GREEN CLIMATE FUND | Simplified Approval Process

SIMPLIFIED APPROVAL PROCESS (SAP) TECHNICAL GUIDELINES

Renewable energy

INTRODUCTION

DEFINITION

Renewable energy (RE) is produced using natural resources that are constantly replaced within the human timescale. Just as there are many natural sources of energy, there are many technologies that can help to harness RE sources. Solar photovoltaic (PV) is the most well-known, wind power is the most widespread and hydropower is one of the oldest. Other RE technologies harness geothermal energy, solid waste or ocean-wave energy to produce heat or electricity.

While, at this stage, GCF does not have a list of RE technologies excluded or eligible under the simplified approval process (SAP) or the proposal approval process (PAP), applicants to the SAP are invited to familiarize themselves with the GCF Environmental and Social Screening Checklist[1] to assess if their proposed project meets minimum eligibility requirements.

LINKS TO CLIMATE CHANGE

Reducing the emissions associated with electricity generation and energy use is a core part of the climate change mitigation challenge. In the energy sector, the core GCF strategy is to increase the share of renewables in countries' electricity generation mix and to ensure access to energy becomes access to clean energy, while making sure energy consumption is efficient. One way of achieving this is by reducing reliance on fossil fuels. Energy has a cross-cutting input into most segments of the economy and is linked to many of the results areas of GCF.[2] As many countries are embarking on major new initiatives to invest in their energy infrastructure, there is an urgent need to step up efforts to shift these investments towards low-emission sources of energy.

1. *Guidelines for the Environmental and Social Screening of Activities Proposed under the Simplified Approval Process. Available at: <https://g.cf/2XlwZ7O>*
2. *Identification of result areas where targeted GCF investment would have the most impact. Available at: < https://g.cf/2MVKmY9>*

With energy use accounting for over two-thirds of total annual greenhouse gas emissions,[3] decarbonization of the sector through RE development is a key pillar of several countries' mitigation strategies. In fact, while several paths have the potential to mitigate climate change, RE and energy efficiency provide the optimal pathway to deliver the majority of the emission cuts needed at the necessary speed. Together they can provide over 90 percent of the energy-related carbon dioxide (CO_2) emission reductions required to limit global temperature increase to under 2 °C.[4] According to the International Panel on Climate Change (IPCC),[5] for the world to meet the goal of limiting temperature increase to 1.5 °C , renewables must supply 70-85 percent of electricity in 2050.

APPROACH

KEY AREAS / COMPONENTS

There are three complementary but distinct dimensions of reducing emissions from energy production.[6] The first is to support increases in large-scale deployment of low-carbon electricity as an alternative to conventional fossil fuels. These investments can offer co-benefits, including improving air quality and associated health benefits; they can also foster the creation of new jobs and industries and offer energy-security benefits. Actions to this end include scaling up the deployment of relevant technologies (e.g. wind and solar PV), the use of which has gained global momentum, and which have significant scaling up potential. Indeed, increased penetration of renewable-energy technologies is the top mitigation need identified by countries in their technology needs assessments.[7]

The second dimension is to seize the significant mitigation potential associated with increasing access to low-emission energy technologies. Such interventions may be highly relevant in the least developed countries (LDCs) where an estimated 2.6 billion people are still using biomass for cooking and more than 1 billion still lack access to electricity. Access to modern energy services for lighting and cooking are the two key needs usually highlighted by the international community. The mitigation potential from such interventions is significant. The immediate term mitigation potential from these interventions is nevertheless relatively small when compared with other possible interventions, but the co-benefits are substantial and can help to support the transition to low-emission development, particularly in LDCs. For instance, three recently GCF-funded green mini-grids projects are expected to help to reduce 1,950 $ktCO_2$ emissions while providing tier 3 or above access to clean and sustainable energy to 750,000 people.

The third dimension is to support the development and implementation of innovative approaches to climate change mitigation in the energy sector. In the coming years, greater resilience to climate change impact will be essential to ensure the technical viability of the energy sector and its ability to cost-effectively meet rising energy demand. The use of indigenous RE sources, such as solar, and wind, can improve energy security but is linked with intermittency challenges.

In this sense, innovative solutions (e.g. storage, smart retrofitting, or aggregation that achieves economies of scales through virtual power plants) will play a key role in the journey towards a more reliable RE systems while incentivizing the private sector to engage in the global energy transition. Innovative solutions will also be key in helping to replace or retrofit the centralized electricity grid with decentralized, resilient, renewable power while combining it with energy efficiency measures.

Lastly, despite the positive trends highlighted above, RE will continue to face an uphill battle for as long as environmental externalities associated with burning fossil fuels remain unaccounted for in the economy. In this sense, legislative change and policy direction led by governments have a key role in directing market forces in a way that can create certainty for investors and incentives for innovation. For this reason, regulations and policies play a prominent role in creating an enabling environment for the three types of interventions above.

3. International Renewable Energy Agency (IRENA) 2015. Rethinking Energy. Available at: <www.irena.org/publications/2015/Nov/REthinking-Energy-Renewable-Energy-and-Climate-Change>.
4. International Renewable Energy Agency (IRENA) 2018. Global Energy Transformation: A Roadmap to 2050. Available at: <www.irena.org/publications/2018/Apr/Global-Energy-Transition-A-Roadmap-to-2050>.
5. International Panel on Climate Change (IPCC) 2018. Global Warming of 1.5 oC: Summary for Policymakers. Available at: <www.ipcc.ch/sr15/>.
6. GCF/B.09/06.
7. United Nations Framework Convention on Climate Change (UNFCCC) 2013. Subsidiary Body for Scientific and Technological Advice document FCCC/SBSTA/2013/INF.7. Available at: <http://unfccc.int/resource/docs/2013/sbsta/eng/inf07.pdf>

PARADIGM SHIFT POTENTIAL

Access to energy is essential for poverty reduction, yet the means by which we have been producing energy – fossil fuel combustion – is the biggest contributor worldwide to climate change. Our dependence on fossil fuels is impacting the energy security of nations across the world. The negative effects of burning fossil fuels on human health and the environment are increasingly evident. Outdoor air pollution kills 4.2 million people every year, and over 90 percent of the world's population live in locations where air quality is below World Health Organization (WHO) guideline limits.[8] However, while RE is advancing swiftly – accompanied by sharp cost reductions for solar and wind power, in particular – the growth rate needed to prevent dangerous climate change has yet to be achieved.

GCF was established as a result of the world's political commitment and global action to realize the transition to a low-carbon agenda. The case is a compelling one, with RE becoming more competitive than fossil fuels in many parts of the world. As investments rise in renewables, manufacturing costs fall exponentially, and renewable power generation becomes increasingly competitive year after year. This shift in energy paradigm is already evident: with some 173 countries now having plans for RE interventions. However, because funding from public sources is scarce, concessional finance is urgently needed to encourage the private sector to invest in the RE interventions required to meet 2050 targets. The development of appropriate financing instruments by GCF is one way to address the barriers and risks that presently hold back private investment. GCF is ready to step up its contribution to emerging economies to facilitate an inclusive and sustainable development based on clean energy.

8. WHO 2017. Air Pollution. Available at: <www.who.int/airpollution/en/>.

IMPACT MEASUREMENT

Applicants should ensure a project's paradigm-shift potential is measured using a combination of quantitative and qualitative information aligned with the GCF performance measurement frameworks (PMFs).[9] Where applicable, RE projects that also generate adaptation results should report adaptation indicators; similarly, sex-disaggregation for the indicators is to be applied where applicable. A table with relevant fund-level impacts and project/programme-level outcomes is presented below:

9. *Mitigation and Adaptation Performance Measurement Frameworks. Available at: https://g.cf/2IRwNUu >*

EXPECTED RESULTS	INDICATORS	NOTES
Fund-level Impacts		
Emission mitigated	Tonnes of carbon dioxide equivalent (tCO_2eq) reduced	Aggregate summation of tCO_2eq reduction indicators. Intended to be estimated ex-ante and reported annually and ex post
	Cost per tCO_2eq decreased	Intended to help to understand anticipated costs (ex-ante) as well as trends in reducing costs of mitigation over time
Finance leveraged	Volume of finance leveraged by the Fund	Considered synonymous with the term "mobilized" (used by other funds); to be disaggregated by public and private sources
Reduced emissions through increased low-emission energy access and power generation	Tonnes of carbon dioxide equivalent reduced or avoided as a result of the project	Greenhouse gas (GHG) emission reduction from increased low-emission energy access and power generation
Co-benefits achieved	Social, environmental, economic co-benefits	Co-benefit indicator related to GHG reductions/low-emissions development pathways and sustainable development
Project/Programme outcomes		
Technology transferred	Number of technologies and solutions transferred	Technology transfer licensed, facilities created, and projects that include transfer of technology and solutions
Strengthened institutional and regulatory systems for low-emission planning	Regulatory systems for low-emission development	Indicate what can be measured at different levels and what changes are tied to the work of GCF
	Number and level of effective coordination mechanisms	Seeks to measure evidence of measures taken for promoting coordination and synergy at the regional and international levels
Increased number of small, medium and large low-emission power suppliers	Proportion of low-emission power supply in the market	Seeks to increase the share of renewables in the generation mix
	Number of households, and individuals with improved access to low-emission energy sources, disaggregated by sex	Seeks to increase access to clean energy, either through substitution of polluting sources, or through green field projects that promote market transformation
Reduced household electricity expenses	Share of household income spent on fuel and electricity	Seeks to transfer the concessionality of GCF funding to end users when adopting clean-energy pathways. Applicable only to brownfield projects
Reduced health and safety expenses	Saving from reduced health hazards	Co-benefit indicator from access to clean energy
Reduced indoor pollution	Ambient concentrations of air pollutants	Co-benefit indicator from access to clean energy
Reduced deforestation	Rate of deforestation attributed to energy use or energy generation	Seeks to keep a balanced approach towards mitigation by making sure energy use or energy generation does not deplete forests

INDICATIVE SIMPLIFIED APPROVAL PROCESS ACTIVITY MATRIX FOR RENEWABLE ENERGY[10]

10. These activities may not be eligible under the SAP under certain conditions. Accredited entities will need to screen their projects to determine if they are low risk and therefore eligible for consideration under SAP. Factors such as the scale of operations may increase the risk level.

SAP-ABLE EXAMPLES

Reduced emissions through increased low-emission energy access and power generation

SECTOR	SAMPLE SAP-ABLE ACTIVITY	SAMPLE INDICATOR	NOTES
Renewable energy	Off-grid electrification by means of stand-alone systems and/or ground-mounted micro-scale solar PV Mini-grids (connecting a number of households) with a safeguard on grid connection and general environment, health, and safety EHS safeguards at implementation	Number of households electrified, disaggregated by sex Level of fossil fuel displaced/ Climate impact Potential for productive use (PUE) Tier service level achieved Private-sector funds mobilized	The project concept note should demonstrate the presence of sufficient local expertise to ensure the long-term well-functioning of the installed equipment. Projects should not involve physical displacement (relocation, loss of residential land or loss of shelter), economic displacement (loss of land, assets or access to assets, including those that lead to loss of income sources or other means of livelihood), or both, caused by project-related land acquisition or restrictions on land use where affected persons or communities do not have the right to refuse land acquisition or restrictions on land use that result in displacement.
	Rooftop solar programmes	Energy capacity	This activity is SAPable as long as it demonstrates no to minimal environmental and social risks
	Training and capacity-building to State and non-State actors	Level of enabling environment created in relation to the three main challenges Number of conducive reforms achieved Number of Trainings of Trainers successfully completed, disaggregated by sex	This should not constitute the main deliverable of the proposed project
	Extension of credit lines to local financial institutions to increase lending to renewable energy projects (e.g. solar water heater, wind-powered pumps)	Investment leveraged Renewable energy capacity installed tCO_2eq avoided Number of participating financial institutions	The applicant should prove the new credit lines will not increase the level of debt of vulnerable communities. The project scope should include the actual delivery of renewable energy infrastructure through the supported credit lines
	Viability gap fund for micro scale solar PV plant crowding in public and private capital with a safeguard on grid connection and general EHS safeguards at implementation	Investment leveraged Renewable energy capacity installed tCO_2eq avoided	This can take the form of concessional finance and grants. Projects should not involve physical displacement (relocation, loss of residential land or loss of shelter), economic displacement (loss of land, assets or access to assets, including those that lead to loss of income sources or other means of livelihood), or both, caused by project-related land acquisition or restrictions on land use where affected persons or communities do not have the right to refuse land acquisition or restrictions on land use that result in displacement.

NON SAP-ABLE EXAMPLES

SECTOR	SAMPLE NON-SAP-ABLE ACTIVITY	NOTES
Renewable Energy	Large scale solar farm	Large scale solar farm may be able to align with GCF ESS safeguards but will still not be SAP-able as this will not be having no to minimal E&S risks/impacts.
	Hydropower plants (Pico- and micro-hydro installations may be eligible, subject to minimal environmental and social risks and impacts satisfying GCF SAP requirements, and greenhouse gas impact potential quantified by feasibility studies, and demonstrates no to minimal environmental and social risks/impacts)	Rationale: Involving the construction of large-scale infrastructure, potential for destruction of natural habitats and resettlements of communities
	Biomass to energy projects not supported by feasibility studies covering to the satisfaction of GCF (1) the climate mitigation impact potential, (2) the cost of alternative solutions, and (3) an environmental study covering the sustainability and the impacts of the biomass supply	Example: Palm oil mill effluent to energy plants
	Installation and piloting of untested technologies	–
	Research and development expenses	–

PROJECT SCENARIOS

PROJECT SCENARIO 1

CONTEXT
Rural communities in developing countries are often afflicted by limited access to affordable and clean energy sources. Heavy reliance on diesel generators and biomass burning increases greenhouse gas emissions, while prolonged exposure to paraffin smoke can intensify respiratory and eye infections among the rural poor.

PROJECT ACTIVITIES:
The project focused on removing barriers to the wide-scale utilization of RE technologies to meet the basic electricity needs of households and small businesses. Project activities included:

- **Delivery of RE-based technology packages,** including the installation of PV stand-alone and pico-hydro systems to benefit households, schools and health centres.
- **Awareness-raising,** in the form of information made available to the general public to increase awareness on the role of RE in meeting basic energy needs in rural areas.
- **Training of trainers,** including training workshops on technical and financial aspects delivered to a cohort of technicians and trainers.
- **Innovative financial mechanism,** with the the implementation of performance-based grants and a credit guarantee scheme for the dissemination of RE based technologies.
- **Environmental and social screening of activities** conducted by the project sponsor, together with technical experts, to establish compliance with safeguards on the use and proper disposal of equipment (e.g. PV modules, batteries) and general EHS safeguards at implementation.

IMPACT POTENTIAL
The project will deliver access to clean energy to 50,000 people leading to 100,000 tCO_2eq emission avoided over the lifetime of the project. This corresponds to roughly USD 25 per tCO_2eq avoided. The sustainability of the systems is ensured by a cohort of 165 newly trained technicians.

PROJECT SCENARIO 2

CONTEXT
Even with strong consumer confidence in the reliability of solar water heater (SWH) technology, the high upfront cost of SWHs is still a substantial market barrier when compared to cheaper water-heating alternatives, such as gas water heaters. Replacing electric water heaters with solar ones will improve the grid emission factor on generation systems that are heavily reliant on fossil fuel.

PROJECT ACTIVITIES:
The project development objective is the implementation of an effective and innovative programme to incentivize the acquisition of domestic water heater equipment. This consists of a range of institutional and financial support to develop and sustain the SWH market, including:

- **A credit support mechanism,** consisting in a 7 percent interest buy-down to lower the 14 percent commercial lending rate for similar products. In addition, participating banks agreed to a further reduction of 7 percent during the first 12 months following loan disbursement, meaning a 0 percent interest charge for SWH buyers.
- **Assessment and monitoring of clients' repayment capacity,** working together with participating financing institutions to raise awareness and improve measurement of the risk of over-indebtedness among the rural poor.
- **Environmental and social screening of activities,** conducted by the project sponsor, together with technical experts, to establish satisfactory safeguards on the use and disposal of SWH equipment and general EHS safeguards at implementation.

IMPACT POTENTIAL
During the first year of implementation, the programme contributed to the installation of 7,200 solar water-heating systems, resulting in the reduction of 10,000 tCO_2eq and will improve the grid emission factor of 10 percent over the lifetime of the equipment.

PROJECT SCENARIO 3

CONTEXT

Rural farmers are responsible for 60 percent of the livelihoods in the country, yet their productivity is affected by a lack of reliable energy supply. This situation leads to LDCs scoring lower in the Global Food Security Index. With growing seasons becoming more unreliable due to climate change and rapidly growing demographics, LDCs are under growing pressure to improve the food security of their citizens.

PROJECT ACTIVITIES:

The project's development objective is to provide un-electrified farmers with least-cost reliable electricity supply for productive uses using RE technology to increase the productivity and income of rural communities. The project included a number of complementary and self-reinforcing components:

- **Promotion campaigns,** designed to increase awareness among farmers, private-sector companies and government agencies about the potential benefits of RE technologies. This included national and regional producer workshops, demonstration events and fairs.
- **Institutional strengthening** to increase the capacity of private and public sector technicians to work with farmers to promote, design, install and maintain farm-based RE systems and build the capacity of RE vendors.
- **Marked development** consisting of scaling up projects for (a) solar-based solutions for agricultural processing and cooling, (b) solar water heating for sterilization of vegetables, and (c) solar-/wind-driven solutions for electricity supply.
- **Productive use** following the market development initiative and consisting in direct financial incentives to support the installation of productive solar-powered systems.
- **Vendor financing facility** to enable farmers to access concessional finance and invest in RE solutions.

IMPACT POTENTIAL

The project demonstrated the technical viability of solar-based solutions to empower the productivity of rural farmers. At the end of its implementation period, the project had contributed to the installation of solar energy and agricultural systems across an estimated 600,000 unelectrified farmers leveraging five times the initial capital invested by the project sponsor and achieving a mitigation impact of 150,000 tCO_2eq over the project's lifetime.

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