

DRAFT

PROPOSAL FOR CTF DEDICATED PRIVATE SECTOR PROGRAMS

I. INTRODUCTION

1. The CTF Trust Fund Committee at its meeting in May 2013 reviewed a proposal for a global private sector program (document CTF/TFC.11/10), and decided that a private sector program should be developed for decision at the Committee's meeting in November 2013. The Trust Fund Committee requested the CIF Administrative Unit and the MDBs to elaborate proposals for programs that focus on current CTF pilot countries utilizing 150 million of dedicated existing CTF resources. The Committee further requested the CIF Administrative Unit and the MDBs to develop programs for consideration that could be applied at a regional or global scale and could be financed with new contributions.

2. This paper outlines *four detailed proposals* for potential private sector programs (hereafter referred to as *programs*) together with common considerations that would apply to all dedicated private sector programs. Each program proposal includes projects / sub-programs that could absorb the USD 150 million of existing CTF resources in a first phase, to be deployed in selected CTF pilot countries. If additional resources were available, the proposals indicate a potential phasing for expansion of the activities: possibly, first to additional CTF or CIF pilot countries, and then on a wider regional or global scale in other developing countries.

3. The Trust Fund Committee is requested to review and endorse the program proposals as a useful basis for the further development of projects/sub-programs. The Trust Fund Committee may also consider whether it would be useful 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.

II. GENERAL PRINCIPLES AND OBJECTIVES OF THE DPSP

4. The Dedicated Private Sector Programs (DPSP) would have the objective of financing programs or operations that can deliver scale (in terms of development results and impact, private sector leverage and investment from CTF financing) and speed (faster deployment of CTF resources, more efficient processing procedures), while at the same time, maintaining a strong link to country priorities and CTF program objectives. The proposals presented here would deliver impact at scale by enabling the CTF to address existing market failures either through the use of a specific climate finance tool or by supporting the deployment of renewable energy and energy efficiency technologies and mitigation of specific risks. For each proposal, in addition to the Phase I investments, there is an estimate for market demand within other CTF pilot countries and more globally.

5. The intention is not to replace the current country-driven investment plan model but rather to provide a supplemental pathway through which funds can be more specifically channeled to private sector investments.
6. DPSP proposals would comply with the overall principles and objectives of the CTF, including the results framework. Thus, programs and projects/sub-programs would 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.
7. Through the results framework, the MDBs would be expected to monitor achievement of results, promote accountability for resource use, and document and disseminate results and lessons learned.
8. The DPSP would continue to make use of a range of financing instruments, which include debt, equity, subordinated structures, guarantees and complementary technical assistance for capacity building. Consistent with the catalytic role of the CTF and with current practice, the DPSP will need to take risks that commercial lenders are not able to bear, and as a result, the programs are likely to be placed in a higher risk position than other financiers. Such positions 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.
9. The principle of least concessionality will continue to be applied. Each project or sub-program will propose the financial instruments and pricing parameters to be used.
10. At no time would the DPSP have more than 30% of allocated funds committed in a single country so as to ensure a wide geographical reach. The Trust Fund Committee may also wish to consider whether there should be regional concentration limits. Another limitation that could be considered is a funding cap for any one project/ sub-program (for example, USD 50 million).

III. COUNTRY OWNERSHIP AND CONSULTATION PRINCIPLES

11. CTF funding for the DPSP will be deployed in addition to the current country-driven investment program modality. Projects/sub-programs under the DPSP programs will be developed in consultation with, and with the engagement of, relevant public and private sector stakeholders and beneficiaries from the recipient countries. Continued engagement by the MDBs with stakeholders through the normal MDB processes will also aid in ensuring alignment of the projects/sub-programs with country, MDB, and CTF strategies.

12. More specifically, consistency with country priorities and country ownership will be ensured through:

- a) compliance with underlying government policies, strategies, and existing regulatory regime;
- b) consistency with participating MDB's country assistance strategy and appropriate sector strategies and country plans (such as national climate change plan), which are dynamically updated through regular consultation and dialogue with the recipient government and other stakeholders;
- c) alignment with the CTF country ownership principles that promote a country-led approach and integration into country-owned development strategies;
- d) consultations and engagement by MDBs with the recipient country stakeholders during the design of projects/sub-programs concepts under the programs.

13. Once a program is endorsed by the Trust Fund Committee, the following procedures for country engagement will 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;
- 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;
- 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).

IV. CTF TRUST FUND COMMITTEE DECISION MAKING

14. Each program proposal and associated preliminary list of ready projects/sub-programs will be submitted to the Trust Fund Committee for endorsement. Four such proposals are annexed to this paper for review and endorsement. The Trust Fund Committee would also be invited to agree on an indicative allocation of CTF resources for the program. 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.

15. 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 programs¹.

16. Regular reporting to the Trust Fund Committee through the CIF Administrative Unit would be the responsibility of the MDBs.

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

V. MONITORING AND REPORTING

18. Strategic operational monitoring of the DPSP would be 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 would be 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.

19. The CTF Trust Fund Committee will review the annual reporting on the DPSP and may, if appropriate, decide:

¹ 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.*

- a) on mid-course corrections to dedicated program objectives, criteria, and priorities²;
- b) to redistribute the indicative allocation of funds between programs or agree on new indicative allocations for new or existing programs for application in CTF, CIF or new countries; and/or
- c) to cancel unused funds from the original allocations if the sub-program is not meeting its milestones.

VI. LEGAL IMPLICATIONS

20. For the Trust Fund Committee to have the authority to agree to a new business model for the allocation of CTF resources, such as that proposed in this document, it will be necessary to amend the *Governance Framework Document for the CTF* (adopted November 2008 and amended December 2011), since the Governance Framework currently only provides for access to CTF financing through country-based investment plans. Specifically, paragraphs 14 and 15 under the section entitled, *Country Access to the CTF*, could be expanded to allow for use of different programs or business models if the Trust Fund Committee deems them helpful to achieve the objectives of the CTF. This means that, in addition to accessing CTF financing through investment plans (paragraph 14), the Trust Fund Committee could agree to allocate funds in accordance with the agreed governance and decision making of new programs, such as dedicated private sector programs as proposed in this document.

21. If the Trust Fund Committee agrees to proceed with the further development and approval of the DPSP, it will be necessary for the timely launch of the programs that the Trust Fund Committee also recommends the initiation of the amendment process for Paragraphs 14 and 15 of the Governance Framework Document for CTF.

VII. FUNDING

22. For each of the following proposed programs there would be a minimum level of funding below which it would not be effective to pilot the concept. Each proposal identifies the minimum amount of funding that would be required for a meaningful first phase of the program (Phase I) to be implemented in selected CTF pilot countries. All proposals have been designed with the premise that the existing funds are only a start and to take these programs to scale in CTF pilot countries and beyond will require additional funding. If additional funding were made available, the program could be scaled up in other CTF or CIF pilot countries in Phase II and/or expanded on a regional or global basis to non-pilot countries.

² Any mid-term correction would not apply to funds where the relevant sub-project has already passed the first stage of MDB internal approval.

VIII. PROGRAM PROPOSALS

23. The above procedures would apply to any of the dedicated programs, unless the specifics of the proposal call for some modification to the above general principles. In such a case, these modifications are spelled out in the individual proposal concerned.

24. Four program proposals are presented covering a range of investment areas, countries, and regions. Each indicates the MDBs that are interested in pursuing the proposal and the amount of financing requested in the different phases of proposal implementation. As can be seen, taken together, the four requests for Phase I allocations exceed the USD 150 million envelope of resources available for programming, and therefore, all the projects/ programs included here cannot be piloted immediately with the available resources. The Trust Fund Committee is requested to consider and endorse all four program proposals and assign priority to the order in which the programs can be developed based on availability of funding. The Trust Fund Committee is also requested to provide any comments on the proposed first projects and sub-programs that could be piloted.

25. 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.

Utility-Scale Renewable Energy:

26. The objective of this proposal is to catalyze a global funding effort to scale up renewable energy. The program will focus on utility-scale renewable energy which can offer a reliable alternative to traditional fossil fuel base load generation by: (i) mitigating risks that are difficult for the private sector to mitigate; (ii) concentrating efforts on renewable energy technologies that are mature and offer cost reduction potential (through economies of scale, technical improvements, learning effects, etc.); (iii) focusing on technologies that encompass strong country ownership, being part of country strategies to expand reliable energy supply and access.

27. Geothermal energy is a unique renewable resource with potential to contribute a significant share of affordable and reliable electricity supply in several low and middle-income countries. However, global installed capacity of geothermal electricity generation has reached only 11 GW, a fraction of its technical potential, even if in most countries where it is available it can be a relatively low cost source of electricity – around US¢8 per kWh. This is due to the fact that overcoming the resource risk is a large financial hurdle for geothermal projects.

28. To validate the approach of this program, the program proposes to focus initially on geothermal energy and more specifically on addressing the geothermal resource risk through well drillings. Depending on satisfactory deployment of this program, the program would be expanded to other technologies that satisfy the criteria above (potentially: concentrated solar power, biomass energy) in subsequent phases.

Risk Capital to Address Regulatory Risks for Renewable Energy:

29. Renewable energy projects are often less attractive than conventional power alternatives. To help level the field and enhance the economics of different renewable energy projects, governments of many countries have enacted various regulatory or policy measures. Yet, while these measures positively affect attractiveness of the investments, they also provide grounds for investors' concerns over the possibility of reversal or revision of such incentives. The perception of regulatory instability or policy reversals restrains investments and undermines the effectiveness of regulatory initiatives. Recent experience in Spain, Bulgaria, and elsewhere has heightened the private sector's regulatory risk perception globally.

30. This program proposes an approach to mitigating regulatory risk for renewable energy projects that does not impose additional financial burden on recipient country governments and that uses a targeted approach to address the risk posed by uncertainties arising from a regulatory regime. The program would seek to use CTF funds as part of the project financing package in a way that would mitigate or cushion the downside triggered by unexpected negative surprises on the regulatory front. Concessionality would only be activated if the regulatory commitments or agreements between the project sponsor and public sector body/entity governing the project were not met.

Renewable Energy Mini-Grids and Distributed Power Generation:

31. One of the principal challenges to economic growth in developing countries, especially in Africa, Asia and the Pacific, is the lack of access to reliable sources of energy. Approximately 1.2 billion people (17% of the global population) lack access to electricity and 2.8 billion rely on traditional biomass for cooking. It is now widely acknowledged that universal access to energy simply cannot be achieved without decentralized energy solutions.

32. This proposal aims to leverage private investment to fill financing gaps and to promote the wide-spread development of renewable energy mini-grids to serve rural communities and under-served off-grid communities with reliable, affordable and clean electricity and to demonstrate business models that can be replicated and scaled up for wide-spread implementation. This has the potential to spur economic development, spawn employment-generating activities (including both direct and indirect jobs), and improve the social and economic well-being of rural communities including that of women and children who stand to directly benefit from the provision of renewable energy services. While the size of such renewable energy projects is inherently small, the scale up and replication potential is enormous (arguably almost infinite) considering the size of the underserved market segment in the pilot countries.

Climate Finance Equity Investments:

33. Developing countries face a dual challenge of climate change and limited access to energy and other resources. At the same time the annual climate investment gap of around USD 1 trillion necessitates innovative engagement of the private sector if the above challenges are to be met. The Climate Finance Equity Investment program will aim to address this gap and will (i)

target climate change mitigation technologies with significant potential in terms of greenhouse gas 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 will greatly 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.

34. CTF resources will be invested through separate investment and private equity vehicles and will play a catalytic role in leveraging other resources. While the goals of the participating MDBs are broadly the same, each will differ somewhat in how it deploys the resources, due to regional differences and needs.

Proposals at a Glance				
	<i>Utility-Scale RE</i>	<i>Regulatory Risk for RE</i>	<i>RE Mini-grids</i>	<i>Climate Finance Equity</i>
Objective	To mitigate drilling risk for geothermal project development	To mitigate regulatory risk for RE projects	To expand energy access via RE mini-grid development	To catalyze private investment in mitigation via private equity
MDBs interested	ALL	ALL	ADB, AfDB, IDB, IBRD	ADB, AfDB and IDB
Phase 1 countries	Chile, Mexico, Turkey	Jordan, Kazakhstan, Nigeria, Philippines, Ukraine	India, Philippines, Indonesia	Any CTF country that is a member country of AfDB or ADB, with limitations for India and China; potentially CTF countries in Latin America and Caribbean
Other potential countries	Armenia, Columbia, Dominica, El Salvador, Djibouti, Ethiopia, Guatemala, Grenada, Honduras, Indonesia, Kenya, Nicaragua, Philippines, St. Kitts & Nevis, St. Lucia, Tanzania, Vanuatu	Other CTF pilot countries: Egypt, India, Indonesia, Morocco, South Africa, Thailand, Turkey, Vietnam Non CTF Pilot countries: Argentina, Ecuador, Jamaica, and others	SE4All countries including Bangladesh, Colombia, Ethiopia, Ghana, Honduras, Kenya, Nigeria	Tbd based on other MDB interest
Indicative range of funding	Phase 1: \$50-75 million; Phase 2: \$130 million	Phase 1: \$75 million Phase 2: \$150 million	Phase 1: \$35 million (o/w \$5 million grant) Phase 2: tbd	Phase 1: \$115 million for ADB and AfDB; \$50 million by IDB Phase 2: tbd
Market failure/barrier being addressed	High resource risk impedes investment	Policy and regulatory risk, real or perceived, impedes investment	Lack of financing for distributed RE projects	Lack of private equity financing for sustainable energy

Proposals at a Glance

	<i>Utility-Scale RE</i>	<i>Regulatory Risk for RE</i>	<i>RE Mini-grids</i>	<i>Climate Finance Equity</i>
Potential market demand	CTF pilot countries: 9 potentially financeable fields over 12-18 months (Phase 1); additional 19 fields in 18-24 months (Phase 2). SREP countries: 12 fields. Others: 10 fields. Total additional capacity = 4GW (current installed capacity = 11GW)	CTF pilot countries that have programs offering RE regulatory support (Phase I may include, among others, Jordan, Kazakhstan, Nigeria, Ukraine).	India: 81 million households; Philippines: 12.9 million people; Indonesia: 25% of the population.	300 RE projects in Africa; 100 investment funds in Asia
Demand likely to be addressed by proposal	2-5 fields	3-5 investments	tbd	AfDB: two PE funds; ADB: CP3 first close
Financial instruments	Contingent loans, equity or quasi-equity; subordinate loans; exploration risk insurance. Support would be provided directly to the project or through commercial banks or public programs.	Senior and subordinated debt, equity, quasi-equity and other mezzanine financing; all provided on a contingent basis. Support to be provided directly to RE projects.	Loans, guarantees and quasi-equity products. Both direct investments and investments in regional or country-specific impact investment funds may be pursued.	Investment in PE funds via equity and debt; or in a customized structure alongside a fund; or direct investment

Proposals at a Glance				
	<i>Utility-Scale RE</i>	<i>Regulatory Risk for RE</i>	<i>RE Mini-grids</i>	<i>Climate Finance Equity</i>
Key stakeholders	Government, private sector, MDBs, bilateral institutions of the UK, France, Australia, Netherlands, Germany	Government, regulatory agencies, private sector project developers, MDBs, other financiers	Energy sector, public and private sectors	PE funds, UK Government
Expected leverage	1:4 or higher	1:20	tbd	1: 28 (AfDB) 1: 73 (ADB)
Other core indicators	Avoided CO ₂ , new RE capacity, GWh generated or saved	Avoided CO ₂ , MWh generated or saved	Number of households supplied; Avoided CO ₂	Avoided CO ₂ , MWh generated or saved; finance mobilized; jobs created; taxes raised
Co-benefits	Capturing and disseminating knowledge; creating momentum to scale-up geothermal investment; expanding opportunities for co-financing; broaden donor reach	Increased perception of policy stability; additional capital attracted to domestic investment; accelerated rate of technology adoption; knowledge and experience in risk mitigation	Improvement in indoor air quality; reduction of black carbon; job creation, training and workforce development; gender and social inclusiveness	Job creation; additional capital attracted to domestic investment; taxes generated; technology and skills transfer

IX. PROPOSAL NAME: UTILITY-SCALE RENEWABLE ENERGY

MDBs interested in participating: ALL

Relevant CTF pilot countries in Phase I: Chile, Mexico, Turkey

Other potential countries (Pilot and Non-Pilot): Armenia, Colombia, Dominica, El Salvador, Djibouti, Ethiopia, Guatemala, Grenada, Honduras, Indonesia, Kenya, Nicaragua, Philippines, St Kitts and Nevis, St Lucia, Tanzania, Vanuatu.

A. Program overview

The objective of this proposal is to catalyze a global funding effort to scale up renewable energy. The program will focus on utility-scale renewable energy which can offer a reliable alternative to traditional fossil fuel base load generation by: (i) mitigating risks that are difficult for the private sector to mitigate; (ii) concentrating efforts on renewable energy technologies that are mature and offer cost reduction potential (through economies of scale, technical improvements, learning effects, etc.); (iii) focusing on technologies that encompass strong country ownership, being part of country strategies to expand reliable energy supply and access. To validate this approach, the program proposes to focus initially on geothermal energy and more specifically on addressing the geothermal resource risk through well drillings. Depending on satisfactory deployment of this program, the program would be expanded to other technologies that satisfy the criteria above (potentially: concentrated solar power, biomass energy) in subsequent phases.

Geothermal energy is a unique renewable resource with potential to contribute a significant share of affordable and reliable electricity supply in several low and middle-income countries. However, global installed capacity of geothermal electricity generation has reached only 11 GW, a fraction of its technical potential, even if in most countries where it is available it can be a relatively low cost source of electricity – around US\$8 per kWh. This is due to the fact that overcoming the resource risk is a large financial hurdle for geothermal projects.

This proposal aims to be transformational by generating sufficient momentum towards geothermal development that catalyzes investment in the overall value chain (prospective ground studies, test and production drilling, power generation, institutional development, and geothermal development knowledge expansion) and reduces resource risk in select areas and as much as possible, globally. To reach that momentum, this proposal aims to first concentrate a significant amount of available concessional financing towards exploratory drillings in a select number of underdeveloped areas.

Due to the modest size of the geothermal industry compared to other renewable energy sources, only a limited number of test drilling projects will be ready to be financed at any given point in time. As a result, only a global scale-up approach can significantly increase knowledge to reduce risks of drilling failures and ensure systematic identification of investments with large environmental benefits.

A range of potential financing instruments is proposed. The instrument of choice for each country will depend on the specific nature and modalities for private sector participation in the sector and the opportunities for private sector involvement in the specific investment-ready fields. In some countries, private sector engagement in geothermal development may only take place after test drillings are completed through a public investment and their results used to tender concessions.

This proposal builds up on the efforts conducted through ESMAP Global Geothermal Development Plan to validate surface exploration and support the identification and design of individual projects, in active collaboration with multiple other multilateral and bilateral partners. ESMAP has set aside USD 5 million that have started being deployed globally to offer technical assistance to the identification of test drilling investments and to facilitate capture and dissemination of lessons learnt on best practices. The proposal also complements ongoing efforts by several bi-lateral agencies.

B. Business Case

Market and barriers to growth

To date, global installed capacity of geothermal electricity generation has reached only 11 GW, a fraction of its technical potential. In middle- and low-income countries, insufficient funding has been allocated to validating the availability of commercially viable geothermal resources. Most concessional funding and other support for public and private investments have almost exclusively focused downstream (e.g., 92% of geothermal investments by MDBs over the past three decades have gone towards building steam gathering systems, power plants or geothermal electricity transmission infrastructure). This has resulted in a modest, stop-start expansion of the geothermal energy supply. A country like Kenya, where the geothermal energy resource base is large and promising, has taken years to secure modest geothermal electricity production capacities as development is constrained in large part by the lack of financing for resource validation.

Unlike other renewable energy technologies, such as wind, solar, and hydro, it is not possible to validate the geothermal resource with sufficient confidence for commercial development without performing test drillings at depth to assess specific geologic conditions in the field. After completing surface exploration (i.e. geochemical, geological and geophysical), a conceptual model of the geothermal field is developed, which provides a preliminary estimate of the field's potential as well as an indication of where to focus test drillings. Surface exploration represents a small capital expenditure, generally easier to finance than the next stage: test drilling.

The objective of the drilling program, , is to confirm the existence, exact location, potential of the geothermal reservoir and cost to access it (through additional production drillings). These drillings provide the necessary information to (i) firm up the assessment of well productivity, which is largely determined by the flow rate and temperature of geothermal fluids; (ii) assess the cost of drilling a well in a particular reservoir, which is determined, among other factors, by the depth at which the resource is found; and determine the cost to extract geothermal energy from

the fluid to be found at depth (the composition of the fluid may impose specific cost to reduce mineral content or capture unwanted chemicals)³.

Typical costs for drilling are in the range of \$3 to 5 million per well. Costs for and the test drilling phase are thus in the order of USD 15-25 million per field, representing at least 10% of the capital expenditure in a new geothermal power plant. This amount covers the cost for drilling 2-4 wells and all associated costs to design, review and independently certify a drilling program. Test drilling costs can significantly vary from field to field and that they will also depend on the success rate for the first few wells. The rate of success for test drillings increases with the numbers of wells drilled⁴. The total production drilling cost is usually between 30-50% of the total development cost

The combination of relatively high capital requirements, high uncertainty of this phase, and time taken to complete this resource validation phase, about 3 years, deter commercial investors. International experience shows that the resource confirmation stage generally takes place with some kind of public financial support for test drillings, and/or with the use of shareholders equity, thus constraining the growth of the geothermal sector as such funding options are scarce, and expensive.

The technology to produce electricity from geothermal sources is mature. After being able to confirm the geothermal energy potential of a given geothermal field with the required level of certainty, geothermal has a similar risk profile to many other power generation technologies, with relatively high upfront costs and comparatively low costs of operation and maintenance. Furthermore, the power plant technology is comparable to any other steam driven power plant like coal power plants and is therefore proven and financeable.

How Proposal will address barriers

Lessons learnt from experience: To date, there have been two significant programs to address the resource risk. They were both implemented by the World Bank, with the Global Environment Facility (GEF) as the contributor of concessional capital. First, the GeoFund had a total capitalization of USD 25 million for risk mitigation and technical assistance (TA)⁵ and was closed in 2009 after several years of activity in Eastern Europe⁶. Second, ARGeo (African Rift Geothermal Development Program) whose capital consisted of USD 11 million for risk mitigation – a component which was dropped in 2012 after 10 years of preparation – and USD 6.75 million for TA (executed by UNEP). Six countries – Ethiopia, Eritrea, Djibouti, Kenya,

³ For example, the difference between drilling to a depth of 2.5 km instead of 2 km for full size wells may translate into an additional cost in excess of USD 1 million per well (ESMAP *Geothermal Handbook*)

⁴ IFC, 2013, *Success of Geothermal Wells: A global study*, Washington.

⁵ The first phase of the Geofund included two subprojects: (a) a grant of US\$ 810,000 to the International Geothermal Association for Regional Technical Assistance (TA) activities and (b) a Geological Risk Insurance (GRI) Grant of US\$ 3.72 million to MOL, the Hungarian integrated oil and gas company group. In the second phase, US\$ 1.5 million was allocated for TA in Armenia, and US\$ 10 million was allocated to the IFC for geothermal development projects involving the private sector in Turkey. The remaining US\$ 9.5 million was returned to GEF. The \$10 million for Turkey are currently being managed by IFC for the deployment of an Exploratory Risk Insurance facility in partnership with MunichRe.

Uganda, and Tanzania – were eligible to receive support from the program. These programs failed to trigger a large and sustainable development of geothermal development mainly because they lacked capital to mitigate the individual risk of failure of test drilling projects but also because they lacked the geographic span to allow for risk diversification across a sufficiently large number of projects

Recognizing the needs in some specific areas for more funding to address the resource risk, several bilateral donors have created facilities to provide insurance to guarantee the risk of drilling failures. One example is KfW's Geothermal Risk Mitigation Facility (GRMF) for Eastern Africa⁷, which has about USD 71 million available to provide grants for surface studies aimed at well siting, for the drilling of exploratory wells and, on a contingent basis, for subsequent exploration or appraisal wells. The GRMF is currently evaluating applications for its first round of proposals and received a number of application exceeding expectations. Through close collaboration with KfW, this sub-program will explore how to further leverage the GRMF resources further. More specifically, the DPSP sub-program could support test drillings in sites where the GRMF has financed surface studies, as well as in sites where GRMF's support is not sufficient to leverage enough capital to fully finance the test drilling operation.

Several key lessons from international experience, including the GEF and the current support to geothermal development from the CIFs, point to the need for a larger critical mass of well-targeted concessional funding:

- Per unit of concessional funding, an increased focus on resource assessments (i.e. support to drillings expenditures) leverages larger investments in geothermal energy than downstream one-off investments in power plants;
- In low and middle income countries, risk insurance instruments are unavailable in some cases or insufficient and direct financing of resource assessments is indispensable to large scale development given the constraints on capital availability;
- Unless highly concessional loans are made available and significantly alter the risk/reward ratio of the exploration, lending needs to be combined with other risk sharing instruments (e.g. guarantee schemes, insurance).
- Given the large unit cost of individual resource assessments per field, allocating the costs (and the results) across a larger number of donors is a more effective way to expand the pipeline of downstream investments;
- To reduce the risk of drilling failures, maximizing learning effects through knowledge dissemination within and across countries is indispensable and can only be achieved if the global volume of drillings increases sufficiently to induce a sustained growth of the geothermal industry globally.

Most of the international geothermal development experience shows that the upstream phases of development inevitably rely strongly on public sector investment, with private developers entering the project at more mature phases (i.e. when resource risk has been significantly

⁷ Eligible countries for the first round included Ethiopia, Kenya, Rwanda, Tanzania and Uganda. For the second round, the list has been extended to Burundi, Comoros, Djibouti, Democratic Republic of Congo, Eritrea and Zambia.

reduced). Private sector participation takes different forms, depending on the role of private investors in electricity production and distribution and on the available financing structures and their corresponding risk allocations. However, private sector-led development models still tend to rely on government entities to support early exploratory activities (e.g. Nicaragua, Chile), with some countries tendering out fields where some type of test drillings (and even resource confirmation) have already been carried out (e.g. Turkey, Indonesia). In both cases, existing PPP structures allow for an active private sector role.⁸

To mobilize additional capital, there is increasing interest by governments of countries where geothermal resources are present in deploying instruments that facilitate private sector engagement in the upstream phases of project development. In parallel to a large number of concessions having been offered to private developers in multiple countries, such instruments include direct support to investments as well as guarantee and insurance schemes. Direct support and guarantees schemes have proven successful in attracting private investors to the test drilling phase in countries where significant geothermal electricity capacity has been developed (e.g.: US, Japan, Iceland). The large-scale deployment of such instruments in developing countries will require support from donors and IFIs.

Longer-term vision. The reality of geothermal development is that some amount of public support, both to the public and private sectors, will remain indispensable for many years. However, the need for direct concessional funding support should decrease and not require continuous replenishment. The need for concessional funding will decrease in the long run proportionately to reductions achieved in drilling costs that will be obtained from scaling up drilling activity. Those reductions will arise both from technological improvements and from an accelerated reduction in the rate of failures through learning, as observed when drilling activity grows.⁹

Market size potential

Current installed geothermal power production capacity is around 11GW. The proposal has an indicative potential to unleash 4GW of additional geothermal electricity capacity (see Annex).

An indicative inventory of fields for CTF support has been put together based on an inventory of investment-ready sites recently completed by Iceland GeoSurvey (ISOR) for the World Bank Group's led Global Geothermal Development Plan and on communications with different donors. The table below describes the different fields, organized in groupings to facilitate proposal review.

⁸ See PPIAF, 2010, *An Assessment of Geothermal Resource Risks in Indonesia*, Geothermex for the World Bank, Washington.

⁹ IFC, 2013, *Success of Geothermal Wells: A global study*, Washington.

Table 1: Indicative project and country pipeline

	Description	Total number of fields	Countries
Group 1	Fields in CTF pilot countries potentially financeable in 12-18 months	9	Chile, Mexico, Turkey
Group 2	Fields in CTF pilot countries potentially financeable in 18-24 months	19	Colombia, Mexico, Indonesia, Philippines
Group 3	Potentially financeable fields in SREP countries	12	Kenya, Ethiopia, Tanzania, Vanuatu, Armenia
Group 4	Potentially financeable fields in non-CIF countries	10	El Salvador, Guatemala, Dominica, Nicaragua, St Kitts and Nevis, St Lucia

Source: WBG

NOTE: This list of countries is only indicative, others may be identified or become ready in the medium term. Examples are Peru, where JICA has recently completed a nationwide geothermal power development plan, which includes a preliminary appraisal of geothermal resource potential in promising fields; Grenada, where early surface exploration has indicated the possibility of hot geothermal fluids; and Honduras, where a private developer has recently signed a PPA with ENEE, the public utility.

The Annex contains the complete list of indicative fields by group, presenting their stage of development; estimated potential, when available; and estimated drilling costs. The development stage indicates whether a field (1) needs additional surface exploration, (2) has sound surface exploration but limited or no exploratory drilling, and (3) has had its resources confirmed by exploration/test drilling but further exploration/appraisal drilling is necessary. Fields in stages (2) and (3) would be the primary focus for test drilling support during the first phases of the DPSP, while fields currently in stage (1) could move to stage (2) in the medium term if surface exploration is completed.

Countries have been grouped based on CTF's requirements for fast disbursement and for an initial focus on CTF-pilot countries. However, these groups are not meant to indicate sequential development. The actual sequence in which investments happen and fields are developed will depend on availability of funds; decision by the CTF Sub-Committee to expand the DPSP sub-program to non-CTF and, potentially, non-CIF countries; and readiness of fields to move into the test drilling phase.

C. Proposal Terms and Implementation Strategy

Financial instruments to be used

The risks involved in geothermal development are multiple and high (resource, regulatory, operational). A number of those risks can be mitigated through quality preparation and supervision of projects. However, there exists a high residual level of risk that cannot be entirely mitigated, and will inevitably result in losses. The only viable approach to enable a transformational geothermal scale-up is to focus a critical mass of support to address the main financial hurdle of a large number of projects.

The project funding mechanisms to be supported under this sub-program are foreseen to be flexible, and would be further developed during specific project preparation. However, the general principles that would be followed include minimum concessionality for use of donor funding, interventions to risk/return ratios through upfront grants/concessional grants or other financing modalities, including risk sharing mechanisms, related to geothermal resource development to increase private sector investment flows, with a key emphasis on investment readiness (including enabling environment conditions and sponsor activity) for projects in the pipeline.

Project or country specific instruments targeted at the private sector could include:

- Direct financial support to private sector concession holders. These would include (i) contingent loans (i.e. loans convertible to grants in case of drilling failure); (ii) equity or quasi-equity with the upside of potential gains; (iii) risk mitigation schemes such as cost-shared drilling schemes which include the option of the conversion to an equity stake in the project under a pre-agreed pricing formula that reflects the risk assumed by the development funding institution/government entity. Overall tenor/exit of 10 years appears reasonable (i.e. 7-8 years after production starts).
- First loss guarantees to commercial banks or to public sector facilities established to provide risk mitigation to private developers. CTF funds would be used to mobilize existing financial sector liquidity while providing a “risk cushion” to financial institutions or to a public facility. The guarantee would be contingent finance that is callable cash, and as such, count as Tier 1 capital, and would not require a government counter-guarantee. Commercial banks or public facilities would share risks to a pre-defined maximum, to create an incentive for thorough due-diligence of projects by the financiers and reduce the risk of moral hazard.
- Exploration Risk Insurance. To reduce financial exposure to resource productivity risk, CTF funds could be used to buy-down the cost of the premiums charged to insure the thermal output of the reservoir. Success criteria as well as conditions for payout would be pre-defined for this particular instrument.
- PPP for test drilling: In the exceptional cases where private sector would not participate in development even with risk mitigation instruments, the funds may be used for test drilling by public sector to confirm the resources as long as there is a clear plan in place to transfer further development to private investors

Key stakeholders and implementation strategy

All MDBs as well as several bi-laterals¹⁰ have expressed interest in the proposed sub-program, while initial dialogue with potential recipient countries concerned shows strong interest. The involvement of CTF operational focal points, and governance and decision making will follow the general procedures outlined in the main text.

To avoid harming ongoing national or regional initiatives (cherry picking projects) the DPSP will work with them on a complementary basis, meaning that the national program or the MDB involved shall operate as the implementing agent and DPSP resources will top up existing programs and be deployed under the same guidelines and conditions as the local program.

D. Results Framework

Core indicators. In addition to project success indicators that track validation of the resource base, the leverage achieved by the donor funds, and the ability of the project to achieve financial closure, core indicators relevant to CTF include: volumes of GHG avoided and MWh generated. These have been estimated below based on current estimated generation potential for the fields in the indicative list (see Annex for details). Table 2 below summarizes the estimated targets by group of projects:

Table 2: Core indicators*

Core indicators	Group 1	Group 2	Group 3	Group 4	TOTAL
Avoided CO ₂ (million tCO ₂) per year	1.8	4.4	3.6	2.6	12.5
- lifetime (30 year cumulative)	54	132	109	78	374
New RE capacity (MW installed)	525	940	2,298	692	4,455
Additional generation power (GWh/year)	4,139	7,410	18,177	5,455	35,123
Leverage from CTF Funds	1:4-1:6				

*Estimated targets include fields in all the three development stages (1-3 - i.e. test drillings have not been completed). Fields for which no information was available on estimated generation capacity have been assigned a 50 MW potential for the purpose of estimating the core indicators.

Co-benefits. Co-benefits include: (i) capturing and disseminating knowledge across a wide range of countries, enabling a global community of practice to emerge, providing comfort and expertise to investors by developing a track-record of successful projects; (ii) creating momentum to scale-up investments in geothermal and expand the geothermal industry through drilling, securing a larger market for geothermal equipment sales; (iii) helping donors to

¹⁰ Government of the United Kingdom, France, Australia, Netherlands, Germany, among others

articulate their development objectives, expanding opportunities for co-financing and parallel financing for individual resource assessment projects; and (iv) helping to broaden the reach of donors, complementing country level or regional efforts (such as KfW’s GRMF for East Africa).

E. Consistency with CTF investment criteria

CTF Investment Criteria	Sub-Program Compliance
Potential GHG Emissions Savings	Avoided emissions for the indicative pipeline are shown in Table 2. It is important to note that this sub-program will only be an enabler for future emission reductions as no such reductions will directly result from drilling activities.
Cost-effectiveness	Based on CO ₂ emissions reductions estimates assumed levels of financing under Phase I of the sub-program, the cost of reducing a ton of CO ₂ would be USD 1.38.
Demonstration Potential at Scale	<p><u>Knowledge dissemination:</u> capture and dissemination of knowledge on successful models and instruments for private sector involvement in upstream geothermal development; cross-fertilization of experiences across CIF programs; potential for further scaling-up, since numerous SREP eligible countries are making efforts to scale-up on geothermal energy .</p> <p><u>Reduction of costs through expansion of the geothermal industry:</u> increased geothermal drilling has the potential to reduce drilling costs if it stimulates construction of new rigs that will be available for rental; cost reductions due to learning effects that will accompany expansion of drilling activity.</p> <p><u>Improvement of industry practices:</u> enhanced standards through use of the MDB’s procurement, environmental and social standards and the stimulation of good drilling practices will improve the industry’s reputation, helping to generate public support for the technology as a reliable and clean energy source;</p>
Development Impact	<p><u>Increased supply and reduced costs.</u> increased generation of electricity to address growing demand, with potential to reduce levelized costs geothermal will be below the alternative fossil-fuel baseload technologies; reducing investors’ risk perception will lower risk premiums for debt and capital, thus helping to further reduce the required levelized tariff for geothermal.</p> <p><u>Local benefits.</u> Reduction in emissions of local pollutants where geothermal plants displace fossil-fueled generation, especially coal; potential generation of jobs during construction and plant operation</p>

CTF Investment Criteria	Sub-Program Compliance
Implementation Potential	<p>Implementation potential will vary by country depending on the public policies and institutions in place for support of geothermal development, as well as on the presence of interested and experience private sector developers and sponsors. Countries that already have supportive policies for attracting private investors are likely to develop projects faster. However, it is expected that the projects supported under the sub-program include some component of technical assistance for capacity building and advisory services, which would also help address specific regulatory and institutional barriers.</p>
Risks	<p><u>Program risks:</u></p> <ul style="list-style-type: none"> • Co-financing for projects does not materialize • Projects take longer to prepare and implement, slowing the expected disbursement rate. • The country environment is not conducive to development of drilling projects due to specific regulatory and sector organization barriers • Test drilling projects conclude to insufficient productivity of wells to ensure availability of commercial geothermal resource. The proposal seeks to diversify the risk across a large number of diverse fields and areas. • Successful test drilling projects do not advance to the production stage due to high levels of regulatory risk that limit the appetite for private sector engagement. <p><u>Project risks.</u> Specific implementation, financial, social or environmental risks will be identified for each particular country and project at the time of preparation.</p>

F. Funding

Funding needed to launch the program (Phase I) will require about USD 50-75 million, which will include technical assistance funds for capacity building and advisory services. This funding would focus on Group 1 projects. Depending upon the availability of additional funds, the program could be scaled up to other countries belonging to the three other groups based on the application of the CTF core indicators and readiness criteria. The program could deploy an estimated additional USD 130 million in the Group 2 countries and an estimated additional total of USD 155 million in countries on Groups 3 and 4. These figures show that there is strong demand for resources that Phase I will not be able to satisfy given the funding constraint.

ANNEX

INDICATIVE PROJECT PIPELINE

[NOTE: others fields or countries may be identified or become ready in the short to medium term]

CTF country	Site	Stage of development*			Estimated potential (MW)	Estimated drilling cost (US\$million) †	Estimated emission reductions (tons CO2/year)
		1	2	3			
GROUP 1 - Indicative list of potentially financeable fields in 12-18 months (CTF pilot countries)							
Chile	Puchuldiza			x	75	30	242,433
Chile	Tinguiririca		x		50	30	161,622
Chile	Laguna del Maule			x	50	30	161,622
Chile	Toihuaca			x	50	30	161,622
Mexico	Nuevo Leon Ejido		x			11	179,361
Turkey	Aydin-Umurlu		x		100	11	362,664
Turkey	Denizli-Tekke Hamam		x			11	181,332
Turkey	Manisa-Alasehir			x		11	181,332
Turkey	Manisa-Salihli		x			11	181,332
GROUP 2 - Indicative list of potentially financeable fields in 18-24 months (CTF pilot countries)							
Colombia	Tufino-Chiles-Cerro Negro	x				18	69,379
Colombia	Volcan Macizo Ruiz		x		80	18	111,007
Mexico	El Ceboruco-San Pedro	x				11	179,361
Indonesia	Jailolo	x			40	18	223,590
Indonesia	Wai Sano	x			50	18	279,488
Indonesia	Tulehu		x		40	18	223,590
Indonesia	Atadei	x			40	18	223,590
Indonesia	Matalako Flores Island			x	40	18	223,590
Indonesia	Sokoria Flores Island		x		20	18	111,795
Indonesia	Atadai Lambata Island		x		20	18	111,795
Philippines	Mt. Cagua-Baua, Cagayan			x		18	279,488
Philippines	Batong-Buhay, Kalinga		x		150	18	568,831
Philippines	Daklan, Benguet			x	60	18	227,532
Philippines	Mt Natib, Battan			x		18	189,610
Philippines	Mabini, Batangas		x			18	189,610
Philippines	Montelago, Mindoro Oriental		x			18	189,610
Philippines	Mt. Labo, Camarines Norte			x		18	189,610
Philippines	Biliran, Biliran Province			x	125	18	474,026
Philippines	So. Leyte			x	85	18	322,337
GROUP 3 - Indicative list of potentially financeable fields in SREP countries							
Kenya	Longonot (3)		x		600	18	1,296,130
Kenya	Silali (3)		x		1000	18	2,160,216
Ethiopia (1)	Aluto-Langano			x	75		
Ethiopia	Corbetti (3)		x		500	18	27,594
Ethiopia	Tendaho (3)	x				18	2,759
Ethiopia	Gedemsa	x				18	2,759
Ethiopia	Dofan (4)	x				18	2,759
Tanzania	Mbaka		x		10	18	25,938
Tanzania	Ngozi	x			25	18	64,846
Tanzania	Rufigi	x			5	18	12,969
Armenia (2)	Karkar		x		30		
Vanuatu	Efate		x		8	30	49,133

CTF country	Site	Stage of development*			Estimated potential (MW)	Estimated drilling cost (US\$million) †	Estimated emission reductions (tons CO2/year)
		1	2	3			
GROUP 4 - Indicative of potentially financeable fields of non-CIF countries							
El Salvador	Chinameca			x		11	87,907
Guatemala	San Marcos	x			37	11	83,428
Guatemala	Tecuamburro	x			50	11	112,741
Guatemala	Zunil II			x	45	11	101,467
Guatemala	Cerro Blanco			x	50	11	112,741
Dominica	Wotten Waven			x	120	11	736,996
St Kitts & Nevis	Charlestown			x	35	11	214,957
Nicaragua	Volcan Telica - El Najo		x		60	18	217,598
Nicaragua	Volcan Casita - San Cristobal		x		225	18	815,994
St Lucia	La Soufriere-Qualibou Caldera	x			20	18	122,990

Source: *Inventory of Investment-Ready Geothermal Sites*, June 2013, prepared by the Iceland GeoSurvey (ISOR) for the World Bank Group Global Geothermal Development Plan; and communications with donors.

- (1) World Bank and others have already committed financing for production drilling at Aluto-Langano, so this field would not, in principle, require additional financial resources (project currently under preparation)
- (2) Test drilling for the Karkar site in Armenia is being considered for support under the SREP IP currently being prepared, so this field has not been included in our calculations for financing resources and emission reductions.
- (3) Application under review for KfW-AUC GRMF grant support for drilling. Suswa (Kenya) and Kinigi (Rwanda) are also in the list of initial sites for which support has been requested from the GRMF - decision expected by Aug 2013 For the Tendaho site in Ethiopia, AFD is expected to contribute co-financing of 15-20 million Euros.
- (4) Application under review for KfW-AUC GRMF grant support for surface studies - decision expected by Aug 2013
- (5) Communication with project sponsor indicated that funding for production drillings and plant construction is already partially secured, so this field has not been included in our calculations.

X. PROPOSAL NAME: RISK CAPITAL TO ADDRESS REGULATORY RISKS FOR RENEWABLE ENERGY

35. MDBs interested in participating: ALL

36. Relevant CTF pilot countries in Phase I: All CTF Pilot Countries are eligible. In particular, the focus countries will be Jordan, Kazakhstan, Nigeria, and Ukraine.

37. Other potential countries (Pilot and Non-Pilot) in Phases II and III: All CTF Pilot Countries for Phase II and all eligible non-Annex I countries for Phase III.

A. Program overview

38. Renewable energy projects are often less attractive than conventional power alternatives. To help level the field and enhance the economics of different renewable energy projects, governments of many countries have enacted various regulatory or policy measures. Yet, while these measures positively affect attractiveness of the investments, they also provide grounds for investors' concerns over the possibility of reversing or revising such incentives. The perception of regulatory instability or policy reversals restrains investments and undermines the effectiveness of regulatory initiatives.

39. Research and empirical evidence indicate that one of the most important criteria affecting attractiveness of a certain jurisdiction for renewable energy investments is the stability of the policy environment. Moreover, when assessing attractiveness of investments, renewable energy developers rate regulatory governance aspects as equally important as specific regulatory policies, and more important than operational factors.¹¹ Recent experience in Spain, Bulgaria, and elsewhere has heightened the private sector's regulatory risk perception globally. The risk perception was especially affected in countries where various policy and regulatory measures and incentives had already been perceived as unsustainable in the long-term. This increased risk perception, in addition to existing perceived political risks for a country, has had a dampening effect on the appetite of the private sector to develop renewable energy projects.

40. This program proposes an alternative approach to mitigating regulatory risk for renewable energy projects that does not impose additional financial burden on recipient country governments, and uses a targeted approach to address the risk posed by uncertainties arising from a regulatory regime. The program would seek to use CTF funds as part of the project financing package in a way that would mitigate or cushion the downside triggered by unexpected negative surprises on the regulatory front. The key element here is that the concessionality would only be activated if the regulatory commitments or agreements between the project sponsor and public sector body/entity governing the project were not met. However, each MDB will differ in how to structure and deploy the CTF resources, due to regional differences and needs, while the objectives of this program are still fulfilled.

¹¹ Holburn, G.L.F., Regulatory Governance and Policy Risk: Attracting Private Investment in (Renewable) Energy, Ivey School of Business, 2010. http://www.thinkingpower.ca/PDFs/Governance/1_1_Holburn.pdf

41. This program would undertake a project-based approach and MDBs would need to ensure appropriate alignment of interests between all parties in the project, including the relevant government entity, to minimize moral hazard. The presence of an investor such as one of the MDBs in the transaction would leverage country and sector relationship and provide some necessary comfort to ensure crowding-in senior lenders, including MDBs own financing, and third party risk capital.

42. Initially, the program (Phase I) may pick countries with high perceived likelihood of retroactive reversal of regulatory incentives. These may include the ones that have large and growing exposure to renewable energy not fully supported by corresponding budgetary resources, or the ones with aggressive policies in place but limited track records. As noted earlier, the MBDs in the transaction would need to ensure proper alignment of interest in the structure to limit moral hazard potential.

B. Business Case

Market and barriers to growth

43. Growth in the renewable energy sector has been driven by various forms of support from national governments over the past decade. This support has come in the form of financial measures or market-based instruments that strengthen the economics of projects by enhancing revenue streams (FiTs or other arrangements providing preferential tariffs) or predictably alleviating the burden of expenses. Sometimes, however, these measures, while improving viability and bankability of projects, have also injected some uncertainty over the stability and longevity of the policy measures. This uncertainty often leads to an increase in the risk perception of capital providers, therefore, increasing the cost of capital, and in some cases potentially offsetting the positive effects of the support. Fears of possible regulatory instability are often amplified in the context of scarcity of long-term financing, and lead to decisions to not develop the project.

44. The proposed program recognizes that substantial additional risk is “induced” by the expectation of policy/regulatory instability and aims to reduce its influence. The program is expected to help protect investments against non-commercial risks and to help investors obtain access to funding sources with better financial terms and conditions.

45. The primary target market segment is green-field utility-scale renewable energy projects in countries with enacted regulatory or policy measures for renewable energy technologies. One of the subcategories may include energy generation projects structured with the use of PPAs with long-term preferential structure, FiTs, or other forms of offtake agreements. Another subcategory might be comprised of projects that explore long-term government measures that create cost advantages (such as specific tax holidays or accelerated depreciation allowances). The program would be flexible enough to accommodate some other regulatory measures.

46. A mix of renewable energy technologies would be considered with priority given to the technologies that could be most affected by the potential changes in the regulatory environment. Caps on the amount of CTF funding (expressed as a portion of overall project costs) for different

types of technologies could also be introduced in the structure of the investment to reflect the fact that cost structures of different technologies may vary in different markets.

47. In the current global environment where carbon markets are not playing a substantial or stabilizing role in enhancing the economics of renewable energy projects, payments generated under legally-binding power selling agreement(s) are the largest, and oftentimes the only reliable source of revenue for a project developer. Frequently, these payments rely on the pricing that is directly or indirectly set by the government through the utility agency or grid operator, and are subject to policy and regulatory uncertainties. Furthermore, the risk of potential changes in the policy and regulatory environment is sometimes overestimated—and to some extent ‘contaminated’ by the occurrence of adverse changes in regulatory environment in other countries, thus ‘importing’ or ‘heightening’ perceived risks. These real and perceived risks pose a major barrier to investment.

48. There are additional barriers to investment, particularly in developing countries. Although renewable energy technology development and generation costs are coming down substantially in many countries, several developing economies still face higher costs and barriers to the adoption of renewable energy technologies. As with many new and emerging sectors, renewable energy projects will need to build up a critical mass of track record to be able to fully draw on commercial financing.

49. Risk mitigation instruments are currently available from MDBs to mitigate some regulatory risk in projects in the context of privatizations and traditional project financing. However, the uptake of such instruments by the private sector through public sector arms of the MDBs is hampered by the fact that a 100 percent sovereign counter-guarantee from beneficiary government is required. These types of counter-guarantees tie up scarce budgetary resources of beneficiary governments, thus dampening the interest and ability to use these risk mitigation instruments.

50. Another set of available instruments provide protection against government’s discriminatory actions, where the project sponsor is affected in a manner different from other market participants. These instruments include, for example, political risk insurance for expropriation or breach of contract. However, actions of the government directed at changing the regulatory environment across an entire sub-sector or the inability of an offtaker to meet its payment obligations due to regulatory changes are not sufficiently covered by these instruments.

51. For all the above reasons, a certain level of policy and regulatory support is needed and crucial to spur the development of renewable energy projects. Most importantly, this support needs to be stable and predictable to attract private sector financing of the underlying projects. Using CTF funds to defray some of these real and perceived regulatory risks would result in overall de-risking of the investment, and improving the project sponsor’s access to sources of capital with more favorable terms and conditions while contributing to improving the investment environment and overcoming such initial barriers.

How proposal will address barriers

52. *Lessons from existing experience.* Literature points out to the detrimental effect of policy instability. For example, a study that looked into the effect of Renewable Portfolio Standards (RPS) enactment in different states in the US indicates that investments flows increased significantly less in states with a history of regulatory reversals. In states that had not previously repealed restructuring legislation, the average increase in new renewable energy generation assets after RPS enactment was almost three fold more than in the states that had policy reversal incidents in the past.¹² Moreover, in states with a history of regulatory repeal, the increase in investment after RPS enactment was not statistically significant relative to the states that did not enact RPS at all.

53. The case of Bulgaria and Spain, for example, further demonstrates both a devastating short-term effect of policy reversals or changes, as well as longer-lived effects. In addition, it indicates that the perceived regulatory risks are no longer contained to one country. Policy reversals in one country result in additional risk premium imposed to the projects in another country within or outside the same continent out of fear that the governments of other countries may follow suit.

54. Risk-mitigation structures developed under this program will serve as a buffer against adverse changes in the economics of the project caused by unanticipated regulatory revisions. The proposed risk mitigation structures will be specifically tailored to mitigate retroactive changes affecting viability of the project. This proposal seeks to increase the predictability and reliability of these types of payments for projects by using CTF funds to provide concessionality to the financing package in case of unpredicted/unexpected changes in the regulatory environment, i.e. an ex-post subsidy.

55. For example, an equity or debt investment under this sub-program could be provided on the same terms as the other (commercial) investors in the project (unless the mitigation of other market barrier requires concessionality to also be structured upfront), with a regulatory risk mitigation clause that would kick-in if newly introduced changes in the regulatory environment or some other trigger event alter the project's ability to maintain a preset level of debt service (established under original policy conditions). In the event of such a change, the CTF funds could provide some form of concessionality, by either deferring dividends or interest/principal repayments, or by capping dividends or interest/principal repayments on its investment relative to the other investors in the project, or through some other form of subordination. Except if concessionality is needed upfront by the project to deal with other market barriers, the CTF funds would receive the same market rate of return as senior lenders unless the trigger event occurs, in which case the concessionality would be activated. In such a scenario, the implied concessionality of the CTF funds would protect the senior lenders by lowering their exposure and risk, which in turn will enable the project to go forward. Thus, CTF lowers the risk for senior lenders by reducing their exposure in the project and by protecting debt service coverage in the event of adverse tariff changes. This will help to attract commercial co-finance and increase the scope of participating capital providers.

¹² Fabrizio, K.R., The Effect of Regulatory Uncertainty on Investment: Evidence from Renewable Energy Generation, Journal of Law, Economics, and Organization, 2012

56. *Longer-term vision.* The goal of this program is to establish a track record of the technical and financial viability of private sector renewable energy projects, thereby accelerating development of the renewable energy sector in a country. Future project developers are expected to benefit from these efforts through decreased technology costs and established markets for supply, services, and tailored financial products. Once projects funded by this program begin to consistently demonstrate commercial viability and the perception of risk decreases, the availability and cost of long-term capital is expected to improve to a point where new projects will be financed on a fully commercial basis without the contingent risk protection or with a lower risk protection level.

Market size potential

57. The program would be open to project sponsors involved in the development of any type of green-field renewable energy project in one of the pilot countries. Initial demand is estimated to be strong, as most of the CTF pilot countries are undergoing policy reforms targeted to improve investment profiles of green projects. These reforms, while enhancing project economics, also create an additional sense of uncertainty and perceived risk, which can be mitigated by using instrument(s) included in this program. Short-term pipeline will come from the CTF pilot countries such as Jordan, Kazakhstan, Nigeria, or Ukraine, that currently offer FiTs or other renewable energy regulatory incentives.

58. It is expected that the first phase of the program will be able to contribute to three to five investments in selected pilot countries. The CTF funds request of USD 75 million is expected to leverage the amount of project financing in USD 400 - 1,500 million range, leading to 250MW to 1,500MW of additional installed capacity.

59. A sample application of this program will be through AfDB's partial risk guarantee (PRG) program in Nigeria. AfDB has developed this PRG program with USD 95 million of its own resources to support Nigeria's power sector privatization and seeks to deploy additional CTF resources (of up to USD 50 million) under this program to enhance risk coverage. The CTF portion of the funds will help the PRG protect private investors and/or lenders against the risk of changing terms of the power purchase agreement (PPA) between independent power producers (IPPs) and the Nigeria Bulk Electricity Trading PLC (NBET). The provision of PRG is expected to help IPPs mitigate regulatory risks and to increase electricity generation in Nigeria by catalyzing private sector finance in the power sector. As a result, a total of USD 145 million from AfDB and the CTF may catalyze up to USD 1,140 million of private sector investment, for a leverage effect of 8x. If the PRG is not called over the life of the program, the CTF resources of USD 50 million will be returned to this program.

C. Proposal Terms and Implementation Strategy

Financial instruments to be used

60. This program proposes to use a mix of instruments tailored to specific country, technology, and project circumstances. The instruments may include: senior and subordinated-debt, guarantees, equity, quasi-equity, and other forms of mezzanine financing. For the most

part, this program will make direct investments in renewable energy projects by financing project developers and provide contingency risk mitigation for senior lenders and other investors in such projects. In some other cases, for example as noted earlier with respect to the AfDB application, there will be no direct CTF funded investment in the project, but an unfunded risk mitigation guarantee. As described earlier, the key element of the instrument would be the triggering of concessionality if (and only if) an adverse policy or regulatory event occurs such that the project economics are impaired. The structuring of the specific investment will be tailored to the project, sector and country needs.

Key stakeholders and implementation strategy

61. All MDBs have expressed interest in the proposal. Key stakeholders are the government, regulatory authorities, private sector project developers and other financiers. The involvement of CTF operational focal points, and other governance and decision making will follow the general procedures outlined in the main text.

D. Results Framework

62. *Core indicators.* Core indicators and targets to be used to monitor outcomes and impacts include:

- a) GHGs reduced: GHG reductions will be measured by the relevant MDB using its existing methodologies and expected to be somewhere in the range of 300,000 to 1,000,000 tCO₂e per year.
- b) MWhs generated or saved: Annual electricity generation enabled through the first phase of the program is expected to be about 500 to 1,900 GWh per year.
- c) Leverage from CTF Funds (separating public and private sources): The funds will be used in combination with MDBs' own resources and project sponsor's investments, delivering high and sustainable level of leverage. Overall, the first phase funding of US\$75 million will be able to leverage up to US\$1,500 million of total project financing.

63. *Co-Benefits.* The program will generate various co-benefits including: (i) Increased perception of policy stability; (ii) Additional amounts of private capital, including foreign capital, attracted into domestic investments; (iii) Accelerated rate of technology adoption leading to rapid cost and risk premiums reduction; (iv) Avoidance of supply chain interruptions, assuring greater stability in employment, business development, and progressive cost reduction; (v) Accumulated knowledge and experience in regulatory risk management and mitigation, potentially leading to lowering the cost of risk mitigation options.

E. Consistency with CTF investment criteria

CTF Investment Criteria	Program Compliance
Potential GHG Emissions Savings	The program is estimated to enable investments that would lead to about 300,000 to 1,000,000 tCO ₂ e per year of GHG savings or up to 20 MtCO ₂ e over an asset life of 20 years. In particular, AfDB's Nigeria PRG program is expected to attain 15.9 MtCO ₂ e of GHG savings over 20 years.
Cost-effectiveness	Based on the assumptions of the GHG reductions above and CTF financing of USD 75 million, the estimated cost of GHG reduction in this program will be below USD 12.5 per ton of CO ₂ e. Particularly, in the case of Nigeria, the estimated cost could be as low as USD 3.14 per ton of CO ₂ e.
Demonstration Potential at Scale	the proposed program will allow to demonstrate a potential in (i) Increasing perception of policy stability; (ii) Accelerating private investments; (iii) Faster technology adoption and cost and risk premiums reduction rates; (iv) Scaling up regulatory risk mitigation instruments. In addition, the sub-program will likely have a noticeable effect beyond participating countries, decreasing perceived regulatory risks in the neighbor countries and, potentially, globally.
Development Impact	Beyond the benefits of allowing many renewable energy programs to attract capital at lower costs – and, therefore, increasing the likelihood of deal closure, leading to decreased GHG emissions and local air pollutions, it is also expected that the program will: (i) Help drive down the costs of technologies faster; (ii) Provide more stable employment for the specific sub-sector, as well as for the supply chain, servicing sub-sectors, and other related businesses; (iii) Increase the knowledge sharing and technology adaption rates.
Implementation Potential	The program can be replicated across all the pilot countries and all the renewable energy technologies.
Financial Sustainability	The program is expected to generate a healthy rate of reflows and, therefore, be sustainably maintained and scaled up if needed. Overtime, the impact of the program will be felt in decreasing risk perception in the renewable energy field, enhancing financial viability of various initiatives.
Effective Utilization of Concessional Finance	Concessionality of CTF funds would be activated only in the event of failure of a regulatory commitment to materialize as anticipated when the project was initiated, thereby providing an ex-post subsidy. The program will therefore deliver a substantial development impact, with relatively low level of

CTF Investment Criteria	Program Compliance
	concessionality.
Mitigation of Market Distortions	Regulatory risk mitigation instruments and the sub-program itself will not create any additional market distortions. The instruments themselves will continue to operate on market terms, unless the regulatory environment changes adversely. In latter case, the instruments will be positioned to partially absorb worsening of economics of the project.
Risks	Potential risks include slow uptake of the risk mitigation product due to increased complexity of the deals; moral hazard; inability to bring in sufficient co-financing from other third-party investors

F. Funding

64. Phase I of the program will require USD 75 million to launch. During the first phase, the program is expected to contribute to three to five investments (up to 1,500MW of additional installed capacity) in several countries, leveraging as much as USD 1,500 million of project financing. AfDB is seeking USD 50 million in Phase I for the PRG program in Nigeria.

65. The program will implement a gradual, incremental approach. Once the first phase of the program establishes a reputation and accumulates experience by conducting activities in a few pilot countries, Phase II would bring in additional CTF pilot countries. The second phase can scale up the results achieved in the first phase, by deploying another USD 150 million of CTF capital.

66. Funding required for the scale up of the program will depend on continued appetite from investors, renewable energy technologies cost dynamics, and, most importantly, an ability of the program to reduce the global perception of instability of the regulatory environment. Success of the first two phases of the program might contribute to improving the perception of the regulatory stability globally, leading to smaller need in regulatory risk capital in each individual country. Then, in Phase III, the program could be expanded to non-pilot countries with an estimated funding of USD 200 million.

XI. PROPOSAL NAME: RENEWABLE ENERGY MINI-GRIDS AND DISTRIBUTED POWER GENERATION

MDBs interested in participating: AfDB, ADB, IDB, IBRD

Relevant CTF pilot countries in Phase I: India, Indonesia, Philippines

Other potential countries (Pilot and Non-Pilot) in Phases II and III: Sustainable Energy for All (SE4All) countries (e.g., Bangladesh, Colombia, Ethiopia, Ghana, Honduras, Kenya, Nigeria)

A. Program overview

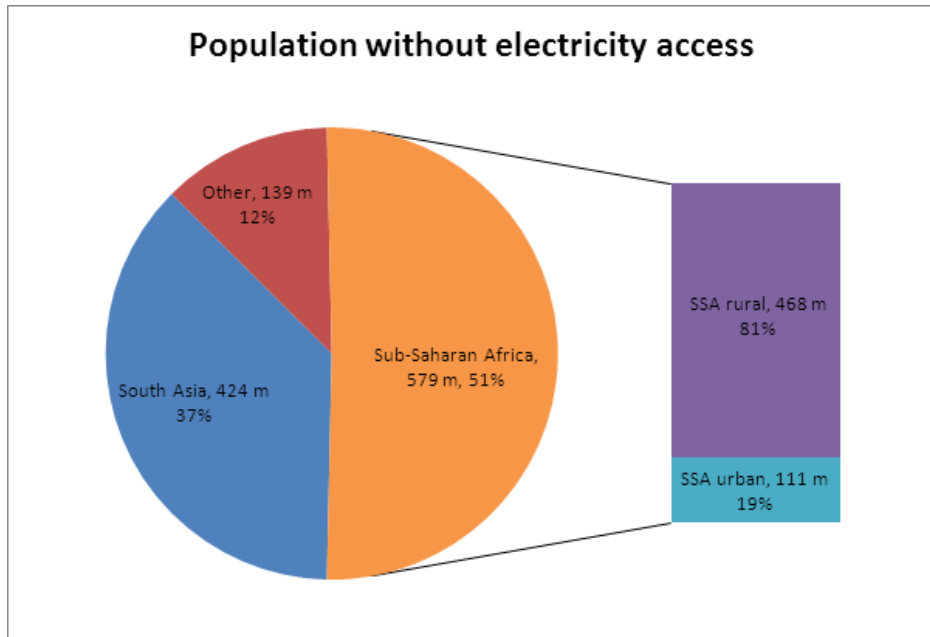
67. One of the principal challenges to economic growth in developing countries, especially in Africa, Asia and the Pacific, is the lack of access to reliable sources of energy. On the other hand it is now widely acknowledged that universal access to energy simply cannot be achieved without decentralized energy solutions. To achieve universal energy access by 2030 it is estimated that 100% of urban but only 30% of rural households will be connected to grid electricity, with the remaining 70% connected to mini-grids and isolated systems¹³. Of the 1,031 million additional people in sub-Saharan Africa requiring electricity by 2030, it is estimated that 607 million people (58.9%) will be best served with a grid connection, and 423 million people (41.1%) will be best served by decentralized energy solutions.

68. Approximately 1.2 billion people (17% of the global population) lack access to electricity and 2.8 billion rely on traditional biomass for cooking¹⁴. Some 50% of those without electricity (579 million people or 77% of the population), and 25% of those still using solid fuels for cooking (690 million people or 81% of the population), live in sub-Saharan Africa. All 20 of the countries with the lowest rates of access to electricity, and 19 of the 20 countries with the highest dependence on solid fuels, are in sub-Saharan Africa. Out of a total population of some 4.1 billion people in Asia and the Pacific, an estimated 1.9 billion people depend on burning traditional biomass for energy and in Asia an estimated 670 million people have no access to electricity¹⁵. Communities continue to depend principally on biomass, kerosene, and candles to meet their lighting, cooking and heating needs; the use of such fuels has adverse impacts on health and safety of millions of low-income households.

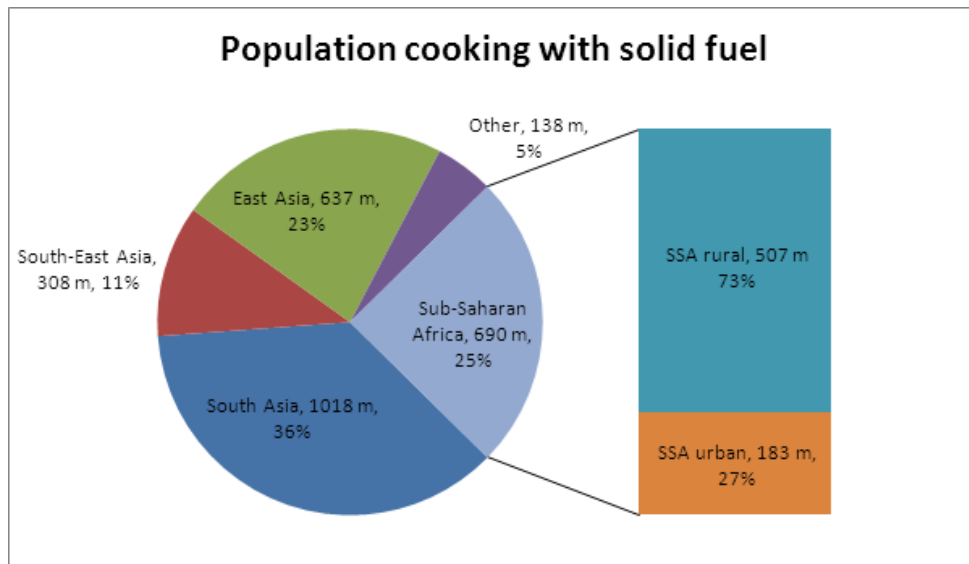
¹³ World Energy Outlook, 2010. International Energy Agency, Paris. *“Decentralized options have an important role to play when grid extension is too expensive, and will probably provide the bulk of the additional connections over the project period to 2030.”*

¹⁴ Unless otherwise stated, figures in this Introduction are drawn from the draft Global Tracking Framework of the World Bank / ESMAP, based on the World Bank Global Electrification Database 2012 and the WHO Energy Database 2012.

¹⁵ World Energy Outlook, IEA, 2011



Source: SE4All Energy Access Global Tracking Framework consultation document



Source: SE4All Energy Access Global Tracking Framework consultation document

69. The demand for energy in Africa and Asia is projected to more than double and almost double, respectively, by 2030, and both regions face enormous challenges in meeting their commitments to expand energy access. Given the inadequacy of public resources, governments need to mobilize the resources of the private sector to meet this challenge. An important lesson learned from years of program implementation in the energy sector is that expanding energy access in rural and off-grid areas requires the deployment of multiple business delivery models to meet the somewhat unique situations of each country. Decentralized and distributed energy expansion models, e.g., “mini-grids” have proved to be viable options for the provision of electricity services in un-served and underserved areas. Mini-grids serving rural and off-grid areas have been successfully developed and provide reliable service in some African and Asian

countries, albeit at a high financial and environmental cost given that many of these systems operate solely with diesel generator sets.

70. Private sector entrepreneurs have piloted new business models to deliver such energy solutions in countries with enabling frameworks and in countries where small-scale rural services are not regulated. Mini-grids powered primarily by renewable energy (RE) resources, e.g., solar PV, micro and pico hydro, biomass-fired power, have also been installed depending on the availability of indigenous resources and the financial viability of the system. Mini-grids have the potential to transform the energy landscape by providing power generation locally, as opposed to large central power generation stations (traditionally powered by fossil fuels) with long transmission and distribution lines to load centers.

71. This proposal aims to leverage private investment to fill financing gaps and to promote the wide-spread development of RE mini-grids to serve rural communities and under-served¹⁶ off-grid communities with reliable, affordable and clean electricity, and to demonstrate business models that can be replicated and scaled up for wide-spread implementation. This has the potential to spur economic development, spawn employment-generating activities (including both direct and indirect jobs), and improve the social and economic well-being of rural communities including that of women and children who stand to directly benefit from the provision of RE services. While the size of such RE projects is inherently small, the scale up and replication potential is enormous (arguably almost infinite) considering the size of the underserved market segment in the pilot countries. The program intends to be transformational in moving these new energy consumers onto a low carbon growth trajectory and in addition, would generate significant developmental co-benefits.

B. Business Case

Market and barriers to growth

72. To meet growing energy demand, governments (and even the MDBs) are too often focused on developing and raising finance for large, grid-connected energy projects (e.g., “ultra mega” power projects in India, “fast track” program of power generation projects in Indonesia), even if such projects frequently take upwards of five years to materialize. While there is no denying that large scale energy projects can result in economies of scale and significant economic and social benefits, such projects are designed to serve the growing demand of electricity deficient urban load centers and do not always benefit off-grid and rural communities where a large percentage of the population continue to live. Moreover, this traditional power delivery model in Africa and Asia and the Pacific has been unable to keep pace with rising energy demand in fast-growing countries such as Ethiopia, Ghana, India, Indonesia, Kenya, Nigeria and the Philippines. Moreover, despite the best efforts by governments and the private sector IPPs, this traditional power delivery model has been unable to keep pace with rising energy demand in fast-growing countries. Large centralized projects for base-load power generation supply require (i) long periods for land acquisition and negotiation with communities and persons affected by the project; (ii) 4-5 years for development, financing, construction and commissioning of the plant,

¹⁶ This includes those areas, which are servicing only a few hours a day by a diesel gen-set. Partial provision of power is minimally acceptable for lighting needs, but does not provide stable power for project beneficiaries to invest in small appliances (e.g., refrigerators, engines, pumps, etc.) to start or expand a small business.

(iii) dedicated supply of raw water for cooling (thereby competing with agricultural and domestic water needs of local communities), and (iv) secured linkages for long-term supply of fuel, either domestic or imported, which exacerbates the environmental and carbon footprint of the projects.

73. Distributed RE generation projects on the other hand tend to be quicker to install, have a smaller footprint and are more inclusive for communities, as they reap the direct benefits of electricity supply from locally available resources. Despite the relatively higher up-front capital costs, such projects can be financially and economically viable considering the displacement of high cost diesel gen-sets consuming imported fuels, the decreasing capital costs of RE systems, and the low levelized cost of RE electricity generation compared to diesel generation¹⁷. Further, the infrastructure of such distributed generation systems can be readily integrated into a national grid when such expansion becomes financially viable and can supplement generation on the grid system. An entrepreneurial private sector is keen to participate, provided it can raise the necessary financing, mitigate risks, and obtain a reasonable rate of return commensurate with the risks of operating a RE mini-grid system.

74. Countries now widely recognize the benefits of distributed generation and are willing to consider a two pronged strategy focusing on (i) utility scale power generation for meeting the growing demand on the grid and (ii) mini-grids to serve off-grid communities. Policy makers are also increasingly cognizant of the fact that this growth of the energy sector has to increasingly be fueled by clean energy sources not just to address concerns of global climate change but to reduce dependence on imported energy resources in volatile energy markets and conserve scarce foreign currency reserves, and their desire to improve energy security. However, while there is broad political and policy support for sustainable and low carbon development pathways, political, fiscal, institutional, market, and social realities continue to pose challenges to the widespread development of distributed generation schemes and RE mini-grids.

75. The development of RE mini-grids faces several barriers and risks:

- a) Technical: low demand and poor capacity utilization factor of the system due to low productive energy use; poor resource assessment and load assessment; intermittent RE generation; lack of trained personnel to manage and operate RE systems in remote areas; lack of technical standards/code for mini grid development.
- b) Policy and Regulatory: the risk of policy changes that can reduce or eliminate subsidies and incentives; lack of clarity on impacts of grid expansion on distributed generation and RE mini-grids; lack of clarity on tariff regulation; net metering policies which inhibit surplus generation to be fed to the main grid (after integration); government focus on large scale public projects.
- c) Institutional: weak institutional structure of agencies involved; the inappropriateness of CTF business models for the private sector; and previously agreed country and sector allocations under CTF which may limit ability to support the private sector.

¹⁷ ESMAP, World Bank, McKinsey Analysis, 2011

- d) Financial: insufficient public funds to meet demand; perceived high risk and relatively low return on investment; risk of non-payment of tariffs; high transaction cost of financing small projects; high up-front capital costs for installing mini-grids; high interest rates and short tenors unsuited to implementing rural mini-grid projects; high cost of equity finance in developing countries; insufficient net worth and limited experience of private sector entrepreneurial firms which makes debt financing difficult; low liquidity and power sector exposure constraints of local commercial banks; inadequate experience of commercial banks to evaluate mini grid projects; difficulty in channeling MDB funds through local financial institutions.

How Proposal will address barriers

76. *Lessons learned.* Based on the MDBs experience, the inherently small size of these transactions is a fundamental barrier for raising finance. Many companies in the target countries have invested in the provision of off-grid electricity services through mini-grid operations. Some of these have been successful in raising early-stage equity capital from the local markets and impact investment funds, but due to financial barriers mentioned above, this has unfortunately not been sufficient to catalyze debt financing for scale up of operations.

77. Another impediment to greater private sector activity in this area is payment risk, whereby customers do not pay for the electricity received. In some cases, securing a large offtaker e.g., a telecom operator, for a majority of the power supply (where the remainder is still sufficient to supply underserved or off-grid local consumers) helps ameliorate the payment risk. ADB's experience in undertaking similar investments in India¹⁸ shows that a "pay as you go" model for supplying affordable solar energy mitigates this risk. Customers make an initial down payment and then pre-pay their energy service in small user-defined increments using a mobile phone. Each payment adds towards their final purchase price. Once fully paid, the system unlocks permanently and continues to produce electricity. The technology can be offered to RE micro-grid developers as an extremely flexible prepaid metering, customer, and revenue management solution. There are similar solutions being implemented in sub-Saharan Africa.

78. The program will (i) target locally available RE resources with significant potential to meet power demand of mini-grids; (ii) mobilize investment from private sector and other sources; (iii) increase the supply of RE in the energy mix, thereby improving energy security; (iv) promote energy efficiency measures as an integral part of the RE mini-grid implementation to lower electricity demand and expand the number of customers connected to the system, and lower customer consumption and spending on electricity; and (v) demonstrate business models for distributed generation and RE mini-grids that can be replicated and scaled-up across the country and region.

79. The program will concentrate on addressing financial and structural barriers to private sector led development of mini-grids and distributed generation. Thus, the focus of the first

¹⁸ In 2013, ADB approved a \$2 million equity investment in Simpa Networks in India. More information can be found at: <http://simpanetworks.com>

phase will be on countries where other market barriers to mini-grids, such as a lack of supportive policies and regulations, institutional and technical barriers, including poor capacity of the private sector are either low or being addressed by other, complementary initiatives. The program will be initially promoted in India, Indonesia and the Philippines, which meet the criteria outlined above.

Market size potential

80. The market potential for development of distributed generation and mini-grids in each of the three selected countries is substantial, as shown below.

81. As of 2011, there were 81 million households in **India** without access to electricity of which around 75 million rural households. The Electricity Act of 2003 supports rural electrification and de-licensing of rural power supply, and the Rural Electrification Policy of 2006 supports grid connected and off-grid electricity solutions. The 2011 census also states that 31.6% of all households and 43.2% of rural households use kerosene as their main source of lighting. Kerosene is predominantly used for lighting in the eight low-income states, Bihar, Uttar Pradesh, Assam, Orissa, Jharkhand, West Bengal, Madhya Pradesh and Rajasthan. These states collectively account for 84% (approximately 68 million households) of the total off-grid households in India. Additionally there are a number of rural electrification schemes that support mini-grid operations, which are operated by state utilities, rural cooperatives and the private sector. Several entrepreneurial private firms have invested in the provision of off-grid electricity services through mini-grid operations.

82. **The Philippines** does not have an integrated national electricity grid; there are two major regional grids and many smaller island isolated systems. The rate of electrification in the Philippines is relatively high and as of 2012, 79% or 48.6 million out of 61.53 million people were electrified. The Philippines possesses good RE resources in terms of small hydro, wind, biomass and solar power. The Electric Power Industry Reform Act supports the implementation of several policy mechanisms for the development of RE, RE portfolio standards, and net metering, but implementation remains a work in progress. Feed-in-tariffs (FiT) have also been designed for RE segments and publicly announced, but allocations will not be confirmed to private sector sponsors until the project is commissioned (a difficult scenario in which to raise debt financing). In addition, detailed implementation rules and regulations are still in process. Finally, the FiT allocations are relatively small for some segments (e.g., only 50 MW of solar power nationally), with project demand well in excess of the allocation. All of which has constrained private sector development of RE projects, whether on or off-grid.

83. Generation for off-grid electrification is provided by private firms under the Small Power Utilities Group (SPUG) Program of the National Power Corporation, and there presently are 534 generating units with total rated capacity of 278 MW (this capacity is mostly comprised of small diesel-fueled power plants), which serve 221 island grids including 8 isolated grids.¹⁹ Most of these grids are too small for traditional power supply solutions and interconnection remains capital intensive and lengthy. The program has introduced a competitive bidding process for 15-

¹⁹ There are also efforts underway to increase electrification through the hundreds of electric cooperatives through RE and energy efficiency initiatives to reduce losses. These programs would be complementary.

year concessions to select the lowest cost generation options. Generation and output based subsidies are available to cover the difference between generation costs and retail tariffs. Electricity service to remote and unviable areas is franchised to qualified third parties or QTPs. Such implementation models could be scaled up to reduce the operation of diesel gen-sets in the Philippines where solar energy and other RE potential is cost effective.

84. **Indonesia** has seen consistent increase in economic growth, yet some 25% of Indonesians do not have access to electricity²⁰. Like the Philippines, the archipelago of Indonesia does not have an integrated grid. The Government has accelerated efforts to develop new and renewable energy sources to meet future energy demand. Presidential Decree No. 5 mandates an increase in renewable energy production from 7% to 15% of generating capacity by 2025, which will require the installation of some 6.7 GW of RE projects. The National Energy Policy of 2006 has amended several policies and regulations to support renewable energy deployment. The law codified the RE target and strengthened the position of cooperatives, private companies, and community organizations in PPA negotiations. The Ministerial Regulation on Small-Scale Power Purchase Agreements requires PLN to purchase electricity generated from renewable energy sources by non-PLN producers for projects of up to 1 MW capacity.

85. PLN and Pertamina are generally more focused on large scale RE projects (e.g., geothermal, storage based hydropower projects). There are plans to use public funds to leverage private investment and increase energy reliability and achieve a target of 90% electrification by 2020. The country has installed 53 centralized solar PV systems, and 51 micro/small scale hydro systems in off-grid regions totaling about 1.7 MW and powering some 10,000 households. Diesel generators however dominate power generation in the off-grid areas despite the high cost of transporting fuels to many sparsely populated islands. The abundance of RE sources in the country makes it an ideal candidate for installation of RE based mini-grid systems.

C. Proposal Terms and Implementation Strategy

Financial instruments to be used

86. In most cases, CTF resources would be deployed as investment capital (loans, guarantees and quasi-equity products) alongside an MDB investment. 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, RE offtakers 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 (high upfront costs are made harder and more expensive to finance by high lending rates in the target countries). As the projects are inherently small, the solutions are likely to be simple financial instruments with low transaction costs, and will be designed to deploy capital in a highly targeted manner to address unique market segment risks.

87. A portion of resources may be deployed into regional or country-specific impact investment funds, which are making direct equity or early stage investments in RE mini-grid projects and/or operators. While the focus of this program will be on direct investments in the

²⁰ <http://www.energyforall.info/25-of-indonesian-have-no-access-to-energy/>

pilot countries, this complementary approach will allow additional scale up of equity resources for certain approaches with some of the MDB's existing partners, where relevant.

Key stakeholders and implementation strategy

88. Key stakeholders are the government, regulatory authorities, private sector project developers and other financiers. The involvement of CTF operational focal points, and other governance and decision making will follow the general procedures outlined in the main text.

89. Through existing private sector operations and the SE4ALL program, the MDBs have already established strong engagements with the energy sector in all the target countries, and the MDBs will leverage its relationships with public and private sector stakeholders to quickly coalesce on a strategy to implement the distributed generation and RE mini-grid Program. The MDBs already have developed a pipeline of private sector projects in the pilot countries, which can begin implementation within six to nine months of CTF approval.

D. Results Framework

90. The proposed project will support the development of private sector led RE mini-grid projects, which will expand electricity access, and stimulate economic growth through the scaled-up deployment of clean energy solutions and provide a trigger for transformation of clean energy markets by unleashing the expertise and investment of the private sector.

91. *Core indicators.* While it is difficult to provide precise estimates of such targets for a program such as this, some of the key objectives and outcomes to be monitored and the indicators to be measured will include:

- a) Households supplied: the number of new household connections, and increase in the installed capacity (measured in MW and/or number of new plants) and electricity supplied from RE (in MWh per annum).
- b) Leverage: the ratio of the amount of CTF funds allocated to the additional funding sourced from MDBs, private sector entrepreneurs, local developmental and commercial banks, and other sources including donors, development partners, local government etc. This indicator will be segregated into public and private sources of financing.
- c) GHG reductions: GHG mitigation in tons of CO₂ equivalent per annum

92. *Co-benefits.* Community-based projects such as RE mini-grids promote participative decision making and gender and social inclusiveness. This program is expected to deliver significant co-benefits, most of which will disproportionately benefit women and children:

- a) Improvement in indoor air quality (substitution of kerosene and candles for lighting in households);

- b) Reduction of soot and the incomplete combustion of fossil fuels i.e., “black carbon” (from burning of traditional biomass for cooking and diesel-fired gen-sets);
- c) Direct and indirect job creation (a stable supply of electricity will increase the supply of light for extended hours of work and study in the household, and provide electricity for basic appliances);
- d) Improved communications and access to information (mobile phones, radio, television);
- e) Promote training and work force development to operate and maintain the RE mini-grid;
- f) Enable seamless integration with the national grid and provide supplementary generation sources to improve reliability.

E. Consistency with CTF investment criteria

CTF Investment Criteria	Program Compliance
Potential GHG Emissions Savings	Modest GHG savings with each individual project but will place local populations on low-carbon development pathways. In addition, the replication potential of the sub-program is significant, resulting in substantial GHG savings.
Cost-effectiveness	Based on similar projects/programs, the marginal cost of reducing a ton of CO ₂ equivalent is estimated at USD 2-4 per ton of CO ₂ .
Demonstration Potential at Scale	The program will demonstrate the effectiveness of different business models for distributed generation and RE mini-grids, which will reduce transaction costs for replicating and scaling up of projects, create awareness among investors thus leveraging additional resources resulting in greater CO ₂ reductions. While RE mini-grid projects may be inherently small, the scale up potential if business models are proven viable is enormous (arguably infinitely scalable).
Development Impact	With expanded and assured energy access, local populations will have environmental co-benefits, job creation co-benefits and long-term low-carbon growth. Implementation of energy efficiency measures will expand capacity and lower customer bills. Increased RE in the mix will reduce GHG emissions and energy security will be improved.
Implementation Potential	The program meets the objectives of the CTF pilot countries to expand energy access to all by 2030, and to increase RE in the energy mix.

Additional Costs and Risk Premium	RE projects have higher upfront capital costs, although the leveled economic costs of such systems make them viable. The program will lower the perception of risks of RE mini-grid systems among investors and address other barriers by developing appropriate business models. CTF funds deployed to catalyze long-term financing will enable investments in low-carbon technologies to become financially viable.
Financial Sustainability	The demonstration of successful business models will lower risk perception and catalyze additional investments from the private sector and lending from banks. The need for capital subsidies could eventually be phased out as RE system costs decrease further. CTF funds can also be used to mitigate government payment risks of such partial subsidy schemes.
Effective Utilization of Concessional Finance	The principle of minimal concessionality will be deployed. CTF funds may be used to provide concessional financing for the program in a targeted fashion to mitigate specific barriers, which will lead to greater leverage of funds from other financing sources.
Mitigation of Market Distortions	With over a billion people in developing countries without access to energy, the market for delivering energy solutions to off-grid consumers is massive. Any intervention to select CTF pilot countries would not distort the market. It will rather promote sustainable, safe and affordable energy access and foster private sector participation and investment by lowering risks and barriers.
Risks	The anticipated risks are discussed above in Section B. Risks will be evaluated for each project to be implemented under this program and measures taken to mitigate them.

F. Funding

93. To begin implementation in Phase I (India, Indonesia, and Philippines), a sum of USD 35 million is requested from CTF, which is comprised of USD 30 million of investment capital (to be deployed as described above) and USD 5 million in grant. It is expected that the \$30 million in investment capital in Phase I will leverage a minimum of 10 RE mini-grid companies in the pilot countries described above; it is assumed that each company may operate approximately 3-5 mini-grids. The latter will be used to (i) provide advisory services for business plan finalization and due diligence of the first set of projects; (ii) establish template legal documentation that can be replicated across projects and different products; and (iii) carry out other capacity building activities with local financial institutions or investment partners which can help ensure leverage of capital resources from sources other than CTF and ADB.

94. Should implementation of Phase I be successful and additional capital required for the other pilot countries (Phase II) or non-pilot countries (Phase III), then such request will be made subsequently. It is not possible to estimate either demand or replication potential at this time due to the small-scale nature of the projects contemplated

XII. PROPOSAL NAME: CLIMATE FINANCE EQUITY INVESTMENTS

MDBs interested in participating: ADB, AfDB and IDB

Relevant countries in Phase I: Africa and Asia/Pacific (and potentially Latin American and the Caribbean).

A. Introduction and Program Description

1. Developing countries face a dual challenge of climate change and limited access to energy and other resources. At the same time the annual climate investment gap of around USD 1 trillion necessitates innovative engagement of the private sector if the above challenges are to be met. The Climate Finance Equity²¹ Investment program (CFEI) will help address this gap and will (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 will greatly 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.
2. The Climate Finance Equity Investments Program is expected to be developed over two phases. In Phase I AfDB and ADB (and potentially IDB) will launch programs in their respective regions. Other MDBs will also launch theirs if program proposals following the same criteria hereby established are ready within the relevant timeframe (if not, they will join in Phase II).
3. CTF resources will be invested through separate investment and private equity vehicles and will play a catalytic role in leveraging other resources. While the goals of AfDB's and ADB's programs are broadly the same, they do, due to regional differences and needs, differ somewhat in how they will deploy the CTF resources.
4. AfDB will follow an indirect equity investment approach over two stages. In stage one CTF funds will be blended with resources from AfDB and other investors that will be invested into Private Equity Funds ("PEFs"). In stage two, the PEFs will re-invest these resources in the form of equity instruments and in accordance with pre-negotiated investment policies. Given current market conditions, the African CTF pilot countries would not be able to absorb the resources requested. Consequently, CFEI as deployed by the AfDB will be available to all countries in which it operates in Africa, to include both CTF pilot and non-pilot countries.
5. ADB has alongside a commercial investment partner established an investment program, the Climate Public Private Partnership ("CP3"), which will invest between 20-40% in PEFs, and the remaining 60-80% in direct investments. Although CP3 has been approved by ADB's board

²¹ While the objective of the sub-program is to mitigate the climate finance equity gap, the sub-program may also include quasi-equity or mezzanine investment vehicles co-investing with equity funds.

of directors and is about to begin fund raising efforts, it was anticipated that investors could have different requirements in regard to making investments. CP3 consequently has the ability to customize large investments and can accept equity and / or debt, ring-fenced for specific purposes, and establish Alternative Investment Vehicles (“AIVs”).

B. Business Case

Market and barriers to growth

6. **The Challenge.** As a whole, developing countries are faced with many challenges, not least those of climate change and limited access to energy and other resources. Both have significant negative impacts on the poor populations of those countries, and neither of the challenges will be addressed with public finance alone. This is especially relevant for Africa which is poised to experience tremendous economic growth over the next several years but which is threatened by underdeveloped infrastructure, mainly in the power sector.

7. **The Funding Gap.** Current investments in mitigation and adaptation are estimated at around USD 0.5 trillion per annum, an investment that must triple if the goal of a temperature increase of no more than 2°C is to be achieved. This implies an approximate investment gap of around USD 1 trillion, which cannot be bridged solely by limited public sector resources. Rather, it is critical to find ways to unlock participation by private finance.

8. **The Funding Source.** Assets being managed by OECD countries alone amount to USD 71 trillion, some of which could be deployed towards green investments in emerging markets, but which are held back by policy distortions and uncertainties, along with market and technology risk. As such, it is not a lack of available finance that is holding back investment. Evidence suggests that the targeted use of public finance, through equity, debt and other financial products, can greatly help scale up private financial flows, which will be the key to unlocking the financing needed to close the investment gap in emerging markets.

9. **Additionality.** The perceived high risks associated with investing in sustainable energy assets and other areas of environmental finance has resulted in insufficient availability of funds for the sector, which remains an unexploited engine of growth for developing countries as a whole and for the African continent in particular. Through the provision of long-term investment capital, the MDBs and CTF commitments are expected to mobilize additional capital through lowering the perceived risk of investments.

10. **Addressing Market Failures.** The proposals are designed not only to overcome specific challenges related to investing in sustainable energy and climate investments in general. They are more importantly designed to overcome a number of obstacles which separately or collectively has inhibited much needed investments, and will as such demonstrate to other market participants that it is possible to invest profitably in these sectors leveraging private sector capital while generating financial returns and development impact.

How Proposal will address barriers

11. **Ability to Address Market Bottlenecks.** The proposals promote a coordinated response to environmental finance market constraints, namely: (i) financial facilities (equity and mezzanine financing provided by the fund; dedicated technical assistance; and other climate change funds administered by the MDBs); (ii) the knowledge platforms of the respective banks which includes specialized environmental, social, and governance capabilities and a pool of technical experts in a broad range of sectors; and (iii) country dialogue and engagement (that reduce policy, regulatory and political barriers).

12. **Ability to Access and to Leverage Private Sector Capital.** The proposals expect to have significant ability to leverage private sector capital partly because of the value addition that MDBs bring and partly because strategy and risk profiles are specifically designed to appeal to institutional investors. This will allow for a dramatic catalytic effect.

13. **Ability to Generate Development Outcomes and Financial Returns.** The proposals seek to combine private sector returns with a strategy designed to maximize development impact. In addition to the unique catalytic effects, the proposals will: (i) promote foreign direct investment to fund target countries' infrastructure needs; (ii) attract international fund managers to the regions and also catalyze the local investor base, which will facilitate technology innovation, transfer, and diffusion; (iii) introduce AfDB, ADB and IDB to new, high-impact technologies or sectors; (iv) promote regional integration; and (v) likely have a higher impact than most existing operations in terms of many development metrics.

14. **Lessons learnt from experience:** Over the last 10 years, the AfDB has invested a total of USD 620 million in more than 20 PEFs, and the ADB has invested USD 723 million in more than 40 PEFs, which have had substantial development impact in the respective regions. However, concessional financing can help tip the balance for particular sectors and markets which otherwise are neglected by those PEFs investing in Asia and Africa. It can also help make certain projects financially viable (through mezzanine financing) which would otherwise not pass internal tests of PEF fund managers.

Market size potential: Africa

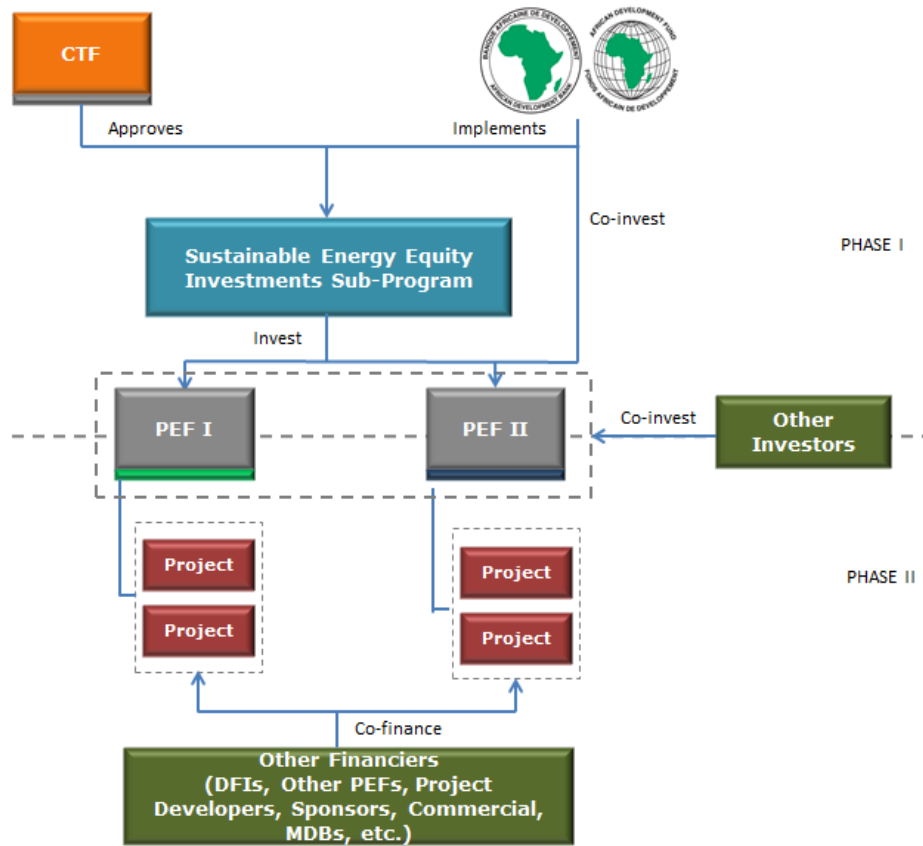
15. AfDB will seek to deploy USD 40 million of CTF resources into a maximum of two PEFs that will leverage other resources, including AfDB's. These PEFs will then re-invest these resources, in accordance with pre-negotiated investment policies that will focus on renewable energy and energy efficiency, into approximately 10 portfolio projects per PEF. CTF resources will play a catalytic role in unlocking a new class of investors/capital (e.g. pension funds) to Africa, especially if CTF investment is deployed with some degree of subordination (e.g. delayed access to the return waterfall). Figure 1 introduces the structure of the proposed business case.

16. **Pipeline.** Investment opportunities in sustainable energy projects are substantial, both in terms of existing facilities and projects in development. Between 2000 and 2012, over 150 renewable energy projects were completed in sub-Saharan Africa (excluding South Africa). The potential of expanding renewable energy even further is significant, particularly in small and

medium renewable energy projects. A market scoping exercise led by AfDB shows that there are currently over 300 renewable energy projects at various stages of development. The pipeline of identified renewable energy projects under development amounts to 90,000 MW and will require over USD 400 billion²².

17. **The Investments.** The total size of the PEFs is estimated at USD 200 million but this will depend on market appetite. With USD 40 million of CTF resources, AfDB will invest USD 40 million of its own resources and will raise additional USD 160 million from other investors including development financing institutions (“DFIs”) and commercial investors, among others. Once formed, the PEFs will buy minority shares in project companies that will attract other sources of investment such as equity and mainly debt, contributing to leveraging further USD 1,130 million. AfDB is currently appraising a Pan-African fund that aligns with this proposal, with financial closure expected by the end of 2013. This fund would be able to absorb USD 20 million of this Program if CTF funding is available before the end of 2013. Annex I provides more details on this fund.

Figure 1: Implementation Diagram



²² Further substantiation of the pipeline can be provided. Only the results have been provided at this conceptual stage.

18. **Leverage.** For each USD 10 million of CTF resources provided under the AfDB's business case, a total of USD 283 million may be leveraged downstream. The main contribution for this leverage effect lies at the project level. In the African infrastructure context, a rule of thumb is to finance projects with a combination of debt and equity at a 30/70 ratio. Assuming that a PEF will at no point in time hold more than 49% of a Project Company's shares (approximately 15% of the 30% total equity stake), the leverage potential of any direct equity investments made by a PEF into a project company is 1 to 6.67 from different types of investors and financiers. Given the size of CTF resources being requested under this business case and based on the assumptions and calculations provided above, the USD 40 million CTF resources in equity will contribute to leverage further USD 1,130 million over a period of 7-9 years. This represents an overall leverage ratio of 28.3x.

19. **GHG Emission Savings.** Although it is difficult to establish ex ante the amount of emission reductions due to different potentials of different technologies and unclear portfolio structures, preliminary calculations based on a number of realistic assumptions point out to savings in the order of 23.3 million tons of CO₂ emissions over a lifespan of 25-years for the portfolio projects. It would be also possible to demonstrate a higher potential when the leverage effect of the equity investment is proven to be larger than the initial expectation. Based on the aforementioned preliminary calculations and assuming USD 40 million in CTF resources for the AfDB business plan, the cost for a unit emission reduction is estimated to be approximately USD 1.72 of CTF funding.

Market size potential: Asia and Pacific

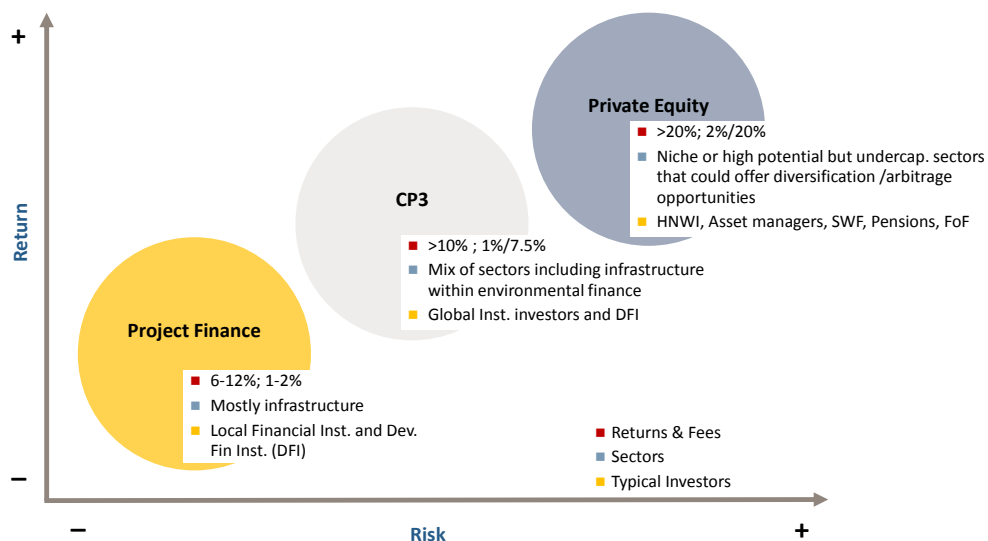
20. ADB's CP3 has been designed as a comprehensive investment program. This allows it to accept investments both in the form of equity and debt, and when needed tailor-make alternative investment vehicles ("AIVs") for investors with special requirements. An AIV would invest alongside the main fund on broadly the same terms and conditions, i.e. investors may have specific geographic or sector preferences, which CP3 can accommodate, while still subject to the same restrictions regarding for instance investing sustainably according to the policies of ADB.

21. **Differentiators.** CP3 differs substantially from existing private sector PEFs in a number of ways: (i) size and opportunity, (ii) risk-mitigation, (iii) environmental and social safeguards, (iv) deal sourcing and track record, (v) diversification, (vi) fee structure. All of which are not only key to ensure successful fundraising among private sector investors but will further be key to ensuring successful deployment of funds. Additionally, CP3 is a unique new and complimentary instrument in the market, which will be able to leverage existing debt and equity facilities that will greatly increase the impact (please see Figure 2).

22. **Leverage.** The aggregate target size of CP3 is USD 1,500 million of mixed public institutional and private sector funding. A direct equity investment of USD 75 million from the CTF towards a first close of USD 500 million will potentially help catalyze up to an additional USD 5.5 billion in both debt and equity investments, for a leverage effect of 73x . An investment

in the way of mezzanine or sub-debt would also have a significant catalytic effect, though more challenging to accurately estimate²³.

Figure 2: CP3 fills a blank spot in the risk-return spectrum



23. **Investment Strategy.** CP3 can broadly speaking invest in all of AsDB’s developing member countries, but will constrain itself to 30% or less in both China and India respectively, with the remainder expected to be invested in developing Asia, among others targeting countries such as Bangladesh, Cambodia, Indonesia, Malaysia, the Philippines, Thailand, and Vietnam. CP3 expects to invest into three broad sectors: 1) renewable energy infrastructure (e.g., wind, solar, geothermal), 2) Energy Efficiency (e.g., green buildings, electric vehicles, waste heat recovery), and 3) “nature based assets” (e.g., agriculture, forestry water).

24. **Investment Pipeline.** Though not yet operational, CP3 is, in anticipation of fund formation (expected in Q3 2013), currently tracking in excess of 100 investment funds that are currently fund-raising or are expected to begin fund-raising soon, which broadly meet CP3’s investment criteria. These Funds have been carefully screened and assessed and divided into three overall tiers where 73 fall into Tier I and II, and thus present the best investment opportunities. Collectively these 73 funds are seeking to raise around USD 16.8 billion and currently have a funding “gap” of around USD 11 billion. In addition to the funds, CP3 is continuously being presented with and considering various potential direct co-investment opportunities.

25. **Asset Allocation.** CP3 will invest between 20–40% in investments funds and the remaining 60–80% in direct co-investments. In addition to investing according to its sector allocation, CP3 will furthermore invest across all stages of the private equity life-cycle ranging

²³ A significant commitment as mezzanine through an AIV would on its own have a leverage effect that is likely to be substantial, though probably less so than equity. At the same time, a mezzanine AIV would potentially aid equity fundraising for funds.

from early stage venture capital over growth investments to leveraged buy-outs. CP3 expects to invest up to 50% in renewable energy infrastructure with the remainder in private equity. This asset allocation strategy will allow CP3 to increase its scale and reach significantly, via sub-investments by the investment funds, while at the same time providing a pipeline of potential direct co-investments, collectively achieving a multiplier effect of up to 6x on the fund as a whole.

26. **Development Impact.** CP3 has been specifically designed to “do good by doing well.” While the focus is on generating market returns, which is critical to attract private sector investors, development goals such as job creation, taxes generated, technology and skills transfer, GHG emission savings, environmental and social compliance, and FDI promotion have not been neglected and are expected to be substantial.

27. **Fundraising.** CP3 has been approved both by ADB’s board of directors and the UK Government (an anchor investor). ADB expects fund formation this quarter and anticipates a first close of no less than USD 500 million no later than Q1 2014, at which point it will be able to make investments. To date, CP3 has secured USD 215 million in equity commitments. The UK Government and ADB have both committed USD 100 million respectively to the program as limited partners, while the commercial investment manager has committed USD 15 million, equal to 3% of fund size at the minimum fund size of USD 500 million or equal to 1% of fund size at the maximum fund size of USD 1,500 million.

28. **CTF Commitment.** ADB proposes an investment of up to USD 75 million in CP3 from the CTF. This would greatly facilitate CP3’s fund raising efforts, helping to mitigate fundraising risk, and bringing CP3 much closer to its minimum first close of USD 500 million, which for many private sector investors represents the first hurdle that must be passed before they will commit. Thus, the CTF commitment would be instrumental in ensuring the sought after catalytic effect of leveraging private sector money alongside public money, which is one of the overall aims of CP3.

29. The simplest method for a CTF investment would be through an equity commitment. However, if so desired, the investment could be structured as a hybrid structure such as mezzanine. A mezzanine structure has the further advantage of helping bridge potential funding gap between the equity and senior debt in individual deals, and may as such play a pivotal role in ensuring that viable direct or co-investments can be made with a good return, while not taking on excessive levels of senior debt or hollowing out returns on equity. This would provide additionality beyond ADB’s and UK Government’s investment, and create a combination of market instruments through the same investment platform, something not currently available at scale in the market.

C. Results Framework

30. *Core indicators.* Core indicators to be monitored include:

1. GHG emissions savings: for AfDB: target of 0.9 million tons per year; for ADB, target of 2.5 million tons per year

2. Increased finance (by public and private sources): AfDB's target is USD 1.1 billion over the investment life of the PEFs while ADB expects to mobilize USD 1.5 billion by final closing of CP3 in 2015.
3. MWhs generated or saved: Annual electricity generation enabled or saved through the first phase of the program targets will be established.
4. Number of jobs created: ADB's target is 5,000 jobs per annum; AfDB's targets will be established in the coming months and presented in the formal proposal.

D. Consistency with CTF Criteria

CTF Investment Criteria	Program Compliance
Potential GHG Emissions Savings	Estimating GHG reductions without confirmed investment portfolios is a challenge, but indicative targets for GHG reductions are around 4.0 million tons for Phase I of the program.
Cost-effectiveness	The marginal cost of reducing a ton of CO ₂ is expected to be more efficient than in other CTF programs due to the strong leveraging effect of CTF capital (greater than 28x). AfDB estimates the cost effectiveness at USD 1.72 of CTF resources/ton of CO ₂ savings (specifically for renewable energy investments). Because investments in the other sub-sectors are more difficult to estimate at this point, ADB's and EBRD's estimates will be developed and presented in the full proposals under this program.
Demonstration Potential at Scale	Wide reach of program will have considerable replication effect across countries. The projects will provide authorities with the capacity to prepare and implement complex tender processes and contracts, leading to transformational impact. At a global level, the successful implementation of CFEI investments through the proposed vehicles shall contribute to an overall reduction of market risk premiums demanded by equity investors at the same time positive spillover effects will benefit neighbor countries willing to increase the sustainability of their energy mix.
Development Impact	Significant benefits through job creation, reduction of carbon intensity, private sector demonstration, technology and knowledge transfer, energy security and reliability. Especially in countries short of power supply, income generating activities will be promoted by filling the gap in energy supply.
Implementation Potential	Given the priority placed on energy supply and scarcity of equity investments in the countries involved, public policies and institutions will be supportive of the program. Resource mobilization will be stronger due to the high leverage effect
Additional Costs and Risk Premium	CFEI will enable investments that would not otherwise take place due to barriers and perceived risks.

CTF Investment Criteria	Program Compliance
Financial Sustainability	As long as the PEFs and investment programs are financially self-sufficient, they will not require additional contributions from the CTF to gain financial sustainability. By demonstrating successful cases and lowering perceived risks (and risk premiums demanded by investors), the CFEI will encourage the formation of more PEFs or other equity co-investors to commit resources without requiring the concessionality of CTF.
Effective Utilization of Concessional Finance	The principle of minimum concessionality will be employed to garner participation from other investors
Mitigation of Market Distortions	The concessionality of CTF funds will reduce the cost of capital for the investment vehicles. The underlying investments made by the PEF/CP3 will be made into projects and companies operating freely in developing country markets. Therefore, CFEI will not distort markets but rather, will stimulate sustainable infrastructure development.
Risks	Most of the anticipated risks are inherent in the transactions and operational processes of the PEFs and investment programs. Each regional program will assess its intrinsic risk factors and mitigation strategy before approval under the sub-program.

31. With regard to the AfDB, the CFEI will be available to all countries in which it operates, including CTF countries and non-CTF countries. This decision is based on risk management considerations, as investors' perceived risk in Northern Africa have greatly gone up following the Arab Spring, and on the lack of market absorption capacity if for instance, only current CTF pilot-countries were considered. ADB's CP3 Program can invest in all ADB developing member countries but can, given the much greater scope for deployment of funds within CTF pilot countries for Asia, if so desired for current CTF funding, limit investments to CTF pilot countries, while still ensuring an adequate deployment rate and risk diversification. For the purpose of risk management, PEFs and, in the case of CP3, DIs will be carefully selected based on rigorous investment criteria. In the case of PEFs to ensure alignment of interests, the investment managers will be required to participate in the equity investment.

E. Funding Phase I

32. In the first Phase, USD 115 million is requested for the implementation of two regional programs in Africa and Asia and the Pacific by AfDB and ADB respectively. An additional amount may be requested by IDB during this phase if its program proposal can be completed within the relevant timeframe (similar investment needs in PEFs of USD 50 million have already been confirmed so far, but an integrated program proposal was not available at the time this paper was being drafted for initial TFC consideration of the subprogram). In addition, approximately USD 1 million of preparation grant may be necessary for other MDBs to prepare their own regional program under the CFEI.

33. AfDB is currently structuring a private equity fund with a pan-Africa focus that will deploy equity in the development of renewable energy projects. The Fund Manager has been selected and a first close is expected in late 2013/early 2014 for an amount of USD 150 million. Therefore, if CTF fund is made available prior to financial close, AfDB will be able to seize an investment opportunity of USD 20 million, otherwise the implementation of the program by AfDB may be postponed until market conditions exist.

F. Preliminary information on potential IDB program

34. IDB, through its multiple private sector divisions, has been active in structuring, fundraising and investing equity and mezzanine finance in various green infrastructure equity funds. For example, the IDB-managed Multilateral Investment Fund (MIF) is looking to leverage additional equity for the MicroCarbon Development Fund (MCDF), a private equity fund providing equity and mezzanine financing to projects in the demand-side energy efficiency and renewable energy sectors in Colombia, Mexico, Central America, and the Caribbean. The Fund has raised USD 41.2 million from anchor investors and is looking for additional capital commitments (up to USD 100 million) in the next twelve months. MCDF will focus investments in energy efficiency in a) the commercial sector, b) the industrial sector (cogeneration, waste heat recovery, other), and c) street lighting. It will also invest in small-scale renewable energy generation, including solar and hydro rehabilitation and expansion. The fund management of the MCDF has been structuring pilot investments that achieve significant energy savings and have high potential to be replicated and scaled-up to pursue larger market opportunities. These include, for example, energy efficiency projects in the hotel sector in Colombia for USD 100 million, energy efficiency in air-conditioning, lighting and solar PV generation in public office buildings and schools in Sonora, Mexico, and Jamaica, and solar distributed generation opportunities in Costa Rica.

35. IDB has also evaluated numerous fund managers with focus on sustainable investments in the LAC region and as a result is considering various potential funds, some of them with a country focus (particularly in CTF pilot countries) and some other with a regional focus. The typical fund IDB is targeting will be mezzanine and expect total capital commitments between USD 250 and USD 400 million. One such country fund IDB is considering is focusing on sustainable infrastructure projects in the areas of renewable energy, water, biofuels, and solid waste management, among other, and has identified over 35 projects in the different infrastructure sectors, with a total equity investment potential of over USD \$1.5 billion. In this particular opportunity, IDB expects to consider an investment of up to USD 80 million in senior debt, and to enable IDB's and third parties' investments IDB is looking to bring along an investor who can provide a mezzanine finance tranche. In addition, IDB is also considering a smaller yet highly catalytic investment in a regional clean technology fund, for which a matching source for its equity investment is needed.

36. IDB will develop a program proposal aligned with the criteria outlined in this CFEI proposal. Such proposal could include the USD 50 million request for the two funds in which it aims to invest (as described above, the energy efficiency regional fund requiring USD 10 million

in equity and the sustainable infrastructure country fund requiring USD 40 million in mezzanine financing), or take the form of a more integrated program.

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