

CLIMATE INVESTMENT FUNDS

CTF/TFC.13/5
June 11, 2014

Meeting of the CTF Trust Fund Committee
Montego Bay, Jamaica
June 26, 2014

Agenda Item 5

DEDICATED PRIVATE SECTOR PROGRAMS

PROPOSAL FOR PHASE II

PROPOSED DECISION

The Trust Fund Committee reviewed document CTF/TFC.13/5, *Dedicated Private Sector Programs Proposal for Phase II*, and notes with appreciation the work of the CIF Administrative Unit and the MDB Committee to develop the proposals contained therein.

The CTF Trust Fund Committee approves the following program proposals and requests the MDBs to proceed to develop sub-programs and projects under each program in accordance with the approved *CTF Private Sector Operational Guidelines*:

- [a) The Scaling up of the two approved programs under DPSP I, ***Utility-Scale Renewable Energy*** with a focus on utility-scale geothermal energy for an amount of USD 120 million; and ***Renewable Energy Mini Grids and Distributed Power Generation*** for an amount of 53.5 million.]
- [b) ***The Mezzanine Finance for Climate Change Program*** for an amount of USD 35 million.]
- [c) The addition of two new subprograms under the ***Utility Scale Renewable Energy program*** with a focus on ***private and early stage renewable energy power*** for USD 35 million, and ***Solar photovoltaic power*** for USD 95 million.]
- [d) The addition of one new program, the ***Energy Efficiency and Self-Supply Renewable Energy program*** for USD 20 million.]

The Trust Fund Committee requests the CIF Administrative Unit and the MDBs to include information on the progress being made in implementing the Dedicated Private Sector Programs in the semi-annual operational reports of the CTF.

I. INTRODUCTION

1. The CTF Trust Fund Committee at its meeting in October 2013 reviewed a proposal for the Dedicated Private Sector Program (DPSP) (document CTF/TFC.12/4), which contained four program proposals. The Trust Fund Committee approved two program proposals:

- a) *Utility-Scale Renewable Energy*: aimed at scaling up renewable energy (RE), starting with a focus on utility-scale geothermal energy; and
- b) *Renewable Energy Mini Grids and Distributed Power Generation*: focused on catalyzing growth in energy access by addressing primarily financial and regulatory barriers to private sector led mini grid and distributed power generation to serve rural and under-served off-grid communities.

2. An indicative allocation of USD 115 million was approved for the Utility Scale Renewable Energy Program, and USD 35 million for Renewable Energy Mini Grids and Distributed Power Generation for allocation within existing CTF pilot countries.

3. The Trust Fund Committee took note of the two other proposed programs, Risk Capital to Address Regulatory Risks for Renewable Energy and Climate Finance Equity Investments, but felt that in each case more work was needed to explain/ mitigate the risks inherent in these programs.

4. The Committee agreed that if additional financial resources became available for the DPSP, these could be allocated in a timely fashion to existing or new programs. The programs could be extended beyond CTF pilot countries to all CIF pilot countries if justified. Finally, the Committee requested the CIF Administrative Unit and the MDBs to report back to the Trust Fund Committee on progress on implementation of the first phase of the DPSP at its next Committee meeting.

5. Of the indicative Phase 1 allocation of USD 150 million, MDB proposals for an aggregate USD 75 million have been submitted to the CTF TFC for approval as follows:

- a) USD 40 million for geothermal in Mexico and Chile; and
- b) USD 35 million for renewable energy mini grid and distributed power generation in India, Indonesia, and the Philippines.

6. Applying the agreed eligibility and readiness criteria, the MDB committee earmarked additional allocations for forthcoming DPSP phase I proposals under the Utility scale RE program, including:

- a) USD 10 million for Colombia; and
- b) USD 65 million for Turkey.

7. The funding proposals for all these projects are expected before October 2014.

8. Given the additional contribution received at the end of December 2013 from the United Kingdom of USD 330 million, the CIF Administrative Unit and the MDBs have worked together to outline the potential deployment of the additional resources, including the scaling up of existing programs, and modified and new programs. This paper details the following programs proposals for the possible allocation of the DPSP:

- a) Scaling up of the two approved programs (Utility-Scale Renewable Energy- with a focus on geothermal, and Renewable Energy Mini Grid and Distributed Power Generation), to all CIF countries;
- b) One modified program originating from the previous Climate Finance Equity Investment Program, namely:
 - i. The Mezzanine Finance for Climate Change Program;
- c) Additional sub-programs under the Utility-Scale Renewable Energy program:
 - i. Program to finance private and early stage renewable energy power; and
 - ii. Program for solar photovoltaic financing.
- d) One new program: Energy Efficiency and Self-Supply Renewable Energy program.

9. All program proposals include projects / sub-programs that could absorb a substantial portion of the USD 330 million of additional CTF resources for additional CTF pilot countries and other CIF pilot countries particularly in Africa. The Trust Fund Committee is requested to review and endorse those proposals that they wish to see further developed. The Trust Fund Committee is also invited to determine an indicative allocation of initial funding for each endorsed program proposal. Individual projects or sub-programs developed under any endorsed program will be submitted to the Trust Fund Committee for approval of CTF funding.

10. The General Principles and Objectives of the DPSP remain unchanged from those presented in the October 2013 proposal for the DPSP (document CTF/TFC/.12/4). A summary of the principles, objectives, and operating procedures can be found in Annex 1.

II. FUNDING AND EXPANSION OF COUNTRY COVERAGE

11. Each proposal identifies the minimum amount of funding that would be required for a meaningful first phase, or a scaling up of existing programs. All proposals have been designed with the idea that they could be scaled up in CTF pilot countries and more broadly within CIF pilot countries.

12. Following the recommendation of the CTF Trust Fund Committee, the program proposals include non CTF pilot countries particularly in Africa. The MDB Committee strongly supports the expansion of the DPSP beyond the CTF pilot countries. The barriers and challenges of scaling up private sector investment are found in both middle income and lower income developing countries often with greater acuity. In addition, to achieve scale on a regional wider basis (e.g. across regions or globally) it is necessary to pilot test innovative financing and risk mitigation approaches and compile and disseminate lessons learned (from both successes and failures) through the implementation of DPSP programs across several countries and regions simultaneously. This will also facilitate more “south-south” learning and knowledge sharing to facilitate successful models for private sector investment and increase the impact of these investments. To put it another way, the outcomes from the whole will be greater than sum of their parts.

Table 1: Overview of Proposed Funding By MDB and by Program

Program excluding non-CIF - based on 330 million USD														
Bank	Phase 1				Phase 2									
	Program Volume USD million													
	Geo-thermal	Mini-Grids	Phase 1 Only		Geo-thermal	Mezz	Private/Early RE	Photo-voltaic	EE/RE	Mini Grids	Phase 2 Only		Phases 1 & 2	
AfDB				0%	50			65			115	33%	115	23%
ADB		35	35	23%	30	30				5	65	18%	100	20%
EBRD	12.5		12.5	8%	-		35				35	10%	47.5	9%
IDB	50		50	33%	20			10	20	10.5	60.5	17%	110.5	22%
IBRD	40		40	27%	20					38	58	16%	98	19%
IFC	12.5		12.5	8%	-			20			20	6%	32.5	6%
Total	115	35	150	100%	120	30	35	95	20	53.5	353.5	100%	503.5	100%

III. PROGRAM PROPOSALS FOR PHASE II

13. To facilitate review, a brief summary of each proposal is presented below, together with a table that shows the salient features of each proposal in summary form (Proposals at a Glance). A detailed elaboration of the individual proposals follows this summary.

Programs proposed for scaling up

Utility scale renewable energy: geothermal

14. At its October 2013 meeting, the CTF Trust Fund Committee approved an allocation of USD 115 million for phase 1 of this program with a particular focus on mitigating the drilling and resource risks for geothermal project development. This approach was adopted given the large financial hurdle posed by these risks in developing geothermal projects. Projects under this program have strong country ownership and use proven technologies that offer significant cost reduction potential for wide scale deployment and replacement of carbon-intensive thermal

power generation in emerging markets. This program could include other technologies such as solar power, or biomass energy utilization.

15. The MDBs allocated these resources to five projects in Turkey, Mexico, Colombia, and Chile. Two projects (USD 20 million for Mexico and USD 20 million for Chile) have been approved by the Trust Fund Committee. For phase II, the MDBs propose an allocation of USD 120 million) for geothermal projects in CIF pilot countries, with USD 50 million earmarked for Africa.

Renewable energy mini grids and distributed power generation

16. The Renewable Energy Mini Grids and Distributed Power Generation Program was endorsed by the CTF Trust Fund Committee with a USD 35 million allocation for Phase I. ADB submitted a sub-program proposal to the TFC for three pilot CTF countries, India, Indonesia, and the Philippines which has now been approved. Under Phase II of the DPSP there is an opportunity to expand this program with an additional USD 53.5 million for other CIF pilot countries in Africa, Asia and the LAC region.

17. This Program addresses the energy needs of bottom-of-the-pyramid consumers who may never be served by traditional grid connections. Establishing mini grid and distributed power generation systems¹ can help transform the energy landscape by putting new energy consumers on a low carbon growth trajectory, and leapfrogging traditional fossil fuel electricity grids. The off-grid market presents some unique opportunities, where the low carbon growth trajectory can be the only viable, cost-effective solution to providing energy services to remote populations. The program would catalyze investments in energy access projects by addressing the key financial, credit and other barriers to private sector led development in this sector.

18. Additional investment opportunities for consideration in a Phase II of the DPSP, have been identified in Asia (Bangladesh, Cambodia, Maldives, Nepal and the Pacific Islands), Africa (Ghana, Mali), and Latin America (Colombia and Haiti).

Revised Programs –revised equity investment program

19. The Climate Finance Equity Investments program presented to the TFC in October 2013 was not endorsed. The Trust Fund Committee requested further information regarding how risks would be managed under an equity program, and how different funding instruments (grants, capital, and loans) would be considered. One revised proposal, Mezzanine Finance for Climate Change, is presented below.

Mezzanine finance for climate change

20. The revised DPSP Phase II includes a draft proposal for a \$30 million mezzanine co-investment (or “sidecar”) facility for ADB’s flagship climate finance equity fund, the Climate Public-Private Partnership Fund (CP3)². DPSP funds would be used to catalyze investments in

¹ The program contemplates a range of potential system sizes from 1kW to 1MW.

² <http://www.adb.org/projects/45918-014/main>

climate change projects which otherwise would be not viable with traditional senior debt and equity financing. Already approved by ADB's board, CP3 is finalizing its first financial close in Q3 2014 of \$400 million, and expects to raise the additional \$600 million within 18 months. The longer term vision of the program is to establish mezzanine financing as a third tier for climate investments in Asia and other emerging markets. This would effectively increase the impact of public and private finances and leading to more mature financial markets, better equipped for bridging climate investment gaps.

New sub program proposals under the utility scale renewable energy program

Program to finance private renewable energy power plants

21. EBRD SEMED region countries (Egypt, Jordan, Morocco, and Tunisia, all CTF countries) are particularly well positioned to develop renewable energy due to strong solar and wind natural resources. However, in order to attract private sector investment in renewable energy, these countries must address the significant barriers of inadequacy of local regulatory and legal frameworks, limited experience of investors and governments with these new financing models, and financing gaps. Due to these market failures, the limited investment in renewable energy to date has been dominated by the public sector.

22. This program seeks to overcome these barriers through a combination of policy dialogue to improve the regulatory frameworks, technical assistance for project preparation, and concessional finance to overcome the financing gap and the lack of experience with new private models of financing renewable power projects.

23. The program will enable the success of renewable energy generation projects in SEMED developed under new private financing models and will disseminate lessons learned. Its success would be greatly enhanced and accelerated by the contribution of USD 35 million CTF funds to address financing gaps and encourage the development of initial demonstration projects.

24. Potential clients have been identified in North Africa: Egypt, Jordan, Morocco, and Tunisia.

Utility scale renewable energy: solar photovoltaic

25. Solar PV is considered amongst the most scalable and sustainable forms of renewable energy; effective measurements of irradiance can be undertaken beforehand, and proven PV-technologies have been developed over time. The overarching objective of this program is to enable the scaling up of these renewable energy technologies with an initial focus in Africa and Latin America and the Caribbean (LAC). Given the values of solar irradiance on the African continent along the solar belt north and south of the equator, as well as in some regions in LAC, conditions for solar photovoltaic projects are optimal. To this end, Solar PV not only represents significant potential in these markets in terms of improving and diversifying the energy mix with a low carbon technology but also the potential to provide positive benefits to end-users by ensuring greater energy access and improvements in affordability.

26. While ensuring greater energy security in these regions, investments in Solar PV projects are expected to expand opportunities for private sector participation and development, to increase employment opportunities, to prevent locking in economies which need to make significant investments to expand their energy installed capacity into a higher carbon intensity path, and, not least, to result in improved livelihoods for women, men, and children. Presently, Africa is the lowest emitter of GHGs and Latin America has the cleanest energy matrix in the world; however, their rapidly growing populations and energy demand growth rates will put an acute pressure on the supply side forcing countries to adopt traditional technologies with track record and more efficient over renewable ones. In order to avoid this, a significant increase in the supply of clean and affordable energy, such as Solar is required.

27. Investment opportunities have been identified in both CIF and non CIF pilot countries: Burkina Faso, Kenya, Mali, Nigeria, , Brazil, Mexico, as well as Chad and Senegal.

Energy Efficiency and Self-Supply Renewable Energy Program

28. The proposed Energy Efficiency and Self-Supply Renewable Energy Program (EE/SS) is aimed at providing investment resources and technical expertise for the currently underserved sector of energy efficiency and self-supply renewable energy generation. CTF resources will be mostly used to establish an EE/SS Facility that will provide guarantees (or in limited cases complementary debt resources) in support of loans for energy efficiency and self-supply renewable energy projects in CIF-pilot countries.

29. With an initial \$20M Facility IDB will support over \$100 million of investment in energy efficiency and self-supply renewable energy projects, as the guarantee coverage will leverage between four and six times its size from other financing sources (debt and equity). Additionally, these projects will help establish local engineering capacity for their technical design, establish supply chains for equipment procurement, and demonstrate the market potential to local financial institutions (to be achieved through co-investment as well as a knowledge management activities). The market potential for biogas, small-scale biomass and solar projects is significant, as is for a number of EE technologies, and the demonstration impact of the CTF and IDB-supported projects could lead to significant replication. An initial pipeline of investments has already been identified (and feasibility studies completed) in various CIF-pilot countries in LAC, so CTF guarantees would have immediate impact in those cases where the credit profile of the investments in these new applications or models needs to be enhanced to allow debt financing.

Proposals at a Glance						
	Utility-Scale RE: Geothermal	RE Mini grids & Distributed Generation	Mezzanine Finance for Climate Change	Private/early stage RE	Utility-Scale RE: Solar Photovoltaic	EE and Self-Supply RE
Objective	To mitigate drilling risk for geothermal project development	To expand energy access via RE mini grid / distributed generation development	To enhance the impact, scope and reach of climate equity investments	Kick-start investment in private/private and early-stage FiT generation/off take of RE using the grid	Enable scaling up of RE technologies in Africa and LAC; increased energy access, reduce (imported) fossil fuel dependence; enhance energy security	To catalyze investment and demonstration of EE and Self-Supply RE applications and models through credit enhancement
MDBs interested	ALL	ADB, IDB, IBRD	ADB	EBRD	AfDB, IDB, IFC,	IDB
Phase 1 countries	Chile, Colombia, Mexico, Turkey	India, Philippines, Indonesia	NA	NA	NA	N/A
Phase 2 countries	Kenya, Indonesia/ Philippines, Turkey, LAC/ Caribbean (countries TBD)	<u>Asia</u> : Bangladesh, Cambodia, Maldives, Nepal, Pacific Islands. <u>Africa</u> : Ghana, Mali, <u>LAC</u> : Colombia, and Haiti,	India, Indonesia, Philippines, Thailand, Vietnam, Bangladesh, Cambodia, Lao PDR, Maldives, Mongolia, Nepal, Pacific Region, Tajikistan	MENA region	<u>Africa</u> : Burkina Faso, Ghana, Kenya, Mali, Niger, Nigeria, Chad, Senegal LAC: Brazil, Mexico, other CIF countries	All CIF countries in LAC
Indicative range of funding	Phase 1: \$115 million; Phase 2: \$120 million	Phase 1: \$34.3 million Phase 2: \$53.5 million	Phase 1: N/A Phase 2: \$30 million	Phase 1: N/A Phase 2: \$35 million	Phase 1: N/A Phase 2: \$95 million Phase 3 Non-CIF: 75million	Phase 1: N/A Phase 2: \$20 million
Market failure/barrier being addressed	High resource risk impedes investment	Lack of commercial financing for distributed or off-grid RE projects	Lack of mezzanine financing instruments in Asia and other emerging markets	Weak regulatory environments; lack of LT funding, lack of risk capital	Overcome higher perceived risk profile of RE projects for private sector; regulatory risk; market/price risk	Inadequate access to financing (tenors, collateral requirements); high risk perception given lack of sufficient local demonstration

Proposals at a Glance						
	Utility-Scale RE	RE Mini Grids and Distributed Generation	Mezzanine Finance for Climate Change	Private/ early stage RE	Utility-Scale RE: Solar Photovoltaic	EE and Self-Supply RE
Potential market demand	CTF countries: 9 potential fields over short term (12-18 months); additional 19 fields in medium term (18-24 months). SREP countries: 12 fields. Others: 10 fields. Total additional capacity = 4GW	There are roughly 167 million people with no access to electricity living in CIF countries in Asia (excluding Phase I), Africa and the LAC, representing approx. 6,700MW of new demand	Approximately \$1 trillion of climate finance is needed to keep global average temperature increases below 2 degrees Celsius and avoid “dangerous” climate change.	CIF Countries: 5-10 projects of various technologies and scale across eligible countries in Phase 2	CIF countries: Burkina Faso, Ghana, Kenya, Mali, Niger, Nigeria, Brazil, Mexico (and others in LAC) Non CIF countries: Chad and Senegal	CIF Countries: 20-40 projects of various technologies and scale across eligible countries, leading to full absorption within three years.
Demand likely to be addressed by proposal in Phase 2	5-7 fields	Approx. 25 investments in RE mini grid & distributed power generation companies and impact funds	ADB’s main climate equity fund, CP3 (\$1 billion target size) is expecting first close in Q3 2014 of approximately \$400 m; CTF funds would be used to catalyze these investments into new sectors and countries.		Up to ten solar PV projects to be implemented resulting in about 300 MW of additional installed capacity.	CIF Countries: 20-40 projects of various technologies and scale across eligible countries, leading to full absorption within three years.
Financial instruments	Contingent loans, equity, quasi-equity; subordinate loans; exploration risk insurance. Through comm. banks or public programs.	Senior debt, subordinated debt, guarantees and equity products.	Mezzanine finance (subordinated debt)	Commercial financing blended with concessional financing for senior/ sub-debt/ mezzanine and equity financing	Commercial financing blended with concessional financing for sub-debt/ mezzanine financing	Guarantees (and in limited cases, loans)

Proposals at a Glance						
	Utility-Scale RE	RE Mini Grids and Distributed Generation	Mezzanine Finance for Climate Change	Private/ early stage RE	Utility-Scale RE: Solar Photovoltaic	EE and Self-Supply RE
Key stakeholders	Government, private sector, MDBs, bilateral institutions of the UK, France, Australia, Netherlands, Germany	Governments, policy makers, financial institutions, investment funds, project developers, energy service providers, utilities, regulators, civil society, and development partners	Institutional investors, PE funds, private sector, bilateral institutions of the UK Government	Governments, regulators, private sector RE producers and users, DFIs	Governments, private sector, utilities, local communities, investors, energy market participants	Manufacturing/services companies, energy service companies, commercial banks
Expected leverage	1:10 or higher	1:2	1: 6	1:10 or higher	1:8	1:4-1: 6
Other core indicators	Avoided CO ₂ , new RE capacity, GWh generated or saved	Avoided CO ₂ , new RE capacity (MW), GWh generated or saved	Avoided CO ₂ , new RE capacity (MW), GWh generated or saved	Avoided CO ₂ , new RE capacity, GWh generated or saved, finance mobilised	Avoided CO ₂ , new RE capacity, GWh generated or saved, access to clean energy	Avoided CO ₂ , new RE capacity, GWh generated or saved, number of technologies/applications demonstrated
Co-benefits	Capturing / disseminating knowledge; momentum to scale-up geothermal investment; expanding opportunities for co-financing; broaden donor reach	New energy access, livelihood creation, health and gender benefits, job opportunities, technology transfer, social inclusiveness, reduced cost of grid expansion	Job creation, large scale investment in climate technology, skills transfer, creation of a third tier of financing (mezzanine) to catalyze investment in climate projects	Demonstration of RE at scale for replication; gov. revenues; energy security, employment; lower consumer tariffs; direct contracting models, new technologies, reinforcement reg. environments, local environmental improvements	Demonstration of RE at scale for replication; diversification of energy sector; government revenues; job creation; lower consumer tariffs	Reduction of strain on electricity, transportation systems, decreasing need for transmission and distribution investments, decreasing electricity costs, reducing fossil fuel imports, enhancing energy security; improving trade balances; enhanced competitiveness of companies.

IV. PROGRAMS PROPOSED FOR SCALING UP

Utility scale renewable energy: geothermal

MDBs interested in participating:	ADB, AfDB, EBRD, IBRD, IDB, IFC
CTF pilot countries in Phase I:	Chile, Colombia, Mexico, Turkey
CTF pilot countries in Phase II:	CIF countries in Africa, Asia, and Latin America
CTF Phase II funding request:	\$120 million

30. On October 28, 2013, the CTF Trust Fund Committee approved an allocation of \$115 million dollars for Phase I of a Utility-Scale Renewable Energy Sub-Program³ with the objective of mitigating drilling risks in geothermal project development. These funds were earmarked for projects in CTF pilot countries, with specific allocations to be made by the MDB Committee based on project readiness.

31. Support to geothermal resource validation can have a truly transformational effect by unlocking development and contributing to scaling up development of one of the most competitive sources of renewable energy. The Utility-Scale Geothermal sub-Program has the potential to catalyze a reduction in the levelized cost of geothermal, driving it below the alternative fossil-fuel baseload technologies. This would be achieved through: (i) reduction in the resource risk thanks to the accumulation and dissemination of knowledge on successful risk-mitigation strategies in drilling operations, including technical improvements; (ii) reduction in investors' risk perception thanks to the improvement in drilling techniques and to the development of risk mitigation and risk sharing strategies and instruments, which would lead to lower premiums for debt and capital; and (iii) construction of new drilling rigs and increase in the number of drilling professionals and contractors due to increased demand for their services, which would result in lower rental and hiring costs respectively.

32. Table 1 below summarizes the current pipeline of geothermal projects for Phase I. The proposed allocations have been agreed among the MDBs. It is expected that all projects in Phase I will be submitted for approval/consideration by the CTF Trust Fund by the end of October 2014 (i.e. within 12 months of the DPSP decision). Appendix 1 contains additional details on each project.

Table 1: Phase I pipeline

MDB	Country	Proposed allocation (USD million)	Status	Expected submission
EBRD/IFC*	Turkey	25	Project concept under preparation, initial discussions held with stakeholders	Q3 2014
IBRD*	Turkey	40	Project concept under preparation, initial discussions held with stakeholders	Q4 2014
IDB	Mexico	20	Proposal submitted to TFC	Q2 2014
	Chile	20	Proposal approved by TFC	Q2 2014
	Colombia	10	Project concept under preparation	Q3 2014
TOTAL		115		

*EBRD, IFC and IBRD have agreed to coordinate their activities in Turkey

³ CTF/TFC.12/CRP.3

33. In its October decision, the Trust Fund Committee also indicated that, if additional resources became available for Dedicated Private Sector Programs, it would welcome scaled-up proposals for existing programs.

34. Following the CTF committee decision, the MDBs have reviewed all proposals and suggest that up to USD 120 million of the new funding is channeled to scale up the Utility Scale Geothermal Program. This will allow increasing the global impact of the program. The October 2013 proposal⁴ identified an indicative project and country pipeline (see Appendix 2), resulting in a preliminary estimated demand of \$230 million for DPSP funding from CTF pilot countries for mitigation of geothermal drilling risks in the early phases of project development. An additional allocation of about \$120 million under Phase II of the DPSP would allow expanding geographic support not only to additional CTF countries that have already identified potential fields for DPSP support (e.g. Indonesia, Philippines) but also to other CIF countries, particularly in Africa, some of which hold some of the largest undeveloped geothermal potential in the world (see Appendix 3). Extending support to Africa SREP countries would provide a unique opportunity to maximize learning effects under the umbrella of the DPSP through knowledge dissemination and cross-fertilization of experiences on successful models and instruments for private sector development across countries and programs. In addition, achievement of the planned geothermal scale-up in countries that already receive support for geothermal investments under SREP (e.g. Kenya, Ethiopia and to a lesser extent Tanzania) will require additional concessional resources in order to scale up development by mitigating part of the risks associated to drilling.

35. Additionally, as some of the proposed projects in Africa represent new sites for development, the exploration risk of development and perceived project risk overall are high. CTF resources would be used to mitigate these risks, particularly exploration drilling risks in order to enable private sector participation on the generation side downstream. The AfDB is aware of ongoing efforts by private sector participants to establish a type of facility which would aim to address specifically the high costs associated with exploration drilling risk insurance by means such as premium buy-downs and potentially an allocation of resources to offset due diligence costs associated with drilling risk insurance. In addition to providing direct support to individual projects, the AfDB would be receptive to continue to explore the possibility of deploying of available CTF resources to such a type of facility subject to all of the due diligence conditions having been met.

36. Table 2 below summarizes the indicative pipeline for the Phase II allocation. Project readiness will be essential to qualify for funding. DPSP funding will remain focused in reducing drilling risks through different risk mitigation instruments targeted at the private sector, which will be tailored to the particular status and nature of ongoing developments in each country.

⁴ CTF/TC.12/4

Table 2: Indicative pipeline for Phase II

MDB	Country	Proposed allocation (USD million)	Project status	Expected submission
ADB	Indonesia/ Philippines	30	<p>In Indonesia, ADB anticipates that all \$150 million of its approved program under the current Indonesia Investment Plan will be deployed by the end of 2014 for 3 specific private sector projects. With 40% of the world's global geothermal resources located in Indonesia, there is good reason to contribute additional CTF funds to mitigate risks and support other private sector developers in the market.</p> <p>In the Philippines, ADB is in discussions with two separate private sector sponsors developing geothermal sites in northern Luzon and eastern Visayas regions. Both have indicated that they are unable to obtain any funding for exploration and resource verification stage of the projects.</p>	Q4 2014/ Q1 2015
AfDB	Kenya	50	CTF funds would be used to enhance the risk profile of two projects, encouraging greater participation from the private sector and lowering total project costs. Development of these projects is expected to contribute to increased energy access and affordability.	Q42014
IFC	Turkey	17.5	Expansion of approach defined under Phase I	Q3 2014
IBRD	Indonesia	10	IBRD is in discussions with MOF to explore options to support implementation of the Geothermal Fund through provision of CTF guarantees to the loans offered by the State Investment Agency (PIP) through the Geothermal Development Fund (GDF) to existing license holders. This is expected to reduce the requirement for collateral, which is currently a barrier for private developers.	Q4 2014
IBRD	Dominica	10	Dominica is currently planning a two phase geothermal approach. In the first phase, it is planning to build a 5 MW geothermal power plant (next 12-18 months). In the next 2-5 years, a second phase in the range of 50 MW would be built for exports. The CTF DPSP allocation would leverage co-financing from the WBG and a private sector consortium for the first phase.	

IDB	Central American and Caribbean	20	IDB and JICA are working towards supporting the development of geothermal projects through the Co-financing for Renewable Energy and Energy Efficiency Program (CORE) creating the opportunity to leverage other concessional cofinancing like DPSP funds and enabling private developers in the region to participate in geothermal projects deployment. Background: During the IDB's 2014 annual meeting in Brazil, IDB and the Japan International Cooperation Agency (JICA) signed an agreement to support renewable energy and energy efficiency for the mitigation of climate change in Central America and the Caribbean. Through this co-financing mechanism, IDB and JICA aim to support Caribbean countries in the deployment of geothermal pilot projects that can be scaled up to seize geothermal potential in the Caribbean with an initial focus on the Eastern Caribbean Countries (Dominica, Grenada, St. Vincent & the Grenadines, St. Kitts, Nevis, and St. Lucia) where potential exists to add at least 250 MW of geothermal generation capacity.	Q2 2015
TOTAL		120		

37. The proposed allocations are subject to the following:

- a) In order to simplify the allocation procedures, EBRD and IFC have decided to merge their pipelines of projects in Turkey. An immediate allocation of the \$25 million has been requested to their joint pipeline under Phase I, with a need for additional \$17.5 million from Phase II and \$17.5 million from a potential Phase III to cover the work of both MDBs; and
- b) Allocations to the same country through different MDBs will be processed as different operations (e.g. Indonesia-ADB, Indonesia-IBRD), unless otherwise indicated

38. The table below presents the estimated target values for the **core indicators/ results framework** under the program (see Appendix 4 for details):

Core Indicators		Performance	
		DPSP I	DPSP II
GHG emission reductions	- Annual (million tCO ₂ e/year)	1.9	1.5
	- lifetime (30 year cumulative, million tCO ₂ e)	57.4	43.5
Electricity production	- New RE capacity (MW installed)	570	370
	- Additional Power Generation (GWh/year)	3,189	2,917
Cost to CTF (\$/t CO ₂)		3.1	3.2
CTF financial leverage		1:10-1:20	1:10-1:20
Energy Access	- Number of previously non-electrified households provided with access to electricity (Households)	N/A	N/A
	- Number of individuals provided with access to electricity (Individuals)	N/A	N/A
Employment	- Number of new jobs generated (direct and indirect) (Jobs)	N/A	N/A

39. The pipeline currently identified for a potential DPSP Phase III, both for CIF and non-CIF countries would catalyze an estimated additional 390 MW of geothermal generation. Appendix 5 includes details on the preliminary pipeline.

Appendix 1: Indicative project description for Phase I

Project	Preliminary description
EBRD/IFC - Turkey	Commercial banks in Turkey currently finance geothermal projects only after commissioning has been completed or, more often, after operations have begun and production of electricity has been verified. This financing gap is a barrier to scaling up geothermal development. The proposed project would support the creation of a direct lending facility and/or finance projects directly to support the confirmation and production drilling stages through risk mitigation instruments, while the remaining financing gap would be covered by sponsor equity and co-financing from other lenders, possibly including IFIs or local development banks. The project would also include a technical assistance component to support the client, and the government, to be financed by another donor in the case of EBRD It is expected that 3-4 projects could be supported under this scheme.
IBRD – Turkey	Domestic commercial development banks in Turkey currently finance geothermal projects only after commissioning has been completed or, more often, after operations have begun and production of electricity has been verified. This is a barrier to scaling up geothermal development. The proposed project would support the creation of a financing facility through a Financial Intermediary (FI), such as a local development Bank, to support the confirmation and production capacity drilling stages through concessional loans and thus provide incentives to strengthen the capacity of Turkey’s development banks to take exposure to geothermal investments. IBRD co-financing would be sought to help the government invest in early exploratory production drilling. The project would also include a technical assistance component to strengthen capacity of the Government and the FI. It is expected that 4 to 5 projects could be supported under this scheme.
IDB – Mexico	The program combines IP and DPSP resources to scale up private investment in geothermal power generation projects (up to now only developed by the Public utility CFE) by making available a range of financial mechanisms tailored to meet the specific needs of each project’s stage of development, namely: (i) exploration and test drilling, where risk and/or cost sharing instruments are combined with lending to reduce Value at Risk for developers, hence removing the main barrier to investment; (ii) field development, production and re-injection drilling, where risk mitigation instruments may be developed with the private sector (insurance) to deal with the still relatively high risk levels, and can be combined with lending; (iii) construction and operation phase (only once sufficiency and stability of the resource have been proven), which requires more standard financing tools (ordinary, subordinate or concessional debt, but also contingent finance and guarantees). The IDB considers this a most effective structure to mobilize continued financing for the development of geothermal projects, especially in the early phase, where specific incremental risks (i.e. resource risks) are high. The involvement of a local public development bank (NAFIN) and the private banking and insurance sectors should maximize

	<p>leverage from public and private sources, accelerate and scale-up finance to a larger number of projects, enable the conditions for a sustainable development of the geothermal sector and reduce the need for subsidies in the future.</p> <p>The Program is expected to finance up to 300 MW of additional installed capacity.</p>
IDB - Chile	<p>The IDB/CTF MiRiG program combines resources from the IP and DPSP to support investment needs of projects that have already completed some exploratory drilling but require resource risk mitigation support to conduct additional exploratory and production drilling before they can access commercial debt financing. The projects that the IDB MiRiG program intends to support have the potential of becoming the first geothermal projects in Chile (and at this point in South America), demonstrating the viability of this technology locally and leveraging DFI and commercial financing on a non-recourse basis. CTF resources will thus be used in structuring financial solutions that will mitigate the effects of these risks to project developers and financiers, and incentivize project developers to make the significant additional investments still necessary to allow production drilling campaigns to go forward. Such structuring solutions could include senior and subordinated long term project loans, short term bridge loans, and guarantees. When needed, CTF loans may be disbursed earlier than IDB or other senior lenders' capital, if perceived resource risk levels are still too high for such lenders. The program expects to directly enable a minimum of 100-150 MW of installed capacity.</p>
IDB – Colombia	<p>The program would support the first geothermal exploration drilling campaign in the country. The IDB has supported preliminary surface studies for a project with an estimated capacity of 50 MW. The client would be the third largest power generator in the country, a mixed public-private utility.</p>

**Appendix 2: Indicative project and country pipeline presented in the October 2013
Utility Scale Renewable Energy - Geothermal proposal**

	Description	Total number of fields	Countries	Estimated demand for DPSP funding
Group 1	Geothermal fields in CTF pilot countries potentially financeable in 12-18 months	9	Chile, Mexico, Colombia, Turkey, Indonesia, Philippines	\$75-130 million
Group 2	Geothermal fields in CTF pilot countries potentially financeable in 18-24 months	19	Mexico, Chile	\$100 million
Group 3	Potentially financeable geothermal fields in other CIF countries	12	Kenya, Ethiopia, Tanzania, Vanuatu, Armenia, Honduras, Saint Lucia, Saint Vincent and the Grenadines, Grenada, Dominica	\$155 million
Group 4	Potentially financeable geothermal fields in non-CIF countries	10	El Salvador, Guatemala, Dominica, Nicaragua, St Kitts and Nevis,	

Appendix 3: Geothermal potential and installed capacity in CTF countries and Africa SREP countries

Region	Country	Estimated geothermal potential (MW)	Installed geothermal capacity (MW)	Capacity Addition (Phase 1&2)	Capacity Addition Relative to Potential (Phase 1&2)
East Asia	Indonesia	10,000 (proven), 29,000 (potential)	1,300	15%	2%
	Philippines	2,027 (proven), 2,380 (potential)	1,868	3%	3%
Central Asia	Turkey	1,500	310	65%	13%
Latin America	Mexico	<6,500	958	31%	5%
	Colombia	2,200	0	n/a	2%
	Chile	2,350	0	n/a	4%
Africa	Kenya	7,000-10,000	240	83%	3%
	Tanzania	650	0	n/a	15%

Appendix 4: Core indicators: Detailed calculations and assumptions for DPSP Phase I and Phase II

	Phase I				
	Turkey	Mexico (1)	Chile (1)	Colombia	Total Phase I
CTF funding (million)	65	54.3	50	10	179.3
New RE Capacity installed (MW)	120	300	100	50	570
Avoided CO2 (million tCO2/year)	0.46	1.10	0.29	0.06	1.91
Avoided CO2/lifetime (million tCO2/30 years)	14	33	8.7	1.8	57.4
Additional Power Generation Capacity (GWh/year)	946	1,104	745	394.2	3,189
Cost to CTF per ton of GHG reduction (\$/ton)	4.67	1.65	5.75	5.64	3.12
Leverage from CTF funds	1:10	1:20	1:10	TBC	1:10 - 1:20
Emission factors (tons CO2/MWh)(2)	0.49	0.45	0.4	0.15	
Capacity factor	0.9	0.9	0.9	0.9	

	Phase II - excluding non-CIF (based on USD 330 million)				
	Indonesia (3)	Turkey	Caribbean (4,5)	Kenya	Total Phase II
CTF funding (million)	40	17.5	30	50	137.5
New RE Capacity installed (MW)	100	30	40	200	370.0
Avoided CO2 (million tCO2/year)	0.58	0.11	0.25	0.52	1.45
Avoided CO2/lifetime (million tCO2/30 years)	17	3	7	16	43.5
Additional Power Generation Capacity (GWh/year)	788	237	315	1577	2917
Cost to CTF per ton of GHG reduction (\$/ton)	2.32	5.36	4.07	3.20	3.16
Leverage from CTF funds	N/A	N/A	N/A	1:15	1:10-1:20
Emission factors (tons CO2/MWh)(2)	0.73	0.46	0.78	0.33	
Capacity factor	0.9	0.9	0.9	0.9	

KEY:

- (1) Figures taken from IDB's CTF IP+DPSP project proposals approved by CTF Committee in April 2014. Includes full CTF funds for Chile (\$50 million) and Mexico(\$54.3 million)
- (2) Calculated using (grid) emission factors for electricity generation in CO2 Emissions from Fuel Combustion: Highlights. IEA, 2012 (p.111) - averages for 2008-2010
- (3) Estimated capacity (MW) based on figures in original Indonesia IP; based on project readiness, The Philippines could also be a candidate under Phase II-ADB instead of Indonesia.
- (4) Rough estimate as no detailed information yet available on potential program
- (5) Emission factor is world average for electricity produced from oil

Appendix 5: DPSP preliminary pipeline for Phase III: Geothermal

	Phase III - including non-CIF							
	Indonesia	Philippines	Turkey	Caribbean	Tanzania	Comoros	Djibouti	Total Phase III
CTF funding (million)	30	20	17.5	20	20	15	25	147.5
MDB (proposed)	IBRD	ADB	EBRD	IBRD	AfDB	AfDB	AfDB	
New RE Capacity installed (MW)*	75	50	30	25	100	60	50	390.0
Avoided CO2 (million tCO2/year)	0.43	0.19	0.11	0.15	0.23	0.37	0.29	1.77
Avoided CO2/lifetime (million tCO2/30 years)	13	6	3	5	7	11	9	53.1
Additional Power Generation Capacity (GWh/year)	591	394	237	197	788	473	394	3074.8
Cost to CTF per ton of GHG reduction (\$/ton)	2.32	3.52	5.36	-	2.92	1.36	2.90	2.78
Leverage from CTF funds	N/A	N/A	N/A	N/A	1:20	1:19	1:10	1:10-1:20

* Estimate, as no detailed information is available yet

Renewable Energy Mini grids and distributed power generation

MDBs interested in participating:	ADB, IDB, IBRD
CTF pilot countries in Phase I:	India, Indonesia, Philippines
Other potential countries (CIF pilot countries) in Phase II	Africa: Ghana, Mali Asia: Bangladesh, Cambodia, Maldives, Nepal, the Pacific Region, and Myanmar ⁵ . LAC: Colombia, and Haiti.
CTF Phase II funding request:	\$53.5 million (including \$6 million in TA)

Intro – Program overview/description

40. This Program seeks to catalyze growth in access to electricity by addressing barriers to private sector led development of renewable energy mini grids and distributed power generation. The Program will address the fundamental challenge of transforming the energy landscape via combinations of new business models and technologies that deliver clean, reliable, and affordable energy to bottom-of-the-pyramid consumers who will likely never be served by conventional centralized electricity grids⁶. The program is about transformational change in the way modern energy is provided to underserved populations; not only about increasing access to electricity, but also about leapfrogging fossil-fuel dominated electricity grids with renewable energy (RE) technologies and putting new electricity consumers on a new, low-carbon growth trajectory.

41. This Phase II concept note outlines a facility of \$53.5 million, of which approximately \$38 million would be allocated for Africa, and Haiti an additional \$5 million for Asia (beyond the CTF pilot countries approved under Phase I), and \$10.5 million for Latin America and the Caribbean. Through a combination of investment capital and technical assistance targeting financial, regulatory, policy and project specific barriers, it is anticipated the Program will deliver the scale and replicability needed to attract commercial financing and “mainstream” mini grid and distributed power generation in CIF countries. Phase II of the program would reach approximately 2 million people, currently with no access to electricity, and reduce GHG emission by an estimated at 3.9 million tCO₂e. The cost effectiveness of CTF funds would be roughly \$22 per tCO₂e.

42. The Program was conceptually endorsed by the CTF Trust Fund Committee in October 2013 for Phase I of the DPSP. ADB’s proposal for Phase I for India, Indonesia and the Philippines has now been approved by the TFC. Through the potential expansion of the Program to other regions in Phase II, CTF would enhance scale up and replication of business models piloted and proven successful in the Asia-Pacific region to a global level. This would generate unique “south-south” learning and knowledge exchange and enhance the ability of private sector capital to develop this sector.

43. The countries listed for participation in Phase II include CTF countries (Colombia), non-CTF, CIF countries (Bangladesh, Cambodia, Ghana, Haiti, Maldives, Mali, Nepal, and the

⁵ Not currently a CIF country

⁶ The program contemplates a range of potential system sizes from 1kW to 2MW.

Pacific region) and potentially one non-CIF country (Myanmar) that we expect to apply for membership. Phase I of the Program focuses on the incubation of private sector led development, piloting and validation of successful business models, and distillation of lessons learned in middle-income countries. CTF funds would be used in Phase II to take these successful “road-tested” business models and other lessons learned to promote replication and scale-up across a broader range of CIF countries. This Program could potentially be considered as a separate SREP Program. However, to maintain continuity and to avoid additional costs and staff resources developing duplicitous proposals and systems, expansion of the Program through the CTF DPSP is arguably more appropriate and efficient.

44. There are strong parallels for this Program across different regions (e.g., sub-Saharan Africa and the Indian subcontinent); similar constraints and barriers, similar systems of mainstream electricity provision, similar large underserved sections of society without proper access to electricity, similar markets for new energy access services and similar actors and institutions. Most opportunities in this sector come from entrepreneurs in developing countries, who, by proving successful commercial business models, can have an impact at the domestic level. However, entrepreneurs do not usually design their business plans to move quickly to investments across multiple countries and regions. However, by incorporating an energy access initiative into a global program, the impacts of the CTF would extend far beyond the reach of previous country-focused, or region-focused assistance to this sector. Lessons would be shared across regions, and in this sense, the value of a global program would be enhanced, ultimately becoming larger and more effective than the sum of its parts.

Business Case/Model

Market Description

45. An estimated 1.16 billion people (17% of the world’s population) currently live without access to electricity⁷. These people depend principally on biomass, candles, and kerosene to meet their lighting, cooking, and energy needs. As a result, they generally suffer from poor rates of literacy, low levels of education, inadequate health care, poor communication, low levels of income generation and cyclic poverty.

46. In contrast, providing access to electricity is indelibly linked with accomplishing a range of development goals, and is widely considered to have a catalytic impact on development pathways. Modern energy services bring dramatic improvements to people’s lives in a multitude of different ways. Improved lighting, education, communication, health care and security bring instant improvements to standards of living. Furthermore, reliable electricity brings longer term opportunities for establishing small and medium sized business and improving income-generating activity to help communities break the cycle of poverty and transition to middle-income economies.

47. There is a range of promising private sector developers in this market segment, and an enormous choice of potential locations, technologies, and business models to be employed.

⁷ This does not include those nominally connected to grids who receive irregular and sporadic electricity for only a few hours a day.

Many companies have been established locally in developing countries, and are expected to play a key role in south-south cooperation in this sector. But before they can get access to traditional sources of commercial capital, they have to prove their business model over a minimum scale (e.g., \$xx million in sales) and over a sufficient period of time (e.g., 3 financial years). Barriers currently inhibiting private sector developers include insufficient market capital, perceived high risk and relatively low return on investment, non-payment risks, high transaction costs for financing small projects, high up-front capital costs, insufficient net worth and limited experience of private sector entrepreneurial firms (which makes debt financing difficult), low liquidity and inadequate experience of commercial banks to evaluate projects, and difficulty in channeling MDB funds through local financial institutions.

48. Despite interest from technology and energy generation suppliers in expanding their services, current financing mechanisms do not offer the necessary risk management tools and warranties needed to facilitate sustainable and expandable investment (given there is no real structured market demand for off-grid energy services). Potential customers (demand for renewable energy) need mechanisms that facilitate access to reliable technology without prohibitively high initial costs and often local microfinance institutions acting in rural areas do not integrate RE financing into their current business structure.

How will proposal address these?

49. Through a combination of investment, technical assistance and advisory services, the proposed Program will: (i) develop renewable energy based mini grid and distributed power generation solutions in target countries and expand the number of customers with access to modern energy; (ii) mobilize investment from the private sector to mainstream mini grid development, including in some countries the development of dedicated financial instruments and engagement with local financial institutions; and (iii) demonstrate private sector business models that can be replicated and scaled-up across the region.

50. CTF funds would be deployed as investment capital (senior loans, subordinated loans, guarantees, and equity products) for renewable energy mini grid and distributed power generation companies, impact funds and local financial institutions, including second tier national development banks. Resources would be used to finance gaps in projects' financing or companies' plans to scale up implementation, and to capitalize dedicated financial instruments that local financial institutions could promote to encourage energy suppliers and customers to invest in and pay for the RE services. Resources would also be used to partially mitigate credit and performance risks related to the project or those perceived by other lenders, to guarantee short or medium term loans, to bridge timing gaps between capital expenditure needs and payment of government subsidies, and as lower-cost loans to help mitigate the high upfront capital costs of RE systems. Financial products would be aligned with specific project risks, and would be consistent with the general findings and recommendations of prior review and analysis of the market risks in the target countries.

51. Technical assistance and advisory services would be provided through MDBs in different regions (Africa, Asia and LAC). The advisory teams would conduct due diligence for companies and funds with candidate investments based on their ability to deliver RE-based mini-grid

solutions in accordance with the results framework. The advisory teams will assist in deal sourcing and investment pipeline management including the following activities: (i) undertaking market analysis to better understand barriers for financing RE energy (both from supply as well as demand for RE); (ii) assessment of local regulatory and institutional environments for financing and promoting new business models, including at the municipal level; (iii) designing intervention strategies (i.e. types of financial instruments and risk sharing mechanisms that could be promoted for instance through local financial institutions or a second tier development bank); (iv) pre-screening and selecting companies and funds with candidate projects meeting investment criteria; (v) evaluating and finalizing business plans and due diligence of projects or financing strategies that could be implemented by local financial institutions; (vi) establishing templates for legal documentation that can be replicated across projects and different products, including potential documentation for bidding and regulation of concessional contracts at municipal level; and (vii) capacity building with local financial institutions (including national development banks) and other investment partners to ensure leverage of capital resources.

52. The advisory services component will also seek to promote knowledge sharing of successful business models with governments, electric utilities and other stakeholders to encourage improvements in the regulatory and investment environment for more private sector involvement in this market segment. The TA will also examine why some of the existing business models have failed to scale-up, and how they can be improved to attract mainstream commercial financing. Regulatory and policy barriers will be addressed through engagement with governments and regulators, and will focus on demystifying issues relating to allowing private companies to establish sources of off-grid generation.

What is the longer-term vision?

53. Mini grids and distributed power generation systems offer the prospect of decentralized energy service provision analogous to that provided by modern mobile telephone networks. The transformation of the global telecommunications business has been nothing short of astounding: today there are more mobile phones in the world than people, and obtaining a mobile phone is now within everyone's reach. The Program would expand access to clean, reliable, and affordable energy, improve the lives of people who do not yet have access to electricity and provide benefits such as improved health, better education, and opportunities for income generation. Market transformation will occur by removing financial and other barriers to private sector-led mini grid development, and the demonstration of viable commercial business models will be catalytic in increasing the size of the market. It is anticipated that successful investment models in local RE generation, that consider solutions in an integrated manner to incentivize investments by energy suppliers, payments by local costumers and innovative approaches for PPPs would have an important demonstration impact for further replication and scale-up.

Market size potential

54. There are roughly 140 million people living in the targeted countries of Africa, Asia, Latin America and the Caribbean with no access to electricity (excluding the Phase I countries of India, Indonesia and the Philippines). This provides a market potential of roughly 5,630 MW in

new capacity. Please refer to table below for figures for individual countries under consideration for a potential Phase II of the Program.

Country	Population (million)	Electrification rate ⁸	Un-electrified population (million)	Potential Market Capacity (MW) ⁹
Bangladesh	153.5	60%	62.0	2,481
Myanmar	53.4	49%	27.3	1,091
Mali	12.4	17%	10.3	412
Cambodia	14.4	31%	9.9	397
Ghana	23.3	61%	9.2	369
Nepal	29.5	76%	7.0	280
Haiti	8.7	38%	5.4	216
Pacific region				
- Papua New Guinea	5.9	11%	5.3	211
- Solomon Islands	0.6	12%	0.5	20
- Vanuatu	0.2	19%	0.2	7.0
- Samoa	0.2	80%	0.0	1.4
- Tonga	0.1	80%	0.0	1.0
Colombia	44.9	92% ¹⁰	3.6	144
Maldives	0.4	100%	0.0	0.03
TOTAL			140.7	5.630

55. In Asia and the Pacific, ADB's Energy for All team¹¹ has developed a pipeline of potential private sector mini grid and distributed power generation projects. With 62 million un-electrified people, Bangladesh represents the largest potential market in Asia to be reached, with Myanmar (a possible new CIF candidate) second at 27 million. In the short term over the next 12 months, investment needs in Asia are conservatively estimated at \$5 million. Over the medium to longer term (12-36 months) investment needs identified include: Bangladesh (approximately \$15 million), Cambodia (\$2 million), Maldives (\$5 million), Nepal (\$10 million) and the Pacific Islands (\$12 million). This only represents a partial snapshot of the market. While the configurations will vary by country, these projects include solar PV mini grids, solar home system distribution networks, mini-hydropower systems and small wind and biomass/biogas systems.

56. In Africa, the IBRD has identified opportunities for mini-grids investments with high potential for replication in the following CIF countries: Ghana (\$15 million), Mali (\$13 million), and Haiti (\$10 million).

57. Ghana's SE4ALL plan estimates that 65% of the population currently has access to the electricity grid. As a result, the single largest remaining access challenge has been identified as the region surrounding Lake Volta, where the presence of complex flooded terrain, and inhabited islands, peninsulas and waterfronts make it difficult and prohibitively expensive to electrify with

⁸ <http://datamarket.com/>, <http://www.geni.org/>

⁹ Based on the average of 200 watts per household and an average of 5 persons per household

¹⁰ This figure represents the national average, combining urban and rural areas, and as such it does not properly reflect the differences between vast regions in Colombia. In 2012 there were four departments in Colombia with access rates between 57% and 65%.

¹¹ <http://www.energyforall.info/>

conventional grid-based electrification. Preliminary assessments show that 200 inhabited islands and 2,000 lakeside communities are not likely to be connected to the national electricity grid in the near future, therefore depriving from access to electricity an estimated 550,000-1,870,000 people.

58. Over the past five years, the World Bank has supported the Ghana Energy Development and Access Project (GEDAP), which has helped promote off-grid electrification (including mini-grids) through provision of solar home systems, as well as solar PV-based lighting to clinics, schools, and community centers. Under GEDAP, the ongoing development of four mini-grids pilot projects in the lake region will serve 4,500 people in these four villages divided into about 600 households. These villages are meant to operate on the basis of hybrid energy generation (using either solar/wind and diesel in some combination).

59. With support from the CTF, the mini-grid project in Ghana would electrify an additional 60 villages (approximately 12,000 households, clinics, schools, and security posts) in the immediate vicinity of Lake Volta using mini- and micro-grid systems implemented by private sector entities. The use of CTF funding will be restricted to financing the renewable energy component of the hybrid systems. Based on the pilot exercise currently under evaluation through the GEDAP program, the electrification of these 60 villages would cost in the order of \$50 million. The request to the CTF is for \$15 million, with additional co-financing expected from private sector and other sources. The proposed CTF-funded project would be incorporated into the World Bank-supported successor project to the GEDAP program.

60. In Mali, a landlocked country with an electrification rate of roughly 20%, over 10 million people lack access to electricity. Conventional distributed generation, which is mostly based on diesel gen-sets, is extremely costly due to high fuel transportation costs. Therefore, state-owned electricity (SOE) companies such as the public utility EDM-SA have traditionally been reluctant to expand access to rural areas given the investment and operating costs involved. Nevertheless, Mali has developed an active rural electrification sector based on a bottom-up approach, whereby local private operators have piloted new business models to deliver energy services in rural areas. These local entrepreneurs have acquired significant expertise in operating small grids with renewable energy sources (mainly solar PV). This expertise can be highly valuable for EDM-SA. Nowadays, EDM-SA is operating 20 isolated networks.

61. The CTF-funded mini-grid investment in Mali would pave the way to scaling-up the integration of solar PV in selected SOE isolated networks through PPPs, by leveraging the experience of private actors in installing and operating small-scale solar PV hybrid systems. The intervention will target some of the existing 20 isolated grids operated by the utility EDM-SA. Likely targets would be localities in which EDM-SA has just started or will soon start to operate within its concession perimeter. These pilot projects will be developed by private sector vehicles associating local private entrepreneurs with experience in renewable energy, other equity investors/commercial lenders, and the utility-company (also purchaser of power). The total project cost is estimated at \$38 million. The request to the CTF is for \$13 million. Additional co-financing is expected from the private sector, \$25 million. Existing World Bank operations in Mali would be used to finance any “soft” expenses such as technical assistance necessary to successfully implement the project.

62. *Complementarity with SREP-funded activities in Mali.* This CTF-funded proposal aims to seize the significant potential for scaling-up solar PV generation in the neglected sub-segment of medium-sized isolated mini-grids given the high cost of conventional generation alternative. This segment lays in-between rural electrification by local entrepreneurs through mini-grids and national grid expansion. The complementarity between the proposed mini-grid project funded through the CTF and the interventions funded through the SREP investment plan for Mali are illustrated in the table below.

	SHER Project (SREP, IDA, GPOBA)	Proposed CTF-funded Project
Typical size of system	50 to 250 kW	500 kW to 2 MW
Localities targeted	400 to 1500 connections per site	1500 to 5000 connections per site
Investments financed	Solar PV + grid extension	Solar PV
Soft activities financed	Technical assistance, capacity building	N.A. (other projects and trust funds would be used as needed).
Operators	Local private concessionaires	PPP project company
Location	Outside of EDM-SA concession perimeter	Inside EDM-SA concession perimeter

63. For Latin America and the Caribbean, IDB has identified immediate potential for sub-programs in Colombia (and potentially, Peru pending some definitions on timing for some government plans). In Colombia, there is strong potential for a project with a total cost of roughly \$10 million (proposed CTF contribution of roughly \$10 million) that aligns with the Colombian government’s ongoing efforts to provide energy to the non-interconnected areas (ZNI). There is a favorable policy framework for mini-grids in Colombia and some additional specific policies are currently being designed. Although centralized grid generation in Colombia is mainly hydropower-based, energy needs in off-grid ZNI areas are covered mainly by conventional diesel solutions. Currently in the ZNI electrification rates are between 60-80%, more than 700,000 of households are not connected to the national grid and 490,000 households have no access to electricity. Electricity generation in these areas is costly (\$0.50 per kWh) and emissions are high from the combustion of diesel fuel.

64. Initiatives in Colombia focused on renewable energy mini grids and distributed power generation are few, and seek a financial model that is both sustainable and encourages investment. To further identify and develop the pipeline of eligible investments under this program, IDB proposes to utilize limited CTF TA grant funding (in the order of USD 0.5M) for short, targeted market assessments in other CIF countries in LAC. TA resources are also necessary to structure demand and for capacity building, dissemination, and most importantly “business model structuring” and demonstration with pilot projects. It is worth noting that Latin American presents different challenges and opportunities compared with other CIF countries, and it is necessary to develop strategies and structures that promote the attractiveness of mini-grid investments and allow greater private sector involvement in the LAC region.

65. Also in the Latin America and the Caribbean region, the IBRD has identified opportunities for mini-grid investments in **Haiti**, where an access rate below 30% is depriving

over 7 million people from electricity, mostly in low density rural areas. Public sector interventions have largely focused on improving the condition and efficiency of the power system through the reconstruction and rehabilitation of the grid. As a result, the further electrification of rural areas has been low and very limited. On the other hand, the private sector has been relatively active in the area of rural electrification, managing all existing mini-grids in the country (35 as of now). As noted by the ongoing World Bank energy project which supports the creation of an enabling environment and institutions for off-grid electrification, the potential and need for private sector engagement in rural electrification is significant. The proposed CTF-funded mini-grid investments will help unlock private sector participation in rural electrification in Haiti through the demonstration of viable commercial business models. Delivery models and ownership arrangements (e.g., PPPs, cooperatives), technology choice, target area and number of mini-grid investments are unknown at this stage, some assessments and pilot initiatives currently ongoing under the World Bank energy project are going to provide useful inputs. The request to the CTF is for \$10 million, which would be combined with funding from private sources in an expected leverage of at least 1:1.

Proposal Terms and Implementation Strategy

66. Through a combination of investment (\$47 million) and advisory services (\$6 million), the proposed Program will: (i) develop renewable energy off-grid and mini-grid solutions in target countries and expand the number of customers with access to modern energy; (ii) mobilize investment from the private sector to mainstream mini-grid development; (iii) increase the supply of renewable energy and reduce GHG emissions; and (iv) demonstrate private sector business models that can be replicated and scaled-up across the region.

67. The investment component will deliver a combination of senior debt, subordinated debt, guarantees and equity investments in approximately 25 projects. Investments will range in size, depending on project structure, financing requirements, and anticipated development impacts. CTF funds will be deployed as investment capital either alongside MDB investments or on a stand-alone basis. Resources will be used to finance gaps in the project's financing or company's plans to scale up implementation, partially mitigate credit risks of project sponsors, or perceived risks of other lenders, guarantee short or medium term loans to bridge timing gaps between capital expenditure needs and payment of government subsidies, and as lower-cost loans to help mitigate the high upfront capital costs of RE systems.

68. The Program will address potential financial risks by the inclusion of several sub-investment limits (to be determined at the proposal stage). Pricing floors will be established to ensure sufficient net income to mitigate the risk of potential losses or defaults. The proposed financial products will be aligned to specific project risks, and will be consistent with the general findings and recommendations of prior review and analysis of the market risks in the target countries. Financing plans would be determined for each investee or borrower and reported at financial close in accordance with CTF guidelines for private sector programs.

Results Framework/ Core indicators (indicative)

Core Indicators		Performance	
		DPSP I	DPSP II
GHG emission reductions	- Annual (million tCO ₂ e/year)	0.071	0.19
	- lifetime (20 year cumulative, million tCO ₂ e)	1.42	3.8
Electricity production	- New RE capacity (MW installed)	30	81
	- Additional Power Generation (MWh/year)	65,700	177,400
Cost to CTF (\$/t CO ₂)		24	22
CTF financial leverage		1:2	1:2
Energy Access	- Number of previously non-electrified households provided with access to electricity (Households)	150,000	410,000
	- Number of individuals provided with access to electricity (Individuals)	750,000	2,050,000
Employment	- Number of new jobs generated (direct and indirect) (Jobs)	2,700	7,400

Special Considerations

Program Risks

69. The main risk to the Program appears to be financial risk from deploying a higher risk financial instruments such as equity and subordinated debt instruments into emerging markets. This will be addressed through appropriate pricing floors to ensure there is sufficient net income to the Program to mitigate the risk of potential losses and defaults. The pricing will be aligned to specific project risks, and will be consistent with the general findings and recommendations of prior review and analysis of market risks in the target countries. In line with the procedure followed for Phase I of the Program, the MDBs will work with the CTF Trust Fund Committee in understanding cash flow implications. Financing plans will be determined for each borrower and reported at financial close in accordance with CTF guidelines for private sector programs.

70. The Program also faces a number of additional risks, intended to be mitigated through the Program's technical assistance and advisory services element, created specifically to address and reduce these risks. Currently identified risk include:

- a) Business plan execution risk. Private sector companies are exposed to a range of context-specific business and management risks that may inhibit their ability to execute business plans (general "market" risk). Assumptions made on financial parameters, the market for specialist products and services, quality of human resources, legal costs, competition, financial services and sales and marketing present risk due to the infancy and instability of the market, and will be addressed through the TA.
- b) Policy and Regulatory: a component of the TA will address ways to improve policy and regulatory frameworks, enhance knowledge sharing on these issues

and create improved enabling environments. Support will also be provided to companies to assist in navigating these environments.

- c) Technical: The will ensure there are adequate resource assessments, quality products, trained and experienced service providers, reliable warranties, appropriate system design, good installation and technical standards/codes for development.
- d) Soft systems (information, marketing, education and capacity building): Resources will be used to address low literacy rates, poor communications, and lack of trained personnel in parts of pilot countries.
- e) Operation and Maintenance: the Program will ensure there are sufficient contingencies for O&M to ensure the long term sustainability of the installed systems for their 20 year estimated lifetime.

V. REVISED PROGRAMS

Mezzanine Financing for Climate Change

Proposal Name:	Mezzanine Financing for Climate Change
MDBs interested in participating:	ADB
Relevant CTF pilot countries in Phase I: (if there was a Phase I)	N/A
Other potential countries (CIF pilot countries) in Phases II	India, Indonesia, Philippines, Thailand, Vietnam, Bangladesh, Cambodia, Lao PDR, Maldives, Mongolia, Nepal, Pacific Region, Papua New Guinea, Tajikistan
CTF Phase II funding request:	\$30 million

Intro – Program overview/description.

71. CTF funds would be employed through a mezzanine financing facility (the “Program”) for co-financing alongside MDBs’ climate equity investments. This would expand their scope and range of potential investments, and catalyze financial closure for projects that would ordinarily face gaps raising sufficient funding. In middle income developing countries, the Program would facilitate investment in projects where commercial lenders are typically dissuaded mainly by technology and/or sector risk. In lower income developing countries, the Program would facilitate investments in projects where commercial lenders are typically dissuaded mainly by country and political risk. In addition to these benefits, the extended scope and reach that a mezzanine facility would bring to climate equity investment programs would enhance their attractiveness to potential investors, thus enhancing both fund raising and deployment activities.

72. Climate related investments¹², though relatively mainstream in developed countries, are often novel/pioneering in developing countries. Concessional finance is required to establish

¹² Includes renewable energy (grid-connected and off-grid wind, solar, hydro, geothermal, biomass etc.), energy and resource efficiency (including lighting, heating, co-generation, electricity transmission and distribution, building

successful track records, assist commercial investors to overcome first-mover financing barriers and to lower risk premiums on commercial/domestic financial products. At a scale previously unheard of in Asia (\$1 billion target fund size), ADB is currently embarking on a climate equity investment program through the Climate Public-Private Partnership Fund (“CP3”)¹³. The proposed \$30 million CTF funded mezzanine “sidecar” facility would co-invest alongside ADB’s CP3 equity investments in the form of subordinated debt for projects that require a small amount of concessional financing to reach financial close. The facility would essentially add a third tier between debt and equity instruments to catalyze climate investments in CIF pilot countries. The Program would reduce, in addition to CP3, GHG emissions by an estimated 11 million tCO₂e, and the cost effectiveness of CTF funds would be roughly \$5 per tCO₂e. Additionally the existence of a mezzanine facility would allow CP3 to reach out to a more conservative investor base from a risk reward perspective and thus combining under the same platform investors with different downside protection requirements.

73. Whilst mezzanine finance is generally available in mature capital markets such as those in the US and Europe, its absence in Asia means projects with debt or equity shortfalls are often unable to reach financial close through traditional financing solutions (due to a risk/reward imbalance). The Program would enable a greater number and larger size of climate equity investments to proceed to implementation, and would likely increase the return on these investments while not excessively increasing levels of senior debt or lessening returns on equity.

74. Whilst the mezzanine facility’s subordinated debt would not enjoy the same level of cash flow seniority and security as senior debt, it would retain the key characteristics of debt, namely a requirement for full repayment of principal to lenders, and the delivery of a minimum return in the form of a payment coupon. Notably, the CTF funds would be ranked higher in the cash flow waterfall for individual projects (i.e., less risk) than ADB’s equity investments through CP3.

75. CP3 has received approval from ADB’s board of directors, and first financial close is being finalized for Q3 2014 at \$400 million (\$100m from ADB, \$100m from the UK government, and \$200m underwritten by the fund management partner¹⁴). An additional \$600 million is expected to be raised over the next 18 months from commercial capital, institutional investors, and bilateral agencies. It is anticipated that the mezzanine financing facility would be a valuable, catalytic addition to the CP3 equity investment program, and by creating a combination of market instruments to better address financing needs, the impact of the combined investment program will be enhanced and amplified.

standards and transportation), and renewable energy and energy resource efficiency supply chains (including the manufacture of renewable energy technology, monitoring & control equipment, advanced energy storage solutions, new materials, nanotechnology and bio-materials, sustainable agriculture, environmental service technologies, water and wastewater treatment, recycling, and waste management).

¹³ <http://www.adb.org/projects/documents/climate-public-private-partnership-fund>

¹⁴ An established, Asia-based commercial investor

Business Case/Model

Market Description

76. Approximately \$1 trillion per annum in climate finance is needed to contain global temperature increases within a 2°C limit to avoid dangerous climate change¹⁵. Acknowledging and addressing three key factors that will be critical to accomplishing this challenge. Firstly, developing countries are facing a rapidly growing problem of containing rising GHG emissions, and transitions to low-carbon economies and leapfrogging of carbon-intensive activities is needed in developing countries as well as in developed countries. In 2010, non-OECD emissions exceeded OECD emissions by 38 percent; in 2040, they are projected to exceed OECD emissions by about 127 percent¹⁶. Secondly, neither public funds nor private funds alone can bridge the climate financing gap, and large-scale public-private partnerships (PPPs) are needed to tackle this issue in a meaningful way. And thirdly, as discussed in the previous section, affordable financing for climate projects is not yet available in developing countries at the scale needed to address the challenge, and concessional climate finance is required to establish a successful track record of investment before commercial financing will become more widely available.

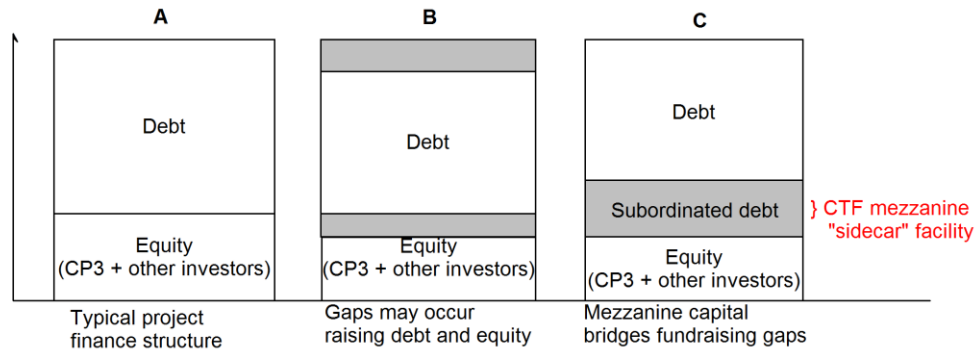
How will the proposal address these?

77. In response to these issues, ADB has developed CP3 as a way to facilitate climate equity investments in developing countries alongside large institutional investors, pension funds and public sector institutions. With a final target fund size of \$1 billion, the fund will be a significant step for climate financing in Asia. However, alternative investment vehicles, such as a mezzanine co-investment facility, are needed to maximize the impact of proposed equity investments.

78. The following diagram shows how the facility would catalyze investments for projects unable to reach minimum fund raising requirements. Scenario “A” shows a successful project finance structure, where developers are able to source sufficient financing from debt and equity providers (such as ADB) to reach financial close. Scenario “B” shows a structure where financial close is not reached and there are financing gaps (e.g., where additional debt would breach key ratios of lenders, and additional equity commitments would cause IRRs to fall below minimum thresholds of investors). These would be the “additional” projects where the CTF mezzanine finance is needed to catalyze investments. Scenario “C” shows how the mezzanine facility would function; CTF funds would be deployed to cover debt and equity shortfalls, allowing the project to reach financial close.

¹⁵ Inver-governmental Panel on Climate Change, 2014. Fifth Assessment Report (AR5), IPCC. <http://www.ipcc.ch/report/ar5/>

¹⁶ International Energy Agency, 2013. World Energy Outlook, OECD/IEA, 2013, Paris, 2013



79. For developers the facility would offer a long-term, flexible financing instrument able to bridge financing gaps when bank debt and equity investors are either not available or unsuitable. It would be less restrictive than bank debt and would put less strain on projects' cash flows (more specifically, the debt service coverage ratio and senior debt to equity ratio). Mezzanine finance is cheaper than equity, and the Program would reduce the debt and equity fund raising requirements (and thus increasing the multiplier effect of CP3 investors), likely increasing returns on equity, and allowing investment to occur in new geographic regions or sectors experiencing financial barriers. For senior lenders, benefits from the program would involve less restrictive financial covenants and would allow them to maintain priority on contractual cash flows whilst benefiting from the "equity-like" layer in the finance structure.

80. In addition to benefits for developers and investors getting projects off the ground in difficult or new geographies or technologies, the mezzanine facility would enhance MDBs' ability to mobilize funds from investors that otherwise would not participate in the market. First, potential CP3 investors would gain comfort from their commitments being co-invested alongside a facility that allows them to potentially increase their return and, for investors with development considerations, increase their multiplier effect and reach to less developed markets. Without the mezzanine facility, some projects would not be pursued and/or equity investors may need to increase the size of their equity investments to bridge financing gaps, thus increasing the overall cost of financing and reducing the scope impact of climate equity programs. Second, potential CTF mezzanine facility investors would have access to a sizeable and commercial pipeline of projects typically not available on a stand-alone basis to public sector investors with downside protection. The existence of this facility would give comfort to additional investors that similarly seek exposure to non-concessional projects but with higher protection of their commitment. The fact that CP3 would have the ability to offer two different types of risk exposure to the underlying assets would enhance its ability to reach to a broader investor base and increase its impact metrics.

81. In summary the Program will have 3 major impacts: (a) from a market perspective, it will enhance CP3's ability to reach to less developed geographies, fund projects struggling to reach financial close and fill a recognized market gap, (b) from an investor perspective, it will allow ADB and CP3 to offer a highly diversified (across sectors, countries, and investment vehicles) product, that appeals to private and public sector investors with flexibility to ring fence their commitment to the required risk/return profile, (c) from a strategic and policy perspective, it will combine under the same platform like-minded public and private sectors investors, committed to

promote change and provide scale to environmental markets in Asia and avoid multiplication of often similar and uncoordinated facilities in this space.

Given the absence of dedicated mezzanine funds in Asia and the partial reluctance of local banks to provide sufficient leverage at subordinated level, the Program would add a new instrument to improve the risk/reward return of a range of investments contemplated by ADB for CP3. Thus, the Program would be a key addition to addressing the challenges of climate change and the provision of energy services in more challenging markets. It would ultimately: (i) target climate change mitigation technologies with significant potential in terms of greenhouse gas (GHG) emission reductions; (ii) maximize the mobilization of co-investment for low-carbon development; (iii) increase the supply of renewable energy; and (iv) increase energy efficiency. It would contribute to overcoming a number of barriers faced by private sector institutional and equity investors such as: (i) first-mover risk; (ii) high capital and operational expenditures; (iii) technology risk; (iv) revenue volatility; (v) sovereign risk; and (vi) financing risk.

What is the longer-term vision?

82. The longer term vision is to establish mezzanine financing as a third tier for climate investments in Asia and other emerging markets. The aim is to increase the impact of public and private finances and lead to greater depth in financial markets for addressing climate investment gaps.

83. For climate finance in developing countries, MDBs are centrally placed to play a key role for combining private and public sector institutions, both at investment and management levels. Institutional investors and pension funds are generally more willing to participate in investment vehicles tailored by MDBs to suit their risk/return profiles, and MDBs can bring value addition by providing: (i) appropriate financial facilities (equity, debt, dedicated technical assistance and other climate change funds); (ii) the knowledge platforms and technical experts from a broad range of sectors; and (iii) country dialogue and engagement to assist with implementation and reduce policy, regulatory and political barriers. However, to best utilize funds being raised for climate equity investment programs, alternative investment vehicles such as mezzanine financing facilities are needed, and thus program such this will be a key step to realizing the full potential of future climate equity investment programs.

Market size potential

84. With a climate financing gap of \$1 trillion, the full market potential for mezzanine facilities is limited mostly by the size of climate investment programs under development by MDBs and other financial institutions. For CP3, the knock-on effects from the successful demonstration of a large Asia-Pacific based climate equity fund are expected to be significant. The size and wide reach of the fund is expected to have a replication effect across different jurisdictions, leading to further benefits in terms of GHG reductions at a country, regional and even global level. It would send a strong message to large institutional investors that climate related investments can provide attractive risk-adjusted returns and deal appropriately with market, operational and regulatory risks associated with green investments in emerging markets. In developing countries, increasing the deal flow would provide authorities with the experience, familiarity and capacity to manage future similar transactions. Through the provision of long-

term investment capital, the MDB and CTF commitments are expected to enhance the range and size of investments and to mobilize additional capital through lowering the perceived risk of investments.

Proposal Terms and Implementation Strategy

85. Mezzanine finance would be deployed for individual investments according to the principle of minimum concessionality. This will be considered on a case-by-case basis to catalyze investments that would not otherwise have occurred. CTF funds would be deployed as subordinated debt, alongside ADB equity investments through CP3.

86. The funds would rank between senior debt and common equity in the form of subordinated debt, and would thus incur less risk than ADB's equity investments for CP3. The subordinated debt would include an obligation to return the full principal amount of the loan and a current interest coupon (repayable over the life of loan). This structure can induce additional senior lenders into a project, because they maintain priority of available project cash to service their debt (meeting minimum coverage ratios), while at the same time, providing another funding source that must be paid before investors can receive dividends from the project. .

87. CTF mezzanine funds would be deployed by the CP3 investment manager, which will be a joint venture partnership between ADB and an experienced Asia-based private sector fund manager¹⁷. As such, ADB will play a critical role in the decision where and when to deploy this capital into those projects or funds where concessionality is justified. The CTF funds would not be co-mingled with CP3's investment, but deployed as a separate co-investment facility with distinct legal agreements, rights and remedies. Funds would be deployed in middle income markets where perceived technology and sector risks inhibit commercial investors. A portion would also be deployed in small, lower-income and post-conflict markets which are generally underinvested by commercial funds due mainly to political risks. ADB would play the primary role of negotiating and structuring co-investments from CTF funds.

¹⁷ Information is confidential at this stage.

Results Framework / Core Indicators (indicative)

Core Indicators		Performance DPSP II
GHG emission reductions	- Annual (million tCO ₂ e/year)	0.548
	- lifetime (20 year cumulative, million tCO ₂ e)	11.0
Electricity production	- New RE capacity (MW installed)	208
	- Additional Power Generation (MWh/year)	730,000
Cost to CTF (\$/t CO ₂)		5
CTF financial leverage		1:6
Energy Access	- Number of previously non-electrified households provided with access to electricity (Households)	N/A
	- Number of individuals provided with access to electricity (Individuals)	N/A
Employment	- Number of new jobs generated (direct and indirect) (Jobs)	18,750

Special Considerations

88. The main risk to the Program appears to be financial risk from deploying a higher risk financial instrument (i.e., subordinated debt) into emerging markets. This will be addressed through appropriate pricing floors to ensure there is sufficient net income to the Program to mitigate the risk of potential losses and defaults. The pricing will be aligned to specific project risks, and will be consistent with the general findings and recommendations of prior review and analysis of market risks in the target countries. In line with the procedure followed for other DPSP Phase I proposals, the MDBs can work with CTF to ensure financial risks are appropriately managed. Financing plans will be determined for each borrower and reported at financial close in accordance with CTF guidelines for private sector programs.

89. Further to this, it is worth noting that substantial research, analysis and due diligence will be conducted by several independent parties assessing a wide range of risks before potential investments proceed to financial close. ADB and its commercial fund partner would conduct extensive due diligence, as would other equity investors, and debt providers. All funds in the CTF mezzanine facility would be co-invested alongside CP3's investments. CTF funds of \$50 million in the mezzanine facility would rank senior to CP3's funds of up to \$1 billion being deployed as equity, and ADB and the UK Government (among others) would be taking greater risk on these investments than the CTF. In short, all investments will need the backing of ADB, its commercial fund partner, other investors and debt providers (including risk management teams from these organizations) in order for them to proceed.

VI. NEW PROPOSALS

Program to finance private and early stage renewable energy power plants

Program Overview	
MDBs interested in participating:	EBRD
CTF pilot countries in Phase II:	Jordan, Egypt, Tunisia, Morocco (CTF countries in EBRD SEMED Region)
EBRD Finance	USD 321 million
CTF Co-Finance	USD 35 million CTF

Facility Overview	
Countries covered	Jordan, Egypt, Tunisia, Morocco (CTF countries in EBRD SEMED Region)
Sector Covered	Utility scale renewables
Financial Structure	A range of products would be on offer, and CTF funding would accompany EBRD funding at whichever part of the capital structure EBRD invested, most likely senior debt but potentially including mezzanine debt or equity.
EBRD Finance	USD 199 million (phase 2/1) USD 319 million (phase 2/2)
CTF Co-Finance	USD 25 million CTF (phase 2/1) USD 25 million CTF (phase 2/2)
Other Donor Co-Finance	USD 15 million GEF for investment Up to USD 5 million for technical assistance and policy dialogue from bilateral donors or EBRD
Sponsor Co-Finance/Commercial Lending	USD 330 million(phase 2/1) USD 568 million (phase 2/2)
Investment Volume	USD 569 million (phase 2/1) USD 913 million (phase 2/2)
Investment Period	2014 to 2015 (phase 2/1) 2016 to 2018 (phase 2/2)

¹ 20 years lifetime, assumed Grid EF 0.6tCO₂/MWh

Introduction

90. CTF funds are requested to support private sector renewable energy projects in Jordan, Egypt, Tunisia and Morocco (“SEMED”) to address the barriers created by untested and often weak regulatory frameworks and insufficient availability of capital. The focus of the proposed EBRD program is two-fold:

- a) To strengthen and expand the policy and regulatory frameworks so as to support the development of various types of private renewable energy investments; and
- b) To structure and finance a portfolio of renewable energy projects that will establish a precedent in regional markets and thereby reduce the perceived and actual risk of subsequent investments by providing demonstration effects and lessons learnt for improvements to laws and regulations.

91. To achieve this, EBRD is developing a coordinated approach to support private renewable energy projects in SEMED combining policy dialogue, technical cooperation for project preparation, and investment, including concessional finance to be potentially provided by CTF and GEF alongside EBRD's investments. The policy dialogue and technical cooperation packages are expected to total USD 5 million and will be financed by EBRD or bilateral donors.

92. To support this facility, the EBRD is submitting a proposal to the DPSP for US\$25m of Phase II funding to be used in the next two years, with a request for US\$25million to follow to cover the period through 2018. The CTF funds will in all cases be used in the same part of the capital structure of projects as the EBRD finance. To augment the CTF finance, EBRD has also requested up to US\$15 million from the GEF Private Sector Facility, which it intends to use alongside the EBRD and CTF financing. While the overall concessional finance element (CTF and GEF combined) is expected to represent a rather small portion of the total project values, it will provide substantial benefit and additionality to the EBRD given the very tight margins relative to risk for these initial private renewable energy projects in SEMED.

Business Case

93. SEMED countries are particularly well positioned to develop renewable energy due to strong solar and wind natural resources. However, in order to attract private sector investment in renewable energy, these countries must address the significant barriers of inadequacy of local regulatory and legal frameworks, limited experience of investors and governments with these new financing models, and financing gaps. Due to these market failures, the limited investment in renewable energy to date has been dominated by the public sector.

94. SEMED countries have had some success to date with energy generation projects developed as fully state-owned or as public-private partnerships (e.g. independent power producers, "IPPs"). Within the renewable energy sector, all four SEMED countries have developed public projects, but only Jordan and Morocco have shown the viability of the IPP model for renewable energy generation. All four countries have passed legislation allowing for renewable energy auto generation projects, but none has demonstrated the success of that model for bringing private sector investment in the renewable energy sector. In Morocco, Egypt and Jordan, the development of private to private renewable energy projects has been authorised through legislation but has not yet been proven in practice. The barriers of inadequate regulatory environment and financing are delaying and impeding the full scale up of private renewable energy projects in SEMED.

95. While there is some emerging evidence that electricity generation from renewable sources, including solar PV and onshore wind, is at or very close to grid parity in SEMED, the governments' social policies of subsidising power prices has masked this emerging competitiveness of renewable power production. This means that even at grid parity overall investor returns are at best marginal, while risks remain substantial due to the weakness and newness of the regulatory frameworks. Utilising CTF to support the early group of project developers will reduce risk and enhance the project margins to a point that investments become possible, while from a social policy perspective, increasing domestic renewable power

production by opening up the market to private sector renewable energy generation will reduce governments' reliance on subsidising power.

96. There are therefore significant barriers to scaling up private sector investment and the deployment of renewable energy in SEMED countries. The most significant barriers are:

- a) a poor or non-existent and untested regulatory environment;
- b) a financing gap, since commercial banks and IFIs tend to focus on the “safer” projects with public sector involvement;
- c) limited experience since in the sectors this proposal targets no projects have yet been implemented; and
- d) perceived project and financing risks have further hindered the development of a private sustainable energy market.

Business Model

97. Egypt, Jordan, Morocco and Tunisia each have varying combinations of regulatory and legal frameworks for the investment models above and have made varying degrees of progress towards establishing the successful functioning of a given model. In some cases a country has successfully used a financing model for conventional power projects but not for renewable energy projects. In each country, successful implementation of an investment model involving the private sector includes: (i) the establishment of the necessary legal and regulatory framework; and (ii) the financing, construction and operation of projects using that model. At times this can be an iterative process whereby the initial legal and regulatory framework is flawed or inadequate and changes are necessary before the new model can be considered a proven one.

98. The three models of bringing in private investment for renewable energy projects are as follows:

- a) Independent power producer (IPP): A private (or majority private) entity owns and operates the power plant, selling the electricity to a public entity through a power purchase agreement (PPA), sometimes with a feed-in-tariff.
- b) Auto generation: A private company builds, owns and operates a power plant to use the electricity for its own use, generally for industrial or manufacturing processes. A public off-taker may commit to purchase a portion of surplus production, if any.
- c) Private to Private: A private developer sells produced electricity to one or more private off-takers. In some cases a public entity may serve as off-taker of last resort for a portion of potential surplus generation.

99. Private clients could include focused renewable energy developers, larger international energy companies, and companies active in other sectors seeking to enter the new renewable energy markets for private companies. The programme will seek to create more favourable regulatory and legal environments for private renewable energy developers in parallel to providing the investment, but the developers will not be shielded from any adverse regulatory changes that may arise despite policy dialogue efforts.

100. The status per country concerning the private investment models for renewable energy project is summarised in Table 1 below. The scope of the proposed CTF program is the area of the table that is shaded.

Table 1: Status of SEMED countries in private investment models for renewable energy

Country	Private Investment Models ¹		
	IPP	Auto Generation	Private to Private
Egypt	<ul style="list-style-type: none"> • Authorised • Unproven for renewable generation 	<ul style="list-style-type: none"> • Authorised • Not proven for renewables 	<ul style="list-style-type: none"> • Authorised • Not proven
Jordan	<ul style="list-style-type: none"> • Authorised • Proven for conventional and renewable generation 	<ul style="list-style-type: none"> • Authorised • Not proven for renewables 	<ul style="list-style-type: none"> • Not authorised (net metering allowed)
Morocco	<ul style="list-style-type: none"> • Authorised • Proven for conventional and renewable generation 	<ul style="list-style-type: none"> • Authorised • Not fully proven for renewables 	<ul style="list-style-type: none"> • Authorised for HV • Not proven for renewables
Tunisia	<ul style="list-style-type: none"> • Authorised for conventional but not renewable generation 	<ul style="list-style-type: none"> • Authorised • Unproven for renewables 	<ul style="list-style-type: none"> • Not authorised

¹ the scope of the proposed program in a given country is the shaded area of the table.

101. The longer-term vision is for these models of private sector involvement to become proven for all forms of renewable energy across the range of potential sectors being able to participate in investing in renewables in all of these countries. Beyond investments, this will also mean that stakeholders have to work to reduce the regulatory barriers through policy dialogue, overcome capacity shortages in implementation capacity both at the regulatory and the project developer end through the provision technical assistance, and overcome the financial barriers through scaling up investment and initial support from multilateral donors such as the CTF and GEF to get over the initial hurdles and enable commercial finance to flow towards the sector.

102. Once a model of private sector investment is proven in a given country for renewable energy, the CTF and GEF concessional finance will no longer be needed to accompany investment under that model. The success in proving these private financing models for renewable energy will be regularly evaluated by the EBRD and the expected second phase of this programme will build on EBRD's progress with the initial request to CTF for USD 25 million. The long-term vision also includes sharing of lessons learned among SEMED countries and beyond, in the same way as this approach is benefiting from lessons learned in Ukraine and Turkey.

Proposal Terms and Implementation Strategy

103. The approach to addressing the market barriers and promoting the growth of the private sustainable energy market in SEMED will be based on a tried and tested combination of technical assistance, policy dialogue and finance, with the support of the CTF, GEF and other co-financiers:

Technical Assistance

104. The EBRD will seek funds (co-financing) for technical assistance to a range of stakeholders, which will provide essential support for project preparation in terms of technical, legal and environmental due diligence. The EBRD will in particular work with project sponsors to prepare bankable projects and mobilise funds for their investment projects. Estimate: EUR 2 million

Policy dialogue

105. The EBRD will also pursue policy dialogue in each country and promote learning across the region. An initial study will be conducted to evaluate the legal and regulatory frameworks for private investment in renewable energy in each of the countries, including applying lessons learned among countries. An annual evaluation of the impact of policy dialogue reforms and the progress towards meeting the market development goals will serve as the basis to determine if a financing model should be considered to be proven, which will in turn impact which projects will be eligible for the concessional GEF financing expected to accompany EBRD financing under the program. Estimate: EUR 1-2 million

Investment

106. The investment will be in greenfield renewable energy power plants, expected to be primarily using onshore wind and solar PV technologies, although other opportunities for renewable energy development that fits within the project will be pursued as they appear. CTF funding will accompany EBRD financing in the capital structure, though with more concessional terms in order to stimulate project development in this challenging climate. In this way, CTF funds can leverage considerable amounts of MDB and commercial financing and address the market barrier related to availability of finance that currently holds back sustainable energy development. EBRD is most likely to invest in senior debt, but would consider investments across the capital structure, and would deploy CTF funding in parallel to its own. The CTF finance would always accompany the EBRD finance in terms of financial instrument used. Estimate: EUR 500 million through 2018

Results Framework/ Core Indicators (indicative)

Core Indicators		Performance DPSP II
GHG emission reductions	- Annual (million tCO ₂ e/year)	0.650
	- lifetime (20 year cumulative, million tCO ₂ e)	13.0
Electricity production	- New RE capacity (MW installed)	400
	- Additional Power Generation (MWh/year)	1,100
Cost to CTF (\$/t CO ₂)		3.5
CTF financial leverage		1:24
Energy Access	- Number of previously non-electrified households provided with access to electricity (Households)	N/A
	- Number of individuals provided with access to electricity (Individuals)	N/A
Employment	- Number of new jobs generated (direct and indirect) (Jobs)	N/A

107. The benefits of the first phase of the programme, and the targets for indicators based on the phase 1 pipeline above, are expected to be:

108. The programme is expected to have additional co-benefits, including:

- a) Improving the energy security of SEMED countries by increasing the electricity generation from domestic fuel sources (renewables)
- b) Moving to electricity generation technologies that rely less on water consumption and do not emit local pollutants, thus promoting a cleaner environment and reducing water stress across the region
- c) Reducing the governments' economic outlays to subsidise power by outsourcing generation to the private sector and relying increasingly on grid-competitive renewables.

Timelines, Phasing, and Pipeline

109. Technical assistance for project preparation and policy dialogue will be launched by EBRD in 2014. It is expected that the first investment will be deployed as soon as 2H 2014. By the end of 2015, the EBRD expects to deploy USD 35 million of CTF funds to enable the construction of 400-450 MW of renewable energy projects in SEMED, leading to a reduction in emissions estimated at 675,000 tCO₂/yr, and over 10 mtCO₂/lifetime.

110. The EBRD envisions a second phase of the programme through 2018, when another USD 25 million of CTF funds could be deployed to support over 400 MW of renewable energy projects in SEMED, avoiding more than an estimated 650,000 additional tons of CO₂ a year.

The preliminary and indicative pipeline for the first phase of the program is shown in Table 2:

PHASE 1											
Country	Technology	Installed Capacity (MW)	Avoided CO2 Emissions (tons/year)	Cost per MW (USD m /MW)	Estimated TPV (USD m)	Estimated EBRD loan (USD m)	CTF Leverage (TPV/CTF)	Estimated CTF Financing (USD m)	Estimated GEF Financing (USD m)	Estimated Co-Finance (USD m)	CTF CO2 Cost
Jordan	Solar PV	20	30,000	2.50	50	18	20	2.5	3.0	27	4.2
Tunisia	Onshore wind	27	43,000	2.00	54	19	20	2.7	3.0	29	3.1
Morocco	Onshore wind	120	190,000	2.00	240	84	28	8.6	3.0	144	2.3
Egypt	Solar PV	50	75,000	2.50	125	44	20	6.3	3.0	72	4.2
Morocco	Onshore wind	50	79,000	2.00	100	35	20	5.0	3.0	57	3.2
TOTAL		267	417,000		569	199		25.0	15.0	330	4.0
PHASE 2											
Country	Technology	Installed Capacity (MW)	Avoided CO2 Emissions (tons/year)	Cost per MW (USD m /MW)	Estimated TPV (USD m)	Estimated EBRD loan (USD m)	CTF Leverage (TPV/CTF)	Estimated CTF Financing (USD m)	Estimated GEF Financing (USD m)	Estimated Co-Finance (USD m)	CTF CO2 Cost
Egypt	Onshore wind	120	190,000	2.00	240	84	40	6.1		150	1.6
Morocco	Solar PV	50	75,000	2.50	125	44	30	4.2		77	2.8
Tunisia	Solar PV	10	15,000	2.50	25	9	30	0.8		15	2.8
Egypt	Onshore wind	100	158,000	2.00	200	70	40	5.0		125	1.6
Jordan	Solar PV	25	38,000	2.50	63	22	30	2.1		39	2.7
Morocco	Onshore wind	100	158,000	2.00	200	70	40	5.0		125	1.6
Tunisia	Onshore wind	30	47,000	2.00	60	21	30	2.0		37	2.1
TOTAL		435	681,000		913	319		25.1	TBD	568	2.5

PHASE 1 Financing Volumes Estimated, USD million										
Country	Technology	Installed Capacity (MW)	Avoided CO2 Emissions (tons/year)	Cost per MW (USD m /MW)	TPV	EBRD loan	CTF Financing	CTF Leverage (TPV/CTF)	Estimated Co-Finance	CTF CO2 Cost/tCO2 (lifetime)
Jordan	Solar PV	20	30,000	2.50	50	18	2.5	20	30	4.2
Tunisia	Onshore wind	27	43,000	2.00	54	19	2.7	20	32	3.1
Morocco	Onshore wind	120	190,000	2.00	240	84	6.0	40	150	1.6
Egypt	Solar PV	50	75,000	2.50	125	44	6.3	20	75	4.2
Tunisia	Onshore wind	30	47,000	2.00	60	21	3.0	20	36	3.2
Egypt	Onshore wind	100	158,000	2.00	200	70	5.0	40	125	1.6
Jordan	Solar PV	25	38,000	2.50	63	22	3.1	20	38	4.1
Tunisia	Solar PV	10	15,000	2.50	25	9	1.4	18	15	4.8
Morocco	Onshore wind	50	79,000	2.00	100	35	5.0	20	60	3.2
TOTAL		432	675,000	2.22	917	321	35.0	24	561	3.5

Development Impacts

111. The proposed programme will scale up the deployment of renewable energy and of private sector investment. It will strengthen the viability and availability of renewable energy regionally and will reduce greenhouse gas emissions. The programme will promote the investment of private capital, as prioritised by the CTF, through the enabling environment, complimentary infrastructure, and investor risk appetite. While the CTF finance is expected to represent less than 10% of total project values, it will be additional to the projects because of the tight margins for private sector renewables projects in SEMED.

112. If regulatory and legal environments are not improved in SEMED, then these models for private sector investment in renewable energy will remain unproven for years to come. While the EBRD might seek to pursue investments in these projects, experience to date has shown that concessional finance is needed to get the initial projects “over the line”. As the market barriers are reduced, the CTF and GEF concessional finance will no longer be needed. This progress will be evaluated regularly and will be reflected in the future development of phase 2 of the programme.

113. The other important risk for these projects is access to the electricity distribution and transmission grid for private intermittent renewable energy projects. This is exacerbated by lack of familiarity with the concept of “wheeling” of intermittent power from renewables and inherent caution of network operators. EBRD would address this barrier through policy dialogue with grid operators, regulators, and other authorities, to build confidence and prepare a robust and accessible framework of both commercial and technical procedures. For example in Morocco, EBRD has a technical assistance assignment in progress with the Ministry of Energy and Mines to open the medium voltage transmission network to private power project developers.

114. Overall, the programme will pilot test private renewable energy generation projects in SEMED and will disseminate lessons learned. It success would be greatly enhanced and accelerated by the contribution of CTF funds.

Consistency with CTF Investment Criteria

115. For CTF Private Sector Projects/Programs:

- a) *Potential GHG Emissions Savings*
At least 650,000 tCO₂/year for the project lifetime of 20 years, reaching a total of 13,000,000 tCO₂.
- b) *Cost-effectiveness*
USD3/tCO₂ for CTF and USD71/tCO₂ for the total project cost.
The marginal abatement cost is below USD100/tCO₂.
- c) *Demonstration Potential at Scale*
The EBRD SEMED region is approaching grid parity for some renewable energy technologies, and has a substantial predicted increase in power demand. Given the

excellent resources in the region, it is expected that renewables will play a major role in providing power in the future, if the industry can be helped to move onto a development path that is more strongly driven by the private sector. In order for this to happen, the development of the supporting infrastructure, regulations, and demonstration projects for the industry will have to start now. The regulatory environment is being developed and while there are weaknesses, it is on the right track.

- d) *Development Impact*
The project will be instrumental in establishing a private sector led renewable power industry in the region. This will lead to job creation and support green growth in a coal dominated economy.
- e) *Implementation Potential*
High. There is a clear pipeline of projects.
- f) *Additional Costs and Risk Premium*
Medium, due to the untested nature of the regulatory frameworks and continuing fuel subsidies.
- g) *Financial Sustainability*
High, since the first set of projects will reduce the cost and risk premium, and should over the medium term lead to a situation in which the regulatory frameworks alone should be able to carry the industry to sustainability.
- h) *Effective Utilization of Concessional Finance*
High. The CTF funding will be instrumental in getting this project implemented, and the cost to donors is very low.
- i) *Mitigation of Market Distortions*
High. This is appropriate use of low levels of concessional finance in an emerging market.
- j) *Risks*
Technical risk: low – the technologies are known, public sector projects utilizing these technologies are being implemented.
Financial risk: medium – primarily due to the untested nature of the regulatory frameworks.

Overlaps with Other DPSP and CTF Investment Programmes

Country Investment Plan – Egypt

116. There is no overlap with the Egypt investment plan due to the different nature of the sponsors.

Country Investment Plan – Morocco

117. There is no overlap with the Morocco investment plan due to the different nature of the sponsors.

MENA CSP

118. There is no overlap with the MENA CSP plan due to the different nature of the technologies being supported.

Photovoltaic Programme

119. There is no overlap with the Photovoltaic Programme due to the different country coverage of priority countries under the Photovoltaic Programme.

Utility Scale Renewable Energy - solar photovoltaic financing

MDBs interested in participating:	AfDB, IDB, IFC
CTF pilot countries in DPSP II:	CIF countries: Burkina Faso, Ghana, Kenya, Mali, Niger, Nigeria; Brazil, Mexico ¹⁸ Non-CIF countries: Chad and Senegal
CTF amount requested / Total Project Cost (USD):	<u>Phase 2</u> CIF countries USD 95 million CTF <u>Phase 3</u> Non-CIF countries USD 75 million CTF

Intro – Program overview/description

120. Many African countries are ideally located along the solar belt, north and south of the equator with high direct solar irradiance and are therefore endowed with rich resources of solar energy as renewable, environmentally friendly basis for electricity production. For some countries, such as Chad and Burkina Faso, solar energy virtually represents the sole alternative to their existing thermal production potential, consisting mainly of diesel generators or heavy fuel oil plants. While greenhouse gas emissions in these countries are residual when compared to other more developed economies, the cost of not providing clean energy alternatives today will be reflected in the future with an increase of installed capacity from traditional sources. It is therefore vital to put these countries, and eventually others where opportunities arise, in the clean energy development path. Solar Photovoltaic (PV) projects can be implemented in a short period of time when compared to other technologies. This is a relevant advantage of solar PV technologies, especially in countries with perceived high average generation costs that contribute to bring Solar PV to grid parity levels.

¹⁸ Identified projects in Jamaica - Chile and other CIF countries may also be considered. In the case of Chile, DPSP resources would be considered only if the DPSP support to potential projects identified presents clear additionality relative to the existing resources available through the IP.

121. Moreover, successful execution of this program is expected to result in considerable positive benefits to end-users in the form of improved energy access and affordability, increased employment opportunity, and overall improved livelihoods.

122. Although Africa is the lowest emitter of GHGs, its rapidly growing population is expected to result in a significant increase in the demand of energy. In Kenya, for example, with an electrification rate of about 23%, demand for electricity is anticipated to increase from the current level of approximately 1,302 MW to 15,026 MW by 2030; and in Burkina Faso, where the electrification rate is about 13%, energy demand is expected to increase from about 131 MW to 426 MW by 2020. Given such patterns in growing demand, several African governments have committed to making the development of renewable energy, in particular solar PV, a principal source of power. Nevertheless, a significant penetration of renewables in the energy mix of these countries will only be possible if the proper incentives are in place which will include the provision of concessional financing to address specific barriers to the deployment of these technologies instead of a business as usual approach.

123. Some of the same aspects are true in some regions of Latin America and the Caribbean. Most Central American and Caribbean countries are heavily reliant on imported fossil fuels. This dependence has significantly increased in the last fifteen years, with marked economic impacts, including on trade balances and energy security. For example, Honduras experienced a dramatic change in the composition of its power matrix, from being predominantly hydro-based to its current mostly thermal-based generation. Jamaica has some of the highest power costs in the world. In countries with a good solar resource, solar PV is therefore an option that is quickly becoming cost competitive. In other countries, such as Brazil and Mexico, better endowed with other renewable or fossil fuel resources, current power cost and trade balances –while very important- are not the main immediate concern to the same extent they are to some Central American and Caribbean countries. But development of solar PV generation is seen as an important potential contributor to power matrix diversification objectives, reducing exposure to the variability of hydrological regimes (particularly for those where generation is highly reliant on them, as in the case of Brazil) and volatile fossil fuel prices, for example, thus enhancing energy security.

124. The program will address a variety of barriers encountered by private sector investors, in particular: (i) first-mover risk; (ii) comparably higher total project costs of solar PV plants compared to fossil-fuel projects; (iii) the requirement of higher feed-in tariffs; iv) regulatory risk; and v) price/market risk (in cases where adequate PPAs cannot be secured).

Business Case/Model

Market Description

125. Limited energy access threatens human development, the creation of an enabling environment for private sector development and impacts negatively prospects for job growth. Furthermore, the majority of African countries, as well as Central American and Caribbean countries have deficits in their energy balances as they heavily rely on imports to fulfill their energy needs. The weight of these imports, coupled with rising commodity prices, is increasingly

hampering the countries trade balances and their foreign currency reserves. It is essential that these countries reduce the risks arising from the increasing and volatile prices of fossil fuels since many of them are net oil importers. Therefore, countries need to find alternative sources of energy to meet the needs of their populations and maintaining an appropriate level of financial reserves to import essential equipment for developing their local industries and other commodities that are not available on the local market but essential (e.g., food).

126. There is an economic and social imperative for African and Latin American and Caribbean countries to increase and diversify their power mix, and given the barriers to private investment in the renewable energy sector in these regions, innovative and alternative financing solutions are much needed. These barriers can be technological, institutional, environmental, social and financial. In addressing financial barriers, the Program aims to facilitate the development of projects that would not materialize otherwise given that the risk-return tradeoff for private investors on non-renewable energy projects are generally viewed as more attractive than renewable energy projects such as solar PV. Even though solar PV is considered a proven technology, substantially reducing the technology risk of potential investments, we still notice only a few solar PV projects being effectively implemented in Africa and Latin America and the Caribbean given other barriers such as the cost and risks of implementing and financing such projects - in particular higher financing cost for more risky countries. Concessional financing based on the CTF will be a decisive element to overcome these financial and other barriers.

127. Solar PV would contribute to substantial reductions in the use of oil/diesel often resulting in import substitution. The Program's overall objective will be to support innovative private sector investments in this area. The private sector will have a decisive role in contributing to the targets of the recipient countries' governments to diversify their energy sector, lower electricity production costs and contribute to the transformation of these markets to low-carbon economies.

128. Independent power producer models would be a suitable solution for various targeted countries. However, development costs and perceived investor risks are high, resulting in a reluctance to invest or at significant high rates of return and in higher electricity production costs and higher end-user tariffs which often require government subsidy to ensure affordability.

129. The primary risk that the program will address is first-mover risk in markets such as Burkina Faso, Chad, Kenya, and Brazil where the proposed solar PV projects would be the first of its kind. In addition, CTF funds would help to maintain tariffs at a reasonable level, as project-based tariffs are not competitive with existing feed-in tariffs. For example, in Kenya feed-in tariff is USD 0.12/kWh. This rate is based on a so-called 'long-run marginal cost' of electricity as identified in Kenya's Least Cost Power Development Plan. The underlying power purchase agreement is not back-stopped by a Sovereign guarantee. The latter increases financing costs compared to a scenario with a MoF guarantee. With CTF contributions, such financing costs could be lowered and help to finally reach a tariff level that matches the requirements of the recipient country. CTF funds would be catalytic in facilitating investments and the involvement of MDBs would ensure that international best practices are being applied with regards to issues such as environmental, social standards, governance, and bidding processes.

How will proposal address these?

130. The Program focus would be to facilitate the development of solar PV projects that would not materialize without CTF involvement, thereby promoting investment in renewable energy technologies and the participation of the private sector. This would be achieved by blending CTF and commercial funds in the context of senior loans and to a lesser extent potentially subordinated debt.. Such investment products could be combined on a case-by-case basis with technical assistance for capacity building, particularly in the case of first-movers, and enhancing the business-enabling environment. Therefore, CTF would substantially help to overcome gaps in the financial set-up of related projects, serve as risk mitigation vehicle and reduce barriers in implementing solar PV projects, whose implementation cost are usually higher than traditional thermal plants. Even though it is the intention to focus exclusively on debt instruments, this approach will be pioneer work in various regions, in particular Chad and Burkina Faso as international project finance structures for energy projects are not yet common practice. In many cases the identified investments would be a first movers, so these financial instruments will be innovative per se given the environment of the financial sector in such countries.

131. Based on such mix, the proposed Program would: (i) help to promote solar PV projects in the envisaged countries; (ii) increase the electricity access rate for rural and urban areas of the recipient countries; (iii) attract private sector investment to finally establish IPP models; and (iv) enable a high demonstration effect with a high potential for duplication and scaling up in other countries suitable for solar PV.

What is the longer-term vision?

132. Given the fact that solar PV technology is considered mature, in the future, learning effects, economies of scale and improved technologies will offer cost reduction potential, lessening the need for concessional finance. In addition, host country governments continue to enhance their legal and regulatory frameworks, allowing for greater engagement of the private sector generally and the attraction of more foreign direct investment. Once implemented, solar PV projects tend to perform profitably under projected market conditions.

133. Even if Africa is the Continent with the lowest levels of GHGs emissions worldwide (4% of worldwide CO₂ emissions per capita) and, therefore, the GHG reduction potential per se is lower than in other regions, most African countries Business-As-Usual scenarios based on carbon intensive sources would in the long run lead to substantially higher emissions than under a scenario focusing on the promotion of use of renewable energy sources. In addition, Africa's rapidly growing populations and energy demand growth rates require a significant increase in the supply of reliable and affordable energy, such as solar PV.

Market size potential

134. Considering the tremendous natural resource available for solar PV based electricity production in Africa and Latin America and the Caribbean, in particular along the solar belt regions, the potential for the development of solar PV projects in these regions is very significant. In addition, such first mover transactions tend to have a substantial demonstration

effect in the regions to showcase the implementation of new forms of energy projects under challenging circumstances with private sector involvement. As state budgets are not likely to be sufficient to cover Africa’s estimated infrastructure investment needs of USD 93 billion per year, or to meet Latin America’s need to increase generation capacity by about 75% by 2030, engagement of the private sector will be key to unlock participation of private capital.

Indicative list of projects to be supported by AfDB (CIF option only) in the next 18 months

Country	Installed Capacity (MW)	GHG Reduction Potential/yr	Total Project Cost (mio)	AfDB loan (mio)	CTF contribution (mio)	Co-funding per CTF \$	Cost to CTF per ton of GHG reduction
Burkina Faso	20	23,000 tons	USD 52	USD 11	USD 5	10.4	10.8
Kenya	40	21,300 tons	USD 96	USD 32	USD 10	9.6	23.5
Kenya	100	53,300 tons	USD 180	USD 60	USD 20	9.0	18.8
Nigeria	100	50,600 tons	USD 268	USD 89	USD 30	8.9	29.6

Indicative list of projects to be supported by AfDB (option for non-CIF) in the next 18 months

Country	Installed Capacity (MW)	GHG Reduction Potential/yr	Total Project Cost (mio)	AfDB loan (mio)	CTF contribution (mio)	Co-funding per CTF \$	Cost to CTF per ton of GHG reduction
Chad	40	48,000 tons	USD 87	USD 29	USD 20	4.4	20.8
Senegal	150	313,000 tons	USD 374	USD 68	USD 55	6.8	8.9

135. In the case of Latin America and the Caribbean, Brazil and Mexico represent the most immediate opportunities¹⁹. In Brazil, a couple of projects, which would be the first utility-scale plants in the country, are being considered. As such, they would contribute significant demonstration in the local context, as well as help provide momentum and volume –with the potential for economies of scale- to an industry that has developed a number of small projects (normally below 1MW) but has not yet been able to compete with other technologies for larger-scale generation. In Mexico, a few dozen projects have been considered by IDB in the last couple of years, with a recent consolidation process in the subsector –with more experience and better capitalized developers arriving to Mexico and acquiring early-stage projects for further development- now offering better prospects for the take-off of this technology; and while a couple of projects were able to close, investment decisions have however stalled to a certain extent in the last few months in light of the energy sector reform underway.

136. CTF’s financing can be key in helping mitigate regulatory risk (for both developers and lenders), as well as to mitigate market/price risk given the difficulties in getting adequate, fixed-price PPAs. This last factor is one of the main obstacles for solar PV project development in

¹⁹ Chile is also one of the countries in LAC with the highest potential. Initial work there is already underway with support from the CTF resources under the Chilean Investment Plan.

countries like Chile, for example, where the uncertainty around future prices in the two grids – SIC and SING- in the country (and the potential effect of the interconnection of both of them in the next few years) exacerbate –in the absence of adequate PPAs- price risk, increasing project costs and reducing project returns given the lower leverage that can be supported in order to achieve acceptable debt service coverage ratios.

137. Most projects under consideration are in the 20-30MW range, with total costs between USD 50-90M each. An average of USD 15M per project of CTF financing is normally needed. Given uncertainties over reforms underway (Mexico, Honduras) and the possibility of offering adequate financing given current restrictions for CTF to offer local currency, IDB is initially requesting a modest amount of \$10M to allow some initial work in these new markets. A further, larger request is envisioned for phase III of this program. IDB's request of USD 10M for this first phase is expected to support about 20MW of new installed capacity, leveraging about USD 50M of investment from other sources, and generating about 0.5MTon of direct CO2 emission reductions, at about USD 20 of CTF investment per Ton of CO2 avoided .

138. Similarly to the AfDB and IDB, IFC's component of the program will aim at addressing the structural barriers and enabling the rapid rollout of utility scale solar PV across client countries at locally competitive prices. The CTF funds will support IFC's programmatic approach aimed at conducting a series of investments and advisory services projects across number of countries. Ultimately engagements will be demand driven, but initial indications from governments of some countries suggest that this program is well timed and wanted.

139. To build a robust pipeline of its own and CTF-supported investments, IFC has initiated a process of selecting and prioritizing countries based on: (i) suitability of PV to the energy supply mix; (ii) applicability of standardized IPP procurement given local legal and regulatory context; (iii) alignment with WBG country strategies and country level IDA availability; and (iv) likelihood of success at reasonable scale. Initial priority targets include Ghana, Mali, Niger, and Senegal in Sub-Saharan Africa region; and Brazil and few other countries in the LAC region. The final selection of the candidate country will require further coordination with operational teams.

Proposal Terms and Implementation Strategy

- a) Financial instruments to be used would mostly be in the form of senior debt.
- b) Subordinated debt, guarantees, and technical assistance would be provided, as the need arises, alongside MDB investments.
- c) The populations affected by the projects, local communities, NGOs, government entities and participants in the energy market are expected to be stakeholders of the Program. Stakeholder engagement and community liaison officers would be key during project implementation.

- d) Countries under consideration so far are Burkina Faso, Chad, Ghana, Kenya, Mali, Niger, Nigeria, and Senegal in Africa; Brazil and Mexico in LAC²⁰.

Results Framework/ Core Indicators (indicative)

Core Indicators		Performance DPSP II
GHG emission reductions	- Annual (million tCO ₂ e/year)	0.20
	- lifetime (20 year cumulative, mtCO ₂ e)	4.0
Electricity production	- New RE capacity (MW installed)	330
	- Additional Power Generation (MWh/year)	490,560
Cost to CTF (\$/t CO ₂)		24\$/t
CTF financial leverage		1:8
Energy Access	- Number of previously non-electrified households provided with access to electricity (Households)	N/A
	- Number of individuals provided with access to electricity (Individuals)	N/A
Employment	- Number of new jobs generated (direct and indirect) (Jobs)	N/A

Co-benefits

140. By implementing solar PV low carbon technologies for electricity production, the Program would contribute to the provision of clean, reliable and more affordable power - as an alternative to traditional fossil-fuel generation - that would contribute to economic and employment growth, and improvements in the health and economic well-being of those residing in rural communities, specifically women and children who would directly benefit from the provision of renewable energy services:

141. Other anticipated benefits include:

- a) A reduction in the import of/use of expensive and environmentally unfriendly fuels;
- b) A diversification of the energy sector in the recipient countries - often faced with overdependence on thermal resources;
- c) Projects implemented under this Program are expected to generate revenues for governments of the recipient countries and to reduce the need for fuel subsidies of end-user tariffs and energy imports, thereby improving the government's balance of payments (for every project, an economic model will be developed in order to compute the project's economic net present value and its economic internal rate of return);

²⁰ As mentioned before, while Brazil and Mexico would be the main target, investments in Honduras, Jamaica and Chile will also be considered.

- d) An enhanced know how transfer by implementing state-of-the-art technology linked with job creation for skilled and unskilled workforce (focus on use of local workforce in the construction and operation phase); and
- e) Better environmental circumstances of the people affected by e.g. emergency diesel generators causing air pollution, noise and related illnesses - traditional use of biomass for cooking has direct negative implications on people's health, as biomass combustion nearby or inside the houses affects air quality avoided by solar PV based electricity, therefore, improving households' health and hygiene which will be a benefit in particular for women and children who tend to engage in these time-consuming activities (gender aspect). Another direct negative implication of utilizing fuel wood is the environment degradation it creates with the loss of some unique and precious ecosystems.

142. Specific indicators and estimated values for these co-benefits cannot be provided at this concept stage. MDBs will provide them at the time of submitting final project/program proposals for CTF approval.

Consistency with CTF investment criteria (see also Core Indicators)

Demonstration Potential at Scale

143. Countries like Brazil, Mexico, Kenya, and Nigeria have a vast potential for replication, given the size and projected growth of these economies (and thereby in power demand), the continuously decreasing price of the technology (enhancing economic viability), the increasing presence of experienced international developers in some markets, and the strong demonstration effect that these first projects can have in reducing risk perception from both investors and off-takers. In LAC, an additional installed capacity of at least 500MW in the next 5-7 years appears reasonable (and likely conservative), assuming a second phase of the program allowing for additional demonstration and catalytic effect on investment in these technology. In such case, projected GHG emission reductions would be over 12Mton of CO₂.

Development Impact

144. Solar PV is a low carbon technology which yields both environmental and social benefits. Implementation of Solar PV under the program will not only result in the expansion of energy access with clean, reliable and more affordable power in markets with some of the lowest electrification rates in the world but also provide health benefits by replacing traditional, polluting fossil-fuel generation.

Implementation Potential

145. CTF resources would be deployed in countries where there is expected to be a growing demand for power and where governments are committed to implementing the legal and regulatory reforms for making the development of renewable energy, in particular solar PV, a principal source of power.

Additional Costs and Risk Premium

146. CTF resources will be used to address costs associated with: (i) first-mover; (ii) comparably higher total project costs of solar PV plants compared to fossil-fuel projects; and (iii) the requirement of higher feed-in tariffs and to some extent market/price risk.

Financial Sustainability

147. The primary risk that the program will address is first-mover risk in markets such as Burkina Faso, Chad, Kenya, and Brazil where the proposed solar PV projects would be the first of its kind. Implementation of the Solar PV program is expected to have considerable demonstration effect and it is anticipated that the success of projects supported by CTF resources would lead to greater private sector participation in the financing of future Solar PV projects and a decrease dependence upon subsidies.

Effective Utilization of Concessional Finance

148. Under the program CTF resources would be deployed to ensure minimal concessionality and prevent the crowding out of potential private sector participants. Additionally, financing for each project under consideration would be structured to reflect the particularities of the individual project, dynamics of the local market, and level of catalytic funding needed to maximize private sector finance.

Mitigation of Market Distortions

149. In some of the proposed markets Solar PV projects will represent the first of its kind. CTF resources would be to remove barriers for private sector participation and crowd-in the greatest level of private sector investment.

Risks

150. Main risks in initial target countries in LAC and Africa include:

- a) **Regulatory risk:** project development in Mexico and Honduras are currently affected by the uncertainties linked to the energy sector reforms underway. While projects under consideration are expected to still be financially viable, structuring of CTF funding to provide some risk cushion (as subordinated debt, for example) could help depending on other developments- deal with this uncertainty and allow the projects to go forward.
- b) **Price/Market risk:** the difficulty securing adequate PPAs in some of these markets expose projects to potential revenue short falls, as they operate on a complete or partial merchant basis. This imposes the need to reduce leverage (to ensure higher debt service coverage ratio) and/or put in place additional and often expensive mitigation measures (contingent reserve accounts. Cash sweeps, etc) that erode equity investors returns, jeopardizing financial viability of the projects.

CTF may help address these risks through structuring solutions (subordination, contingent financing, guarantees) or concessional pricing to reduce the cost of – for example- additional debt reserve account requirements.

- c) **Currency risk:** local currency financing is needed in most of the markets under consideration. Unhedged foreign currency financing can create a significant risk for both lenders and project sponsors. While the CTF cannot provide local currency financing, it could subsidize the cost of hedges to enhance economic viability (as hedge cost normally increase significantly total financial cost). The CTF hedge subsidy is, however, currently limited, and may not be enough for countries with significant currency depreciation expectations and risk. Alternative solutions will be explored in such cases.

Funding

Phase 2 in Africa: \$65MM CIF

Phase 2 in LAC: \$10M

Phase 2 Other: \$20M

Phase 3 in Africa: \$75MM non-CIF

Energy Efficiency and Self-Supply Renewable Energy Program

Program Overview	
MDBs interested in participating	IDB
Countries covered	All CIF pilot countries in LAC
Financial Structure CTF Phase II funding request	
	IDB Finance
	USD 50-100 M Debt Facility ²¹
	CTF Finance
	USD 20M EE/SS facility ²²
Sponsor Co-Finance/Commercial Lending	USD 50-150 M (as equity or debt)

Intro – Program overview/description

151. The Inter-American Development Bank (IDB) proposes an Energy Efficiency and Self-Supply Renewable Energy Program to provide the investment resources and technical expertise for the currently underserved sector of energy efficiency and self-supply renewable energy generation.

152. The proposed USD20 million CTF contribution for phase I of this program²³ will be used to establish an **Energy Efficiency and Self-Supply Renewable Energy Facility**²⁴ (the **EE/SS Facility**) that will provide guarantees (and in some cases complementary debt resources) in support of loans²⁵ for energy efficiency and self-supply renewable energy projects in CIF-pilot countries. In 2013, the IDB's Structured and Corporate Finance (SCF) Department established a Facility to offer loans ranging in size from USD500,000 to USD5,000,000 for investments in self-supply renewable energy projects and energy efficiency. However, in many cases, the loan size, tenors, and security requirements of these investments exceed both local bank and IDB's risk tolerances. The investment resources of the facility (USD16M of the total of USD20M) will mainly provide guarantees for direct loans to corporations, improving the credit profile of the projects and allowing adequate access to finance.

153. In addition, USD4M are requested in grant funding to provide investment-grade energy efficiency audits and renewable energy feasibility studies to overcome information barriers in countries where there are no existing similar clean energy projects. In addition, these resources may be used on a case-by-case basis to reduce the cost of environmental and legal due diligence fees normally absorbed by borrowers. The grant resources would further finance some targeted capacity building activities and a strong knowledge management component needed to ensure

²¹ IDB will consider expansion of the initial USD50M Debt Facility, upon approval of the CTF EE/SS Facility and utilization of the existing line.

²² This \$20M facility will consist of ~\$16M of investment resources (guarantees and loans) and \$4M of grant resources to support feasibility studies, capacity building and knowledge management activities. While the main objective of the facility is to provide guarantees, we propose to give the facility some flexibility to alternatively –in very specific cases- provide loans, when the sponsor cannot secure sufficient additional co-financing from other sources beyond IDB to close the investment (IDB is limited to a maximum of 25-50% -depending on the country- of project cost with its own capital). The need and terms for this proposed flexibility will be confirmed in the detailed program proposal to be submitted to CTF at the next stage of approval.

²³ An additional amount may be requested for phase II, as the pipeline is further developed and phase I resources are used up.

²⁴ IDEM footnote 2 above.

adequate dissemination of the program's results to corporations, financial institutions, energy service companies, government stakeholders and other development organizations (including DFIs) to ensure its demonstration effect.

154. With this Facility IDB will support a minimum of \$100 million of investment in EE/SS projects, as the guarantee coverage will leverage a minimum of four times its size from other financing sources (debt and equity). Additionally, these projects will help establish local engineering capacity for their technical design, establish supply chains for equipment procurement, and demonstrate the market potential to local financial institutions (to be achieved through co-investment as well as a knowledge management activities). The market potential for EE and various types of small-scale renewables (biogas, scale biomass, solar) is significant, and the demonstration impact of the CTF and IDB supported projects could lead to hundreds of millions in investment in similar projects in the near future.

155. The program would capitalize the initial work done by IDB setting up the facility framework, which includes:

- a) IDB approval of \$50M initial debt facility (which IDB will seek to expand upon approval of CTF resources).
- b) Complementary guarantee and technical assistance resources secured from the Nordic Development Fund (NDF) for the initial operation of the facility (but restricted to a limited subset of countries, mostly not covered by CTF or the CIFs).
- c) The pipeline identification work and feasibility studies conducted in some CIF-eligible countries.
- d) The legal and administrative framework to facilitate approval of small EE/SS loans; this is of key importance given that the high transaction costs relative to project size are a well-established barrier to energy efficiency and small-scale renewable projects.

156. This ensures the availability of co-investment resources, procedures and inputs required for the CTF program to rapidly become operational and achieve the speed and contribute to the scale sought by the DPSP.

Business Case

Market Description

157. Energy efficiency and self-generation of energy from on-site renewable systems is increasingly economical as technology costs decrease, fossil fuel prices rise, and new business models for financing projects emerge. Unfortunately, currently there remain considerable market barriers to companies who wish to implement these technologies. As renewable technologies generally have higher initial capital costs and longer pay-backs than more polluting alternatives, any risk premiums -including traditional credit, currency and political risks- are amplified. In addition, renewable technologies are less proven which results in higher risks. Therefore, access to affordable, long-term finance is essential to level the playing field. This long-term debt is

unavailable for many companies. And even under the third-party finance model or “PPA” model (which could also be supported by this facility), common in the U.S. and Europe, the creditworthiness of the corporate off-taker prevents the third-party company from accessing the credit needed to finance the project and operate and sell the renewable energy to the corporation. Particularly when the solar panels or biogas system will be incorporated into the operations of the plants (placed on the companies’ rooftops or in their wastewater treatment system), strong corporate credit is vital to access finance.

158. Energy efficiency and small-scale, self-supply renewable generation lending is an underserved sector. The project sizes are small (relative to utility-scale projects) to match the interest, knowledge and risk preferences of many financial institutions, but large in comparison with the balance sheets of the companies that can implement these projects. The projects themselves do not provide significant security to allow for standard, asset-based lending, which results in unnecessarily high risk premiums, high collateral requirements, and short loan tenors.

159. This has therefore generally not resulted in an area of priority interest for commercial banks. IDB approached a few of them in CTF pilot countries, with both debt and guarantee/risk sharing solutions, without yet getting results in the scale needed to capitalize in a meaningful way the economic and mitigation opportunity that these type of projects offer. IDB is therefore piloting a number of complementary business models to demonstrate and promote these investments, through both its public and private sector arms, and which include, among other, energy efficiency investment funds securitization of EE loan portfolios (through EE/green bond issuances), performance guarantee facilities and insurance to support development of ESCOs and energy savings contracting models, among other. The hereby proposed EE/SS Facility is aimed at complementing those other efforts and tools to help demonstrate and unlock the potential of this type of investments.

How will proposal address these?

160. The proposed EE/SS Facility is designed to address these financial barriers by facilitating –through credit enhancement of projects- the provision of loans with reduced transaction costs, at sufficiently long tenors and without high collateral requirements – yet within the risk tolerance of the IDB given the risk sharing provided by CTF. By financing these projects directly, and given the slow uptake of financing of these investments by commercial banks, the IDB will help demonstrate both the technologies and their financial viability. The Facility will focus on projects with potential for high financial returns, including increasingly economical technologies such as advanced lighting, solar and biomass power. It will target sectors and industries with high potential for replication, to maximize the value of demonstration and scale-up potential.

161. As the intent of the Facility is to maximize the private sector investment it can support, and to “crowd in” rather than “crowd out” private sector lending for climate change, the Facility’s resources will be allocated based on the principle of minimum concessionality. The IDB will lend no more than 50% of the total project costs to each project, and will seek co-financiers for the remaining debt. The guarantees will be provided on case-by-case basis to address risk and cost barriers identified in each project. Guarantee support will also be available to financial institutions and other intermediaries.

162. Energy efficiency and self-supply with renewable energy will have many benefits including reducing the strain on the electricity and transportation systems, decreasing electricity costs (thus improving competitiveness of businesses), enhancing energy security and improving trade balances. In addition, these investments can provide significant greenhouse gas savings derived from the substitution of fossil fuels already used in industrial processing and capture of methane when dealing with biomass waste.

What is the longer-term vision?

163. Through a programmatic approach (at least 20-40 investment will likely be supported), the Program expects to generate sufficient success cases and demonstration for various technologies, in different type of applications (sizes, configurations, type of energy services), power supply contractual arrangements, industries, co-financing arrangements, local context (regulation, power costs, business environment) to provide meaningful demonstration to inform and promote further replication. Drivers of replication will be:

- a) Awareness raising among companies, energy service providers, financial institutions, government agencies, and other relevant stakeholders about the viability and economic benefits of these investments.
- b) Reduced perception of the risk associated with these investments, that will encourage financial institutions to consider them as an area of business opportunity; the recognition that these investments can enhance –rather than hinder- the credit profile of banks’ corporate customers, as energy costs are reduced with the potential to improve net income. Successful demonstration of the technologies and the financial results of the investments may also result in enhanced confidence for further financing without the need of guarantees.
- c) The development of local expertise and capacity (local engineering capacity for their technical design, supply chains)

Market size potential

164. The market potential for these investments is enormous. Table I below presents a pipeline of investments already identified in CIF pilot countries about half of them with feasibility studies already completed utilizing the initial technical assistance resources from another donor. The proposed CTF grant resources would be used –among other things- to further expand the pipeline of investment-ready, high demonstration investments, that the CTF program (and the IDB EE/SS Debt facility) would be investing in.

Table 1: Identified potential pipeline for the SS/EE Facility

Country	Industry	Project Type	Estimated Project Cost (\$M)
Bolivia	Agribusiness-biofuels	EE, biomass cogeneration	\$1.5
Brazil	Auto	EE-Natural gas boiler system	\$5.0
Brazil	Health	EE Retrofit Water System	\$0.5
Brazil	Chemicals	EE Retrofit Water System	\$0.5
Brazil	Consumer Products	Solar PV warehouse rooftop	\$2.0
Brazil	Education	EE HVAC, Lighting	\$0.5
Brazil	Food	EE Lighting	\$0.3
Brazil	Construction	EE- Lighting, PV	\$2.0
Brazil	Telecom	EE- Lighting	\$1.5
Brazil	Animal Waste Treatment	EE-Steam	\$5.0
Brazil	Water Treatment	EE-Electric Substation	\$13.0
Chile	Mining	Solar PV	\$10.0
Chile	Waste Water Treatment	Biogas	\$5.0
Chile	Commercial Building	EE-Motors and Lighting	\$2.0
Chile	Manufacturing – paper	Biomass	\$15.0
Chile	Seafood Producer	Biogas	\$1.0
Chile	Hospital	EE-Cogeneration	\$2.0
Colombia	Airport	Energy efficiency (EE)- lighting, HVAC ^[1]	\$1.0
Colombia	Manufacturer	EE-Cogeneration	\$2.5
Haiti	Manufacturing-textiles	EE-lighting, HVAC, solar PV	\$1.0
Haiti	Hotel	EE-lighting, HVAC, solar hot water	\$0.5
Honduras	Bank	Energy efficiency – lighting, HVAC	\$0.5
Honduras	Brewery	Solar, EE-HVAC, biogas cogeneration	\$1.5
Honduras	Agricultural processing-fruit	Cooling, biogas capture and cogeneration	\$0.8
Honduras	Recycling center	EE-solar hot water, motors, solar PV	\$1.0
Honduras	Hospital	EE-HVAC	\$0.5
Jamaica	University	Solar	\$3.0
Jamaica	Chicken processor	Biogas	\$3.0
Total			\$82.0

Proposal Terms and Implementation Strategy

165. The IDB will establish a CTF USD20M EE/SS Facility to support investments sourced for IDB’s initial USD50M EE Debt facility (and which IDB is seeking to expand). The IDB will use the minimum guarantee coverage necessary to derive an acceptable credit profile for IDB and other participating lenders, as needed, to offer financing on each transaction. The pricing, terms and conditions of the IDB financing offered with the benefit of a guarantee will be structured on a case-by-case basis.

^[1] HVAC: Heating, Ventilation, Air Conditioning. Includes motors, boilers, chillers, building envelope improvements

166. This program will be implemented immediately upon the establishment of the EE/SS Facility. The IDB Board has already approved the previously mentioned USD50 million EE/SS Debt Facility of IDB’s own capital, allowing loans of up to USD5M per project with facilitated approval procedures for these EE/SS renewable energy projects. The IDB has previous experience with a similar donor-backed Guarantee Fund for Central America and has established legal and administrative procedures. Over the past two years, the IDB has completed detailed self-supply renewable energy feasibility studies with private companies in Central America and a few Caribbean and South American countries. The IDB is currently conducting financial due diligence with several of these companies. However, due to the risks described, guarantee support from the CTF would greatly facilitate IDB’s ability to finance these projects, as many corporations have risk profiles that prevent access to the long-term capital needed for their implementation. There are generally no regulatory barriers to the implementation of these “behind the meter” projects.

Results Framework / Core Indicators (Indicative)

Core Indicators		Performance DPSP II
GHG emission reductions	- Annual (million tCO ₂ e/year)	~0.1
	- lifetime (20 year cumulative, million tCO ₂ e)	2.0
Electricity production	- New RE capacity (MW installed)	35
	- Additional Power Generation (MWh/year)	120,000
Electricity saved (MWh/year)		43,000
Cost to CTF (\$/t CO ₂)		USD 10/t CO ₂
CTF financial leverage		1:4-1:6
Energy Access	- Number of previously non-electrified households provided with access to electricity (Households)	N/A
	- Number of individuals provided with access to electricity (Individuals)	N/A
Employment	- Number of new jobs generated (direct and indirect) (Jobs)	TBD

^{A/} Depending on final size of debt facility, and mix of investments across countries.

^{B/} Will be provided to TFC at the time of submission of detail program proposal

Co-Benefits / Development Impact

167. Energy efficiency and self-supply with renewable energy has many benefits including reducing the strain on the electricity and transportation systems, decreasing the need for costly transmission and distribution investments, decreasing electricity costs, reducing fossil fuel imports, enhancing energy security and improving trade balances. In addition, these investments can provide significant greenhouse gas savings derived from the substitution of fossil fuels already used in industrial processing and capture of methane when dealing with biomass waste. These companies each employ hundreds of women and men who will benefit from the project due to the companies lower long-term energy costs and enhanced competitiveness.

Consistency with CTF investment criteria

168. **Potential GHG Emissions Savings.** 2 MTon CO₂

169. **Cost-effectiveness.** USD 10 of CTF investment / Ton CO₂

170. **Demonstration Potential at Scale.** Given the broad variety of EE/SS technologies, and the vast potential and untapped opportunities in the region, it is reasonable to assume that the direct demonstration offered by these investments could be replicated by at least a 5x factor (the potential is much higher; this is just a conservative estimate for the following 5-7 years). This would result in GHG emission reductions of at least 10 Mton of CO₂.

171. **Development Impact.** Please see previous section.

172. **Implementation Potential.** As mentioned before, there are many enabling factors facilitating implementation. They include: already existing framework program within IDB to speed up internal approval of sub-projects, including an IDB USD50M Debt facility already approved; significant pipeline identification and feasibility work already completed; no major regulatory, policy or institutional barriers in most countries; increasing interest and presence of ESCOs and EPC contractors in many of these countries.

173. **Additional Costs and Risk Premium.** EE and SS investments have not significantly penetrated most of the CIF countries in LAC; there is still significant room for demonstration for a number of technologies and applications. First movers on this will face issues of high initial cost and risk barriers, arising from some of the technologies, the lack of sufficient/adequate collateral of target companies, and –in some cases- insufficient contractual precedents and/or untested regulatory frameworks. Another area of “additional cost” to be covered by the program will be that of initial engineering studies to demonstrate the financial viability of the investments.

174. **Financial Sustainability.** According to the feasibility studies conducted the identified opportunities have reasonable IRRs; risk perception is however hindering their development, thus making risk mitigation instruments necessary to catalyze investment decisions. Successful demonstration of these applications is expected to reduce risk perception and encourage replication with decreasing or no need of development and concessional finance.

175. **Effective Utilization of Concessional Finance.** The proposed program is considered an effective utilization of concessional finance as it:

- a) demonstrates the financial viability of a series of EE and SS applications across various countries, industries and companies.
- b) utilizes targeted TA resource for feasibility work that would then directly enable the investments.
- c) tackles mainly information and risk barriers, the main reason why these otherwise financially viable are not proceeding in a significant manner and scale.
- d)
- e) leverages a significant amount of additional investment.

176. **Mitigation of Market Distortions.** The programs will be supporting investments which today are mostly not happening, given the information and risk barriers previously mentioned.

There isn't therefore a market already existing to be distorted. Rather, the program expects to create it, through demonstration to both companies with potential to implement similar projects (both manufacturing and service facilities as well as third party project developers such as ESCOs) and to financial institutions with potential to learn about the risk/return profiles of these investments and further support their development as a new business area.

Funding

Phase I funding needed - \$20M

Phase II funding needed – TBD

ANNEX 1: GENERAL PRINCIPLES, OBJECTIVES AND OPERATIONAL GUIDELINES OF THE DPSP (SUMMARY OF THE DPSP OCTOBER DOCUMENT CTF/TFC.12/4)

This section provides an overview of the main principles, objectives and modalities of the Dedicated Private Sector Programs (DPSP).

- Objectives:
 - Financing for programs and sub-programs that can deliver scale and speed, while maintaining a strong link to country priorities and CTF program objectives. The DPSP does not to replace the country-driven investment plan model, but provides a supplemental pathway through which funds can be more specifically channeled to private sector investments.

- Principles:
 - DPSP proposals comply with the overall principles and objectives of the CTF, including the results framework. Thus, programs and projects/sub-programs need to demonstrate:
 - a) potential for long-term greenhouse gas emissions savings;
 - b) demonstration potential of the activities being proposed;
 - c) development impact expected, including co-benefits; and
 - d) implementation potential, including targeted private sector leverage expected.
 - Through the results framework, the MDBs are expected to monitor achievement of results, promote accountability for resource use, and document and disseminate results and lessons learned.
 - The DPSP broadens the range of financing instruments beyond debt, to include equity, subordinated structures, guarantees and complementary technical assistance for capacity building. DPSP resources should be positioned in a higher risk position than other financiers particularly, private sector investors. Such positions could include subordinated loans or mezzanine tranches of debt, first-loss cover in risk sharing or insurance type products, and equity or seed money for early stage development.
 - The principle of *least concessionality* will apply. Each project or sub-program will propose the financial instruments and pricing parameters to be used.
 - At no time will the DPSP have more than 30% of allocated funds committed in a single country so as to ensure a wide geographical reach.

- Country Ownership and Consultation:
 - The DPSP is deployed in addition to the current country-driven investment program modality. Projects/sub-programs under the DPSP programs are developed in consultation with, and with the engagement of, relevant public and private sector stakeholders and beneficiaries from the recipient countries. Application of the normal MDB processes will ensure alignment of the projects/sub-programs with country, MDB, and CTF strategies.
 - Consistency with country priorities and country ownership will be ensured through compliance with government policies and strategies as well as MDBs' country assistance strategies. MDBs will consult and engage recipient country stakeholders during the design of projects/sub-programs.
 - Once a program is endorsed by the Trust Fund Committee, the CIF Administration Unit will inform the CTF focal point of each CTF country of endorsed programs and seek their non-objection. Detailed procedures for project/sub-program development can be found in Annex 1.

- Monitoring and reporting:
 - Strategic operational monitoring of the DPSP is the responsibility of the CIF Administrative Unit, in close co-operation with the MDB Committee, based on MDB reporting pursuant to the monitoring guidelines. Tracking of sub-programs for approval and disbursement has been integrated into CTF pipeline management.
 - The CIF Administrative Unit and the MDBs will report annually to the CTF Trust Fund Committee on the progress made in implementing the programs, in accordance with existing monitoring and reporting requirements for CTF. Based on this reporting, the program would be assessed against the CTF results framework. The CTF Trust Fund Committee may, if appropriate, take decisions to alter program objectives, priorities and criteria; to redistribute funds between programs; cancel unused funds from original allocations if implementation objectives have not been met.

- CTF Trust Fund Committee Decision Making
 - Each program proposal and associated preliminary list of ready projects/sub-programs are submitted to the Trust Fund Committee for endorsement (please see section on program proposals). The Trust Fund Committee will agree on an indicative allocation of CTF resources among the endorsed programs.
 - Specific projects/ sub- programs under an approved program would be subsequently developed by the MDBs and submitted for funding approval. If the program proposal allocates funds among the participating MDBs, the MDB

Committee will keep such allocations under review through the CTF pipeline review process and may agree to reallocate funds among the MDBs based on project readiness. The CIF Administrative Unit will inform the Trust Fund Committee of any reallocation of resources among the MDBs participating in the program.

- Where a program or sub-program is to be implemented by a single MDB and Trust Fund Committee approval of CTF funding has been obtained, projects to be financed under the program or sub-program would be approved by the Board of Directors of the MDB. The Trust Fund Committee will be notified of each project approved under a single-MDB program or sub-program in accordance with current procedures for private sector programs²⁶.

The CIF Administrative Unit and the MDB Committee may make recommendations to the Trust Fund Committee on the indicative allocation of funds among the programs in cases where the demand for funds exceeds resources, or if one program demonstrates that it is disbursing funds and achieving results more effectively than another.

- Country consultation and project development process

Once a program is endorsed by the Trust Fund Committee, the following procedures for country engagement apply:

- a) the CIF Administrative Unit will inform the CTF focal point of each CTF country of the endorsed program and will invite each country to agree in principle (on a non-objection basis) to MDBs pursuing DPSP activities in the country;
- b) following a non-objection by the CTF focal point, the participating MDBs will design projects/sub-programs concepts consistent with the objectives of the specific endorsed program. For each project/sub-program concept developed, the relevant MDB will engage through the CTF focal point to discuss content of the concept to move forward with the project/sub-program due diligence;
- c) the MDB will carry out due diligence and structuring of the project/sub-program and seek internal MDB clearance;
- d) the CTF focal point can provide any additional inputs at this stage to further guide the MDB in finalization of the project/sub-program;

²⁶ See CTF Financing Products, Terms and Review Procedures for Private Sector Operations, October 24, 2102, Annex B, page 16: *To ensure accountability under the programmatic approach used for private sector projects and as agreed by the Trust Fund Committee, and also to ensure that useful data is available to the Members of the Trust Fund Committee to allow them to exercise their role with respect to private sector projects, MDBs will report to the Trust Fund Committee, at the financial closing of each project (when details of the project are available) on how each project meets the 10 CTF investment criteria.*

- e) the project/sub-program will be submitted to the Trust Fund Committee for CTF funding approval. The submissions will include a list of the stakeholder consultations that took place; and
- f) before MDB approval or financial close of any CTF financing facility, the MDB will seek a non-objection from the country (which is part of the normal MDB country engagement and approval procedures).