Innovative Finance Solutions to Drive Investment to Renewable Energy

The India Innovation Lab for Green Finance is a public-private initiative that identifies, develops, and accelerates innovative solutions to finance green infrastructure in India.

The Global Innovation Lab for Climate Finance identifies, develops, and pilots cutting edge climate finance instruments that can drive billions of dollars of private investment in climate change mitigation and adaptation in developing countries.

The Fire Awards accelerate powerful, early-stage pilots and businesses that can unlock finance for clean energy and green growth.

पीयूष गोयल
PIYUSH GOYAL

सत्यमेव जयते

विद्युत, कोयला, नवीन और नवीकरणीय ऊर्जा एवं खान
राज्य मंत्री (स्वतंत्र प्रभार)
भारत सरकार
Minister of State (Independent Charge)
for Power, Coal, New & Renewable Energy and Mines
Government of India

Message

Serious climate action with focus on renewable energy is essential to protect and build long-term prosperity. Under the Paris Climate Agreement, countries have committed to reducing greenhouse gas emissions by investing in adaptation, mitigation, technology and capacity building.

To accelerate progress towards these commitments, there is a need to scale up investments significantly. Although clean energy investment surged in 2015, it still falls short of the need to mitigate and adapt to climate change, and to meet the rapidly growing electricity demand in emerging economies. In India itself, the Government has set an ambitious target of 175 GW capacity of renewable energy by 2022, including 100 GW of solar capacity.

The International Solar Alliance (ISA) was formed to help mobilise these funds and to harness the immense potential for investment in member countries. While Governments play a key role in formulating the right domestic policies, other actors like aid agencies, bilateral and multilateral funds, development finance institutions (DFIs), and the private sector drive the global climate and energy finance system. The private sector can be a large source of investment, however there are certain perceived risks.

In this context, Climate Policy Initiative (CPI) has been working on initiatives to overcome challenges in climate and energy financing and to identify new ways to drive investment. Such initiatives have mobilized close to $600 million through the Lab network in seed capital for Solar power and clean energy, energy efficiency, and climate-smart land use.

These innovative financing solutions will be useful for various other nations. Our common goals require establishment of a strong knowledge-sharing platform to locate and popularise such instruments and initiatives. The Ministry of New and Renewable Energy and CPI have partnered to prepare a Compendium of successful innovative instruments. This Compendium presents a selection of the financial instruments from such initiatives, like India Lab, Global Lab, and FiRe Awards that can provide a much-needed impetus in driving billions of dollars of private investment into solar power in developing countries.

I am confident that this Compendium would be a valuable reference, and would be a lighthouse in showing the way to various countries for enabling large-scale deployment of renewable energy projects.

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Innovative finance solutions to drive investment to renewable energy

Private investors – often supported by public policy and finance – are already channelling significant amounts of money into solar power, renewable energy, and climate resilience in countries around the world, but much more investment is needed in order to tackle the challenge of climate change. Well-designed financial instruments and appropriate public support that address the needs of investors can play a key role in scaling up finance for climate adaptation and mitigation in developing countries.

Innovative approaches are needed to blend public and private resources in order to catalyse private investment. The need to facilitate coordination between the public and private sectors to identify innovative interventions to mobilise green finance and accelerate their deployment led to the establishment of the Global Innovation Lab for Climate Finance (the Lab) in 2014, and a sister initiative specific to India,the India Innovation Lab for Green Finance (the India Lab) in 2015, as well as the Fire Awards in 2013.

The Labs and the Fire Awards identify, develop, and accelerate innovative solutions to manage investment risks and scale up investment. After a crowdsourced, open call for ideas, the three initiatives then select, analyse, stress-test, and help launch this next wave of cutting-edge finance instruments.The Labs focus on taking ideas and developing them into pilots. The Fire Awards focus on early stage pilots and businesses that are ready to be implemented. A complete cycle operates over the course of a 12-month period.

The initiatives are comprised of expert public and private stakeholders from government, finance, renewable energy, and more, whocollaborate to inform well-designed and implementable financial instruments. Climate Policy Initiative (CPI) serves as the Secretariat.

This compendium of instruments contains brief descriptions of the instruments currently under development (in various stages) with the Labs and the Fire Awards. These instruments were selected by the Lab members based on the following criteria:

- **Actionable**: Identifies the type of entity that could implement it, the pathway towards implementation, including the timeframe, activities, and key milestones, and possible risks to successful implementation and mitigation strategies.
- **Innovative:**Demonstrates the ability to address, directly or indirectly, barriers to private climate finance that have not yet been addressed or that will be addressed in an improved manner.
- **Catalytic**:Demonstrates the potential to mobilize private investment at scale and be scaled-up or replicated in other contexts.
- **Financially Sustainable:**Identifies a strategy for phasing out of public financial support and/or catalytic capital to achieve market viability.

Compendium of innovative financial instruments developed by the India Innovation Lab for Green Finance, Global Innovation Lab for Climate Finance, and Fire Awards

Summary of Innovative Financial Instruments:

India Innovation Lab for Green Finance (The India Lab)				
Cycle	**Instrument**	**Goal**	**Focus area**	**Implementation status**
2015-16	Rooftop Solar Private Sector Financing Facility	To drive capital at a lower cost for financing rooftop solar projects by providing long term financing through securitization	Rooftop solar power	Design ready to pilot in presence of standardized PPA documents
2015-16	Loans4SME	A peer to peer lending platform to help SMEs operating in renewable energy and energy efficiency raise debt finance	Renewable energy and energy efficiency	Identification of a donor to facilitate the launch of platform and key implementers are in progress.
2015-16	FX Hedging Facility	To facilitate large-scale foreign investment into renewable energy in India by providing a cheaper currency hedging solution	Utility-scale renewable energy	Under development. Could be complemented by Long-Term FX Management and Climate Investor One of the Global Lab

Global Innovation Lab for Climate Finance (The Global Lab)				
Cycle	**Instrument**	**Goal**	**Focus area**	**Implementation status**
2014-15	Long-Term FX Risk Management	To increase low-carbon investment in developing countries by providing foreign exchange and interest rate risk management instruments	Renewable energy	EUR 30 million commitment from German government to TCX for hedging instruments in Sub-Saharan Africa
2014-15	Climate Investor One	To promote development and finance of climate mitigation projects in developing countries.	Renewable energy	USD 450 million in strong interest with commitments totalling USD 250 million. First project in Rwanda in Q1 2017.
2014-15	Renewable Energy Platform for Institutional Investors (REPIN)	To simultaneously stimulate renewable energy deal flow and engage institutional investors in the financing of renewable energy projects	Renewable energy	Shortlisted for development. Pilot in planning stage for South Africa
2014-15	Debt Fund for Pre-Paid Energy Access	To bring renewable energy to more than five million off-grid homes in five years.	Off-grid solar	Key elements are in development to start pilot.
2014-15	Global Renewable Independent Energy Supply (GRIPS)	To replace off-grid industrial diesel generators with commercially mature and cost-competitive renewable alternatives, including storage, in Sub-Saharan Africa.	Renewable energy	Seeking support for the governance of the facility and fundraising for pilot.
2015-16	Small-Scale Renewable Financing Facility	To increase the deployment of small-scale renewable energy in developing countries by systemically improving financing conditions for small-scale projects.	Small-scale renewable energy	Key elements are under development to start pilot.

Finance for Resilience (Fire) Awards				
Cycle	**Instrument**	**Description**	**Focus area**	**Stage of development**
2014	Global Energy Efficiency and Renewable Energy Fund 2.0 (GEEREF)	To raise up to EUR 1bn ($1.38bn) of public and private capital for clean energy infrastructure.	Clean energy	Fire Winner – The Champion receives support from experts to implement the instrument.
2015	Pay As You Save® (PAYS®) Financing	To provide access to high value financing for utilities' customers where the utility invests in cost-effective energy upgrades at customer sites – like better building efficiency and rooftop solar.	Renewable energy and energy efficiency	Fire Winner – The Champion receives support from experts to implement the instrument.
2016	Developing Harmonized Metrics For PayGo Solar	To ease consumer financing, enhance investor confidence and decision making speed, by developing harmonized KPIs.	Distributed solar	Fire Winner – The Champion receives support from experts to implement the instrument.

India Innovation Lab for Green Finance (India Lab)
greenfinancelab.in

The India Innovation Lab for Green Finance is a public-private initiative that identifies, develops, and accelerates innovative solutions to finance green infrastructure in India.

It has been endorsed by the Ministry of New and Renewable Energy, and hosted and funded by Shakti Sustainable Energy Foundation, with additional financial support from the UK Government and the David and Lucile Packard Foundation. Climate Policy Initiative in Delhi serves as the Secretariat and analytical provider. The India Lab is in the process of its inaugural cycle (2015-2016), and these are the four instruments currently under development:

Rooftop Solar Private Sector Financing Facility

Meeting the Indian government's target of 40 GW of rooftop solar power by 2022 will require significant financial resources, estimated at USD $40 billion. However, lack of availability and low quality of debt capital are the key barriers to growth in the sector, due to lack of investor confidence in credit quality and the small size of rooftop solar system deals. In addition, delays in both lending decisions and disbursal of loans are decelerating the growth of the sector.

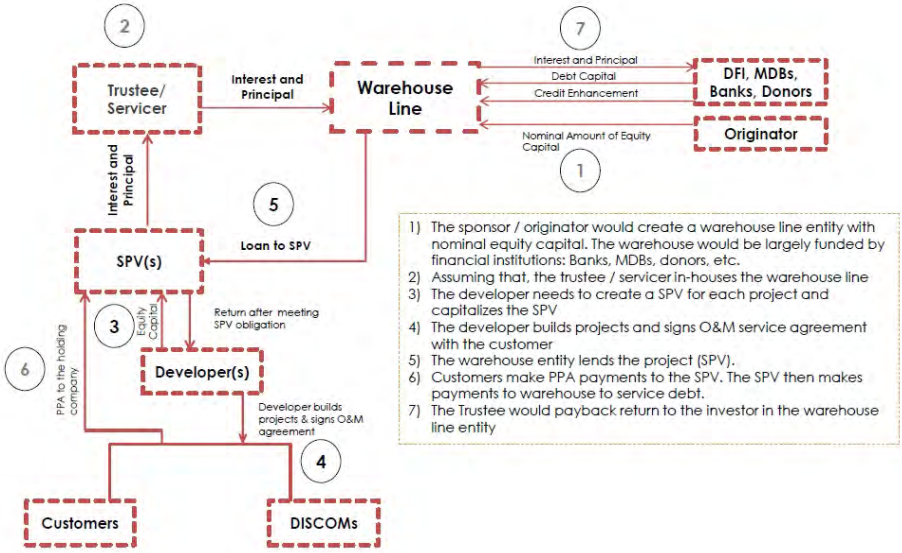
The Rooftop Solar Private Sector Financing Facility addresses these barriers by structuring a large number of small projects together so that the aggregate deal size is large enough and of sufficient credit quality to attract more attention from investors, especially institutional investors. In addition, the Facility could demonstrate the commercial viability of the sector, enabling it to issue asset backed securities (ABS) to institutional investors. This securitization will help reduce the cost of capital compared to conventional financing and drive capital flows through expansion of investor base. These two phases of the instrument, i.e., the aggregation phase and the securitization phase, are explained below:

Aggregation phase

The aggregation phase involves building a warehouse line of credit that provides loans to creditworthy rooftop solar projects. The Facility will be available for financing for 24 months. During this phase, projects will be submitted for financing by approved developers / aggregators. The developer builds the projects, and signs power purchase agreements (PPA) s and operations and maintenance service agreements with the customers. The PPA payments would be used to pay back the investors of the warehouse line. The

project developer can draw dividends or redeploy returns as long as it meets certain debt covenants. The structure of the warehouse facility is depicted in the figure below:

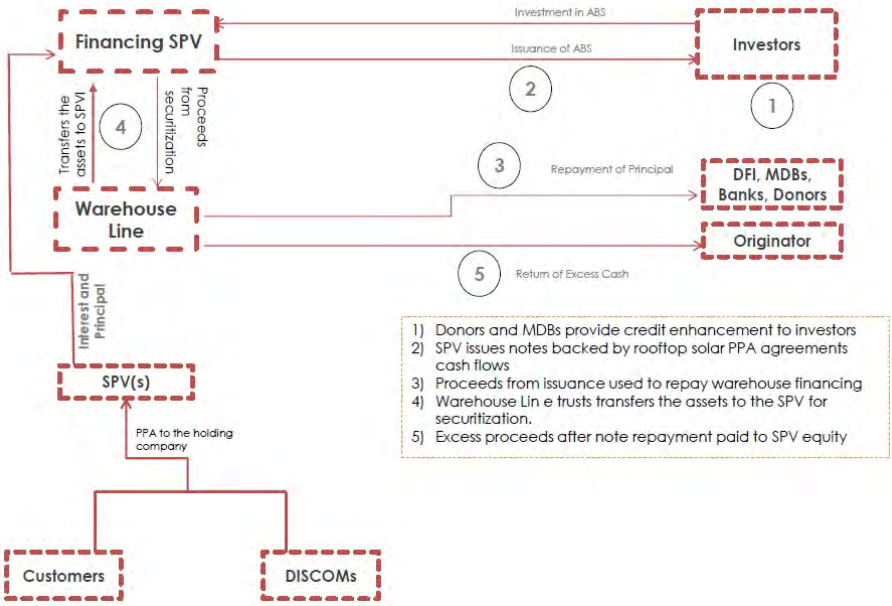
Rooftop Solar Private Sector Financing Facility – Aggregation Phase Mechanism



Securitization phase

The securitization phase includes refinancing the warehouse line of credit by issuing asset-backed security bonds to domestic institutional investors, domestic lenders, or international investors (if currency risk can be managed by the implementing agency). The asset-backed security bond will be securitized against the loan pool. The proceeds from the securitization can be used to pay back the outstanding loans.The structure of the securitization phase is depicted in the figure below:

Rooftop Solar Private Sector Financing Facility – Securitization Phase Mechanism



The Facility would add around 180 MW of capacity in the pilot phase and around 500 MW by 2022. In the long run, the Facility has the potential to raise more capital once the solar developer reaches scale, which enables the developer to securitize the power purchase agreement payments. Securitization will help reduce the cost of capital compared to conventional financing and drive capital flows through expansion of investor base. During the aggregation stage, this Facility could lend at a rate of ~10.5%, which is 0.5-3.5% points lower than current cost of debt of solar developers. In the securitization stage, the Facility could lend by 1-1.5% lower than the cost of borrowing from traditional sources.

By 2022, the Facility could lower CO_2 emissions by around 695 mMT (0.93mton of CO_2 per 1 MWh power generation, (EPA, 2012), and SOx and NOx emissions by 2,300 mMT and 3,217 mMT, respectively, per year. It can also create an additional 20,000 jobs over 2016-2022. The impact of the Facility is based on its market share potential in the rooftop solar sector by 2022.

The proponents of the Facility are in discussions with potential investors and donors to take it forward. Once investors commit capital to the Facility, further work will be done on standardizing the power purchase agreement and loan

documents, developing term sheets and prospectus, and selecting developers, customers, and projects. (*Source: Rooftop Solar Private Sector Financing Facility, India Lab*)

Loans4SME

Small and medium enterprises will require substantial amount of funds in debt financing to harness the opportunities presented by renewable energy and energy efficiency in India. Bank lending is the most common source of external finance for many SMEs and entrepreneurs, causing SMEs to be heavily reliant on traditional debt financing facilities to fulfil their initial capital requirements, working capital requirements and other investment needs. Entrepreneurs have to contend with a banking system that has traditionally relied on collateral and past track records as key factors in lending decisions. As a result:

- There are high defaults and non-performing assets (NPAs) in banks' records. Most renewable energy companies fail to meet their stringent lending criteria such as the requirement for at least three years of profitability.
- First generation SME entrepreneurs often do not have real estate to offer as collateral.
- Banks are not fully aware of new technologies or asset light businesses and are generally wary of taking a credit exposure on these companies.
- Turn-around times for loan sanctions are currently several months, resulting in companies missing out on opportunities.

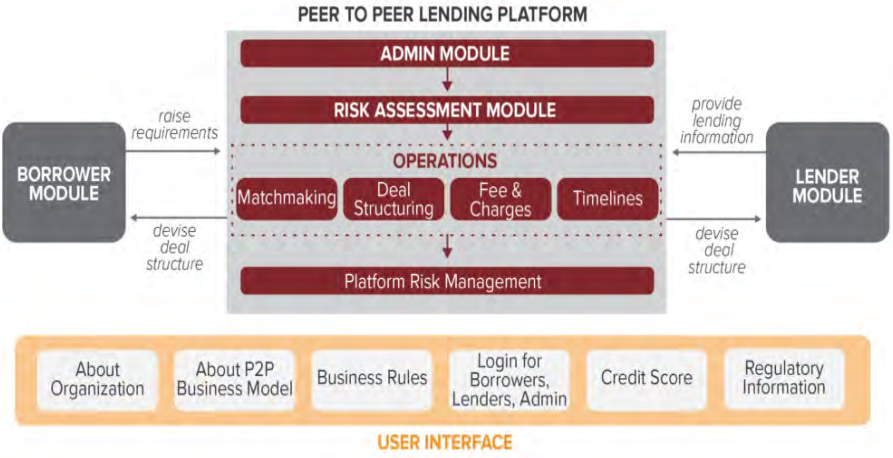
Loans4SMEs offers a solution that could expand the source of domestic debt capital for SMEs beyond banks, to include high net worthindividuals, family investment offices and corporate treasuries. Loans4SMEs will launch a curated marketplace that will connect businesses with debt providers directly via peer-to-peer lending. It will focus on cash flows and the repayment capabilities of the projects in order to increase investor confidence and offer timelier financing. Loans4SMEs would (i) expand the source of domestic debt capital beyond banks; (ii) focus on cash flows and repayment capabilities of the projects and create trust in the minds of investors and (iii) be able to offer timely financing.

Loans4SMEs is unique in that it targets only renewable energy and energy efficiency initiatives, which makes it a green financing facility for the SME sector. Further, this instrument can address key barriers like limited availability of finance, information asymmetry, and higher risks and transaction costs associated with small scale lending. This adds to its novelty.

Borrowers and lenders would interact with each other on the Loans4SMEs platform accessed with validated login details. The structure of the platform is shown below. The platform admin performs a Know-Your-Customer (KYC)

check of a potential account holder before they begin transactions through the platform, in which on his or her business and financial position are scrutinized, followed by a fraud check.

Loans4SMEs would also be supported by a robust credit risk assessment model to build lender confidence. Using an innovative credit score algorithm, Loans4SMEs will provide lenders with a tool to measure the relative risk of all the loans listed on the portal and organize them according to their risk profile. The model is used in conjunction with cash flow projections to form a view on relative riskiness of the transaction.



Our analysis indicatesthat a peer-to-peer lending platform has the potential to mobilize substantial amount of funds in debt financing for SMEs in renewable energy and energy efficiency by 2022. The instrument is expected to lower CO_2 emissions by 1,167 mMT per year and SOx and NOx emissions by 3,681 mMT and 5,146 mMT per year by 2022.(*Source: Loans4SME, India Lab*)

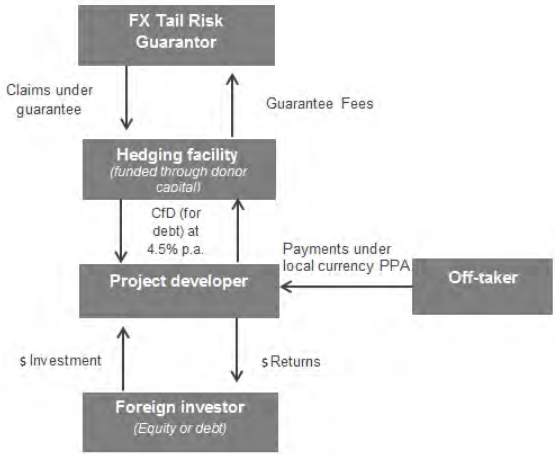
FX Hedging Facility

The FX Hedging Facility aims to attract more, and cheaper, foreign investment for renewable energy by managing a key barrier: currency risk. When financing a renewable energy project with foreign capital (USD), the mismatch in the currency of obligations and currency of revenue exposes the investors/project to the risk of devaluation in the latter over time, resulting in reduced investments in the country due to the higher perception of risk and necessitating the use of a currency hedge to protect against these devaluations. The FX Hedging Facility is a customizable currency hedging product that lowers currency hedging costs by targeting a particular tranche of currency risk, thereby

allowing allocation of risks to suitable parties and eliminating the credit risk premium otherwise charged in a commercial currency swap.

The FX Hedging Facility possesses the following benefits compared to a commercial cross currency swap:

- Elimination of counterparty credit risk: The transaction structure and the upfront availability of the guarantee fee can reduce the cost of hedging by ~100 bps.
- Implicit/indirect subsidization of liquidity risk: This does not require any donor grant, thereby increasing the leverage. Providingsuch implicit subsidy in a commercial swap is not feasible. This further increases the leverage factor.
- Targeted subsidy: The cost of the subsidy, or the guarantee fee, to provide the FX Hedging Facility to a typical foreign debt service payment was calculated as 83 bps, and at 28 bps for solar PV projects linked to equity cash flows. This is more efficient use of public grants as it covers only the extreme currency depreciation.



The FX Hedging Facility can be structured for both debt and equity. A contract for differences (CfD) is used for debt transactions but not equity transactions. The FX risk exposure of the project developer can be fixed at a pre-determined level, beyond which the FX hedging facility component of the instrument (funded by donor capital) will cover the risk by paying cash to the project developer. The frequency of this payment would be similar to debt payment obligations of the project developer. If the currency depreciation is below the CfD rate, then the hedging facility would have the benefit. Beyond the CfD FX rate, the hedging facility would require an FX tail risk guarantee to protect itself from extreme currency depreciation.

The FX Hedging Facility requires an implementation agency ('guarantor') to underwrite or provide the guarantee. The transaction requires two separate contract agreements:

- A CfD contract between the project developer and the FX hedging facility (donor capital).
- A guarantee agreement between the hedging facility and guarantor. The guarantor can be a government agency or development finance institution (DFI).

The figure shows the transaction and the associated stakeholders. Beyond the CfD FX rate, the hedging facility would require an FX tail risk guarantee to protect itself from extreme currency depreciation.

There is a slight difference in the overall transaction structure for equity investment. In the case of equity, we estimated that there is a natural hedge for foreign equity investors against currency devaluation. Up until an annual average depreciation of 5.45% in INR against USD, a renewable energy project can deliver an equity internal rate of return (IRR) of 10% to foreign equity investors, given the project generates an equity IRR of 16% in INR terms. Also, the underlying cash flows to be protected will be different when compared to debt service payments, which will be free cash flows available for foreign equity.

There are different methods that can be employed to price a guarantee product. We used the equivalence premium principle with distribution of the future exchange rate, derived using a geometric Brownian motion to arrive at the minimum commercial annual guarantee fee of 83 bps for debt with a tenor of ten years tenor, and 28 bps for equity with a horizon of 25 years.

Overall, the FX Hedging Facility can not only reduce the cost of currency hedging by almost 22%, but can also increase the leverage factor. (*Source: FX Hedging Facility, India Lab)*

Global Innovation Lab for Climate Finance (The Lab) *climatefinancelab.org*

The Global Innovation Lab for Climate Finance identifies, develops, and pilots cutting edge climate finance instruments that can drive billions of dollars of private investment in climate change mitigation and adaptation in developing countries.

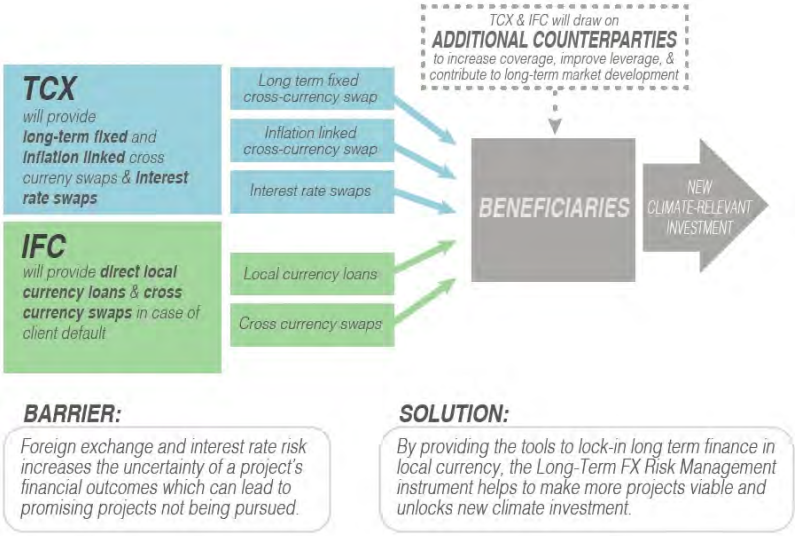
It has been endorsed by the G7. The Global Lab is funded by the UK Department of Energy & Climate Change (DECC), the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB), the U.S. Department of State, the Netherlands Ministry for Foreign Affairs, Bloomberg Philanthropies, and The Rockefeller Foundation. Climate Policy Initiative serves as the Lab Secretariat. The Global Lab has completed two cycles (2014-2015 and 2015-2016) and to date, Global Lab instruments have collectively attracted more than $600 million in initial funding for pilots. This compendium includes a few selected instruments from the Global Lab that specifically targets renewable energy (solar), both from the utility scale and energy access perspective.

Long-Term FX Risk Management

Currency risk is one of the biggest and most persistent barriers to renewable energy and climate investment in developing countries. In countries with underdeveloped capital markets the only viable option is to finance projects in a foreign currency – such as dollar or euro, which adds cost to projects.

The Long-Term Foreign Exchange Risk Management instrument provides tools to address currency and interest rate risk for climate relevant projects in developing countries, by locking in long-term finance in local currencies.

The proposed structure provides a solution to mitigate market risk and counterparty credit risk, which act as the main barriers to greater issuance of swaps in developing countries. Market risk is mitigated within the facility by pooling risk and diversifying overall foreign exchange exposure across a wide range of emerging market currencies and through the use of long-term economic models in countries with little financial depth and a lack of financial barometers such as yield curves. Counterparty credit risk is addressed by working through counterparties with established lending relationships such as DFIs and Exim banks that have a good understanding of credit quality of borrowers. In cases where this is not possible, the instrument uses credit guarantees that will cover a certain percentage of defaults.



By addressing a major investment barrier - currency risk, it can support $1.5 billion of clean investment projects. TCX and IFC (International Finance Corporation) are seeking to implement a pilot with the aim of mobilizing up to $2 billion in hedging capacity for clean investment projects in developing countries, with a potential GHG reductions of 1.7mtCO_2 per year and a cumulative total of 39mtCO_2 over the operational lifetime of the assets.

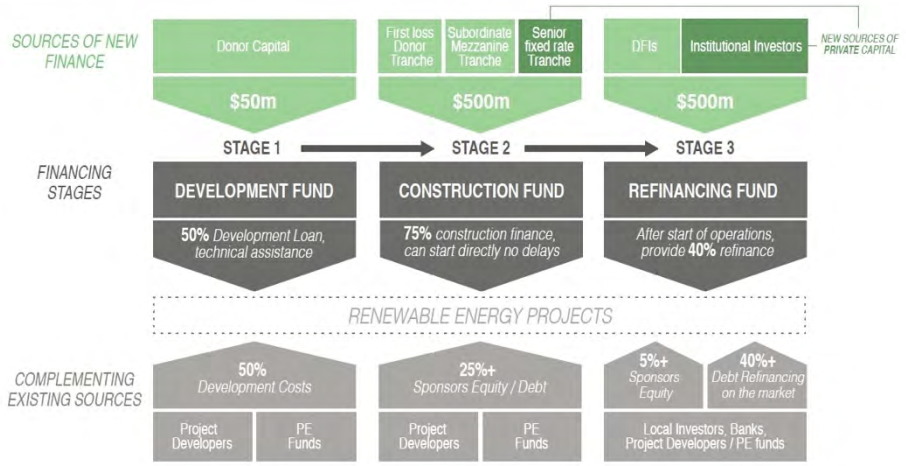
The German Environmental Ministry announced €30 million for innovative and new hedging instruments to promote renewable energy and energy efficiency investments in Sub-Saharan Africa. (*Source: Long-Term FX Risk Management, The Lab)*

Climate Investor One

In recent years, many developing countries have established supportive regulatory frameworks for private investment in renewable energy projects. However, finance for these projects remains a challenge: projects can fail or face severe delays due to lack of expertise and prolonged negotiations with financiers; because renewable energy projects involve high amounts of capital expenditure, debt costs at construction can have a disproportionate effect on their financial viability; and finally, attracting new investors remains a challenge.

Climate Investor One will facilitate early-stage development, construction financing, and refinancing to fast-track renewable energy projects in developing countries; combining three innovative investment facilities into one

to finance projects in the wind, solar and hydro sectors. The Facility supports projects through several stages of a projects' life to ensure projects get off the ground and attract new investors.



The Climate Investor One (CI1) facility includes: A Development Facility (DF) that will reduce development times and improve bankability for identified projects; A Construction Finance Facility (CFF), which will provide one-cheque equity/mezzanine finance to get projects operational; and after an appropriate time, a Re-financing Facility (RFF) to take up to 50% of re-financed long-term and low risk debt.

Climate Investor One will mobilize at least USD 2 billion in new private finance out to 2020, while lowering the cost of clean electricity to consumers in developing countries. A pilot of 300 MW of renewable energy capacity has the potential to reduce 600ktCO_2 emission per year.

The pilot is being taken forward by FMO, the Netherlands Development Finance Company, which proposed the idea to the Lab in partnership with Phoenix Infraworks from South Africa. Climate Investor One has generated USD $200 million in initial funding from private and public sources, with USD $450 million in strong interest – with term sheets recently signed for major solar and hydro projects in East Africa. While CI1 is currently operating in Africa, there is interest, and potential applicability in Asian geographies. (*Source: Climate Investor One, The Lab)*

Renewable Energy Platform for Institutional Investors

Renewable energy investments offer long horizons, predictable cash-flows, diversification, and excess yields. These attributes can align well with the needs of most institutional investors, however, renewable energy investment vehicles are not structured in a way that can attract institutional investment. At the same time, renewable energy financing relies on commercial banks that have a preference for shorter investment horizons.

In this context, it is vital to engage institutional investors in the financing of renewable energy projects by improving the access to long-term capital and shortening holding periods for commercial banks.

The Renewable Energy Platform for Institutional Investors (REPIN), proposed by the European Investment Bank, aims to engage institutional investors in the financing of renewable energy projects to free up balance sheets of project developers and project finance banks, reduce overall costs, and thereby encourage new investment in the sector. REPIN aims to foster the financing of new projects by (a) freeing capital from refinancing transactions and channelling this into new projects, and (b) by providing liquidity to the market so to increase the willingness of project finance lenders to finance new projects at a lower cost.

REPIN is a flexible instrument that could encompass a variety of financial structures, tailored to the renewable energy financing market and to investors' preference and specific country needs. As a pilot case in South Africa, a REPIN mechanism could mobilize substantial funds in the next five years, if successfully implemented, and increase commercial banks' current renewable energy financing by more than 20%. These projects would theoretically reduce emissions by 508mtCO_2 overall and 36mtCO_2 on a yearly basis.

The European Investment Bank is currently seeking partners for institutional support and sourcing of loans. (*Source: REPIN, The Lab)*

Debt Fund for Prepaid Energy Access

Almost 600 million people in Sub-Saharan Africa still lack access to electricity. Prepaid off-grid renewable energy systems have the potential to significantly reduce this number over time. However, access to working capital is a key barrier preventing this technology from reaching full-scale.

The Debt Fund for Prepaid Energy Access (Debt Fund) is structured as a stand-alone fund that would lend to energy service providers of prepaid solar home system products and services. The Debt Fund aims to provide the necessary working capital to energy service providers in Sub-Saharan Africa to expand service to new regions and areas and provide electricity to 645 million people by 2030 and could reduce emissions by more than 10mtCO_2.

The Debt Fund would be financed through private equity and debt from institutional investors and international financial institutions. It provides asset finance and consumer debt and gives investors priority access to consumer payments and deployed energy assets. Consumer payments are typically greater than the corresponding loan amount, providing a degree of over-collateralization of the amount lent.

There is interest from private investors and development banks to invest, however there are several more steps and implementation challenges to overcome, in order to get the Debt Fund to pilot stage, including the development of an implementation plan and credit metrics.*(Source: DFPEA, The Lab)*

The Global Renewable Independent Power Supplier

Large energy consumers seeking affordable and stable power in remote areas often have no option but to rely on expensive, inefficient, and carbon-intensive diesel generators.

The Global Renewable Independent Power Supplier (Grips) model provides industries in developing countries with grid-independent renewable energy to drive the replacement of diesel generators with cheaper and reliable renewable alternatives.

Grips offers an innovative solution to finance renewable energy projects in developing countries – with no need for long-term public subsidies. Grips will use all-equity financing to fund the construction of portfolios of off-grid, grid-parallel and grid-supported projects through tailored PPAs with businesses that need reliable and affordable energy. For each project, Grips will substitute diesel generators for a hybrid system, using at least 50% renewable energy, enabling clean, low-emissions energy where it was not available before.

The Grips model can promote economic growth in remote areas with no stable energy supply and it targets a huge and largely untapped global market of industrial off-grid diesel systems estimated at approximately 29 GW in installed capacity. Successful implementation would avoid up to 2.5mtCO_2 per year through 2030, promote industrial energy security, and foster electrification of rural communities in low-income countries.

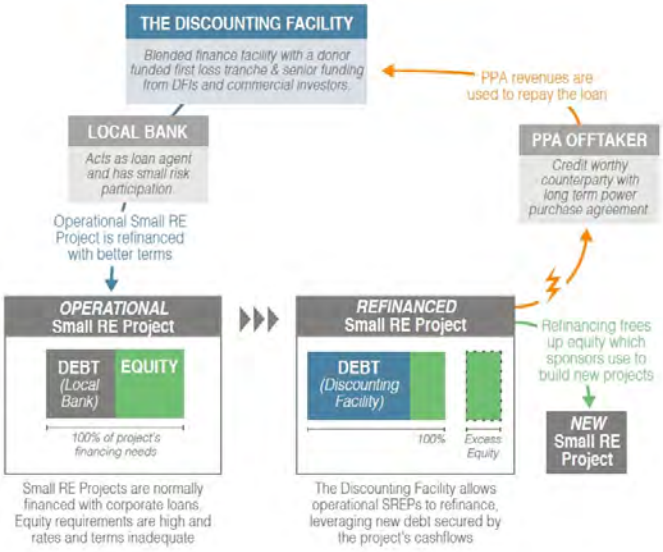
Grips is currently seeking public support for setting up its corporate governance structure and for identifying the first diversified pool of pilot projects in at least three countries in Sub-Saharan Africa. Fundraising is ongoing for the first fund, which is targeting $200 million in investment to support an initial portfolio of at least five projects with potential to reduce more than 71 kilo tonnes of CO_2 emissions per year by replacing approximately 27 million liters of diesel per year with renewables.*(Source: GRIPS, The Lab)*

Small-Scale Renewable Financing Facility

Small-scale renewable energy can play a key role in increasing energy access and driving low-carbon development, but projects ranging from 1-20MW typically do not have access to project finance.

The Small-Scale Renewables Financing Facility (SRFF) aims to systemically improve financing conditions for small-scale renewable energy projects, helping make more projects bankable and contributing to the transformational development of local institutions to enable a wider scale-up. The Facility incorporates two innovative and complementary financing approaches – discounting and mezzanine facility. The direct impacts of the facility will be substantial.

The Global Lab has developed the Discounting Facility, which will allow operational renewable energy projects to refinance into long-term debt and increase its financial leverage by "discounting" its future cash-flows from a power purchase agreement. These cash-flows will serve as collateral, reducing



the amount of equity needed and improving financing terms.

The Discounting Facility is at an advanced conceptual phase with a high-level operational and financial structure already defined. The next step of development is undertaking detailed due diligence to assure investor needs, develop a deal pipeline and ensure market additionality as this instrument is highly market specific.*(Source: SRFF, The Lab)*

Fire Awards
financeforresilience.com

The Fire Awards accelerate powerful, new ideas and business models that can unlock finance for clean energy and green growth.

Climate Policy Initiative serves as the Secretariat for the Fire Awards, which collaborates closely with the Global Innovation Lab for Climate Finance (The Lab). The Fire Awardsare funded in part by Bloomberg Philanthropies, and Bloomberg New Energy Finance provides in-kind support. The following three interventions are part of a select list of Fire Awards winners that are actively targeting investors andin the process identifying the most important metrics that need to be standardized to support the launch of a financial structure.

Global Energy Efficiency and Renewable Energy Fund II

The opportunity for renewable energy investing in developing economies is driven by three principal factors: 1) population and economic growth; 2) energy demand growth; and 3) a growing share of clean power in the energy mix. Energy efficiency is now widely recognized as one of the most economical ways of addressing climate change and many countries have established energy efficiency targets. However, in the absence of adequate public sector finance, it is vital to address barriers for private sector participation for the deployment of renewable energy and energy efficiency technologies.

GEEREF (Global Energy Efficiency and Renewable Energy Fund) II is a fund-of-funds model that leverages public finance in multiple layers with a first loss mechanism to bring clean energy to emerging markets. GEEREF I has aggregated 15 clean energy infrastructure funds across Asia, Africa and Latin America, enabling them to raise up to $138 million equity each. These funds then deliver additional capital through co-investment and debt into the underlying projects, creating a multiplier effect for GEEREF investors of nearly 50 times.*(Source: GEEREF II, FiRe)*

Pay As You Save (PAYS) Financing (2015)

Individual building owners and low-income households have faced barriers to accessing investment capital for cost-effective energy upgrades like better building efficiency and rooftop solar, and similar financing challenges have stumped credit-strained companies and local governments.

Pay As You Save (PAYS®) is a market-based system that enables utility customers to purchase and install cost-effective energy efficiency upgrades or distributed renewable energy assets through a voluntary tariff that assures

immediate net savings to customers. PAYS enables building owners or tenants to purchase and install money saving, resource efficiency products with no up-front payment and no debt-obligation. Those who get the savings, pay for these products through a tariffed charge on their utility bill, but only for as long as they occupy the premises where the products were installed.

This intervention will open access to financing for distributed energy to utilities' customers implementing a voluntary tariff for energy efficiency and renewables. (*Source: GEEREF, FiRe)*

Developing Harmonized Metrics ForPayGo Solar (2016)

More than a billion people lack access to electricity. Traditional alternatives have fallen short in their environmental performance, and in this context, distributed solar, has emerged as a leading business model for alternative energy systems. Offering consumer financing has proved to be a very successful business model, but needs large amounts of working capital to scale. High perceived and actual risks like lack of information on credit quality of the off taker; local currency exposure; and lack of meaningful collateral for collection purposes are limiting growth by restricting access to necessary financing in an attempt to increase the availability of commercial finance.

PayGo solar is a new and growing sector with potential to deliver energy access to millions of people by increasing investor confidence. Harmonized industry KPIs combined with data sharing and benchmarking can help unlock necessary commercial finance and help bridge the 1.2 billion person energy access gap through appropriate credit risk assessment, thereby lowering overall risk of the investment portfolio.

The World Bank/IFC is in the process of finalizing agreed and feasible KPI's and stress testing features of a dedicated financial vehicle for the Distributed Solar Industry.*(Source: PayGo Solar, FiRe)*

Innovative financial instruments key to mobilizing private capital for solar energy deployment in ISA countries

Many ISA countries are facingfinancing-related barriers in scaling up deployment of solar power, specifically, access to low-cost finance. The innovative financial instruments developed by the India Innovation Lab for Green Finance, the Global Innovation Lab for Climate Finance, and the FiRe Awards, which are presented in this compendium, have the potential to address this barrier by mobilizing billions of dollars in private investment.

The instruments – the India Lab's FX Hedging Facility and the Global Lab's Long-Term FX Risk Management and Climate Investor One – will address the currency risk, which is the most significant barrier to foreign investment. These instruments have the potential to attractthe much needed foreign investments for the uptake of solar power in the ISA countries in the next 1-2 years. Two of these instruments are already being piloted in Sub-Saharan Africa, Rwanda, and could be potentially applied to Uganda, Kenya, Nigeria, Ghana, Indonesia, Philippines, India, Nepal, Nicaragua, Guatemala, Costa Rica, and Panama.

Rooftop solar, which can be installed quickly and would provide a reliable power supply, can help eradicate energy poverty in developing economies. However, in many nations, the rooftop solar sector continues to face problems in accessing low-cost finance. Since the rooftop solar sector is new and transaction costs are high (due to the smaller size of projects), bankers don't yet feel comfortable lending to these projects.The India Lab instruments, which aim to increase financing for rooftop solar PV systems – Rooftop Private Sector Financing Facility and Loans4SME,– can also support the development and energy goals of ISA nations. The Global Lab's Debt Fund for Pre-paid Energy Access, GRIPS, Small-Scale RE Finance Facility, and FiRe winners - PAYS and PayGo Solar could be instrumental in enhancing clean energy access.

Through the innovative financial instruments presented in this compendium, ISA nations have several avenues to unlock more investment to support their energy and development goals.

Paris Declaration: International Solar Alliance

DECLARATION ON THE OCCASION TO LAUNCH THE INTERNATIONAL SOLAR ALLIANCE OF COUNTRIES DEDICATED TO THE PROMOTION OF SOLAR ENERGY

Recognizing that sustainable development, universal energy access, and energy security are critical to the shared prosperity and future of our planet, and acknowledging that clean and renewable energy needs to be made affordable for all, we do hereby declare our intention to support India's proposal to launch an international solar alliance as a common platform for cooperation among solar resource rich countries lying fully or partially between the Tropics of Cancer and Capricorn.

United by a shared vision to bring clean, affordable and renewable energy within the reach of all, we affirm our intention to join the international solar alliance as founding members to ensure the promotion of green, clean and sustainable energy, and to draw on the beneficence of the Sun in this endeavour.

We share the collective ambition to undertake innovative and concerted efforts with a view to reducing the cost of finance and cost of technology for immediate deployment of competitive solar generation assets in all our countries and to pave the way for future solar generation, storage and good technologies adapted to our countries' individual needs.

United by our objective to significantly augment solar power generation in our countries, we intend making joint efforts through innovative policies, projects, programmes, capacity building measures and financial instruments to mobilize more than 1000 Billion US Dollars of investments that are needed by 2030 for the massive deployment of affordable solar energy. We recognize that the reduced cost of finance would enable us to undertake more ambitious solar energy programmes to bring development and prosperity for our people.

We intend working together towards the development of appropriate benchmarks, facilitating resource assessments, supporting research and development and demonstration facilities, with a view to encouraging innovative and affordable applications of solar technologies.

Desirous of establishing an international alliance of countries dedicated to the promotion of solar energy as an effective mechanism of cooperation, we agree to create an International Steering Committee, open to interested countries, to provide the necessary guidance, direction and advice to establish the international solar alliance.

Monday, 30th November, 2015

LIST OF PROSPECTIVE MEMBER COUNTRIES FOR INTERNATIONAL SOLAR ALLIANCE (ISA[1])

1. *Peoples Democratic Republic of Algeria*
2. *Antigua and Barbuda*
3. *Republic of Angola*
4. *Argentina Republic*
5. *Commonwealth of Australia*
6. *Commonwealth of Bahamas*
7. *Peoples Republic of Bangladesh*
8. *Barbados*
9. *Belize*
10. *Republic of Benin*
11. *PluriNational State of Bolivia*
12. *Republic of Botswana.*
13. *Federal Republic of Brazil*
14. *Nation of Brunei, Abode of Peace*
15. *Burkina Faso*
16. *Republic of Burundi*
17. *Kingdom of Cambodia*
18. *Republic of Cameroon*
19. *Republic of Cape Verde*
20. *Central African Republic*
21. *Republic of Chad*
22. *Republic of Chile*
23. *Peoples Republic of China*
24. *Republic of Colombia*
25. *Union of Comoros*
26. *Congo Democratic Republic of*
27. *Congo - Republic of*
28. *New Zealand*
29. *Republic of Costa Rica*
30. *Republic of Cote divoire*
31. *Republic of Cuba*
32. *Republic of Djibouti*
33. *Commonwealth of Dominica*
34. *Dominican Republic*
35. *Republic of Ecuador*
36. *Arab Republic of Egypt*
37. *Republic of El Salvador*
38. *Republic of Equatorial Guinea*
39. *State of Eritrea*
40. *Federal Democratic Republic of Ethiopia*
41. *Republic of Fiji*
42. *France*
43. *Gabonese Republic*
44. *Republic of The Gambia*
45. *Republic of Ghana*
46. *Republic of Grenada*
47. *Republic of Guatemala*
48. *Republic of Guinea*
49. *Republic of Guinea-Bissau*
50. *Republic of Guyana*
51. *Republic of Haiti*
52. *Republic of Honduras*
53. *Republic of India*
54. *Republic of Indonesia*
55. *Jamaica*
56. *Japan*
57. *Republic of Kenya*
58. *Republic of Kiribati*
59. *Laos Peoples Democratic Republic*
60. *Republic of Liberia*
61. *Libya*
62. *Republic of Madagascar*
63. *Republic of Malawi*
64. *Federation of Malaysia*
65. *Republic of Maldives*
66. *Republic of Mali*
67. *Republic of Marshall Islands*
68. *Islamic Republic of Mauritania*
69. *Republic of Mauritius*
70. *United Mexican State*
71. *Federated States of Micronesia*
72. *Republic of Mozambique*
73. *Republic of Myanmar*
74. *Republic of Namibia*
75. *Republic of Nauru*
76. *The Netherlands*
77. *Republic of Nicaragua*
78. *Republic of Niger*
79. *Federal Republic of Nigeria*
80. *Sultanate of Oman*
81. *Republic of Palau*
82. *Republic of Panama*
83. *Independent State of Papua New Guinea*
84. *Republic of Paraguay*
85. *Republic of Peru*
86. *Republic of Philippines*
87. *Republic of Rwanda*
88. *St. Lucia*
89. *Federation of Saint Kitts and Nevis*
90. *Saint Vincent and the Grenadines*
91. *Independent State of Samoa*
92. *Democratic Republic of Sao Tome and Principe*
93. *Kingdom of Saudi Arabia*
94. *Republic of Senegal*
95. *Republic of Seychelles*
96. *Republic of Sierra Leone*
97. *Republic of Singapore*
98. *Solomon Islands*
99. *Federal Republic of Somalia*
100. *Republic of South Africa*
101. *Republic of South Sudan*
102. *Democratic Socialist Republic of Srilanka*
103. *Republic of Sudan*
104. *Republic of Suriname*
105. *United Republic of Tanzania*
106. *Kingdom of Thailand*
107. *Democratic Republic of Timor-Leste*
108. *Togolese Republic*
109. *Kingdom of Tonga*
110. *Republic of Trinidad and Tobago*
111. *Tuvalu*
112. *Republic of Uganda*
113. *United Arab Emirates*
114. *United Kingdom*
115. *United States of America*
116. *Republic of Vanuatu*
117. *Bolivarian Republic of Venezuela*
118. *Socialist Republic of Vietnam*
119. *Republic of Yemen*
120. *Republic of Zambia*
121. *Republic of Zimbabwe*

[1]*The name ISA is provisional and subject to change*

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Seeking Powerful Ideas

The Global Innovation Lab for Climate Finance, the Fire Awards, and **the India Innovation Lab for Green Finance** are seeking powerful ideas and projects that can accelerate finance for a low-carbon, climate-resilient economy. Selected ideas will receive technical guidance from high-level investors and experts, as well as analytical, outreach, and communications support.

To learn more and submit an idea, visit:
www.ClimateFinanceIdeas.org

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This compendium was published for the 2016 International Energy Conference.