Mid-Term Review – India ACE Project

Official Project Title: ***Scale Up of Access to Clean Energy for Rural Productive Uses (India ACE GEF Project)***

Country: India
UNDP PIMS# 4605
GEF Project ID# 4900
GEF Operational Focal Area: CCM (Climate Change Mitigation)
GEF Strategic Programs: CCM-3 (Promote investment in renewable energy technologies)

Ministry of New and Renewable Energy, Government of India
United Nations Development Programme
Global Environment Facility

July 22, 2019

Mid-Term Review Timeline
Mission: April 1 - 12, 2019: Delhi; Guwahati, Assam; field site in Assam; Bhopal, Madhya Pradesh; Bhubaneswar, Odisha
Main Work: Oct. 25, 2019 – May 30, 2019 (from start of document review to draft report)
Report Reviews and Finalization: May 31, 2019 – July 22, 2019

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Project Information Table

Project Title	Scale Up of Access to Clean Energy for Rural Productive Uses (*India ACE Project*)		
UNDP Project ID (PIMS#)	4605	PIF Approval Date:	April 8, 2013
GEF Project ID (PMIS#)	4900	CEO Endorsement Date:	December 5, 2014
Atlas Business Unit Award #: Project ID:	00086253 00073461	ProDoc Signature Date (date project began):	July 23, 2015
Country:	India	Date project manager hired:	First PM hired towards the end of 2017, left in Dec. 2018; acting, part-time PM assigned as of Feb. 2019
Region:	Asia Pacific	Inception Workshop date:	July 13, 2016
Focal Area:	CCM (climate change mitigation)	Midterm Review completion date:	May 30, 2019 (draft report) July 22, 2019 (response to UNDP comments and final report)
GEF Focal Area Strategic Objectives:	CCM-4: Promote investment in renewable energy technologies	Planned project closing date:	July 23, 2020
Trust Fund:	GEF TF	If revised, proposed op. closing date:	NA [*potential application for extension to Jan. 23, 2022 would depend on MNRE interest, justification, and project reaching agreed upon "six-month hurdle" by end of 2019 (application would be submitted Jan. 2020)*]
Executing Agency/ Implementing Partner:	Ministry of New and Renewable Energy (MNRE)		
Other Execution Partners:	OREDA, AEDA, MPUVN		
Project Financing (USD)	*at CEO Endorsement (USD) - expected*	*at Midterm Review (USD) – realized as of 12/31/2018**	
[1] GEF Financing:	4,006,849	573,661	
[2] UNDP Contribution:	800,000	0.0	
[3] Government:	10,000,000	0.0	
[4] Other Partners:	8,233,767	0.0	
[5] Total Co-financing [2+3+4]:	19,033,767	0.0	
TOTAL PROJECT COSTS [1+5]	23,040,646	573,661	

*MTR mission conducted in April 2019, but CDRs of 2019 to date were not provided

Acronyms, Abbreviations, and Other Definitions

ACE – Access to clean energy and part of abbreviated name for project, which is *India ACE Project.*
AEDA – Assam Energy Development Agency. The SNA for MNRE in the State of Assam.
APR – annual progress report. Required report for UNDP-GEF projects. To be provided by the PMU each year.
ASRLM – Assam State Livelihoods Mission
Assam – state in Northeast India with population of around 35 million people. Assam is one of three demo states of the *India ACE Project.*
AWP – annual work plan. Required of UNDP-GEF projects. To be provided by PMU each year.
Benchmark Price *or* Benchmark Cost: Estimate of cost-effective price to pay in market for a product. In the case of *India ACE Project*, MNRE sets benchmark prices for various products; and then subsidies are determined based on the benchmark price.
BP&Ss – benchmark price and specifications. Abbreviation used for the purpose of this report.
BPL – below poverty line. Typically refers to households with annual incomes below poverty line.
BRH – Bangkok Regional Hub. Asia Pacific Regional Headquarters for UNDP.
CDR – combined delivery report: UNDP document that shows realized and committed project expenditures.
CO_2 – carbon dioxide.
Co-financing: For a GEF project, co-financing is the funding provided by other sources to support the same outcomes and, often, the same outputs and activities as the GEF funds.
CER – GEF CEO Endorsement Request. A project design document submitted, along with the project document ("ProDoc"), to the GEF once full project design has been completed.
CCM – climate change mitigation. In this report, designates an operational area of focus for GEF projects.
CEO – Chief Executive Officer
CLIA – cluster-level implementing agency: Before MNRE cancelled plans to involve NGOs and other non-government organizations in demo design and implementation and provide them with a service fee, CLIAs were to design and carry out demos and be by paid by *India ACE Project* a percent of total demo costs.
Cluster – a designated area for I*ndia ACE Projec*t implementation. Clusters are typically districts within states. ACE has designated six clusters per demo state for a total of 18 clusters.
CO – country office. Refers to UNDP CO, UNDP country office.
Compendium: Listing with descriptions of RETPRLs. A compendium was prepared for the ProDoc by Greentech Knowledge Solutions; and later another compendium was prepared for the project by OUAT.
country office support: An approach in which implementation for nationally implemented UNDP projects is handled by UNDP, but with approval for significant decisions by the IP.
CSR Foundations – corporate social responsibility foundations: In India, organization set up to comply with amendment to Company Law that makes CSR mandatory. Examples of CSR foundations relevant to *India ACE Project* are REC Foundation and NTPC Foundation.
DAFW – Department of Agriculture and Farmers' Welfare. State level equivalent to MAFW.
DCD – Deputy Country Director. A high-level position in the UNDP CO.
DPR – detailed project report. Prepared prior to implementation. Can also be considered a detailed proposal.
DRD – Department of Rural Development. State-level counterpart to MORD.
EnGenuity: Firm preparing demo proposals for MP from the end of 2018 through early 2019.
EOP – end of project.
FPO – farmer producer organization. Group of farmers aimed at increasing income of its members.

FY – fiscal year. Often does not correspond to calendar year and, while still lasting 365 days, spans parts of two different calendar years.
GEF – Global Environment Facility. Core funding source of this project.
GEF TF – GEF Trust Fund. One source of funds for GEF projects and the source of GEF funds for *India ACE Project*.
GHG – greenhouse gas
GHG DER – direct greenhouse gas emission reduction. In this report, "direct" means directly due to project activities.
GHG ER – greenhouse gas emission reduction
Greentech Knowledge Solutions: Firm that carried out detailed project design work for *India ACE Project* during PPG phase and prepared initial RETPRL compendium.
GW – Gigawatt: 1,000 MW or 1 million kilowatts (unit of measure of electric power).
Harsha Trust – non-profit organization with sanctioned RETPRL project under *India ACE Project*. Harsha has expertise in RE for livelihoods and interest in pursuing non-subsidized economically viable business modes. Harsha operates in selected districts only. In the end, the sanctioned project did not come to fruity, as MNRE decided not to work with non-government entities in the way that had initially been planned.
HP – horsepower. In this report, refers to power level of solar PV pumps.
Ideal Price – price estimated by NISE along with its specification work. The "ideal price" is based on component costs and typically is within +/-10% of the eventual benchmark price determined.
ICAR – Indian Council of Agricultural Research. Identified by project proponents as possible source of new, innovative RETPRLs.
IITs – Indian Institutes of Technology. Premier educational institutions, identified by project proponents as possible source of new, innovative RETPRLs.
INV – funds designated for investment in equipment and infrastructure, in contrast with TA funds, which are to be used for services. The distinction between TA and INV is used in budget allocations for GEF projects, though *India ACE Project's CER* lacks these distinctions.
IP – Implementing Partner. In a nationally implemented UNDP-supported GEF-financed project, the government agency responsible for implementation. MNRE is the IP of *India ACE Project*.
IPE Global: Firm that carried out benchmarking study on livelihoods and RE for livelihoods market for *India ACE Project* in its three demo states in late 2018 and early 2019.
Jharkand – state in eastern India with population of about 39 million. The state was initially considered for inclusion in the *India ACE Project*, but in the end was not included as one of the three demo states.
JS – joint secretary. A high level position in government ministries and other government organizations in India.
loan guarantee fund: A fund that guarantees loans and compensates the lender in the case of lendee default.
M – million
Madhya Pradesh – state in central India with an estimated population of around 80 million people. Madhya Pradesh is one of the three demo states of the *India ACE Project*.
MAFW – Ministry of Agriculture and Farmer's Welfare
M&E – monitoring and evaluation
Meghalya – state in Northeast India with a population of about 2.6 million. Meghalaya was initially considered for inclusion in the India ACE Project, but in the end was not one of the three selected demo states.
Metecno: Italian company with offices in Bangalore that specializes in making the materials for the walls of solar cold storage units.
MNRE – Ministry of New and Renewable Energy, IP for *India ACE Project*
MORD – Ministry of Rural Development
MP – Madhya Pradesh

MPSRLM – Madhya Pradesh State Livelihoods Mission
MPUVN - Urja Vikas Nigam Limited. The SNA for MNRE in the State of Madhya Pradesh
MTR – midterm review. An evaluation of a project taking place midway through its lifetime.
MTR team: In the case of this report, refers to the team of two, the international consultant and national consultant, that conducted the MTR and prepared this report.
MW – Megawatt. 1,000 kilowatts (unit of measure of electric power)
MWh_e – Megawatt hours electricity output
MWh_{th} – Equivalent to thermal input required to generate 1 MWh of electricity
NA – Not Available or Not Applicable
NGO – non-governmental organization: NGOs are both non-profit and non-governmental
NIRD – National Institute of Rural Development: Identified by project proponents as possible source of new, innovative RETPRLs.
NISE – National Institute of Solar Energy. Autonomous institute under MNRE. Among its tasks, NISE prepares product specifications and ideal pries for MNRE and has prepared these for a number of RETPRLs under *India Ace Project.*
NPC – National Project Coordinator. For nationally implemented UNDP-GEF projects, the IP government official in charge of day to day operation of the project. While the NPC does not typically work on the project full time, he or she works with the project team on a day-to-day basis.
NPD – National Project Director. For nationally implemented UNDP-GEF projects, the NPD is the IP government official responsible for monitoring the project and for its overall implementation. At MNRE, the NPD is at the JS level.
NRLM – National Rural Livelihoods Mission. Aimed at improving incomes of the rural poor. NRLM is under MORD.
NTFPs – non-timber forest products
NTPC – National Thermal Power Corporation. India's largest energy conglomerate, with presence across the full power sector value chain.
Odisha – state in the east part of India with population of about 46 million. Odisha is one of three demo states of the *India ACE Project*.
OLM – Odisha Livelihoods Mission
Onergy Solar: A company with sanctioned demo project under *India ACE Project*. (Note: Sanctioned projects of non-government entities did not come to fruition, as MNRE decided later not to work with such entities in the way that had been planned.)
OREDA – Odisha Renewable Energy Development Agency. The SNA for MNRE in the State of Odisha.
OUAT – Odisha University of Agricultural Technology. For *India ACE Project*, has prepared draft compendium of RETPRLs.
PEC – Project Executive Committee. In the case if *India ACE Project*, a committee overseeing operational project aspects and meeting more frequently than the PSC.
PIF – Project Information Form: Initial proposal for a GEF project. The PIF is a rough concept document. Once approved, the GEF allocates funds for the full project, but detailed project design must be completed and cleared (via submission of ProDoc and CER) before funds can be released. (The GEF often provides separate funds for detailed project design around the time of PIF approval.)
PIR – Project Implementation Review. A template-based document that is prepared mid-year each year for active UNDP-supported GEF-financed projects. The document reviews progress towards results and quality of implementation. It includes an update on the status of each project indicator.
PM – project manager or project management. With regard to *India ACE Project*, this may refer to the person hired to lead the PMU. Or, in a different context, it may refer to the project management function, which UNDP and MNRE may consider outsourcing to a third party.
PMU – Project Management Unit. In the case of *India ACE Project*, this refers to the staff and offices of the Delhi-based team providing both project management and implementation for the project. At the time

of the MTR, the team consisted of two full-time staff based in MNRE (one technical officer and one administrative personnel) and a part-time PM based in UNDP CO.
PO – producer organization. An entity, such as an FPO, formed by primary producers to increase member income.
PPG – Project Preparatory Grant: GEF funds for detailed project design. Typically provided around the time of PIF approval and allowing maximum of 18 months until submission of ProDoc and CER to the GEF.
PRADAN – Professional Alliance for Development Action. Well-reputed NGO that has strong experience in the livelihoods area.
ProDoc – Project Document. A full project design document. In the case of UNDP-supported GEF-financed projects, the ProDoc is submitted to the GEF along with the CER to receive approval of the full project design.
Project team: In the case of this report, refers to the PMU/ individuals affiliated with the PMU.
PSC – project steering committee: In the case of *India ACE Project*, the PSC is responsible for providing strategic guidance to the project and is considered a level above the PEC, compared to which it meets less frequently. The PSC is chaired by the secretary of MNRE.
QPR – quarterly progress report. Required report for UNDP-GEF projects. To be provided by the PMU four times per year.
RE – renewable energy.
RE for livelihoods: Refers to using renewable energy based equipment for productive uses so as to increase income.
Rec. – Recommendation. Abbreviation adopted for the purpose of this report.
REC – Rural Electrification Corporation. The public infrastructure finance company in India's power sector responsible for rural grid-based electrification.
RE SNA – renewable energy state nodal agency. Term used in this report at times to refer to the SNAs under MNRE.
RETPRL – renewable energy technology package for rural livelihoods: Term coined by the designers of the *India ACE Project* to refer to a technology application of RE that can be used in a livelihood sector to support production and thus raise income.
RFP – request for proposals
Rs – rupees (Indian)
RTA – Regional Technical Advisor. For UNDP-supported GEF-financed projects, a regionally-based expert and manager who provides technical and management guidance to the design and implementation of projects in focal areas under his or her purview.
sanction: In the case of India ACE project and this report, "sanction" refers to approval of a project.
SCC – State Coordinating Cell. Name for the local PMU set up in each state for *India Ace Project*. The SCCs to date have been based in MNRE's SNAs. They are designed to have two staff each, but currently Assam and Odisha SCCs have one person each and MP's SCC has none.
scheme: a Government of India program for disbursing funds for a certain cause. For the *India ACE Project*, MNRE launched a $10 million scheme to subsidize RETPRLs at 30% of project costs.
SELCO Foundation – Bangalore-based not-for-profit charitable trust. Among other areas, SELCO is known for developing and then demonstrating new, innovative RETPRLs.
SNA – state nodal agency. In the case of *India ACE Project*, the SNAs are the state-level renewable energy agencies, which are the SNAs of MNRE.
SOURABHA: NGO with sanctioned demo project under *India ACE Project*. (Note: Sanctioned projects of NGOs did not come to fruition, as MNRE decided later not to work with NGOs in the way that had been planned.)
SPM – State Project Manager. A project management role in MPSRLM and other organizations.
SRLM – State Rural Livelihood Mission. Autonomous entity under state government. Oversees implementation of NRLM related activities in the state.

STAP – Scientific and Advisory Panel. An independent group of scientists that advise the GEF. STAP typically provides comments on PIF stage project concept proposals.
SU – abbreviation used in this report for "scale-up."
Supply Ch – abbreviation used in this report for "supply chain."
sub-HP - sub-horsepower. In this report refers to PV pumps with power levels less than one horsepower.
TA – technical assistance. Funds designated for service, in contrast with INV funds, which are to be used for equipment and infrastructure. The distinction between TA and INV is used in budget allocations for GEF projects.
TE – terminal evaluation. An evaluation conducted towards the end of a project's lifetime. A TE is required for all UNDP-supported GEF-financed projects.
TOR – terms of reference. A document describing work tasks. Often used to recruit consultants or contracting firms for a project.
Udyama: NGO with sanctioned demo projects under *India ACE Project*. (Note: Sanctioned projects of NGOs did not come to fruition, as MNRE later decided not to work with NGOs in the way that had been planned.)
UL – unrealized loss. Line item in CDRs that shows exchange rate loss.
UNDP – United Nations Development Programme. GEF Implementing Agency for the project.
UNDP CO – UNDP Country Office. In the case of the *India ACE Project*, UNDP CO refers to the UNDP India Country Office.
UNDP-GEF Project: Project with core funding from GEF that is supported by UNDP as GEF Implementing Agency.
UNEG – United Nations Evaluation Group
USD – US Dollar. Also symbolized by "$."
VGF – variable grant fund: A fund in which grant size or grant proportion varies based on the situation. In the case of *India ACE Project*, a VGF for project demos may specify grant proportion based on newness of technology/ current economic viability.
Villgrow: Firm that began carrying out supply chain work for *India ACE Project* in its three demo states in late 2018.

Acknowledgements

The MTR team is highly appreciative of the contributions of the many stakeholders who supported the MTR through generous contributions of their time, effort, and insights. The PMU Team and SCCs provided facilitation for meetings and AREDA provided strong support for our field trip in Assam. We also appreciate the guidance from UNDP India and UNDP Bangkok Regional Hub. MNRE, SNA, and SRLM officials all provided useful insights on project progress and challenges. The original project designers shared their perspective so we could better understand their original intention and experience with project design. Consultants and sub-contractors to the project explained their work and provided thoughtful suggestions. Further, NGOs and other entities involved in earlier phases of the project helped us to understand what has happened and provided suggestions for the future. Specific organizations and individuals are noted with more detail in the realized mission and consultation schedule provided in Annex 1. We wish to thank all of those listed as well as some who participated in group meetings whose names may not be included.

Executive Summary

The MNRE-UNDP-GEF *India ACE Project* (official title: *Scale Up of Access to Clean Energy for Rural Productive Uses*) has as its objective "enhancing reliable and affordable clean energy access for rural livelihoods in un-served and underserved areas." The project has four components focusing, respectively, on the following: (1) Demonstration and wide-scale replication of RE for livelihood applications; (2) Supply chains for RE for livelihood applications; (3) Policies to promote RE for livelihood applications; and (4) Financial mechanisms to promote RE for livelihoods applications. The project targets demonstration and replication in three states: Odisha, Assam, and Madhya Pradesh. MNRE is the project's IP. UNDP is the primary provider of oversight services, guidance, and backstopping and also provides technical inputs. MNRE's secretary chairs the PSC, which oversees project strategy and is intended to meet at least once per year. An MNRE JS, who is also NPD, chairs the PEC, which oversees project operations and is to meet at least four times per year. The NPC, who oversees the project's day-to-day activities, is a director-level official of MNRE. Core funds of USD 4,006,849 are provided by the GEF. With intended five-year duration, the project has an official start date of July 23, 2015 and end date of July 23, 2020, only about 14 months away (based on May 2019 timing of draft version of this report). The PMU currently has two full-time staff, a technical officer and administrative assistant, both based in MNRE, though at one point had four persons. There is an interim part-time project manager based in UNDP, though for about one year in 2017, there was a full-time one (also based in UNDP). The SCCs in the three states initially had two persons each, based in the SNAs, for a total of six. Now, Assam has one, Odisha one, and MP none.

Progress: Progress towards targeted results has been limited. There was significant early activity in 2015 and 2016, but, then, reversal of progress and little new activity in 2017 and most of 2018. Recently, activity has been seen again via UNDP CO-driven initiatives at the end of 2018 and first part of 2019, though without much involvement of MNRE. The significant activity of 2015-2016 includes solicitation of proposals from NGOs and other non-government entities for demo grants, with 69 proposals across the three states being short-listed and an initial set of 11 from Odisha receiving sanction letters. There were also a number of workshops held, specifications of "RE for livelihoods" equipment issued, and solicitation of proposals for grant funding for suppliers, of which five were shortlisted. Yet, MNRE then decided to change course and not work though non-government entities in the way initially envisioned. Thus, none of the shortlisted demo proposals, including the sanctioned ones, went forward. MNRE instead planned to launch a subsidy scheme, the funding of which, $10 million, would be equivalent to MNRE's committed co-financing to *India ACE Project*. The scheme was formally launched in August 2018, but at the time of the draft version of this report, nine months later, not a single project has been funded under the scheme. At the end of 2018 and beginning of 2019, UNDP launched the following work: installation of six 5-ton solar cold storage units (which can also be plugged into the grid), two in each state and with 100% grant; a benchmarking study on the situation of livelihoods and demand for RE for livelihood equipment in the three states; supply chain work (mainly identification of suppliers); and preparation of four demo proposals for MP. In terms of the four components, over the life of the project to date, the main focus of activities has been Component 1 (demos and replication), with some attention to Component 2 (supply chain). No specific work has been carried out for Component 3 (policy) or Component 4 (financing), except for MNRE's setting up of its scheme, which may be considered a part of Component 4.

Expenditures: By the end of 2018 (in USD), $573,661 out of $4,006,849 in GEF funds (about 14%) had been spent. None of the $19,033,767 in co-financing was reported as spent, though the establishment of the $10 million MNRE scheme signifies the setting aside of the co-financing committed by MNRE. In addition, OREDA plans a scheme valued at around $720,000. Also, in-kind contributions, such as SNA

and MNRE officials' time have been significant, as has been specifications work by NISE, provided at no cost to the project. Further, NGOs and other non-government entities put significant time and other resources into developing demo proposals and presenting these to MNRE.

Relevance: *India ACE Project* has the potential to be highly relevant and innovative, but key measures will be needed to ensure the project operates in spaces where it is needed. When the *India ACE Project* concept was initially proposed in March 2012, "RE for livelihoods" represented a novel and high-potential concept for India. Energy access and particularly access to electricity was quite low in rural India and needs for enhancing livelihoods high. In the seven years since that time, much has changed. Internationally, the concept of "productive uses of RE" has become quite popular. In India, a number of small-scale pilots with various "RE for livelihoods" applications have been carried out; and very large programs for solar PV lighting (which is one type of RETPRL proposed by the project) and solar PV pumping (another kind of RETPRL proposed by the project) have been instituted. Meantime, the cost of RE equipment, especially solar PV, has dropped substantially, increasing potential economic viability of projects. Power grid expansion has, as of end of 2018, brought electricity to almost every village in India. Yet, the recent IPE Global study for the project (draft, March 2019) indicates high potential market demand for RETPRLs. And, stakeholders argue that there is still a strong need for the *India ACE Project* to facilitate massive scale-up of RETPRLs. Most other efforts (aside from the lighting and PV pump efforts) are not wide-scale, but pilot in nature. Thus, to ensure relevance, *ACE Project's* key differentiating feature from other work should be a focus on facilitating massive scale-up. And, also to ensure relevance, the project should both avoid assistance for technologies already supported on a wide scale and work to make certain that technologies selected are still relevant for many locations over the next five years, despite grid rollout.

In terms of relevance to UNDP and GEF priorities: On the UNDP side, the project fits quite well with the priorities of access to clean energy and income generation. In particular, the UNDP primary outcome of "Sustainable access to energy and energy efficiency" is addressed as is the secondary outcome of "Planning at sub-national levels to help connect national priorities with action on the ground." At the country level, the fit is even more closely aligned, with the expected CP outcome being "expanded access to clean energy" and the expected CP output being "support for initiatives that increase access to clean energy for productive uses in off-grid, underserved rural regions." On the GEF side, the project supports the climate change mitigation focal area outcomes of: Outcome 3.1 Favorable policy and regulatory environment created for renewable energy investments and Outcome 3.2 Investment in renewable energy technologies increased.

Notable achievements: Despite limited progress toward targeted results, the MTR team finds that the project has two particularly impressive achievements: (1) national government allocation of $10 million for a two-year MNRE subsidy scheme for "RE for livelihoods" and (2) Odisha State Government allocation of $720,000 for a one-year OREDA subsidy scheme for "RE for livelihoods" (likely to be renewed with similar funding in the next fiscal year). Given that these were achieved without much project progress, it seems that a well-designed and impactful demo program, once implemented, may stimulate substantial additional financing mechanisms for scale-up, as is intended by Component 4 of the project.

Challenges and concerns: The project faces a number of challenges, given the complexity of the landscape for integrating RE with livelihoods. These are introduced briefly below, along with concerns about how the project has been implemented to date. Recommendations to address these challenges and concerns are provided in the last sub-section of the Executive Summary.

- The project's differentiation from other projects and programs is not as obvious as it once was, when the project was designed in 2014 and when "RE for livelihoods" was a fairly new concept in India. Thus, related to the requirement that UNDP-GEF projects address needs that would otherwise not be addressed in the absence of the project, there is a need to improve understanding of the relevance of the project at different levels. To elaborate on the need to improve understanding of the project's differentiating features/ relevance, there are already a number of other pilots of RE for livelihoods in India, such as those supported by SELCO and Harsha Trust. And, there is widespread support from other programs of RE applications that are key ones the project intends to support (especially PV lighting and PV pumps). (See Recs 1 and 2 for suggested resolution.)
- With a strong push from the national government, grid extension to almost every village in India was achieved by the end of 2018; and grid extension to almost every household is intended by the end of 2019. Stakeholders report, however, that many villages still lack dependable electricity supply, with, in some cases, electricity only available for, say, four hours a day. Further, the majority of homes in many "electrified" villages, as of the time of the MTR mission (April, 2019), were said to still lack electricity. And, power levels available in newly electrified villages generally address home needs only. At the same time, grid rollout makes the economic competitiveness of RETPRLs more complicated, so that further analysis and justification would be needed (that would not have been needed in 2014 when there were larger areas and full villages without access to electricity). Verification of the electricity situation (current and expected over next five years) and, in some cases, comparative costs (grid versus RE options) is now needed for intended demo and replication sites. And, project strategy needs to consider that increased availability of grid electricity could render electricity-focused RETPLs unnecessary at some locations or at least not economically competitive in the near-term at some locations. At present, there is a lack of information and associated confidence on the expected situation over the next five years. And, there is a lack of analysis on which RETPRLs are attractive despite expectations for grid expansion and improvement over the next five or so years. (See Rec 4 for suggested resolution.)
- At present, the IP's plan is that the "RE for livelihoods" work of the project and the scheme will be open to any RE livelihood application. While openness to different types of RE (e.g. PV, solar thermal, biomass, etc.) is important, without focus on specific technology applications (e.g. solar thermal drier, PV cold storage, etc.), a strategy of demonstration and scale-up becomes difficult to effectuate. And, as above, the problems of supporting technologies supported by other programs or supporting technologies that don't make sense due to grid extension arise when there is a lack of focus on specific technologies. The ProDoc initially envisioned a focus on selected technologies and identified priority RETPRLs in its compendium. Yet, the compendium update commissioned by MNRE does not convey this kind of focus. More recently, UNDP has commissioned IPE Global to revalidate the RETPRLs in the ProDoc and their report provides recommendations of RETPRLs on a district-by-district basis. Yet, with PV pumps as one of the top two technologies selected in that report, further refinement is needed, as many other programs already address PV pumps. Further, to achieve the scale-up envisioned, one master set of selected technologies needs to be identified. (See Rec 2 for resolution.)
- While some of the key existing RETPRLs (such as solar lighting and solar pumps) are already widespread and there is a need to develop new applications, the project lacks a means of bringing promising, newly developed RETPRLs into the demo and scale-up pipeline. (See Rec 2 for resolution.)
- Beneficiary targeting as currently being carried out is likely to result in demos that are not replicable with similar groups once subsidy levels are reduced and/or removed. Consultations suggest that most of the beneficiary groups targeted in demos proposed to date require very high subsides, typically 70 percent or more. In some cases, efforts are being made to group together subsidies from different

sources, so that the cost of the project will be covered at 100 percent, without beneficiary contribution. (See Rec. 3 for resolution.)

- Related to the problem directly above, the project lacks a clear understanding of the best way to identify economically viable beneficiaries and work with them. Currently, the project considers the SRLMs as the best partner for identifying beneficiaries. Yet, the SRLMs focus on BPL groups that they indicate lack the funds to pay for a significant portion of the RETPRLs and instead require very high subsidy (e.g. 70 percent or more). (See Rec. 6 for resolution.)
- It has been suggested that the differentiation between demo and scale-up, a distinction indicated in the project document, be removed to speed up progress. Yet, a great strength of UNDP-GEF projects is the opportunity to demonstrate and have associated TA to support the demonstration. And, scale-up in such a project should build on demonstration of things that have previously not been substantially or systematically demonstrated. (See Rec. 5 for resolution)
- Related to the lack of differentiation between demo and scale-up, the total budgets available to the three states for the demonstration phase and the number of different types of technologies they should demonstrate has not been made clear to them. This leads to a lack of overall strategy in what they will demonstrate and the extent of the demonstrations of each RETPRL. To ensure that each state demonstrates a good range and balance of selected RETPRLs (rather than perhaps demonstrating just one or two, or mostly demonstrating one or two), a maximum state "sub-budget" for each RETPRL to be demonstrated, or some other approach to ensure balanced diversification across selected technologies within each state, is needed. (See Recs 2, 5, and 15 for resolution.)
- While the project, in its early stages, achieved a number of approved specifications and benchmark prices, these may be outdated or perhaps in some cases not known to exist by the relevant MNRE team. The MTR team found that some key technologies of interest to the states cannot be funded by the scheme, because official MNRE benchmark prices are not in place. (See Rec 7 for resolution.)
- There is a lack of clarity, in the case of some RETPRLs, as to whether the MNRE scheme will determine the subsidy based only on the cost of the RE portion of the equipment and not on the full cost of the equipment. (See Recs 5 and 15 for resolution.)
- In some cases, targeted RETPRL equipment is quite expensive and may not be considered economically viable (without subsidy) by communities, depending on the extent to which they can utilize the equipment. The six cold storage units (5-ton capacity) the project recently installed via provision of 100 percent grant cost Rs 1.4 million each (including transport), though NISE had estimated a cost of Rs 900,000 per unit. While there are examples of individuals buying such units without subsidy, scaling up production or more in-depth sourcing work could lower costs and extend the group of beneficiaries finding such products economically viable, considering their potential use levels. Yet, there is not yet an organized effort for bulk purchase or such in-depth sourcing work. (See Rec 8 for resolution.)
- Because there is no focus on specific RE for livelihoods technology applications, the project supply chain work cannot focus on certain types of equipment and thus cannot train local persons to become service providers with capabilities in installing and repairing certain RETPRLs. Further, while the supply chain work has been relaunched recently, the contractor for that work faces challenges in getting suppliers interested, as there are no links between suppliers and demo opportunities. While the IPE Global work has identified recommended RETPRLs for each project district, the MTR team sees a need to revisit this work or take a different approach vis-à-vis the recommendations in this report to achieve selection of 10-15 RETPRLs and to ensure that the technology focus eventually agreed upon is conveyed to the supply chain contractor. (See Recs 2 and 8 for resolution.)
- Despite MNRE's scheme and OREDA's scheme, which occurred without specific TA support of the project, the project has no activities carried out or planned that are specifically tailored to achieve the targeted outcomes of Component 3 (the policy component) and Component 4 (the financing component). (See Recs 9 and 10 for resolution.)

- MNRE is quite busy with much larger programs than the ACE Scheme. Further, MNRE does not seem to place high enough priority on the India ACE Project to give it the attention needed to move the project forward. Neither the Secretary (Chair of PSC) nor the JS (NPD) were available to meet with the MTR team, though the team did have one meeting with the current NPC. (See Recs 12 and 15 for resolution.)
- The project team is understaffed. Some staff have left voluntarily, perhaps due to the lack of project progress. The project lacks a full-time project manager, though currently has a part-time one based in UNDP CO. Over its almost four year life, the project only had a full-time project manager for one year. That PM was based in UNDP CO and not at MNRE with other PMU staff members. Further, the project team lacks livelihood expertise. (See Rec. 13 for resolution.)
- The project has just around 14 months remaining (at the time of the draft version of this report). The project should carry out the demos first, with enough time for the demos to inform scale-up. Yet, there is unlikely to be enough time to both achieve demos and scale-up, building on lessons learned from the demos for scale-up, before the current project close date. (See Rec. 14 for resolution.)
- In general, communications with the SNAs and contractors has been quite weak. The SNAs are not briefed on what is being planned. Some contractors have not been followed up with in a timely fashion. (See Rec. 15 for resolution.)

Ratings: Based on the rating scales provided in UNDP guidelines for conducting UNDP-GEF MTRs, the MTR ratings for *India ACE Project* are generally low, with "unsatisfactory" being the typical rating across categories. Despite these low ratings, the MTR team believes the adoption of "RE for livelihoods" schemes by MNRE and OREDA is quite encouraging, as is the recent upswing in project activity, facilitated by UNDP CO and starting at the end of 2018. And, the MTR team believes there is potential for the project to have a major impact and achieve satisfactory or perhaps even some highly satisfactory ratings if the MTR recommendations can be adopted and implementation pace and quality improved substantially. In sum, despite the challenges and low performance so far, valuable lessons have been learned that, if leveraged via adoption of the MTR recommendations, could result in a real turnaround of the project. The specific ratings are: Overall progress towards results is rated as Unsatisfactory. For reference, "Unsatisfactory" or "U" is defined as "the objective/outcome is expected not to achieve most of its end-of-project targets," while "Moderately Unsatisfactory" or "MU" is defined as "the objective/outcome is expected to achieve its end-of-project targets with major shortcomings." The greatest concern of the MTR team in assigning a "U" rating to progress towards the project objective is that lack of significant movement with the MNRE scheme ten months after launch (and 3.8 years into the five-year project), along with various barriers to scheme progress (e.g. "benchmark prices," etc.), suggest a high probability that the $10 million scheme funds needed to achieve replication targets will not be substantially mobilized by project close. (Outcome 1, Outcome 2, Outcome 3.3 are all rated as Unsatisfactory; Outcome 3.1 and 3.2 are rated as Moderately Unsatisfactory; Outcome 4.1 is rated as Satisfactory; and Outcomes 3.3, 4.2 and 4.3 are rated as Highly Unsatisfactory). Project Implementation and Adaptive Management are rated as Unsatisfactory. Sustainability is rated as Unlikely. Explanations of these project ratings and the UNDP project rating scales are given in Annex 7.

Recommendations: A summary of recommendations for the project is given below. Full recommendations, including, elaboration/ justification and action plan for each recommendation, are provided in Section 12.

1. Clarify and agree on the key features supporting the project's main aim and differentiating it from other "RE for livelihoods" work. Suggested clarification of features: "Economically viable wide-scale replication of 'RE for livelihoods' (that can soon continue without subsidy), targeting applications that are not widespread and not addressed by other schemes." Use clarified key features to determine nature of

demo installations, replication installations, and other activities. This is an overall recommendation supported by several recommendations below.

2. Select priority "RE for livelihood" technology applications that have the highest potential for scale-up, can achieve economic viability, are not already widespread, and are not supported substantially by other schemes. Focus on a limited number (4-6) of key livelihood chains. Target to have 10-15 different technology-livelihood chain pairs demonstrated via the demos and scaled up with the scheme, ensuring that each receives sufficient budget allocation. In addition, consider allocating some resources to demonstration of innovative application emerging out of academia and other organizations, such that these may constitute 4 to 5 additional applications.

3. Determine criteria/strategy for target beneficiary selection that ensures economically viable replication of demos by groups with similar characteristics. While, depending on technology, the demos may receive an additional grant beyond the 30% base subsidy (see Recommendation 5), beneficiary selection should ensure replication by similar groups with only 30% subsidy in the project's replication phase and later with no subsidy after project close and discontinuation of MNRE scheme. Such beneficiaries are likely to be those already carrying out the livelihood activity and those with financial strength or access to financial resources to purchase equipment at full price. Ideal target groups may be farmer producer organizations (FPOs) and other POs that have a strong financial situation and several year track record.

4. Build criteria related to recent and expected grid expansion into demo and replication selection plan to ensure that the RE application is still the economically more competitive option.

5. Distinguish demos/pilot phase from replication/scale-up phase and complete demos within one year. Demos should move forward with GEF funds only in the case that MNRE needs more time to carry out benchmarking/specifications. All demos should receive a base subsidy of 30%, with possible additional VGF (variable grant funding, % being specified for each of the 10-15 technology applications) of up to 35%. The VGF may be used towards equipment and/or TA support. Demos and scale-up should focus on the 10-15 selected technology applications (Rec 2) and funding should be rationally distributed among these, or among at least 6-8 per state. Total GEF budget for demos (e.g. $1.5 - $2.1 million) and amounts to be allocated to each state (e.g. $500,000 to 700,000 each) should be determined and conveyed to the SNAs quickly, especially so that OREDA gets news of co-financing in time to include in the design of its own RE-livelihoods scheme. All GEF "investment" funds will be used in demo phase. Scale-up will use MNRE scheme funds only. For scale-up phase, basis of subsidy amount (either full cost of equipment or cost of RE portion only) for each selected RETPRL should be determined and communicated.

6. While maintaining role of SNAs as state-level RE partner, determine partners for identification of beneficiaries of the project demos and scale-ups, proposal preparation, and, when needed, support of beneficiaries during implementation. Given the need for beneficiaries with well-established livelihoods and financial strengths, such as strong, well-established FPOs (Rec. 4), determine partner(s) who will be able to identify such groups and work with them. This may include SRLMs, though, given their BPL focus, the fit may not be strong. Other promising options include: (a) a very select group of NGOs known for pursuing economic viability (e.g. Harsha Trust, PRADAN), (b) strong equipment supplier organizations that can identify beneficiaries and assist with proposals and implementation, (c) strong local consultant in each state who has the right links / skills to identify the designated type of beneficiaries and liaise with them, and (d) direct discovery of qualified POs by SCCs. Determine any budgetary allocations needed for such partners. It is expected that allocations, if any, for beneficiary identification and facilitation should be quite low, though sufficient funding for quality proposals with proper assessment of economic viability will be needed once proposed demo concept agreed upon.

7. For demos, quickly prepare and adopt interim plan for specifications and benchmark costs for the 10-15 selected technology applications. Plan can be based on previous work, such as previous specification work done by NISE, price benchmarking by MNRE, and/or price discovery for tenders (e.g. 0.5 HP pumps in Odisha). If needed, consultant can fill any gaps. For scale-ups, set in motion all needed specification and benchmark work (either original or updates) to be carried out in parallel with demos and to be completed within six months.

8. Revise supply chain work to support clarified aim of project (Rec. 1) and, specifically, economically viable demonstration and scale-up of the 10-15 selected technology applications (Rec. 2). As such: (i) Identify suppliers/ potential suppliers of the 10-15 selected items and ensure that as many as possible are informed of demo and scale-up related calls for supplier bids. (ii) Support suppliers of the 10-15 selected technologies in directly connecting with communities to develop demo and scale-up proposals (so that they may be one type of project partner to identify communities and develop proposals) (Rec. 6). (iii) Support the development of local service providers to install and repair the 10-15 selected technology applications. (iv) Conduct targeted sourcing work to get the price down of selected items (such as solar cold storage) and also consider bulk orders as means of price reduction.

9. Policy work of Component 3 should be revised/ refined and work initiated. (i) For the first outcome, "inclusion of RE application in national and state level rural livelihood policies for key livelihood sectors in rural areas," outreach should be conducted with MORD and other relevant ministries at the national level and SRLMs and other relevant state-level departments in the three project states. An understanding should be gathered of how to incorporate RE into policies and draft proposals to do so prepared. (ii) For the second outcome, "the catering of future MNRE programs towards RE for livelihoods," consultations should be carried out within MNRE to see how RE for livelihoods could be incorporated into MNRE's mandate for long-term incorporation into work plans going forward. This may target plans for MNRE to carry out, on an ongoing basis, work to identify suitable existing RETPRLs and to stimulate development of new ones. It may further include plans for work on specifications, benchmark pricing, and supply chain measures to get the price down. The work could also be expanded to ensure that RE for livelihoods enters the mandate and scope of ongoing work of the SNAs. (iii) The third outcome, "improved tariff and grid interconnection regulations for decentralized RE," may not be relevant unless it is decided that PV-battery mini-grids are a key option for supporting selected livelihood value chains and determined that they are neither widespread nor covered by other schemes. If mini-grids are not selected as one of the 10-15 technologies, the outcome might be revised to encompass other types of policy incentives for involvement in RETRPLs, such as "preferential tax and import tariff policies for RE for livelihoods equipment." In this way, the outcome retains its original spirit of improving the attractiveness of being involved in the business of RETPRLs.

10. While MNRE's "RE for livelihoods" scheme can be seen to fulfill part of one of the outcomes of Component 4, no other work on this component has been initiated. It is recommended that due attention be put on this component and the work for the outputs under each outcome be clarified. In some cases, the wording of the output may be adjusted so that it is clearer or more specific. (i) For the first outcome "improved RE decentralized subsidies and support for rural livelihoods," in addition to developing innovative approaches to subsidies, work could be done to encourage MNRE to continue its scheme in years to come and to get the states to develop such schemes (as Odisha has already done). This work will have more potential if success of the demos and some of the replications is well documented, so may be carried out after demo installation. (ii) For the second outcome, "enhanced provision of financial support," the project can promote RETPRLs to lenders and to other programs to help secure loans and other support to achieve replication of the project priority 10-15 RETPRLs. (iii) For the third outcome, "improved investment risk mitigation," the project may target development of marketing, sourcing,

quality, and productivity support for household enterprises using the project's priority 10-15 RETPRLs via local language documentation of guidelines and advice, as well as pilot focused, individual advising.

11. Approach CSR foundations, such as REC, NTPC, etc., regarding co-financing ACE RE for livelihoods deployment in states in which they are active. This support could extend efforts in India ACE states or extend efforts to the two additional states initially considered but then not included in project design (Jharkhand and Meghalaya).

12. Shift bulk of implementation to faster mechanism: either (1) country office support (where UNDP carries out implementation with agreement of MNRE on various decisions) or (2) subcontracting of project management to capable organization with sector expertise (e.g. SELCO Foundation, Harsha Trust, PRADAN, etc.), which then carries out implementation, while still seeking agreement on decisions from MNRE, which in either case would remain the IP.

13. Strengthen the PMU (if the country office support option is chosen in Rec. 12) and strengthen the SCCs by adding staff. Improve motivation and flexibility and speed up hiring by shifting all PMU and SCC staff from MNRE to UNDP contracts. Hire a highly proactive project manager to lead the PMU (if the country office support option is chosen in Rec. 12) -- someone who has the background to engage effectively with MNRE officials and gain their trust and to understand the strategies and approaches of UNDP-GEF projects. Consider hiring a part-time senior advisor to ensure the project is on-track to make real, strategic contributions to scaling up "RE for livelihoods" India. The SCCs should be fully staffed, which means adding a person in each of Odisha and Assam (to the one RE-focused officer already in place in each state) and two persons in Madhya Pradesh. In the end, each SCC should include one officer with a background in RE and one officer with a background in livelihoods/ communities. If in Rec. 6 it is decided that the SRLMs will be the main partner to identify beneficiaries, then this livelihoods officer may sit in the SRLM, but otherwise they should be housed along with the RE officer in the SNA. Depending on needs, a livelihoods officer may also be added to the Delhi based PMU.

14. Revise project framework (outputs and activities), rough overall budget, and indicators to reflect clarified project aim (Rec. 1) and other decisions taken with regard to these recommendations. For Component 1, sole focus should be on designing and implementing the demos/ scale-ups, with no further general studies, workshops, or trainings, except perhaps translation of information on the 10-15 technologies into local language and extension at the district level to specifically promote these 10-15 technologies. Only after and if positive results are achieved with the demos, workshops featuring results may be held towards end of project. Component 2 work should be revised as indicated in Rec. 8. Component 3 and 4 work still needs to be launched, after being revised and/or clarified as indicated in Recs 9 and 10, respectively. A clear success hurdle for the next six months of the project (from mid-June to mid-Dec. 2019) should be established. The MTR team recommends a six month hurdle including approval of demos that would entail use of the full demo budget allocation and installation of demos accounting for at least half of that amount. In January 2020, if indeed the six month hurdle is met in December 2019, apply for 18 month project extension of end date from July 23, 2020 to January 23, 2022. If the hurdle is not met, the project should prepare to close in six months on its original end date of July 23, 2020. In the case the hurdle is met, suggested justification for the extension is: "Project faced major delays due to both (1) the highly complex nature of stimulating rapid scale-up of economically viable "RE for livelihoods" in India's evolving environment of electrification, subsidy programs, and rapid RE market evolution; and (2) the very heavy workload at MNRE, the IP, whose targets for installation of RE power generation in India were raised from the hundreds of MW to the hundred GW level. Both of these issues have now been addressed through adoption of the MTR recommendations, which (1) delineated a strategy for high-impact demos and scale-up via lessons learned in the first 3.75 years of implementation and (2) suggested a shift to UNDP country office support of MNRE, lessening

MNRE's load with regard to the project, but allowing it to continue to provide its expert input and lead decision-making. By meeting its six-month post-MTR hurdle, the project has shown that it is now back on track and will be meeting and potentially surpassing GHG ER targets."

15. Devise and implement a communications strategy to keep all key players in the loop with regard to project developments and a promotion strategy to promote RE for livelihoods to MNRE, national government, state governments, and the public. The communications strategy should include an internal strategy for keeping communications between UNDP, MNRE, SNAs, and SCCs strong. To get the project relaunched, through June, July, and August, there should be meetings between UNDP and MNRE one time per week at the NPC-programme officer level, with the SNAs conferenced in, and at the NPD-section chief level once per month. Once per week through the life of the project, PMU should provide weekly email updates cc'ing UNDP, MNRE SNAs, and SCCs and hold weekly four-way calls with the SCCs to communicate all developments. The PMU should develop a listserv and, at least once per month, keep its supplier base and potential partner base (state FPOs, etc.) in the loop on developments, such as selection of 10-15 priority technologies, decisions on VGF levels for each, etc. PMU should ensure that communications and follow up with all contractors is timely and follow up on any long overdue loose ends. The promotion strategy should delineate an effective means of catching the attention of government officials and the public with regard to the "RE for livelihoods" concept. While different organizations will be targeted, the most important target will be MNRE itself, so that the profile of the "RE for livelihoods" concept can be raised within the ministry.

1. Project Background

Basic project design: The MNRE-UNDP-GEF Project *Scale Up of Access to Clean Energy for Rural Productive Uses* (*India ACE Project* for short) is a five-year project launched with Prodoc signing on July 23, 2015. Its concept was first submitted to the GEF in March 2012 and design work took place in 2014. The project end date is July 23, 2019, only about 14 months from preparation of the draft version of this mid-term review report (May 2019). The stated objective of the project is "enhancing reliable and affordable clean energy access for rural livelihoods in un-served and underserved areas." GEF funding is USD 4,006,849 and committed co-financing is USD 19,033,767. The project has four components focusing, respectively, on the following: (1) Demonstration and wide-scale replication of RE for livelihood applications; (2) Supply chains for RE for livelihood applications; (3) Policies to promote RE for livelihood applications; and (4) Financial mechanisms to promote RE for livelihoods applications. It targets achievement of eight outcomes, one under each of the first two components and three under each of the second two components. These outcomes, along with their original allocations of GEF budget and co-financing and their main content are:

Outcome 1. Deployment of RE-rural livelihood application packages (GEF $2,719,949; co-financing $18,374,380): The outcome as originally designed encompasses demonstration of the project's selected RETPRLs (renewable energy technology package for rural livelihoods) benefiting 1,500 household enterprises and replication benefitting 28,500 household enterprises, for a total of 30,000 household enterprises benefitting.

Outcome 2: Increased supply of RE technology and service providers for rural livelihood applications (GEF $301,000; co-financing $416,387): The outcome as originally designed called for the selection and development of 20 RE technology and service providers to be involved in the project demos and receive grant support of USD7,500 each and for 80 more to be selected and developed to be involved in the replications.

Outcome 3.1: Inclusion of RE applications in national and state level rural livelihoods policies for key livelihood sectors in rural areas (GEF $196,700; co-financing $53,900): The outcome as originally designed calls for inclusion of these RETPRLs in appropriate policy statements / documents of the national and state livelihoods missions, as well as in the policy statements/ documents of the government bodies overseeing key rural livelihood sectors.

Outcome 3.2: Future MNRE programs also cater to actions towards enhanced RE utilization in rural livelihoods (GEF $46,600; co-financing $14,000): The outcome as originally designed encompasses the development of an MNRE program to support deployment of RETPRLs.

Outcome 3.3: Improved tariff and grid interconnection regulations for decentralized RE (GEF $69,500; co-financing $28,800): The outcome as originally designed encompasses the development of guidelines for tariff-setting and grid interconnection for RE mini-grids.

Outcome 4.1: Improved decentralized RE subsidies and support for rural livelihoods (GEF $64,800; co-financing $22,000): The outcome as originally designed encompasses analysis and development of improved models for subsidy schemes that are somehow different in nature than the standard Government of India subsidy schemes at present.

Outcome 4.2: Enhanced provision of financial support for decentralized RE in rural livelihood applications (GEF $119,900; co-financing $32,000): The outcome as originally designed encompasses the

development of a range or potential means for supporting RETPRL deployment, such as grants, subsidies for interest rates, low or no interest loans, performance linked payments, import duty exemptions, etc.

Outcome 4.3: Improved investment risk mitigation for decentralized RE in rural livelihood applications (GEF 298,900; co-financing 29,300): The outcome as originally designed encompasses design and implementation of a risk guarantee fund to support RETPRL deployment.

Country context:

Rural areas: Of India's estimated population of 1.37 billion in 2019, an estimated 65 percent or more of which (890 million or more people) live in rural areas. There is a large gap in incomes between urban and rural areas in India. Key livelihood value chains in rural India are those associated with farming, animal husbandry, and fisheries. They include horticulture/ agriculture, poultry, dairy, and fisheries/ fishing. Other livelihood value chains of significance are weaving/ textiles and NTFP (non-timber forest product) collection and sorting.

RETPRLs: At the time of project concept development in 2012, productive use of renewable energy was a new concept to India. Now, in 2019, quite a number of "RE for livelihoods" pilots have been developed but not deployed on a wide scale. SELCO Foundation is one organization known for its development of "RE for livelihoods technologies." Harsha Trust is an example of an organization that has expanded its rural support work to RE for livelihoods and is supporting farmers with a suite of RE technology applications for their farms. In addition to these pilots deployed on limited scale, in some cases, specific RE technologies considered RETPRLs in the *India ACE Project* design have been deployed widely in India or are now set for deployment with large, in-progress subsidy schemes. These specific technologies are PV lighting and PV pumps.

RE deployment in India: At the time of initial project concept in 2012, India had low deployment of RE technologies. Now, however, thanks to large-scale deployment of grid-connected RE, India is one of the nations in the world with the largest installed capacity of RE power generation. Whereas India's RE power generation targets when the project was launched in 2015 were in the hundreds of MW, the current target of India for RE power generation capacity deployment is 100 GW (non-hydro RE) by 2022. With about 77.6 GW deployed by the first quarter of 2019, India appears on track to meet this very high target. The high targets have kept MNRE, the project IP, extremely busy. Yet, most of the deployment has been grid-connected RE power generation. Off-grid deployment is significant, but quite low in comparison. By the end of July 2018, cumulative off-grid PV systems established with government support had a capacity of 762 MW, with about 104 MW deployed in the 2017/2018 fiscal year. Private sector sales are reported to have grown substantially in recent years. Private sector PV sales (pico-solar and solar PV home systems) have been estimated at around 6.7 million units per year. Annual private sector mini-grid deployment at 1.8 MW per year.[1] Some stakeholders have indicated that for RE products, rural people expect subsidies. Yet, the increase in private sector sales of pico-solar and solar PV home systems is an encouraging trend that says the situation may be changing.

Grid extension in India: An important trend of relevance to *India ACE Project* implementation is the rapid extension of the power grid to rural areas. The government target for 2018 was that the grid would be extended to every village in India; and this target is close to having been met. For 2019, the target is that the grid will be extended to every household. The rate of rollout is extremely impressive. At the same time, some sources indicate that there have been problems with quality. And, despite grid extension to most villages, power is said in many places to be of low reliability and in some places available for only a

[1] Off-grid deployment figures are from *State of the Decentralized Renewable Energy Sector in India*, Clean Energy Access and USAID, 2018.

few hours a day. Power levels are generally designed for household use and cannot accommodate some of the more power intensive productive use applications.

Involved states: The project's pilot states for the intended demos and replications are Assam (estimated population of 35.5 million), Madhya Pradesh (80.4 million), and Odisha (46 million). When selecting states, the design team aimed to focus on those states with lower rural incomes and thus avoided South India. They made the final selection based on the states that were most proactive and involved in early stage work. Other states considered and ranked highly are Jharkhand and Meghalaya. Thus, if the project were to be extended to other states, these two might be considered.

Project governance and oversight of project management: MNRE is the project Implementing Partner (IP); and UNDP is the primary provider of guidance and backstopping. MNRE's secretary chairs the Project Steering Committee (PSC), which oversees project strategy and is intended to meet at least once per year. An MNRE Joint Secretary (JS), who is also National Project Director (NPD), chairs the Project Executive Committee (PEC), which oversees project operations and is to meet at least four times per year. The National Project Coordinator (NPC), who oversees the project's day-to-day activities, is a director-level official of MNRE. Throughout the first 3.8 years of the project, there have been a number of changes in these key individuals. For example, the project has had three different NPCs to date.

Project team: At the time of the mid-term review, the project team, which comprises the project management unit (PMU) was operating with fewer staff than previously. Currently, there is a part-time interim project manager (PM) who is based in UNDP CO and has full-time responsibility overseeing another UNDP-GEF project. For most of 2017 there was a full-time PM based in UNDP. Prior to that, from July 2015 through most of 2016, the project did not have a PM. The central/ Delhi PMU is officially located in MNRE's offices. Currently there is one technical officer, one administrative/financial assistant, and one general assistant based in the central PMU. Previously there were two technical officers, two administrative/financial assistants, and the general assistant. There have been difficulties retaining staff due to the lack of progress of the project. There is a state coordination cell (SCC) located in each of the three pilot states. Earlier in the project, these were staffed with one technical officer and one consultant (an assisting role) each, for a total of six persons. Each of these teams was based in the respective SNA. At the time of the MTR, Assam's SCC has just its technical officer (one person), as does Odisha Madhya Pradesh (MP) has no staff in its SCC. One challenge with SCC staff is that their salaries, disbursed by MNRE are sometimes quite delayed in coming (e.g. six months late).

Main stakeholders: Main stakeholders for the project as originally envisioned include MNRE, the cluster level implementing agencies or "CLIAs" (NGOs and other groups that were to develop the demos and replications and assist local households in carrying them out), rural households, and RE suppliers and service providers. Resulting from decisions made by MNRE, the CLIAs are no longer involved in the project; and the SNAs are the main stakeholders tasked with developing demos. Under MNRE's "RE for livelihoods" subsidy scheme that it has launched, the SNAs are to receive a three percent service fee of subsidies disbursed. Involvement of the supply chain entities is still targeted. Recently, the state rural livelihood missions (SRLMs) have also been engaged to support beneficiary identification.

2. Mid-Term Review Approach

Purpose of Mid-Term Review: The purpose of the mid-term review (MTR) is two-fold: (1) transparency – information and assessment on whether the funds spent are leading to progress towards intended results; (2) course correction – recommendations of how the project may shift its activities or approach to increase the likelihood of achieving desired impacts by end of project. MTR analysis may also yield lessons learned or other insights applicable to future projects.

Methods of MTR: The MTR team made use of document review, extensive consultations, and additional information requests in its methodology. Prior to the mission, they reviewed a set of basic project management documents provided by the team, as well as some relevant items acquired via online search. During the mission, they requested the PMU and SCCs to provide and then received a much more extensive set of documents related to actual projects activities, such as consultant reports, listing of short-listed demo projects from the 2015 and 2016 RFPs, and a range of meeting notes. Some of these documents were reviewed during the mission, which took place in India from April 1 – 12, 2019; and most of the rest were reviewed after the mission. A list of documents reviewed, including those acquired before and those acquired during or after the mission is provided in Annex. 2. The mission itself consisted of extensive consultations. In addition to Delhi, the MTR team visited each of the project states, with trips to Guwahati in Assam, as well as a site visit to an installed solar PV cold storage unit in Assam; Bhopal in Madhya Pradesh; and Bhubaneswar in Odisha. A few additional consultations were carried out both before and after the mission via Skype. In total, over 40 consultations were carried out. The organizations or individuals interviewed are shown below in summary form. The more detailed mission schedule is provided in Annex 1. The two MTR team members exchanged ideas frequently prior to, during, and after the mission to develop the MTR conclusions and recommendations.

Stakeholder Interviews
over 40 interviews conducted

Project Team and UNDP (*present and former*)	
Interim Project Manager (UNDP CO-based)	UNDP CO Unit Head for CCRE
PMU Technical Officer (MNRE-based) x 2	UNDP Regional Technical Advisor (*via Skype*)
UNDP CO Programme Officer x 2	Former UNDP CO Programme Analyst
Former UNDP CO Programme Officer	
Project Designers	
Project Design Lead – International	Project Design Lead – National
National Government and National Institutes	
NPC – MNRE	NISE – Deputy Director (*via telephone*)
Former MNRE NPC	Advisors to NPC – MNRE
Consultants and Contractors to the Project	
Villgro – supply chain developer (*via telephone*)	OUAT – new RE livelihood applications compendium (*while in Assam*)
Demo Designer for MP (current)	
Consultant – livelihoods/pumps (*via Skype*)	IPE Global – updating of livelihood and RE market
Potential Suppliers	
Future Pump – Head, India Operations	
Assam	
AREDA – Vice Director	Dairy related NGO
ASLRM – Director	Aaranyak (NGO working in nature reserve)
ASLRM – liaison for solar cold storage	Farmers association receiving solar cold storage unit
SCC (local PMU) Technical Officer	
Madhya Pradesh	
MP SNA – Vice Director	MPLM – Vice Director and two colleagues
MPLM – liaison for solar cold storage	
Odisha	
OREDA x 3 (Vice Director responsible for scheme and Vice Director responsible for ACE)	SCC (local PMU) x 2 (Technical Officer and former SCC staff member)
OLM – Vice Director and colleagues	Udyama (NGO with sanctioned project)
Harsha Trust (NGO with sanctioned project)	Onergy Solar (company with sanctioned project)
SOURABHA (NGO with sanctioned project)	Metecno (solar cold storage materials co)

The MTR team made an effort to include gender assessment in its evaluation methodology, so that evaluation questions included questions related to involvement of women in the project and the potential emphasis on livelihoods involving women. Yet, given the limited progress of the project to date, the gender assessment is focused more on what the project is planning on doing rather than what it has done so far.

Content of MTR report: The main body of the MTR report includes 12 sections. It is preceded by the Executive Summary, which includes a summary of project background, progress, expenditures, relevance, notable achievements, challenges and concerns, and recommendations. Section 1, Project Background, includes a brief summary of the project as designed, country context (including rural India, RETPRLs, RE deployment in India, and grid extension in India), involved states, project governance and management oversight, project team, project board, and main stakeholders. This section, Section 2, introduces the MTR purpose, methods, and report content. Section 3 covers findings about the project overall, including overall relevance and innovativeness, overall impression of the project by the MTR team, most outstanding achievements, most notable concerns, and the cross-cutting area of communications and awareness raising. Sections 4 – 7 look in more depth at each of the project Components. Section 4 addresses the demo and scale-up component (Component 1), with a look at activity to date, including demo proposals by CLIAs, specifications and benchmarking, RETPRL compendium, SNA proposals, the six installed solar cold storage demos, consultant-prepared proposals, and market assessment work. Section 5 reviews activities to date, results, and needs with regard to the supply chain for "RE for livelihoods" component (Component 2), in particular addressing the idea of linking it more closely with the demos and scale-ups. Section 6 reviews results and needs with regard to the policy for "RE for livelihoods" component (Component 3), looking at policies of the livelihoods related bureaucracy, MNRE policy, and policy for grid connection of mini-grids. Section 7 reviews results and needs with regard to the financing of "RE for livelihoods" component (Component 4), looking at subsidies, loans, and grants. Section 8 covers findings and needs with regard to project implementation, including project timeline and extension, management arrangements, M&E and reporting, stakeholder engagement, and gender. Section 9 covers findings and needs with regard to project design and indicators. Section 10 covers project expenditures and co-financing. Section 11 covers sustainability. Section 12 expands upon each of the key recommendations listed in the Executive Summary. For each, it provides elaboration of what is being recommended and justification of the conclusions leading to the recommendation, as well as an action plan for achievement covering who will do what and by when.

Annexes provide additional material. Annex 1 provides the realized schedule of the mission and other consultations, as well as the specific stakeholders consulted. Annex 2 provides a list of documents reviewed. Annexes 3 and 4 provide proposed revisions: Annex 3 has preliminary suggestions for output and activity revisions to support further discussion of the project team. Annex 4 offers proposed indicator revisions, which take account of proposed output revisions in Annex 3. Annex 5 provides initial proposed rough budget revisions for use of GEF funds. It also suggests additional revisions, once decisions are made on project outputs, of how to ensure changes in allocations between outcomes do not exceed ten percent of total GEF budget. Annex 6 shows the MTR team's assessment of progress towards indicator targets (with color "traffic light" ratings and explanations). Annex 7 provides an explanations for the project ratings presented in the Executive Summary. Annex 8 is the standard UN Evaluation Group Code of Conduct for Evaluators. Annex 9 is the TOR for the MTR consultants. Annexes 10 and 11, per UNDP guidance, are submitted as separate documents. The first is the UNDP review comments on the MTR report and the responses of the MTR team. The second is the project GEF Climate Change Mitigation Tracking Tool at mid-term.

3. Project Overall

This section covers big-picture aspects of project results/ intended results, while the following four sections cover results/ intended results on a component by component basis. In terms of big picture, this section covers the innovativeness/relevance/need for the project, the overall impression of the project, the most notable achievements, the main challenges and concerns, and communications/ awareness raising.

Innovativeness/Relevance/ Need: When the project concept was first designed in 2012 and even when the detailed design was carried out in 2014, the "RE for livelihoods" theme of the project was considered highly innovative and new to India. Further, there was strong enthusiasm for the project. Energy access and particularly access to electricity was quite low at that time in rural India. And, the project was also seen to be needed to enhance rural livelihoods, especially those of the majority of farmers, who are marginal land holders with only two acres or less of land. Today, the *India ACE Project* still has the potential to be innovative and highly relevant/ needed. Yet, because of what has occurred since the time the project concept and full project were designed, for it to remain highly relevant and innovative, key measures will be needed to ensure the project operates in spaces where it is needed. The project will need to differentiate itself from the many small, pilot efforts to promote "RE for livelihoods" technology applications. And, it would not be relevant for the project to promote those "RE for livelihoods" technologies, such as PV lighting and PV pumps of certain sizes, that are already being promoted widely by other schemes. Further, power grid expansion may lessen the relevance of certain RE power generation technologies in certain places. Thus, there will be a need for the project to take into consideration the status of electricity in various locations and determine what types of RE for livelihood technology applications will still be relevant despite that status and expected status, perhaps, say, five years out, of the power grid. In sum, to ensure relevance, the project may need to clarify its scope and niche. Thus, MNRE will need to beef up its efforts to bring more focus in this regard to the project.

Overall impression: They main overall impression of the project is that progress towards targeted results has been limited. There was significant early activity in 2015 and 2016, but, then, reversal of progress and little new activity in 2017 and most of 2018. Recently, activity has been seen again via UNDP CO-driven initiatives at the end of 2018 and first part of 2019, though without much involvement of MNRE. The reversal of progress was due to MNRE's decision to change course and not work through non-governmental entities in the way envisioned. The revival of activity via UNDP CO efforts is a positive development. Yet, the MTR team has concerns as to whether the recent activity will, in the end, lead to real impact. Related to the issues of relevance discussed above, there is a need to clarify approach and be more strategic before moving forward with too many activities and too much spending. It is hoped that the MTR recommendations can assist proponents in this kind of clarification and strategy setting, so that the newfound momentum of the project can be fruitfully applied.

Most notable achievements: Despite limited progress toward targeted results, the MTR team finds that the project has two particularly impressive achievements: (1) national government allocation of $10 million for a two-year MNRE subsidy scheme for "RE for livelihoods" and (2) Odisha State Government allocation of $720,000 for a one-year OREDA subsidy scheme for "RE for livelihoods" (likely to be renewed with similar funding in the next fiscal year). Given that these were achieved without much project progress, it seems that a well-designed and impactful demo program, once implemented, may stimulate substantial additional financing mechanisms for scale-up, as is intended by Component 4 of the project. Further, if the project is able to develop the kind of clarity and strategy recommended in this report, there is strong potential to leverage the schemes that have been set up.

Challenges and concerns: The project faces a number of challenges, given the complexity of the landscape for integrating RE with livelihoods. Key concerns are given below and are similar to those

listed in the Executive Summary. At the end of each key concern, reference to the specific recommendations in Section 12 that could resolve the concern or challenge is given.

(1) The project's differentiation from other projects and programs is not as obvious as it once was, when the project was designed in 2014 and when "RE for livelihoods" was a fairly new concept in India. Thus, in terms of the requirement that UNDP-GEF projects address needs that would otherwise not be addressed in the absence of the project, there is a need to improve the understanding of the relevance of the project at different levels. To elaborate, there are already a number of other pilots of RE for livelihoods in India, such as those supported by SELCO and Harsha Trust. And, there is widespread support from other programs of RE applications that are key ones the project intends to support (especially PV lighting and PV pumps). (See Recs 1 and 2 for suggested resolution.)

(2) With a strong push from the national government, grid extension to almost every village in India was achieved by the end of 2018; and grid extension to almost every household is intended by the end of 2019. Stakeholders report, however, that many villages still lack dependable electricity supply, with, in some cases, electricity only available for, say, four hours a day. Further, the majority of homes in many "electrified" villages, as of the time of the MTR mission (April, 2019), were said to still lack electricity. And, power levels available in newly electrified villages generally address home needs only. At the same time, grid rollout makes the economic competitiveness of RETPRLs more complicated, so that further analysis and justification would be needed (that would not have been needed in 2014 when there were larger areas and full villages without access to electricity). Verification of the electricity situation (current and expected over next five years) and, in some cases, comparative costs (grid versus RE options) is now needed for intended demo and replication sites. And, project strategy needs to consider that increased availability of grid electricity could render electricity-focused RETPLs unnecessary in some locations or at least not economically competitive in the near-term. At present, there is a lack of information and associated confidence on the expected situation over the next five years. And, there is a lack of analysis on which RETPRLs are attractive despite expectations for grid expansion and improvement over the next five or so years. (See Rec 4 for suggested resolution.)

(3) At present, the IP's plan is that the "RE for livelihoods" work of the project and the scheme will be open to any RE livelihood application. While openness to different types of RE (e.g. PV, solar thermal, biomass, etc.) is important, without focus on specific technology applications (e.g. solar thermal drier, PV cold storage, etc.), a strategy of demonstration and scale-up becomes difficult to effectuate. And, as above, the problems of supporting technologies supported by other programs or supporting technologies that don't make sense due to grid extension arise when there is a lack of focus on specific technologies. The ProDoc initially envisioned a focus on selected technologies and identified priority RETPRLs in its compendium. Yet, the compendium update commissioned by MNRE does not convey this kind of focus. More recently, UNDP has commissioned IPE Global to revalidate the RETPRLs in the ProDoc and their report provides recommendations of RETPRLs on a district-by-district basis. Yet, with PV pumps as one of the top two technologies selected in that report, further refinement is needed, as many other programs already address PV pumps. Further, to achieve the scale-up envisioned, one master set of selected technologies needs to be identified. (See Rec 2 for resolution.)

(4) While some of the key existing RETPRLs (such as solar lighting and solar pumps) are already widespread and there is a need to develop new applications, the project lacks a means of bringing promising, newly developed RETPRLs into the demo and scale-up pipeline. (See Rec 2 for resolution.)

(5) Beneficiary targeting as currently being carried out is likely to result in demos that are not replicable with similar groups once subsidy levels are reduced and/or removed. Consultations suggest that most of the beneficiary groups targeted in demos proposed to date require very high subsides, typically 70 percent or more. In some cases, efforts are being made to group together subsidies from different sources, so that

the cost of the project will be covered at 100 percent, without beneficiary contribution. (See Rec 3 for resolution.)

(6) Related to the problem directly above, the project lacks a clear understanding of the best way to identify economically viable beneficiaries and work with them. Currently, the project considers the SRLMs as the best partner for identifying beneficiaries. Yet, the SRLMs focus on BPL groups that they indicate lack the funds to pay for a significant portion of the RETPRLs and instead require very high subsidy (e.g. 70 percent or more). (See Rec 6 for resolution.)

(7) It has been suggested that the differentiation between demo and scale-up, a distinction indicated in the project document, be removed to speed up progress. Yet, a great strength of UNDP-GEF projects is the opportunity to demonstrate and have associated TA to support the demonstration. And, scale-up in such a project should build on demonstration of things that have previously not been substantially or systematically demonstrated. (See Rec. 5 for resolution.)

(8) Related to the lack of differentiation between demo and scale-up, the total budgets available to the three states for the demonstration phase and the number of different types of technologies they should demonstrate has not been made clear to them. This leads to a lack of overall strategy in what they will demonstrate and the extent of the demonstrations of each RETPRL. To ensure that each state demonstrates a good range and balance of selected RETPRLs (rather than perhaps demonstrating just one or two, or mostly demonstrating one or two), a maximum state "sub-budget" for each RETPRL to be demonstrated, or some other approach to ensure balanced diversification across selected technologies within each state, is needed. (See Recs 2, 5, and 15 for resolution.)

(9) While the project, in its early stages, achieved a number of approved specifications and benchmark prices, these may be outdated or perhaps in some cases not known to exist by the relevant MNRE team. The MTR team found that some key technologies of interest to the states cannot be funded by the scheme, because official MNRE benchmark prices are not in place. (See Rec 7 for resolution.)

(10) There is a lack of clarity, in the case of some RETPRLs, as to whether the MNRE scheme will determine the subsidy based only on the cost of the RE portion of the equipment and not on the full cost of the equipment. (See Recs 5 and 15 for resolution.)

(11) In some cases, targeted RETPRL equipment is quite expensive and may not be considered economically viable (without subsidy) by communities, depending on the extent to which they can utilize the equipment. The six cold storage units (5-ton capacity) the project recently installed via provision of 100 percent grant cost Rs 1.4 million each (including transport), though NISE had estimated a cost of Rs 900,000 per unit. While there are examples of individuals buying such units without subsidy, scaling up production or more in-depth sourcing work could lower costs and extend the group of beneficiaries finding such products economically viable, considering their potential use levels. Yet, there is not yet an organized effort for bulk purchase or such in-depth sourcing work. (See Rec 8 for resolution.)

(12) Because there is no focus on specific RE for livelihoods technology applications, the project supply chain work cannot focus on certain types of equipment and thus cannot train local persons to become service providers with capabilities in installing and repairing certain RETPRLs. Further, while the supply chain work has been relaunched recently, the contractor for that work faces challenges in getting suppliers interested, as there are no links between suppliers and demo opportunities. While the IPE Global work has identified recommended RETPRLs for each project district, the MTR team sees a need to revisit this work or take a different approach vis-à-vis the recommendations in this report to achieve selection of 10-15 RETPRLs and to ensure that the technology focus eventually agreed upon is conveyed to the supply chain contractor. (See Recs 2 and 8 for resolution.)

(13) Despite MNRE's scheme and OREDA's scheme, which occurred without specific TA support of the project, the project has no activities carried out or planned that are specifically tailored to achieve the targeted outcomes of Component 3 (the policy component) and Component 4 (the financing component). (See Recs 9 and 10 for resolution.)

(14) MNRE is quite busy with much larger programs than the ACE Scheme. Further, MNRE does not seem to place high enough priority on the India ACE Project to give it the attention needed to move the project forward. Neither the Secretary (Chair of PSC) nor the JS (NPD) were available to meet with the MTR team, though the team did have one long and productive meeting with the current NPC. (See Recs 12 and 15 for resolution.)

(15) The project team is understaffed. Some staff have left voluntarily, perhaps due to the lack of project progress. The project lacks a full-time project manager, though currently has a part-time one based in UNDP CO. Over its almost four year life, the project only had a full-time project manager for one year. That PM was based in UNDP CO and not at MNRE with other PMU staff members. Further, the project team lacks livelihood expertise. (See Rec. 13 for resolution.)

(16) The project has just around 14 months remaining (at the time of the draft version of this report, May 2019). The project should carry out the demos first, with enough time for the demos to inform scale-up. Yet, there is unlikely to be enough time to both achieve demos and replication, building on lessons learned from the demos for replications, before the current project close date. See Rec. 14 for resolution.)

(17) In general, communications with the SNAs and contractors has been quite weak. The SNAs are not briefed on what is being planned. Some contractors have not been followed up with in a timely fashion (See Rec. 15 for resolution.).

Communications and awareness raising: As noted in the last of the above concerns, project communications has been quite weak. The MTR consultations created an impression of "no one knows exactly what is going on." There is a need to institute regular communications and updates for the SNAs and other stakeholders. Central management of the project needs to make decisions in a timely fashion and get these decisions conveyed to stakeholders in the states, as well as the various contractors.

The MTR team also found a need for strategic communications in a couple of other areas. While the project in 2015 and 2016 held several workshops, the type of stakeholder communications and awareness raising needed now is much more specific. First, MNRE does not seem that interested or engaged in the project. Thus, strategic efforts to promote the importance of RE for livelihoods within the ministry could be of great benefit in turning the situation around. Secondly, once the project makes progress on selecting its targeted technologies, there is a need to promote them among rural people by materials and outreach in the appropriate local languages and settings, so as to stimulate their interest in the demos and replications.

4. Component 1. Demo and Scale-Up

This section and the subsequent three cover the work and needs associated with each of the project components. For Component 1 and its one outcome, Outcome 1, the main areas of work include preparation of demo proposals, specifications and benchmark pricing for selected RETPRLs, holding of workshops, study of livelihood and RETPRL markets, and preparation of a compendium of RETPRL technologies. The work might be divided into three different parts based on the main organization(s) driving the work: The first part would then be that associated with demo proposal preparation by the CLIAs in 2015 and 2016, as well as other activities going on during that time period. The second part

would be demo proposal preparation by the SNAs (2016-2018) and conception and launching of the MNRE scheme (2017 and 2018). The third part would be that associated with the recent ramp up of activity as commissioned by UNDP CO at the end of 2018 and beginning of 2019.

Component 1 has been the project component with the greatest activities and expenditures to date, by far. Yet, performance has been weak in achieving Outcome 1's ultimate target, demos and replications. The only demos installed to date are six cold storage units implemented by UNDP with 100% GEF grant funding towards the end of 2018. While MNRE's $10 million scheme has been in place for about 9 months at the time of report preparation (May 2019), not a single demo or replication has yet been sanctioned under the scheme.

CLIA Phase – Demo Proposals

The most extensive activity under Outcome 1 has been the CLIA preparation of proposals and associated review by the project. As noted earlier, CLIAs, as defined by the project, are non-governmental organizations that prepare and implement demo and scale-up projects. The CLIAs are mainly NGOs, but also include companies and academic or research institutes. The project decided in 2015 that, during the demo phase, the proposed projects would be offered a subsidy of 65 percent on total project cost (up to a cap on total project cost of Rs 2.5 million, about $36,000). The CLIAs would receive an additional 15 percent of the subsidy amount for their services. The project carried out three RFPs for CLIA proposals for the demos, but shortlisted proposals from only the first two. The first RFP was in August 2015; and the second was in October 2015. Over 200 proposals were received; and 69 were shortlisted, 23 in Assam, 21 in MP, and 25 in Odisha. For these, the first round of sanctions for 11 projects in Odisha were issued, with sanction letters sent to the respective seven CLIAs in Dec. 2016. The intent was also to sanction proposals from the other two states, but this never happened due to a change of strategy by MNRE. The sanction letter required the CLIAs to register in the government portal for NGOs, provide various documents, and plan to provide 35 percent of project costs, putting at least 20 percent of project costs in a bank account in order to get the first payment of the subsidy.

MNRE soon after the Dec. 2016 sanctions (around February/ March 2017) informally decided to pursue the setting up of an official subsidy scheme and not work with the CLIAs. The latter decision reflects a general trend in the government of concern about NGOs and preference not to work through them. It was around June 2017, about six months after the sanction letters to the CLIAs were issued, that MNRE had a formal meeting at which the decision to adopt the scheme and not work with the CLIAs was made. Given the challenge of gathering the required funds from beneficiaries to deposit into a bank account and some issues with the national monetary system at that time, only three of the seven CLIAs with sanctioned projects met the requirements of the sanction letter and were delayed in doing so until around the same time the decision was made regarding the scheme, in summer 2017. The scheme was launched in August 2018. Stakeholders provided mixed information on whether official action was taken to "cancel" the sanctions. Most indicate that cancellation of the sanctions was conveyed only verbally. Stakeholders also indicate that it is highly unusual for sanctions to be cancelled and that they had not seen this occur before.

In general, the CLIA phase of the project raises a number of issues: Stakeholders indicate the quality of the proposals are mixed. Some noted that technologies, such as solar PV lighting, which are widespread and supported by other programs, but included in a number of the shortlisted proposals, are not a good use of project funds. Others noted that the 15 percent service fee for the CLIAs is too high (as 15% of subsidies, this comes to around 10% of project costs). Indeed, during the MTR mission, it was found that strong NGOs may have other funding or directly represent beneficiaries (e.g. producer organizations) and thus may be willing to carry out the demos for no fee, or for a much lower one, such as 5 percent of subsidies provided.

To give an idea of the range of CLIA projects shortlisted from the two 2015 RFPs, these are listed by state below.

Assam Short-Listed CLIA Demo Proposals (from 2015 RFPs)

NGO or Other Type of CLIA	Livelihood Sector	RETPRL	Number of Systems
1. BOSCO Reach Out	KVIC	Solar charkha for handloom	41
2. BOSCO Reach Out	Horticulture	Solar pumps for horticulture (80 W)	33
3. BOSCO Reach Out	Other (tea laborers)	Solar home lighting system, with ceiling fans	44
4. Green Urja Technologies & Systems (GUTS)	Weaving	Solar home lighting system	125
5. GUTS	Weaving	Solar home lighting system	125
6. Horizon	Horticulture	PV based small cold room for horticulture	3
7. Horizon	Poultry	Solar lighting and poultry incubator	200
8. Kabil	Horticulture	Solar pumps for irrigation (0.1 HP)	84
9.Kabil	Horticulture	Solar pumps for irrigation (0.1 HP)	75
10. Rural Women Upliftment Association of Assam (RWUAA)	KVIC	Solar PV lighting systems, Solar Handlooms	NA
11. Rural Women Upliftment Association of Assam (RWUAA)	KVIC	Solar charka, solar spindle charka, LED lights	NA
12. Center for Energy, IIT Guwahati	Fisheries and Dairy	Solar Aerators and Solar PV for milk chilling	2 & 1
13. Center for Energy, IIT Guwahati	Fisheries	Solar Aerators	3
14. Center for Energy, IIT Guwahati	Horticulture	Rubber drying and processing (solar and biofuel based drying)	2
15. Free Power Technology Pvt. Ltd.	Sericulture	Solar PV off-grid plant (< 1 kW)	30
16. Action for Food Production (AFPRO)	Poultry	Solar PV lighting system, ventilation for backyard poultry farm	NA
17. AFPRO	Informal Industries/ Small Businesses	Biomass briquetting	NA
18. Sampriti NGO	KVIC	Solar PV off-grid plant (1 kW, 300 W, 40 W, 24 W)	2, 25, 45 & 50
19. Sampriti NGO	KVIC	Solar PV off-grid plant (1 kW, 300 W, 40 W, 24 W)	As above
20. Dhan Foundation	Fisheries	Solar fish dryers, solar aerator	NA
21 SSRDP (Sri Sri Rural Development Program, Art of Living Foundation)	KVIC	Solar loom, lights, fan	NA
22. SSRDP	KVIC	Solar loom, lights, fan	NA
23. SSRDP	KVIC	NA	NA

Madhya Pradesh Short-Listed CLIA Demo Proposals (from 2015 RFPs)

NGO or Other Type of CLIA	Livelihood Sector	RETPRL	No. of Systems
1. BAIF Development Research Foundation	Horticulture	Solar energy based lift irrigation system (12.5 – 15 HP pumps)	1
2. BAIF	Horticulture	Solar energy based lift irrigation system (12.5 – 15 HP pumps)	1
3. Tree Policy Centre	Fisheries	Solar fish dryers, solar aerator	NA
4. Anupama Education Society	Agriculture	Biomass gasifier for grading & packaging of rice	NA

5. Anupama E.S.	KVIC	Solar home lighting systems to power looms	100
6. Centre for Advanced Research & Development	Horticulture	5 HP solar pumps	5
7. Bhopal Yuwa Paryavaran & Shikshan & Samajik Sansthan (BYPASS)	KVIC	SPV plants (7 kW) at CFC for bamboo crafts works	2
8. Society for Communications and Social Research (SCSR)	Informal Industries	Improved cook stoves	NA
9. SCSR	Informal Industries/ KVIC	Solar home lighting systems for artisans (12 W)	500
10. Sahayog Micromanagement	Dairy	Solar milk chiller	1
11. Sahayog	Dairy	Solar milk chiller	1
12. Sahayog	Dairy	Solar PV power pack for lighting and powering small equipment at milk collection centers	
13. Sahayog	Dairy	Solar PV systems for milk chilling at milk collection centers (100 W)	130
14. GUTS	Sericulture	Solar lighting system for lights and livelihood activities (100 W)	125
15. GUTS	Various - Tailoring, Bamboo products, Potters, Blacksmith, Weaving	Solar lighting system for lights and livelihood activities (100 W) with fan	125
16. Indian Grameen Services	Poultry	Solar lighting and fan	125
17. Center for Technology Development (SESS)	Horticulture	Biomass drier/ solar drier for value addition of fruits	2
18. Pushan Renewable	Poultry	Solar poultry incubator	NA
19. Pushan Renewable	Textiles/ weaving	Solar sewing machines	NA
20. Shri Krishna Gramotthan Samiti	Horticulture	Solar PV systems for small cold rooms	NA
21. Shri Krishna Gramotthan Samiti	Horticulture	Portable solar pumps for irrigation	NA

Odisha Short-Listed CLIA Demo Proposals (from 2015 RFPs)

NGO or Other Type of CLIA	Livelihood Sector	RETPRL	No. of Systems
1. SOURABHA	Horticulture	1 and 2 HP pumps, solar cold storage	4, 11, & 1
2. SOURABHA	Horticulture	As above	4, 13, & 1
3. SSRP, Art of Living	Horticulture	PV micro-grid, rice huller (14 kW)	1
4. SSRP, Art of Living	Horticulture	PV micro-grid, rice huller (13 kW)	1
5. Harsha Trust	Horticulture	PV farm: 3 HP pumps, 15 acre 1 kW solar fencing, solar insect trapper, DC fridge, solar lighting system	6, 1, 6, 6, & 50
6. Harsha Trust	Horticulture	As above	As above
7. DISA	Horticulture	2 HP pump, 1 HP pump, PV cold room (5 ton)	4, 10, & 1
8. DISA	Horticulture	As above	As above
9. Switch On	Dairy	Solar milk chilling, 1 HP pump, 2 HP pump	1, 4, & 4
10. Switch On	Horticulture	Solar PV cold storage	1

11. Putnam Energy	Horticulture	1 and 2 HP pumps	4 & 4
12. Putnam Energy	Poultry	Solar lighting systems and fans	8 & 2
13. Udyama	KVIC	Solar PV for lighting and powering equipment at CFC (various sizes)	240
14. Udyama	KVIC	As above	230
15. AFPRO	KVIC	Solar home lighting system (50-100W)	97
16. AFPRO	Fisheries	Solar fish drier	NA
17. PRAGATI KORATPUT And Kalinga Renewable Energy Manufacturers Pvt Ltd	Horticulture	Solar food processing units, 7 kW, 3 kW, and 1 kW	1, 1, & 1
18. PRAGATI and Kalinga, as above	Horticulture	Solar PV cold storage (7 tons)	1
19. Inter-cooperation Social Development India	KVIC	Solar based lighting and powering of handlooms in CVC center	3
20. Eesavyasa Technology Pvt. Ltd.	Fisheries	Solar aerator	NA
21. Society for Women Action Development (SWAD)	KVIC	Solar PV for lighting and powering of equipment at CVC center	120
22. SWAD	Fisheries	Solar aerator	NA
23. Society for Participatory Action and Reflection (SPAR)	Horticulture	Solar cold storage	4
24. SPAR	KVIC	Solar lighting and powering of equipment at CFC	1
25. PACT for Rural Livelihoods		3 HP DC pump, 3 HP AC pump, 5T solar cold storage, 10 T biomass cold storage, solar sprayer	3, 3, 1, 1 & 10

CLIA Phase – Other Activities

Other activities carried out during 2015 and 2016 include specifications by NISE and benchmark pricing, holding of workshops, and preparation of an RETPRL compendium.

Specifications and benchmarking: During the 2015-2016 period (first 1.5 years of the project), specifications and benchmark costs were developed for ten categories of RETPRLs. These include: (1) five different sizes of solar PV lighting systems ranging from 6W to 40W; (2) solar loom (12 W); (3) 8 spindle solar charka; (4) seven different models of solar pumps, including 3 HP (both AC and DC), 2 HP (both AC and DC), 1 HP (both AC and DC), and 0.1 HP; (5) solar PV cold storage (5 ton with 4 kW of panels); (6) biomass cold storage (10 ton, with 20 kW boiler); (7) solar dryer with flat plate collector; (8) biomass gasifiers including one for power generation (10 kW) and one for thermal applications (10 kWth); (10) biogas plants using animal wastes (3-20kW model, 20-100 kW model, greater than 100 kW model). NISE conducted most of the specification work in its role as government agency affiliated with MNRE and, as such, the work did not require any GEF funds. Benchmark pricing was determined for all products by MNRE based on various inputs, including “ideal prices” (based on component costs) from NISE. One challenge is that, over time, some of this work, especially the benchmark prices, becomes outdated in MNRE’s view and must be redone. Indeed, one of the key reasons given for the MNRE “RE for livelihoods” scheme not approving some of the SNA proposals (see next section) is lack of up-to-date benchmark prices and the desire of MNRE to update the benchmark prices before approving the proposals. The issue of benchmarking prices and specifications is considered a major one in impeding progress of the project. At the same time, the MTR team learned that it takes NISE just three months to prepare specifications for a product that is manufacturing-ready. After these are prepared, it takes 10 to 15 days for MNRE to approve the specifications. NISE provides an “ideal price” with the specifications, based on cost of components. These ideal prices tend to be within ten percent of the benchmark prices later determined through price discovery of bidding or market research. NISE has actually carried out the

design itself for solar PV cold storage units and solar driers and five and fifty of these, respectively, have been piloted.

Workshops: A number of workshops were held in the early stages of the project in 2015 and 2016. Stakeholders expressed positive views on these and showed the MTR team photos of them. Yet, given the standstill in project progress, these workshops have not really been leveraged to achieve project results. The PIRs indicate 16 training programs on "energy access" in the states were carried out by NISE, training 480 people, though NISE's involvement in workshops was not raised by any of the stakeholders, nor were such a high number of events. Stakeholders did indicate that a number of workshops were held at both the state level and the district level. For example, stakeholders in Odisha indicated that one state level workshop and two district level workshops were held in the very early stages of the project and were useful for getting district level officials involved. Some stakeholders reported that workshops were held even before official launch of the UNDP-GEF project with UNDP funds from a partner project of *India ACE*.

Compendium: While the ProDoc provides a compendium of key RETPRLs across key livelihood sectors, in early 2016, the project commissioned OUAT to prepare a compendium of RETPRLs. The OUAT compendium presents numerous RETPRLs across a range of sectors and includes descriptions and manufacturers. The RETPRLs include 11 in horticulture and agriculture, 9 in dairy, 8 in fisheries management, 7 in poultry, 10 in KVIC, 8 in cottage industries, 12 in micro-enterprises, and 15 in "miscellaneous." The compendium findings were presented at a workshop for suppliers held in March 2016. The project was to provide feedback afterwards for revisions, but never did, so that the contractor has not been able to complete the assignment. The MTR team recommends that the project first determine the 10 to 15 RETPRLs on which it will focus for the demos and replications and then ask OUAT to improve the compendium by expanding the information provided on these 10 to 15 items, perhaps still retaining all the other items if believed to be of interest to the audience for the compendium.

SNA Proposals

During consultations and via document review, the MTR team learned about some demo proposals that had been submitted by the SNAs to MNRE for funding over the course of the project, as well as new concepts in the SNA proposal pipeline. In general, the SNAs must prepare these proposals while lacking information about how much money they can expect overall for the demos and replication. Further they have not been given guidance on how many different types of RETPRLs they should try and distribute such funding allocations among. Of the SNA-developed proposals, none have been sanctioned yet by MNRE, but some of them have found funding in other places. Some were proposed as early as 2016 (e.g. two of the Odisha proposals), but were later revised to suit the MNRE scheme, reducing the proposed MNRE/ACE subsidy to only 30% as is allowed under the scheme (e.g. Odisha 0.5 HP pump proposal). Under the scheme, the SNAs are to receive 3% service fees based on the subsidies disbursed under the scheme. Each of the proposals from the SNAs to MNRE we heard about appeared to be delayed for one reason or another. One of the largest proposals was for 980 of 2,500 0.5 HP pumps OREDA is targeting. The hold-up in getting this proposal sanctioned was explained to be a need by MNRE to redo benchmark pricing for the 0.5 HP pumps. The SNA proposals in the pipeline (not including those prepared by the UNDP consultant for MP in late 2018 and early 2019) are listed and elaborated upon below, by state:

1. Odisha:

- Chililka Lagoon (various RETPRLs, 2016): This project, proposed in 2016 and serving fishing communities, was to provide seven different technologies, including: solar street lighting, solar PV lighting for individual processing unit, solar PV boat lighting, 7 ton solar PV fish chilling unit, 200 kg solar fish chilling unit, off-grid rooftop system, and Unnat chulah. The total project cost is $2.5 million; and a 65% subsidy was expected (so about $1.8 million, which is far beyond the resources

that India ACE would provide to single demo). When UNDP indicated that the project would only provide 30% subsidy for the PV lighting aspects, the Chilika Development Authority, CDA, decided to go elsewhere for funding. It is believed that this project was able to find other funding, as it is no longer pursuing ACE funding.

- 0.5 HP pumps (2016 and revised/ updated in 2018): First proposed in 2016, with a sub-total of 980 pumps to be supported by ACE in designated ACE clusters and about 2,500 pumps in total, with the rest covered by other funds. With a cost Rs 80,000 per pump, total project costs for the 980 pumps is about $1.3 million. In newer versions of the proposal, the subsidy shifts from a 65% to a 30% subsidy from MNRE/ ACE (or $390,000 total ACE subsidies), 60% from state of Odisha, and 10% beneficiary contribution. The revised version of the proposal was submitted in Sept. 2018, but no response was received. The MTR teams understand that the 2,500 pumps have now found other funding if needed and that the project will be extended in the following fiscal year to 2,500 more 0.5 HP pumps for a total of 5,000. New sources of funding have been found, so that the project can be carried on without ACE. The total subsidy will be 65%, with 35% is from Odisha Dept. of Agriculture and 30% from Odisha's Science and Technology Department.
- Solar lighting for artisans, concept submitted in Sept. 2018

2. Assam

- Solar micro-pumps of 0.1 HP for horticulture (2018): 250 pumps in total, with submission in August 2018. The cost per pump is Rs 15,700. At 30%, the total subsidy is about $17,000, so this is a much lower cost project than some of the ones Odisha is proposing.
- Solar micro-pumps and power packs for dairy (2018): This project was raised in August 2018 and discussion at the next meeting was proposed.
- Solar cold storage for horticulture (2018): This project was raised in August 2018 and discussion at the next meeting was proposed. The concept suggests 30% subsidy from MNRE and 70% contribution from beneficiary.
- Lighting and power packs for communities in buffer zone of nature preserves (2019). This is a project concept under discussion with an NGO. The NGO does not require a service fee, but has explained that the subsidy needs to be a relatively high proportion of total costs, at least around 70%.

3. Madhya Pradesh

- PV systems for sewing centers (2018). This concept was discussed in Aug. 2018 and it was said the proposal should be submitted soon. UNDP later commissioned a consultant to prepare this and other proposals for MP. More information on the results of that proposal preparation work is provided in the next sub-section.

Recent Ramp-Up of Project Activities

Towards the end of 2018 and in early 2019, UNDP CO took actions to ramp up project activities. In particular, they developed plans to deploy two solar cold storage units in each state, for a total of six units, with costs 100% covered by GEF funds. In addition, they commissioned a consultant to work with the MP SNA to prepare four demo proposals. And, they commissioned a consulting firm to conduct an updated assessment of livelihoods in the pilot states, as well as their market for RETPRLs.

Solar cold storage units: Two 5 ton solar PV cold storage units have now been installed in each state for a total of six, each with 100% grant from GEF funds. The MTR team was able to visit one of the solar cold storage unit sites in Assam. At the time of the visit, there was only a very limited amount of wilting leafy greens in the unit. While the farmer's association that owns the unit is said to have 500 farms, it appears that only a few are using the unit. The president of the association has used the unit to arbitrage spice prices (buying low, storing in the unit, and later selling high). Most of the farmers in the association are

growing rice, so do not have any use for the solar cold storage unit. The president of the association explained that they are still figuring out how to use the unit. Although they have so many members, they currently are not charging for use of the unit. The general impression that the MTR team got is that use of the unit is not very well organized. There may be just a few persons benefiting; and the use of the unit for arbitrage suggests that the intended purpose of helping the farmers extend shelf life of their produce so they can sell when the price is high is not necessarily how the unit is being mainly used. Further, the approach of 100% grant with "no skin in the game" does not create urgency for the beneficiary to make running of the system economically viable. The cost of these solar cold storage units was Rs 1.4 million (or about $20,300) each delivered to the site. MNRE earlier in the project had determined a benchmark price of Rs 900,000 ($13,000) for 5 ton PV cold storage units. More in-depth sourcing work may achieve a lower price. Alternatively, consultations suggest that bulk purchase of 50 or more units could drive the price down substantially from what was paid for these demos.

Outside and inside views of one of the six 5 ton solar PV cold storage units in Assam supported by the project with 100% grant. The project has supported two such units in each of the three demo states. Photo take in April 2019.

MP proposals: In late 2018 and extending through the first quarter of 2019, the project commissioned a consultant to work with the MP SNA to prepare demo proposals for MP. The proposals, some of their content, and MTR team comments are as follows:

1. MP rooftop PV system for sewing center proposal (2018): This proposal builds on the concept previously proposed by the MP SNA. It calls for a 10 kW rooftop PV system with 0.6 kW hr back up (for fans, lights, and computers). Total project cost is 950,000 Rs, or about $14,000. Thus, per kW cost is about $1,400. The project is looking to piece together various subsidies so that 100% will be covered; and the proposed end beneficiaries will not be contributing. Sources indicate that the center usually has power 24-7, so that the purpose of the rooftop system is to generate revenues through net metering rather than power productive use activities in the building. The MTR team suggests that *India ACE* should instead focus on use of renewable energy directly in livelihood activities, rather than in a financial mechanism/ sale of electricity, such as this is. Increasing the focus of type of demo supported will give the project greater potential to achieve enough demo presence to stimulate wide-scale replication.

2. MP community pump proposal (2019): This proposal calls for 19 pumps of 5 HP each serving 401 farmers. One concern is that 5 HP pumps are already supported by other schemes, so that the need for *India ACE t*o do so is not clear. The total project cost is $337,000, of which 30% is expected from MNRE, 35% from UNDP/GEF, 15% from the community, 13% from MPSRLM and 8% from "CCL back linkage." These amounts include the 3% SNA costs. The plans call for MNRE to pay the bulk of pump costs and UNDP to pay for the bulk of irrigation costs. Yet, it is not clear whether MNRE would limit its payment to 30% of pump costs only, rather than 30% of total project costs (including irrigation),

as intended. And, another challenge is that the proposal may expect MNRE to release its full subsidy up front, which MNRE, based on past experience with the CLIAs, is not planning on doing.

3. MP solar PV cold storage proposal (2019): This is for 25 five-ton PV cold storage units in 13 districts across the state, with 500 beneficiaries indicated per unit (though it is not clear that this many farmers could realistically share a 5 ton unit). One issue is that local farmers that are expected to be the beneficiaries are currently not growing large amounts of vegetables, because selling has been too difficult. They are mainly growing grain. The proposed project depends on farmers making the shift from grain to vegetables. The cost per unit is estimated at Rs 1.5 million, which, as discussed above, is relatively high. The total cost is about $543,000. The proposal asks for just 15% from UNDP as large subsidies are available from other sources. The FPO will contribute just 15%. The attractive aspect of this project is that PV cold storage units are relatively new and not in wide-scale use. The concerns are that the farmers are mainly growing grain now, so would need to shift their livelihoods to make the project work. Further, at 15%, the FPO is contributing a relatively low share, suggesting viability for similar groups, once subsidies are removed, may not be good. MPSRLM has entered into an agreement with Pradan to provide capacity building for forward linkages. The main concerns are: (1) whether and how to ensure that it is really viable for farmers to make the shift to vegetables and to determine how many farmers shifting to vegetables could be supported by one such unit; and (2) how to get the price of the units down by doing sourcing work and possibly bulk purchase. Payback is currently estimated at 5 to 7 years, but a 33% reduction in cost could, which seems plausible, reduce payback to 3 to 5 years.

4. MP solar rooftop system with battery backup for NTFP collection centers (2019): This project also addresses a new livelihood, as the collection centers referenced in the proposal have just been set up and beneficiary collecting of NTFPs has just begun. The MTR team recommends to ensure economic viability and sustainability the project aim to focus instead on established livelihoods. Another issue is that this project is focused on PV lighting only, which is an RETPRL that is already supported by other schemes and demonstrated on a wide scale. Lastly, the project aims to achieve 100% subsidy (though just 30% from MNRE), rather than having beneficiaries contribute. As noted earlier, beneficiaries having “skin in the game” is preferable. Payback is said to be just one month, which raises the question of whether any subsidy is really needed, given the very fast payback.

Market assessment: Recently, IPE Global has completed a draft report for *India ACE* under the assignment “Revalidation of Renewable Energy Technology Packages and Rural Livelihood Sectors under the India ACE Project.” The work depended mainly on interviews with the SNAs, the SRLMs, and equipment providers. Findings indicate that *India ACE*’s original RETPRLs are still in demand and that more RETPRLs can be added to the group. The firm suggests priority RETPRLs are (a) solar water pumps for irrigation and fisheries and (b) solar based charkhas and looms. The latter is an interesting finding, as MTR consultations suggested textiles/ weaving as a livelihood of secondary importance, and thus with its RETPRLs not of as high importance as those associated with the primary livelihoods of horticulture, dairy, poultry, and fisheries. IPE Global notes, in its justification, that the solar charkas are attractive as they can raise productivity to 2.5 to 3 times their original (non-electrified) level. The report has a table at the beginning covering each of the 19 districts (“clusters”) proposed in the ProDoc. The table lists RETPRLs proposed for the district at the time of the ProDoc and then lists IPE Global’s updated recommendations. This level of analysis, at the district level could be useful, assuming the inputs are dependable. As for the pumps, however, the MTR team has a concern that pumps of 1 HP or higher (and possibly even 0.5 HP) are already covered on a wide scale by other schemes. Another issue is that the findings in this study are not based on fieldwork, but instead on very short visits to each of the three states. Thus, the quality of the analysis depends on the quality of information the third party interviewees had about each district. The report also provides background and rationale for several RETPRLs. As the report is focused on demand only, it does not screen for the issue of existing support from other schemes, such as is the case for lighting and many sizes of pumps. Thus, it is recommended that the project make

good use of the information in the report in its process of selecting, say, 10-15 RETPRLs on which to focus, but apply such additional screens to RETPRL selection as needed.

5. Component 2. Supply Chain

There has been much less work towards Component 2's one targeted outcome, than towards Component 1's one targeted outcome. Yet, Component 2 has still gotten more focused attention than either Component 3 or Component 4 (aside from establishment of the MNRE scheme, which, depending on interpretation, might be considered a part of work towards either one of the Component 3 outcomes or one of the Component 4 outcomes). There have been two main phases of Component 2 work. The first phase occurred in 2016 when there was an RFP for RETPRL suppliers and the second phase is associated with the recent ramp-up of work at the end of 2018 and beginning of 2019 as led by UNDP CO.

In June 2016, the project re-issued an RFP for supply chain participants to set up entrepreneurial hubs in *India ACE* project states, initially targeting the establishment of two such hubs per state for a total of six. The MTR team is not certain when the RFP was first issued. The RFP explains that it is seeking "Rural Entrepreneurs for establishing infrastructure (Entrepreneurial Hubs) for assembling, supplying, after-sales servicing, training of technicians/ operators of off-grid Renewable Energy (RE) systems or devices for rural livelihoods in identified districts of the states of Assam, Odisha and Madhya Pradesh." The offer from the project was Rs 1 million ($14,500) per entity, with the requirement that an additional Rs 300,000 ($4,300) be secured from other sources. A total of 23 proposals were received. The project held three meetings (the first two in 2016, the last in early 2017) to review the proposals and discuss the way forward. Five applicants were short-listed in 2016, three in Odisha and one in each of MP and Assam. At the last meeting, it was decided to move forward in selecting two of three shortlisted firms from Odisha and ask for further information from the one from MP and the one from Assam. Yet, this work was eventually abandoned and it is no longer clear if the concept of "entrepreneurial hubs" will be pursued. The two selected firms in Odisha were not provided with the intended grant and no further selection was carried out for Assam and MP. The short-listed and selected firms are as follows:

1. Shortlisted for Odisha
a. Orissa Project And Marketing Development Centre (OPMDC), based in Odisha and selected for sanction – products include mobile lamp, LED lamp, LABL product, solar lantern, solar security lamp, solar DC fridge kit, solar panel upgrade kit, light to off-grid households, and supply of spare parts
b. Free Duty of Mankind (Freedom), based in Odisha and selected for sanction– products /services include: manufacturing and training - low cost study lamp
c. Surya International, based in Odisha – products include solar home lighting systems, solar street lighting, solar water pumping, and solar lanterns with mobile chargers

2. Shortlisted for Assam
a. Punam Energy (Onergy), based in Kolkata – products include home lighting systems, street lights, lanterns, and beacons

3. Shortlisted for MP
a. Pushan Renewable Energy Pvt. Ltd., based in MP – products include small solar lamps with mobile charger, solar home lighting systems, solar power system, solar water pumps, solar water heater, improved biomass cook stove

At the end of 2018, UNDP CO reinitiated supply chain work by retaining Villgro to lead efforts. Villgro was paid $74,200 at the end of 2018 for this work. A 26 page report (including title, content, and reference pages) was provided listing 55 suppliers and indicating 63 enterprises had been surveyed and 6

experts interviewed. No real plan for how this work will be focused and integrated with RETPRL demo and scale-up has been made clear to the contractor; and the amount of payment so far seems quite high considering the output. Yet, Villgro has a history incubating enterprises and, with more focus on selected technologies and integration with the project demos (e.g. suppliers working with communities to develop demo proposals), this work could be promising. As an example of its success with incubation, Villgro incubated Ecofrost, the supplier of the six five-ton solar cold storage units purchased by the project. Ideally, the suppliers will be closely linked to the demos and scale-ups by having opportunities to develop proposals with communities. This type of opportunity could incentivize the suppliers to be involved and make the desired RETPRLs available to the designated clusters and states. At the same time, in order to focus this work, for the same reasons that technology focus is needed for the demos and replications, it is recommended that the project focus on suppliers and service providers for the same 10 to 15 technologies that it designates for the demos and scale-ups.

OUAT, in its draft compendium prepared under Outcome 1 back at the beginning of 2016, also provides listing of suppliers for the many RETPRLs it covers. If the project develops a small group of 10-15 RETPRLs to focus on, OUAT could also be asked to elaborate its supplier identification work for these 10-15 RETPRLs, which could then be compared to Villgro's work.

6. Component 3. Policy

The project has not done any substantial work specifically tailored to any of the three targeted outcomes of Component 3. Yet, as of the end of 2018, $69,375 of the GEF ProDoc budget allocation of $312,800 for the component had been spent. It is believed this spending was mostly on workshops in 2015 and 2016, as the general awareness raising carried out may have been considered to be a first step towards influencing policy. Each of the component's three outcomes are listed below with discussion. An important point is that some may consider the establishment of the MNRE scheme, which allocates $10 million (the promised co-financing for the project) for "RE for livelihoods," a strong success for Outcome 3.2 which refers to "future MNRE programs." Yet, because there is overlap between Component 3 and Component 4 with regard to subsidy schemes, and because this outcome is focused on "future" programs, the MTR team suggests that "schemes" as financial mechanisms be associated with Component 4 ("the financing component"), while Component 3 focuses more on policies that will stimulate impact in the long-run, which might include but not be limited to future schemes.

<u>Outcome 3.1: Inclusion of RE applications in national and state level rural livelihoods policies for key livelihood sectors in rural areas</u>

This outcome refers to getting RE for livelihoods incorporated into policies of both the MORD/NRLM/SRLM system and the ministry/departments responsible for key livelihood sectors, especially MAFW and its relevant departments and their state-level counterparts.

No work has been done toward achieving this outcome. In November 2017, an RFP titled "Request for Proposal for Assessing National and State level rural livelihoods mission statements/documents/policies and recommending inclusion of RE applications in policies for key rural livelihood sectors" was prepared, but to the knowledge of the MTR team was not floated. Yet, the project has begun to work with the SRLMs, making them familiar with the "RE for livelihoods" concept. Getting the rural development bureaucracy involved in this way may be seen as a first step towards impacting policy, though a more strategic and complete plan is needed. Some stakeholders have suggested, in fact, that the SLRMs will be able to dedicate more effort towards "RE for livelihoods" if they receive a mandate from MORD. At the same time, some stakeholders mentioned that the project's earlier efforts to engage NRLM were not successful; and NRLM, although approached, was not available to meet the MTR team.

Outcome 3.2: Future MNRE programs also cater to actions towards enhanced RE utilization in rural livelihoods

While no specific work has been done on this outcome, the presence of India ACE project has made MNRE aware of "RE for Livelihoods" and adoption of the scheme may be considered a first step in getting "RE for Livelihoods" incorporated into MNRE's long-term policy. At the same time, as noted, the scheme as a financial mechanism is considered in the category of Outcome 4.1. What is needed here to influence future programs (Outcome 3.2) is inclusion of "RE for Livelihoods" in MNRE's mission and long-term work plans. Given that the project does not have such a positive image in MNRE, one thing that is needed to bolster more specific work towards this outcome is a communications campaign to promote "RE for livelihoods" within MNRE, as discussed towards the end of Section 3.

Outcome 3.3: Improved tariff and grid interconnection regulations for decentralized RE

No work has been done toward achieving this outcome. Stakeholders have different views as to whether this outcome remains relevant to the project. Given extension of the grid, the project may wish to focus more on specific applications for specific end users that are willing to pay for reliability of electricity and/or higher power levels, rather than focusing on mini-grids that will serve a group of users with varying willingness to pay for a more reliable power source. At the same time, some stakeholders indicate this outcome is quite relevant to MNRE's work and that MNRE has an interest in developing mini-grids for productive uses. If indeed it is found that RE mini-grids are a high priority RETPRL and that other programs are not addressing these in a substantial way, so that RE mini-grids are selected as one of the projects 10 to 15 priority RETPRLs, then this outcome may be pursued as is. If, on the other hand, mini-grids are not selected as one of the 10 to 15 priority RETPRLs of the project, then it may make sense to look for adjustments that will ensure the outcome as pursued is relevant to the overall project strategy. If modifications are pursued, the original spirit of the outcome, which is to increase the attractiveness of being in the RETPRL business, should be maintained. One option that maintains this original spirit would be to adjust the outcome to target "preferential tax and import tariff incentives for RETPRL suppliers."

7. Component 4. Financing

The project has not done any substantial work specifically tailored to any of the three targeted outcomes of Component 4, except for establishment of the MNRE scheme and the OREDA scheme, which fit with the financing theme of the component and might be considered successes towards the achievement of the first outcome. Each of the components three outcomes are listed below with discussion.

Outcome 4.1: Improved decentralized RE subsidies and support for rural livelihoods

The outcome as originally designed encompasses analysis and development of improved models for subsidy schemes that are somehow different in nature than the standard Government of India subsidy schemes at present. While the MNRE scheme lacks this differentiation and is not "decentralized," the establishment of the MNRE "RE for livelihoods" scheme of $10 million (for two fiscal years) and of the OREDA analogous scheme for $700,000 (for one fiscal year, though continuation of the OREDA scheme is likely) may be considered first steps towards this outcome. What the project needs to do now in this regard is successfully implement the demos so that the value of the schemes will be clear and the methodology of selecting the most relevant technologies be shown. Seeing well-done demos will be the most important way to get these schemes extended to future years. In order to make the schemes more effective and innovative, work should be done on alternative ways to deliver subsidies. One ongoing issue is that small household enterprises lack the capital to buy the RE equipment first and be reimbursed later,

as is MNRE's typical mode of operation. Yet, if other financing mechanisms, such as those promoted in Outcome 4.2 (e.g. loans) and 4.3 (e.g. loan guarantee) are developed, that might leave open room to test subsidies that are performance based, being delivered to the end users as a reward for successful implementation. This kind of "reward" might allow the end user to pay off loans earlier than scheduled or to expand the base of RETPRLs installed.

Outcome 4.2: Enhanced provision of financial support for decentralized RE in rural livelihood applications

The outcome as originally designed encompasses the development of a range of potential means for supporting RETPRL deployment, such as grants, subsidies for interest rates, low or no interest loans, performance linked payments, import duty exemptions, etc. Based on consultations, loans may be one of the best financing mechanisms for RETPRLs. As compared to subsidies, loans will be more effective in ensuring that it is the economically viable RETPRLs that are selected and installed. Stakeholders indicate the relevant lending institutions already exist, but that some kind of guarantee mechanism may be needed to get them to participate. No work has been done toward achieving this outcome; and the project has not engaged with financial institutions. In general, once the RETPRL schemes are completed and discontinued there will be a need to support RETPRLs through loans and other programs (such as non-RETPRL schemes), and, possibly, a loan guarantee programs.

Outcome 4.3: Improved investment risk mitigation for decentralized RE in rural livelihood applications

The outcome as originally designed encompasses design and implementation of a risk guarantee fund to support RETPRL deployment. The way such a mechanism might work is that a fund could be available to guarantee a certain percentage (such as 75 or 80%) of total loan amount for each loan made for RETPRLs. This would lower the risk for lenders and greatly increase their willingness to loan for RETPRLs. Meantime, successful loans for RETPRLs achieved via the stimulation of the guarantee fund could increase lenders' future confidence in RETPRL loaning. This outcome originally had $298,900 in GEF funds allocated to it, mostly to serve as the funds for a pilot guarantee fund. Yet, given that UNDP typically does not carry out guarantee funds with GEF money, an alternative may be to seek out funds from other donors for the guarantee fund. Or, ideally, central government funds that were initially targeted for a subsidy scheme could be instead used as a guarantee fund in order to promote more economically viable approaches to "RE for livelihoods." No work has been done toward achieving this outcome; and the project has not engaged with financial institutions. While the MTR team initially proposed the project pursue donors to support such a guarantee fund, proponents indicate that they would prefer to achieve risk mitigation by supporting the business success of household enterprises that use RETPRLs.

8. Implementation

This section first covers project timeline and then reviews other implementation issues.

Project Timeline and Extension: Milestones in the project timeline are shown below. The initial PIF submission took place over seven years ago in March 2012. In terms of significant gaps, there were over seven months between ProDoc approval in Dec. 2014 and ProDoc signing in July 2015, which is also the launch date of the project. The most significant timeline issue, however, is that during its 3.8 years of implementation, the project has not made much progress. Thus, with only 1.2 years left in its five-year lifetime, even if the project were able to achieve a major turnaround in the effectiveness of implementation, time would still be too tight for the project to first implement the project demos and then build on lessons learned to carry out replication of the scale targeted.

GEF guidelines allow for a maximum of 18 months extension with strong justification. And, the typical time to apply for such an extension is above six months before original project close date. Thus, in the case of *India ACE Project*, if the project were to apply for an extension, that should take place in January 2020. Yet, the MTR team feels it would not make sense for *India ACE* to apply for such an extension if the project were to continue without much progress or real impact. That is, it would be better for the project to close in a timely fashion (if not sooner) and return any unspent funds to the GEF. Only if the project can make a very strong turnaround over the next six months, such as by readjusting its strategy as recommended in this report, selecting its 10 to 15 priority RETPRLs, designing and getting approved its full budget of demos, and getting half of them installed, should an extension be applied for. Assuming a very impressive turnaround is achieved in six months and it is clear the project is headed for high impact, an application for an 18 month extension makes sense. If an extension is applied for six months before the original close date and granted, the project could then use the remaining six months before the close date to complete the demos (having completed installation of at least half of the demos before the original close date) and the subsequent 1.5 years for achieving the targeted replications/ scale-up.

Project Timeline

First PIF submission	March 20, 2012

PIF approval	**ProDoc Approval**	**ProDoc Signing – Official Project Start Date**	**1st RFP**	**2nd RFP**	**Sanction of 12 Odisha projects**	**3 Odisha Projects fulfill requirement for funds release by depositing 20% project costs in bank account**	**MNRE decision to pursue scheme and therefore rescind sanction of 12 Odisha projects**
April 1, 2013	Dec. 5, 2014	July 23, 2015	Aug. 2015	Oct. 2015	Dec. 2016	June 2017	June 2017

Scheme launched	**Mid-Term Review**	**Latest date for proposal submission to scheme (current)**	**Current target date for terminal evaluation**	**Current target date for project close**	**With 18 month extension, latest date for terminal evaluation**	**With 18 month extension, latest date for project close**
August 2018	April 2019	Mar 2020	April 23, 2020	July 23, 2020	Oct. 23, 2021	Jan. 23, 2022

-Already about 3.8 years since project launch with very limited results
-Decision to launch scheme, negated the sanctions of 12 CLIA proposals from Odisha
-Scheme not launched until 3 years 1 month after project launch
-Scheme launched nine months ago, but not a single project sanctioned yet under scheme
-Without extension, 1.2 years to project close
-With maximum extension of 18 months, 2.7 years to project close

Management arrangements: Current management arrangements have not been working out well and, as a result, project implementation has been weak. MNRE is the IP, but has not been able to move the project forward. Further, the project is understaffed and only had a full-time PM for about one of its almost 4 years. The PM was based in UNDP CO, while the rest of the team is based in MNRE. Recent country office support has created movement, but plans for how the project will be implemented going forward need to be confirmed. Given that MNRE officers are very busy with their heavy load of other programs, it is suggested the project either informally shift to a mode of country office support or outsource project management entirely. In the country office support mode, the UNDP India CO will guide project implementation, consulting MNRE on various decisions that arise. Outsourcing of project management to an organization, such as SELCO Foundation or Harsha Trust that have experience in the RE for livelihoods field, may also effectuate the desired turnaround and management fees might be relatively low, such as 5% of GEF budget managed.

To prepare the project for a turnaround in implementation and, hopefully, a strong level of meaningful progress, the understaffed situation of the SCCs and PMU should be turned around. Each of the SCCs should have two persons. And, if project management is not outsourced, a full-time project manager that will sit in the Delhi PMU and lead the project team, should be hired. The project may also discuss whether to hire a livelihoods officer for the Delhi PMU.

In terms of UNDP's role in the project thus far, UNDP guidance for MTR of GEF-financed projects suggests review of a number of areas. The MTR team's brief assessment of some of these areas is as follows: (1) With regard to "appropriate focus on results," the MTR team has some concerns about the six solar cold storage demos each funded with 100 percent grant as moved forward by UNDP CO efforts. A general concern is that an effort was not made to ensure the beneficiaries had "skin in the game" to in turn promote sustainability, as well as to promote replicability by using a partial instead of full grant approach. Further, at the one solar cold storage site visited, beneficiaries did not seem to have a clear plan on how to ensure best use of the unit. (2) As for the "adequacy of UNDP support to implementing partner and project team," the MTR team found that UNDP is making repeated proactive efforts to engage the implementing agency and move the project forward, but faces challenges in terms of a low level of responsiveness of the implementing agency. At the same time, UNDP has promoted a PMU in which a project manager sits in UNDP CO offices; and the rest of the project team is located at MNRE. Greater support for the rest of the PMU may be achieved if the full PMU is sited together. (3) As for "responsiveness of the managing parties to significant implementation problems," the MTR team may suggest a more proactive approach for UNDP CO management. Despite UNDP CO's outreaches to the implementing partner, the project has been stuck without much of a way forward for some time. It seems that UNDP CO should have more proactively looked for other solutions, such as alternative management arrangements, or perhaps consider getting the project shut down early if no way forward is possible. The situation has been serious and merits involvement of leadership of the UNDP CO.

M&E and reporting: As for monitoring and evaluation, the MTR team found that most if not all of the required M&E related documents are in place. Yet, clearly, the M&E system has not been able to ensure that the project moves forward. What is needed is a higher level in the M&E system -- not only the M&E reporting, which is well in place, but a system for reacting to the poor results that the M&E system is detecting.

Reponses to specific questions taken from UNDP guidance for the MTR of GEF-financed projects include the following: (1) Regarding the mid-term tracking tool, it was not completed. The MTR team asked about the tool and the RTA provided feedback that it would be required, but the project team did not provide it. (2) Regarding the extent to which the Project Team is using inclusive, innovative, and participatory monitoring systems, the MTR team did not find any evidence of such systems. In particular, given that the project spans three states and has a state coordination cell in each sates, it could be useful to

get the perspective of the states incorporated into the monitoring process. So far, general feedback is that the states are not receiving the support from the center that they need. (3) Re the appropriateness of the M&E system to the project's specific context, what the MTR team finds, as referenced above, is that the M&E system is not triggering the kind of reaction needed to address the situation of a nonperforming project. The M&E is done – the PIRs prepared and the MTR conducted -- but still the problems are not addressed. The M&E system needs to have consequences built in for poor performance.

Stakeholder engagement: Whereas early in the project, there was a high level of engagement, most stakeholders are now quite frustrated with the project due to lack of progress and change of approach, which negated their hard work. Further, there is a lack of communication with stakeholders directly engaged in the project, such as CLIAs that had prepared proposals, SNAs that are still waiting for feedback on proposals, consultants waiting for feedback/ responses on their work, etc. Communications, covered briefly at the end of Section 3, is clearly a problem area, both within the closer circle of MNRE/PMU communication with the SNAs and SCCs, and in the broader area of keeping other stakeholders that might get involved, such as RETPRL suppliers, informed. This report's recommendations cover this issue, suggesting weekly email newsletters and calls for the closer circle and monthly email newsletter updates for the broader one.

Gender: The project is clearly considering gender as it includes in its scope women-focused livelihoods, such as textiles, and as it works with the SRLMs that focus mainly on SHGs (self-help groups) made up only of women. Yet, the project has not systematized its gender work in a quantitative way. Thus, as it maps out plans for the project demos to ensure they cut across a significant group of RETPRLs (i.e. ideally 10 to 15 RETPRLs, or at least 6-8 per state), it may also want to ensure that a certain proportion of demos/ demo funding is associated with RETPRL use led by women.

Responses to specific gender questions in the UNDP guidance for MTR of GEF-financed projects are as follows: (1) Re relevant gender issues being raised in the project document, the ProDoc notes that some self-help groups are led by women and that many rural entrepreneurs are women, implying that the project by default (rather than via a proactive approach) will benefit women. The project design does state at one point that district level "energy access committees" should be gender balanced. Yet, overall the MTR team suggests it would have been better for the ProDoc to reference proactive ways that the project would ensure a significant proportion of beneficiaries would be women. (2) As for the mandatory UNDP Social and Environmental Screening, gender issues were not triggered. Instead the Screening text merely states that "The project does not specifically focus on gender issues, but women head many rural livelihood enterprises, or work or are employed by them, so the project will have a very positive overall gender impact as well." It would have been better had the project design confirmed that specific measures would be taken to ensure a certain proportion of female beneficiaries. (3) As for the project results framework and project indicators, aside from the aforementioned point that the district level "energy access committees" will be gender balanced, these do not have language to ensure gender mainstreaming. (4) As for implementation, as noted above, the project is working with the SRLMs, which focus mainly on women-only SHGs, so that, in the end, despite lack of gender mainstreaming in project design, the project appears to be putting a strong emphasis on female beneficiaries. (5) As for the project team, the MTR team detected a lack of gender balance. All team members handling technical/ content issues are men: The current two state coordinating cell team members and the team member in the central PMU handling technical issues, as well as the part-time PM, are all men. From interviews, however, the team learned that the very first PMU team member, in one of the state coordinating cells was a woman. She is no longer involved in the project, however.

9. Design and Indicators

Project Design: The project design receives high marks for being innovative, relevant and needed, in line with national priorities of livelihood enhancement, and presenting the potential of especially high and meaningful impact, given its comprehensive, four-pronged approach covering demonstration and replication, supply chain, policy, and financing. The project design also recognizes key barriers and challenges in the existing systems and aims to address them. For example, the design recognizes that the current subsidy schemes don't work well for rural household enterprises, as the subsidies usually work on a reimbursement basis after the equipment is purchased and thus are difficult for those who lack access to financial resources up-front. Hence, efforts to develop alternative financing schemes and even alternative models of subsidy schemes are emphasized in the project design.

While it's hard to say whether more specifics in the design and more careful agreement between MNRE and UNDP on certain issues could have helped to avoid some of the challenges the project is now facing, these are points worth considering for future projects. As for the latter, the MTR team understands that the plan for the CLIAs to implement the demos with significant service fee (15% of subsidies received) may have not been acceptable to MNRE even at the time of project design. If this is indeed the case, more discussions and negotiations may have led to a plan more amenable to all sides. In terms of possible need for greater specificity, an example is that the level of subsidy is not clearly articulated in the ProDoc and has since become an ongoing, debated issue. Consultations indicate the designers believed the subsidies should not be too high (e.g. around 30%, rather than 65-85%) to ensure that the RETPRLs are truly economically viable. Indeed, certain places in the ProDoc discuss the issue of high subsidies leading to lack of sustainability once subsidies are discontinued. Yet, in retrospect, given that subsidy levels have been an ongoing concern and source of confusion, more details on them written into the activities of the ProDoc may have been useful.

Based on the learnings from the MTR, the current situation of the project, and the recommendations the MTR team has proposed, Annex 3 provides preliminary suggestions for revision of outputs and activities. It is suggested this annex be used as a starting point for the project team to revise the outputs and activities with the aim of ensuring the project will be well targeted to address the MTR recommendations and achieve the project outcomes. In general, the MTR team believes that, in several cases, greater specificity of output wording can help the IP and project team understand more clearly what the intended target of the output is.

Project indicators: The project indicators include objective, outcome, and output level indicators. Nowadays, UNDP-GEF project design requires only objective and outcome level indicators. Yet, output level indicators, in their greater detail, can be a good way to ensure a project is moving forward with its basic tasks. So, given the challenges *India ACE Project* faces in moving forward, use of output level indicators, after they are refined to suit course correction and agreed upon, is a good idea. Annex 4 provides preliminary suggestions for revision of the project indicators. It incorporates the preliminary suggestions for revisions of the project outputs that are first presented in Annex 3. Some of the indicator revisions are made for the reason of achieving greater clarity on what the target is. In other cases, the revisions are made to make the indicator more suitable to what the project aims to achieve and/or more suitable in terms of level of challenge. In general, outcome level indicators are more challenging than output level ones, as they may depend not only on the project carrying out its activities, but on carrying them out particularly strategically so that others are convinced to do things that are otherwise beyond the control of the project. An example of the sort of indicator improvements the MTR team is suggesting is associated with the indicator for Outcome 2, "the supply chain outcome." The original indicator was "No. of RE technology supply and service providers for rural livelihood applications by EoP." The MTR team notes that the supply chain contractor has collected a list of 55 suppliers or service providers and plans to

eventually increase the list to 100, so as to meet the target associated with this indicator. In the MTR team's view, it would be better for an outcome level indicator to be more challenging than merely identifying a certain number of suppliers, which might be more of an output-level indicator. Getting a certain number of suppliers directly involved in the project demos, for example, would be more challenging, but represent a greater contribution. Thus, the recommended revised indicator for Outcome 2 is, "No. of RE technology supply and service providers for rural livelihood applications that supply or provide installation services to the project demos or scale-ups for one or more of the project's selected 10 to 15 RETPRLs by EoP."

10. Expenditures

Expenditures: By the end of 2018 (in USD), $573,661 out of $4,006,849 in GEF funds (about 14%) had been spent. None of the $19,033,767 in co-financing was reported as spent, though the establishment of the $10 million MNRE scheme signifies the setting aside of the co-financing committed by MNRE. Also, in-kind contributions, such as SNA and MNRE officials' time have been significant, as has been specifications work by NISE, provided at no cost to the project. Further, NGOs and other non-government entities put significant time and other resources into developing demo proposals and presenting these to MNRE.

Expenditures of GEF funds between 2015 and 2018 are given in the table below. In addition to total GEF funds being about 14% spent, the results show that project management allocated amount is about 69% spent, the Component 1 (demos/replications) allocated funds are about 12% spent, Component 2 (supply chain) 10% spent, Component 3 (policy) 22% spent, and Component 4 (financing) 0% spent. Yet, the rationale of CDR entries is not always clear. For example, the 2018 $74,199 payment to the supply chain contractor was charged under Component 1. As for the policy component, as work hasn't really begun, it is guessed that those fund are 22% spent (around $69,000 spent) due to workshops in 2015 and 2016 being charged to that component. Annex 5 provides very preliminary recommendations on distribution of the remaining budget among the outputs and outcomes (based on the preliminarily proposed revised outputs). One point is that the SCCs, and, to some extent, the PMU, are performing a lot of the work that might otherwise be considered TA. Thus, although the PM allocation is 69% spent, some of the upcoming expenses for these staff can be allocated among appropriate outputs and outcomes as the team carries out associated non-PM activities.

Expenditures 2015-2018 Based on UNDP CDRs (in USD)

Component	2015	2016	2017	2018	Total Spent	Total Allocated	% Spent
1 Demos/SU	10,181.94	33,105.21	19,075.39	280,713.00	**343,075.54**	2,719,949	12.6%
2 Supply Ch	0	551.22	30,239.55	140.00	**30,930.77**	301,000	10.3%
3 Policy	0	24,585.61	44,876.97	-87.40	**69,375.18**	312,800	22.2%
4 Finance	0	0	0	0	**0**	483,600	0.0%
PM	0	49,743.09	47,426.89	32,795.89	**129,965.87**	189,500	68.6%
Net UL*	-0.01	153.79	0	159.46	**313.24**	0	---
Total	**10,181.93**	**108,138.92**	**141,618.80**	**313,720.95**	**573,660.60**	4,006,849	14.3%

*Net Unrealized Loss = Unrealized Loss – Unrealized Gain

11. Sustainability

The MTR team sees major risks to the sustainability of project results. Sustainability issues and possible ways to address them have been emphasized in other places in this report, particularly with regard to

economic viability of the demos once subsidies are no longer available and with regard to the type of targeted beneficiaries being able to carry out the demos with low subsidy (e.g. 30%) or no subsidy. Thus, the main contribution of this section will be to organize brief summaries of sustainability risks into key categories.

Financial risk: Financial risks to sustainability are quite high. So far, the demos implemented (the six solar cold storage units) were installed with 100% grant. Other demo projects being proposed aim to weave together different subsidies, so that beneficiaries make little if any contribution towards costs. These kind of demos do not present strong replication potential once subsidies are lowered substantially or removed. Further, beneficiary selection so far is not factoring in financial sustainability. Ideally, beneficiaries will already be involved in the livelihood activity that the RETPRL will enhance. Further, the beneficiary, or the beneficiary's associated organization, e.g. FPO, will be financially strong enough to make substantial contributions towards project costs and towards ensuring the RETPRL is sustainable.

Socio-economic and institutional risks: Socio-economic and institutional risks are also high, mainly because the project has not progressed much, so cannot make a positive impact in these areas. Institutionally, the project has not finalized a good structure for implementing demos and replications and ensuring policy makers support "RE for livelihoods" going forward. Socio-economically, due to lack of progress, benefits are not being realized, so sustainability is impossible

Environmental risks: Environmental risks are not high, but disposal of equipment after useful lifetime should be considered in demo designs and monitoring plans

12. Recommendations with Justification/Elaboration and Action Plan for Each

A summary version of the MTR team's recommendations is provided in the Executive Summary on pages xii - xvi. Below, each recommendation, shaded in grey, is followed by (1) elaboration of the recommendation and justification/ evidence for conclusions leading to the recommendation and (2) action plan, first with parties responsible and then with main steps and timeline. The recommendations are grouped by type. There are a total of 15 recommendations: one overall recommendation, six recommendations pertaining to Component 1 (demo and scale-up), one recommendation pertaining to each of Components 2, 3, and 4 (supply chain, policy, and financing, respectively, for a total of three recommendations), one recommendation regarding co-financing, and four recommendations regarding implementation and communications.

I. Overall Recommendation

Recommendation 1. Clarify and agree on the key features supporting the project's main aim and differentiation it from other "RE for livelihoods" work. Use this to determine nature of demo installations, scale-up installations, and other activities. Suggested clarification of features: Economically viable wide-scale replication of "RE for livelihoods" (that can soon continue without subsidy), targeting applications that are not widespread and not addressed by other schemes. Once agreed upon, clearly and repeatedly communicate these key features and differentiation to all key stakeholders and promote widely within MNRE. This is an overall recommendation supported by other of the recommendations below.
Elaboration and justification: While related to several recommendations below, agreeing on the key features supporting the project's main aim and defining its scope and making sure these features are well understood by all is the necessary first step in moving the project forward. MTR work revealed a

lot of confusion and several competing ideas of what should be included in the project. Most agree that the basic idea of "RE for livelihoods" is fantastic, but there are many disagreements on subsidy levels, types of technology to be included, which economic strata target beneficiaries should come from, implications of grid expansion, etc. Starting with a common vision of the key features supporting the project's main aim is a critical first step in sorting through the competing ideas, eliminating the confusion, and coming up with a strategic path, guided by the main aim and these key supporting features.

The key features recommended by the MTR team (along with justification) to support the project's main aim are:

Wide-spread replication of "RE for livelihoods": A key feature of ACE should be to facilitate scale-up of economically viable wide-spread replication of "RE for livelihoods" applications within key states and eventually on national scale. While "RE for livelihoods" was a relatively new concept when the project was designed, there are now many small-scale efforts in India, including successful pilots that could be built upon by the ACE project. Many stakeholders indicate that what differentiates ACE is its potential to stimulate the wide-spread replication of "RE for livelihoods." Given the original design (demos followed by replication), having MNRE as IP, MNRE's "RE for livelihoods" scheme, and the project's level of funding, the MTR team agrees that ACE's key differentiating feature as compared to other efforts should be wide-scale replication.

Economic viability: If the key differentiating feature of the project is wide-scale replication, then economic viability of "RE for livelihoods" applications that will be demonstrated and replicated is required. Payback of the full investment should be achievable within an attractive period of time, such as one or two years, or perhaps three or four in some cases. It also requires that the target groups to adopt the technologies (the beneficiaries during the ACE project and groups with similar characteristics afterwards) have the financial strength or access to resources (such as loan funds) to acquire the technology once subsidies end. The project should aim that replication can occur without subsidies within two or three years of demonstration (and by project close). With this aim in mind, ACE should target initial state-level replication to occur with low (30%) subsidy and rest of contribution made by beneficiaries. Demos/ pilots, which will occur before scale-up, may require higher subsidy or TA support, from variable grant fund. (See Rec 5.)

Selected technology applications that are not already widespread or supported by other schemes: To justify use of funds, ACE should focus on technology applications that are not already widespread or supported by other schemes in substantial way. Pure solar lighting projects and pump projects, if type of pump is widespread or addressed by other schemes, should not be in the scope of ACE. "RE for livelihood applications" refers to direct use of RE in productive, income-generating activities by beneficiaries, rather than to getting financial benefits from selling power back to the grid or to others. The key differentiating feature of wide-spread replication requires that the project select a group of specific technology applications with high potential for wide-spread replication and focus on these in its demonstration and replication phases. (See Rec 2.)

Suitable fit on the ground with new reality of rapid electrification: A great challenges in justifying ACE is the rapid grid expansion that has occurred in India since project design and is expected to continue. As such, project proponents need to identify and focus only on those situations in which "RE for livelihoods" still provides economic advantage and will continue to do so in coming years. (See Rec 4.)

Recommendation 1 Action Plan

Who: MNRE (Secretary/ PSC Chair, JS/NPD, and NPC) and UNDP (DCD, Chief of Section, Progamme Officer) with input from SNAs/ SCCs/ PMU and, if desired, experts

Main steps and timeline: (1) After reading this recommendation, hold discussion on key features supporting project main aim and differentiating project from other work (UNDP and MNRE, by June 10). (2) Collect input from SNAs/SCCs/PMU and any relevant experts, such as project designers, and provide in writing to MNRE and UNDP (PMU by June 16). (3) Reconvene and come to final decision/ agreement on written expression of key features supporting project aim and differentiating project from other work, including implications for tech scope, beneficiary type, and fit with grid expansion. (MNRE and UNDP by June 17.) (4) Communicate results to SNAs and other key stakeholders (PMU) (by June 20). (6) Promote the project, scheme, and clarifications of key features to all MNRE officers and staff using strategically selected outreach approach (PMU by June 27). (6) Emphasize clarified key features and scope in all communications going forward (ongoing).

II. Component 1 (Demo and Scale-Up) Recommendations

Recommendation 2. Select priority "RE for livelihood" technology applications that have the highest potential for scale-up (along with strong livelihood/ GHG ER benefits), can achieve economic viability, are not already widespread, and are not supported substantially by other schemes. Focus on a limited number (4-6) of key livelihood chains with the most extensive participation. Target to have 10-15 different technology-livelihood chain pairs demonstrated via the demos and scaled up with the scheme. Consider grid extension issue (Rec 4) in selecting technology applications. Provide the list of 10-15 priority technology applications to all those that may be involved in concept or proposal preparation. Ensure that funding for demos is allocated rationally among the 10-15 different applications (or at least 6-8 per state). Consider allocating some resources to development of innovative application emerging out of academia and other organizations, such that these may constitute 4 to 5 additional applications. For the 10-15 priority technology applications and possible 4 to 5 additional ones, MNRE should come to decision of whether scheme will subsidize 30% based on full cost or cost of RE components only.

Elaboration and justification: While ACE will build from basis of being "technology agnostic" and thus open to the various forms or RE (e.g. solar PV, solar thermal, biomass, etc.), stimulation of scale-up is most effectively pursued by strategically focusing on high potential technology applications. Thus, the demo and scheme funds should focus on such strategically selected technologies. As noted, solar PV lighting alone is probably too wide-spread and receiving too much support from other schemes to justify its inclusion. Solar pumps have strong support from other schemes. The sub-HP pumps (depending on coverage by other schemes), however, might still merit consideration. While diversification among too wide a range of technology applications runs a high risk of not achieving desired impact of replication, if the scope of the project demos is too limited (e.g. just 2 or 3 technologies), the opportunity to leverage GEF funds for the testing and learning aspects of demonstration is squandered. It is suggested a criteria that the technologies must directly support livelihood activities be instituted, so that RE that raises income merely by selling power to the grid or customers is not included. Preliminary suggestion of scope for livelihood chains are: horticulture, fisheries, dairy, poultry (and, possibly, textiles and NTFPs). While solar lighting kits and HP range pumps probably do not fit, some technology applications proposed to date that may fit are: for horticulture - solar thermal crop drying, solar PV cold storage, and biomass cold storage (the latter two, only if economically viable and making sense in terms of grid situation); for fishing - solar fish drying and solar PV cold storage for boats. As for development of innovative applications, some partners encountered in MTR consultations or document review to consider are OUAT, SELCO Foundation, IITs, ICAR, and NIRD.

Recommendation 2 Action Plan

Who: MNRE, UNDP, PMU, IPE Global, OUAT, Villgrow, SNAs, SCCs, possibly SELCO Foundation
Main steps and timeline: (1) Convey criteria for technology application selection to all of the above parties. Ask them to identify priority value chains and RE livelihood applications that fit the criteria and have good potential. (PMU by June 10). (2) Provide written feedback to PMU on foregoing (MNRE, UNDP, SNAs/SCCs, IPE Global, OUAT, Villgrow, possibly SELCO Foundation, by June

17). (3) Finalize list of 4 to 6 livelihood chains and 10 to 15 technology-livelihood chain pairs, the latter being the 10-15 items that the target demos and scheme will focus upon (MNRE, UNDP by June 24) and communicate to SNAs and all other key stakeholders (PMU by June 26). (4) Conduct outreach with OUAT, SELCO Foundation, IITs, ICAR, and NIRD about possible development and demonstration of 4 or 5 additional high-potential applications in the selected value chains. (PMU by July 7) (5) Agree on allocation of funding for demonstration (and possibly development) of the 4 to 5 innovative RE technology applications. (MNRE, UNDP, PMU by July 14). (6) Prepare TOR on development of innovative technology applications, float RFP (PMU by July 31) and carry out work (OUAT, SELCO Foundation, IITs, ICAR, and/or NIRD, development work by Nov. 1, demonstration within a year thereafter). (7) For each of the 10 to 15 technology applications and, possibly, the 4 to 5 new ones, decision by MNRE whether to calculate 30% scheme subsidy based on full cost or RE component cost only (MNRE, by July 1 for first group and by Nov. 30 for second group). (8) Prepare final version of updated RETPRL compendium by providing much expanded discussion and supplier lists for the 10-15 selected technologies (OUAT, by Aug. 1).

Recommendation 3. Determine criteria/strategy for target beneficiary selection that ensures economically viable replication of demos in groups with similar characteristics. While, depending on technology, the demos may receive additional grant beyond the 30% base subsidy (see Recommendation 5), beneficiary selection should ensure replication by similar groups with only 30% subsidy in the project's replication phase and later with no subsidy after project close and discontinuation of MNRE scheme. Such beneficiaries are likely to be those already carrying out a livelihood activity, rather than those who would newly be adopting the activity. Further, target groups should have the financial strength or access to financial resources to purchase equipment at full price. Ideal target groups may be farmer producer organizations (FPOs) and other POs that have a strong financial situation and several year track record. The project should determine the best approach in identifying such beneficiaries, whether it be partnership with SRLMs or with strong NGO that emphasizes economically viable approaches over subsidies, or direct identification through local consultants in state of interest. Because discussions with SRLMs are already underway, it will be important to determine whether they are indeed the best partners for identifying financially strong POs, given their focus on BPL populations that may not have the resources to achieve sustainability and replication.

Elaboration and justification: Keeping its aim of economically viable replication in mind, project should be careful not to adopt a pure charity approach, but instead select beneficiaries that have similar characteristics to the target groups that will be able to replicate the demos with only 30% subsidy and eventually with no subsidy. (Note: Even though demos with selected technologies may receive an additional grant amount beyond the base subsidy of 30% during the demo phase, they should be beneficiaries with characteristics of those who will be able to replicate the demos with the base subsidy only or with no subsidy, once economic viability is proven.) The MTR team found that for some proposed demos, beneficiaries would not be contributing any amount as they are not able. Many proponents indicate there is no way beneficiaries could ever manage to pay 70% or, eventually, 100% of costs. While SNAs have offered similar feedback that most proposals are not viable with 30% subsidy, deeper discussions should be carried out with SNAs and other relevant experts with regard to the characteristics of target groups and whether sufficient number of suitable groups that could eventually replicate the project demos without subsidy exist. Meantime, measures such as a loan guarantee fund (to increase the potential of some groups to be able to handle a larger share of costs) should also be explored (see Rec 10) to facilitate replication without subsidy.

Recommendation 3 Action Plan

Who: MNRE, UNDP, PMU with input from SNAs, IPE Global, Villgrow, EnGenuity, SRLMs, and perhaps Harsha Trust, PRADAN, SELCO Foundation

Main steps and timeline: (1) Discuss issue and come to initial understanding of how to select target beneficiaries with characteristics similar to the groups that will be expected to replicate the demos in project replication phase with low subsidy (30%) and eventually no subsidy. (MNRE, UNDP by June 10). (2) Seek input on characteristics of target groups (e.g. FPOs and other POs) and whether such groups exist in sufficient numbers for widespread replication (input sought by PMU from IPE Global, Villgrow, EnGenuity, SRLMs, and perhaps Harsha Trust, PRADAN, SELCO Foundation) and draft up findings for MNRE and UNDP (PMU, by June 24). (3) Come to decision on characteristics of target groups. This will relate also to decision on partners (Rec 6) and perhaps VGF (Rec 5) (MNRE, UNDP by July 1).

Recommendation 4. Build criteria related to recent and expected grid expansion into demo and scale-up selection plan to ensure that the RE application is still the economically more competitive option.

Elaboration and justification: Project's selection of priority technology applications (Rec 2) and selection of project demos and scale ups should address grid extension. The demo and scale up proposals should be required to present the current and expected (five years into the future) grid situation and discuss why project is still economically competitive in light of that situation. Given grid expansion, some of the key areas to focus on in technology and demo selection are: (i) non-electricity applications (such as solar driers), (ii) applications that occur far from the home/building and are likely to continue to lack access to grid electricity (such as chillers for fishing boats, solar PV equipment for farmers' fields, etc.). For electricity applications that occur near homes/ buildings that are already connected to the grid or expected to be connected soon, possible areas that will still make sense are: (iii) applications that require power levels beyond what the grid supplies or is expected to supply in the next five years, (iv) applications where grid reliability is still poor enough and expected to continue to be poor enough for next five years to make the application the economically superior choice, (v) situations/ applications where off-grid is cheaper than grid-connected.

Recommendation 4 Action Plan

Who: MNRE, UNDP, PMU, SNAs, SCCs with input from experts (IPE Global, Villgrow, EnGenuity)
Main steps and timeline: (1) Discuss and come to initial understanding of how grid extension issue impacts selection of 10-15 priority technology applications and how criteria can be incorporated into proposal template and review process. (MNRE, UNDP, PMU by June 10). (2) Seek input (input sought by PMU from SNAs, SCCs, and possibly experts including IPE Global, Villgrow, EnGenuity) and draft up findings for MNRE and UNDP (by June 17). (3) Come to decision on how grid consideration will impact selection of 10-15 priority technology applications and how it will be incorporated into proposal template and review process (MNRE and UNDP by June 24). Communicate decision to partners (PMU by July 26).

Recommendation 5. Distinguish demos/pilot phase from replication/scale-up phase and more forward with demos, all of which should be installed within one year. Demos should move forward with GEF funds only in the case that MNRE needs more time to carry out benchmarking/specifications (which should then be carried out in parallel with the demos and completed within six months). See Rec. 7 on interim benchmarking/ specification plan for demos. All demos should receive a base subsidy of 30%, with possible VGF (variable grant funding, % being specified for each of the 10-15 technology applications) of up to 35%, so that total support of demos ranges from 30% to 65%. The VGF may be used towards equipment and/or TA support. Demos and scale-up should focus on the 10-15 selected technology applications (Rec 2), or minimum of 6-8 per state, and funding should be rationally distributed among these. The total GEF budget for demos (e.g. $1.5 - $2.1 million) and amounts to be allocated to each state (e.g. $500,000 to 700,000 each) should be determined and conveyed to the SNAs quickly, especially so that OREDA gets news of co-financing in time to include in the design of its own "RE for livelihoods" fund. States should also be informed of the expected distribution of the

10-15 technologies among these funds (or, at minimum, be asked to achieve a reasonable distribution of 6-8 of these). A plan for disbursing funds according to milestones reached should be determined and communicated. Additional funds (e.g. $300,000 to $400,000 total across all states) may be allocated to demonstrate 4-5 innovative technologies after they are developed (see Rec 2). All GEF "investment" funds will be used in the demo phase, so that MNRE scheme funds only will be available in the scale-up phase. For scale-up phase, basis of subsidy amount (either full cost of equipment or cost of RE portion only) for each selected RETPRL should be determined and communicated.

Elaboration and justification: Once the 10-15 technology applications are selected (Rec. 2), the VGF % (if any) for each should be determined. The state process of proposal preparation should be restarted immediately. Now, with agreement on (i) the 10-15 priority technology applications (Rec. 2), (ii) required characteristics of the beneficiaries (Rec. 3), (iii) required status/ info on grid extension (Rec. 4), (iv) total GEF allocation for demos in the state and VGF %s (Rec. 5), and (v) targeted distribution of that allocation among the 10-15 priority technologies (or among a minimum of 6-8 selected from these) (Rec. 5), the proposal preparation will be much more focused and have a much lower risk of non-acceptance. The states already have some proposals in-hand that might be improved upon, though some of these may not qualify due to: (i) technology being widespread, (ii) RE provided not directly supporting productive use (e.g. focus on net metering scheme), and (iii) existence of other schemes supporting technology on a wide scale. Others may not work due to (iv) the target beneficiary group not having the financial strength to contribute the 35-70% needed and thus not providing a good model for replication after subsidies are removed by groups with similar characteristics. As for proposals, once basic concept is agreed upon, preparation of solid DPRs, with financial analysis, may be carried out by some combination of SCCs, recruited consultants, and/or NGOs. If recruited consultants do this work, the team should include at least one local consultant from the state in question that is experienced in field work. While the plan for disbursing demo and replication funds according to milestones reached should consider how to ensure that funds are properly used, it should also consider how to ensure that beneficiaries have enough funds to launch their demo.

Recommendation 5 Action Plan

Who: UNDP, MNRE, SNAs/ SCCs, PMU, recruited consultants, and NGOs
Main steps and timeline: (1) Make decision on total allocation from GEF budget for demos and under what condition MNRE scheme could contribute to demos in timely fashion (e.g. which of the 10-15 technologies) (UNDP, MNRE, PMU by June 24). (2) Make decision on level of VGF for each of the 10-15 selected technology applications (UNDP, MNRE with input from SNAs and possibly consultants and NGOs by June 30). (2) Ensure that SNAs and other proposal preparers are clear on 10-15 priority technologies, beneficiary characteristics, required status/ info on grid extension, total GEF allocation for demos, and targeted distribution of GEF demo funds among 10-15 technology applications (or at least 6-8 per state), and VGF level associated with each technology application with both written and verbal (telephone) communication (July 4). (3) Launch and complete proposal preparation considering GEF funds available to each state, targeted distribution of 10-15 selected (minimum 6-8) technology applications, required beneficiary characteristics, and required justification vis-à-vis grid extension. Ideally, proposals will account for full GEF funding amount for each state. (SNAs, SCCs, possibly consultants and/or NGOs by August 30.) (4) Review proposals – approval acceptable ones and provide feedback on ones that need to be improved. (MNRE, UNDP, PMU by Sept. 15.) (5) Provide initial payment (UNDP/MNRE by Sept. 30) and launch procurement and demo installation (beneficiaries with support of SNAs, etc., by Oct. 15). (6) Complete all demo installation (beneficiaries with support of SNAs, etc., by Oct. 15, 2020).

Recommendation 6. While maintaining role of SNAs as state-level partner with renewable energy expertise for the project demos and scale-ups, determine partners for identification of beneficiaries of the project demos and scale-ups, proposal preparation, and, when needed, support of beneficiaries during implementation. Given the need for beneficiaries with well-established livelihoods and financial

strengths, such as strong, well-established FPOs, to carry out demos (Rec. 4), determine partner(s) who will be able to identify such groups and work with them. This may include SRLMs, though, given their BPL focus, this may not be their strength. Other promising options include (a) a very select group of NGOs known for pursuing economic viability (e.g. Harsha Trust, PRADAN) (which might carry out this work whether or not they are subcontracted to do PM as in Rec. 12), (b) strong equipment supplier organizations that can both identify beneficiaries and assist with proposals and/or (c) a strong local consultant in each state who has the right links / skills to identify the designate type of beneficiaries and liaise with them to prepare the proposals. (Note: If a decision is made to sub-contract project management, then the sub-contracted organization is likely to also become to partner to lead beneficiary identification and liaison. See Rec. 12.) Determine any budgetary allocations needed for such partners. It is expected that allocations, if any, for beneficiary identification and facilitation should be quite low (as explained below), though sufficient funding for quality proposals with proper assessment of economic viability will be needed once proposed demo concept agreed upon.

Elaboration and justification: Judging from inputs during the MTR mission and review of proposals prepared to date, the project is still not on track in identifying beneficiaries of the type that eventually could implement "RE for livelihoods" without subsidy. The project has shifted its thinking towards working with the SRLMs. Yet, these appear to focus on groups that would lack the resources to purchase "RE for livelihood" equipment without a high proportion of subsidy. While some SRLMs indicate they also have the links with the FPOs, etc. that would be more attractive to the project, their capabilities in this area still need to be assessed and compared to those of other potential partners. One attractive model may be to have strong suppliers themselves become the partner that identifies more appropriate beneficiaries, prepares proposals, and supports beneficiaries in implementation. Once the 10 to 15 technology applications are identified, Villgrow can be consulted on this option of suppliers as community identifier and liaison entity. Another option is to work with a select NGO or NGOs known for working towards economic viability, such as Harsha Trust or PRADAN. Lastly, SNAs may identify state-level NGOs (or producer organizations) directly that may develop specific projects, likely without requesting a fee. (An example is the dairy association identified by AREDA and willing to implement with only 30% subsidy.) If it is decided that SRLMs have the right strengths to fill this partner role, then pursue agreement with MORD such that MORD assigns related work task to SRLMs. If it is decided that other partners are the better avenue to work with the type of beneficiary the project seeks, or the project decides to work with a range of partners, an MORD agreement may be less relevant. As for compensation of partners, this will need to be decided by UNDP and MNRE. For the scale-up scheme, MNRE plans to provide a 3% fee (3% of subsidy), which may go to the SNAs or be split between the SNA and SRLM if SRLM becomes the main partner. UNDP and MNRE will need to decide if any such proportion-based compensation will go to the SNA (and SRLM if it becomes a main partner) in the case of the GEF-funded demos. Further, they will need to decide, if consultants or national NGOs become such partners, how to compensate them. If suppliers or state-level NGOs become the main partners, it is likely they may not require compensation as they see other benefits for being involved, thus adding to their attractiveness as partners. For suppliers, those other benefits will be equipment sales; for state-level NGOs, if they are a producer organization, the project will directly benefit their members; and, if they are a more traditional NGO, they may already have other funding to support their operations. Because there are opportunities to find quality partners at much lower rates than originally offered the NGOs in an earlier phase of this project, the MTR team suggests UNDP/ MNRE pursue such low-cost or no-cost partnerships rather than higher cost ones.

Recommendation 6 Action Plan

Who: MNRE, UNDP, PMU, and (to be consulted) SRLMs, Villgrow and suppliers suggested by Villgrow, Harsha Trust, PRADAN, SELCO Foundation

Main steps and timeline: (1) Carry out consultations to determine capabilities of various parties in identifying beneficiaries, assisting SNAs with proposals, and supporting beneficiaries in implementation if needed (MNRE, UNDP, and PMU via discussions with SRLMs, Villgrow, suppliers suggested by Villgrow, Harsha Trust, PRADAN, SELCO Foundation, sample state-level NGOs

identified by SNAs, etc., and including PMU prepared briefing on, by June 24). (2) Make decision on partners for demo and scale-up beneficiary identification, concept preparation, and implementation and determine compensation to be offered if any. This may include just one of the suggested partner types or a combination thereof. Compensation decision will include determining whether there will be compensation for SNAs for demos supported by GEF funds, whether the 3% "service fee" compensation for scale-ups will be shared with other partners (especially SRLMs), as well as whether there might be any other compensation for other partners (SRMLs, national NGOs, state-level NGOs, or suppliers, though the last two many not require compensation) (MNRE and UNDP by July 1). (3) If support is needed to build on the demo concepts and prepare quality proposal, allocate funding and hire consultants to prepare proposals with economic viability assessment (hiring of consultants - MNRE, UNDP, and PMU by July1; completed proposals - consultants by Aug. 30, as in Rec. 5).

Recommendation 7. For demos, come up quickly with an interim plan for specifications and benchmark costs for the 10-15 selected technology applications based on work done to date, such as NISE's previous specification and benchmarking work and/or price discovery for tenders (e.g. 0.5 HP pumps in Odisha). For scale-ups, set in motion all needed specification and benchmark work (either original or updates) to be carried out in parallel with demos and to be completed within six months. If the 4-5 innovative technology applications are also developed, an interim plan for their specifications and benchmark costs can similarly be prepared.

Elaboration and justification: Lack of specifications and benchmark pricing is one of the key delaying factors in sanctioning proposals for project demos/scale-up. This recommendation takes as its basis the reestablishment of distinction between the demos and scale-ups (Rec. 5) and the proposal that GEF funds only can be used for the demos in cases in which MNRE is not yet ready to sanction.

Recommendation 7 Action Plan

Who: MNRE, UNDP, NISE, SNAs, PMU, SCCs and, if needed, consultant
Main steps and timeline: (1) Once 10-15 priority technology applications are selected (Rec. 2), determine which already have up-to-date specifications and benchmark prices acceptable to MNRE. (PMU to prepare table, launch June 24, complete by July 1). (2) For those of the 10-15 selected that do not have up-to-date specifications and benchmark prices, collect information on options for interim plan (e.g. previously prepared specifications and benchmark prices, previous price discovery through tenders, price discovery through new tenders for project demos, or brief consultant assignment when the foregoing not available or appropriate), present this information in a table, hire consultant for brief assignment to fill any gaps if needed, and finalize draft table (including actual proposed specifications and benchmark prices for each technology by various methods available) (PMU in consultation with SNAs and SCCs, and, if needed, consultant or NISE, launch July 7, complete by Aug. 15). (3) Review PMU table showing possible interim benchmark prices and specifications by various methods (for those of the 10-15 techs that lack updated/ MNRE approved specs/prices), suggest which method is acceptable for each tech, and approve (MNRE and UNDP, by Aug. 21). (4) Launch and complete work on final, official updated or new specifications and benchmark prices, as needed, for scale-ups of the 10-15 selected technologies (MNRE and NISE, completed by Jan. 1, 2020).

III. Component 2 (Supply Chain) Recommendations

Recommendation 8. Revise supply chain work to support clarified aim of project (Rec. 1) and, specifically, economically viable demo and scale-up of the 10-15 selected technologies (Rec. 2). As such: (i) Identify suppliers/ potential suppliers of the selected 10-15 technologies and ensure that as many as possible are informed of demo and scale-up related call for supplier bids. (ii) Support suppliers of the 10-15 selected technologies in directly connecting with communities to develop demo and scale-up proposals (so that they may be one type of project partner to identify communities and develop proposals, as in Rec. 6). (iii) Support the development of local service providers to install and repair the

10-15 selected technology applications. (iv) Carry out targeted sourcing work to get the price down of selected items (such as solar cold storage). Also, consider bulk orders as means of price reduction.

Elaboration and justification: The project has recently restarted supply chain work by retaining Villgrow. Yet, without clear plans for which technologies the project will focus on or for how suppliers will benefit from involvement with the project, it is difficult for this work to develop momentum and make an impact. With clarification of the project aim (massive, economically viable scale-up) and strategy (initial focus on 10-15 selected technology applications), the plans for supplier work can be revised as recommended above. The last sub-recommendation, getting the prices down, will make critical contributions to viability. In the case of cold storage, for example, there appears to be significant room for price reduction. While earlier benchmark prices for 5 ton solar cold storage models were 900,000 Rs (about $13,000), the price paid (including transport) for the project's initial six units was 1,400,000 Rs (about $20,000) with transport. Back of the envelope estimates by one potential supplier indicates a cost of 800,000 to 900,000 Rs ($11,600 to $13,000) ex-factory if bulk order of at least 50 is placed.

Recommendation 8 Action Plan

Who: MNRE, UNDP, PMU, Villgrow, possibly other supply chain contractor
Main steps and timeline: (1) Once project outputs and activities are revised (Rec. 14), discussions with Villgrow on revising work should be carried out to determine if any or all of this work can be carried out under current contract (UNDP, PMU, Villgrow, July 1). (2) If any of the four items cannot be carried out under the current contract, either the Villgrow contract should be extended or a new TOR and new RFP should be floated and contractor selected (UNDP, PMU, Villgrow, possibly other contractor, Aug. 1). It is expected that items (i), (ii), and (iii) can be handled by Villgrow. Item (iv) may or may not require a separate assignment, as both large and small companies should be included among the possible sources of equipment the contractor assesses. (3) Complete identification of suppliers for the 10-15 technologies (Villgrow, Aug. 1). (4) Support suppliers in liaising with communities to develop proposals (Villgrow, Sept. 1). (5) Determine which of the 10-15 technologies require price reduction work (MNRE and PMU by July 1) and carry out the work via supplier research and supplier discussions, including on bulk buying (Villgrow or other supply chain specialized contractor, by Oct. 1). (6) Build capacity of local persons to become service providers for the 10-15 technologies. (Villgrow, Sept. 1, 2019– March 1, 2020).

IV. Component 3 (Policy) Recommendation

Recommendation 9. Policy work of Component 3 should be revised/ refined and work initiated. (i) For the first outcome, "including of RE application in national and state level rural livelihood policies for key livelihood sectors in rural areas," outreach should be conducted with MORD and other relevant ministries at the national level and SRLMs and other relevant state-level departments in the three project states. An understanding of how to incorporate RE into policies of these organizations should be gained and draft proposals to do so should be prepared. (ii) For the second outcome, "catering of future MNRE programs towards RE for livelihoods," consultations should be carried out within MNRE to see how RE for livelihoods could be incorporated into MNRE's mandate for ongoing incorporation into work plans. Targets may include plans for ongoing MNRE work to identify suitable existing "RE for livelihoods" technology application and to stimulate development of new applications. They may include plans for ongoing MNRE work in specifications, benchmark pricing, and supply chain measures to get prices down. The work for this outcome could also be expanded to ensure that RE for livelihoods enter the mandate and scope of ongoing work of the SNAs. (iii) The third outcome, "improved tariff and grid interconnection regulations for decentralized RE," may not be relevant unless it is decided that PV-battery mini-grids are a key option for supporting selected livelihood value chains and determined that these are neither widespread nor covered by other schemes, so that mini-grids are chosen as one of the projects 10-15 priority RETPRLs. If, as anticipated, mini-grids are not selected as one of the 10-15 technologies, the outcome might be revised to encompass other types of policy

incentives for involvement in RETPRLs, such as "preferential tax and import tariff policies for 'RE for livelihoods' equipment." In this way, the outcome retains its original spirit of improving the attractiveness of being involved in the business of RETPRLs.
Elaboration and justification: To date, the project has focused mainly on Component 1, with some work on Component 2. Work on Component 3 has really not begun. Revisions to Component 2 outputs (and possible outcomes) should reflect the vision of the project as determined in Rec. 1. And, a decision on the third outcome should reflect whether mini-grids are included as one of the 10-15 selected technology applications. At present, it appears mini-grids may not be the right fit for the project, in which case, as noted, the outcome may retain its spirit of improving the attractiveness of being involved in the business of RETPRLs, but shift to a focus on policy incentives such as preferential tax and import tariff policies.
Recommendation 9 Action Plan
Who: MNRE, UNDP, PMU, MORD, other ministries related to rural livelihoods, SCCs, SNAs, SRLMs, SNAs, and other state departments related to rural livelihoods, policy consultants (if needed) *Main steps and timeline*: (1) For the first outcome, "inclusion of RE in national and state level livelihood related policies," consultations should be carried out (by Jan. 30 2020, MNRE, UNDP, PMU, SCCs, and SNAs, consulting target ministries and departments relevant to livelihoods, with consultants involved if needed); draft policy amendments prepared (PMU, SCCs, and consultants, if needed, by March 31, 2020); and second round consultations and promotion of recommendations carried out (parties same as for first round of consultations, by May 31, 2020). (2) For the second outcome, "including of RE for livelihoods in MNRE programs (and possibly SNA ones)," consultations should be carried out (MNRE, UNDP, PMU, SNAs, SCCs and consultants, if needed, by July 30, 2020); draft policy /mandate amendments prepared (PMU, SCCs, and consultants if needed, by Sept. 30, 2020); and second round consultations and promotion of recommendations carried out (parties same as for first round of consultations, by No. 30, 2020). (3) Action plan for third outcome should be prepared after 10-15 priority technologies are determined (Rec. 2). If the conclusion is that the outcome needs to be revised, but maintaining the spirit of the original outcome, then follow up with RTA to discuss approach (UNDP, MNRE, RTA, PMU by Oct. 2020). Regardless of whether the outcome will be carried out as is, or revised to address tax and tariff incentives for suppliers of "RE for livelihoods equipment," then work should be carried out between Oct. 2020 and Dec. 2020 (by UNDP, MNRE, PMU in consultation with relevant government ministries and with assistance of consultants, if needed).

V. Component 4 (Financing) Recommendation

Recommendation 10. While institution of MNRE's "RE for livelihoods" scheme can be seen to fulfill part of one of the outcomes of Component 4, no other work on this component has been initiated. It is recommended due attention be put on this component and the work for the outputs under each outcome be clarified. In some cases, wording of the output may be adjusted so that it is clearer or more specific. (i) For the first outcome "improved RE decentralized subsidies and support for rural livelihoods," in addition to developing innovative approaches to subsidies, work could be done to encourage MNRE to continue its scheme in years to come and to get the states to develop such schemes (as Odisha has already done). This work will have more potential if success of the demos and some of the scale up is well documented, so may be carried out after demo installation. (ii) For the second outcome, "enhanced provision of financial support," the project can promote RETPRLs to lenders and to other programs to help secure loans and other support to achieve replication of the project priority 10-15 RETPRLs. (iii) For the third outcome, "improved investment risk mitigation," the project may target development of marketing, sourcing, quality, and productivity support for those household enterprises using the project's priority 10-15 RETPRLs via local language documentation of guidelines and advice, as well as pilot focused, individual advising.

Elaboration and justification: As for schemes, the decision of Odisha to launch its own "RE for livelihoods scheme" with funding of 50 million Rs per fiscal year for each of two fiscal years shows the strong potential to achieve success on the first outcome. As for the two other outcomes, there is great need for loan funds (and other financial mechanisms) that will support RETPRLs, so that beneficiaries with less financial resources can implement "RE for livelihoods" at the level of 30% subsidy and once subsidies are removed. Assistance in reducing the risk of loan default by household enterprises that take out loans for RETPRLs, in turn, will be greatly needed so that lending institutions will be willing to make the needed RETPRL loans.
Recommendation 10 Action Plan
Who: UNDP, MNRE, SNAs, PMU, SCCs, lending institutions, possibly other government agencies and other donors (foundations, CSR funds), consultants as needed *Main steps and timeline*: (1) Carry out consultations to determine more effective and innovative approach to subsidies for household enterprise RETPRLs. Promote, via high-level consultations, idea of extension of MNRE and Odisha RE for livelihood schemes and establishment of such schemes in Assam and MP that incorporate the selective more innovative subsidy scheme approaches (UNDP, MNRE, SNAs by Jan. 2021). Provide support to the extension and establishment of schemes by preparing draft scheme documents (PMU, SCCs, by Feb. 2021). Adopt schemes and secure funding allocations (MNRE, SNAs, by March 2021). (2) Conduct outreach to lending institutions regarding the potential to provide loans for RETPRLs and conduct outreach to other relevant programs to encourage proponents to support RETPRL replication with their programs (by UNDP, MNRE, PMU, SNAs, SCCs, consultants, by Jan. 2020) and provide liaison support for household enterprises to apply for loans and support from other programs as relevant (by June 2021, consultants). If relevant, conduct outreach to donors for guarantee fund (by Jan. 2021, UNDP, MNRE, SNAs, and donors such as foundations and CSR funds) and provide design of such program (by March 2021, donors). Launch program (by May 2021, donors). (3) Prepare written guidelines and advice (specific to each of the 10-15 priority RETPRLs) on markets, sourcing, quality, and productivity for household enterprises utilizing each of the 10-15 priority RETPRLs and provide one-on-one coaching to household enterprises on the same topics. Conduct outreach to banks to educate them about loan default risk reduction thus achieved (by Jan. 2020, consultants, banks, PMU, SCCs).

VI. Co-Financing Recommendation

Recommendation 11. Approach CSR foundations, such as REC, NTPC, etc., regarding co-financing ACE RE for livelihoods deployment in states in which they are active. This support could extend efforts in India ACE states or extend efforts to the two additional states initially considered but then not included in project design (Jharkhand and Meghalaya).
Elaboration and justification: It is expected these efforts could secure at least another $1 or $2 million for demonstration or scale-up during the project lifetime, if followed up in a timely fashion. More funding for demos or scale-up of the selected 10-15 technologies (Rec 2) fits well with the proposed main aim of massive scale-up (Rec 1).
Recommendation 11 Action Plan
Who: UNDP, MNRE, PMU, and CSR foundations (REC, NTPC, etc.) *Main steps and timeline*: (1) Once plan for follow-up on MTR recommendations is determined, carry out consultations with target foundations, presenting to them the plan and asking for their support to either expand activities in ACE states or extend demos to Jharkhand, Meghalaya or other states where the foundations are active (UNDP, MNRE, PMU, with CSR foundations, by July 15). (2) Provide follow up information as requested by foundations and continue to follow up weekly with foundations until response on their potential participation is received. (July 15 – Sept. 15, UNDP, MNRE, PMU).

VI. Implementation and Communications Recommendations

Recommendation 12. Shift bulk of implementation to faster mechanism: either (1) country office support (where UNDP carries out implementation with agreement of MNRE on various decisions) or (2) subcontracting of project management to capable organization with sector expertise (e.g. SELCO Foundation, Harsha Trust, PRADAN, etc.), which then carries out implementation, while still seeking agreement on decisions from MNRE, which, in either case, would remain the IP.

Elaboration and justification: Because of the heavy load of work from programs much larger than ACE, MNRE appears overloaded. ACE, with a relatively small amount of funding, is low priority within MNRE. As evidence: Neither the Secretary (head of PSC) nor JS (NPD) were available to meet the MTR team. The only project demos on the ground in 3.75 years of implementation are the 6 cold storage units installed in Feb. 2019 via country office support. A range of stakeholders are highly disappointed with the project due to lack of appropriate communications and follow up from decision makers. UNDP country office support would allow the project to move forward much more quickly and would not add much in the way of administrative costs, though MNRE should work with UNDP to ensure that equipment procurement is achieved at best possible prices and good quality. The alternative to country office support would be to outsource the project to a third party for project management. Organizations such as SELCO Foundation or Harsha Trust have specific "RE for livelihoods" expertise and may be willing to carry out the PM function for perhaps just 5% of GEF funds spent or less. This is a very low fee and it might even include not only PM but potentially proposal preparation and then handholding for some or all of the project demos. Were the decision to be made to outsource PM, a competitive bid should be held in a timely fashion.

Recommendation 12 Action Plan

Who: MNRE and UNDP (as well as possible subcontracting project management, "PM," organizations: SELCO Foundation, Harsha Trust, PRADAN, etc.)
Main steps and timeline: (1) Meet to discuss main alternatives for speeding up implementation (a) UNDP country office support or (b) sub-contracting PM to organization with expertise in "RE for livelihoods" (MNRE, UNDP by June 10). (2) To explore outsourcing PM function, meet or hold conference calls with prime candidates (MNRE and UNDP and calls with candidates by June 20). (3) Make final decision on whether to outsource project management or shift to UNDP country office support and proceed accordingly (June 30). (4) If UNDP country office support selected, shift to this approach immediately (e.g. June 30). If outsourcing PM selected, prepare and post RFP, reach out to potential bidders, and select winning organization/ launch contract (by Aug. 15). (5) Whether UNDP country office support or PM outsourcing is selected, MNRE NPC should have a call once per week with UNDP and/or with UNDP and the PM organization for duration of project.

Recommendation 13. Strengthen the PMU (if the country office support option is chosen in Rec. 12) and strengthen the SCCs by adding staff. Improve motivation and flexibility and speed up hiring by shifting all PMU and SCC staff from MNRE to UNDP contracts. Promptly hire an experienced and highly proactive project manager to lead the PMU (if the country office support option is chosen in Rec. 12) -- someone who has the background to engage effectively with MNRE officials and gain their trust and to understand the strategies and approaches of UNDP-GEF projects. Consider hiring a part-time senior advisor to ensure the project is on-track to make real, strategic contributions to scaling up "RE for livelihoods" India (if country office support option chosen). The SCCs should be fully staffed, which means adding a person in each of Odisha and Assam (to the one RE-focused officer already in place in each state) and two persons in Madhya Pradesh. In the end, each SCC should include one officer with a background in RE and one officer with a background in livelihoods/ communities. If in Rec. 6 it is decided that the SRLMs will be the main partner to identify beneficiaries, then this livelihoods officer may sit in the SRLM, but otherwise they should be housed along with the RE officer in the SNA. Depending on needs, a livelihoods officer may also be added to the Delhi based PMU.

Elaboration and justification: The details of this recommendation may vary based on decisions made regarding Rec. 12 and Rec. 6. If outsourcing of the PMU is decided upon (vis-à-vis Rec. 12), then there will be no need to hire a PM, advisor, or livelihoods officer, but SCC staffing may remain relevant. As for Rec. 6, if it is decided that SLRMs will carry out the bulk of livelihoods work (identifying communities, designing proposals, and assisting in implementation), then one SCC livelihoods officer can be based in the SLRM. Based on current information, however, it seems that the project may wish to pursue a range of partners for identifying communities, preparing proposals, and assisting in implementation. These may include equipment suppliers, state-level NGOs, such as FPOs, and even state-level consultants that assist in linking up with POs. As such, it will make more sense for the livelihoods officer to sit in the SNA and carry out liaison with these multiple groups.

Recommendation 13 Action Plan

Who: UNDP, MNRE

Main steps and timeline: (1) Hire PM with UNDP contract (UNDP with MNRE approval – in progress, achieve by June 20). (2) Discuss and make decision of whether to hire part-time senior project advisor and PMU livelihoods officer, both under UNDP contract (UNDP and MNRE by June 15). (3) Hire SCC livelihoods officers for each of Odisha, Assam, and MP, hire SCC RE office for MP, all under UNDP contract (UNDP and SNAs, by July 15). (4) Shift contracts of PMU team, Assam SCC, and Odisha SCC RE officers from MNRE contract to UNDP contract (UNDP, MNRE, by July 1).

Recommendation 14. Revise project framework (mainly outputs and activities) to reflect clarified project aim (Rec. 1) and other decisions taken with regard to these recommendations. Overall, for Component 1, the sole focus should be on designing and implementing the demos/ scale-ups, with no further general studies, workshops, or trainings conducted, except perhaps translation of information on the 10-15 technologies into local language and extension at the district level to specifically promote these 10-15 technologies. Only after and if positive results are achieved with the demos, workshops featuring results may be held towards end of project. Component 2 work should be revised as indicated in Rec. 8. Component 3 and 4 work still needs to be launched, after being revised as indicated in Recs 9 and 10, respectively. Preliminary output revisions are provided in Annex 3. Revise overall plans for overall GEF budget (especially rough amounts for project demos). Preliminary suggestion given in Annex 5. Review and revise project indicators, especially at output level, to reflect revised plans for project. Preliminary suggested revised indicators included in Annex 4. A clear success hurdle for the next six months of the project should be established. The MTR team recommends a six month hurdle including approval of demos that would entail use of the full demo budget allocation and installation of demos accounting for at least half of that amount. In January 2020, if indeed the six month hurdle is met in December 2019, apply for 18 month project extension of project end date from July 23, 2020 to January 23, 2022. If the hurdle is not met, the project should prepare to close in six months on its original end date of July 23, 2020. In the case the hurdle is met, suggested justification for extension is: "Project faced major delays due to both (1) the highly complex nature of stimulating rapid scale-up of economically viable "RE for livelihoods" in India's evolving environment of electrification, subsidy programs, and rapid RE market evolution; and (2) the very heavy workload at MNRE, the IP, whose targets for installation of RE power generation in India were raised from the hundreds of MW to the hundred GW level. Both of these issues have now been addressed through adoption of the MTR recommendations, with (1) a clear strategy for high-impact demos and scale-up via lessons learned in the first 3.75 years of implementation and (2) a shift to UNDP country office support of MNRE [or to outsourced PM], lessening MNRE's load with regard to the project, but allowing it to continue to provide its expert input and lead decision-making. By meeting its six-month post-MTR hurdle, the project has shown that it is now back on track and will be meeting and potentially surpassing GHG ER targets."

Elaboration and justification: The current project framework (outcomes, outputs, activities) was designed in 2014. Now, with the passage of time and lessons learned from the 3.75 years of

implementation, there is a need to revise the outputs/ activities, budget, and indicators. Most stakeholders agree that ACE is a fantastic concept, but has faced extensive problems in implementation. If ACE is able to overcome the problems based on these recommendations and decisions made about them, achieving the proposed six month hurdle, a project extension offers the potential for a very high impact project, bringing livelihood benefits to many and achieving substantial GHG ERs.

Recommendation 14 Action Plan

Who: UNDP CO, UNDP RTA MNRE, PMU
Main steps and timeline: (1) Review suggested changes to outputs, revise and complete the effort, adding specific activities; prepare rough breakdown of remaining budget; review suggestions for indicator revisions and finalize. Agree upon a six month hurdle, achievement of which in Dec. 2019 would allow the project to apply for extension in Jan. 2020 (UNDP CO, UNDP RTA, and MNRE to comment on MTR Teams suggestions and to come to agreement on six-month hurdle, PMU to finalize according to comment by June 20). (2) Once demos are designed and initial payments have been issued, apply to the GEF for 18 month extension, preparing justification (UNDP and PMU, by Jan. 1 2020).

Recommendation 15. Devise and implement a communications strategy (as part of PM) to keep all key players in the loop with regard to project developments and a promotion strategy to promote RE for livelihoods to MNRE, national government, and state governments (as part of Component 3), and the public (as part of Component 1). The communications strategy should include an internal strategy for keeping communications between UNDP, MNRE, SNAs, and SCCs strong. To get the project relaunched, through the rest of June and through July and August, there should be meetings between UNDP and MNRE one time per week at the NPC-programme officer level, with the SNAs conferenced in, and at the NPD-chief of section level one per month. These can later drop to once per month and once per quarter, respectively. The PMU should provide weekly email updates copying UNDP, MNRE SNAs, and SCCs. The PMU should hold joint calls with the SCCs once per week to communicate all developments ongoing through the life of the project. The PMU further should develop a listserv and keep its supplier base and potential partner base (state FPOs, etc.) in the loop on developments, such as the selection of 10-15 priority technologies, etc. The PMU should develop an email update for this listserv be issued once per month. In addition, the PMU should ensure that communications and follow up with all contractors is timely. In particular, there may be some open contracts that are over a year overdue for feedback from the PMU. This should be conducted in a timely fashion so that the contracts can be completed. In terms of promotion, the strategy should find an effective way of catching the attention of government officials with regard to the "RE for livelihoods" concept and achievements of the project (once these are available). While different organizations will be targeted, the most important target will be MNRE itself, so that the profile of the "RE for livelihoods" concept can be raised within the ministry. As for promotion to the public, the project may support translation into local languages of information on the 10-15 selected "RE for livelihoods" technologies and promotion meets at the district level, such as through agricultural extension centers.

Elaboration and justification: During the MTR mission, it became apparent that communication between the center and the states, as well as in some cases between the center and contractors, has been incredibly weak. Much confusion has been ensued. An organized program of internal communications is needed to alleviate this problem. Further, the more extended group of stakeholders should be informed of various decisions taken by the project. This will ensure that proposals reflect the decisions made and that more stakeholders participate in the proposal process. In terms of promotion, the project particularly needs to raise its profile at MNRE. Top leaders may not be very positive about the project due to its lack of progress, even though this lack of progress may relate to decisions made within the ministry. Given the nation's emphasis on livelihoods, there is good potential to raise the profile of the project in the ministry with a strategic promotion strategy. Dissemination of local language information

and holding of meets on the selected 10-15 "RE for livelihood" technologies at the district level could supplement the demos and scale-ups towards the aim of achieving replication on a larger scale.
Recommendation 15 Action Plan
Who: UNDP, MNRE, PMU, SNAs, SCCs and, possibly, consultant and/or contractor (e.g. OUAT in Assam) *Main steps and timeline*: (1) Prepare draft communications strategy and revise/ approve (PMU to draft and UNDP, MNRE to approve by June 15). (2) Implement communications strategy (UNDP, MNRE, PMU, SNAs, SCCs, ongoing, with, in addition to meetings/ calls, PMU preparing weekly email updates for UNDP, MNRE, SNAs, and SCCs and monthly email update for broader group). (3) Prepare draft government promotion strategy and revise/ approve (PMU or consultant to draft with input from SCCs by Aug 1). (4) Implement promotion strategy (PMU, SCCs, possibly with consultant, ongoing). (5) Consider and if desired, prepare plan for district level promotion strategy in the states (e.g. translation of info on 10-15 technologies into local language and promotion of these technologies at district level extension centers) (UNDP, MNRE, PMU, SNA, SCC to decide for each state and PMU to prepare TOR by Sept. 2020, work to be completed by contractors, such as OUAT in Assam, by Sept. 2021).

Annex 1. Mid-Term Review Mission and Other Consultations – Realized Schedule

Consultation Segments
Pre-Mission: February 27 and March 15
Mission: April 1 - 12, 2019
Post-Mission: May 2 and May 3, 2019

Consultations

1. Pre-Mission (both via Skype): February 27 and March 15, 2019

Date	Name, Role, and Organization
Feb. 27, 2019	1. Mr. Saba Kalam, UNDP India CO responsible Programme Officer, and Mr. Sunil Shekher, Acting Project Officer of *India ACE* Project (based in UNDP) (*together*)
March 15, 2019	2. Mr. Ishan Mouli Paliwal, Project Technical Officer, *India ACE* Project PMU (based in MNRE)

2. Mission in India: April 1 - 12, 2019

Mon., April 1 Delhi
3. Acting Project Manager *India ACE*: Mr. Sunil Shekher (based in UNDP CO) 4. UNDP CO Programme Officer: Mr. Saba Kalam, responsible for *India ACE* 5. National Project Coordinator (NPC): Mr. J.K. Jethani, Director/ Scientist "E", MNRE 6. Project Technical Officer *India ACE*: Mr. Ishan Mouli Paliwal (based in MNRE) 7. Consultant to India ACE preparing MP proposals: Mr. Prodyut Mukherjee, Partner, En-genuity
Tues., April 2 Delhi (evening travel to Guwahati, Assam)
8. Former UNDP CO Programme Officer: Dr. Srinivas Shroff Nagesha Rao, CEO, REC Foundation (responsible for *India ACE* during design and early implementation stage) Other: Meeting with Project Technical Officer Ishan Mouli Paliwal of *India ACE* to discuss outstanding meetings
Wed., April 3 Guwahati and Assam Field Trip
9. AEDA Director: Mr. Mrinal Krishna Chaudhury, Additional Director i/c 10. Aaranyak (A Society for Biodiversity Conservation in Northeast India): Dr. Bibhuti P. Lahkar, Manas Landscape Administrator and Programme Secretary 11. Milk Cooperatives Founder: Mr. Pankaj Kuma Das, also Senior Manager, Union Bank of India 12. Assam State Coordination Cell (SCC) for *India ACE*: Mr. Hemeng Deka 13. Field Trip to Solar Cold Storage: Site visit and interviews with president and members of FPO
Thurs., April 4 Guwuhati (evening travel to Bhopal, Madhya Pradesh)
14. Assam State Rural Livelihood Mission day-to-day contact for ACE: Mr. Dhruba Jyoti Gugoi, responsible for livelihoods and marketing 15. Assam State Rural Livelihood Mission Director: Ms. Nandita Hazarika
Fri., April 5 Bhopal, Madhya Pradesh (evening travel to Delhi)
16. Madhya Pradesh State Renewable Energy Nodal Agency, MPUVNL: Mr. Anup Kumar Garg, responsible for *India ACE* and Vice Director at MPUVNL 17. MPSRLM 1: Dr. Mahesh Bawankar, State Project Manager (SPM) 18. MPSRLM 2: Mr. Raman Wadhwa, Deputy CEO, Mr. Manish Singh, SPM, Dr. Mahesh Bawankar, SPM

Sun., April 7 Delhi
19. UNDP Design Phase Team: Ms. Chitra Narayanswamy, former UNDP Programme staff during *India ACE* Design Phase 20. Regional Technical Advisor (RTA), UNDP-GEF Asia-Pacific Regional Hub: Dr. Usha Rao
Mon., April 8 Bhubaneswar, Odisha (morning travel to Bubaneswar)
21. OREDA: Mr. A.K. Choudhury, Deputy Technical Director, formerly OREDA person in charge if India ACE and currently in charge of OREDA livelihoods scheme; and Mr. M P Komer, Director in charge of *India ACE* and of RE pump programs 22. Project State Coordination Cell for *India ACE*: Mr. Arupananda Pattanaik, Technical Officer 23. OSLRM: Dr. Babita Mahapatra, Additional CEO (Operations) and colleague responsible for nutrition and cooperation with ACE on solar cold storage 24. Udyama (a CLIA with sanctioned project under ACE): Mr. Pradeep Mohapatra, Team Leader 25. OREDA: Additional meeting with Mr. Mr. A.K. Choudhury, Director formerly in charge of ACE and now in charge of OREDA livelihoods scheme along with SCC Technical Officer, Mr. Arupananda Pattanaik 26. Metecno India Pvt. Ltd. (maker of cold storage materials): Mr. R. Vivekanandan and colleagues
Tues., April 9 Bhubaneswar (night travel to Delhi)
27. International Expert preparing *India ACE* ProDoc: Mr. Frank Pool, Clean Energy Consultant (via Skype) 28. Odisha University of Agricultural Technology (OUAT): Dr. Mahendra Kuma Mohanty, Department of Farm Machinery and Power and colleague, both team members preparing updated project compendium of RETPRLs for *India ACE* 29. OREDA: Additional brief meeting with Mr. A.K Choudhury, Director formerly in charge of ACE and now in charge of OREDA livelihoods scheme 30. Odisha State Coordinating Cell: former Technical Officer, Ms. Sujati Das and current Technical Officer, Mr. Pattanaik 31. Onergy Solar (a CLIA with sanctioned project under ACE): Mr. Nimal Chandra Mohanty, General Manager 32. Harsha Trust (a CLIA with sanctioned project under ACE): Mr. Gautam K. Pradhan, Coordinator (Programme) 33. SOURABHA (a CLIA with sanctioned project under ACE): Mr. Manoj Kumar Das
Wed., April 10 Delhi
34. UNDP India Section Chief: Dr. Preeti Soni, Chief, Climate Change, Resilience, and Energy, UNDP India (with Mr. Sunil Shekhar, Acting Project Manager of *India ACE*) Acting Project Manager, India ACE Project) 35. IPE Global (preparing updated assessment of livelihood market needs for energy for *India ACE*): Mr. Amit Jain, Vice President, Corporate, and Mr. Himanshu Arora, Assistant Manager, Central Business Development 36. Villgrow (carrying out supply chain development work for *India ACE*): responsible person (Anand) 37. National Expert leading detailed design of I*ndia ACE:* Dr. Sameer Maithel, Director, Greentech Knowledge Solutions 38. Former NPC of *India ACE*: Dr. V.K. Jain, lead MNRE liaison during project design and first NPC of *India ACE*, now retired from MNRE and consulting on renewable energy
Thurs., April 11 Delhi
39. Project Technical Officer, *India ACE*: Mr. Ishan Mouli Paliwal (based in MNRE), second content-oriented meeting 40. MNRE Scientists supporting *India ACE* Project: Mr. Shobit Srivastava, Scientist-C MNRE, formerly supporting *India ACE* and Dr. Preeti Kaur, Scienetist-D, MNRE, currently supporting *India ACE*

41. NISE (prepares specifications for MNRE): Mr. Sanjay Kumar, Deputy Director General (led development of technical specifications for 0.1 HP solar pump)
Fri., April 12 Delhi
42. MTR Debrief: Dr. Preeti Soni, Chief, Climate Change, Resilience, and Energy, UNDP India, and Mr. Saba Kalam, Programme Officer responsible for India ACE, UNDP India, Mr. Sunil Shekher, acting Project Manager, *India ACE*, Mr. Ishan Mouli Paliwal, Project Technical Officer, *India ACE*

3. Post-Mission (both via Skype): May 2 and May 3, 2019

Date	Name, Role, and Organization
May 2, 2019	43. Expert carrying out analysis for *India ACE* on solar pumps for vegetable growers in Assam and Odisha: Mr. Thomas Pullenkav (also SELCO Foundation Board Member)
May 3, 2019	44. Futurepump (sub-HP solar pump manufacturer), Mr. Jitendra Lakhani, Head, India Operations

Annex 2. Documents Reviewed

Documents provided by UNDP CO on Sept. 24, 2019
1. ProDoc

Documents provided by UNDP CO on Feb. 7, 2019:
1. Annual Work Plans: 2015, 2016, 2017
2. Face Forms: Q1 2018, Q2 018, Q3 2018, Q4 2018
3. PIF Stage Documents: PIF, PPG Request, GEF Review Sheet, STAP Review, Council Notification Letter, Council Notification Letter
4. PIR: 2017, 2018
5. PEC Meeting Minutes: (1) 1st meeting – Aug. 7, 2015; (2) 2nd meeting - Nov. 24, 2015; (3) 3rd meeting – April 13, 2016; (4) 4th meeting - Aug. 12, 2016; (5) 5th meeting - Oct. 10, 2016; (6) 6th meeting - June 30, 2017
6. PSC Meetings: (1) Minutes for first meeting held May 13, 2015; (2) Invitation for Oct. 2017 meeting with April 2015 memorandum on constitution of PSC attached.
7. QPR: 2015 - Q1, Q2, Q3, Q4; 2016 – Q1, Q2, Q3, Q4; 2017 - Q1, Q2, Q3; 2018 – Q1, Q2, Q3, Q4
8. APR: 2015, 2016, 2017, 2018
9. Implementation and Monitoring Stage Quality Assurance Report
10.

Documents retrieved via online search:
1. Sept. 11, 2018 RFP for Technology Revalidation
2. Government Approves Scale Up of Access to Clean Energy Program by Saumy Prateek at Mercom India website (Renewable Energy News and Insights), Aug. 10, 2018
3. June 14, 2016 RFP from MNRE for Rural Entrepreneurs for Establishing Infrastructure for Assembling, Supplying, After-sales Servicing and Training of Technicians/ Operators of off-grid Renewable Energy Systems or Devices in Identified Districts of the state of Assam, Odisha and Madhya Pradesh.
4. Aug. 7, 2018: Subject: Administrative Approval of "Scale Up of Access to Clean Energy Scheme" for the period FY 2018-19 and FY 2019-20 (13 pages)
5. Sept. 3, 2015 RFP: Request for Proposals for Implementation of Pilot Projects on Renewable Energy for Rural Livelihoods in Identified Districts of the state of Assam, Madhya Pradesh and Odisha under MNRE - UNDP/GEF Project on “Scale Up of Access to Clean Energy for Rural Productive Uses”.
6. 2015 AWP with attached documents such as RFPs (totally 37 pages)

Documents provided during April 2019 mission:

<u>Set 1</u>
1. *Status of Supply and Service Providers for Powering Livelihoods using Renewable Energy in Assam, Madhya Pradesh, and Odisha*, 26-page consultancy report prepared by Villgrow

<u>Set 2</u>
1. Project Brief (informal document with no title)
2. *Administrative Approval of "Scale Up of Access to Clean Energy Scheme" for the period FY 2018-19 and FY 2019-20*, 2, August 7, 2018

3. *Operational Guidelines for Implementation of Scale-Up of Access to Clean Energy Scheme* (Annex to above Administrative Approval document), Aug. 7, 2018.
4. *F. 101/10/2016/PMU/ACE Benchmark Costs of Renewable Energy Systems to be Installed under the MNRE-UNDP/GEF Project on "Scale Up of Access to Clean Energy for Rural Productive Uses,"* MNRE PMU, Oct. 2019 (4 pages)
5. MNRE Categories with Benchmark Costs and Specifications (informal Excel document)
6. Office Memorandum with Subject "Determination of benchmark costs of Sub-One HP Solar Pumps under Scale-Up of Access to Clean Energy Scheme," Jan. 15, 2019 (1 page)
7. *Minutes of Meeting of Benchmark Cost Committee on Finalization of Benchmark Costs of Sub 1 HP Solar Pumps held on 18.01.2019-Regarding*, Feb. 1, 2019 (5 pages, of which 3 are annex)
8. ACE Annual Work Plan 2017
9. ACE Annual Work Plan 2016
10. ACE Annual Work Plan 2015
11. Information on assignment to develop benchmark costs, specifications, and testing methods, Sept. 2017 (12 pages)
12. Letter from MNRE to NISE requesting information on three RE technology systems developed by NISE: (i) solar drier/ space heater, (ii) solar cold storage (8 ton, 5 kW panels), (iii) solar powered bulk milk chiller (1000 liters per day, 5 kW panels), Feb. 2019.
13. NISE Developed Technical Specifications. Informal Document (undated, but likely shared with MNRE Feb. 2019, has descriptions/ specification of solar cold storage and solar drier, 4 pages)
14. MNRE Draft Performance Specifications Solar Powered Cold Storage with Thermal Storage System For Cold Storage Capacity of 5 MT 2018-2019, provided by NISE, March 2019 (7 pages).
15. MNRE Draft Performance Specifications Solar Drier 2018-2019, provided by NISE, March 2019 (7 pages).
16. MNRE Draft Specifications of 0.1 HP Pump 2018-2019, provided by NISE, Sept. 2018.
17. Notes from meeting with CLIAs July 13, 2016 (3 pages)
18. *ACE Inception Workshop Report held on July 13, 2016* (24 pages of which 14 are non-annex)
19. Details of CLIAs for Assam (14), Odisha (15), and Madhya Pradesh (11) (Excel document)
20. List of Shortlisted Projects for Assam (23), Odisha (21), and Madhya Pradesh (25)
21. Meeting notes – MNRE Meeting on State Proposals (with SNAs and SRLMs in attendance), Sept. 12, 2018 (5 pages, of which 2 are non-annex)
22. Meeting notes – MNRE Meeting on State Proposals (with a few from the states attended), Aug. 10, 2018 (5 pages, of which 2 are non-annex)
23. Meeting notes – June 19, 2017 – MNRE meeting to review 2017 work plan (3 pages, 2 non-annex)
24. Meeting notes – July 18, 2018 – MNRE meeting to discuss to discuss MNRE ACE scheme (3 pages, 2 non-annex)
24. Meeting notes – Aug. 2, 2018 – MNRE meeting to discuss MNRE ACE scheme (4 pages, 2 non-annx)
25. Meeting notes – Oct. 8, 2015 – MNRE meeting with stakeholders (1 page)
26. Meeting notes – Feb. 3-4, 2016 – annual work plan meeting in Bhubaneswar
27. Meeting notes – Dec. 16, 2016 – Rural Entrepreneurial Hubs/ Supply Chain – Bhubaneswar (5 pages)
28. Various documents (e.g. presentation, meeting notes, etc.) for Sept. 9, 2016 Clinic Workshop in Bhubaneswar
29. Project Guidelines for Holding Awareness and Training Workshops, July 31, 2015
30. 7th PEC Notes: July 10, 2018

<u>Set 3</u>

1. OREDA CEO letter to PMU Oct. 20, 2016 on Project Feasibility Report of Chilika Development Authority (re fisherman livelihood project)
2. *Project Feasibility Report: Enhancement of Livelihood for Fishermen Communities around Chilika Lagoon* (31 pages, 23 of which are non-annex, 2016)
3. *Project Feasibility Report: Small Solar Pumps for Enhanced Livelihood of Vegetable Growers* Odisha Agriculture and Farmers' Empowerment Department (197 pages, 13 of which are non-annex, 2016)
4. *Proposal for Mapping Rural Livelihoods- Renewable Energy Best Fits*, OREDA (6 pages, 2015)
5. *Plan for Clinic Workshop, Sept. 9-10, 2016*, (Excel file on meetings with NGOs and compendium preparer)
6. MNRE Sanction Letters for the following CLIA projects: Harsha I (with annexes, letter dated Nov. 25, 2016), Harsha II (with annexes, letter dated Nov. 25, 2016), Udyama I (with annexes, letter dated Nov. 24, 2016), Udyama II (with annexes, letter dated Nov. 24, 2016), Udyama II (with annexes, letter dated Nov. 24, 2016), PACT (with annexes, letter dated Nov. 25, 2016), SPAR (with annexes, letter dated Nov. 25, 2016), SWAD (with annexes, letter dated Nov. 25, 2016)
7. MNRE Letter to OREDA CEO regarding Project Sanctions (Oct. 8, 2016)

Documents provided after April 2019 mission:
1. CDRs for 2015, 2016, 2017, and 2018
2. Draft Project Proposal for MP *Solar Powered Lift Irrigation Programme* (12 pages March, 2019)
3. Draft Project Proposal for MP *Solar Powered Cold Storage Programme* (12 pages March, 2019)
4. Draft Project Proposal for MP *Solar Powered NTFP Collection Centres* (9 pages March, 2019)
5. Future Pump *Project Catalogue* (3 pages, 2017)
6. *Revalidation of Renewable Energy Technology Packages and Rural Livelihood Sectors under the India ACE Project*, IPE Global

Annex 3. Preliminary Suggestions for Output Revisions and Activities

The first part of this annex, in the format of a table, shows preliminary suggestions for revision of the project outputs. These suggestions are meant as a basis for discussion of how the project outputs can be revised both to better reflect the current direction of the project (as it has changed since project design) and to reflect the mid-term review recommendations. In the second part of this annex, below the outputs table and in open text format (no table), the outputs (both existing and new) are shown again, this time along with preliminary suggestions for the project activities going forward. Both of the two parts of the annex use color coding of text, so that newly suggested content or revised content can be distinguished from text representing the project design of the ProDoc and CER. To simplify, however, in the case of the activities, the original text is not included. While they certainly overlap with the original activities, all activities have been drafted from scratch to achieve maximal fit with the revised outputs. They are provided in blue font. This annex also proposes the deletion of one outcome. As deletion of outcomes is typically discouraged and said to require approval from the GEF, this is a matter that should be discussed with the RTA.

Part 1. Proposed Adjustments to Outputs

Note: Proposed adjustment to outputs are shown in red (suggested additions) and strikethrough (suggested deletions).

Outcomes	Outputs
Component 1. Demo and Replication	
1. Deployment of RE-rural livelihood application packages	1.1 ~~At least t~~ Ten to 15 ~~(10)~~ cost-effective RE technology packages ~~developed~~ for rural livelihood (RETPRL) applications (that meet "massive scale-up criteria") selected for project demos and designated as priorities for scale-up with MNRE "RE for livelihoods" scheme 1.2 Interim (as needed) and (eventually) official benchmark prices and ~~established~~ technical specifications for the 10 to 15 selected RETPRLs 1.3 Proposals for economically viable RETPRL demos with beneficiaries meeting viability criteria and RETPRLs, as a set, cutting across the 10 to 15 selected ones (or at least 6 to 8 per state) 1.~~2~~4 Demonstrated and documented RE-rural livelihood application packages of the 10 to 15 selected types (or at least 6 to 8 per state) in at least 15 clusters in the 3 project states and benefitting at least 1,500 household enterprises ~~1.3 Completed training programmes and training of trainers activities for replication and scale up of RE – rural livelihood application packages~~ 1.~~4~~5 Completed promotion of the 10 to 15 selected RETPRLs via translation of descriptions into local language and via dissemination events at district-level extension centers 1.6 Replicated and documented RE-rural livelihood application packages ~~to other districts /~~ in the three project states via MNRE "RE for livelihoods" scheme and ~~applied to~~ benefitting at least 28,500 household enterprises
Component 2. Supply Chain	
2. Increased supply of RE technology and service providers for rural livelihood applications	2.1 One hundred identified manufacturers, distributors, and (current or potential) service providers (in aggregate) for the 10 to 15 selected RETPRLs 2.~~1~~2 Assistance of at least 30 of the 100 identified RE technology supply and service providers for the 10 to 15 selected rural livelihoods applications in connecting directly with suitable communities to develop

	economically viable demo proposals and MNRE "RE for livelihoods" scheme scale-up proposals 2.3 Assistance of at least 30 local service providers in mastering some of the 10 to 15 selected RETPRLs and setting up businesses to carry out distribution, installation, and/or servicing of these RETPRLs 2.4 Targeted sourcing and/or bulk purchase to substantially reduce the price of certain of the 10 to 15 selected RETPRLs as needed to achieve economic viability
Component 3. Policy	
Outcome 3.1: Inclusion of RE applications in national and state level rural livelihoods policies for key livelihood sectors in rural areas	3.1.1 National and state level rural livelihoods mission (or MORD/ DRD) statements / documents / policies emphasizing the use of RE 3.1.2 National and state level policies that support the use of RE for key rural livelihoods sectors, such as agriculture/ horticulture, animal husbandry, and fishing ~~3.1.3 Documented experiences and lessons on RE applications for rural livelihoods at suitable regional and international for a~~
3.2. Future MNRE programs also cater to actions towards enhanced RE utilization in rural livelihoods	3.2.1 Inclusion of ~~Developed MNRE -supported programme for enhanced~~ RE utilization in rural livelihoods in MNRE's mandate for its long-term work program 3.2.2 Inclusion of "RE for livelihoods" in Odisha, Assam, and MP RE SNAs' mandates for their long-term work program
3.3 ~~Improved~~ Preferential tax and import tariff incentives for RETPRL suppliers ~~and grid interconnection regulations for decentralized RE~~ *Note: Revision will depend on whether PV mini-grids are selected as one of the 10-15 RETPRLs. If they are, no revision necessary*	~~3.3.1 Completed roadmap and workshops for supporting improved tariff structures for small scale captive and off-grid RE~~ ~~3.3.2 Developed and implemented regulatory, technical and tariff guidelines for RE based captive/decentralized systems' grid interconnection~~ 3.3.1 Proposed and promoted preferential tax and import tariff incentives for RETPRL suppliers *Note: Revision will depend on whether PV mini-grids are selected as one of the 10-15 RETPRLs. If they are, no revision necessary for the second output, though the first one may be revised to focus on roadmap still, but not workshops*
Component 4. Financing	
4.1 Improved decentralized RE subsidies and support for rural livelihoods	4.1.1 Assessed RE subsidy and support models for increased effectiveness of RETPRL schemes ~~decentralized RE~~ 4.1.2 Improved RE subsidy and support models for increased effectiveness of ~~decentralized RE for rural livelihoods funding~~ RETPRL schemes adopted at both national and state levels
4.2 Enhanced provision of financial support for decentralized RE in rural livelihood applications	4.2.1: ~~Implemented f~~ Financial support-packages of different types, such as loans and funding from other programs, are secured to support ~~for~~ RE technology-rural livelihood applications ~~4.2.2: Pooled available financial resources for supporting viable livelihood business models and enhanced market linkages~~
4.3 Improved investment risk mitigation for decentralized RE in rural livelihood applications	4.3.1: Enhanced risk mitigation mechanisms via business development support in identifying markets, sources of supplies, and measures for enhanced quality and productivity ~~designed and supported that provides guarantees~~ for the project's key 10-15 selected RE ~~enterprises and RE technology adopters / end users in~~ for rural livelihood~~s~~ applications

Part 2. Suggestions for Additions/ Adjustments to Project Activities

Note: All outcomes and outputs are shown. As above, any proposed revisions to outputs are in red font (for additions) or black font with strikethrough (for deletions). Activities are included in blue and are all those recommended for the project going forward or those completed or in progress that are considered crucial to achievement of the outputs in their revised form. (For those that have been completed or are in progress, indication of status is given in a note in italics after the statement of the activity.)

Objective: Enhancing reliable and affordable clean energy access for rural livelihoods in un-served and underserved areas

Component 1: Demo and Replication

Outcome 1: Deployment of RE-rural livelihood application packages

Output 1.1: ~~At least t~~ Ten to 15 ~~(10)~~ cost-effective RE technology packages ~~developed~~ for rural livelihood (RETPRL) applications (that meet "massive scale-up criteria") selected for project demos and designated as priorities for scale-up with MNRE "RE for livelihoods" scheme

Activity 1.1.1: Assess, select, and agree upon the 4 to 6 rural livelihood value chains that have the greatest level of activity across the three demo states and will thus be the focus of the project's RETPRLs. Likely value chains to include are (i) agriculture/ horticulture, (ii) fishing/ fisheries, (iii) dairy, and (iv) poultry. Possible value chains to include are (v) textiles and (vi) NTFPs. Assessment and decision to be made in consultation with the three demo states.

Activity 1.1.2: Prepare brief in-house analysis of the impact of grid rollout at present and over next five years on the types of RETPRLs that will be economically viable/ attractive. Analysis will provide best guess on level of grid access, grid reliability, and expected level of power available at present and over next five years in less served areas. It will identify types/ categories of RETPRLs that will continue to be attractive despite grid rollout and types of situations in which other types/categories (not typically attractive in areas well-served by the grid) will still be attractive. Categories and situations may include: (i) non-electricity applications, (ii) applications that are far from home/building and are likely to continue to lack grid access, (iii) applications that require power level beyond what grid is expected to provide next five years, (iv) situations where grid reliability is poor and expected to continue to be poor enough next five years to make RETPRL economically superior choice, and (v) situations/ applications where off-grid is cheaper than on-grid.

Activity 1.1.3: Select 10 to 15 RE for livelihood technology applications that best meet required criteria. These will be the set of RETPRLs to be demonstrated by the demos and replicated by the scale-ups. The criteria for selection are: (i) RETPRL is part of value chain for key livelihood (see *Activity 1.1.1*). (ii) RETPRL has highest potential for scale-up (among options). (iii) RETPRL has strong livelihood benefits. (iv) RETPRL has strong GHG ER benefits. (v) RETPRL can achieve economic viability without subsidy in a few years. (vi) RETPRL is not already wide-spread. (vii) RETPRL is not supported substantially by other schemes. (viii) In light of grid expansion to date and expected next five years, RETPRL still has strong potential for scale-up. (ix) RETPRL is used directly by beneficiaries in livelihood related production activities (pure net metering or pure electricity sales projects do not qualify). (*Note: An initial shortlist of RETPRLs was provided in the ProDoc, though not all of the above criteria were used and about five years have elapsed since it was prepared. Thus, the assessment should be done from scratch, although the technologies in the original list can be among those considered for the new shortlist.*)

Activity 1.1.4: Determine designated VGF (variable grant fund) proportion to support the demos for each of the 10 to 15 different selected RETPRLs. For the demos, there will be a base subsidy of 30% of demo cost. A VGF supplement of 0% to 35% will also be provided for the demos (but not for scale-ups). The level of VGF (as a percent of total costs) will be determined for each of the 10 to 15 different RETPRLs based on economic analysis and analysis of needed stimulation for uptake.

Activity 1.1.5: Support MNRE in determining, for each of the 10 to 15 selected RETPRLs, whether its "RE for livelihoods" scheme provision of 30% subsidy will be based on the full cost of the RETPRL or only on the cost of its RE components. For the demos, if official and up-to-date benchmark costs and specifications are available, MNRE scheme may provide this 30% of the full cost or of the RE cost only. Then, the GEF funds will be used for the VGF and, in any cases where the scheme covers 30% of RE cost only, GEF funds will also cover 30% of the rest of costs as well. (In cases where official and up-to-date benchmark costs and specifications are not available, GEF funds will cover both the VGF and the full subsidy of 30% of total demo cost.)

Activity 1.1.6: Ensure that key stakeholders are aware of the list of 10 to 15 selected RETPRLs and that the project demos and scale-ups are required to focus on these technologies only. Further, ensure that stakeholders are aware: (a) vis-à-vis the demos of the subsidy level (30% of total costs) and of the VGF level (specific to each of the 10 to 15 technologies) and (b) vis-à-vis the scale-ups that only the 30% subsidy will be provided and that it will be subject to MNRE policy for each technology with regard to covering 30% of full costs or 30% of RE costs only. Key stakeholders to be informed of these matters include the SNAs, who should also be informed of the required distribution (budget-wise) of the demos across the 10 to 15 technologies (or a minimum of 6 to 8 per state). They will also include the supply chain contractor and compendium preparer, who will shift focus of their work to these 10 to 15 technologies and suppliers of them. And, they will include all those who may be involved in preparing concepts and detailed proposals for project demos and scale-ups.

Activity 1.1.7: Consult with organizations innovating in the "RE for livelihoods" space about the development of new "RE for livelihoods" applications that have potential for massive scale-up. Such organizations may include SELCO Foundation, OUAT, IITs, and/or other institutes/ universities. Seek agreement on specific technologies (3 to 4 in total) to be developed, for which the project will provide funds for demonstration.

Output 1.2: Interim (as needed) and (eventually) official benchmark prices and ~~established~~ technical specifications for the 10 to 15 selected RETPRLs

Activity 1.2.1: Prepare table showing status of benchmark prices and specifications for each of the 10 to 15 selected RETPRLs. Table will show whether officially approved and up-to-date benchmark prices and specifications ("BP&Ss") are available for each RETPRL. If they are not available, table will also show if any interim alternatives are already available, such as (i) previous official BP&Ss that are considered outdated, (ii) NISE prepared specifications and ideal prices (not yet approved), and (iii) price discovery via previous tender. (*Note: Specifications and ideal prices for a number of RETPRLs were prepared by NISE and approved by MNRE as a part of earlier work for this project.*)

Activity 1.2.2: Referring to table prepared for Activity 1.2.1, determine and implement interim plan (for demo phase) for benchmark prices and specifications for those of the 10 to 15 technologies that do not yet have up-to-date BP&Ss. The interim plan preparation work will consider the following six options: (i) previous official BP&Ss that are considered outdated, (ii) NISE prepared specifications and ideal prices (not yet approved), (iii) price discovery via previous tender, (iv) new price discovery via demo tender, and (v) hiring of consultant to do market assessment to determine interim benchmark price and/or technical assessment to determine interim specifications. Once the appropriate option or options are

chosen for each of the 10 to 15 technologies needing interim BP&Ss, any work needed (e.g. as in options (iv) or (v)) should be carried out.

Activity 1.2.3: Prepare single document with the interim BP&Ss (when needed) along with the official up-to-date BP&Ss (when available) covering all of the 10 to 15 selected technologies. Provide this document to key stakeholders that will be involved in the project demos: SNAs, manufacturers-suppliers-service providers, and demo concept and proposal preparers.

Activity 1.2.4: For those of the 10 to 15 selected technologies lacking official, up-to-date BP&Ss, launch and complete process to secure official, up-to-date BP&Ss within six months. Once finalized, prepare a document providing the official, up-to-date BP&Ss for each of the 10 to 15 selected RETPRLs. Provide this document to stakeholders that will be involved in the MNRE scheme-supported scale-ups: SNAs, manufacturers-suppliers-service providers, and scale-up concept and proposal preparers.

Output 1.3: Proposals for economically viable RETPRL demos with beneficiaries meeting viability criteria and RETPRLs, as a set, cutting across the 10 to 15 selected ones (or at least 6 to 8 per state)

Activity 1.3.1: Determine and draft brief description of strategy for target beneficiary selection that ensures economically viable replication of demos in groups with similar characteristics, at first with only 30% subsidy and later with no subsidy. Preliminary criteria for beneficiaries (as groups, such as producer organizations, or as individuals) include: (i) Already carrying out livelihood activity (or at least carrying out critically related parts of value chain), rather than newly adopting it. (ii) Able and willing to pay and plan to pay at least 35% of cost of demo if not more. (Projects/ beneficiaries where other sources contribute to the point that demo is 100% grant funded should be avoided.) (iii) Has financial strength or access to resources to purchase equipment at full price. (iv) Has several-year financial track record. Ideal target groups may be FPOs and other POs with strong financial situation and several-year track record. Discuss with SNAs if indeed enough qualifying target groups exist (or perhaps could exist with loan support) to facilitate massive scale-up. Prepare preliminary list of suitable beneficiary groups in each state.

Activity 1.3.2: Determine (a) suitable partners for beneficiary identification and facilitation and (b) suitable partners/ parties for proposal preparation. Also, determine (c) whether payment is needed for each and, if so, what terms will be.

- For (a), consider best partners to help identify and work with beneficiaries with characteristics as determined in Activity 1.3.1, such as financially strong producer organizations (POs). Prepare brief written summary of strategy for this type of partner. Partners to be considered are (i) SRLMs[2], (ii) NGOs that emphasize economically viable approaches over subsidies (e.g. Harsha Trust, PRADAN, SELCO Foundation), and (iii) RETPRL suppliers (who could directly discover suitable beneficiaries via Villgrow supply chain work, in which such parties will be identified and supported in doing business). Other alternatives are that (iv) SNAs get in direct contact with strong FPOs and other POs (which may then develop proposals in conjunction with the SNAs and then later handle facilitation of the demos themselves); and (v) SNAs hire consultants to identify (preparing a list with contact information) and link SNA with a strong group of POs (some of which may, after discussions, decide to develop proposals in conjunction with the SNAs and then later handle facilitation of demos themselves).
- For (b), consider best partners / parties to prepare demo (and eventually scale-up) proposals, weighing both capabilities and cost effectiveness. Prepare brief written summary of strategy for this type of

[2] SRLMs focus on BPL groups, so may not be the appropriate partner unless they also have strong links with many financially strong POs across the state.

partner or party. Partners/ parties to consider include: (i) NGO partner (with examples as above), (ii) RETPRL supplier, (iii) SNA, (iv) SLRM. Alternatively, there may be a need to hire (v) a consultant.

- For (c), agree upon and prepare a brief written summary of strategy for payment (if any) of partners for beneficiary identification/facilitation for the demos and of partners/ parties to prepare proposals. Target to keep the allocation (if any) for beneficiary identification/ facilitation low. Partners may be willing to do this for "free" (e.g. in case of suppliers or local NGO, such as FPO, or other NGO that already has funding) or relatively low price (=<5% of subsidy/grant amount). Relatedly, clarify the 3% "service fee" associated with the MNRE scheme, including the following aspects: (i) Determine whether or not the 3% service fee (which has been confirmed to be provided along with scheme funding) will be provided for demos (or part of demos) funded with GEF funds. (2) Further, for cases in which this fee is provided, determine whether SNA will share the fee with other parties (such as SRLM or other partner) if they are involved in demo/scale-up design and/or implementation. If it will be shared, determine the proportion share that will go to each party.

Activity 1.3.3: Inform each of the three partner SNAs of total GEF budget available for demos in their state and ask that they oversee the demo preparation process so that it will fully utilize these funds. Remind the states that these funds should be utilized for demos of the 10 to 15 specified RETPRLs and that a good mix of at least 6 to 8 of these, if not more, should be represented in the mix.

Activity 1.3.4: Agree on which demo concepts should be developed into detailed proposals and prepare demo proposals. These concepts/proposals in aggregate should be suitable to the total demo budget for each state and be rationally distributed among the 10 to 15 specified RETPRLs, or at minimum among 6 to 8 of these per state. Once the demo concept is agreed upon, prepare a high quality proposal that includes economic assessment, showing economic viability of the project, viability of the beneficiary, and how the proposals still makes sense in terms of grid extension situation at present and expected over the next five years. (*Note: Some proposals have already been prepared by the SNAs. These may be revisited to see if they are relevant once the 10 to 15 RETPRLs meeting the required criteria are selected and beneficiary viability criteria are applied. It is likely, however, that most existing proposals will not meet either the RETPRL criteria or the beneficiary criteria. For any that still qualify, the total cost should be considered to see whether it is appropriate to the aim of spreading the GEF demo funds across the 10 to 15 selected RETPRLs, or, at minimum, 6 to 8 of these.*

Activity 1.3.5: Finalize proposals based on any feedback (to be handled by proposal preparers) and sanction demo projects (to be handled by ACE team and, if scheme funds will be used, MNRE scheme team).

Activity 1.3.6: Later in the project (assuming funds are allocated for this activity), prepare concepts, proposals (once concepts agreed upon), finalize proposals, and sanction proposals for the 3 to 4 innovative RETPRLs developed under Activity 1.1.7.

Output 1.~~2~~4: Demonstrated and documented RE-rural livelihood application packages of the 10 to 15 selected types (or at least 6 to 8 per state) in at least 15 clusters in the 3 project states and benefitting at least 1,500 household enterprises

Activity 1.4.1: Implement sanctioned project demos, including installation and subsequent operation. Provide facilitation to beneficiaries as needed.

Activity 1.4.2: Monitor and document demos, providing assessment of income benefits, challenges and lessons learned, and estimates of GHG emission reductions achieved.

Activity 1.4.3: Later in the project, assuming funds are allocated, implement demos of the 3 to 4 innovative RETPRLs developed under Activity 1.1.7 and monitor and document these demos.

Output 1.~~4~~5: Completed promotion of the 10 to 15 selected RETPRLs via translation of descriptions into local language and via dissemination events at district-level extension centers ~~Output 1.3: Completed training programmes and training of trainers activities for replication and scale up of RE – rural livelihood application packages~~

Activity 1.5.1: Prepare RETPRL compendium that focuses on the 10 to 15 selected technologies, providing information on the use, pros and cons, costs, payback period, and suppliers of each. (*Note: Draft compendium has been prepared earlier in project by OUAT, but covers many different technologies briefly rather than the designated 10 to 15 in depth. Thus, this document can be expanded to include in-depth reviews of the 10 to 15 selected technologies once they are selected.*)

Activity 1.5.2: Translate information on the 10 to 15 selected RETPRLs into selected local languages of demo states and into Hindi

Activity 1.5.3: Hold dissemination events on the 10 to 15 selected RETPRLs at district-level extension centers in the three demo states.

Output 1.6: Replicated and documented RE-rural livelihood application packages ~~to other districts /~~ in the three project states via MNRE "RE for livelihoods" scheme and ~~applied to~~ benefitting at least 28,500 household enterprises

Activity 1.6.1: Prepare concepts and, once concept agreed upon, prepare detailed proposals for the project scale-ups (which are to receive 30% subsidy under the MNRE "RE for livelihoods" scheme) in each of the three project states. As a group, concepts/ proposals should achieve a good distribution across the 10 to 15 RETPRLs (or minimum of 6 to 8 per state) demonstrated in the demo phase. The group of 10 to 15 may be expanded to include the set of 3 to 4 innovative technologies developed under Activity 1.1.7 if these are successfully demonstrated under Activity 1.4.3.

Activity 1.6.2: Finalize proposals based on any feedback (to be handled by proposal preparers) and sanction scale-up projects (to be handled by MNRE).

Activity 1.6.3: Implement sanctioned project scale-ups, including installation and subsequent operation. Provide facilitation to beneficiaries as needed.

Activity 1.6.4: Monitor and document scale-ups, providing assessment of income benefits, challenges and lessons learned, and estimates of GHG emission reductions achieved.

Component 2: Supply Chain

Outcome 2. Increased supply of RE technology and service providers for rural livelihood applications

Output 2.1: One hundred identified manufacturers, distributors, and (current or potential) service providers (in aggregate) for the 10 to 15 selected RETPRLs

Activity 2.1.1: Once the 10 to 15 RETPRLs have been selected, identify manufacturers and distributors of each product, as well as existing service providers. Manufacturers and suppliers may be at the national

level, though service providers should be at the state and district levels. In addition, at the district level, identify entrepreneurs that have the potential to provide service for these products but are not yet doing so. The total of all manufacturers, distributors, service providers, and potential service providers identified across the 10 to 15 RETPRLs should be 100.

Output 2.~~1~~2: Assistance of at least 30 of the 100 identified RE technology supply and service providers for the 10 to 15 selected rural livelihoods applications in connecting directly with suitable communities to develop economically viable demo proposals and MNRE "RE for livelihoods" scheme scale-up proposals

Activity 2.2.1: Provide all 100 supply chain entities with information on the opportunity to conduct demos with 30% subsidy and 0 to 35% VGF support. For those that are interested and qualified (at least 30), provide assistance in connecting them with beneficiaries that also meet requirements for viable demos, so that the supply chain entities may develop project concepts with the beneficiaries and, once concepts are cleared, develop proposals.

Output 2.3: Assistance of at least 30 local service providers in mastering some of the 10 to 15 selected RETPRLs and setting up businesses to carry out distribution, installation, and/or servicing of these RETPRLs

Activity 2.3.1: Provide training for local service providers in the distribution, installation, and servicing of some of the 10 to 15 selected RETPRLs (or the 6 to 8 that each state chooses to demonstrate). Provide assistance in setting up service businesses associated with the selected RETPRLs.

Output 2.4: Targeted sourcing and/or bulk purchase to substantially reduce the price of certain of the 10 to 15 selected RETPRLs as needed to achieve economic viability

Activity 2.4.1: Determine RETPRLs for which price reduction is needed and carry out sourcing research on complete product and/or on components to find lower cost channels, leading to greater economic viability of the RETPRLs.

Activity 2.4.2: Carry out discussions with potential suppliers on bulk purchase as an option for price reduction of certain of the 10 to 15 priority RETPRLs and obtain reduced prices through bulk purchase for project demos and scale-ups, thus increasing economic viability of projects.

Component 3: Policy

Outcome 3.1: Inclusion of RE applications in national and state level rural livelihoods policies for key livelihood sectors in rural areas

Output 3.1.1: National and state level rural livelihoods mission (or MORD/ DRD) statements / documents / policies emphasizing the use of RE

Activity 3.1.1.1: Carry out consultations with MORD, NRLM, and, in the three project states, DRDs and SRLMs so as to: (a) promote the benefits of "RE for livelihoods," and (b) determine in which of their policy documents and how RETPRLs could be included.

Activity 3.1.1.2: Based on findings from Activity 3.1.1.1, draft proposed amendments or new policy statements that call for MORD, NRLM, the three state DRDs, and the three SRLMs, respectively, to promote RETPRLs.

Output 3.1.2: National and state level policies that support the use of RE for key rural livelihoods sectors, such as agriculture/ horticulture, animal husbandry, and fishing
~~Output 3.1.3: Documented experiences and lessons on RE applications for rural livelihoods at suitable regional and international fora~~

Activity 3.1.2.1: Carry out consultations with MAFW and its relevant departments (e.g. horticulture, dairy, poultry, fisheries) and with DAFWs and their analogous divisions in the three project states so as to: (a) promote the benefits of "RE for livelihoods," and (b) determine in which of their policy documents and how RETPLs could be included.

Activity 3.1.2.2: Based on findings from Activity 3.1.2.1, draft proposed amendments or new policy statements that call for MAFW and its relevant departments and the three state DAFWs and their relevant divisions to promote RETPRLs.

Outcome 3.2. Future MNRE programs also cater to actions towards enhanced RE utilization in rural livelihoods

Output 3.2.1: Inclusion of ~~Developed MNRE -supported programme for enhanced~~ RE utilization in rural livelihoods in MNRE's mandate for its long-term work program

Activity 3.2.1.1: Develop and implement a program to promote "RE for livelihoods" within MNRE so as to raise the profile and image of RETPRLs among MNRE officers. This program should use effective means targeted at MNRE only, such as promotion event for MNRE officers/staff only, attractive RETPRL posters or calendars for their offices, attractive posters in the hallways, and social media strategy for internal groups. Also, as a part of this program, carry out one-on-one consultations with selected MNRE officials to promote the idea of RETPRLs and project results, once demos have achieved success.

Activity 3.2.1.2: With the help of MNRE, determine which documents and how "RE for livelihoods" might be incorporated into MNRE's mandate for its long-term work program. Draft proposals for such inclusion and promote to relevant MNRE officials.

Output 3.2.2: Inclusion of "RE for livelihoods" in Odisha, Assam, and MP RE SNAs' mandates for their long-term work programs

Activity 3.2.2.1: With the help of SNA contacts in each of the three project states, determine which documents and how "RE for livelihoods" might be incorporated into each SNA's mandate for its long-term work program. Draft proposals for such inclusion and promote to relevant SNA officials.

Outcome 3.3 ~~Improved~~ Preferential tax and import tariff incentives for RETPRL suppliers ~~and grid interconnection regulations for decentralized RE~~
Note: Revision of this outcome and its outputs will depend on whether PV mini-grids are selected as one of the 10-15 RETPRLs. If they are, no revision necessary, except for the first output, the team may consider focusing on roadmap only and not workshops, due to the limited time and funds remaining in project

~~Output 3.3.1: Completed roadmap and workshops for supporting improved tariff structures for small scale captive and off-grid RE~~
~~Output 3.3.2: Developed and implemented regulatory, technical and tariff guidelines for RE based captive/decentralized systems' grid interconnection~~
Output 3.3.1: Proposed and promoted preferential tax and import tariff incentives for RETPRL suppliers

Activity 3.3.1.1: Preparation of draft proposed preferential tax and import tariff incentives for RETPRL suppliers
Activity 3.3.1.2: Promotion of draft proposed preferential tax and import tariff incentives for RETPRL suppliers to relevant government officials and revisions based on feedback

Component 4: Financing

Outcome 4.1: Improved decentralized RE subsidies and support for rural livelihoods

Output 4.1.1: Assessed RE subsidy and support models for increased effectiveness of RETPRL schemes ~~decentralized RE~~

Activity 4.1.1.1: Carry out consultations and design work to determine effective and innovative subsidy models (such as performance-based subsidies) for household enterprise RETPRLs.

Output 4.1.2: Improved RE subsidy and support models for increased effectiveness of ~~decentralized RE for rural livelihoods funding~~ RETPRL schemes adopted at both national and state levels

Activity 4.1.2.1: Design, promote, get funding, and launch a 2-year MNRE subsidy scheme for "RE for livelihoods" and a similar one-year scheme in the state of Odisha. (*Note: This activity was completed in August 2018 with launch of MNRE scheme*.)

Activity 4.1.2.2: After success with demos is achieved, use results to promote a second 2-year phase of MNRE "RE for livelihoods" subsidy scheme within the ministry and similar schemes within the states that will adopt the more effective and innovative subsidy models determined via Activity 4.1.1.1.

Outcome 4.2: Enhanced provision of financial support for decentralized RE in rural livelihood applications

Output 4.2.1: ~~Implemented~~ ~~f~~ Financial support-packages of different types, such as loans and funding from other programs, are secured to support ~~for~~ RE technology-rural livelihood applications

Activity 4.2.1.1: Reach out to institutions that make loans to rural areas with scale of loan size in the range needed for the RETPRLs that the project promotes. Promote RETPRLs to these financial institutions and provide briefings on economic viability/ payback period of the 10 to 15 selected RETPRLs, as well as on actual demo success stories for each.

Activity 4.2.1.1: After success with the demos, reach out to other government and donor programs and promote the benefits of RETPRLs, so as to convince them to providing financing (loan, loan guarantees, or viability grant funds) for replication of the project's selected 10 to 15 RETPRLs.

~~Output 4.2.2: Pooled available financial resources for supporting viable livelihood business models and enhanced market linkages~~

Outcome 4.3: Improved investment risk mitigation for decentralized RE in rural livelihood applications

Output 4.3.1: Enhanced risk mitigation mechanisms via business development support in identifying markets, sources of supplies, and measures for enhanced quality and productivity ~~designed and supported~~

~~that provides guarantees~~ for the project's key 10-15 selected RE ~~enterprises and RE technology adopters / end-users in~~ for rural livelihood~~s~~ applications

Activity 4.3.1.1: For the project's key 10-15 selected RETPRLs, develop guidelines for rural household enterprises on how to identify markets, source supplies, enhance quality, and increase productivity. Provide coaching to select households.

Activity 4.3.1.2: Work with lending institutions to ensure they understand how the guidelines developed under Activity 4.3.1.1 can reduce risk of RETPRL investments.

Annex 4. Proposed Indicator Revisions

India Ace Project Results Framework – with Proposed Revisions at Time of Mid-Term Review
Red and strikethrough indicate recommended changes. Blue indicates comments.

PROJECT RESULTS FRAMEWORK

This project will contribute to achieving the following Country Programme Outcome as defined in the UNDP Strategic Plan 2014-2017 and the UNDP India CPAP 2013-2017: ***Project:*** Scale Up of Access to Clean Energy for Rural Productive[3] Uses (India ACE Project) ***Outcome:*** Expanded access to clean energy**.** ***Output:*** Support for initiatives that increase access to clean energy for productive uses in off-grid, underserved rural regions. ***Output indicators:*** number of REPTRL packages developed and trialed, number of RE for rural livelihoods applications fostered by project.
Country Programme Outcome Indicators: ***Outcome:*** Progress towards meeting national commitments under multilateral environmental agreements ***Output:*** Supporting national development objectives with co-benefits of mitigating climate change ***Output indicators*****:** (a) Annual reductions in greenhouse gas (GHG) emissions in India; (b) million USD flowing annually to India from GEF through UNDP for this programme; (c) number of additional UNDP initiatives for achieving global and national targets under multilateral environmental agreements.
Primary applicable Key Environment and Sustainable Development Key Result Area): Strengthened national capacities to mainstream environment and energy concerns into national development plans. Expanding access to environmental and energy services for the poor.
Applicable GEF Strategic Objective and Program: **Strategic Objective:** Climate Change Objective 3: Promote investment in renewable energy technologies
Applicable GEF Expected Outcomes: Increased market uptake of RE systems for rural livelihoods
Applicable GEF Outcome Indicators: a. Extent to which EE policies and regulations are adopted and enforced b. Volume of investment mobilized **c.** Tonnes of CO_2 equivalent avoided

Strategy	Objectively Verifiable Indicators			Means of Verification	Critical Assumptions
	Description	Baseline	Target		
Project goal: Reduced GHG emissions achieved through renewable energy systems in rural livelihood sectors	Cumulative CO_2 emission reduced from start of project to End-Of-Project (EOP), (tCO_2e)	0	69,115	M&E reports of the demonstration and replication projects	Continued support and participation from co-financing institutions, MNRE, ~~CLIAs~~ SNAs, demo/scale-up partners, and other stakeholders

[3] The original PIF and documentation referred to "and Domestic (Uses)" but in the PPG phase the feedback and analysis firmly supported a narrowing of the project scope to be limited to productive uses. In a country of over 1.2 billion people (India) even just focusing on productive uses in three states is very ambitious with only a GEF $4 million budget. Adding domestic uses would increase project implementation complexity and risks as domestic users expect low cost (subsidised) electricity supply and it would also make the project scope and ambition too great. This reduction in scope to just productive uses will also address GEF STAP and Council comments at the PIF stage of the project scope being too ambitious and that the original project was too unfocussed.

Strategy	Objectively Verifiable Indicators			Means of Verification	Critical Assumptions
	Description	Baseline	Target		
Project Objective: Enhancing reliable and affordable clean energy access for rural livelihoods in un-served and underserved areas	Total energy savings achieved from implemented RETPRLs by EOP MWhe MWh$_{th}$	0 0	112,737 1,376,631	M&E reports of the demonstration and replication projects	Selected end users for demos and replications have sufficient finance and favorable business environment
Component 1: Development and deployment of key RE-rural livelihood application packages					
Outcome 1: Deployment of RE-rural livelihood application packages	No. of household enterprises adopting RETPRLs through demonstrations and replications in the targeted states by the EOP	0	30,000	M&E reports of the demonstration and replication projects	Sufficient finance is available for the implementation of developed packages for RE-rural livelihood
Output 1.1: ~~At least t~~ Ten to 15 ~~(10)~~ cost-effective RE technology packages ~~developed~~ for rural livelihood (RETPRL) applications (that meet "massive scale-up criteria") selected for project demos and designated as priorities for scale-up with MNRE "RE for livelihoods" scheme	No. of RETPRLs ~~developed by Year 2~~ selected to be designated techs for demos/ scale-ups that meet criteria[4]	0	10	PMU communications with SNAs informing them of 10 to 15 selected ~~erformance assessment reports on~~ RETPRLs that are the required technologies to be used in the project demos and scale-ups	~~RE technology suppliers willing to provide services as required for technology packages in rural areas~~ Adequate information available from states, rural development entities, power entities, etc. to assess criteria
Output 1.2: Interim (as needed) and (eventually) official benchmark prices and ~~established~~ technical specifications for the 10 to 15 selected RETPRLs	No. selected type of demo/scale-up RETRPLs for which interim or official, up-to-date benchmark prices and specifications are available by Sept. 1 2019 and then used for demos without causing delay	0	10	Document prepared under Activity 1.2.3 of interim benchmark prices and specifications; project monitoring reports	Expertise available, if needed, to perform timely interim benchmark pricing work
	No. selected types of demo/scale-up RETRPLs for which official, up-to-date benchmark prices and specifications are available by Feb. 1 2020 and then used for scale-ups/ scheme without causing delay	0	10	Document prepared under Activity 1.2.4 of official, up-to-date benchmark prices and specifications, project monitoring reports	Political will in government enables benchmark pricing work to progress in timely fashion

[4] Criteria to be met are: (i) RETPRL is part of value chain for key livelihood (see Activity 1.1.1). (ii) RETPRL has highest potential for scale-up (among options). (iii) RETPRL has strong livelihood benefits. (iv) RETPRL has strong GHG ER benefits. (v) RETPRL can achieve economic viability without subsidy in a few years. (vi) RETPRL is not already wide-spread. (vii) RETPRL is not supported substantially by other schemes. (viii) In light of grid expansion to date and expected next five years, RETPRL still has strong potential for scale-up. (ix) RETPRL is used directly by beneficiaries in livelihood related production activities (pure net metering or pure electricity sales projects do not qualify).

Strategy	Objectively Verifiable Indicators			Means of Verification	Critical Assumptions
	Description	Baseline	Target		
Output 1.3: Proposals for economically viable RETPRL demos with beneficiaries meeting viability criteria and RETPRLs, as a set, cutting across the 10 to 15 selected ones (or at least 6 to 8 per state)	Sum of no. of selected technologies covered substantially (at least 50 household enterprises covered per technology type) in each state in finalized set of demo proposals	0	18 (at least 6 per state)	Proposals submitted by the SNAs	Household enterprises are attracted to participate in demo at subsidy and VGF levels offered, providing 35% or more of the investment themselves
Output 1.~~2~~4: Demonstrated and documented RE-rural livelihood application packages of the 10 to 15 selected types (or at least 6 to 8 per state) in at least 15 clusters in the 3 project states and benefitting at least 1,500 household enterprises	No. of districts in which demo~~nstration~~ projects are demonstrated ~~clusters~~ by EoP	0	15	Reports from ~~CLI~~SNAs M&E reports of the demonstration	Household enterprises are convinced of ~~with~~ RE application benefits in livelihood activities
	No. of household enterprises adopting RETPRLs in the demonstration districts ~~clusters~~ or other appropriate districts in the demos states ~~by Year 3~~	0	1,500	Reports from ~~CLI~~SNAs M&E reports of the demonstrations	End-users are interested and have ~~the~~ sufficient finance
	No. of newly developed, innovative RETPRLs demonstrated in addition to the selected 10 to 15 existing RETPRLs	0	3	M&E report	Institutes willing to develop innovative and development new RETPRLs that fit the project criteria for massive scale-up and value-add
Output 1.~~4~~5: Completed promotion of the 10 to 15 selected RETPRLs via translation of descriptions into local language and via dissemination events at district-level extension centers ~~Output 1.3: Completed training programmes and training of trainers activities for replication and scale up of RE – rural livelihood application packages~~	No. of ~~training programmes conducted by EoP~~ languages into which descriptions of the selected 10 to 15 technologies are translated	0	~~14~~ 4[5]	~~Report of training programmes~~ Translated compendium with description of the selected 10 to 15 technologies	~~Continued support and participation from co-financing institutions, MNRE, CLIAs and other stakeholders~~ RE technology suppliers willing to provide services as required for selected technologies in targeted rural areas, so that the technologies make sense for those areas
	No. of district-level extension events on the 10 to 15 selected technologies that are held ~~training packages developed by Year 2~~	0	~~7~~30	~~Training package material~~ Project monitoring reports	~~Continued s~~Support from local officials in holding events ~~and participation from co-financing institutions, MNRE, CLIAs and other stakeholders~~
	No. of local persons ~~trained by EoP~~ attending district-level extension events on the 10 to 15 selected technologies	0	~~28~~1,500	Project monitoring ~~R~~ report ~~of training programmes~~	Strong enough interest from stakeholders to generate ~~Continued support and~~ participation of an average of 50 local persons per district-level event ~~from co-financing institutions, MNRE, CLIAs and other stakeholders~~

[5] Likely Hindi, Odia, Assamese, and Bengali

Strategy	Objectively Verifiable Indicators			Means of Verification	Critical Assumptions
	Description	Baseline	Target		
Output 1.6 Replicated and documented RE-rural livelihood application packages ~~to other districts /~~ in the three project states via MNRE "RE for livelihoods" scheme and ~~applied to~~ benefitting at least 28,500 household enterprises	~~No. of household enterprises adopting RETPRLS through replications by EoP~~ *original indicator was same as outcome indicator* Sum of no. of selected technologies covered substantially (at least 500 household enterprises covered per technology type in each state) in realized scale-ups	~~1,500 (at the end of demonstration)~~ 0	~~30,000~~ 18 (6 per state)	M&E reports of the replication projects	Implementing agencies and end-users are interested, accept RETPRLs and are equipped to implement the project
Component 2: Supply chain for RE technology supply and service providers for enhancing rural livelihoods					
Outcome 2: Increased supply of RE technology and service providers for rural livelihood applications	No. of RE technology supply and service providers for rural livelihood applications that supply or provide installation services to the project demos or scale-ups for one or more of the project's selected 10 to 15 RETPRLs by EoP *Note: The original version of this indicator was the same as the original version of the indicator for Output 2.1. These two indicators have now been differentiated and the outcome level indicator made the more challenging one.*	0	~~10~~80	M&E of supply chain development activity M&E of demos and scale-ups	There is sufficient interest in pursuing ~~demand for~~ RETPRL~~s~~ business in project areas amongst existing and new RE technology and service providers Enterprises have sufficient technical and financial capacity
Output 2.1: One hundred identified manufacturers, distributors, and (current or potential) service providers (in aggregate) for the 10 to 15 selected RETPRLs	No. of RE technology supply and service providers for rural livelihoods applications identified that are involved (by EoP) in supplying and/or servicing one or more of the 10 to 15 selected RETPRLs	0	100	M&E of supply chain development activity	There is sufficient interest among the selected suppliers and service providers in pursuing the selected RETPRLs
Output 2.~~1~~2 Assistance of at least 30 of the 100 identified RE technology supply and service providers for the 10 to 15 selected rural livelihoods applications in connecting directly with suitable communities to develop	No. of ~~business plans developed for~~ RETPRL ~~technology~~ supply and service providers ~~by Year 2~~ that, working with communities, submit successful proposals to project for demos and/or to	0	20	M&E of supply chain development activity~~/ business plan~~ reports	There is sufficient interest among the selected suppliers and service providers in pursuing business opportunities in project areas related to at least one of the 10-15 selected RETPRLs

Strategy	Objectively Verifiable Indicators			Means of Verification	Critical Assumptions
	Description	Baseline	Target		
economically viable demo proposals and MNRE "RE for livelihoods" scheme scale-up proposals	MNRE scheme for scale-ups of the 10 to 15 selected technologies				
Output 2.3: Assistance of at least 30 local service providers in mastering some of the 10 to 15 selected RETPRLs and setting up businesses to carry out distribution, installation, and/or servicing of these RETPRLs	No. of ~~financial mechanism to access finance for~~ RETPRL ~~technology supply and~~ service ~~suppliers by Year 2~~ providers that newly begin to provide local services in project areas for one or more of the 10 to 15 selected RETPRLs after being trained	0	15	M&E of supply chain development activity	There is sufficient interest among the selected potential service providers to attend the training and set up a service business for one or more of the selected RETPRLs in project areas
Output 2.4: Targeted sourcing and/or bulk purchase to substantially reduce the price of certain of the 10 to 15 selected RETPRLs as needed to achieve economic viability	No. of the 10 to 15 selected RETPRLs for which market price is reduced 30% or more from baseline	0	5	Project M&E Reports	Enough suppliers provide the selected RETPRLs and/or components at a wide enough range of prices that price reduction can be achieved via sourcing work
	Price of 5 ton solar PV cold storage unit delivered to site (in Rs)	1,400,000 Rs	900,000 Rs	Project M&E Reports	Enough suppliers are willing to enter market to create competition and/or suppliers willing to substantially lower price with bulk orders
Component 3: Policy and regulatory support for RE - rural livelihood applications					
Outcome 3.1: Inclusion of RE applications in national and state level rural livelihoods policies for key livelihood sectors in rural areas	No. of different national and state~~s~~ level rural development and livelihood sector ministries, departments, or missions taking concrete actions to implement "RE for livelihoods" promoting ~~enforcing~~ policies ~~on the RE applications as part of their SRLM and in line with the same policies at the national level by year 3~~	0	4	MORD, MAFW, NRLM ~~(1)~~, DRD, DAFWs, and SRLMs ~~(3 states)~~ policy documents Project M&E Reports Press reports	~~NRLM and SRLMs that support RE applications for rural livelihoods is sustained~~ Political will to accept beneficial cross-sector ideas (i.e. RE use to enhance rural livelihoods) exists within rural development agencies and agencies responsible for horticulture, dairy, poultry, fish, etc. at national and state levels
Output 3.1.1: National and state level rural livelihoods mission (or MORD/ DRD) statements / documents / policies emphasizing the use of RE	No. of rural development ~~M~~ ministries/~~D~~ departments /missions that officially adopt mission statements that support RE applications for rural livelihoods ~~by Year 3~~	0	4	Policy documents of NRLM and SRLMs, MORD and DRDs ~~meeting/ workshop reports~~	Political will to accept beneficial cross-sector ideas (i.e. RE use to enhance rural livelihoods) exists within rural development agencies at national and state levels

Strategy	Objectively Verifiable Indicators			Means of Verification	Critical Assumptions
	Description	Baseline	Target		
Output 3.1.2: National and state level policies that support the use of RE for key rural livelihoods sectors, such as agriculture/ horticulture, animal husbandry, and fishing	Sum total ~~N~~ no. of livelihood sectors per project state and at national level where RE is incorporated into policy documents (count sub-total for each state and at national level and add together) ~~promoted in 3 targeted states by year 3~~	0	12~~0~~ (an estimated minimum of 3 per demo state and 3 at national level)	Central ~~(e.g. KVIC)~~ and state livelihoods sectors' /departments' (e.g. MAFW and its departments, DAFWs and its divisions) policy documents	~~Continued support and participation from co-financing institutions, MNRE, CLIAs and other stakeholders~~ Political will to accept beneficial cross-sector ideas (i.e. RE use to enhance horticulture, dairy, poultry, fishing) exists within relevant agencies at national and state levels
~~Output 3.1.3: Documented experiences and lessons on RE applications for rural livelihoods at suitable regional and international for a~~	~~No. of peer reviewed publications sharing experiences regarding RE and rural livelihoods by EoP~~	~~0~~	~~7~~	~~Published reports~~	
Outcome 3.2: Future MNRE programs also cater to actions towards enhanced RE utilization in rural livelihoods	~~No. of MNRE programs that espouse RE applications for rural livelihoods programme by Year 3~~ Status of official statements by MNRE of plans to include RE for livelihoods in long-term mandate (0=such statement not yet made; 1=statement made)	0	1	~~MNRE policy document~~ press reports Project M&E reports	~~Continued support and participation from co-financing institutions, MNRE, CLIAs and other stakeholders~~ Political will for long-term commitment to RETPRL promotion exists in MNRE
Output 3.2.1: Inclusion of ~~Developed MNRE -supported programme for enhanced~~ RE utilization in rural livelihoods in MNRE's mandate for its long-term work program	~~No. of replication projects implemented by MNRE in new programme using RETPRLs by EoP~~ Status of inclusion of "RE for livelihoods" in MNREs mandate for its long-term work program (0=not included; 1=included)	0	~~28,500~~ 1	~~Documentation of~~ MNRE~~-supported RET operated rural livelihood projects~~ mandates and policy documents	Political will for long-term commitment to RETPRL promotion exists in MNRE
Output 3.2.2: Inclusion of "RE for livelihoods" in Odisha, Assam, and MP RE SNAs' mandates for their long-term work program	No. of states that include "RE for livelihoods" in their RE SNA's mandates for their long-term work program	0	3	State RE SNA mandates and policy documents	Political will for long-term commitment to RETPRL promotion exists in SNAs
Outcome 3.3: ~~Improved~~ Preferential tax and import tariff incentives for RETPRL suppliers ~~and grid interconnection regulations for decentralized RE~~ *Note: Revision will depend on whether PV mini-grids are selected as*	No. of ~~state regulatory commissions (SRCs) implement policy guidelines of improved tariff structure for decentralized RE by year 3~~ incentives adopted	0	~~3~~1	Project monitoring reports	~~Continued support and participation of SRCs~~ Ministry of Finance and other officials receptive to idea of policy incentives for RETPRLs

Strategy	Objectively Verifiable Indicators			Means of Verification	Critical Assumptions
	Description	Baseline	Target		
one of the 10-15 RETPRLs. If they are, no revision necessary					
Output 3.3.1: ~~Completed roadmap and workshops for supporting improved tariff structures for small scale captive and off-grid RE~~ Proposed and promoted preferential tax and import tariff incentives for RETPRL suppliers *Note: Revision will depend on whether PV mini-grids are selected as one of the 10-15 RETPRLs. If they are, revision might not be necessary, though given short timeline MTR team recommends focus on roadmap rather than workshops*	No. of ~~state level workshops to implement the revised tariff structures by Year 3~~ proposed incentives	0	3	~~Workshop reports~~ Project monitoring reports	~~Continued support and participation from co-financing institutions, MNRE, CLIAs and other stakeholders especially SRCs~~
~~Output 3.3.2: Developed and implemented regulatory, technical and tariff guidelines for RE based captive/decentralized systems' grid interconnection~~ *Note: Revision will depend on whether PV mini-grids are selected as one of the 10-15 RETPRLs. If they are, no revision necessary*	~~No. of SRCs implement policy guidelines for captive/decentralized RE grid interconnection by year 3~~	~~0~~	~~3~~	~~National level study report~~	~~Continued support and participation from co-financing institutions, MNRE, CLIAs and other stakeholders especially SRCs, where SRCs see RE grid interconnection as an important issue.~~
Component 4: Financial support for decentralized RE - rural livelihood applications					
Outcome 4.1: Improved decentralized RE subsidies and support for rural livelihoods	Amount of funds allocated to ~~No. of developed improved overall~~ subsidies ~~y and support models by Year 2~~ for national level and state level "RE for livelihood schemes" incorporating innovative approaches to subsides (USD)	$0	~~1~~$20 million	~~Review report~~ Official scheme documents for national level and state level "RE for livelihood" schemes	Political will exists to allocate funding to "RE for livelihood" schemes at national and state levels
4.1.1 Assessed RE subsidy and support models for increased effectiveness of RETPRL schemes ~~decentralized RE~~	No. of consultations ~~completed studies on existing~~ carried out with officials regarding innovative subsidies and supports for RETPRLs ~~by Year 1~~	0	~~1~~ 15	~~Review report~~ Project monitoring documents	~~Continued support and participation from co-financing institutions, MNRE, CLIAs and other stakeholders in subsidizing and supporting decentralized RE~~ Officials interested in the topic of innovative subsidy schemes and thus

Strategy	Objectively Verifiable Indicators			Means of Verification	Critical Assumptions
	Description	Baseline	Target		
					willing to have engaging discussions with project on this topic
4.1.2 Improved RE subsidy and support models for increased effectiveness of ~~decentralized RE for rural livelihoods funding~~ RETPRL schemes adopted at both national and state levels	Sum total of ~~N~~ no. of two-year phases of "RE for livelihood" subsidy schemes launched by MNRE and the three project state SNAs (with funding allocated) that have innovative subsidy schemes ~~and support models for rural livelihoods available by year 1~~	0	~~3~~ 4 (1 for each state and 1 for MNRE)	~~Report on recommendations~~ MNRE official "RE for livelihood" phase 2 scheme documents; OREDA, AEDA, and MPUVN official scheme documents for state level "RE for livelihood" schemes	Political will exists to allocate funding to "RE for livelihood" schemes at state level
Outcome 4.2: Enhanced provision of financial support for decentralized RE in rural livelihood applications	~~No. of financial institutions supporting~~ Amount of funding from loans and other (non RETPRL-specific) programs for replication of the project's 10-15 selected RETPRL ~~by Year 3~~	0	~~3~~ $1 million	~~Report on new financial support packages developed~~ Project M&E Reports	~~Continued interest, and participation from co-financing institutions, MNRE, CLIAs and other stakeholders such as IREDA~~ Lending institutions willing to study RETPRL opportunity; donors or government willing to include project prioritized 10-15 RETPRLs in the scope of items that they finance with their programs
Output 4.2.1: ~~Implemented f~~ Financial support-packages of different types, such as loans and funding from other programs, are secured to support ~~for~~ RE technology-rural livelihood applications	No. of household enterprises adopting RETPRLs that were partly funded by the ~~established financial support packages by EOP~~ loans or other (non-RETPRL) programs via facilitation of the project for replications	0	~~2~~8,500 1,500	Project M&E Report; RETPRL loan fund documentation	Lending institutions willing to study RETPRL opportunity; donors or government willing to include project prioritized 10-15 RETPRLs in the scope of items that they finance with their programs
~~Output 4.2.2: Pooled available financial resources for supporting viable livelihood business models and enhanced market linkages~~	~~No. of completed studies on inter-institutional linkages for finance pooling to support viable livelihood business models and enhanced market linkages covering three states and center by Year 2~~	~~0~~	~~1~~	~~Study report~~	~~Institutions are willing to continuously pool their financial resources and other financing institutions continued to provide support~~
Outcome 4.3: Improved investment risk mitigation for decentralized RE in rural livelihood applications	Number of ~~states implement designed suitable risk~~ households with documented improved RETPR- related income generation due to	0	~~3~~ 1,500	~~Communication by the state governments / Review report~~ Project M&E Reports;	Households receptive to adopting recommendations related to market, sourcing, quality, and productivity guidelines and support provided by the project

Strategy	Objectively Verifiable Indicators			Means of Verification	Critical Assumptions
	Description	Baseline	Target		
	market, sourcing, quality, and/or productivity support or guidelines provided by the project ~~guarantee/mitigation mechanisms by Year 3~~				
Output 4.3.1: Enhanced risk mitigation mechanisms via business development support in identifying markets, sources of supplies, and measures for enhanced quality and productivity ~~designed and supported that provides guarantees~~ for the project's key 10-15 selected RE ~~enterprises and RE technology adopters / end users in~~ for rural livelihood~~s~~ applications	Number of priority RETPRLs for which the project provides, in local languages, written guidelines and advice regarding markets, sourcing, quality, and productivity	0	~~1~~ 10	~~Study report~~ Project M&E Reports	~~Continued interest, and participation from co-financing institutions, MNRE, CLIAs and other stakeholders such as IREDA~~ Households receptive to adopting recommendations related to market, sourcing, quality, and productivity guidelines and support provided by the project
	~~No. of designed suitable risk guarantee/mitigation mechanisms by Year 3~~	~~0~~	~~1~~	~~Study report~~	

Annex 5. Preliminary Suggested Budget Revisions

The purpose of this annex is to provide "back of the envelope" suggestions as to how the budget might be allocated among outcomes and outputs going forward. These suggestions, in turn, may imply a change in the distribution of overall GEF funds (including those already spent and those to be spent) among outcomes as compared to the ProDoc allocations. The annex begins with a presentation of official expenditures for the years 2015, 2016, 2017, and 2018, based on the UNDP CDRs. It then provides a rough guess of expenditures to date in 2019, as the 2019 CDR to date was not available to the MTR team. Based on the 2015-2018 figures summed with the 2019 to date guesstimate, total expenditures to date are then estimated, thus allowing a rough estimate of remaining GEF funds. Next, a rough allocation of the funds by output is made and then aggregated into outcomes. It is expected that by far the largest expenditure going forward will be for the project demos. After that, the next largest expenditure will be for the project management team, including the local PMUs, the "SCCs." Yet, because the project management team will also be carrying out substantive tasks under the outcomes, the budget for the project management team will be disaggregated across several outputs as well as project management budget lines. The proposed outcome expenditures going forward are added to outcome expenditures to date to come up with proposed overall allocation. Finally, the proposed overall allocations are compared to the ProDoc allocations to get an understanding of the potential percent movement of funds between outcomes and of adjustments needed to keep the movement to within ten percent.

Step 1: Aggregation of annual spending 2015 to 2018, according to CDRs

Exhibit A5 – 1. Expenditures 2015-2018 Based on UNDP CDRs (in USD)

Component	2015	2016	2017	2018	Total Spent	Total Allocated	% Spent
1 Demos/SU	10,181.94	33,105.21	19,075.39	280,713.00	**343,075.54**	2,719,949	12.6%
2 Supply Ch	0	551.22	30,239.55	140.00	**30,930.77**	301,000	10.3%
3 Policy	0	24,585.61	44,876.97	-87.40	**69,375.18**	312,800	22.2%
4 Finance	0	0	0	0	**0**	483,600	0.0%
PM	0	49,743.09	47,426.89	32,795.89	**129,965.87**	189,500	68.6%
Net UL*	-0.01	153.79	0	159.46	**313.24**	0	---
Total	**10,181.93**	**108,138.92**	**141,618.80**	**313,720.95**	**573,660.60**	4,006,849	14.3%

*Net Unrealized Loss = Unrealized Loss – Unrealized Gain

Step 2: Guess at spending to date Jan 1. – May 31, 2019

Noting that the large demo expenditure for the six solar cold storage units was made in 2018, we know that expenditures in the first five months of 2019 will have no demos and consist mainly of project management expenses and some expenses for consultancies. The project management team is now compensated via MNRE and MNRE service contracts were about $39,000 in 2017 and $49,000 in 2018. Assuming the level of 2018 continued from Jan. to May 2018, then about $20,000 was spent on project management staff (PMU and SCCs) during that period. We might assume another $40,000 was spent on (or committed to be spent soon) on consultancies during that period, for a total of $60,000 year to date expenditures for 2019 through May 31, 2019.

Step 3: Estimate of total spending (or committed) to date as of May 31, 2019

Estimate of total funds spent to date: $573,660.60 spent 2015-2018 and $60,000 estimated spending Jan. 1 – May 31, 2019 imply total funds spent of $633,660.60

Step 4: Estimate total of remaining GEF funds

Remaining funds are full GEF budget $4,006,849 minus expenditures of $633,660.60, or $3,373,188.

Step 5: Rough allocation of remaining GEF funds by outputs and outcomes

Exhibit A5-2: Preliminary Suggested Allocation of Remaining Budget

Output (or for subtotals, Outcome)	Total	Within Total, Amount to Pay PM Team	Within Total, non-PM Team Expenses
Outcome 1: Deployment of RE-rural livelihood application packages			**3,058,188**
Output 1.1: ~~At least t~~ Ten to 15 ~~(10)~~ cost-effective RE technology packages ~~developed~~ for rural livelihood (RETPRL) applications (that meet "massive scale-up criteria") selected for project demos and designated as priorities for scale-up with MNRE "RE for livelihoods" scheme	10,000	5,000	15,000
Output 1.2: Interim (as needed) and (eventually) official benchmark prices and ~~established~~ technical specifications for the 10 to 15 selected RETPRLs	60,000	5,000	65,000
Output 1.3: Proposals for economically viable RETPRL demos with beneficiaries meeting viability criteria and RETPRLs, as a set, cutting across the 10 to 15 selected ones (or at least 6 to 8 per state)	75,000	50,000	125,000
Output 1.~~2~~4: Demonstrated and documented RE-rural livelihood application packages of the 10 to 15 selected types (or at least 6 to 8 per state) in at least 15 clusters in the 3 project states and benefitting at least 1,500 household enterprises	2,600,000	50,000	2,650,000
Output 1.~~4~~5: Completed promotion of the 10 to 15 selected RETPRLs via translation of descriptions into local language and via dissemination events at district-level extension centers ~~Output 1.3: Completed training programmes and training of trainers activities for replication and scale up of RE – rural livelihood application packages~~	30,000	5,000	35,000
Output 1.6 Replicated and documented RE-rural livelihood application packages ~~to other districts /~~ in the three project states via MNRE "RE for livelihoods" scheme and ~~applied to~~ benefitting at least 28,500 household enterprises	84,888	83,300	168,188
Outcome 2: Increased supply of RE technology and service providers for rural livelihood applications			**140,000**
Output 2.1: One hundred identified manufacturers, distributors, and (current or potential) service providers (in aggregate) for the 10 to 15 selected RETPRLs	10,000	0	10,000
Output 2.~~1~~2 Assistance of at least 30 of the 100 identified RE technology supply and service providers for the 10 to 15 selected rural livelihoods applications in connecting directly with suitable communities to develop economically viable demo proposals and MNRE "RE for livelihoods" scheme scale-up proposals	25,000	5,000	30,000
Output 2.3: Assistance of at least 30 local service providers in mastering some of the 10 to 15 selected RETPRLs and setting up businesses to carry out distribution, installation, and/or servicing of these RETPRLs	50,000	10,000	60,000
Output 2.4: Targeted sourcing and/or bulk purchase to substantially reduce the price of certain of the 10 to 15 selected RETPRLs as needed to achieve economic viability	35,000	5,000	40,000
Outcome 3.1: Inclusion of RE applications in national and state level rural livelihoods policies for key livelihood sectors in rural areas			**40,000**
Output 3.1.1: National and state level rural livelihoods mission (or MORD/ DRD) statements / documents / policies emphasizing the use of RE	15,000	5,000	20,000
Output 3.1.2: National and state level policies that support the use of RE for key rural livelihoods sectors, such as agriculture/ horticulture, animal husbandry, and fishing	15,000	5,000	20,000
Outcome 3.2: Future MNRE programs also cater to actions towards enhanced RE utilization in rural livelihoods			**30,000**

Output 3.2.1: Inclusion of ~~Developed MNRE~~ ~~supported programme for enhanced~~ RE utilization in rural livelihoods in MNRE's mandate for its long-term work program	10,000	5,000	15,000
Output 3.2.2: Inclusion of "RE for livelihoods" in Odisha, Assam, and MP RE SNAs' mandates for their long-term work program	10,000	5,000	15,000
Outcome 3.3: ~~Improved~~ Preferential tax and import tariff incentives for RETPRL suppliers ~~and grid interconnection regulations for decentralized RE~~			**20,000**
Output 3.3.1: ~~Completed roadmap and workshops for supporting improved tariff structures for small scale captive and off-grid RE~~ Proposed and promoted preferential tax and import tariff incentives for RETPRL suppliers	20,000	0	20.000
Outcome 4.1: Improved decentralized RE subsidies and support for rural livelihoods			**30,000**
Output 4.1.1: Assessed RE subsidy and support models for increased effectiveness of RETPRL schemes ~~decentralized RE~~	10,000	5,000	15,000
Output 4.1.2: Improved RE subsidy and support models for increased effectiveness of ~~decentralized RE for rural livelihoods funding~~ RETPRL schemes adopted at both national and state levels	10,000	5,000	15,000
Outcome 4.2: Enhanced provision of financial support for decentralized RE in rural livelihood applications			**25,000**
Output 4.2.1: ~~Implemented f~~ Financial support ~~packages~~ of different types, such as loans and funding from other programs, are secured to support ~~for~~ RE technology-rural livelihood applications	15,000	10,000	25,000
Outcome 4.3: Improved investment risk mitigation for decentralized RE in rural livelihood applications			**30,000**
Output 4.3.1: Enhanced risk mitigation mechanisms via business development support in identifying markets, sources of supplies, and measures for enhanced quality and productivity ~~designed and supported that provides guarantees~~ for the project's key 10-15 selected RE ~~enterprises and RE technology adopters / end-users in~~ for rural livelihood~~s~~ applications	15,000	15,000	30,000
Project Management		**60,000**	**60,000**
TOTALs	**3,099,888**	**333,300**	**3,433,188**

Notes:

(1) PMU+SCC total annual costs assumed to be at a rate of $50,000 per year for first two months (June and July), so about $8,300 for those two months and then jump (with several new hires) to $130,000 per year for next 2.5 years until project close with extension to Jan. 2022. Total PMU+SCC costs through end of project (with extension) is then $333,300.

(2) PMU+SCC costs of $333,300 are distributed between "pure PM" or project management and various components as it is expected the PMU and SCC teams will actually be carrying out many of the activities associated with the project's targeted outputs and outcomes. The table above is designed to show, for each output, the amount of non-PM team expenditures and PM team expenditures (meaning portions of their salaries and other PMU and SCC costs), as well as the total expenditures for the output.

(3) This is preliminary output-wise budget. One of the key purposes is to determine the amount of GEF funds that will be allocated to the project demos. The above budget assumes that $2.1 million (or $700,000 per state) is allocated to the main round of project demos (demos with existing

products on the market and spread among the 10 to 15 selected RETPRLs) and $400,000 (or about $133,000 per state) is allocated to a smaller, second round of demos that will demonstrate the 3 to 4 innovative technologies developed by universities, institutes, or partners like SELCO Foundation. This totals $2.5 million allocated for the demos themselves. The total of $2.6 million of non-PM team funds suggests $100,000 extra, beyond the cost of the demos, which could support partners. It might alternatively support the 3% service fee ($75,000) to the SNAs, or to the SNAs and SRLMs, if it is decided to provide the service fee for GEF funds spent on demos. In addition, $50,000 of PMU/SCC costs are allocated to the demos for monitoring and other work. This does not include the $50,000 of PMU/SCC costs allocated to the demo proposal preparation, nor the $75,000 of non-PM team costs allocated to demo proposal preparation.

(4) For the scale-ups, all investment funds and the 3% service fee will come from MNRE allocations for its scheme. Allocated amounts to this output cover proposal preparation, facilitation during implementation, and monitoring.

Step 6. Total Proposed Allocation by Outcome and Changes from ProDoc Allocations

Summing the proposed expenditures for each outcome going forward to funds spent already for the outcome gives total proposed allocation by outcome. This can be compared to the ProDoc allocation to get the net proposed change in allocation and what percentage this is of the total GEF budget.

Exhibit A5 – 3. Preliminary Proposed Changes in Outcome-Level Allocations as Compared to ProDoc

Outcome	Expenditures to Date (A)	Proposed Expenditure for Remainder of Project (B)	Total Proposed Allocation C=A+B	ProDoc Allocation D	Proposed Change in Allocation E=C-D	Change in Allocation as % of total GEF Funds = E/$4,006,849
1. Demos and Scale-up	343,075.54	3,058,188	3,401,263.94	2,719,949	681,314.94	17%
2. Supply Chain	30,930.77	140,000	170,930.77	301,000	-130,069.23	-3.%
3.1 Policy – livelihood orgs	NA	40,000	NA	196,700	NA	NA
3.2 Policy- RE orgs	NA	30,000	NA	46,600	NA	NA
3.3 Policy – incentives	NA	20,000	NA	69,500	NA	NA
3. Policy –subtotal	69,375.18	90,000	159,375.18	312,800	-153,424.82	-4%
4.1 Financing – subsidies	NA	30,000	NA	64,800	NA	NA
4.2 Financing – loans	NA	25,000	NA	119,900	NA	NA
4.3 Financing – grants	NA	30,000	NA	298,900	NA	NA
4. Financing – subtotal	0	85,000	85,000	483,500	-398,500.00	-10%
Project Management	129,965.87	60,000	189,966	189,500	465.87	0.00
Net unrealized loss*	313.24	0	313	0	313.24	0.00
Total (or overall if %)	**573,660.60**	**3,433,188**	**4,006,849**	**4,006,849**	**0.00**	**17%**

*Net Unrealized Loss = Unrealized Loss – Unrealized Gain

Because the CDRs only show component-wise spending, the analysis on changes from the ProDoc allocation are made by component. The maximum allowed shift between outcomes (which we will apply to components), if special permission is not sought, is 10%. Hence, the shift of 17% under the current proposed budget allocations is too high, unless the project wishes to seek special permission. Yet, there are ways this amount could be reduced without really changing activities due to some possible overlap in the project design between components. In particular, some of the proposed Component 1 expenditures (demos and scale-ups) might be shifted to Component 4 (financing). The ProDoc allocated significant funds to the financing component: $483,500. Yet, UNDP generally does not do loan funds or guarantee funds as the proposed design seeks to do; and, the funds in any event are perhaps too limited to support a fund that would have the type of impact desired. Further, one of the financing outcomes ("the subsidy outcome") encompasses the MNRE scheme, for which Government of India has allocated $10 million. The proposed allocation for Output 1.6, which is the "replications output," are GEF funds allocated to the scheme scale-ups. Thus, this output's activities and its funding might be moved to Output 4.1.1. Moving the current amount of $168,188 in proposed GEF funds for Output 1.6, which would be for proposals, facilitation, and monitoring of scale-ups under the scheme would reduce the gap between ProDoc allocations and proposed allocations from 17% to 12.8%. This would require revisions of the proposed activities and also indicators. Additional measures, such as this one, could probably be discovered and reasonably adopted to get the budget shifts down to the required 10%. Yet, the MTR team will not take this sort of revision steps as this time, because the current structure of proposed activities is easiest for stakeholders to understand. Thus, it makes sense first to agree on the outputs and activities before undertaking any rearrangement that may make the project more difficult to understand.

Annex 6. Progress towards Indicator Targets

Note: Annex 4 provides proposed indicator revisions. For the table in this annex, however, the original indicators and targets are used to assess progress toward indicator targets. The assessment covers goal-level, objective-level, and outcome-level indictors. The ProDoc Project Results Framework and Annex 4 proposed indicators revisions also include output-level indicators, but MTR requirements suggest a focus on the objective and outcome level ones only for this "traffic light" assessment. The explanation in the rightmost column of this annex's table refers to the "traffic light assessment of indicators." Please see Annex 7 for explanation of the "progress towards results" type ratings, which are also included in this table. Incongruences between the "traffic light assessment of indicators" and "progress towards results" ratings, when they occur, are included in the explanation column of the table below.

Progress towards Results Matrix (Achievement of Objective and Outcome Indicators against End-of-project Targets)
Indicator assessment color key provided below table

Project Strategy	Indicator	Baseline Level	Level in most recent PIR (self-reported) – July 2018	End-of-project Target	Midterm Level & Assessment	Achieve-ment Rating	Explanation of "Traffic Light Assessment of Indicators" and Associated Recommendations – *for Justification of Achievement Rating, Please see Annex 7*
Project Objective: Enhancing reliable and affordable clean energy access for rural livelihoods in un-served and underserved areas	Cumulative CO_2 emission reduced from start of project to End-Of-Project (EOP), (tCO_2e)[6]	0	NA	69,115	NA – minimal	U	6 solar PV 5-ton cold storage units (that also have grid connection option) had been installed as project demos for a few or more months at the time of the MTR mission. Insofar as these are being used in solar PV mode, they are generating GHG ERs and electricity energy savings towards these indicators. Yet, given the large target and lack of clear plans for the rest of the project demos and the project scale-ups, the three indicators are considered not on track to be achieved by EOP.
	Total energy savings achieved from implemented RETPRLs by EOP MWhe MWh_{th}	 0 0	 0 0	 112,737 1,376,631	NA - minimal		
Outcome 1: Deployment of RE-rural livelihood application packages	No. of household enterprises adopting RETPRLs through demonstrations and replications in the targeted states by the EOP	0	0	30,000	NA - minimal	U	As above, the only demos to date are the 6 solar PV 5-ton cold storage units. While each unit might benefit a number of families, based on the one site visit, only about three farmers were using that unit to date. Given the large target and lack of clear plans for

[6] In ProDoc, this is included as a "goal indicator," but is here included as an objective indicator to fit the required format of this table, which focuses on objective and outcome indictors.

							the rest of the project demos and for the project scale-ups, this indicator is considered not on track to be achieved by EOP.
Outcome 2: Increased supply of RE technology and service providers for rural livelihood applications	No. of RE technology supply and service providers for rural livelihood applications by EoP	0	3 (shortlisted for support)	100	0	U	Annex 4 suggests modifying this indicator to link it to involvement of supply and service providers in the project demos or scale-ups. While the indicator as-is can be interpreted in different ways, because its base value is zero, it suggests some significant change from the baseline in what the supply and service providers are doing is needed for achievement. Thus, while the recent supply chain work by Villgro has identified 63 providers and OUAT's work in 2016 similarly identified many providers, we still assess this indicator as zero, because no changes have occurred in the providers. While three were shortlisted in 2016, no action has been taken and that effort appears to have been abandoned by the project.
Outcome 3.1: Inclusion of RE applications in national and state level rural livelihoods policies for key livelihood sectors in rural areas	No. of states enforcing policies on the RE applications as part of their SRLM and in line with the same policies at the national level by year 3	0	0	4	0	MU	To date, the project has not done any specific work to influence SLRM, NRLM, or MORD policies. At the same time, by beginning to cooperate with the three relevant SRLMs, the project can be seen to have opened the door towards working on SRLM policy aspects in the future.
Outcome 3.2: Future MNRE programs also cater to actions towards enhanced RE utilization in rural livelihoods	No. of MNRE programs that espouse RE applications for rural livelihoods programme by Year 3	0	0	1	1	MU	This indicator as currently stated may be understood to be met by the MNRE $10 million "RE for livelihoods scheme," establishment of which is one of the greatest achievements of the project to date. The reader may note that the outcome achievement indicator (MU) is incongruent with the "green" rating of progress toward the current indicator. This is because the MTR team suggests differentiating Outcome 3.2

							and Outcome 4.1 as follows: Because Component 4 is focused on financial mechanisms and Outcome 4.1 is focused on subsidy schemes, achievement of the MNRE Scheme and Odisha Scheme may be considered successes of Outcome 4.1, which is given an "S" achievement rating. Outcome 3.2, in turn, should be differentiated and focus not on the schemes but on long-term policy. Yet, incorporation of RE for livelihoods into long-term policy at MNRE has not yet been achieved and there is no work yet in this area. This in sum explains why the indicator, as currently articulated is rated "green," while the outcome achievement rating is "MU."
Outcome 3.3: Improved tariff and grid interconnection regulations for decentralized RE	No. of state regulatory commissions (SRCs) implement policy guidelines of improved tariff structure for decentralized RE by year 3	0	0	3	0	HU	No work has been initiated for this outcome. It's possible the project may want to revise this outcome: Inclusion of mini-grids may not be as appropriate for "RE for livelihoods" as they would have been at the time of project design. Given the current environment, technology applications that focus on specific enterprises that are willing to pay for a stable supply of electricity or higher power supply than available from grid, despite grid extension to every village in India, may be more appropriate than mini-grids. If the outcome is revised, original spirit may be maintained by focusing on policies that make the RETPRL business more attractive to suppliers, such as tax incentives and reduction in import tariffs.
Outcome 4.1: Improved decentralized RE subsidies and support for rural livelihoods	No. of developed improved overall subsidy and support models by Year 2	0	0	1	0	S	The original intent of this outcome and its indicator is the development of "improved" subsidy models that disburse monies in different ways from the standard subsidy models used. For example, disbursement may

							be made over time based on performance. No work has been done on developing such improved subsidy models, so progress toward the indicator is given a "red" traffic light rating. At the same time, as noted above for Outcome 3.2, suggested revision of indicators, would shift success in establishing "RE for livelihood" schemes to Outcome 4.1 (as a first step before achieving innovative subsidy models), but require Outcome 3.2 to achieve incorporation of "RE for livelihoods" into long-term policy of MNRE, which has not yet been achieved. The reason for the "S" achievement rating of Outcome 4.1 is explained in the achievement of the MNRE and OREDA "RE for livelihood" schemes, which are new in content ("RE for livelihoods"), though not innovative in delivery method. Under the current project indicators, Outcome 3.2 gets "credit" for the MNRE scheme, while Outcome 4.1 does not.
Outcome 4.2: Enhanced provision of financial support for decentralized RE in rural livelihood applications	No. of financial institutions supporting RETPRL by Year 3	0	0	3	0	HU	No work has been initiated for this outcome and no specific plans for such work have been made.
Outcome 4.3: Improved investment risk mitigation for decentralized RE in rural livelihood applications	Number of states implement designed suitable risk guarantee/mitigation mechanisms by Year 3	0	0	3	0	HU	No work has been initiated for this outcome and no specific plans for such work have been made.

Indicator Assessment Color Key

Green= Achieved	Yellow= On target to be achieved	Red= Not on target to be achieved

Annex 7. Explanations of Project Ratings Given and Rating Scales

The table below provides explanation of the ratings of the project given by the MTR team for each of (1) progress toward results, (2) implementation and adaptive management, and (3) sustainability. The rating scales are taken from UNDP guidelines, which are provided below the table.

Explanation of MTR Ratings Given

Type of Rating	Project Strategy	Rating and Achievement Description
Progress Towards Results	Objective: Enhancing reliable and affordable clean energy access for rural livelihoods in un-served and underserved areas	**U:** The project has two important successes in the institution of "RE for livelihoods" schemes by each of MNRE ($10 million) and OREDA ($700,000). Yet, similar to the lack of progress of the project overall, the MNRE scheme after being in place for 9 to 10 months has (at the time of the draft version of this report) still not sanctioned any projects. The greatest concern of the MTR team in assigning a "U" rating to progress towards the project objective is that this lack of significant movement with the MNRE scheme ten months after launch (and 3.8 years into the five-year project), along with various barriers to scheme progress (e.g. "benchmark prices," etc.), suggest a high probability that the $10 million scheme funds needed to achieve replication targets will not be substantially mobilized by project close, so that GHG ER targets will not met. Thus, while shifting to country office support or outsourced project management may get the demos implemented, wide-scale replication during the project's remaining lifetime is unlikely to occur unless other co-financing is secured. Overall, the project has three main aspects that make progress toward the objective unsatisfactory. (1) The project has simply not made much progress and even reversed some of the earlier progress made. The MTR team recognizes that UNDP has recently ramped up efforts and hopes that, as the quality and depth of this work is improved, the project can make a turnaround. (2) The progress that has been made is of questionable use in leading to replication, impact, and change. Consulting work that has been done will not necessarily lead to much impact unless the work is more closely tied to the demos. And, new demo proposals are not strategic enough in the technologies or approaches they select. The only demos that have been done (6 solar cold storage units) were done with 100% grant and do not appear to have been carefully enough planned (economics-wise) to ensure sustainability and replication without subsidy among similar groups. (3) The project is not being strategic enough in its pursuit of demonstration and large-scale replication and also has not strategically integrated these with its supply chain, policy, and financing work. For example, the project is not focusing on a specific group of technologies and there is no effort to look at the total demo budget and suggest how it might be distributed across such technologies; the project is not looking at how to tie in supply chain development with demonstration; and it is not addressing issues such as overlap with other subsidy programs (e.g. PV lights, PV pumps).
	Outcome 1: Deployment of RE-rural livelihood application packages	**U:** The project made some initial progress in 2015 and 2016 towards demonstration of RETPRLs when 69 proposals were shortlisted, but this progress was reversed when MNRE decided not to honor the 11 sanctions issued and not to sanction any more projects from the shortlist. Several subsequent proposals submitted directly from the SNAs (per the new mode decided upon by MNRE) did not receive responses, even though the scheme has now been in place for 9 to 10 months. The installation of six solar cold storage units, 2 in each state, is positive in that it represents deployment of

		an RETPRL that is not widespread and may be needed in places where hours of grid electricity are minimal. Yet, even when the grid situation supports their installation, the way these demos were carried out seems problematic in two regards. First, a 100% subsidy was used; and, second, there does not seem to be a strategic plan for ensuring the solar cold storage will be used for the purpose envisioned. At the one site the MTR team visited, most of the farmers are growing grain. While the unit had only been installed for a couple of months at the time of the MTR team's visit, it was disappointing to find that only a few farmers are using the unit; and the uses described most enthusiastically were arbitrage (buying something and selling it later when the price is high), rather than cold storage of the farmers' own crops. UNDP has recently commissioned a consultant to prepare proposals for MP, though the MTR team finds problems with the proposals and suggests the MP proposals be revisited once a decision on MTR recommendations is made. Concerns are: (1) Sewing center PV system: (a) The electricity from the PV systems for the sewing centers are not going to be used for productive uses by the beneficiaries. Instead the installation will be more of a financial investment (to get payback by net metering). We were told that the site has good electricity 24 hours a day, seven days a week. (b) The beneficiaries will not be paying any part of the costs of the systems, so project does not seem replicable once there are no subsidies. (c) The system prices proposed seem much too high. (2) PV pumps of 5 HP: This size of PV pump is supported by many other schemes, so it is not needed for ACE to support demo and scale-up. (3) PV lighting for NTFP sorting: Lighting is supported by many other schemes, so it is not needed for ACE to support demo and scale-up. (4) Solar cold storage units (which can also be plugged in to use grid power): Of the four demos proposed, this is the one that fits best in terms of demonstrating a technology that directly supports livelihoods and is not being demonstrated by other schemes on a large-scale. Yet, as with the six cold storage units already deployed, the proposal explains that the farmers are mainly growing grain, so don't yet have a use for these units. They will need to shift to different crops to make use of the units. Generally, in order to make economic viability of the demos more tenable, it is recommended the project pursue cases in which the livelihood is already well-established (e.g. already growing vegetables in the case of solar cold storage unit demos), so that the economic viability will be stronger. It will also be necessary to understand the availability of electricity at the locations for which the units are proposed to see if solar cold storage units are economically competitive to the alternative (cold storage units that can be plugged in, but are without the solar option).
	Outcome 2: Increased supply of RE technology and service providers for rural livelihood applications	**U**: The project had an initial RFP for RETPL suppliers and service providers in 2016 and short-listed 5 companies, but later abandoned the process. At the end of 2018, UNDP reinitiated efforts by contracting Villgro to handle supply chain work. Villgro was paid $74,200 at the end of 2018 for this work. A 26 page report (including title, content, and reference pages) was provided listing 55 suppliers and indicating 63 enterprises had been surveyed and 6 experts interviewed. No real plan for how this work will be focused and integrated with RETPRL demo and scale-up has been made clear; and the amount of payment so far seems quite high considering the output. Yet, Villgro has a history incubating enterprises and, with more focus on selected technologies and integration with the project demos (e.g. suppliers working with communities to develop demo proposals), this work could be promising. OUAT, in its draft compendium prepared under Outcome 1, also provides listing of suppliers for the many RETPRLs it covers. If the project develops a small group of 10-15 RETPRLs to focus on, OUAT could also be

		asked to elaborate its supplier work, which could then be compared to Villgro's.
	Outcome 3.1: Inclusion of RE applications in national and state level rural livelihoods policies for key livelihood sectors in rural areas	**MU:** No work has been done toward achieving this outcome. Yet, the project has begun to work with the SRLMs, making them familiar with the RE for livelihood concept.
	Outcome 3.2: Future MNRE programs also cater to actions towards enhanced RE utilization in rural livelihoods	**MU:** While no specific work has been done on this outcome, the presence of India ACE project has made MNRE aware of "RE for Livelihoods" and adoption of the scheme may be considered a first step in getting "RE for Livelihoods" in MNRE's long-term policy. At the same time, the scheme as a financial mechanism is considered in the category of Outcome 4.1 and thus, along with OREDA's scheme, leads to an "S" rating there.
	Outcome 3.3: Improved tariff and grid interconnection regulations for decentralized RE	**HU:** No work has been done toward achieving this outcome, though the MTR team recommends revising the outcome if it is decided not to include RE mini-grids among the 10-15 priority RETPRLs. Because of grid extension, priority RETPRLs may tend to focus on customers that have a strong willingness to pay for reliability instead of the general group of customers that would be served as a mini-grid. Revision of the outcome could maintain original spirit by focusing on policies that increase the attractiveness of being involved in the RETPRL business, such as tax incentives and import tariff reductions.
	Outcome 4.1: Improved decentralized RE subsidies and support for rural livelihoods	**S**: As for subsidy financing mechanisms, MNRE has established a $10 million scheme (for two fiscal years) and OREDA has established a $700,000 scheme for one fiscal year, though continuation of OREDA scheme is likely. What the project needs to do now in this regard is successfully implement the demos so the value of the schemes will be clear and the methodology of selecting the most relevant technologies be shown. Seeing well-done demos will be the most important way to get these schemes extended to future years. At the same time, to achieve the outcome, work will need to be done to determine innovative and more effective models for subsidy delivery, such as performance based subsidies. Once these are determined, they can be integrated into future phases of MNRE and state level RETPRL subsidy schemes.
	Outcome 4.2: Enhanced provision of financial support for decentralized RE in rural livelihood applications	**HU:** No work has been done toward achieving this outcome; and the project has not engaged with financial institutions.
	Outcome 4.3: Improved investment risk mitigation for decentralized RE in rural livelihood applications	**HU:** No work has been done toward achieving this outcome; and the project has not engaged with financial institutions.

Project Implementation and Adaptive Management	NA	**U**: Implementation of the project has been weak, though recently the UNDP CO has taken initiative to move the project forward. (1) Management arrangements: These are not working out well. MNRE is the IP, but has not been able to move the project forward. Further, the project is understaffed and only had a full-time PM for about one of its almost 4 years. The PM was based in UNDP CO while rest of team is based in MNRE. Recent country office support has created movement, but plans for how the project will be implemented going forward need to be confirmed. (2) Work planning: This area also seems weak, as the plans do not address issues/ problems (as described in this document) and focus mainly on component 1, but not the other aspects of the project. (3) Finance and co-finance: This area is positive in that the $10 million scheme has been set up and OREDA has its own $700,000 scheme for RE for livelihoods. (4) Project-level monitoring and evaluation systems: The project does appear to be keeping up with its QPRs and APRs, though lack of progress with the project shows that the M&E system is not sufficient to address serious problems. (5) Stakeholder engagement: Whereas early in the project, there was a high level of engagement, most stakeholders are quite frustrated with the project due to lack of progress and change of approach, which negated their hard work. (6) Reporting: Required reporting appears to have been carried out. (7) Communication: Communication is a problem area. MTR consultations showed that stakeholders are not kept in the loop. The SNAs as key partners are not clear what is happening with the project and do not receive timely feedback on their proposals. Follow up is very weak.
Sustainability	NA	**U**: Financial risks to sustainability are high: So far, the demos implemented (the six solar cold storage units) were installed with 100% grant. Other demo projects being proposed aim to weave together different subsidies, so that beneficiaries pay little if any. These kind of demos do not present strong replication potential once subsidies are lowered substantially or removed. Socio-economic and institutional risks are also high, mainly because the project has not progressed much, so cannot make a positive impact in these areas. Environmental risks are not high, but disposal of equipment after useful lifetime should be considered.

Rating Scales taken from UNDP Guidelines

Progress towards results rating scale:
Highly Satisfactory (HS): The objective/outcome is expected to achieve or exceed all its end-of-project targets, without major shortcomings. The progress towards the objective/outcome can be presented as "good practice."
Satisfactory (S): The objective/outcome is expected to achieve most of its end-of-project targets, with only minor shortcomings.
Moderately Satisfactory (MS): The objective/outcome is expected to achieve most of its end-of-project targets but with significant shortcomings.
Moderately Unsatisfactory (MU): The objective/outcome is expected to achieve its end-of-project targets with major shortcomings.
Unsatisfactory (U): The objective/outcome is expected not to achieve most of its end-of-project targets.
Highly Unsatisfactory (HU): The objective/outcome has failed to achieve its midterm targets, and is not expected to achieve any of its end-of-project targets.

Project implementation and adaptive management rating scale:
Highly Satisfactory (HS): Implementation of all seven components – (1) management arrangements, (2) work planning, (3) finance and co-finance, (4) project-level monitoring and evaluation systems, (5)

stakeholder engagement, (6) reporting, and (7) communications – is leading to efficient and effective project implementation and adaptive management. The project can be presented as "good practice."
Satisfactory (S): Implementation of most of the seven components is leading to efficient and effective project implementation and adaptive management except for only few that are subject to remedial action.
Moderately Satisfactory (MS): Implementation of some of the seven components is leading to efficient and effective project implementation and adaptive management, with some components requiring remedial action.
Moderately Unsatisfactory (MU): Implementation of some of the seven components is not leading to efficient and effective project implementation and adaptive management, with most components requiring remedial action.
Unsatisfactory (U): Implementation of most of the seven components is not leading to efficient and effective project implementation and adaptive management.
Highly Unsatisfactory (HU): Implementation of none of the seven components is leading to efficient and effective project implementation and adaptive management.

Sustainability rating scale
Likely (L): Negligible risks to sustainability, with key outcomes on track to be achieved by the project's closure and expected to continue into the foreseeable future
Moderately Likely (ML): Moderate risks, but expectations that at least some outcomes will be sustained due to the progress towards results on outcomes at the Midterm Review
Moderately Unlikely (MU): Significant risk that key outcomes will not carry on after project closure, although some outputs and activities should carry on
Unlikely (U): Severe risks that project outcomes as well as key outputs will not be sustained

Annex 8. UNEG Code of Conduct for Evaluators/ Midterm Review Consultants

Evaluators/Consultants:

1. Must present information that is complete and fair in its assessment of strengths and weaknesses so that decisions or actions taken are well founded.
2. Must disclose the full set of evaluation findings along with information on their limitations and have this accessible to all affected by the evaluation with expressed legal rights to receive results.
3. Should protect the anonymity and confidentiality of individual informants. They should provide maximum notice, minimize demands on time, and respect people's right not to engage. Evaluators must respect people's right to provide information in confidence, and must ensure that sensitive information cannot be traced to its source. Evaluators are not expected to evaluate individuals, and must balance an evaluation of management functions with this general principle.
4. Sometimes uncover evidence of wrongdoing while conducting evaluations. Such cases must be reported discreetly to the appropriate investigative body. Evaluators should consult with other relevant oversight entities when there is any doubt about if and how issues should be reported.
5. Should be sensitive to beliefs, manners and customs and act with integrity and honesty in their relations with all stakeholders. In line with the UN Universal Declaration of Human Rights, evaluators must be sensitive to and address issues of discrimination and gender equality. They should avoid offending the dignity and self-respect of those persons with whom they come in contact in the course of the evaluation. Knowing that evaluation might negatively affect the interests of some stakeholders, evaluators should conduct the evaluation and communicate its purpose and results in a way that clearly respects the stakeholders' dignity and self-worth.
6. Are responsible for their performance and their product(s). They are responsible for the clear, accurate and fair written and/or oral presentation of study limitations, findings and recommendations.
7. Should reflect sound accounting procedures and be prudent in using the resources of the evaluation.

International MTR Consultant Agreement Form

Agreement to abide by the Code of Conduct for Evaluation in the UN System:
Name of Consultant: _Eugenia Katsigris____
I confirm that I have received and understood and will abide by the United Nations Code of Conduct for Evaluation.
Signed at ___Dallas, Texas, USA__ *(Place)* on _____May 28, 2019_____ *(Date)*
Signature: __Eugenia Katsigris (*electronic signature*)_____

National MTR Consultant Agreement Form

Agreement to abide by the Code of Conduct for Evaluation in the UN System:
Name of Consultant: Sanjay Mande
I confirm that I have received and understood and will abide by the United Nations Code of Conduct for Evaluation.
Signed at __Delhi, India _____*(Place)* on _____May 29, 2019_____ *(Date)*

Signature: _____

Annex 9. TOR for MTR Consultants

1. INTRODUCTION

This is the Terms of Reference (ToR) for the UNDP-GEF Midterm Review (MTR) of the *full* -sized project titled *Scale Up of Access to Clean Energy for Rural Productive Uses (India ACE Project)* (PIMS 4605) implemented through the *Ministry of New and Renewable Energy (MNRE)*, which is to be undertaken in *2018*. The project started on the *23/7/15* and is in its *third* year of implementation. In line with the UNDP-GEF Guidance on MTRs, this MTR process was initiated before the submission of the second Project Implementation Report (PIR). This ToR sets out the expectations for this MTR. The MTR process must follow the guidance outlined in the document *Guidance For Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects*(*http://web.undp.org/evaluation/documents/guidance/GEF/midterm/Guidance_Midterm%20Review%20_EN_2014.pdf*).

2. PROJECT BACKGROUND INFORMATION

The India ACE project aims at demonstrating and developing the market for Renewable Energy Technology Packages for Rural Livelihoods (RETPRLs) in three states (Assam, Madhya Pradesh and Odisha). The project will work with carefully chosen RETPRLs for an initial group of rural districts that have unserved and underserved energy supply situation for ongoing or new livelihood activities. The target livelihood sectors include poultry, fisheries, dairy, horticulture, khadi, silk weaving, bamboo and commercial cooking. The RETPRLs will be demonstrated and replicated by the project before they are scaled up.

The objectives of the project are:

a) *Develop and demonstrate RETPRLs*
b) *Develop the supply chain for RE technology supply and service providers*
c) *Develop supportive policy and regulatory framework*
d) *Financial support for RE based livelihood applications.*

The project activities are broadly grouped into the following Outcomes:-

Component 1: Development and deployment of key RE-rural livelihood application packages

- **Outcome 1: Deployment of RE rural livelihood application packages**
  - *Output 1.1: At least ten (10) cost effective RE technology packages developed for rural livelihood (RETPRL) applications and established technical specifications*
  - *Output 1.2: Demonstrated and documented RE – rural livelihood application packages in 15 clusters and benefitting 1,500 household enterprises*
  - *Output 1.3: Completed training programmes and training of trainers activities for replication and scale up of RE – rural livelihood application packages*
  - *Output 1.4: Completed promotion of replicated and documented RE – rural livelihood application packages promoted to other districts / states and applied to 28,500 household enterprises*

Component 2: Supply chain for RE technology supply and service providers for enhancing rural livelihoods

- **Outcome 2: Increased supply of RE technology and service providers for rural livelihood applications**
  - *Output 2.1: Business development aspects supported for 100 RE technology supply and service providers for rural livelihoods applications*

Component 3: Policy and regulatory support for RE - rural livelihood applications

- **Outcome 3.1: Inclusion of RE applications in national and state level rural livelihoods policies for key livelihood sectors in rural areas**
  - *Output 3.1.1: National and State level rural livelihood mission statements / documents emphasising the use of RE*
  - *Output 3.1.2: National and State level policies that support the use of RE for key rural livelihood sectors*
  - *Output 3.1.3: Documented experiences and lessons on RE applications for rural livelihoods at suitable regional and international for a*

- **Outcome 3.2: Future MNRE programs also cater to actions towards enhanced RE utilisation in rural livelihoods**
  - *Output 3.2.1: Developed MNRE supported programme for enhanced RE utilisation in rural livelihoods*

- **Outcome 3.3: Improved tariff and grid interconnection regulations for decentralised RE**
  - *Output 3.3.1: Completed roadmap and workshops for supporting improved tariff structures for small scale captive and off-grid RE*
  - *Output 3.3.2: Developed and implemented regulatory, technical and tariff guidelines for RE based captive/decentralised systems' grid interconnection*

Component 4: Financial support for decentralised RE - rural livelihood applications

- **Outcome 4.1: Improved decentralised RE subsidies and support for rural livelihoods**
  - *Output 4.1.1: Assessed RE subsidy and support models for increased effectiveness of decentralized RE*
  - *Output 4.1.2: Improved RE subsidy and support models for increased effectiveness of decentralised RE for rural livelihoods funding*
- **Outcome 4.2: Enhanced provision of financial support for decentralised RE in rural livelihood applications**
  - *Output 4.2.1: Implemented financial support packages for RE technology – rural livelihood applications*
  - *Output 4.2.2: Pooled available financial resources for supporting viable livelihood business models and enhanced market linkages*
- **Outcome 4.3: Improved investment risk mitigation for decentralised RE in rural livelihood applications**
  - *Output 4.3.1: Enhanced risk mitigation mechanisms designed and supported for RE enterprises and RE technology adopters / end-users in rural livelihoods applications*

The project period is 60 months starting Aug 2015 to Aug 2020. The total project budget is $ 23,040,616. The GEF and UNDP share is $ 4,006,849 and $ 800,000 respectively, MNREs contribution is $ 10,000,000 and the remaining $ 8,233,767 will be leveraged from the private sector.

The project is co-financed with funding from GEF, and UNDP acts as the GEF Executing Agency.

The project is implemented by MNRE, with the overall responsibility for the achievement of project results as the Implementing Partner (GEF Local Executing Agency). UNDP provides overall management and guidance from its New Delhi Country Office (CO) and from the Bangkok Regional Hub (BRH) in Bangkok. UNDP is also responsible for the monitoring and evaluation of the project as per standard GEF and UNDP requirements.

3. OBJECTIVES OF THE MTR

The MTR will assess progress towards the achievement of the project objectives and outcomes as specified in the Project Document, and assess early signs of project success or failure with the goal of identifying the necessary changes to be made in order to set the project on-track to achieve its intended results. The MTR will also review the project's strategy and its risks to sustainability.

4. MTR APPROACH & METHODOLOGY

The MTR must provide evidence based information that is credible, reliable and useful. The MTR team will review all relevant sources of information including documents prepared during the preparation phase (i.e. PIF, UNDP Initiation Plan, UNDP Environmental & Social Safeguard Policy, the Project Document, project reports including Annual Project Review/PIRs, project budget revisions, lesson learned reports, national strategic and legal documents, and any other materials that the team considers useful for this evidence-based review). The MTR team will review the baseline GEF focal area Tracking Tool submitted to the GEF at CEO endorsement, and the midterm GEF focal area Tracking Tool that must be completed before the MTR field mission begins.

The MTR team is expected to follow a collaborative and participatory approach[7] ensuring close engagement with the Project Team, government counterparts (the GEF Operational Focal Point), the UNDP Country Office(s), UNDP-GEF Regional Technical Advisers, and other key stakeholders.

Engagement of stakeholders is vital to a successful MTR.[8] Stakeholder involvement should include interviews with stakeholders who have project responsibilities, including but not limited to *MNRE, UNDP, State Nodal Agencies and State Rural Livelihood Missions*; executing agencies, senior officials and task team/ component leaders, key experts and consultants in the subject area, Project Board, project stakeholders, academia, local government and CSOs, etc. Additionally, the MTR team is expected to conduct field missions to Guwahati, Bhopal and Bhubaneshwar.

The final MTR report should describe the full MTR approach taken and the rationale for the approach making explicit the underlying assumptions, challenges, strengths and weaknesses about the methods and approach of the review.

5. DETAILED SCOPE OF THE MTR

The MTR team will assess the following four categories of project progress. See the *Guidance For Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects* for extended descriptions.

i. Project Strategy

Project design:

- Review the problem addressed by the project and the underlying assumptions. Review the effect of any incorrect assumptions or changes to the context to achieving the project results as outlined in the Project Document.
- Review the relevance of the project strategy and assess whether it provides the most effective route towards expected/intended results. Were lessons from other relevant projects properly incorporated into the project design?
- Review how the project addresses country priorities. Review country ownership. Was the project concept in line with the national sector development priorities and plans of the country (or of participating countries in the case of multi-country projects)?
- Review decision-making processes: were perspectives of those who would be affected by project decisions, those who could affect the outcomes, and those who could contribute information or other resources to the process, taken into account during project design processes?
- Review the extent to which relevant gender issues were raised in the project design. See Annex 9 of *Guidance For Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects* for further guidelines.
- If there are major areas of concern, recommend areas for improvement.

[7] For ideas on innovative and participatory Monitoring and Evaluation strategies and techniques, see UNDP Discussion Paper: Innovations in Monitoring & Evaluating Results, 05 Nov 2013.
[8] For more stakeholder engagement in the M&E process, see the UNDP Handbook on Planning, Monitoring and Evaluating for Development Results, Chapter 3, pg. 93.

Results Framework/Logframe:

- Undertake a critical analysis of the project's logframe indicators and targets, assess how "SMART" the midterm and end-of-project targets are (Specific, Measurable, Attainable, Relevant, Time-bound), and suggest specific amendments/revisions to the targets and indicators as necessary.
- Are the project's objectives and outcomes or components clear, practical, and feasible within its time frame?
- Examine if progress so far has led to, or could in the future catalyse beneficial development effects (i.e. income generation, gender equality and women's empowerment, improved governance etc...) that should be included in the project results framework and monitored on an annual basis.
- Ensure broader development and gender aspects of the project are being monitored effectively. Develop and recommend SMART 'development' indicators, including sex-disaggregated indicators and indicators that capture development benefits.

ii. Progress Towards Results

Progress Towards Outcomes Analysis:

- Review the logframe indicators against progress made towards the end-of-project targets using the Progress Towards Results Matrix and following the *Guidance For Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects*; colour code progress in a "traffic light system" based on the level of progress achieved; assign a rating on progress for each outcome; make recommendations from the areas marked as "Not on target to be achieved" (red).

Table. Progress Towards Results Matrix (Achievement of outcomes against End-of-project Targets)

Project Strategy	Indicator[9]	Baseline Level[10]	Level in 1st PIR (self-reported)	Midterm Target[11]	End-of-project Target	Midterm Level & Assessment[12]	Achievement Rating[13]	Justification for Rating
Objective:	Indicator (if applicable):							
Outcome 1:	Indicator 1:							
	Indicator 2:							
Outcome 2:	Indicator 3:							
	Indicator 4:							
	Etc.							
Etc.								

Indicator Assessment Key

Green= Achieved	Yellow= On target to be achieved	Red= Not on target to be achieved

In addition to the progress towards outcomes analysis:

- Compare and analyse the GEF Tracking Tool at the Baseline with the one completed right before the Midterm Review.
- Identify remaining barriers to achieving the project objective in the remainder of the project.
- By reviewing the aspects of the project that have already been successful, identify ways in which the project can further expand these benefits.

iii. Project Implementation and Adaptive Management

[9] Populate with data from the Logframe and scorecards
[10] Populate with data from the Project Document
[11] If available
[12] Colour code this column only
[13] Use the 6 point Progress Towards Results Rating Scale: HS, S, MS, MU, U, HU

Management Arrangements:

- Review overall effectiveness of project management as outlined in the Project Document. Have changes been made and are they effective? Are responsibilities and reporting lines clear? Is decision-making transparent and undertaken in a timely manner? Recommend areas for improvement.
- Review the quality of execution of the Executing Agency/Implementing Partner(s) and recommend areas for improvement.
- Review the quality of support provided by the GEF Partner Agency (UNDP) and recommend areas for improvement.

Work Planning:

- Review any delays in project start-up and implementation, identify the causes and examine if they have been resolved.
- Are work-planning processes results-based? If not, suggest ways to re-orientate work planning to focus on results?
- Examine the use of the project's results framework/ logframe as a management tool and review any changes made to it since project start.

Finance and co-finance:

- Consider the financial management of the project, with specific reference to the cost-effectiveness of interventions.
- Review the changes to fund allocations as a result of budget revisions and assess the appropriateness and relevance of such revisions.
- Does the project have the appropriate financial controls, including reporting and planning, that allow management to make informed decisions regarding the budget and allow for timely flow of funds?
- Informed by the co-financing monitoring table to be filled out, provide commentary on co-financing: is co-financing being used strategically to help the objectives of the project? Is the Project Team meeting with all co-financing partners regularly in order to align financing priorities and annual work plans?

Project-level Monitoring and Evaluation Systems:

- Review the monitoring tools currently being used: Do they provide the necessary information? Do they involve key partners? Are they aligned or mainstreamed with national systems? Do they use existing information? Are they efficient? Are they cost-effective? Are additional tools required? How could they be made more participatory and inclusive?
- Examine the financial management of the project monitoring and evaluation budget. Are sufficient resources being allocated to monitoring and evaluation? Are these resources being allocated effectively?

Stakeholder Engagement:

- Project management: Has the project developed and leveraged the necessary and appropriate partnerships with direct and tangential stakeholders?
- Participation and country-driven processes: Do local and national government stakeholders support the objectives of the project? Do they continue to have an active role in project decision-making that supports efficient and effective project implementation?
- Participation and public awareness: To what extent has stakeholder involvement and public awareness contributed to the progress towards achievement of project objectives?

Reporting:

- Assess how adaptive management changes have been reported by the project management and shared with the Project Board.

- Assess how well the Project Team and partners undertake and fulfil GEF reporting requirements (i.e. how have they addressed poorly-rated PIRs, if applicable?)
- Assess how lessons derived from the adaptive management process have been documented, shared with key partners and internalized by partners.

Communications:

- Review internal project communication with stakeholders: Is communication regular and effective? Are there key stakeholders left out of communication? Are there feedback mechanisms when communication is received? Does this communication with stakeholders contribute to their awareness of project outcomes and activities and investment in the sustainability of project results?
- Review external project communication: Are proper means of communication established or being established to express the project progress and intended impact to the public (is there a web presence, for example? Or did the project implement appropriate outreach and public awareness campaigns?)
- For reporting purposes, write one half-page paragraph that summarizes the project's progress towards results in terms of contribution to sustainable development benefits, as well as global environmental benefits.

iv. Sustainability

- Validate whether the risks identified in the Project Document, Annual Project Review/PIRs and the ATLAS Risk Management Module are the most important and whether the risk ratings applied are appropriate and up to date. If not, explain why.
- In addition, assess the following risks to sustainability:

Financial risks to sustainability:

- What is the likelihood of financial and economic resources not being available once the GEF assistance ends (consider potential resources can be from multiple sources, such as the public and private sectors, income generating activities, and other funding that will be adequate financial resources for sustaining project's outcomes)?

Socio-economic risks to sustainability:

- Are there any social or political risks that may jeopardize sustainability of project outcomes? What is the risk that the level of stakeholder ownership (including ownership by governments and other key stakeholders) will be insufficient to allow for the project outcomes/benefits to be sustained? Do the various key stakeholders see that it is in their interest that the project benefits continue to flow? Is there sufficient public / stakeholder awareness in support of the long term objectives of the project? Are lessons learned being documented by the Project Team on a continual basis and shared/ transferred to appropriate parties who could learn from the project and potentially replicate and/or scale it in the future?

Institutional Framework and Governance risks to sustainability:

- Do the legal frameworks, policies, governance structures and processes pose risks that may jeopardize sustenance of project benefits? While assessing this parameter, also consider if the required systems/ mechanisms for accountability, transparency, and technical knowledge transfer are in place.

Environmental risks to sustainability:

- Are there any environmental risks that may jeopardize sustenance of project outcomes?

Conclusions & Recommendations

The MTR team will include a section of the report setting out the MTR's evidence-based conclusions, in light of the findings.[14]

Recommendations should be succinct suggestions for critical intervention that are specific, measurable, achievable, and relevant. A recommendation table should be put in the report's executive summary. See the *Guidance For Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects* for guidance on a recommendation table.

The MTR team should make no more than 15 recommendations total.

Ratings

The MTR team will include its ratings of the project's results and brief descriptions of the associated achievements in a *MTR Ratings & Achievement Summary Table* in the Executive Summary of the MTR report. See Annex E for ratings scales. No rating on Project Strategy and no overall project rating is required.

Table. MTR Ratings & Achievement Summary Table for (*Scale Up of Access to Clean Energy for Rural Productive Uses - India ACE Project*)

Measure	MTR Rating	Achievement Description
Project Strategy	N/A	
Progress Towards Results	Objective Achievement Rating: (rate 6 pt. scale)	
	Outcome 1 Achievement Rating: (rate 6 pt. scale)	
	Outcome 2 Achievement Rating: (rate 6 pt. scale)	
	Outcome 3 Achievement Rating: (rate 6 pt. scale)	
	Etc.	
Project Implementation & Adaptive Management	(rate 6 pt. scale)	
Sustainability	(rate 4 pt. scale)	

6. TIMEFRAME

The total duration of the MTR will be approximately *18* working days over a time period of *7* weeks, and shall not exceed five months from when the consultant(s) are hired. The tentative MTR timeframe is as follows:

ACTIVITY	NUMBER OF WORKING DAYS	COMPLETION DATE
Document review and preparing MTR Inception Report (MTR Inception Report due no later than 2 weeks before the MTR mission)	*2 days*	*03/09/18*
MTR mission: stakeholder meetings, interviews, field visits	*7 days*	*25/09/18*
Presentation of initial findings- last day of the MTR mission	*1 day*	*27/09/18*

[14] Alternatively, MTR conclusions may be integrated into the body of the report.

Preparing draft report (due within 3 weeks of the MTR mission)	*5 days*	*16/10/18*
Finalization of MTR report/ Incorporating audit trail from feedback on draft report (due within 1 week of receiving UNDP comments on the draft)	*3 days*	*24/10/18*

Options for site visits should be provided in the Inception Report.

7. MIDTERM REVIEW DELIVERABLES

#	Deliverable	Description	Timing	Responsibilities
1	**MTR Inception Report**	MTR team clarifies objectives and methods of Midterm Review	03/09/18	MTR team submits to the Commissioning Unit and project management
2	**Presentation**	Initial Findings	27/09/18	MTR Team presents to project management and the Commissioning Unit
3	**Draft Final Report**	Full report (using guidelines on content outlined in Annex B) with annexes	16/10/18	Sent to the Commissioning Unit, reviewed by RTA, Project Coordinating Unit, GEF OFP
4	**Final Report***	Revised report with audit trail detailing how all received comments have (and have not) been addressed in the final MTR report	24/10/18	Sent to the Commissioning Unit

*The final MTR report must be in English. If applicable, the Commissioning Unit may choose to arrange for a translation of the report into a language more widely shared by national stakeholders.

8. MTR ARRANGEMENTS

The principal responsibility for managing this MTR resides with the Commissioning Unit. The Commissioning Unit for this project's MTR is *UNDP India.*

The commissioning unit will contract the consultants and ensure the timely provision of per diems and travel arrangements within India for the MTR team. The Project Team will be responsible for liaising with the MTR team to provide all relevant documents, set up stakeholder interviews, and arrange field visits.

9. TEAM COMPOSITION

A team of two independent consultants will conduct the MTR - one team leader (with experience and exposure to projects and evaluations in other regions globally) and one team expert, usually from the country of the project. The consultants cannot have participated in the project preparation, formulation, and/or implementation (including the writing of the Project Document) and should not have a conflict of interest with project's related activities.

The selection of **international consultants** (team leader) will be aimed at maximizing the overall "team" qualities in the following areas:

- Recent experience with result-based management evaluation methodologies; (10%)
- Experience applying SMART indicators and reconstructing or validating baseline scenarios; (10%)
- Competence in adaptive management, as applied to Energy access, Clean Energy and Climate Change; (10%)

- Experience working with the GEF or GEF-evaluations; (10%)
- Experience working in India; (5%)
- Work experience in relevant technical areas for at least 10 years; (15%)
- Demonstrated understanding of issues related to gender and Energy Access, Clean Energy; experience in gender sensitive evaluation and analysis. (5%)
- Excellent communication skills; (10%)
- Demonstrable analytical skills; (10%)
- Project evaluation/review experiences within United Nations system will be considered an asset; (5%)
- A Master's degree in Energy/ Environment/ Business Management, or other closely related field. (10%)

10. PAYMENT MODALITIES AND SPECIFICATIONS

10% of payment upon approval of the final MTR Inception Report
30% upon submission of the draft MTR report
60% upon finalization of the MTR report

Annex 12. MTR Evaluative Matrix

Evaluative Questions	Indicators	Sources	Methodology
Project Strategy: To what extent is the project strategy relevant to country priorities, country ownership, and the best route towards expected results?			
Does the project fit in with country and state priorities, such as renewable energy priorities and livelihood priorities?	National priorities State priorities	The press quoting officials; national and state documents; stakeholders working for national and state institutions	Online search; review of official documents; stakeholder in-depth consultations
Is there a real need for the project on the energy and livelihood side?	Energy situation in rural areas; livelihood needs in rural areas	Stakeholders at the state and local level; experts	In-depth stakeholder consultations; expert reports
Given that the electric grid is reaching almost every village in India now, has that changed the relevance of the project as compared to when it was designed and/or launched?	Information on electrification situation; types of electrical driven and other energy using livelihood equipment needed	Energy and livelihood specialized stakeholders at the national, state, and local levels; experts	In-depth stakeholder consultations; expert reports
Is the project innovative and/or filling a niche that is not already filled? Given that there are other schemes addressing things like PV lighting and solar PV pumping, is the project just duplicating other efforts, or is it indeed addressing an unmet need?	Information on other MNRE schemes, other state schemes, and other donor projects	Scheme documents, reports, experts, stakeholders	In-depth stakeholder consultations, document review
Assuming there is an unmet need, does the project design combining demonstration, support for supply chain, policy, and financing aspects provide the best route to meet these needs?	Information on needs at state and local levels to effectively demonstrate RETPRLs and stimulate their replication	Stakeholders, ProDoc	In-depth stakeholder consultations, document review
Progress Towards Results: To what extent have the expected outcomes and objectives of the project been achieved thus far?			
Has the project deployed RETPRLs via demonstrations that are suitable to replication and is replication being stimulated?	Number and type of demonstration	Project reports; project management team in	Document review, stakeholder

	implemented; percent subsidy of demonstrations; contributions of beneficiaries to demonstrations; results of demonstrations in terms of income generation	Delhi; state coordination cell team; nodal agencies; local villagers implementing RETPRLs; actual installations	consultations, site visits
Has the project stimulated improved supply chain to supply and service the RETPRLs targeted?	Number of supply chain entities newly supplying or servicing RETPRLs in project areas; number of RETPRLs being newly supplied or serviced in project areas; number of supply chain entities directly involved in project demonstrations or replications	Project reports; project supply chain consultancy; supply chain entities; state nodal agencies	Document review; stakeholder consultations
Has the project resulted in policy changes or at least draft policies that will influence the growth in deployment of RETPRLs?	Policies or draft policies of livelihood mission at national or state level that raise RETPRLs; policies or draft policies of MNRE or state nodal agencies that raise RETPRLs	Policies, national and state officials working in renewable energy, national and state officials working in livelihoods	Document review; stakeholder consultations
Has the project made progress in supporting new financing mechanisms for RETPRLs?	Evidence of MNRE allocation to RETPRL programs; evidence of state nodal agency	MNRE scheme documents; state scheme documents; documents regarding	Online search; document review; stakeholder consultations

	allocation to RETPRL programs; evidence of bank loan programs supporting RETPRL loans; evidence of guarantee fund programs to support RETPRL loans; evidence of innovative support schemes for RETPRLs different than standard schemes (such as performance based payments)	bank loan programs; documents regarding bank loan guarantee programs; MNRE stakeholder input; state nodal agency stakeholder input; bank stakeholder input; donor stakeholder input	
Project Implementation and Adaptive Management: Has the project been implemented efficiently, cost-effectively, and been able to adapt to any changing conditions thus far? To what extent are project-level monitoring and evaluation systems, reporting, and project communications supporting the project's implementation?			
Considering the timeline left in the project, has sufficient progress been made towards results?	Project has completed its demonstrations and is likely to begin replication soon if not already having begun them; supply chain entities have begun supplying/ services most of the targeted RETPRLs in most of the targeted districts; targeted draft policies have been prepared; specific plans for financial mechanisms are in place with involved institutions identified	Project reports; stakeholders involved in demonstrations; stakeholders involved in supply chain work; supply chain entities; livelihood missions; state nodal agencies; MNRE stakeholders; banks or other financial institutions	Document review; stakeholder consultations

What have been the challenges/ barriers to achieving results? How have these problems been addressed?	Problems in implementation have been addressed promptly and issues have been resolved in timely fashion	PIRs; UNDP; MNRE; state nodal agencies; state coordinating cells; other stakeholders	Document review; stakeholder consultation
Was monitoring carried out as planned?	PIRs submitted on time; project results framework updated on time; tracking tool prepared; MTR carried out on time	PIRs; original project monitoring plan; project timeline	Document review; assessment of project timeline vis-à-vis monitoring conducted
What has been UNDP's role in the project?	UNDP actively involved in monitoring project and solving any problems that are occurring	PIRs; MNRE; PMU; UNDP	Stakeholder consultation; document review
Sustainability: To what extent are there financial, institutional, socio-economic, and/or environmental risks to sustaining long-term project results?			
Are the demos as carried out going to be sustainable?	Current use of equipment deployed in demos; income generated by equipment deployed in demos; operating issues with equipment deployed in demos	Beneficiaries of demos; state nodal agencies; state rural livelihood missions; project reports; NGOs knowledgeable of the situation of the demos	Stakeholder consultation (in person and by telephone); document review
Are the demos as carried out likely to be replicated?	% subsidy of the demos; % contributed to demos by beneficiaries; assessment of whether persons in similar situation to the beneficiaries could	Beneficiaries of demos; state nodal agencies; state rural livelihood missions; project reports; NGOs knowledgeable of the situation of the demos	Stakeholder consultation (in person and by telephone); document review

	carry out demos without subsidy		
What kind of policy changes will support sustainability?	Information on the way policy can support the long-term replication of RETPRLs	Experts; state nodal agencies; state rural livelihood missions	Stakeholder consultation
Is MNRE likely to institutionalize RETPRL support?	Statements in the press; existing policy or draft policy of MNRE	Policy documents or draft policy documents; press reports; MNRE stakeholders	Document review; online search; stakeholder consultations
Are the state nodal agencies likely to institutionalize RETPRL support?	Statements in the press; existing policy or draft policy of state nodal agencies	Policy documents or draft policy documents; press reports; state nodal agency stakeholders	Document review; online search; stakeholder consultations
Are the livelihood missions likely to institutional RETPRL support?	Statements in the press; existing policy or draft policy of livelihood missions	Policy documents or draft policy documents; press reports; rural livelihood mission stakeholders	Document review; online search; stakeholder consultations

Annex 13. Final MTR Report Clearance Form

Midterm Review Report Reviewed and Cleared By:

Commissioning Unit

Name: _____

Signature: _____ Date: _____

UNDP-GEF Regional Technical Advisor

Name: _____

Signature: _____ Date: _____