

## CTF PRIVATE SECTOR PROPOSAL

<b>Name of Program</b>	<b>Honduras Utility-Scale Solar PV Sub-Program</b>
<b>CTF amount requested</b>	Investment – up to US\$19.5 million Implementation and supervision budget – US\$0.5 million (Annex A) <u>Total amount – up to US\$20.0 million</u>
<b>Country targeted</b>	Honduras
<b>Indicate if proposal is a Project or Program</b>	Sub-Program under the DPSP Phase II, Utility scale renewable energy: Solar Photovoltaic program

### 1 DETAILED DESCRIPTION OF THE PROGRAM

#### **1.1 Proposal Context:**

The Honduras Utility-Scale Solar PV Sub-Program (*the Sub-Program*) is designed to enable the development of the solar PV sector in Honduras through supporting several **first-mover** private sector investments in utility-scale grid-connected solar PV plants. Bringing these plants to financial closure will not only provide a critical demonstration effect of the financial viability of this type of projects, but also support the Honduran's government ongoing efforts to diversify the energy matrix of the country away from fossil fuels. The Sub-Program will contribute to the reduction of burdensome reliance on the expensive imports of diesel and bunker fuel and help strengthen public finance in the near term. Moreover, the Sub-Program will seek to establish the bankability of solar PV Power Purchase Agreements (PPA) under the new regulatory framework – thereby supporting the regulatory reform, contributing to lowering the cost of electricity, benefiting the residential, industrial, and all other consumers in Honduras, and alleviating budgetary imbalances of the Government of Honduras (GoH).

The proposed Sub-Program is the first-mover under the *CTF Utility scale renewable energy: Solar Photovoltaic program (Solar PV program)*, under the *CTF Dedicated Private Sector Programs – Phase II*, endorsed by the CTF Trust Fund Committee (TFC) in June, 2014. The Sub-Program will advance the work towards achieving the Solar PV program's stated objective *to enable the scaling up of these renewable energy technologies with an initial focus in Africa and Latin America and the Caribbean (LAC)*. As in other countries under the Solar PV program, in Honduras, *conditions for solar photovoltaic projects are optimal and solar PV not only represents significant potential in these markets in terms of improving and diversifying the energy mix with a low carbon technology but also the potential to provide positive benefits to end-users by ensuring greater energy access and improvements in affordability*.

By going beyond the range of CTF countries and targeting Honduras – one of the SREP countries – the proposed Sub-Program refers to the TFC decision made in June, 2014 regarding the Dedicated Private Sector Programs – Phase II that points to the possibility of developing *sub-programs and projects under each program within CIF countries*. The Sub-Program is designed to complement and support the work being undertaken under the SREP Country Investment Plan (CIP, endorsed in October 2011). Specifically, the SREP Honduras CIP aims to *create an enabling environment for scaling-up the use of renewable energy for (i) grid-connected power generation as an alternative to increasing dependence to oil products; (ii) a comprehensive approach for scaling-up the provision of sustainable rural energy services (rural “energization”), including off-grid stand-alone systems to provide basic electricity services in poor rural areas too distant to be connected to the conventional grid, and clean and sustainable cooking technologies*. The Proposed Sub-Program will link with the objective (i) above.

The success of this IFC CTF Sub-Program will enhance the grounds for the advancement of the IFC

program under the SREP Honduras CIP (with US\$6.2 million allocation). The IFC SREP program envisions *the creation of a fund under the Grid-Connected RE Development Support (Apoyo al Desarrollo de las Energías Renovables en Conexión con la Red, ADERC) component of the CIP with resources from SREP, Multilateral Development Banks (MDBs), and possible involvement of other sources including pension funds, private investors and/or commercial banks.* The SREP program, therefore, will benefit from the demonstration effect created by the proposed CTF Sub-Program with a potential to further scale-up investments in the solar PV and other renewable energy (RE) sectors.

In addition, the proposed CTF Sub-Program is fully consistent with the work undertaken by the World Bank Group (WBG) in Honduras. The WBG's 2012-2014 Country Partnership Strategy (CPS) for Honduras prioritizes three objectives: *(i) improving citizen security; (ii) expanding opportunities through reducing vulnerabilities; and (iii) enhancing good governance.* The proposed Sub-Program supports the expansion of critical infrastructure, promotes the shift of the energy matrix into renewables, helps reduce the electricity generation cost, and decrease the dependency on fossil fuels-based energy – all fundamental components of the objective (ii).

The Sub-Program is also quite relevant in the context of a current transition of the energy sector, where the GoH aims to address the underlying sector issues and revert the trend of fiscal imbalances. IFC is engaged with the GoH through a PPP advisory service program aimed at supporting the unbundling of the electricity distribution business of the state-owned energy utility Empresa Nacional de Energía Eléctrica (ENEE)<sup>1</sup>. Moreover, IFC is developing a strong pipeline of solar PV projects in Honduras. These projects will help bring the solar PV sector in Honduras closer to sustainability and significantly advance the work under the CTF DPSP Solar PV program. To move ahead with this pipeline, IFC seeks an approval of the US\$20 million of the CTF funds for the Honduras Utility-Scale Solar PV Sub-Program, under the DPSP *Utility scale renewable energy: Solar Photovoltaic program.*

## **1.2 Country Context:**

The Republic of Honduras is an International Development Association (IDA) country with a population of about 8.1 million and second largest territory in Central America (112,492 km<sup>2</sup>). Honduras remains one of the poorest countries in Latin America with annual average income of US\$2,180 and approximately 65% of the population living below the poverty line. Honduras was hit hard by the global financial crisis in 2009, when the economy contracted by 2% in 2009 and GDP per capita fell by 4%. Political upheaval in 2010 further undermined its economic performance. In 2004, Honduras was classified by the United Nations among the top 20 most vulnerable countries in the world, as the country is often hit with floods and hurricanes that create significant damages, cause losses of human life and property, and further challenge country's prosperity.

Energy sector of Honduras is highly import-dependent. In 2011, energy imports accounted for 51% of net energy use, most of which represented imported oil (an estimated 58,000 barrels of oil per day) and electricity across interregional transmission lines.<sup>2</sup> One of the primary oil consumers is the power generation system that largely relies on imported fossil fuels – Honduras has one of the highest rates of power generated from oil, ranking 14<sup>th</sup> in the world after Kuwait. Of the current total effective installed capacity of approximately 1,800 MW, 55% is oil-fired, 8% biomass, and 37% hydro (mostly government-owned).

The present generation matrix represents a radical transformation (characteristic to many Central American countries) from the situation two decades ago, when the share of renewables (primarily

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<sup>1</sup> ENEE – a state-owned vertically integrated utility – is the sole distributor served by the transmission grid, and controlling all generation facilities, either as owner or through the respective PPAs.

<sup>2</sup> The Honduran grid is interconnected with Nicaragua, El Salvador and Guatemala via a Central American grid network called SIEPAC. SIEPAC is a 1,800 km 230 kV transmission network that has an exchange capacity in the range of 80-110 MW with a planned expansion to 300 MW in 2015.

hydroelectric) was 60%. Since 1980, the GoH systematically focused on increasing the country electrification rate, dramatically improving the coverage from about 30% in 1980 to over 80% in 2010 (with a target of 85% by 2015). Much of this expansion, however, has occurred by a shift to fossil fuels as a source of power generation.

In 1994, the GoH embarked on a gradual electricity sector reform and the generation segment was opened to private sector investment. These reforms led to a significant private participation in expanding the country's generation capacity (reaching 70% by 2012). While this strategy helped Honduras to meet its urgent need for additional capacity, it did not help to "green" the energy mix or reduce the cost of electricity, as the expansion happened mostly by deploying thermal generation that relies on expensive imported fossil fuels. Today Honduras spends 13% of the GDP on fossil fuels (the highest rate in Central America). Most of the thermal power costs as much as US\$280/MWh, pushing the average price of electricity purchased by ENEE to over US\$200/MWh. The retail electricity tariffs at about US\$163/MWh, US\$196/MWh, and US\$130/MWh for residential, commercial, and industrial customers respectively, are nowhere sufficient to recover the full cost, translating into an economic burden for ENEE and the GoH.

In addition to having an expensive generation mix, Honduras is also characterized by high technical losses (12.5%) and very high commercial losses (19.1%) – among the worst in Latin America. The inefficiencies, fossil-fuels orientation, and import-reliance of the power sector and budgetary difficulties of ENEE are all contributing to the deterioration of the country's competitiveness. **Therefore, the GoH has made its key priorities a restructuring of the country's power sector, a reduction of the cost of electricity generation, and a decrease of the reliance on imported fossil fuels.** By implementing a power sector structural reform and introducing additional incentives for RE projects, it expects to improve the efficiency of the sector and attract investors to shift the energy matrix to 70% RE by 2022.

### **1.3 RE Sector Context:**

Despite its current poor economic situation, Honduras has enough natural resources to be able to achieve energy self-sufficiency, either by the use of hydroelectric resources, whose theoretical potential is estimated at 5,000 MW, or the use of its solar energy potential, which is significant because of its geographic location.<sup>3</sup> In meeting ambitious targets (set by the GoH) of increasing total installed capacity by up to 2 GW over the next 5 years (representing US\$2 billion investment or 9% of the country's GDP), RE is emerging as a critical component. Significant increase in RE share in country's generation matrix, enabled by country's abundant natural resources, will help the GoH to balance its dual goal of (a) achieving the capacity target and continuing to improve the quality and the quantity of energy access, while (b) improving the sustainability of the country's power sector, moving away from expensive thermal-based generation, and eliminating destructive dependence on the fossil fuels import.

To achieve the objective of shifting the energy mix in Honduras toward RE generation, the GoH has recently implemented the following measures, among others:

- In 2005, Secretaria de Recursos Naturales y Ambiente (SERNA)<sup>4</sup> approved a sustainable energy action plan which is currently updated for the period up to 2030 (Plan de Acción para la Implementación de una Política Energética Nacional Sostenible). The plan covers a broad range of measures and targets, including RE development;
- In 2007 the National Congress passed the new RE law. The law promotes the use of larger grid-connected RE for the electricity generation by custom tax exoneration, income tax exoneration for the power producer, and obligation of ENEE to buy power generated from RE plants at an increased fee. In addition, the law provides RE projects with relief from import duties on

<sup>3</sup> ESMAP, 2012, *Sustainable Energy for All: Rapid Assessment and Gap Analysis. Honduras*, The World Bank

<sup>4</sup> SERNA's mandate is to define the general energy policy of the GoH.

equipment;

- In January of 2014 (effective July 2014), the National Congress approved the new Electricity Law, providing the framework for a reformed energy system. It included, among other measures:
  - Further unbundling of ENEE's generation, transmission, distribution and commercialization of electricity by 2015 (IFC has been actively involved as an advisor);
  - Creation of a wholesale energy market managed by a newly created System Operator;
  - Creation of a new regulator, responsible for the tariff-setting methodology and approving final tariffs.

These measures have favorably affected the investment attractiveness of various RE projects and, lately, Honduras has seen an active growth of installed capacity in wind generation, hydro, and some other RE sectors. For example, in October 2008, Mesoamerica Energy executed a PPA for 100 MW of wind with ENEE, reaching financial closing in November 2010, and the wind farm being officially inaugurated in February, 2012<sup>5</sup>. Progress has been seen across various RE technologies, but the utility-scale solar PV has remained at a nascent stage.

#### **1.4 Solar PV sector:**

Honduras enjoys a good solar resource, especially in the Choluteca area near the Gulf of Fonseca. Some activity in the solar PV sector has been seen in the off-grid rural sub-sector, where the energy access rates have been historically low, but the size of the potential market (including households, commercial users, schools, etc) appears to be very large. It is estimated that there are as many as 14,000<sup>6</sup> small size solar PV systems installed in the rural areas of the country. Of these, over of 5,000 PV systems have an average size between 30 and 50 W. The small solar PV systems proved effective and useful in replacing traditional lighting sources (such as kerosene lamps that provide inferior illumination) and batteries (used mainly for radio). Nevertheless, due to a combination of high unit prices, absence of financing assistance, and lack of government support, the growth of a wider market for PV in Honduras has been significantly hampered.

In an attempt to establish a support scheme for the development of solar projects, the GoH recently adjusted the existing 1998 Renewable Energy framework to accommodate solar power development. It created the "Energy Sales to ENEE by Own Initiative Program", which allows for ENEE to enter into PPAs with private developers at a price that is equivalent to the short run marginal cost (SRMC) of the System plus a 10% premium. In August 2013, after a series of bilateral negotiations with private developers, the Congress approved additional reforms allowing for standardization of PPA contracts for solar PV energy generation and an additional special price incentive of US\$30/MWh above the average SRMC. This incentive is only available to the first 300MW of solar PV generation capacity to be implemented in the country and only to the projects that become operational prior to August, 2015.

As a result of the energy reforms, PPAs for over 600MW in solar PV projects have been approved and signed by ENEE in the last 12 months, despite the limited first-come, first-served 300MW window. The cost of solar PV energy to ENEE is expected to be lower than the cost of thermal energy that will be displaced in the short term, and the levelized cost is within the range of long run marginal cost projections for the domestic and regional systems.

#### **1.5 Barriers to Private Sector Investment:**

Despite the considerable interest of the developers towards the emerging opportunities in the solar PV sector, most of the awarded PPAs will likely face significant difficulties in bringing the projects to financial closure and fulfilling the timeline requirements. While solar PV is an established technology,

<sup>5</sup> Globeleq Mesoamerica Energy, 2012, *Cerro de Hula, Honduras*, accessed at <http://www.mesoamericaenergy.com/en/projects/honduras.html>

<sup>6</sup> CIF, October 2011, *SREP Honduras Country Investment Plan*

there have not been any utility-scale projects in the country to date and first-movers will encounter typical barriers to the development of first-of-its-kind RE projects in the country. In addition, the limited liquidity of the Honduran financial sector and an untested, commercially unknown regulatory environment further complicate the scene. Thus, some of the key barriers to private sector investments in utility-scale PV in Honduras are:

- Limited ability to raise financing: International banks tend to shy away from Honduras and the Honduran power sector due to country and offtaker risk. Local/regional banks, on the other hand, face restrictions of regulatory capital, maturity mismatches, and have limited or no experience in lending to solar projects. In the current macroeconomic environment in Honduras, long term debt availability is limited and typical maturities (of about 8 years or shorter) in the local commercial debt market are well below those needed to ensure bankability of projects;
- First mover challenges: The first utility scale solar PV projects in Honduras will face unique financing and operational challenges linked to the learning curve of all the participating project parties and the need to operate in the absence of established supply chain, local experienced EPC contractors, proven financing mechanisms, experienced offtaker, etc;
- Lack of track record of PPAs for solar PV: The just-approved PPA scheme and announced solar PV incentives are new to Honduras and, therefore, commercially untested. To date, there have been no projects under the new, first of its kind PPA scheme in Honduras, compounding the perceived risk in the commercial debt markets.

Given the above barriers, a blended financing structure using CTF concessional funds is essential to enable project bankability and financial closure.

### **1.6 Summary of the Program and use of CTF funds:**

The Sub-Program will aim at demonstrating the viability and catalyzing the development of the solar PV sector in Honduras by addressing the barriers described above. It will support several of the first utility-scale private sector solar PV plants for a combined capacity of up to 80MW in order to: (a) generate a demonstration effect and help create a track record of the successful financing of solar PV projects; (b) demonstrate the bankability of first of its kind PPAs in Honduras under the new regulatory framework; (c) in turn, stimulate the entry of commercial local and international lenders into the solar industry, which will provide the long term financing needed for the industry to be sustainable. This will create a virtuous cycle that will help accelerate and consolidate the development of a solar PV industry in Honduras.

IFC has been actively engaged in identifying the suitable projects that comply with IFC financial, environmental and social, and performance standards. The final selection of sub-projects will take into account the sponsors' commitment and ability to deliver on the project, as well as their influence in the market (as this is crucial for establishing a track record and enticing future developers). Also, it should be noted that investments in the potential sub-projects will not create any additional burden to Honduras' debt sustainability. According to IMF<sup>7</sup> as of Aug 07, 2014 (based on 10/22/2010 DSA and 6/9/2014 draft DSA to be published) Honduras' risk of debt distress is rated as "Low." Moreover, no sovereign guarantees are provided for IFC investments and, therefore, investments undertaken by IFC in Honduras will not be reflected in the country's debt service requirements.

CTF support will help address the risks from developing and financing the first-mover utility-scale solar PV projects in Honduras. Given that these initial projects will face increased costs (setting contractual, operational and financial precedents, creating transmission links to key solar PV resource areas, building the sectoral scale that enables lower equipment prices from international suppliers, etc.), as well as the higher perceived risks, the CTF funds will be structured to provide a carefully tailored, minimally

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<sup>7</sup> IMF, August 2014, *List of LIC DSAs for PRGT-Eligible Countries as of August 07, 2014*. Accessed at <https://www.imf.org/external/pubs/ft/dsa/dsalist.pdf>

required level of concessionality, alongside IFC's own investments.

The Sub-Program will seek to retain flexibility in terms of sub-project selection and structuring of the CTF funds. The financial instruments, their pricing and terms of the CTF funds will be tailored on a project by project basis to address the specific needs of each sub-project. IFC will ensure that the sub-projects only receive the minimum concessionality necessary to proceed.

Final agreement to provide CTF funding to any individual sub-project would be subject to a full due diligence and approval by an internal IFC approval body, as well as IFC Board. All sub-projects financed under the Sub-Program will be required to meet IFC environmental, social, governance and other compliance requirements, as well as all Honduran regulatory requirements. IFC's participation in the sub-projects will ensure the implementation of IFC Performance Standards as well as Environmental and Social guidelines early on in the project development cycle.

### **1.7 Program's strategy to achieve market transformation:**

The Sub-Program will play a transformational role in the Honduran solar PV sector by supporting some of the first utility-scale solar PV projects in the country and catalyzing further market uptake. Sub-projects funded under the Sub-Program will establish an initial track record and demonstrate the viability of financing utility-scale solar PV projects by the private sector in a complex and evolving market and regulatory environment, under a long-term PPA of a new type. The Sub-Program will also help establishing project financing practice and reference documentation for future solar projects.

In the long term, the need for concessionality in the sector will diminish and the sector will become sustainable because: (i) the reduced perception of risk will increase the interest of the banking community and lower the cost of capital, enabling future projects to achieve reasonable returns; and (ii) the domestic market will mature and build capacity in understanding the technology (equipment supply, engineering, advisors etc.), while global markets will continue to grow, with equipment costs continuing to fall. Improved access to financing will lead the way for new developers and financiers to follow with scaled-up investments.

The market transformation will be further amplified because of the consistencies exhibited by the Sub-Program and the policies of the GoH, and direct support to achieving the specific goals of increasing the generation capacity and "greening" the mix. The Sub-Program will also benefit from the synergies with the SREP work, including IFC's efforts to support the development of RE technologies through the banking sector.

## **2 FIT WITH INVESTMENT CRITERIA**

### **2.1 Potential GHG Emissions Savings:**

The calculations of the potential GHG emissions savings are based on the following assumptions:

- The Sub-Program is expected to result in up to 80 MW installed capacity;
- An estimated capacity factor of 24%, based on initial assessment;
- A Combined margin emission factor<sup>8</sup> of 0.441 MtCO<sub>2</sub>e/MWh;<sup>9</sup> and
- An anticipated life of 20 years.

The sub-projects under this Sub-Program are expected to directly generate GHG emission reductions of

<sup>8</sup> For grid-connected renewable energy IFC follows the International Finance Institution (IFI) Approach to GHG Assessment in Renewable Energy. GHG emissions are estimated based on the combined margin emission factor.

<sup>9</sup> MtCO<sub>2</sub>e – Metric ton of CO<sub>2</sub> equivalent.

about 70,000 MtCO<sub>2</sub>e over the first full year of operation, and over 1,400,000 MtCO<sub>2</sub>e over the life.

Given that the Sub-Program may result in opening up an abundant solar PV sector in Honduras, triggering a series of follow-up projects, and likely continued stimulation of the sector by the GoH, IFC anticipates a significant replication effect. Assuming a multiple of at least 4x, the Sub-Program, therefore, could indirectly lead to overall of 5,600,000 MtCO<sub>2</sub>e.

Solar PV generation is fully proven, both technically and commercially, and there are widespread examples of successful application at scale around the world. Falling solar PV system prices, the high cost of fossil fuels in recent times and effective and broader incentive schemes have driven the growth in large-scale PV plants. Honduras has an attractive solar resource that can support large scale development of solar PV generation.

## **2.2 Cost-Effectiveness:**

Based on the above calculations and the expected Sub-Program cost of US\$20 million, the implied direct GHG emission reductions per CTF US\$ will be 14 \$/MtCO<sub>2</sub>e (or 0.07 MtCO<sub>2</sub>e/\$) over the life of the sub-projects and indirect GHG emission reductions per CTF US\$ will be 3.6 \$/MtCO<sub>2</sub>e (or 0.3 MtCO<sub>2</sub>e/\$).

## **2.3 Demonstration Potential at Scale:**

The Sub-Program seeks to support and enable the implementation of utility-scale private sector solar PV sub-projects in Honduras. Expansion of these sub-projects has been limited to date by a number of financial, institutional, and technical barriers. CTF support is expected to be critical to enable the very first sub-projects, which could provide the impetus for at least a four-fold increase in projects reaching a combined capacity of 320MW.

## **2.4 Development Impact / Co-benefits:**

The expected co-benefits to be achieved by the Sub-Program include:

- Improved financial sustainability of the ENEE: Through its cost-competitiveness, the Sub-Program will strengthen the financial sustainability of the ENEE, which currently plays a central role in the ongoing fiscal deficit in Honduras. Further, the success of the Sub-Program may help establishing a creditworthy track record of ENEE in the solar PV sector of Honduras, providing confidence to commercial investors for future RE projects;
- Diversified energy mix: By providing a critical demonstration effect of financial feasibility of the first utility-scale grid-connected solar PV projects in Honduras, the Sub-Program will support an ongoing diversification of the energy matrix of an IDA country away from fossil-fuels based energy generation model. In doing so, the Sub-Program will contribute to the reduction of expensive imports of diesel and bunker fuels and help to strengthen public finance in the near term;
- Lowering electricity costs: The Sub-Program will help lower the cost of electricity and therefore help support a lower cost structure for industries and consumers in Honduras;
- Local employment: The Sub-Program will stimulate growth in local employment through engaging local labor, much of it rural, in construction and operation phases and through delivering more energy to the grid, allowing for expansion of businesses and communities;
- Potential solar PV manufacturing industry growth: By accelerating the development of the solar PV sector and supporting its achievement of critical scale in Honduras, the Sub-Program will open up opportunities for manufacturing of some components of solar PV system in Honduras, with its associated employment benefits.
- Spill-over effect: By accelerating the development of this sector in Honduras, it is expected that

the development of the sector in other Latin American countries will receive a further boost.

### **2.5 Implementation Potential:**

IFC has a track record of supporting various private sector projects in Honduras, including over US\$135 million of investments in climate-smart projects (agribusiness, financial markets, trade finance, etc.) and several innovative RE-specific investments (La Vegona hydropower project, etc.). IFC will leverage its sector experience in solar PV energy, combined with country knowledge, to support developers in these initial sub-projects. Over the last years, IFC has financed hundreds of megawatts of solar PV projects in a range of countries and regulatory environments, including several first-of-a-kind projects in the solar sector.

The CTF funds requested in this proposal will be used to support several first-mover solar PV plants in Honduras. At this time, IFC estimated that the total US\$20 million of CTF funds could support approximately 80 MW of solar PV capacity, leveraging about US\$180 million of private sector financing, including US\$25-45 million of financing from IFC and the rest from other lenders and project sponsors.

### **2.6 Additional Costs & Risk Premium:**

Honduras has a good solar resource in the Choluteca area near the Gulf of Fonseca (about 2,170 kWh/m<sup>2</sup>/year). By focusing on solar PV sub-projects, the Sub-Program will enjoy favorable country conditions, leverage a technology that is technically and commercially fully proven outside of Honduras, and benefit from the widespread examples of successful applications at scale around the world. CTF support to first-mover solar PV projects will mitigate the higher costs (setting contractual, operational and financial precedents for IPPs, creating transmission links to key solar resource areas, building the sectoral scale that enables lower equipment prices and perhaps even local support and manufacturing from international suppliers, etc.) and higher perceived risks faced by the early projects. A successful demonstration of the first few truly large scale projects is expected to create the sustainable growth of the industry in Honduras.

### **2.7 Financial Sustainability:**

The first few utility scale solar PV projects in the country are expected to require concessional funding support due to still high equipment costs and high risks. Over time, however, the need for concessional funds will likely diminish. The perception of risk will decrease, attracting larger interest from domestic and international financial communities. The equipment costs will also continue to fall, with the overall growth of the global markets, allowing for prevailing market tariffs to become sufficient to delivering desired rates of return.

Thus, the development efforts, persistence and high costs encountered by the early movers in the sector, will ease the development and implementation process, and lower entry costs for future project developers. These demonstration efforts will also improve capacity in the sectors providing these technologies (equipment supply, engineering, advisors etc.), and prove the technical and economic realities of these technologies in the Honduran context. Through these mechanisms, the Sub-Program expects promoting sustainability of solar PV projects, thereby accelerating the development of the sector.

### **2.8 Effective Utilization of Concessional Finance:**

Concessional funding will:

- Enable the sub-projects to obtain the financing with the terms not currently available on the



- market, but necessary for the sub-projects to move forward;
- Allow IFC and other investors to provide financing to the sub-project, reaching the financial closure;
  - Set a precedent of a series of successful projects under the new regulatory framework;
  - Directly enable the construction of a series of the solar PV plants and indirectly stimulate the entire solar PV sector in Honduras;
  - Encourage private sector participation in solar PV projects in Honduras.

## **2.9 Mitigation of Market Distortions:**

The concessional finance is targeted specifically at addressing the first-mover costs experienced by the developers, who enter this new, evolving and un-proven market of solar PV projects in Honduras. This is a market that has not seen any investments yet, so initial market distortions cannot be foreseen or measured. After the first few investments, as the market matures and becomes better understood by the financiers and developers, it is expected that commercial lenders will enter the market.

The “minimum concessionality” principle will be applied to all the sub-projects and will require that the level of subsidy is not greater than necessary to induce the intended investment. The sub-projects supported under the Sub-Program will seek to minimize the use of CTF funds and maximize the leverage achieved from IFC, and other private sector financiers active in Honduras.

## **2.10 Risks:**

Potential risks associated with the Sub-Program include:

- First mover risks: First utility-scale private solar PV projects in Honduras will face risks associated with lack of experience and capacity in the sector.  
*Mitigant*: The Sub-Program will benefit from IFC’s selection of sub-projects with the right combination of sponsors and suppliers to maximize the chances of success. The Sub-Program will also benefit from IFC’s experience in financing private sector solar PV energy projects.
- Typical solar PV risks: These include tariff and market considerations, completion risks and technology concerns.  
*Mitigant*: These risks will be considered by IFC when selecting sub-projects to benefit from the Sub-Program. Residual risks stemming from the inherent uncertainty of the solar resource, possible cost overruns, and other factors may be addressed through financial structuring measures such as the establishment of minimum financial ratios or reserve accounts.
- Curtailment risk: ENEE has awarded 380 MW of wind, 600 MW of solar, and 600 MW of hydro PPAs, compared to Honduras’ installed capacity of about 1,800 MW. Oversupply and grid instability due to intermittency of the ramp up in RE may cause curtailment of solar PV production.  
*Mitigant*: The financing of the sub-projects will be structured to reflect the possibilities of the curtailment. Wind and solar power have a strong complementarity in time of production, and Honduras benefits from the balancing capacity of El Cajon, a large hydroelectric plant with an interannual storage reservoir. Furthermore, the Central American Electrical Interconnection System (SIEPAC) is expected to allow for evacuation of excess capacity up to a bandwidth of 600MW.
- Untested regulatory environment: This project will operate under the new PPA environment, which has just been introduced. In the case of outright termination, the project would be forced to find alternative buyers, likely through sale to the spot market.  
*Mitigant*: These risks will be critically evaluated by IFC when negotiating specific financing

structures with selected sub-projects. Residual risks stemming from the uncertainty of the PPA stability may be addressed through financial structuring measures, such as sizing the project and debt exposure against different scenarios, including various spot price projections.

### 3 PERFORMANCE INDICATORS

The performance indicators outlined below are derived from the CTF Results Measurement Framework. These indicators will be tracked at least annually. Suggested performance indicators for the sub-project include:

Indicator	Current Baseline	Anticipated Impact
<b>DIRECT IMPACTS:</b>		
MW of private solar power directly supported and installed	0 MW	80 MW
GHG emissions avoided	0 MtCO <sub>2</sub> e per annum for the energy sector	70,000 MtCO <sub>2</sub> e per annum; 1,400,000 MtCO <sub>2</sub> e over the life (20 years)
Incremental financing leveraged (of all, non-CTF parties)	US\$0	US\$180 million for the entire Sub-Program
Jobs created	N/A	N/A