

# Concept Note

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## **Access to Clean Energy (ACE) Fund for Off-grid Energy**

India | National Bank for Agricultural and Rural Development (NABARD)

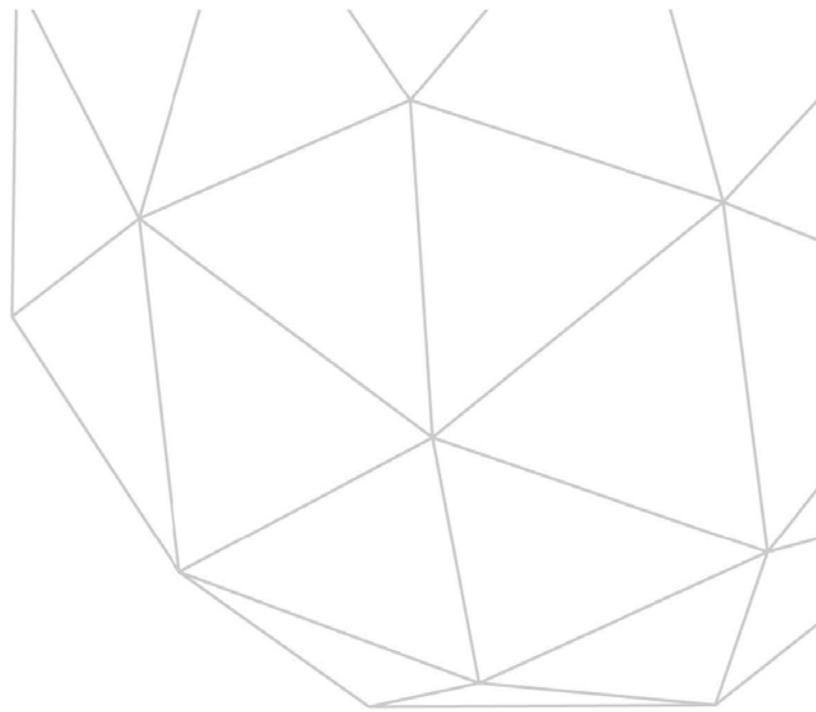
31 August 2016



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# Concept Note

**The Green Climate Fund (GCF) is seeking high-quality projects or programmes.**

Accredited entities may choose to submit a concept note, in consultation with the relevant national designated authority, to present the proposed project or programme idea in order to receive early feedback and recommendation.

Project/Programme Title: Innovative Finance Facility for Off-grid Energy sector

Country/Region: INDIA

Accredited Entity: NABARD (National Bank for Agricultural and Rural Development)

National Designated Authority: Ministry of Environment, Forests and Climate Change, Government of India

Please submit the completed form to [fundingproposal@gcfund.org](mailto:fundingproposal@gcfund.org)<sup>1</sup>

A. Project / Programme Information	
A.1. Project / programme title	Innovative Finance Facility for Off-grid Energy sector
A.2. Project or programme	Programme
A.3. Country (ies) / region	India, South Asia
A.4. National designated authority(ies)	Ministry of Environment, Forests and Climate Change, Government of India
A.5. Accredited entity	NABARD (National Bank for Agricultural and Rural Development)
A.6. Executing entity / beneficiary	Executing Entity: IREDA (Indian Renewable Energy Development Agency Limited) Beneficiary: Off-grid electricity consumers in India
A.7. Access modality	Direct <input checked="" type="checkbox"/> International <input type="checkbox"/>
A.8. Project size category (total investment, million USD)	Micro ( $\leq 10$ ) <input type="checkbox"/> Small ( $10 < x \leq 50$ ) <input checked="" type="checkbox"/> Medium ( $50 < x \leq 250$ ) <input type="checkbox"/> Large ( $> 250$ ) <input type="checkbox"/>
A.9. Mitigation / adaptation focus	Mitigation <input checked="" type="checkbox"/> Adaptation <input type="checkbox"/> Cross-cutting <input type="checkbox"/>
A.10. Public or private	
A.11. Results areas (mark all that apply)	<i>Which of the following targeted results areas does the proposed project/programme address?</i>
	<p>Reduced emissions from:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Energy access and power generation (E.g. on-grid, micro-grid or off-grid solar, wind, geothermal, etc.)</li> <li><input type="checkbox"/> Low emission transport (E.g. high-speed rail, rapid bus system, etc.)</li> <li><input type="checkbox"/> Buildings, cities, industries and appliances (E.g. new and retrofitted energy-efficient buildings, energy-efficient equipment for companies and supply chain management, etc.)</li> <li><input type="checkbox"/> Forestry and land use (E.g. forest conservation and management, agroforestry, agricultural irrigation, water treatment and management, etc.)</li> </ul> <p>Increased resilience of:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Most vulnerable people and communities (E.g. mitigation of operational risk associated with climate change – diversification of supply sources and supply chain management, relocation of manufacturing facilities and warehouses, etc.)</li> <li><input type="checkbox"/> Health and well-being, and food and water security (E.g. climate-resilient crops, efficient irrigation systems, etc.)</li> <li><input type="checkbox"/> Infrastructure and built environment (E.g. sea walls, resilient road networks, etc.)</li> <li><input type="checkbox"/> Ecosystems and ecosystem services (E.g. ecosystem conservation and management, ecotourism, etc.)</li> </ul>
A.12. Project / programme life span	.....25..... years
A.13. Estimated implementation start and end date	Start: .....January 2018..... End: .....December 2042.....

<sup>1</sup> Please use the following naming convention for the file name: “[CN]-[Agency short name]-[Date]-[Serial number]” (e.g. CN-ABC-20150101-1).

## B. Project/Programme Details

The Fund requires the following preliminary information in order to promptly assess the eligibility of project/programme investment. These requirements may vary depending on the nature of the project/programme.

<p>B.1. Project / programme description (including objectives)</p>	<p>An estimated 77 million Indian households have little or no access to grid-based power, and an additional 20 million households are underserved, receiving less than 4 hours of electricity in a day. Kerosene is the primary fuel for meeting lighting needs, which causes high levels of indoor air pollution. At the current rate of grid expansion, accounting for population growth and urbanization, 75 million households will still lack access to grid power in 2024. The estimated market size for decentralized renewable energy is estimated to be at least US\$150 million by 2018.<sup>2</sup></p> <p>The government has created several incentive and subsidy schemes for rural electrification and off-grid energy access over the last decade. However, the pace of implementation is inadequate to meet targets. Under the National Solar Mission (2010), the government aims to install 2,000 MW of off-grid solar PV systems to improve energy access.<sup>3</sup> In order to achieve these goals, private sector participation is essential.</p> <p>While there are existing companies operating in the off-grid energy sector, only a few of them have been able to scale their business operations. Off-grid energy (OGE) companies face multiple business challenges:</p> <ul style="list-style-type: none"> <li>▪ High upfront capital requirement for purchase of assets, and high cost of domestic financing</li> <li>▪ High operational costs due to high maintenance and logistical requirements</li> <li>▪ Small revenue ticket size with uncertain and irregular payment cycles</li> <li>▪ Investment capital at risk due to instalment based payment systems</li> </ul> <p>Therefore, banks and financing institutions (FIs) have a 'high risk' perception of OGE companies. Furthermore, since this is a relatively new sector, there is little data on companies' past performance. As these companies are small, they do not have adequately large balance sheets to seek commercial debt. Therefore, there is a dearth of debt capital for OGE companies to grow and scale business – for capex, working capital requirements, locked assets (as accounts receivable), growth, and expansion. At present, the rate of interest for OGE companies lies between 13-18%<sup>4</sup> with stringent terms and conditions and size of capital approved is dependent upon the financing institution (whether a bank or an NBFC),</p> <p>The proposed program will set up an Innovative Finance Facility for Off-Grid Energy (OGE), which will use a combination of technical and financial support to catalyse investment in the off-grid energy sector. The program components are:</p> <ol style="list-style-type: none"> <li>1. <b>Component 1 – Financial support:</b> The finance facility will offer a combination of a revolving concessional credit facility and first loss capital pool to provide reduced cost loans and risk coverage, respectively, to financial institutions.             <ul style="list-style-type: none"> <li>• <b>First Loss Capital Pool:</b> The first loss capital pool will be used to reduce perceived risk and demonstrate commercial viability of the sector, and mitigate real risks of non-payment by end consumers, <i>in short-term</i>. It will provide protection against repayment failure by the OGE companies.</li> <li>• <b>Revolving Concessional Credit:</b> Concessional credit with a tenor of 3-5 years will be 'rotated' by financial institutions to help the sector reach maturity/scale. Concessional finance is expected to help develop the sector until it reaches sufficient scale to become commercially viable with access to capital from market.</li> </ul> </li> </ol>
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<sup>2</sup> The Climate Group, "Business Case for Off-Grid Energy in India", [http://www.theclimategroup.org/\\_assets/files/The-business-case-for-offgrid-energy-in-India.pdf](http://www.theclimategroup.org/_assets/files/The-business-case-for-offgrid-energy-in-India.pdf)

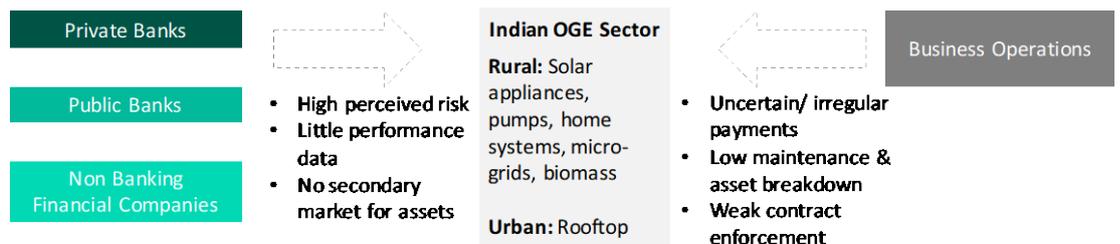
<sup>3</sup> Ministry of New and Renewable Energy, Scheme Documents – JNNSM: <http://www.mnre.gov.in/solar-mission/jnnsmission/introduction-2/>

<sup>4</sup> Insights from preliminary research and semi-structured interviews with OGE companies

Therefore, the blended financing instrument will cover repayment risk by the end consumer for financial institutions, and address the challenge of availability and cost of debt capital for OGE companies. Over the envisioned 25-year program duration, the proposed facility will yield sectoral benefits by catalyzing growth, encouraging private sector participation, and reducing real risks for the sector until it reaches adequate scale, an approach that has been successful in sectors such as microfinance and affordable housing.

- Component 2 – Technical assistance:** The facility will also provide technical assistance to participating financial institutions who would provide debt capital to the eligible offgrid energy sector companies. Domestic financial institutions require capacity building to work in the offgrid energy sector to get familiar and comfortable with lending to the sector. Through establishment of standardized due diligence processes, strong eligibility criteria and simplified lending processes, the technical assistance will strengthen the engagement between financial institutions and sector companies. Repeated interactions between financial institutions and sector companies to structure transactions, service loans, build credit history and relationships etc. will address the challenge of low availability of debt capital for OGE sector in the long-term.

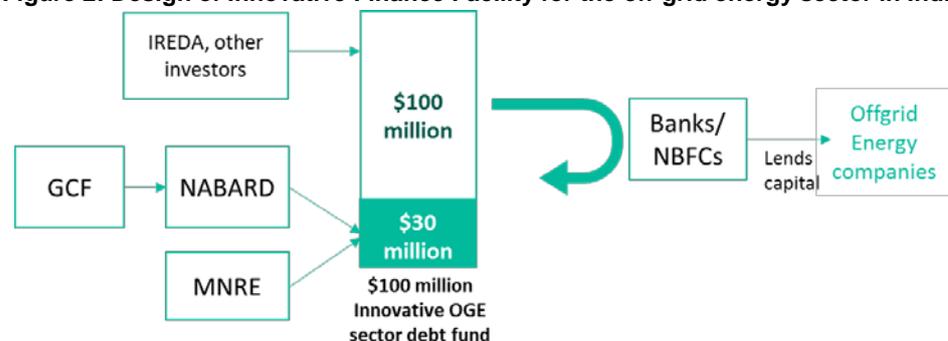
**Figure 1: Concept – Use of concessional finance to cover risk in Clean Energy sector**



The facility will be accessible to all institutions in India for all off-grid energy systems that meet the objective of enabling energy access, including solar products, solar home systems, off-grid solar micro grids and solar based agricultural equipment in rural areas. In urban areas, residential, commercial and industrial rooftop solar systems will be considered. In addition to the primary focus on solar, biomass projects will also be considered.

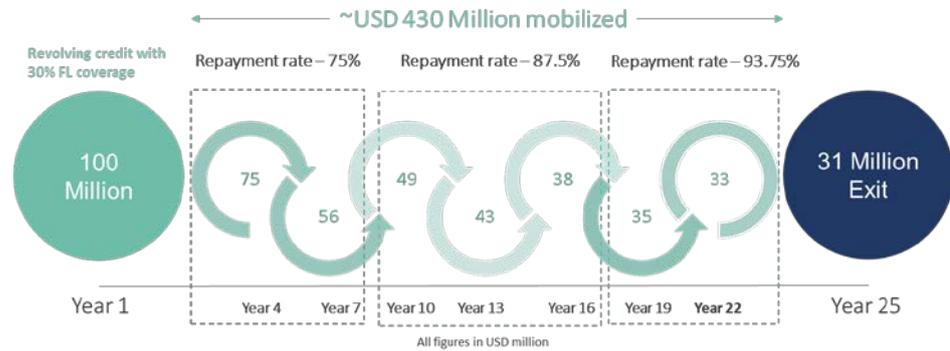
Design of the facility:

**Figure 2: Design of Innovative Finance Facility for the off-grid energy sector in India**



The facility will on-lend funds to the domestic financial institutions using a revolving credit line. The financial institutions will make loans to the Offgrid energy sector using these funds without charging excessive risk premium on account of first loss capital pool provided by the facility, in case loans default (subject to final terms and conditions). The first-loss pool will deplete over the life term of the facility but depending upon the actual losses incurred, it will enable up to 8 cycles of funding from the facility to the financial institutions.

A sample diagram for the proposed operations of the facility is shown below:



The facility has three barriers to address as its objectives:

- (i) **Information asymmetries:** At present, there is very little data available on the performance of OGE companies. Asymmetric information regarding the borrower's creditworthiness leads to high risk perception and therefore low access to finance and unfavourable lending terms for OGE companies. This will be addressed by providing first loss risk coverage, which provides credit enhancement and enable access to finance. In addition, the program will create data and track record for the sector over its 25-year life term, making it possible for new funds and investors to participate in the market.
- (ii) **Institutional capacity:** Financial Institutions' capacity for lending and associated procedures such as risk assessment and due diligence is limited – simply because this is a new sector and the institutions do not have any experience lending to this sector. The finance facility will provide clear guidelines and eligibility criteria through financial and technical assistance, and work closely with institutions that request support, which will improve capacity over time, and reduce real transaction risks. Furthermore, by using a revolving model, the finance facility will enable financial institutions to build relationships with its clients, which will foster greater collaboration.
- (iii) **Financing structures:** Current lending practices rely heavily on balance sheet financed loans with short tenors and high interest rates. The finance facility makes it possible for financial institutions to explore alternate financing models to meet the needs of the sector, and help de-risk the sector. The revolving nature of facility provides the financial institutions a 'line of sight' for future financing. In addition, with the revolving facility, the financial institutions will have flexibility around drawdown and thus not leveraging their balance sheets in one go, allowing them to meet regulatory reserve requirements.

Over time, with sector maturity, it is expected that project risks will reduce, and perceived and real risks will converge through track record creation, enabling market pricing of risks and commercial viability with other sources of finance.

*Describe project/programme sponsor's operating experience in the host country or other developing countries.*

*Describe financial status and how the project/programme sponsor will support the project/programme in terms of equity, management, operations, production and marketing.*

B.2. Background information on project/programme sponsor

IREDA (Indian Renewable Energy Development Agency), a Government of India enterprise that falls directly under the administrative control of the Ministry of New and Renewable Energy (MNRE) has provisionally been identified as the host for the facility. The overall program will be implemented in coordination with MNRE. It was established as Non-Banking Financial Institution (NBFI) and a Public Limited Government Company in 1987. IREDA's mandate is to promote, develop, and extend financial assistance for setting up projects related to new and renewable sources of energy and energy efficiency/conservation.

	<p>IREDA has vast experience in renewable energy lending, and has raised funding through domestic capital markets by issuing taxable bonds, as well as from commercial lenders such as SIDBI. IREDA has also raised grants and credit lines from multilateral agencies such as the World Bank, KfW, ADB, AFD, EIB and JICA.</p> <p>IREDA is 100% owned by the Government of India with an authorized share capital of INR7.8 billion (US\$116.8 million). It is a Mini Ratna (Category I) Government of India enterprise. For the financial year 2014-15, IREDA reported a profit of INR2.72 billion (US\$40.5 million).</p> <p>IREDA's objective is to maintain its position as a leading organization to provide efficient and effective financing in renewable energy and energy efficiency projects. Given its experience and expertise in renewable energy, it is well suited to the task of hosting a finance facility for energy access. IREDA has strong relationships with relevant line ministries, and has demonstrated its ability to successfully execute multilateral funding in line with agency requirements. It also has the necessary market credibility, based on its performance and track record, to mobilize funding from other investors for the finance facility.</p>
<p>B.3. Market overview</p>	<p><i>Describe the market for the product(s) or services including the historical data and forecasts.</i></p> <p><i>Provide the key competitors with market shares and customer base (if applicable).</i></p> <p><i>Provide pricing structures, price controls, subsidies available and government involvement (if any).</i></p> <p>Under the National Solar Mission, India has set an ambitious target of installing 2,000MW of off-grid solar PV systems to improve energy access. However, OGE companies face a number of challenges, including the high upfront capital requirement, high operational costs, small ticket size, and irregular payment cycles. Therefore, access to finance on economically and commercially viable terms is a fundamental structural challenge for companies in India's off-grid energy (OGE) sector.</p> <p>The government has designed a number of policies to support rural electrification over the past 10 years, focusing on decentralized models. In 2005, it initiated the Remote Village Electrification Program (RVEP) which supports mini-grid installations in villages that are not covered in the central grid extension scheme, and provided subsidies for villages to install distributed renewable energy utilities. Subsidies for off-grid systems were also offered under the Rajiv Gandhi Vidyutikaran Yojana in 2005 and Village Energy Security Program (2005-12). Most OGE companies remain reliant on subsidies, particularly due to the capital intensive nature of their business and the lack of working capital at commercial viable terms.</p> <p>India has an electrification rate of 78.7%, with a large proportion of the underserved households concentrated in rural areas. The lack of energy access is particularly pronounced in the states of Bihar, Madhya Pradesh, Odisha, Uttar Pradesh, and West Bengal. Over 5 million households are underserved in each state, accounting for over 50% of the un-electrified and underserved population in India.<sup>5</sup></p> <p>At present, there are a number of small OGE enterprises in India – close to 40 enterprises, but no single player has been successful in achieving scale. Larger companies that have participated in government tenders, while successful in winning bids, were unable to create a sustained project pipeline primarily because of lack of sustained financing. Several very small players, with sales of less than 5,000 units each year, distribute products through third party distribution networks. However, the few companies that have seen growth in installed capacity, have relied on their own distribution networks and direct outreach to customers.<sup>6</sup></p> <p>The off-grid energy sector in India is still at a nascent stage. Hence, the data and information available to gauge real risks in the business are low. Over time, the sector is expected to</p>

<sup>5</sup> The World Bank (2012). Access to electricity. <http://data.worldbank.org/indicator/EG.ELC.ACCS.ZS?view=map>

<sup>6</sup> The Climate Group (2015). Ibid footnote 2

	<p>become mature and achieve scale, such that the risks (perceived and real) of operating in the sector are reduced. A financing facility which can enable and sustain commercial debt transactions can ‘jumpstart’ scale and maturity for the offgrid energy sector.</p> <p>The estimated market size for decentralized renewable energy is estimated to be at least US\$150 million by 2018.<sup>7</sup></p>
<p>B.4. Regulation, taxation and insurance</p>	<p><i>Provide details of government licenses, or permits required for implementing and operating the project/programme, the issuing authority, and the date of issue or expected date of issue.</i></p> <p><i>Describe applicable taxes and foreign exchange regulations.</i></p> <p><i>Provide details on insurance policies related to project/programme.</i></p> <p>All renewable energy projects in India are governed by the Electricity Act, 2003. Off-grid and decentralized renewable energy systems are not regulated in the present tariff regime, particularly since it constitutes about 3% of total renewable energy deployed (MNRE, 2013). However, the regulatory framework for renewables in India is evolving with increasing deployment. Recently national government and a few state governments have also drafted their offgrid energy sector policies which encourages enterprises involved in solar home systems and mini/micro-grids business to scale and deliver electricity to underserved population.</p> <p>IREDA currently converts all foreign currency borrowings from multilateral/ bilateral agencies into INR using a plain vanilla swap transaction/ currency, interest rate swap and interest only swap with various banks with whom IREDA has signed ISDA Master Agreement. These swap/ derivative transactions have been entered into with the participating bank for a different maturity period for each transaction, which is shorter than the maturity period of the loan. The hedging of foreign currency loans is carried out at various intervals and in multiple tranches against lines of credit. Due to swap/ hedging requirements, foreign currency loans carry a hedging/ derivative cost, commitment fee, government guarantee fee and other financial charges in addition to interest cost.</p>
<p>B.5. Implementation arrangements</p>	<p><i>Describe construction and supervision methodology with key contractual agreements.</i></p> <p><i>Describe operational arrangements with key contractual agreements following the completion of construction.</i></p> <p><i>Provide a timetable showing major scheduled achievements and completion for each of the major components of the project/programme.</i></p> <p>MNRE has expressed its support for the proposed finance facility and has provisionally suggested that IREDA act as the host. MNRE has expressed its willingness to co-finance the first loss capital pool with GCF, while IREDA has agreed to mobilize debt capital for the revolving credit facility.</p> <p>The facility is expected to be set up with IREDA as (provisional) host under an appropriate structure that provides transparency of operations and ring-fencing of assets, while enabling it to leverage IREDA’s expertise in renewable energy lending. IREDA has formally agreed to engage in the project preparation process and has also provided a formal engagement letter.</p> <p>Under the proposed structure, IREDA will capitalize the facility, providing an anchor contribution of US\$70 million, which can be raised from syndication of loans, from bond markets, or other existing credit lines depending on the cost of funds that would be feasible for the proposed structure. This US\$70 million will form a part of the \$100 million revolving credit</p>

<sup>7</sup> The Climate Group, “Business Case for Off-Grid Energy in India”, [http://www.theclimategroup.org/\\_assets/files/The-business-case-for-offgrid-energy-in-India.pdf](http://www.theclimategroup.org/_assets/files/The-business-case-for-offgrid-energy-in-India.pdf)

line and will be used for on-lending (after meeting administrative and management costs) to financial institutions engaged in the OGE sector. The remaining US \$30 million will be raised from other domestic investors (with an option for IREDA to raise their investment size as well). IREDA's contribution is expected to reduce the overall rate of interest for loans provided through the facility.

The GCF grant will be used to provide 30% risk cover to participating financial institutions against payment default by end consumers through a first loss capital pool. The level of first loss capital required is based on preliminary research that suggests a requirement of 25-30% first loss capital. The exact size of the first loss pool will be determined on the basis of the required leverage, replenishment required upon depletion of the pool, and the size of the finance facility, upon completion of project preparation activities. GCF funding of US\$30-50 million is expected to be required for setting up a first loss capital pool.

Draw downs from the first loss capital pool are expected to be larger in the first few years, but will likely taper over the 25-year project duration as the sector matures (please see attached financial model). The provision of a first loss capital pool can ensure lower rates of interest for the OGE companies by reducing perceived risks.

Revolving credit lines will be provided to participating financial institutions upon demonstrating capacity to meet the finance facility's due diligence, transparency and safeguard requirements for proposed projects. Eligibility criteria will be set in the final facility design for the participating financial institutions as well the sector companies to mitigate moral hazard and perverse incentives.

A part of GCF grant will be used for technical assistance activities outlined under Component 2 to build capacity within domestic financial institutions to lend to OGE companies, with implementation support for the proposed activities from the Global Green Growth Institute (GGGI). This component is also intended to ensure that the deployment of the funds disbursed by the facility are used prudently without any moral hazard or perverse incentives on account of the provision of the first loss capital pool.

Project implementation will be overseen by a stakeholder committee. The committee will include key stakeholders from relevant ministries, including the Ministry of New and Renewable Energy (MNRE) and the Ministry of Environment, Forests and Climate Change (MOEFCC). The stakeholder committee will be convened by the Global Green Growth Institute (GGGI), which will act as a supporting partner to IREDA and MNRE for project implementation.

The details for proposed PPF activities have been attached with the PPF proposal. The Gantt chart below presents the proposed project implementation schedule post completion of PPF activities:

Activity	2016	2017									
	Dec	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Completion of PPF and GCF full funding proposal											
GCF Approval											
Fund raising for credit facility											
First close of funding											
Agreements with participating financial institutions											
Commencement of lending											

C. Financing / Cost Information

C.1. Description of financial elements of the project / programme

Please provide:

- a breakdown of cost estimates analysed according to major cost categories.
- a financial model that includes projection covering the period from financial closing through final maturity of the proposed GCF financing with detailed assumptions and rationale;
- a description of how the choice of financial instrument(s) will overcome barriers and achieve project objectives, and leverage public and/or private finance.

The size of the finance facility will depend on the outcome of the market sizing exercise as part of project preparation activities. For now, the facility is proposed to be a \$100 million revolving credit line for financial institutions, backed by a \$30 million first loss capital pool.

- **Component 1 – Financial Support:**

Based on preliminary research, the provisional facility size is US\$100 million. The proposed first loss coverage required based on preliminary market feedback is 25-30%, which would indicate a requirement of first loss component of \$30 Million from GCF and revolving credit facility of US\$100 million from different investors (with \$70 million from IREDA). The grant required for first loss capital pool from GCF that will serve as the first loss component will be funded jointly by GCF and MNRE. The exact terms of co-financing will be decided after completion of PPF activities. IREDA, upon confirmation of its role as facility host, has agreed to provide the anchor investment to finance the revolving credit component of the finance facility - US\$70 million.

**First loss capital pool:** The first loss capital pool will be jointly funded by MNRE and GCF on Pari-passu basis. The expected size of the first loss capital pool is US\$30-50 million, depending on the outcome of the market assessment to determine the required gearing ratio and expected depletion of funds.

- **Component 2 – Technical Assistance:** A technical assistance component of US\$1 million to be funded through a grant from GCF for capacity building with financial institutions in order to improve lending practices and build familiarity and comfort with OGE sector lending by establishing suitable lending processes and eligibility criteria.

Because it is a revolving credit facility, all offgrid sector companies will not compromise a 'line of sight' on capital required to grow their business operations because currently there are no such financing facilities available to them. This constraint already checks development of moral hazard and perverse incentives in the system. In addition, technical assistance activities will ensure that lending practices meet strong eligibility criteria, projects are aligned with program objectives, and each financial institution's portfolio under the program meets established financial criteria in order to avoid any perverse incentives. The detailed project report will also outline conditions for disbursement of the first loss capital pool which will release payment only upon satisfaction of predetermined conditions and be subject to institutional caps.

The facility will provide concessional loans for a tenor of 3-5 years, depending on the requirement of the OGE companies. In addition, the facility will provide a first loss capital pool to cover risk of non-payment by the end consumer to the OGE company. A fund management fee will be levied to cover all managerial and administrative expenses. IREDA's participation as host is expected to reduce the cost of loans since it can raise funds at a lower cost, enabling the finance facility to pass on the reduction in the cost of funds to financial institutions.

GCF funding will help reduce the risk premium charged by financial institutions, thereby providing credibility and risk coverage to FIs. In other words, this model will help correct information asymmetries caused by the lack of data regarding risks associated with the

sector, demonstrate commercial viability, enable market pricing of risks, and encourage scaling of initiatives for market maturity.

**Rationale for requesting GCF funding in the form of a grant:**

1. In case of a deep concessional loan, considering the eventual depletion of first loss capital pool, the cost of repayment of GCF capital will eventually flow to the loans to offgrid sector companies. And thus a premium would be added to the loans in order to replenish capital losses from the pool. This could potentially discourage both financial institutions from participating in the proposed program as well as sector companies availing this facility. In contrast, holding the first loss capital pool as a grant will not add any cost. It may also allow the finance facility to provide greater concessionality in lending terms, considering that the pool
  
2. The funding from GCF is also sought in the form of a grant due to the high hedging costs associated with foreign currency loans, which would further put upwards pressure on the ultimate capital cost to the financial institutions and thus to the sector companies. At present, the Indian government's yield on a 10-year bond is 7.12%. Corporate bond yields vary from 7.5 – 9.4%; IREDA's taxable bonds, for example, raise funds from capital markets at 8.4-9.6%. However, precise data for the cost of funds for financial institutions expected to participate in the proposed facility is not available. The longest tenor for which a foreign currency hedge is currently available in Indian markets is 10 years. Assuming bullet repayment of the principal for a 0% loan at the end of 10 years, the hedging cost would lie between 5.6-6%. The cost of rolling over the hedge over the 25-year duration is currently unavailable, and increases in tenor, interest rate, or repayment in instalments would all increase the hedging cost. For a first loss coverage of 25%, assuming shared financing of the first loss capital pool by GCF and MNRE, the cost of debt would be at least ~1% higher than with grant financing. Given that such pricing would be higher than current bond market yields, financial institutions may choose not to participate.
  
3. Lastly, for OGE companies, the ability to service high interest debt is limited. Therefore, cost premiums will erode the economic viability of the proposed financial structure and could even lead to more rapid depletion of the first loss capital pool than originally envisaged.

Detailed financial models comparing alternative modes of financing will be presented as part of the full project proposal using data from the market assessment proposed as part of PPF activities.

		Financial Instrument	Amount	Currency	Tenor	Pricing	
C.2. Project financing information	<b>Total project financing (a) = (b) + (c)</b>		.....				
	(b) Requested GCF amount	(i) Senior Loans	.....				
		(ii) Subordinated Loans	.....			( ) years	( ) %
		(iii) Equity	.....			( ) years	( ) %
		(iv) Guarantees	.....				( ) % IRR
		(v) Reimbursable grants *	.....	...US\$31 million...	<u>million USD (\$)</u>		
	(vi) Grants *	.....	(\$30 million for first loss pool + \$1 million for TA)				

		* Please provide detailed economic and financial justification in the case of grants.				
		<b>Total Requested (i+ii+iii+iv+v+vi)</b>	.....			
(c) Co-financing		<b>Financial Instrument</b>	<b>Amount</b>	<b>Currency</b>	<b>Name of Institution</b>	<b>Seniority</b>
		<u>Grant</u>	US \$30 million ..... ..... .....	<u>million USD (\$)</u> <u>Options</u> <u>Options</u> <u>Options</u>	Ministry of New and Renewable Energy ..... ..... .....	<u>pari passu</u>
		Lead financing institution:				
	(d) Covenants					
(e) Conditions precedent to disbursement						

**D. Expected Performance against Investment Criteria**

Please explain the potential of the Project/Programme to achieve the Fund's six investment criteria as listed below.

<p>D.1. Climate impact potential <i>[Potential to achieve the GCF's objectives and results]</i></p>	<p><i>Specify the climate mitigation and/or adaptation impact. Provide specific values for the below indicators and any other relevant indicators and values, including those from the Fund's <u>Performance Measurement Frameworks</u>.</i></p> <ul style="list-style-type: none"> <li>• Total tonnes of CO<sub>2</sub> eq to be avoided or reduced per annum</li> <li>• Expected total number of direct and indirect beneficiaries and number of beneficiaries relative to total population (e.g. total lives to be saved from disruption due to climate-related disasters)</li> </ul> <p>By deploying renewable energy that can replace kerosene, the project will mitigate CO<sub>2</sub>. Preliminary research suggests that a solar PV based micro grid would mitigate 680tCO<sub>2</sub>e each year for every MW of capacity installed. It will also result in an increase in households with access to low-emission energy by focusing on underserved households or those that lack energy. Initial research indicates that a 500kWp mini grid can serve up 417 households, translating to each MW of additional capacity serving 834 households. The precise impact potential will depend on the size of the facility, which in turn will be confirmed upon completion of market assessment and feedback from stakeholders.<sup>8</sup></p>
<p>D.2. Paradigm shift potential <i>[Potential to catalyze impact beyond a one-off project or programme investment]</i></p>	<p><i>Provide the estimates and details of the below and specify other relevant factors.</i></p> <ul style="list-style-type: none"> <li>• Potential for scaling-up and replication (e.g. multiples of initial impact size)</li> <li>• Potential for knowledge and learning</li> <li>• Contribution to the creation of an enabling environment</li> <li>• Contribution to the regulatory framework and policies</li> </ul>

<sup>8</sup> Preliminary numbers based on UP mini-grid program. <http://upneda.org.in/mini-grid-program>

	<p>The proposed project is expected to have a transformative impact on India's OGE sector and catalyze private investment of OGE projects and enable scaling of companies in India's fragmented OGE sector. GCF support will enable appropriate structuring of the facility to achieve its objectives. Data for mini grids from the government's rural electrification initiative suggests that installation cost for each MW of decentralized solar power can vary from INR227-500 million (US\$3.5-7.7 million). In order to achieve the national target of installing 2GW of decentralized power, therefore, India would need investment capital of US\$7-15 billion. Assuming a debt-first-loss capital ratio of 70:30 and a facility size of US\$100 million with a lending cycle of 3-5 years, over the anticipated 25-year project life, the proposed finance facility could directly enable installation of 128-179MW of power, and catalyze additional investments by demonstrating a viable business model.</p> <p>Recent developments (e.g. BBOX, responsAbility energy access fund) have indicated the need for finance facilities for off-grid energy in other markets such as Africa. The proposed program will be systematically developed <i>with a view to allow international replication</i> and knowledge transfer. GGGI is well positioned for this particular aspect because of its presence across the globe in 26 countries.</p>
<p>D.3. Sustainable development potential [Potential to provide wider development co-benefits]</p>	<p><i>Provide the estimates of economic, social and environmental co-benefits. Examples include the following:</i></p> <ul style="list-style-type: none"> <li>• <i>Economic co-benefits</i> <ul style="list-style-type: none"> <li>- <i>Total number of jobs created</i></li> <li>- <i>Amount of foreign currency savings</i></li> <li>- <i>Amount of government's budget deficits reduced</i></li> </ul> </li> <li>• <i>Social co-benefits</i> <ul style="list-style-type: none"> <li>- <i>Improved access to education</i></li> <li>- <i>Improved regulation or cultural preservation</i></li> <li>- <i>Improved health and safety</i></li> </ul> </li> <li>• <i>Environmental co-benefits</i> <ul style="list-style-type: none"> <li>- <i>Improved air quality</i></li> <li>- <i>Improved soil quality</i></li> <li>- <i>Improved biodiversity</i></li> </ul> </li> <li>• <i>Gender-sensitive development impact</i> <ul style="list-style-type: none"> <li>- <i>Proportion of men and women in jobs created</i></li> </ul> </li> </ul> <p>The project will also enable the delivery of off-grid power at a reasonable cost to the end consumer until the market reaches maturity, in order to incentivize the switch from kerosene to clean energy at the household level. Avoidance of kerosene usage has direct health benefits by reducing exposure to respiratory particulate matter. Ministry of Statistics and Programme Implementation (MOSPI) statistics indicate that 3.2% of urban households and slightly over 25% of rural households use kerosene to meet lighting needs (NSS, 2011-12). Increased access to lighting also has a direct impact on access to education especially for children.</p>
<p>D.4. Needs of recipient [Vulnerability to climate change and financing needs of the recipients]</p>	<p><i>Describe the scale and intensity of vulnerability of the country and beneficiary groups and elaborate how the project/programme addresses the issues. Examples of the issues include the following:</i></p> <ul style="list-style-type: none"> <li>• <i>Level of exposure to climate risks for beneficiary country and groups</i></li> <li>• <i>Does the country have a fiscal or balance of payment gap that prevents from addressing the needs?</i></li> <li>• <i>Does the local capital market lack depth or history?</i></li> <li>• <i>Needs for strengthening institutions and implementation capacity</i></li> </ul> <p>India had a balance of payments deficit of US\$856 million in July-September 2015, which was reversed in the fourth quarter with a modest surplus of US\$4.1 billion.<sup>9</sup> The current account deficit is US\$7.1 billion, 1.3% of GDP. Due to competing development priorities and several fiscal pressures, the government's ability to finance all its sustainable development targets is limited. In order to meet India's ambitious renewable energy targets of 175GW of renewable energy capacity by 2022, private sector participation is essential. However, capital markets are underdeveloped and</p>

<sup>9</sup> Reuters (2016, March). Swing to modest surplus sets tone for India's balance of payments. <http://in.reuters.com/article/india-economy-current-account-idINKCN0WN17Q>

	<p>dominated by government securities, forcing companies to rely on commercial loans to meet their financing needs. Attracting private sector funding through the institution of suitable financing models is essential to catalyze growth of new sectors.</p> <p>India's growing dependence on imported fossil fuels is also a matter of concern, rising to 38% in 2012. In 2013, India was the fourth-largest consumer of crude oil and petroleum products in the world. Global fossil fuel price volatility has exposed the economy to price shocks, and fossil fuel dependence exacerbates the fiscal imbalance.<sup>10</sup></p> <p>Climate change mitigation is a key priority for India, as outlined in its National Action Plan on Climate Change and its Intended Nationally Determined Contributions (INDCs) submitted to UNFCCC. Air pollution is a major public health issue in India, requiring drastic interventions by the government. Given this background, interventions to reduce dependence on kerosene and wood, which create indoor air pollution would be timely and in line with national policies and needs.</p> <p>The project is also expected to lead to institutional strengthening and capacity building, enabling market pricing of risks and stronger due diligence models for the OGE sector.</p>
<p>D.5. Country ownership <i>[Beneficiary country ownership of project or programme and capacity to implement the proposed activities]</i></p>	<p><i>Provide details of the below and specify other relevant factors.</i></p> <ul style="list-style-type: none"> <li>• <i>Coherence and alignment with the country's national climate strategy and priorities in mitigation or adaptation</i></li> <li>• <i>Brief description of executing entities (e.g. local developers, partners and service providers) along with the roles they will play</i></li> <li>• <i>Stakeholder engagement process and feedback received from civil society organizations and other relevant stakeholders</i></li> </ul> <p>The project shows strong alignment with India's national goals and priorities and has strong country ownership since it is led by MNRE. MNRE has also expressed interest in partially funding the first loss capital component of the proposed finance facility jointly with GCF. In addition, IREDA has provided a letter of engagement indicating its interest in acting as host and participating in preparatory activities. Lastly, NABARD has been closely involved in the development of this proposal and has welcomed the creation of a finance facility to meet the financing needs of off-grid power systems. The proposed project falls within GCF's mandate and can help India achieve its renewable energy targets and national goals, while improving quality of life through access to clean electricity.</p>
<p>D.6. Effectiveness and efficiency <i>[Economic and financial soundness and effectiveness of the proposed activities]</i></p>	<p><i>Provide details of the below and specify other relevant factors (i.e. debt service coverage ratio), if available.</i></p> <ul style="list-style-type: none"> <li>• <i>Estimated cost per t CO2 eq (total investment cost/expected lifetime emission reductions)</i></li> <li>• <i>Co-financing ratio (total amount of the Fund's investment as percentage of project)</i></li> <li>• <i>Economic and financial rate of return (to be determined on the basis of financial model in Section 3.2)</i> <ul style="list-style-type: none"> <li>- <i>With the Fund's support</i></li> <li>- <i>Without the Fund's support</i></li> </ul> </li> </ul> <p>The project will leverage GCF funds and raise capital from other sources to constitute the finance facility. It will also provide partial financing to projects in the form of debt or first loss capital, thereby mitigating CO2 at a relatively low cost. Based on initial research, the first loss capital to be provided is a quarter of the total debt requirement for a project. With MNRE agreeing to co-finance the first loss capital pool, assuming a debt-first loss capital pool ratio of 70:30, the proposed project can potentially unlock \$430 million over its lifetime for Off-grid sector in India which means every dollar contributed by GCF will leverage more than \$13 towards decentralized renewable capacity addition in India.</p>

<sup>10</sup> EIA (2014). India is increasingly dependent on imported fossil fuels as demand continues to rise.  
<http://www.eia.gov/todayinenergy/detail.cfm?id=17551>

### E. Brief Rationale for GCF Involvement and Exit Strategy

*Please specify why the GCF contribution is critical for the project/programme.*

The project can have a transformative impact on India's OGE sector and catalyze private investment in projects by reducing perceived risks and ensuring scalability. The project falls within GCF's mandate and can help India achieve its renewable energy targets and national goals, while improving quality of life through access to clean electricity. GCF's contribution will help correct the high perceived risks associated with the sector, and enable OGE companies to achieve adequate scale to break even. It will also enable the delivery of off-grid power at a reasonable cost to the end consumer until the market reaches maturity, in order to incentivize the switch from kerosene to clean energy at the household level.

*Please explain how the project/programme sustainability will be ensured in the long run, after the project/programme is implemented with support from the GCF and other sources.*

IREDA will continue to operate the finance facility with contribution from other private investors upon exhaustion of the first loss capital grant from GCF. The grant is expected to last for a minimum of 10 years, during which OGE companies can create track record and the facility can help modify risk perceptions by demonstrating the commercial and financial viability of the sector. GCF's participation will also lend credibility to the project and facilitate fundraising for future rounds from investors.

### F. Risk Analysis

*Please describe the financial and operational risks and discuss mitigating measures.*

*Please briefly specify the substantial environmental and social risks that the project/programme may face and the proposed risk mitigating measures.*

**Low interest by financial institutions:** There is a risk that financial institutions may not be interested in lending to OGE companies due to high risk perception and lack of familiarity with the sector, which may limit participation in the facility and the market sounding exercise. The project will mitigate this risk by ensuring early engagement with financial institutions to structure the facility in line with their needs. GGGI has also held preliminary discussions with a few financial institutions that have shown interest in the proposed facility.

**Approvals for setting up the facility:** The proposed facility may require specific regulatory approvals in order to be able to disburse funds to financial institutions working in the OGE sector, which in turn would delay the preparation schedule. When designing the facility, the need for approvals will be a factor in identifying a suitable legal structure. Furthermore, IREDA, as the implementing entity, has experience in lending to renewable energy projects.

Please briefly specify the substantial environmental and social risks that the readiness support may face and the proposed risk mitigating measures.

### G. Multi-Stakeholder Engagement

*Please specify the plan for multi-stakeholder engagement, and what has been done so far in this regard.*

Initial consultations with relevant stakeholders have been held. MNRE has been closely involved in the development of the project structure, and has constituted an Empowered Committee comprising of relevant people from ministries to review development of the project concept note. In addition, to monitor project implementation, GGGI will convene a stakeholder committee with key stakeholders from relevant Ministries and agencies to ensure achievement of project milestones and alignment with national priorities. State governments will also be included in the stakeholder committee to improve on-ground outreach efforts. Public/ private banks, NBFCs, renewable energy companies, entrepreneurs and other relevant stakeholders may be included as necessary to provide inputs and guidance on specific structural or implementation issues.

### H. Status of Project/Programme

- 1) A pre-feasibility study is expected to be completed at this stage. Please provide the report in section J.
- 2) Please indicate whether a feasibility study and/or environmental and social impact assessment has been conducted for the proposed project/programme: Yes  No   
(If 'Yes', please provide them in section J.)

- 3) Will the proposed project/programme be developed as an extension of a previous project (e.g. subsequent phase), or based on a previous project/programme (e.g. scale up or replication)? Yes  No   
(If yes, please provide an evaluation report of the previous project in section J, if available.)

### I. Remarks

### J. Supporting Documents for Concept Note

- Map indicating the location of the project/programme
- Financial Model
- Pre-feasibility Study – attached letters of support from offgrid energy sector companies
- Feasibility Study (if applicable)
- Environmental and Social Impact Assessment (if applicable)
- Evaluation Report (if applicable)