



**GREEN
CLIMATE
FUND**

Meeting of the Board
18 – 21 August 2020
Virtual meeting
Provisional agenda item 11

GCF/B.26/02/Add.01

28 July 2020

Consideration of funding proposals - Addendum I

Funding proposal package for FP129

Summary

This addendum contains the following seven parts:

- a) A funding proposal titled " Afghanistan Rural Energy Market Transformation Initiative - Strengthening Resilience of Livelihoods Through Sustainable Energy Access";
- b) No-objection letter issued by the national designated authority(ies) or focal point(s);
- c) Environmental and social report(s) disclosure;
- d) Secretariat's assessment;
- e) Independent Technical Advisory Panel's assessment;
- f) Response from the accredited entity to the independent Technical Advisory Panel's assessment; and
- g) Gender documentation.

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Funding Proposal

Project/Programme title:	Afghanistan Rural Energy Market Transformation Initiative – Strengthening Resilience of Livelihoods Through Sustainable Energy Access
Country(ies):	Afghanistan
Accredited Entity:	United Nations Development Programme
Date of first submission:	<u>[2018-06-22]</u> [V.1]
Date of current submission	<u>[2020/06/26]</u>
Version number	<u>[V.9]</u>



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Note to Accredited Entities on the use of the funding proposal template

- Accredited Entities should provide summary information in the proposal with cross-reference to annexes such as feasibility studies, gender action plan, term sheet, etc.
- Accredited Entities should ensure that annexes provided are consistent with the details provided in the funding proposal. Updates to the funding proposal and/or annexes must be reflected in all relevant documents.
- The total number of pages for the funding proposal (excluding annexes) **should not exceed 60**. Proposals exceeding the prescribed length will not be assessed within the usual service standard time.
- The recommended font is Arial, size 11.
- Under the GCF Information Disclosure Policy, project and programme funding proposals will be disclosed on the GCF website, simultaneous with the submission to the Board, subject to the redaction of any information that may not be disclosed pursuant to the IDP. Accredited Entities are asked to fill out information on disclosure in section G.4.

Please submit the completed proposal to:

fundingproposal@gcfund.org

Please use the following name convention for the file name:

“FP-[Accredited Entity Short Name]-[Country/Region]-[YYYY/MM/DD]”

A. PROJECT/PROGRAMME SUMMARY			
A.1. Project or programme	Project	A.2. Public or private sector	Public
A.3. Request for Proposals (RFP)	Not applicable		
A.4. Result area(s)	<p><u>Mitigation:</u> Reduced emissions from:</p> <input checked="" type="checkbox"/> Energy access and power generation: <input type="checkbox"/> Low-emission transport: <input type="checkbox"/> Buildings, cities, industries and appliances: <input type="checkbox"/> Forestry and land use: <p><u>Adaptation:</u> Increased resilience of:</p> <input type="checkbox"/> Most vulnerable people, communities and regions: <input type="checkbox"/> Health and well-being, and food and water security: <input type="checkbox"/> Infrastructure and built environment: <input type="checkbox"/> Ecosystem and ecosystem services:		<p><u>GCF contribution:</u> 100% <u>Enter number%</u> <u>Enter number%</u> <u>Enter number%</u></p> <p><u>Enter number%</u> <u>Enter number%</u> <u>Enter number%</u> <u>Enter number%</u></p>
A.5. Expected mitigation impact	173,082 tCO ₂ e	A.6. Expected adaptation impact	49,000 beneficiaries (of which over 23,500 are women) benefiting from access to resilient energy systems 0.17% of total population
A.7. Total financing (GCF + co-finance)	<u>21,398,843 USD</u>	A.9. Project size	Small (Upto USD 50 million)
A.8. Total GCF funding requested	<u>17,198,843 USD</u>		
A.10. Financial instrument(s) requested for the GCF funding	<input checked="" type="checkbox"/> Grant <u>USD 17,198,843</u> <input type="checkbox"/> Loan <u>Enter number</u> <input type="checkbox"/> Guarantee <u>Enter number</u>	<input type="checkbox"/> Equity <u>Enter number</u> <input type="checkbox"/> Results-based payment <u>Enter number</u>	
A.11. Implementation period	5 years	A.12. Total lifespan	25 years ¹
A.13. Expected date of AE internal approval	11/4/2019	A.14. ESS category	B
A.15. Has this FP been submitted as a CN before?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> As SAP Funding Proposal	A.16. Has Readiness or PPF support been used to prepare this FP?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
A.17. Is this FP included in the entity work programme?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	A.18. Is this FP included in the country programme?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
A.19. Complementarity and coherence	<i>Does the project/programme complement other climate finance funding (e.g. GEF, AF, CIF, etc.)? If yes, please elaborate in section B.1.</i> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
A.20. Executing Entity information	Government of Afghanistan acting through the Ministry of Rural Rehabilitation and Development (MRRD).		
A.21. Executive summary (max. 750 words, approximately 1.5 pages)			
<p>1. Due to a long period of neglect and under-investment after decades of instability and war, the energy infrastructure in Afghanistan, in particular in rural areas, is now in a dire state, causing a situation in which the</p>			

use of diesel and kerosene fuel is the current model for rural energy use with resulting high GHG emissions. On a binary basis, the national grid connected electrification rate is 30%² which means that nearly 24.5 million people in Afghanistan³ are not connected to modern energy although a large part of the rural population may have some sort of electricity access, often through the use of diesel generators.

2. Renewable energy mini-grids ('mini-grids') are expected to play an important role in bridging the electricity access deficit in Afghanistan in a timely manner, while at the same time offering clean, low-emission energy services. The opportunity around mini-grids is centered around a number of key trends – lower hardware costs (e.g., solar modules, energy efficient appliances), disruption via the advent of digital and cellular technologies, and potential interest from the private sector, bringing new, innovative business models.
3. However, the traditional power sector policy and regulatory frameworks in Afghanistan, focused on the national grid and centralized generation, are not suitable for mini-grids given differences in the cost structures, size and economic profiles of consumer bases and the magnitude of electricity sales. Mini-grid development in Afghanistan – and the potential for eventual, scaled-up commercial investment – will need an enabling environment consisting of policies and regulations (e.g. for licensing and tariffs setting), green procurement guidelines, institutional frameworks, delivery models and financing, technological solutions, capacity building, proof-of-concept pilots and cross-sector linkages.
4. The objective of the project is to kick-start rural renewable energy market transformation in Afghanistan and create the conditions for upscaling and long-term sustainability, through a combination of: (1) policy and regulatory design, facilitating public and private sector financing; (2) capacity building and awareness raising of the public and private sectors and end-users; and (3) investment in the set-up of 3 greenfield solar mini-grids, providing access to 49,000 beneficiaries of which 23,500 women, and creation of an “upscaling platform” to facilitate additional solar mini-grid investments. The upscaling platform will consist of: (i) a knowledge platform, including a solar mini-grid practical development manual, online evidence and data sharing tools, and full technical studies for 5 additional mini-grids; (ii) development and mainstreaming of green procurement policies for solar mini-grids; and (iii) development and mainstreaming of environmental and social governance (ESG) policies for solar mini-grids.
5. Ultimately, the project aims to contribute, in a phased approach, to a large volume of solar mini-grid development in Afghanistan and – with the long-term improvement in macroeconomic and security conditions – the eventual involvement of private investment for mini-grid development beyond operation and maintenance only. The project covers the first, pilot phase out of a three-phased development process of mini-grid market development in Afghanistan, set out in Figure 1 on page 6. This first phase is based on a semi-utility mini-grid ownership model with outsourced operation & maintenance to the private sector. This is expected to create a basis for private sector interest in mini-grid development and to contribute to the build-up of expertise in technical and managerial aspects related to mini-grid design, construction, and operation & maintenance. This will include data gathering and key performance indicators including, but not limited to: demand profiles for electricity; revenue streams, willingness to pay and average revenue per user (APRU); exploration of smart meters and different payment models; and optimizing system-sizing and mini-grid financial viability by means of productive use stimulation. Following this first pilot phase, a second scale-up phase in Afghanistan can consist of moving towards further private sector engagement, including initial private sector ownership BOOT/BOO⁴ models, with considerable public support via development banks. The ultimate goal of mini-grid development in Afghanistan is reflected in a third, maturity phase - served by wide-spread private sector-based BOOT/BOO models with minimal public support. This project covers the first pilot phase, while the scale-up phase and maturity phase fall outside of the scope of this submission.
6. This approach will create the basis for mainstreaming renewable energy mini-grid solutions and continued reduced GHG emission as compared to the alternative, diesel-generated power. The project will result in 173,082 tCO₂e_q reduction from the implementation of 3 solar mini-grids⁵. The implementation of three proof-of-concept solar mini-grid pilots will thereby address enhanced resilience to climate change impact for 49,000 beneficiaries, of whom 23,500 are women as a result of the additional services that will become available with Tier 3⁶ level of energy access.
7. Grant financing is requested from the GCF to develop the necessary basis for renewable energy mini-grid mainstreaming, thereby reducing GHG emissions from diesel and kerosene use in rural areas. A grant

¹ Mini-grid useful life, counted from the first year when the mini-grid starts producing electricity.

² The World Bank Group, 2017. Afghanistan Country Snapshot, Washington, DC, USA.

³ On the basis of estimated 35.5 mln population in 2017: <http://data.worldbank.org/country/afghanistan>.

⁴ Build-Own-Operate-Transfer (BOOT)/Build-Own-Operate (BOO)

⁵ Emission reduction over the 25-year lifetimes of 3 solar mini-grids

⁶ See World Bank/ESMAP 5 Tiers of energy access described in ESMAP/World Bank, 2015, Beyond Connections, Energy Access Redefined,

request from the GCF is considered appropriate as the financial constraints under which the Government of Afghanistan operates, coupled with private investors' risk aversion toward rural mini-grid projects, creates a situation in which Afghanistan continues to depend on foreign grants for energy development in the medium term⁷.

⁷ See also: 1. CAREC: Study for Power Sector Financing Roadmap, Mobilizing Financing for Priority Projects, Afghanistan, PwC Report. September, 2016. 2. Debt Sustainability Analysis Afghanistan, November 2017, IMF, Washington.

B. PROJECT/PROGRAMME INFORMATION

B.1. Climate rationale and context (max. 1000 words, approximately 2 pages)

8. The Afghanistan Nationally Determined Contributions (NDC) to the United Nations Framework Convention on Climate Change (UNFCCC) identifies extreme hunger and poverty as key problems for Afghanistan, and states that climate change impacts could further deepen this by reducing livelihood opportunities, agricultural production, and the availability of energy, water and other natural resources. Rural energy poverty is considered to be urgent where the total energy generation capacity in Afghanistan covers only a 30% grid connected electrification rate nationwide, and 141 kWh per capita annual energy usage⁸. Especially in rural areas, the population is dependent on diesel generated electricity while 95% of rural population is using solid fuel for cooking and heating. Large rural areas will unlikely be connected to the grid during the next decades, due to remoteness, difficult terrain and resulting required high investment costs per client. The well-known concept of the water, energy and food (WEF) nexus means that the three sectors — water security, energy security and food security — are inextricably linked and that actions in one area more often than not have impacts in one or both of the others. It is clear that access to energy is critical for addressing the various dimensions of climate change resilience and wider social and economic development.
9. The baseline option for meeting increased energy demand in rural areas, as their income levels grow, is diesel generated power in the absence of clean alternatives. Diesel generated power is known for its high GHG emission content of some 2.8 kgCO₂/liter. Among the alternative options for energy access, renewable energy (RE) systems offer the best opportunity to serve the rural communities by leveraging Afghanistan's abundant natural resource potential without cost-prohibitive grid extension or GHG-intensive diesel systems. In a baseline scenario, Afghanistan would pursue its development using mainly fossil fuels, as other countries have. In particular in rural areas, where expansion of a national grid is not expected in the short and medium term, this causes a situation in which the use of diesel and kerosene fuel is the baseline and the future model for rural energy use. This would likely result in GHG emissions in Afghanistan continuing to increase at current rates for the period to 2025 and beyond. Afghanistan strives to maintain low per capita GHG emission levels but appropriate support in the form of finance, capacity building, technology and legal assistance is needed for Afghanistan to achieve substantial socio-economic development while maintaining low per capita GHG emission levels. Even with the current low average per capita electricity consumption in Afghanistan⁹, if 24.5 million people that are not connected to the national electricity grid would satisfy a 141 kWh per annum energy consumption on the basis of diesel fueled power, this would amount to 2.76 million tCO₂ emissions per year which can be avoided if 100% of the unelectrified population of Afghanistan would be serviced by renewable energy mini-grids¹⁰. Using estimates from IEA's Energy Access Outlook 2017¹¹, an "electricity for all at lowest cost" scenario could be realized by 2030 with some 50% of the unelectrified population electrified by renewable energy mini-grids and other renewable energy off-grid solutions, thereby avoiding 1.4 million tCO₂ emission reduction per year in the case of Afghanistan¹².
10. The Afghanistan Sustainable Energy for Rural Development (ASERD) program laid the foundation for this proposal by starting the development of feasibility studies for mini-grid development in rural areas in Afghanistan¹³. The program aimed for establishing a technology-neutral, sustainable service delivery arrangement to provide thermal and electrical energy in rural areas of Afghanistan for household, social and productive needs. The experiences in the ASERD program not only provided deep insights in the situation of rural renewable energy development in Afghanistan but also contributed to a further analysis of the barriers to RE development in rural areas in Afghanistan¹⁴. Given the financial constraints under which the Government of Afghanistan operates, the bilateral funds provided for ASERD allowed for the designs and Detailed Project Reports of 5 renewable energy mini-grids as well as (on-going) construction of one renewable energy mini-grid. Given the situation that Afghanistan continues to depend on donor support, any follow-up grant funding of the ASERD project has not yet been secured.
11. The barriers to realizing the full potential of RE for rural energy access in Afghanistan can be described under two broad but interrelated categories: lack of institutional and financing mechanisms to involve private sector

⁸ https://en.wikipedia.org/wiki/List_of_countries_by_electricity_consumption, based on the World Fact Book

⁹ Average per capita electricity consumption in Afghanistan is 141 kWh per person per year

¹⁰ Based on emission factor of 0.8 kgCO₂/kWh-eq for diesel fuelled electricity

¹¹ IEA, 2017, Energy Access Outlook 2017 – From Poverty to Prosperity, OECD/IEA Paris

¹² Based on 12.5 million people served by renewable energy solutions instead of diesel generators, using 141 kWh per capita annual energy usage and emission factor of 0.8 kgCO₂/kWh-eq for diesel fuelled electricity

¹³ The ASERD project was funded through bilateral grant funding from Spain and South-Korea

¹⁴ See further analysis of barriers to renewable energy development in Feasibility Study- Annex II

both in the short term and long term; and inadequate technical and market knowledge to design and implement innovative projects.

12. While a legal and regulatory framework for managing the overall energy and renewable domains has been developed by means of the Renewable Energy Policy (RENP), institutional conditions for rural energy development in general and renewable energy mini-grids in particular are still in a nascent stage of development. Experience has shown that if institutional support is inadequate and compounded by technical, economic and social issues, this may result in unsustainable or defunct mini-grid systems. If mini-grids are to play a significant role in providing access to reliable and affordable electricity, a robust policy framework is essential. Dedicated policies on mini-grids are still missing while regulatory instruments providing safeguards and balancing the interests of the village energy users and the rural energy service provider are not available.
13. The limited access to credit remains one of the main constraints to private sector and renewable energy market development in Afghanistan. 90% of investments needed by businesses were financed by own/internal sources and only 3.4% of businesses had a bank loan/credit. Access to finance came third among the biggest problems faced by business in Afghanistan with 17% considering this as the biggest problem. In addition, companies investing in and developing solar projects in Afghanistan are exclusively focused on on-grid projects where revenues are guaranteed by power purchase agreements (PPAs) with the national utility DABS. PPAs are not available for unconnected mini-grids, whose remote rural locations also increase the risk of service interruption and revenue losses due to security issues. Even though private sector finance is very challenging on the short and medium term, it will be important to create rural energy business and service delivery models that engage the private sector and financial institutions and leverage donor and government resources to create scalable and replicable models that can work on the longer term.
14. Renewable energy development in Afghanistan thus far primarily focused on hydropower development, which is where technical knowledge is available to a greater extent. While other RE technologies such as solar energy show rapidly falling capital costs, as well as the potential to benefit from digital and business innovations, these still remain at a very nascent stage in Afghanistan, even though they may be able to offer viable alternatives to the seasonal availability of hydropower. There is thus a need to move to a technology-neutral approach which can utilize all available renewable energy resources – solar, hydro, wind, biomass as well as grid network extension and hybrid options to provide lowest cost electrical and thermal energy to rural areas. Lack of technical skills and information, perceived technology performance uncertainty and risk and higher cost of capital due to lack of experience in mini-grids act as market entry barriers for RE mini-grids. This often results in technical and financial failure of RE mini-grids system. Even though some experience with hydro mini-grids exist, the ability to design, engineer, procure, construct and maintain mini-grids based on other RE technologies, in particular solar, has been limited.

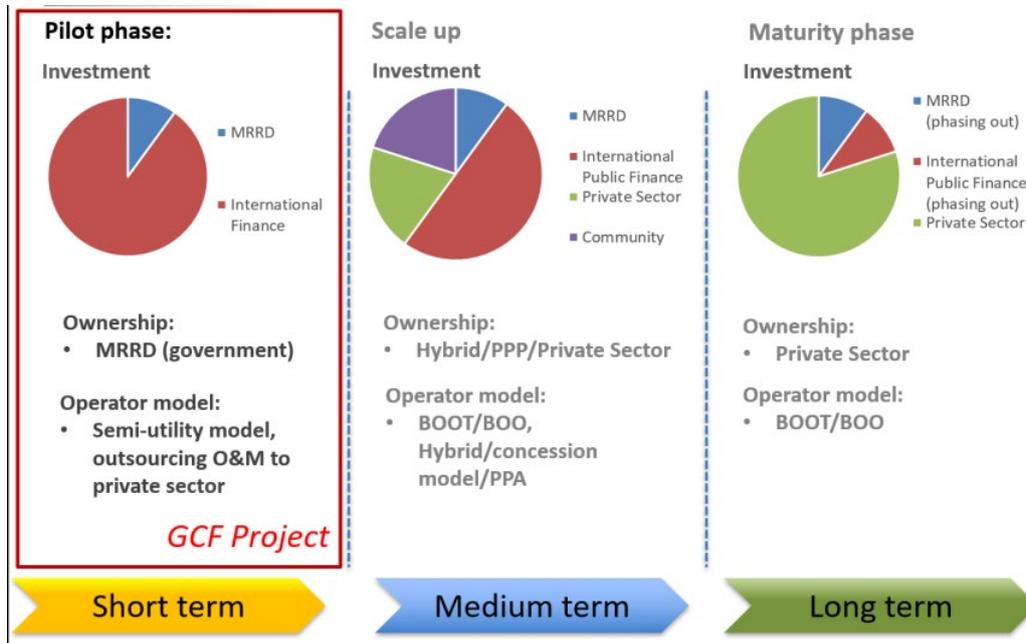
B.2. Theory of change (max. 1000 words, approximately 2 pages plus diagram)

15. The key problem this project proposes to address is the high greenhouse gas emissions expected to result from the use of diesel generators in the absence of energy access in rural areas in Afghanistan and the absence of enabling conditions that allow a market development towards renewable energy mini-grids that can both ensure energy access for the non-grid connected population of Afghanistan as well as provide clean, low carbon emission, electricity production. The objective of the proposed project is **to transform rural renewable energy markets leading to reduced emissions and strengthen adaptive capacities of the communities around them**. This will be achieved by (i) targeted de-risking activities strengthening the rural energy and renewable energy policy and regulatory framework, (ii) capacity building of government institutions and private sector to create the skills and financial capacities to identify and seize business opportunities in RE mini-grid development in future (iii) investment in the implementation of 3 solar mini-grid pilots and (iv) the creation of an upscaling platform to enable future development and implementation of additional solar mini-grids. Core problems that have been identified in Afghanistan in this respect consist of limited renewable energy penetration in Afghanistan and a very low level of on-grid energy access, with currently 30% connected to the national grid. Moreover, dependence on diesel generators for rural energy access hampers productivity of rural economies and the national utility DABS has national grid expansion as its key priority, thereby having lack of time and resources towards off-grid electrification. The RE projects that have been realized so far, thereby focused mostly on domestic lighting with limited penetration in enterprises, productive applications and agricultural sectors while inherent political and security risks have restrained the introduction of state-of-the art technologies and concepts in RE and prevented skills and knowledge development of RE enterprises. Moreover, ministries and departments dealing with energy, water, rural

development, agriculture and environment lack a coordinated vision to promote RE as means for multi-sectoral development.

16. The project covers the first, pilot phase out of a three-phased development process of mini-grid market development in Afghanistan, set out in Figure 1 below. This first phase is based on a semi-utility mini-grid ownership model with outsourced operation & maintenance to the private sector. This is expected to create a basis for private sector interest in mini-grid development and to contribute to the build-up of expertise in technical and managerial aspects related to mini-grid design, construction, and operation & maintenance. This will include data gathering and key performance indicators including, but not limited to: demand profiles for electricity; revenue streams, willingness to pay and average revenue per user (APRU); exploration of smart meters and different payment models; and optimizing system-sizing and mini-grid financial viability by means of productive use stimulation. Following this first pilot phase, a second scale-up phase in Afghanistan can consist of moving towards further private sector engagement, including initial private sector ownership BOOT/BOO¹⁵ models, with considerable public support via development banks. The ultimate goal of mini-grid development in Afghanistan is reflected in a third, maturity phase - served by wide-spread private sector-based BOOT/BOO models with minimal public support. This project covers the first pilot phase, while the scale-up phase and maturity phase fall outside of the scope of this submission.

Figure 1 *Three phases of mini-grid market development in Afghanistan*



17. The scale up phase is expected to be served by the regulatory and institutional framework developed in this project as well as the financial de-risking strategy identified that can offer minigrid developers economically viable business opportunities. As part of the exit strategy of the project, discussions will concentrate on implementation of the 5 minigrids that have been designed in the project whereby RESCOs trained in the project will be guided in the steps needed to come to financial close for minigrid development and implementation. Discussions with donors and financial institutions have already started and will be continued to set up a follow-up project that will prepare Afghanistan for the scale up phase of minigrid development in the country.
18. Complemented by co-financing by the MRRD and UNDP, GCF resources will be used to address the following barriers inhibiting rural renewable energy market transformation:
- Lack of incentives and guidelines for private sector to participate in rural electrification projects
 - Lack of technical standards and guidelines for mini-grid development
 - Lack of coordination among institutions on long term energy planning and mini-grid development
 - Lack of financial instruments that can de-risk challenges such as security, financial, currency and defaulting

¹⁵ Build-Own-Operate-Transfer (BOOT)/Build-Own-Operate (BOO)

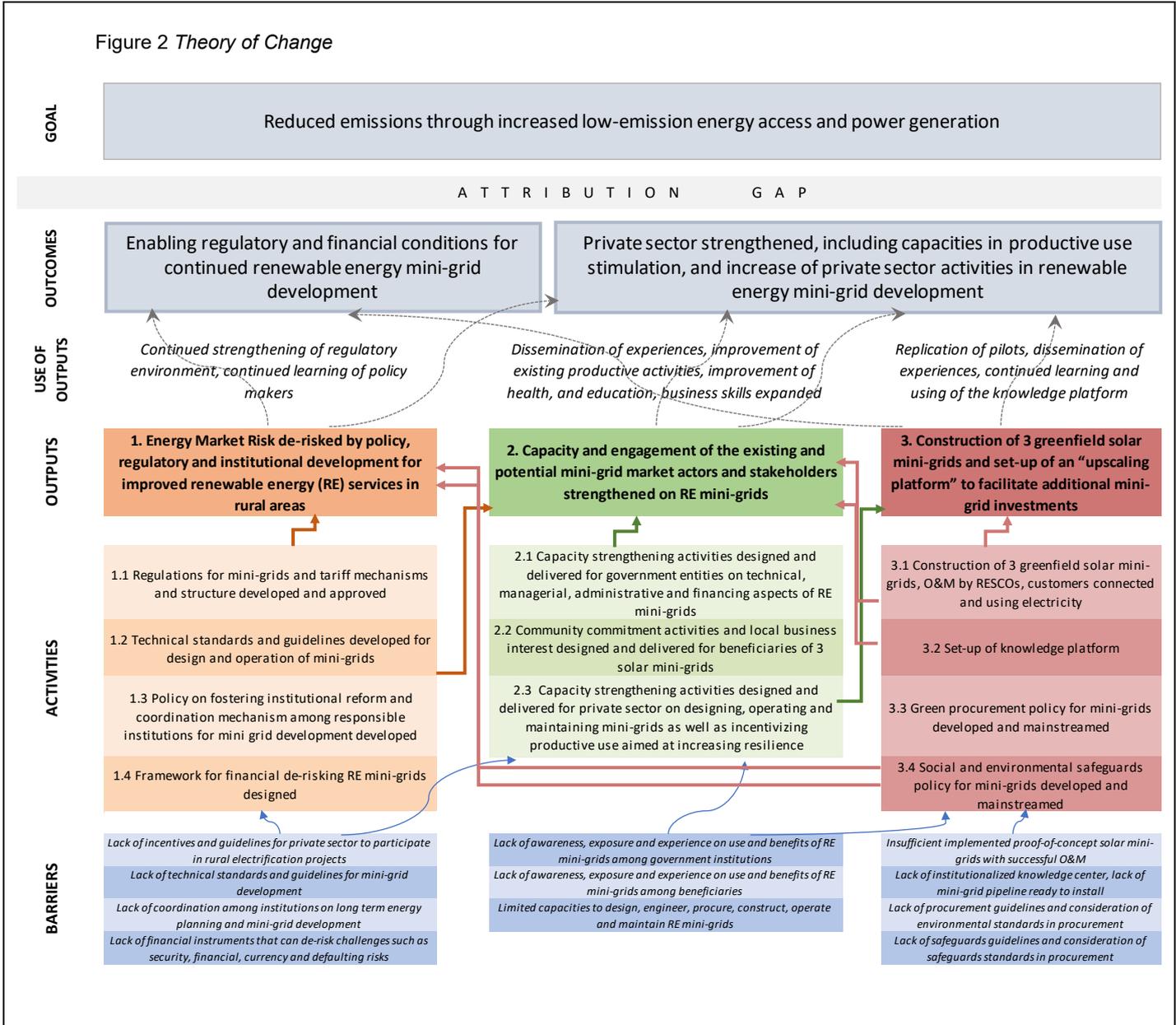
risks

- Lack of awareness, exposure and experience on use and benefits of RE mini-grids among government institutions
- Lack of awareness, exposure and experience on use and benefits of RE mini-grids among beneficiaries
- Limited private sector capacities to design, engineer, procure, construct, operate and maintain RE mini-grids, business opportunities in different mini-ownership models and absent learning in pilot mini-grids
- Insufficient implemented proof-of-concept solar mini-grids with successful O&M
- Lack of institutionalized knowledge center, lack of mini-grid pipeline ready to install
- Lack of procurement guidelines and consideration of environmental standards in procurement
- Lack of safeguards guidelines and consideration of safeguards standards in procurement

19. Key inputs that are expected to reverse the current situation consist of a combination of (i) targeted de-risking activities to address key mini-grid investment risks, (ii) capacity building of government institutions, beneficiaries and private sector (iii) investment in the implementation of 3 solar mini-grids with a combined capacity of 2.6 MW, in the provinces of Kandahar, Parwan and Khost, and (iv) the creation of an upscaling platform to enable MRRD and later on the Renewable Electrification Department under DABS, to independently lead the future implementation of additional solar mini-grids.
20. As shown in the ToC below, the project is comprised of three **Outputs** which will occur in parallel. **Output 1**, addressing Energy Market Risk, focuses on strengthening the enabling institutional and regulatory framework for mainstreaming rural renewable energy markets by undertaking a set of 4 activities. These are: i) regulations for mini-grids and tariff mechanisms and structure developed and approved; ii) technical standards and guidelines developed for design and operation of mini-grids; iii) policy on fostering institutional reform and coordination mechanism among responsible institutions for mini grid development developed; and iv) a framework for financial de-risking and financial incentives for RE mini-grids designed. **Output 2**, addressing Social Acceptance Risk and Labour Risk, comprises of capacity building of all relevant stakeholders as well as institutionalizing training for future sustainability. Specific activities include: i) capacity strengthening activities designed and delivered for government entities on technical, managerial, administrative and financing aspects of RE mini-grids; ii) community commitment, ensuring revenues and stability of the mini-grid systems, and local business interest activities designed and delivered for beneficiaries of 3 solar mini-grids ; and iii) capacity strengthening activities designed and delivered for private sector developers and operators on designing, operating and maintaining mini-grids as well as increasing capacities to promote productive use aimed at increasing resilience. This Output is concentrating solely on capacity building of all relevant stakeholders for mini-grid development, including government and beneficiaries with a specific focus on private sector capacities. Capacity building for the private sector will target RESCOs as identified by the Afghanistan Renewable Energy Union (AREU) as well as RESCOs that will be selected for O&M services of the 3 solar mini-grids in Activity 3.1 and potential RESCOs that could arise from local enterprises and will be identified during project implementation¹⁶. Capacity building activities for the private sector RESCOs will focus on creating the skills and financial capacities to identify and seize business opportunities in RE mini-grid development. **Output 3**, addressing Developer Risk, will provide proof-of-concepts for future reference by means of the implementation of 3 solar mini-grids with a total installed capacity of 2.6 MW in the provinces of Kandahar, Parwan and Khost, and create knowledge, procurement and ESG tools (collectively, the “upscaling platform”) to concretely enable MRRD to upscale the project through additional mini-grid implementations in the future. The 3 solar mini-grids implemented will be owned and regulated by MRRD but operated and maintained by Afghani private sector companies under outsourcing contracts and after a competitive selection process. The objective of the upscaling platform as well as the de-risking activities in Outputs 2 and 3 is that private sector companies will, in the future, also invest in the implementation of additional mini-grids – subject to the improvement of Afghanistan’s macroeconomic and security conditions.
21. The theory of change diagram in Figure 2 describes the key problems as well as barriers that prevent these problems to be addressed whereas it shows how the suggested activities lead to three outputs that relate to de-risking the investment environment for renewable energy mini-grid development. Section B.3 (Project Description Summary) further expands on the key elements of the theory of change.

¹⁶ Private-sector investors/operators of solar projects were interviewed where seven Afghani companies were identified that invest in and operate in on-grid solar projects but are not yet interested in off-grid minigrids. More detailed discussions were held with the two most prominent (Zularistan and Qadarqan).

Figure 2 Theory of Change



B.3. Project/programme description (max. 2000 words, approximately 4 pages)

Project Description Summary:

22. The objective of the project is to prepare the ground for rural renewable energy market transformation in Afghanistan through a combination of (i) targeted de-risking activities to address key mini-grid investment risks, (ii) capacity building of government sector, beneficiaries and private sector, (iii) investment in the implementation of 3 solar mini-grids with a combined capacity of 2.6 MW, in the provinces of Kandahar, Parwan and Khost, and (iv) the creation of an upscaling platform to enable MRRD to independently lead the future implementation of additional solar mini-grids. The project will: create the necessary conditions via policy and regulatory strengthening, as well as institution and capacity building of government, beneficiaries and private sector; provide capital (GCF grant plus MRRD and UNDP co-finance) for investment in the 3 solar mini-grids, which will require a capital expenditure of USD 12.4 million and will be operated under outsourcing contracts by domestic private sector solar mini-grid developers; and set-up an upscaling platform consisting of knowledge tools (step-by-step solar mini-grid implementation handbook, online data sharing platform and investment design reports for 5 additional mini-grids) and procurement and ESG best practices and guidelines. The intent of the upscaling platform is that it leads to either public or private investment, with private sector engagement encouraged.

23. The project covers the first, pilot phase out of a three-phased development process of mini-grid market development in Afghanistan, set out in Figure 1. This first phase is based on a semi-utility mini-grid ownership model with outsourced operation & maintenance to the private sector. This is expected to create a basis for private sector interest in mini-grid development and to contribute to the build-up of expertise in technical and managerial aspects related to mini-grid design, construction, and operation & maintenance. This will include data gathering and key performance indicators including, but not limited to: demand profiles for electricity; revenue streams, willingness to pay and average revenue per user (APRU); exploration of smart meters and different payment models; and optimizing system-sizing and mini-grid financial viability by means of productive use stimulation. Following this first pilot phase, a second scale-up phase in Afghanistan can consist of moving towards further private sector engagement, including initial private sector ownership BOOT/BOO¹⁷ models, with considerable public support via development banks. The ultimate goal of mini-grid development in Afghanistan is reflected in a third, maturity phase - served by wide-spread private sector-based BOOT/BOO models with minimal public support. This project covers the first pilot phase, while the scale-up phase and maturity phase fall outside of the scope of this submission.
24. De-risking is that central mechanism by which this project will act. Public de-risking measures can improve the risk-return profile of investment opportunities¹⁸ in two ways: policy de-risking instruments and financial de-risking. The GCF grant will contribute to policy de-risking by funding technical assistance and capacity building activities. Policy de-risking measures, which address the underlying barriers that create investment risks, can be a cost-effective first step in creating an enabled investment environment. These instruments utilize policy and programmatic interventions to mitigate risks related to e.g. permits and approvals, generation licences, land rights and address overlapping institutional responsibilities, lack of staff capacities and knowledge. The GCF grant will contribute to financial de-risking by reducing the capital expenditure faced by MRRD for the construction of the 3 solar mini-grids mentioned above and, as a result, increase the financial IRR from negative values to a commercially acceptable +20%. The realization of attractive financial IRRs will act as proof-of-concept for future private sector investors in Afghani mini-grids.
25. In order that the project's design takes a systematic approach, the project utilizes the taxonomy of mini-grid investment risks developed under UNDP's DREI (Derisking Renewable Energy Investment) framework¹⁹. The project targets in particular the following investment risk categories, defined as follows:
- *Energy Market Risk*: Risk arising from limitations and uncertainty in the energy market regarding market outlook, access (regulations), price (tariffs) and competition.
 - *Social Acceptance Risk*: Risks arising from lack of awareness and resistance to renewable energy and mini-grids in end-users and communities.
 - *Labour Risk*: Risks arising from the lack of skilled and qualified potential employees at mini-grid operators (including, engineering, customer acquisition, operations/maintenance).
 - *Developer Risk*: Risks arising from limitations in the mini-grid operator's management capability (system sizing and design, business model selection), and its creditworthiness and cash flow.
26. The project will target 8 provinces, with an approach that overcomes the limitations of isolated and one-off efforts thus far. Target communities have been selected after a pan-Afghan survey of 56 sites across 32 of the country's 34 provinces²⁰. Site selection for the implementation of 3 solar mini-grids and 5 investment design reports was based on the analysis of demand and supply patterns, potential loads, ability to pay for energy services, the national grid extension plan from DABS avoiding locations with potential for grid extension in the next 10 years²¹ and a security assessment on the basis of the UN Security Map. The implementation of 3 solar mini-grids and development of 5 additional investment design reports will provide an optimum contribution to the intended paradigm shift of the project as they are broadly spread throughout Afghanistan. Moreover, the 8 sites were selected on the basis of their potential for productive use and willingness to pay, thereby favouring successful deployment of RESCO services for Operation and Maintenance services. Pre-feasibility studies conducted for all these 8 sites describe the demographic and socio-cultural aspects as well as energy baseline scenarios of these communities. The total combined population covered by the 3 implemented mini-grids is approximately 49,000. An additional 63,720 people will

¹⁷ Build-Own-Operate-Transfer (BOOT)/Build-Own-Operate (BOO)

¹⁸ UNDP & ETH Zurich (2018). De-risking Renewable Energy Investment: Off-Grid Electrification. United Nations Development Programme, New York, NY and ETH Zurich, Energy Politics Group, Zurich, Switzerland

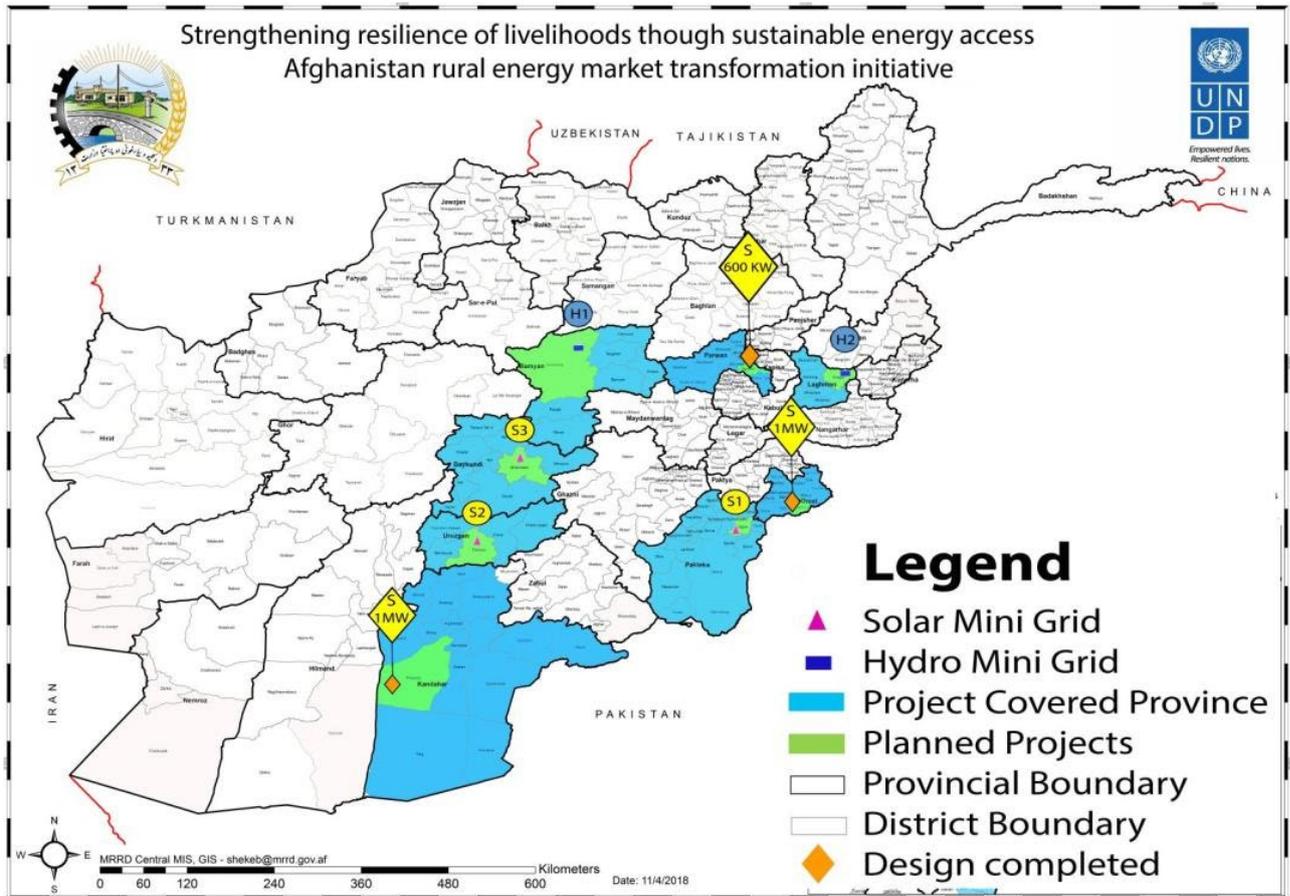
¹⁹ UNDP & ETH Zurich (2018). De-risking Renewable Energy Investment: Off-Grid Electrification. United Nations Development Programme, New York, NY and ETH Zurich, Energy Politics Group, Zurich, Switzerland.

²⁰ A detailed description of the site selection process is presented in Chapter 7 of the Pre-Feasibility Study.

²¹ Da Afghanistan Breshna Sherkat (DABS) is the national power utility in Afghanistan.

be served once the 5 additional mini-grids designed will be implemented by MRRD. Of the total, 47% is female population. All selected sites have good presence of enterprises (tailoring shops, vegetable oil extraction units, commerce) and agricultural activities. Each site has a primary health center, school and mosques. Most sites have police stations present at their locations. The project will benefit all of these enterprises and institutions²². Figure 3 details the selected locations and the Pre-Feasibility Study (Annex II) further explains the main characteristics of the areas served.

Figure 3 Proposed mini-grids (3 implemented, 5 designed) and related provinces



Description of Project Outputs and Activities

Output 1: Energy Market Risk de-risked by policy, regulatory and institutional development for improved renewable energy (RE) services in rural areas

Activity 1.1: Regulations for mini-grids and tariff mechanisms and structure developed and approved

27. One of the recurrent prerequisites discussed in the context of RE sector development is the need for policies and regulatory direction from the government. As the Renewable Energy Roadmap for Afghanistan (RER2032, 2017) describes, there is a need for a dedicated policy on mini-grids to kick-start this segment in Afghanistan. The first activity of the project addresses the development of a mini-grid policy that will institutionalize and support the development of RE mini-grids in the country for the purpose of rural electrification. The mini-grid policy developed under this output will signal the Government of Afghanistan's intent to encourage RE in rural energy markets and will provide a direction for private sector participation. This will set the foundation for rural renewable market transformation. The mini-grid policy will be developed through a consultative process by involving public sector players – Ministry of Rural Rehabilitation and

²² Feasibility Report- Strengthening resilience of livelihoods through sustainable energy access- Afghanistan Rural energy market transformation initiative- Annexure II

Development (MRRD), Ministry of Energy and Water (MEW) and DABS – beneficiaries and private sector players of the Afghanistan Renewable Energy Union (AREU), and will address alignment with the National Energy Supply Program (NESP) and Renewable Energy Policy (RENP), permits and approvals, generation licensing, land rights, rural electrification strategies and institutional arrangements. Close cooperation between MRRD and MEW to define clear roles and responsibilities, as well as collaboration with Ministry of Health (MoH), the Ministry of Education (MoE) and the Ministry of Interior (MoI), is needed so that electricity delivery to health centres and posts, schools, police stations and outposts and street lights in rural areas are part of the policy development.

28. A baseline market study analysing energy systems, actors, productive use potential, impacts on beneficiaries and business models, together with a DREI analysis simulation, will inform the development of the mini-grid policy. Economic sustainability of mini-grids includes affordable tariffs for consumers while ensuring the financial viability of the project over the long term. Further analysis on willingness to pay for energy in rural areas, and the creditworthiness of end-users, will inform the development of regulations that will balance financial viability and a fair tariff structure for mini-grids.
29. In general, policy development under the project will follow the steps of common policy framework procedures consisting of: i) identification and scope of the policy problem to be addressed; ii) draft, consult and finalise policy instrument; iii) get policy instrument government approved; iv) communicate, implement and monitor policy instrument; v) review policy instrument and re-design where needed, following previous steps. Gender mainstreaming will be applied by means of further gender analysis in relation to energy policy as well as gender training for relevant government staff.
30. Sub-activities for the above activity include:
 - 1.1.1 Conduct Derisking Renewable Energy Investment (DREI)²³ analysis simulation for solar mini-grids to inform the development of de-risking policies and tailored interventions to support RE mini-grid development.
 - 1.1.2 Conduct a baseline market study analysing energy systems, actors, productive use potential, impacts on beneficiaries and business models to inform the development of regulations and incentives for mini-grids
 - 1.1.3 Conduct complementary analysis on willingness to pay for energy in rural areas, to inform mini-grid policy and tariff structure development
 - 1.1.4 Develop regulations to ensure fair tariff structure for mini-grids.
 - 1.1.5 Develop Mini-grid Policy to align with the National Energy Supply Program (NESP) and Renewable Energy Policy (RENP), including licensing, rural electrification strategies and institutional arrangements.
 - 1.1.6 Organize consultation process involving Ministry of Rural Rehabilitation and Development (MRRD), Ministry of Energy and Water (MEW), Da Afghanistan Breshna Sherkat (DABS), and market actors of Afghanistan Renewable Energy Union (AREU) and beneficiaries to discuss the draft mini-grid regulations and tariff structure by conducting workshops and business forum
 - 1.1.7 Disseminate and communicate government approved mini-grid regulation and tariff structure results in workshops in all relevant regions as well as through regular government communication channels to relevant government and private sector stakeholders.
 - 1.1.8 Conduct a gender mainstreaming training for the MRRD, MEW and DABS government staff

Activity 1.2: Technical standards and guidelines developed for design and operation of mini-grids

31. Energy market risks can also comprise of uncertain market regime with regard to standards and codes required for certain technology implementation. Technical standards create a common understanding and basis of expectations among developers, operators, regulators and consumers on the various levels of acceptable service delivery including technical, safety, cost and reliability issues. Under this output, a set of technical standards and guidelines for mini-grids will be developed in reference to the available international codes and standards for material choice, system design and service level for generation equipment, distribution grid, and electricity service standards and purposefully designed for rural contexts in Afghanistan.
32. A review of existing technical standards and needs assessment for complementary standards for mini-grid development will inform the development of the technical standards for mini-grids. The mini-grid policy will be developed through a consultative process by involving public sector players MRRD, MEW, DABS,

²³ www.undp.org/DREI

beneficiaries and private sector players of AREU and will follow the steps of common policy development procedures.

33. Sub-activities for the above activity include:

- 1.2.1 Conduct review of existing technical standards and needs assessment for complementary technical standards for mini-grid development
- 1.2.2 Develop/update draft technical standards and guidelines for design and operation of mini-grids (generation equipment, distribution grid, and electricity service standards) purposefully designed for rural contexts.
- 1.2.3 Organize consultation process involving MRRD, MEW, DABS, and market actors of AREU and beneficiaries to discuss the draft technical standards for design and operation for mini-grids by conducting workshops.
- 1.2.4 Provide technical assistance to the government to facilitate approval of the technical standards and guidelines for mini-grids – including enforcement mechanisms – and get government approval.
- 1.2.5 Disseminate government-approved technical standards and guidelines for mini-grids in workshops in all relevant regions as well as through regular government communication channels.

Activity 1.3: Policy on fostering institutional reform and coordination mechanism among responsible institutions for mini-grid development developed

34. Appropriate institutional arrangements that enable effective deployment and subsequently, operation, management, and maintenance of RE mini-grids is critical for scaling up the development of mini-grids as a significant option for providing electricity services. In Afghanistan, government institutions can play a role in building and operating mini-grids while others have a set of responsibilities including defining national and jurisdiction-level energy policy and electrification goals and setting rural electrification strategies. E.g. the MRRD has a Renewable Energy and Enterprise Development (REED) department which is responsible for rural energy development up to a size of 1 MW installed capacity while the Ministry of Energy and Water (MEW) has a Renewable Energy Department (MEWRED) which is responsible for developing renewable energy and rural energy projects of 1 MW or higher installed capacity. Overlapping and unclear institutional responsibilities can contribute to market risk and hinder mini-grid development. This activity addresses institutional reform and will establish a coordination mechanism among responsible institutions for streamlined coordination of mini-grid planning.
35. In order to supplement and compliment DABS, the national power utility in Afghanistan²⁴, the project will initiate the creation of a separate Rural Electrification Department (under DABS) (RED) that will be capacitated to design, plan and implement rural electrification projects mainly based on RE technologies so that DABS will in future be able to take over tasks from the MRRD in developing off-grid solutions under 1 MW. This is aligned to the recently finalized Renewable Energy Roadmap 2032 (RER2032²⁵) as developed under the authority of the Ministry of Energy and Water in 2017. The RER2032 concludes as one of crucial conditions for growth of the RE sector that an institution for rural electrification is needed where DABS should have responsibilities. The Rural Electrification Department (under DABS) may be given responsibilities for generation, transmission and distribution exclusively in rural areas. Given that most of rural Afghanistan is not connected to the national grid, a dedicated rural electrification department shall provide greater focus on meeting the rural power shortage scenario. The department, once fully operational, will undertake all activities related to rural electrification including site identification, land acquisition, raising and managing finances and regulatory approvals, including support to local enterprises such as RESCOs. The project will develop the organizational charter for the RED after conducting wide stakeholder consultations, including possibilities of twinning arrangement with similar institutions in the region to encourage south-south learning²⁶.
36. Coordination between institutions responsible for electricity generation, distribution and application is important for realizing the potential of RE in Afghanistan. The current cooperation between the MEW and the MRRD is based on the responsibility of MRRD to cover rural renewable energy development up to 1 MW in close coordination with MEW. In order to guarantee clear roles and responsibilities of the MEW and the MRRD in line with new responsibilities of the Rural Electrification Department (under DABS), an effective

²⁴ Da Afghanistan Breshna Sherkat (DABS) is the government owned national vertically integrated utility electricity utility which provides electricity primarily in urban and peri-urban areas

²⁵ Renewable Energy Roadmap 2032 (RER2032), ADB, March 2017

²⁶ Rural Electrification Corporation REC (India), Infrastructure Development Company Limited IDCOL (Bangladesh)

coordination mechanism amongst these institutions is an important step to ensure synchronized development of the sector and will be part of the policy development under the activity.

37. Sub-activities for the above activity include:

1.3.1 Organize stakeholder consultations (e.g. containing inter-ministerial platform or Energy Sector Coordination Group, and coordination with regional administrations and village electrification committees) to coordinate on-grid and off-grid electrification.

1.3.2 Establish coordination mechanism among responsible institutions to coordinate on-grid and off-grid planning and national, regional and village level interaction and to allow for continuous updating of mini-grid policy, financial mechanisms and technical standards.

1.3.3 Organize stakeholder consultations on possible arrangements for a Rural Electrification Department (under DABS), including possibilities of twinning arrangement with similar institutions in the region.

1.3.4 Develop mandate and operational conditions for a Rural Electrification Department (under DABS).

1.3.5 Develop the organizational charter for a Rural Electrification Department (under DABS).

1.3.6 Provide training to DABS staff on De-risking Renewable Energy Investment (DREI), rural RE mini-grid systems and on mandate of RED in encouraging rural RE development in Afghanistan.

Activity 1.4: Framework for financial de-risking RE mini-grids designed

38. One of the challenges identified in Afghanistan, and in developing countries in general, for private sector investment in RE mini-grids is to improve the current financial viability of mini-grids. With current inputs for hardware costs and financing costs, and without support, the levelized cost of electricity (LCOE) from mini-grids and the implied tariffs for end-users can be prohibitive. To address this barrier, the project proposes to design a framework for financial de-risking and/or financial incentives for RE mini-grids, on the basis of detailed techno-economic analyses, including a DREI analysis simulation²⁷. The framework will essentially be a viability gap funding mechanism, which will recommend the most cost-effective instruments and design, for example concessional financing and/or direct grants (capital subsidy, tax incentives), to achieve the requisite financial viability. Sources of funding will be explored varying from government funds, climate funds and funding by international financial institutions and/or multilateral development banks, including innovative approaches whereby initial grant funds can be used to develop mini-grids from which revenues could capitalize a revolving fund. Subsequent implementation of this framework will be a key step in the phased approach to develop the mini-grid market, and engage the private sector, in Afghanistan.

39. The development of the framework will be informed by a rigorous process, consisting of expert panel discussions and consultation involving all relevant stakeholders consisting of MRRD, MEW, DABS, and market actors of AREU and beneficiaries. Strategies to be discussed can include mechanisms to compensate for risks (direct incentives, e.g. capital subsidies) and to transfer risk (e.g. concessional debt or guarantees). The applicability of these strategies will in part depend on the macroeconomic and security developments in Afghanistan – direct incentives are likely required to a greater extent in the near-term, due to the very high risk perception of Afghanistan at the moment. A viability gap funding mechanism will be discussed in light of Afghanistan Government's discussions on setting up a Renewable Energy Fund which has thus far not yet materialised. Mechanisms that involve using possible revenues from donor supported mini-grids to be used for setting up a Renewable Energy Fund will be part of possible solutions to discuss. However, the project will not directly implement revolving funds nor channel concessional funding (e.g. loans).

40. Resulting from the above-described process, a most promising funding strategy for financial incentives and de-risking of RE mini-grid development will be further elaborated to explore potential government and climate finance.

41. Sub-activities for the above activity include:

1.4.1 Set up panel consisting of experts from AREU, MRRD, MEW and DABS and international (south-south) experts to discuss findings of DREI Analysis simulation (Activity 1.1.1) in order to draft most suitable financial incentive and de-risking scenarios for mini-grid development in the project specifically and for renewable energy development in general.

²⁷ More information on the DREI methodology for mini-grids can be found at www.undp.org/DREI

1.4.2 Develop the structure of a mini-grid viability gap funding mechanism, including potential sources of (climate) finance to be used for capitalizing a viability gap funding mechanism as well as a roadmap for medium- and longer-term financing need for rural electrification.

1.4.3. Develop financial incentive and de-risking packages for mini-grid development, integrating the viability gap funding mechanism with additional incentives (e.g. facilitation of land acquisition, streamlining permit procedures) based on findings from Activity 1.4.1 and 1.4.2.

1.4.4 Organize consultation process involving MRRD, MEW, DABS, and market actors of AREU and beneficiaries to discuss the financial incentive and de-risking packages for rural mini-grid development.

1.4.5 Develop funding strategy for most promising financial incentive and de-risking package, containing viability gap funding mechanism and additional incentives (including accessing climate finance to implement mini-grids).

Output 2: Capacity and engagement of the existing and potential mini-grid market actors and stakeholders strengthened on RE mini-grids

42. The second output of the project will undertake capacity building of institutions on demand-side as well as supply-side of energy systems and services. On the supply-side, the ability of relevant ministries and government institutes to extend their expertise on rural RE mini-grids with specific professional staff to be further trained in technical, managerial and financial aspects of RE mini-grids, thus creating capacity at scale. On the demand-side, capacity in the agricultural cooperatives, self-help groups, community development councils, NGOs, research organisations and public institutions will be enhanced to understand and accept RE systems as a means to provide energy to enhance their incomes and other benefits. The market sector is of specific focus for capacity building as the intention of the project is to build capacities of private sector entities to become fully fledged actors in the second, scale up phase of mini-grid development right after this project ends. For that, private sector capacities will be built in the areas of design, installation, operations and building maintenance skills but also in tariff design and revenue collection mechanisms as well as knowledge about promoting productive uses of energy using a mini-grid system.

Activity 2.1: Capacity strengthening activities designed and delivered for government entities on technical, managerial, administrative and financing aspects of RE mini-grids

43. Building and strengthening of institutions is a pre-requisite for developing the RE sector in Afghanistan. This involves strengthening of capacities across MEW, MRRD and other key ministries and provincial governments on technical, managerial, administrative and financing aspects of RE projects. Strengthening of monitoring capacities in the National Environment Protection Agency (NEPA) will allow for adequate monitoring of project results. The project will start this process, which will need to grow towards a scheme of continuous process of knowledge acquisition and knowledge management, in order to stay updated with the latest developments in the RE sector internationally and also to incorporate lessons learned from local as well as international experiences.
44. The development of a suitable capacity building package will be informed by a capacity needs assessment of national and local government entities to map the gaps in technical, planning and managerial capacity of government entities with regard to mini-grid development and assess capacity needs. Important input for capacity building activities will be derived from results of Component 1 and 3, e.g. results with regard to licensing (Activity 1.1.5), tariff regulations (Activity 1.1.4 and 1.1.6), rural energy master planning (Activity 1.3.2), tendering and procurement of mini-grids (Activity 3.1.1 and 3.1.2), monitoring of results (Activity 3.1.4) and investment prospectus (Activity 3.2.3).
45. As there is no real standard method on how to estimate the contribution of off-grid electrification to greenhouse gas emission avoidance, its potential role as a mitigation option may be underestimated in official greenhouse gas reporting. The project will therefore develop a system for GHG monitoring, verification and reporting to UNFCCC and train the capacities of NEPA in order to be able to take up the responsibilities related to reporting off-grid GHG emission reduction contribution.
46. Sub-activities for the above activity include:
- 2.1.1 Conduct capacity needs assessment of national and local government entities to map the gaps in technical, planning and managerial capacity of government entities with regard to mini-grid development and assess capacity needs.

2.1.2 Build technical, planning and managerial capacities of national government entities such as MEW, MRRD and other key ministries and provincial and local governments on rural RE mini-grid systems planning

2.1.3 Develop greenhouse gas (GHG) emission monitoring, verification and reporting methodology for the measurement and estimation of (changes) in GHG emissions from off-grid and renewable energy technologies at national and (sub)national level.

2.1.4 Build capacities of National Environment Protection Agency (NEPA) in measurement and reporting of GHG emission changes from off-grid electrification to support formulation of NDS and other climate reporting

Activity 2.2: Community commitment and local business interest activities designed and delivered for beneficiaries of 3 solar mini-grids

47. An important condition for sustainability of mini-grids is the involvement of the community it serves. Depending on the particular mini-grid business model pursued, community contributions can take the form of land, labor, local construction materials and/or economic ownership. Communities may also face, and need to overcome, perception challenges at mini-grid tariffs that differ from grid-connected tariffs. Communities are also central to mini-grid developers' promotion of productive use, providing labor and entrepreneurship. A detailed understanding of the evolving demand profile from communities can be key to demand-side management approaches. Communities can thereby be directly related to economic viability of mini-grid operations.
48. For the 3 solar mini-grids that will be implemented under Activity 3.1, where community involvement is essential for successful operation and increasing the potential of productive use, the project will consult extensively with the local communities and local businesses to play an important role in productive uses of energy while they will need to be capacitated in understanding the economic potential that RE mini-grids can offer.
49. Sub-activities for the above activity include:
- 2.2.1 Conduct assessment to identify present local business and other relevant players in the communities that are served by the 3 solar mini-grids that are important for creating commitment at village level to mini-grid development as well as conduct additional surveys to collect further detailed gender disaggregated data such as women headed households in the three project sites, baselines of women's organizations, women lead enterprises, women farmer cooperatives and specific data on female youth and elderly.
- 2.2.2 Support the relevant stakeholders identified in 2.2.1 for consultation as part of the implementation process of 3 solar mini-grids. Build capacities of local enterprises on productive use potential and importance of a fee-for-service in order to keep the mini-grids operational. Organise training on basic business operations and added value creation for existing enterprises by using electricity from the mini-grids. Support local enterprises in accessing micro-finance to invest in technology that can create added value to existing businesses.
- 2.2.3 Organise a communication campaign to raise awareness of the social and economic benefits of renewable energy mini-grids.

Activity 2.3: Capacity strengthening activities designed and delivered for private sector on designing, operating and maintaining mini-grids as well as incentivizing productive use aimed at increasing resilience

50. If mini-grid investment in Afghanistan is to truly scale up, then private sector investment will be central. The private sector can bring capital, entrepreneurship, and expertise. Past experience in Afghanistan has demonstrated that relying solely on communities for operations and maintenance does not reliably lead to system sustainability. As such, in this project, Renewable Energy Service Companies (RESOs) will be supported and trained, in order to grow a nascent private sector mini-grid industry in Afghanistan. A RESO is an entity that provides energy services to consumers in a particular area, usually in an off-grid location. The services of a RESO can vary from functioning as a mini-utility that combines both generation and distribution of electricity or it can have a more limited scope whereby one (government) entity is responsible for generation whereas the RESO functions as the distributor, selling the electricity to consumers and servicing operation and maintenance costs. In this first, pilot phase of mini-grid development in Afghanistan, RESOs operate under a semi-utility model to offer Operation and Maintenance services in mini-grids owned by the MRRD. The RESOs in this project, as a result of a combination of capacity building and experience from providing O&M in a pilot mini-grid, are expected to obtain the capacities needed for becoming a full-

scale RESCO in the second, scale-up phase after this project ends. A full scale RESCO can also undertake pre-project activities such as site selection, load and enterprise development, feasibility study preparation and engineering design as well as co-own (in PPP models) or fully own mini-grids (in BOOT/BOO models²⁸). The RESCOs participating in the capacity building activities will be selected by the MRRD through a solicitation and due diligence process based on criteria including track record/years of experience, management quality and expertise, financial strength and geographic coverage and will be supported via a RESCO networking platform, initially set-up by MRRD. A consultative meeting held with renewable energy enterprises has endorsed their interest in forming RESCOs for the project²⁹. The Afghanistan Rural Energy Union, AREU, having more than 40 private sector company members operating in the renewable energy sector, can thereby be an important source for identifying potential RESCOs. In addition to local enterprises, agricultural cooperatives, particularly women led ones, would also be involved as RESCOs. The three RESCOs that will be selected for operation and maintenance services for the 3 solar mini-grids implemented under Component 3.1, will also be included in the capacity building activities of Component 2.3 and thereby contribute to the learning experience of RESCOs that are not yet directly involved in mini-grid activities³⁰.

51. Capacity building of the private sector will focus on technical training for RE developers and RE service providers on various aspects of rural RE mini-grids such as:
 - system sizing,
 - design and installation (resource assessment, supply and demand analysis, design, installation considering the technical standards, guidelines and regulations developed under Output 1).
 On the financial side, capacity building will address mini-grid and RE system business models, including:
 - financing options,
 - administration,
 - tariff setting,
 - the critical role of productive uses.
 Finally, training of local technicians for O&M of solar PV and hydropower mini-grids as well as operators and administrators' manuals in local languages will be part of this activity.
52. RESCO training will further consist of identification of potential productive use of electricity in order to increase the load factor and create additional cash revenues to strengthen possible future RESCO business models through a profit margin on electricity sales. Especially productive use potential contributing to higher agricultural productivity, decreased post-harvest losses, increased electricity based small industries and decreased loss of live-stock due to extreme weather will be emphasized in order to contribute to increased resilience to climate change.
53. The project recognizes the importance of gender inclusion in the project interventions. Hence, the project not only incorporates RE technologies that would benefit women by giving them access to cleaner energy, better health and education facilities; but also involves and benefits women enterprises on the supply side of RE by involving women agricultural cooperatives and tailoring shops.
54. The RESCO principles developed under the project will be applied in the 3 solar mini-grids that will be implemented in the project.
55. Sub-activities for the above activity include:
 - 2.3.1 Conduct capacity needs assessment of private sector players to map the gaps on design, installation, operation, planning and finance of off-grid RE systems.
 - 2.3.2 Engage with relevant stakeholders to establish RESCO model and develop a RESCO model that serves the conditions for mini-grid development in Afghanistan.
 - 2.3.3 Technical training designed and delivered for private sector players and energy service companies/RESCO on various aspects of rural RE electrification: design, installation, resource and least-cost assessment, supply and demand analysis, payment systems, design and planning of productive uses, RESCO models, voluntary certification guidelines for RE service providers, formulation of feasibility studies and bankable proposals.

²⁸ Build-Own-Operate-Transfer (BOOT)/Build-Own-Operate (BOO)

²⁹ See stakeholder consultation in Annex II Pre-Feasibility Study.

³⁰ Please note that the RESCOs that will be operating and maintaining the 3 solar mini-grids implemented under Component 3.1 will be selected on the basis of a competitive selection process.

- 2.3.4 Create a RESCO networking platform to exchange good practices and learning (including financing of mini-grids).
- 2.3.5 Develop guidelines for the voluntary certification of RE technology installers and rural energy service companies (RESCOs), managed by the RE industry itself.

Output 3: Construction of 3 greenfield solar mini-grids and set-up of an “upscaling platform” to facilitate additional mini-grid investments

56. This output will set up 3 greenfield solar mini-grids in the Kandahar, Parwan and Khost regions, for a combined capacity of 2.6 MW, providing electricity to approx. 7,800 households (49,000 people) and 1,050 small businesses. The construction of the mini-grids will cost USD 12.4 million and will be funded by GCF with small co-finance from MRRD and UNDP.
57. In addition, this output will set up an upscaling platform to facilitate the implementation of additional mini-grids leveraging on the knowledge and best practices developed from the initial three, consisting of: (i) a knowledge platform, including a solar mini-grid practical development manual, online evidence and data sharing tools, and full technical studies for 5 additional mini-grids; (ii) development and mainstreaming of green procurement policies for solar mini-grids; and (iii) development and mainstreaming of ESG policies for solar mini-grids. Ultimately, the project aims to contribute, in a phased approach, to a large volume of solar mini-grid development in Afghanistan and – with the long-term improvement in macroeconomic and security conditions – the eventual involvement of private investment in the sector.

Activity 3.1: Construction of 3 greenfield solar mini-grids (2.6 MW in total)

58. The project will implement 3 greenfield solar mini-grids for a total capacity of 2.6 MW, requiring a total capital investment (capex) of USD 12.4 million and a total budget of USD 13.4 million including approx. USD 1 million in transaction costs (tendering, negotiation, supervision and monitoring & evaluation). Full technical designs and specifications are already available and can be found in Annex II. In the absence of a complete set of standards and regulations currently available in Afghanistan (subject of interventions under Output 1), the mini-grids are designed in accordance with international or UNDP standards and where applicable national standards³¹. There is therefore no dependence of the mini-grids construction in relation to the results of Output 1. Specifications of materials and equipment ensures the selection of latest technologies available in the market, e.g. the crystalline silicon solar photovoltaics for the mini-grids are in accordance with IEC 61215³², Battery Energy Storage System (BESS) design uses IEEE³³ and IEC standards. Market analysis shows that latest technologies are accessible and in-use for the solar mini-grids. The UNDP safeguards policy has been used to conduct a Social and Environmental Impact Assessment. The table below provides an overview of the 3 mini-grids.

Mini-grid location:	Kandahar	Parwan	Khost
Capacity	1.0 MW	0.6 MW	1.0 MW
Number of beneficiaries	2, 081 households (14,500 people) and 516 commercial users	2,000 households (12,000 people) and 142 commercial users	3,725 households (22,500 people) and 400 commercial users
Capex	\$4.4m	\$3.5m	\$4.5m
Construction period	50% in year 1 50% in year 2	25% in year 1 75% in year 2	100% in year 2
Start of operations	H2 of year 2	Q4 of year 2	Beginning of year 3
Battery replacement cost (15-year lifetime)	\$1.75m	\$1.25m	\$0.9m
Affordable tariff – residential (\$/kWh)	\$0.10	\$0.10	\$0.10

³¹ Regulations to be developed will provide the enabling conditions to support future development of minigrids but are not directly a prerequisite for the development of the 3 solar minigrad pilots

³² The International Electrotechnical Commission (IEC) is an international standards organization that prepares and publishes international standards for all electrical, electronic and related technologies – collectively known as "electrotechnology"

³³ The Institute of Electrical and Electronics Engineers Standards Association is an organization within IEEE that develops global standards in a broad range of industries, including power and energy.

Affordable tariff – commercial (\$/kWh)	\$0.20	\$0.20	\$0.20
Annual revenues at full capacity	\$230,000	\$125,000	\$220,000
Annual O&M fees paid to operator	\$77,000	\$60,000	\$77,000
GCF grant required to achieve approx. 20% IRR	\$3.8m	\$3.2m	\$3.9m
Grant as % of capex	86%	93%	86%

59. The mini-grids will be owned by the Ministry for Rural Development (MRRD) and operated by private sector companies (one or more) under simple outsourcing contracts to be selected on the basis of a competitive tendering process³⁴. The exact minimum eligibility criteria for RESCOs that will be selected for O&M on the basis of a competitive tendering process will be determined as part of project implementation. Given the aim to advance private sector solutions to mini-grids, the criteria will seek to select RESCOs that have the potential to receive follow-up private investment. Formulation of the criteria will take into consideration the typical due diligence areas of investors, including but not limited to:

- Determining the legal identity, and any legal issues, around the company/cooperation
- Track record. Demonstrating operational capability
- Management quality. Profile and expertise of company's leadership
- Business plan for, and financial viability of, proposed RESCO activities
- Existing financial standing and credit-worthiness of the company/cooperative

The operators will not be exposed to the risk that electricity sale volumes may undershoot predictions and any difficulties in enforcing and collecting user tariffs. The construction of the mini-grids will be outsourced to separate construction contractor(s). Both the operator(s) and construction contractor(s) will be selected based on competitive tenders designed by the project. Two established Afghani operators of solar plants (including a 15 MW on-grid plant) have already expressed interest in participating in the tenders. Operation and maintenance contracts between MRRD and RESCOs will be based on simple outsourcing contracts that determine requirements for RESCOs including development of a detailed maintenance and operational schedule, tariff collection arrangements, service level agreements, availability or “uptime” guarantees, performance ratios and yield guarantees, production guarantees, performance incentives and energy based contracts (linking plant production (kWh/y) with O&M service provider revenues³⁵. The regulatory agreement between MRRD and RESCO will also stipulate the treatment of excess cashflows and related MRRD obligations in expenses for battery replacement.

60. The locations of the mini-grids are such that connections to the DABS grid and, therefore, any purchase power agreement with DABS, are not foreseen in the near or medium future. Electricity will be sold directly to customers, with MRRD – as mini-grid owner – bearing revenue risk. The mini-grids will charge a residential tariff of USD 0.10/kWh and a commercial tariff of USD 0.20/kWh. Both tariff levels have been determined through ability-to-pay surveys already conducted in the target communities and are sufficient to cover the operation, maintenance and management costs of the mini-grids. The tariffs are paid in local currency (Afghani) and have been set for 25 years under the expectation that the Afghani devaluates against the USD over time. Willingness-to-pay and ability-to-pay surveys have been conducted in the areas of the 3 mini-grids (see also Detailed Project Reports in Annex II). These are essential because the financial feasibility of a mini-grid project depends largely on the ability of users to pay a tariff that generates enough revenue to cover the costs of operations, maintenance and repairs for the mini-grid system. Specifically, the tariff would result in monthly electricity bills (based on reasonable estimates of consumption for lighting and basic appliances) that are comparable to the cost currently incurred for household energy use on the basis of kerosene (for basic lighting). The residential tariff is higher than the highly-subsidized USD 0.07/kWh tariff currently applied by DABS to households connected to the grid elsewhere in Afghanistan. On the other hand, both the residential and commercial tariffs are lower than the cost of diesel generation, which would be the alternative baseline scenario for users that require full electrification (for lighting and use of domestic appliances) – the cost of diesel generation is estimated by IRENA at USD 0.35/kWh. Users will also pay (in instalments) a connection fee to MRRD to cover the cost of meters and their installation.

61. The GCF grant would fund 88% of capex and related construction costs, for a total commitment of USD 10.9 million. The remaining USD 1.5 million of co-finance for capex will be provided by MRRD (USD 1 million) and

³⁴ UNDP, along with MRRD, will select the private company for the operations and maintenance of the mini-grid through a competitive bidding process.

³⁵ More detailed content of O&M contracts can be found in the Detailed Project Reports of the 3 solar mini-grids in Annex II

UNDP (USD 0.5 million). The large GCF grant proportion is justified by the negative IRR of the mini-grids without concessionality, which is in turn driven by relatively high construction costs, due to the remoteness of the areas and the first-time nature of the project there, as well as maintaining tariffs at affordable level. See section B.5 for a justification of grant size and minimum concessionality.

62. In addition, MRRD will commit to keep in escrow³⁶ any excess cashflows (revenues less operation and maintenance fees paid to the operator) accumulated in the 15 years before the replacement of the battery, to be spent towards the latter investment (requiring a total investment of USD 3.9 million for the 3 mini-grids, at today's prices). UNDP will ensure that the escrow account will be set up as part of the project implementation to ensure that withdrawals from the fund can only take place at the occasion of a "trigger event", in this case at first instance the payment for battery replacement in year 15. Trigger events will be defined and can only consist of investments related to battery replacement for the 3 mini-grids in the project until year 15. After year 15, trigger events can be the development of new mini-grids designs (e.g. funding technical studies), updated handbook for mini-grid development or further support to the knowledge sharing platform and materials³⁷. The escrow account will be set up such that it cannot contribute to capital investment in additional mini-grids but can only be spent on investments in the public goods domain. MRRD will commit to re-invest excess cashflows accumulated in the last 10 years of a mini-grid useful life, and any excess cashflows in the first 15 years above and beyond the cost of battery replacement, to support the knowledge platform (Activity 3.2) e.g. by means of development of new mini-grids designs (e.g. funding technical studies), updated handbook for mini-grid development or further support to the knowledge sharing platform and materials³⁸.
63. As part of setting up and strengthening private sector engagement in mini-grid development in Afghanistan, the three RESCOs selected for the O&M of the 3 solar mini-grids³⁹ will be involved in discussions on potential arrangements for increasing their business interest, either in the 3 solar mini-grids of the project or in other mini-grid development activities. These arrangements, facilitated by the project, will be the subject of analysis and discussions between the RESCOs and MRRD after 2 years of successful operation of the mini-grids. Also, different ownership models will be analysed and on the basis of feasibility assessments, proposed to the three RESCOs. The RESCOs will also be actively involved in exploring potential for participation in PPP business models for the development of the 5 mini-grids for which the project will develop investment design reports as part of the knowledge platform of Activity 3.2. The 3 RESCOs selected for Operation and Maintenance of the 3 solar mini-grids will participate in the capacity building activities under Activity 2.3, especially on encouraging productive use in mini-grids and identification of (future) business models in mini-grid development. They will thereby actively contribute their experiences in the O&M for the 3 solar mini-grids to the other RESCOs participating in the capacity building activities under Activity 2.3.
64. Sub-activities for the above activity include:
- 3.1.1: Organization of tender processes to appoint the construction contractor(s) and the mini-grid operator(s), and to procure equipment, according to international best practices.
- 3.1.2: Negotiation and signing of mini-grid legal and regulatory agreements, including the outsourcing agreement with operator (including competitive pricing and KPIs aimed at ensuring adequate service quality) and a regulatory agreement with MRRD mirroring, to the extent possible, those typical of energy PPPs⁴⁰. The regulatory agreement will also stipulate the treatment of excess cashflows and related MRRD obligations by means of an escrow account.
- (MRRD will commit to keep in escrow⁴¹ any excess cashflows to be spent towards the latter investment in battery replacement. An annual overview of excess funds during the project implementation will be discussed in the Project Board (with UNDP as a senior supplier), to keep track of funds being available for battery replacement. By the end of the project, an outlook of excess cashflows and future investment

³⁶ An escrow is a financial arrangement where a third party holds and regulates payment of the funds required for two parties involved in a given transaction

³⁷ Given that the financial analysis shows a net cash flow from year 15 to 25 of 2.93 mln\$ (see Annex IIIb), this can be attributed for 14 additional mini-grid designs (200 k\$ each) and development of an updated mini-grid handbook.

³⁸ Given that the financial analysis shows a net cash flow from year 15 to 25 of 2.93 mln\$ (see Annex IIIb), this can be attributed for 14 additional mini-grid designs (200 k\$ each) and development of an updated mini-grid handbook.

³⁹ UNDP, along with MRRD, will select the private company for the operations and maintenance of the mini-grid through a competitive bidding process.

⁴⁰ Note that for procurement activities higher than 500,000 Af (~ 7,000 US\$), UNDP will also conduct procurement activities as well as payment to vendors. The tenor of the O&M contract will be 25 years.

⁴¹ An escrow is a financial arrangement where a third party holds and regulates payment of the funds required for two parties involved in a given transaction

strategy will be presented and discussed in the Project Board as part of the exit strategy. The escrow account will continue to be overseen by the Ministry of Finance and the MRRD after the project ends.)

3.1.3: Implementation and supervision of mini-grid construction to ensure it is on time, on budget and in compliance with technical specifications prescribed to the contractor.

3.1.4: Monitoring and evaluation system of mini-grid performance, including collection of data and evidence (e.g. regarding tariff collection, service quality, compliance with budget, unforeseen risks and lessons learnt) to feed into the knowledge platform.

Activity 3.2: Set-up of knowledge platform

65. With this activity, the project aims to create the conditions for scalability in the form of additional solar mini-grid implementations. Evidence of success and lessons learnt from the 3 mini-grids implemented by the project should also facilitate fund-raising from a wider range of donors and, subject to the macroeconomic and security developments in the country, possibly also commercial or impact investors. Scalability will be facilitated by: (i) the production of step-by-step guidelines on solar mini-grid implementation, for MRRD use; (ii) the set-up of an online platform to share KPIs and lessons learnt on solar mini-grid development specifically tailored to Afghanistan, based on data collected from the 3 initial mini-grids; and (iii) the development of an additional 5 RE mini-grids designs (3 solar and 2 hydro) in pre-identified areas of Afghanistan, for ready implementation by MRRD and to facilitate fund-raising from other donors or investors.

66. Sub-activities for the above activity include:

3.2.1: Production of a detailed, step-by-step mini-grid implementation handbook for use by MRRD for the design, tendering, construction and operation of future mini-grids.

(The handbook will build on concrete evidence and best practices that will emerge during the implementation of the 3 mini-grids under activity 3.1. It will also reflect industry guidelines published by recognized institutions, such as the IFC's Scaling Solar program⁴² and the World Bank's Public-Private Infrastructure Advisory Facility (PPIAF), but will be tailored to Afghanistan's specificities. The handbook will also be available to any stakeholders, such as contractors, operators and financiers interested in participating in Afghani solar mini-grids. For that purpose, the handbook will include fully-developed templates of legal, regulatory and financing agreements for speedy and cost-efficient replication and negotiation.)

3.2.2: Set-up of online knowledge sharing platform and materials.

(The online platform will be a real-time, centralized depository of data and information on existing solar mini-grids in Afghanistan. Data will be collected from the 3 initial mini-grids through remote monitoring and regular (quarterly and annual) performance assessments based on a pre-defined set of KPIs. The full technical designs and regulations of the 3 mini-grids will be available for easy replication.)

3.2.3: Development of investment design reports in an additional 5 solar mini-grids sites already identified. The design reports will comply with the green procurement and ESG guidelines developed under activities 3.3 and 3.4 (see below).

(Development of investment design reports for an additional 5 RE mini-grids (3 solar and 2 hydro). Sites have already been identified in the provinces of Bamian, Laghman, Paktika, Urozgan and Daikundi based on analysis of demand and supply patterns, potential loads, ability to pay for energy services, the national grid extension plan from DABS and a security assessment based on the UN Security Map (see also Feasibility Study, Annex II). Demand patterns analysed will include availability of social services in the target sites, the potential for productive use of energy, and women empowerment considerations. The design reports will be ready for implementation by MRRD or for tendering to the private sector, should market conditions and the risk perception of Afghanistan improve in the medium term. RESCOs receiving capacity building support under Activity 2.3 (including the RESCOs selected for O&M services of the 3 solar mini-grids under Activity 3.1) will be involved in discussions on expanding their business in the development of the 5 mini-grids by exploring the potential for participation in PPP business models for the construction and operation of the 5 mini-grids, including support in the financial models and discussions with potential national and international financiers.)

⁴² <https://www.scalingsolar.org>

Activity 3.3: Green procurement policy for mini-grids developed and mainstreamed

67. In order to mainstream climate change considerations into government processes, the effective application of green government procurement (GGP) is needed and can potentially have great impacts in the development and implementation of solar mini-grids as long as mini-grids will remain to be based on government procurement, at least in the near term future. The project will therefore develop a green procurement policy for mini-grids procurement, using guidance from ISO 20400⁴³, to facilitate the use and purchase of most environmentally-friendly services and products for mini-grids. In addition, this policy will be aligned to NEPA's policies and national environmental standards related to the establishment of mini-grids in the country. A peer review of the final draft policy by an expert panel composed of national and international green procurement experts will ensure the highest possible quality.
68. The capacities of the relevant ministries involved in mini-grid procurement processes, especially MEW, MRRD and DABS in light of the establishment of the RED (under DABS) will be strengthened to be able to apply the green procurement guidelines.
69. Sub-activities for the above activity include:
- 3.3.1: Conduct review of existing procurement regulation and needs assessment for complementary standards for green procurement policy for mini-grid development.
- 3.3.2: Develop/update green procurement policy and guidelines for mini-grid procurement including manual and green procurement database with online-reporting system.
- 3.3.3: Organize training to build capacities of national entities, especially MEW, MRRD and where relevant other key ministries on green procurement guidelines for mini-grid development.

Activity 3.4: Social and environmental safeguards policy for mini-grids developed and mainstreamed

70. In general, solar mini-grids have the potential to cause moderate environmental and social impacts. Land clearing for the construction of mini-grids is considered minimal by area and intensity of impact and will not cause significant permanent loss of vegetation. However, there can be a potential for hazardous waste after the end of the project from used batteries of photovoltaic systems.
71. In order to mitigate any potential environmental and social impact of mini-grid development, the project foresees in the development of standards related to social safeguards and environmental sustainability of mini-grids, using UNDP's Social and Environmental Standards⁴⁴ as guidance and specific Environmental and Social Safeguards assessment tools for mini-grid development, such as developed by the World Bank, as input for safeguard policy development. Such regulatory instruments should also provide safeguards and balance the interests of the village energy users and the rural energy service provider and lay out the principles which encourage long term service delivery and specify mechanisms to resolve and redress conflicts.
72. Sub-activities for the above activity include:
- 3.4.1 Conduct review of existing social and environmental safeguards standards and needs assessment for complementary standards for mini-grid development.
- 3.4.2 Develop/update standards related to social safeguards and environmental sustainability of mini-grids (recycling of components at end-of-life, social and environmental considerations of mini-grid location and mini-grid construction, ensuring minimal impact on river flora and fauna).
- 3.4.3 Develop grievance redress mechanism related to social and environmental safeguards regulations for mini-grid development.
- 3.4.4 Design and conduct trainings for national and local government entities such as MEW, MRRD and other key ministries and provincial governments on social and environmental safeguards for mini-grid development.

B.4. Implementation arrangements (max. 1500 words, approximately 3 pages plus diagrams)

⁴³ ISO 20400:2017 provides guidance to organizations, independent of their activity or size, on integrating sustainability within procurement

⁴⁴ <https://www.undp.org/content/undp/en/home/librarypage/operations1/undp-social-and-environmental-standards.html>

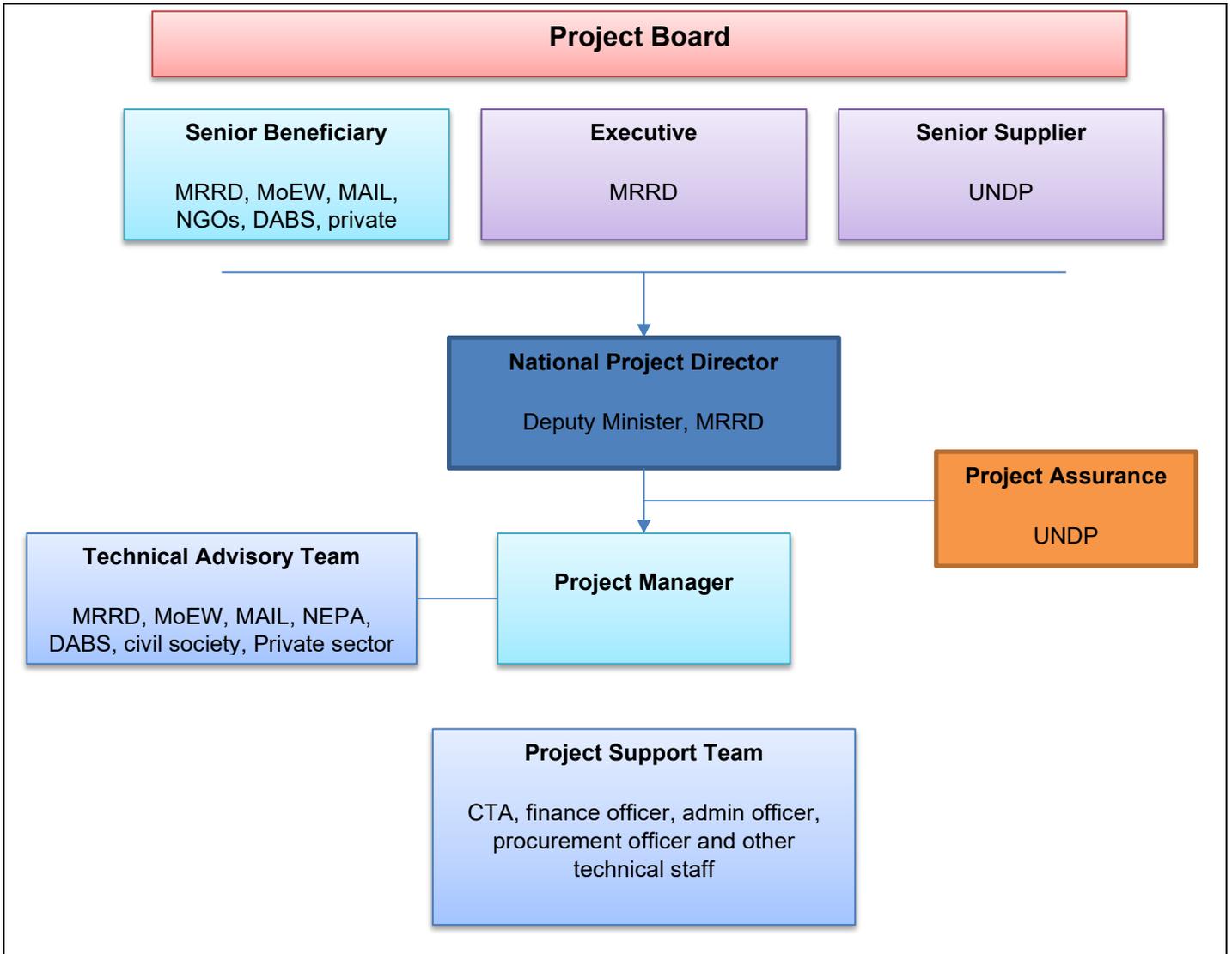
73. The project will be implemented following UNDP's National Implementation Modality (NIM), according to the Standard Technical Assistance Agreement (STAA) between UNDP and the Government of Afghanistan⁴⁵ and as per the policies and procedures outlined in the UNDP POPP⁴⁶.
74. The national executing entity - also referred to as the national 'Implementing Partner/Executing Entity' in UNDP terminology - is required to implement the project in compliance with UNDP rules and regulations, policies and procedures, including the NIM Guidelines. These include relevant requirements on fiduciary, procurement, environmental and social safeguards, and other performance standards. In legal terms, this is ensured through the national Government's signature of the UNDP Standard Technical Assistance Agreements (STAA), together with a UNDP project document which will be signed by the Implementing Partner/Executing Entity to govern the use of the funds.
75. The (national) Implementing Partner/Executing Entity for this project is the Ministry of Rural Rehabilitation and Development which is accountable to UNDP for managing the project, including the monitoring and evaluation of project interventions, achieving project outcomes, and for the effective use of resources made available by UNDP. The management arrangements for this project are summarised below in Figure 4.
76. UNDP's overall role as an Accredited Entity is to provide oversight and quality assurance through its Headquarters, Regional and Country Office units. This role includes: (i) day-to-day oversight supervision, (ii) oversight of project completion, (iii) oversight of project reporting. It also includes oversight roles in relation to reporting and knowledge-management. The 'project assurance' function of UNDP is to support the Project Board by carrying out objective and independent project oversight and monitoring functions. This role ensures appropriate project management milestones are managed and completed. Project assurance has to be independent of the Project Manager; therefore, the Project Board cannot delegate any of its assurance responsibilities to the Project Manager. A UNDP Programme Officer, or Monitoring and Evaluation (M&E) Officer, typically holds the project assurance role on behalf of UNDP at the country level, with support from, in this case, the Global Environmental Finance Unit (responsible for managing GCF resources) at the Headquarter (HQ) and Regional level. The 'senior supplier' role of UNDP is to represent the interests of the parties which provide funding and/or technical expertise to the project (designing, developing, facilitating, procuring, implementing). The senior supplier's primary function within the Board is to provide guidance regarding the technical feasibility of the project. The senior supplier's role must have the authority to commit or acquire supplier resources required. Typically, the Implementing Partner/Executing Entity, UNDP and/or donor(s) would be represented under this role.

Figure 4 Governance Arrangement⁴⁷

⁴⁵ The STAA was signed on 10 May 1956.

⁴⁶ <https://popp.undp.org/SitePages/POPPSubject.aspx?SBJID=245&Menu=BusinessUnit>

⁴⁷ DABS = Da Afghanistan Breshna Sherkat, the national power utility in Afghanistan. MoEW = Ministry of Energy and Water, MAIL = Ministry of Agriculture, Irrigation and Livestock



77. The project will be governed by a Project Board. The Project Board is responsible for making, by consensus, management decisions when guidance is required by the Project Manager. Project Board decisions will be made in accordance with standards that shall ensure management for development results, best value money, fairness, integrity, transparency and effective international competition. In case a consensus cannot be reached within the Board, final decision shall rest with the UNDP Programme Manager.

78. Project Board will consist of a group of representatives responsible for making consensus-based strategic and management decisions for the project. It will oversee the project implementation; review compliance with GoA, UNDP and GCF requirements; and ensure implementation of the management plan for the risks identified. The Board will be comprised of:

- An Executive (role represented by National Implementing Partner) that holds the project ownership and chairs the Board. The Executive will be MRRD.
- A Senior Supplier representative providing guidance regarding the technical feasibility of the project, compliance with donor requirements, and rules pertaining to use of project resources. This role will be fulfilled by UNDP in its capacity as GCF AE;
- Senior Beneficiary representatives who ensures the realisation of project benefits from the perspective of project beneficiaries; and the National Project Director, Deputy Minister of MRRD who is responsible for the overall direction, strategic guidance, and timely delivery of project outputs.
- The Board will also include additional membership including representatives from relevant GoA ministries, Development Partners, Non-Government Organisations and the Afghanistan National Designated Authority to the Green Climate Fund. The Board will meet once every six months and/or upon a call by the National Project Director.

79. The Project Manager will run the project on a day-to-day basis within the constraints laid down by the Project Board. The Project Manager function will end when the final project terminal evaluation report and other documentation required by the GCF and UNDP, has been completed and submitted to UNDP. The Project Manager is responsible for day-to-day management and decision-making for the project. The Project Manager's prime responsibility is to ensure that the project produces the results specified in the project document, to the required standard of quality and within the specified constraints of time and cost.

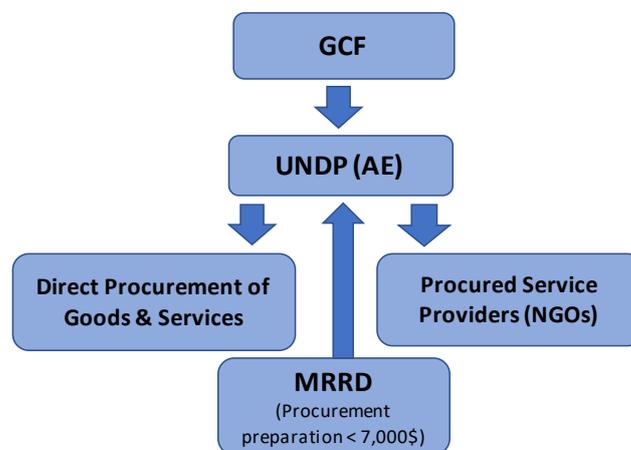
Management Arrangements

80. Using established practice under NIM, the Government will designate a National Project Director (NPD) who will be the Deputy Minister of MRRD. The NPD will provide up to 50% of his/her time, and be responsible for the overall direction, strategic guidance, and timely delivery of project outputs. This position is not remunerated by GCF resources but are Government financed positions. MRRD will recruit a Project Manager (PM), paid for by the project, who will be responsible for day-to-day operations and the management of a team of professionals and technical staff, including an international Chief Technical Advisor (who will also be recruited by UNDP to implement the project).

Project-Support

81. The PM will be supported by a core team of technical and support staff forming the Project Management Unit (PMU) located at MRRD to execute project activities, including day-to-day operations of the project, and the overall operational and financial management and reporting. UNDP will perform the project assurance role in line with the requirements outlined in the AMA. This includes management of funds, programme quality assurance, fiduciary risk management, timely delivery of financial and programme reports to GCF and other requirements as per the AMA. The MRRD will implement the project. UNDP will manage the funds from GCF, and will disburse based on the direct payment modality.

82. Direct payment refers to the arrangement where payments are made directly by UNDP to vendors and other third parties providing goods or services for agreed upon programme activities on behalf of the implementing partner upon request and following completion of the activities. Under this modality, the Executing Entity (/Implementing Partner (IP)) is responsible/accountable for the project expenses and carries out the procurement actions for procurement activities up to 500,000 Af (~ 7,000 US\$), but requests UNDP to make the payments to vendors. For procurement activities higher than 500,000 Af (~ 7,000 US\$), UNDP will also conduct procurement activities as well as payment to vendors. UNDP provides accounting services and banking services to the EE/IP. The UNDP and the Government of Afghanistan acknowledge and agree that those services are not mandatory and will be provided upon Government request and specified in the Letter of Agreement. See flowchart below for the financial flow.



83. The Technical Advisory Team (TAT) consists of technical level staff from all Ministries and NGOs, represented on the Project Board. It will provide the platform for debate and contributions across the project outputs at a more technical and working level.

84. For the implementation of 3 solar mini-grids, there are regulatory requirements related to Afghanistan's existing Environmental Impact Assessment (EIA) regulations. However, the 5 investment design reports will comply with green procurement and safeguards standards developed in the project in order to meet regulatory requirements once these mini-grids will be implemented.
85. Section 7 of the Convention on the Privileges and Immunities of the United Nations provides, inter alia, that the United Nations, including its subsidiary organs, is exempt from all direct taxes, except charges for utilities services, and is exempt from customs duties and charges of a similar nature in respect of articles imported or exported for its official use. Also, the goods and services procured directly by Government of Afghanistan implementing partners, are exempt from customs duties and will be tax free. All the project procurement/inputs will be tax free.
86. For the implementation of project activities, the contractors, selected through bidding processes, will provide and maintain insurance against the following. Insurance costs are included in the estimated activities costs.
- i. All risks in respect of its property and any equipment used for the execution of the activities in their contracts.
 - ii. Appropriate coverage for employees to cover claims for personal injury or death in connection with their activities in the contracts.
 - iii. Liability insurance in an adequate amount to cover third party claims for death or bodily injury, or loss of or damage to property, arising from or in connection with the provision of services under the Contract or the operation of any vehicles, boats, airplanes or other equipment owned or leased by the Contractor or its agents, servants, employees or sub-contractors performing work or services in connection with the Contract.
87. An MoU between MRRD and MEW is in place which promotes a strong collaboration on energy development issues. No agreements are in place at this point with other stakeholders but where needed may be drafted during project implementation.

B.5. Justification for GCF funding request (max. 1000 words, approximately 2 pages)

88. The proposed project offers a unique opportunity for GCF to support the country in its ambition to provide low-carbon energy solutions for rural vulnerable population through mini-grid market development. Given the nascent stage of the mini-grid and more generally solar market in the country, the project will allow creating an enabling environment for RE and support the country in discontinuing the current energy provision pathways (dependent on diesel and kerosene fuel). The project is to be seen as the starting point for Afghanistan in its journey to address the underlying barriers for the rural renewable energy market to develop.
89. Several alternative sources of funding were explored through meetings and interviews, including: (i) the Government of Afghanistan, (ii) international donor organizations and (iii) the private sector, in particular solar project developers. All confirmed that they are severely limited or altogether unable to contribute to project funding, for the following reasons:
- GoA is facing a severe macroeconomic and fiscal situation, compounded by security and political uncertainty. As recipient of an IMF Extended Credit Facility, GoA has committed to a path of fiscal stability which drastically restricts its ability to incur further sovereign debt or budget deficits. The IMF expressly recommends that any external financing is in the form of grants or concessional funding.⁴⁸ In this context, GoA's commitment to provide USD 1 million in cash co-finance (provided by the Ministry of Finance and channeled through MRRD) is very significant. GoA will also contribute in-kind to project management, through the provision of personnel, office space, IT and transport equipment (in-kind contribution worth USD 2.2 million).
 - International donors to Afghanistan currently prioritize other areas, such as security, peace, governance, women empowerment and health. In addition, donor activities are currently on hold due to heightened uncertainty surrounding the outcome of the political elections and the direction of the peace process. UNDP discussed the project and potential co-finance opportunities with the Korean, Japanese and European Union (EU) representations in Afghanistan, the Asian Development Bank (ADB), GIZ and FMO. In addition to the general feedback summarize above, institution-specific constraints were also noted. In particular, in the energy sector ADB prioritizes projects targeting the extension of the electric grid. GIZ (with funding support from the EU) has already committed resources to the renewable energy

⁴⁸ IMF Country Report 19/157 (June 2019): <https://www.imf.org/en/Publications/CR/Issues/2019/06/07/Islamic-Republic-of-Afghanistan-Fifth-Review-Under-the-Extended-Credit-Facility-Arrangement-46973>

sector in northern Afghanistan, including the construction of mini-grids (not yet started); at this moment, it is unable to make further financial commitments in this area.

- Private-sector investors/operators of solar projects were also interviewed. Seven Afghani companies were identified that invest in and operate on-grid solar projects. Discussions were held with the two most prominent (Zularistan and Qadarqan). Neither indicated an interest in investing equity in the mini-grids, noting that they only invest in solar projects connected to the grid, where DABS is contractually obligated to buy electricity under a power purchase agreement. Such agreements are not possible in mini-grids in remote rural areas, leaving any investor exposed to the risk of revenues undershooting expectations. This risk is compounded by the fragile security situation in rural Afghanistan, which could result in service interruptions and revenue losses. While declining to co-finance, the companies confirmed their interest in operating the mini-grids under simple outsourcing contracts on a cost-plus basis.
- Commercial banks in Afghanistan have no track record in lending to solar projects, and would likely share the same concerns (revenue stability and security risks) expressed by the operators. The latter noted that even some on-grid renewable projects could not attract debt finance in the past, and were funded entirely with equity and donor funds.

90. USD 6.3 million of the GCF grant will fund public-good type activities with no immediate, quantifiable financial reflows – namely the whole of outputs 1 and 2, the whole of activities 3.2, 3.3, 3.4 and 4.1, and USD 1 million in transaction costs incurred to implement the 3 mini-grids under activity 3.1 (such transaction costs reflect the proof-of-concept nature of the 3 mini-grids and will be substantially lower in additional mini-grids implemented in the future). For these, a grant is deemed as the most adequate instrument.

91. Activity 3.1 (implementation of 3 mini-grids) capex of USD 12.4 million will lead to the generation of reflows in the form of electricity tariff revenues. However, under the realistic tariff assumptions discussed in B.3, such revenues will not be sufficient to generate, over the 25-year lifetime of the mini-grids, a positive financial IRR. The GCF grant would fund 88% of capex and construction costs, for a total commitment of USD 10.9 million. The remaining USD 1.5 million of co-finance for capex will be provided by MRRD (USD 1 million) and UNDP (USD 0.5 million). The GCF grant would bring the financial IRR to around 20% in all 3 mini-grids, a level that just about reflects the risk of operating in a precarious environment such as a rural Afghanistan. While the mini-grids will be owned by a public entity (MRRD), for replicability and scalability purposes and with the hope to attract private capital to future mini-grid development, it is important that the 3 mini-grids implemented by the project demonstrate that, with minimum concessionality, market-level IRRs are achievable. The table below summarizes IRRs with and without concessionality, and grant size. Please refer to Annex 3 for a detailed description of the financial model.

Mini-grid location:	Kandahar	Parwan	Khost
Capex (years 1-2)	\$4.4m	\$3.5m	\$4.5m
IRR without concessionality (over 25-year mini-grid lifetime since start of operations)	-6.4%	-13.5%	-4.4%
GCF grant	\$3.8m	\$3.2m	\$3.9m
IRR with GCF grant	22.0%	18.9%	19.0%
GCF grant as % of capex	86%	93%	86%

92. MRRD, as owner of the mini-grids, will benefit from the concessionality. MRRD, however, will commit to keep in escrow any excess cashflows (revenues less operation and maintenance fees paid to the operator) accumulated in the first 15 years of a mini-grid's operations, to be spent towards battery replacement in year 16 of mini-grid operation (the latter requiring a total investment of USD 3.9 million for the 3 mini-grids)⁴⁹. MRRD will also commit to re-invest excess cashflows accumulated in the last 10 years of a mini-grid's operations, and any excess cashflows in the first 25 years of operations which are above and beyond the cost of battery replacement, to support the knowledge platform (Activity 3.2) e.g. by means of development of new mini-grids (e.g. funding technical studies), updated handbook for mini-grid development or further support to the knowledge sharing platform and materials⁵⁰. Excess cashflows from the investment, therefore,

⁴⁹ The escrow account will ensure that withdrawals from the fund can only take place at the occasion of a "trigger event", in this case at first instance the payment for battery replacement in year 15. The escrow account will be overseen by the Ministry of Finance, the MRRD and the UNDP so that the release of funds at the occasion of the trigger event is coordinated with all parties involved.

⁵⁰ Given that the financial analysis shows a net cash flow from year 15 to 25 of 2.93 mln\$ (see Annex III), this can be attributed for 14 additional mini-grid designs (200 k\$ each) and development of an updated minigrid handbook.

will not be spent by MRRD for purposes inconsistent with the general objective of the project or for budget deficit reduction.

93. Mini-grid customers (households and small businesses) will not disproportionately benefit from the project's concessionality, in the form of highly subsidized electricity tariffs. The latter have been determined through willingness-to-pay surveys in all three target sites and will be set at levels that compare – but do not represent a discount to – the cost of electricity from diesel and kerosene-powered generators. Specifically, households in the target areas spend around AFG 250/month (USD 3.2) to operate generators. The project assumes that roughly the same budget will be devoted to electricity bills from the mini-grids. Assuming that each household will need 200W of energy (2-3 electricity bulbs and a TV or small appliance) and will use electricity 6 hours a day, the implied tariff is around USD 0.08-0.10/kWh. A tariff of USD 0.10 kWh is considered acceptable on the basis of Willingness-to-Pay and Ability-to-Pay surveys conducted in the 3 sites for solar mini-grid development and has been used in the financial model). These tariffs are higher than the highly-subsidized tariff of USD 0.07 charged by the grid operator DABS, which shows the financial commitment rural users are willing to make in order to obtain electricity in their remote locations.
94. Co-finance provided by UNDP and MRRD will be in the form of grants (and also in-kind, in the case of MRRD) and therefore *pari passu* to the GCF contribution.
95. In the absence of GCF's support, the development of the solar energy sector in rural Afghanistan will happen at a much slower pace. Setting up institutions for implementation of rural energy projects (i.e. RED) through GCF involvement and policy de-risking to create the enabling conditions for solar mini-grid development will act as a catalyst, giving a long-term support to rural energy markets beyond this project. Through this catalytic role, the project will be able to help overcome critical policy, institutional, technical and operational barriers standing in the way of setting up climate changed focused energy access projects in Afghanistan that are targeted at livelihoods. This will enable stakeholders such as the private sector, banks, technology suppliers, O&M providers and other actors to get more confidence required for bringing in their own investments in the rural renewable energy market in future.
96. The grant request from the GCF is considered appropriate as the financial constraints under which the Government of Afghanistan operates including its severely restricted borrowing capacity creates the situation that Afghanistan continues to depend on foreign grants for energy development in the medium term. Afghanistan's financial sector continues to be in a precarious position, especially since 2002 when the formal financial sector was almost non-functioning and the legal framework was practically ineffective. Internationally, the risk profile of Afghanistan precludes the long-term project financing of assets, and, as a result, direct foreign investment has been limited to grant funding from multilateral institutions, including in the power generation sector.

B.6. Exit strategy and sustainability (max. 500 words, approximately 1 page)

97. The project – with its combination of capacity building activities, on one hand, and concrete proof-of-concept construction of 3 mini-grids, on the other – is specifically designed as the pilot phase of a longer multi-phased development process of mini-grid development in Afghanistan with the objective of long-term sustainability and replicability.
98. In particular, **financial sustainability** will be ensured by several factors:
 - The successful example of mini-grid implementation in rural Afghanistan will reduce the risk perception of similar projects for donors, operators and potentially also private sector investors. The achievement of the target financial IRR of approx. 20% will show to private sector investors that, with adequate concessionality, their involvement in solar mini-grids can be financially attractive.
 - The expected reduction in cost of solar PV technology over-time will raise the financial IRR of such projects and reduce the need for concessionality. Reductions are expected to apply to various hardware costs, in particular solar modules and batteries. For instance, solar PV module prices have dropped by 99% in the last 40 years⁵¹ and lithium ion battery prices have dropped by 79% since 2010.⁵²
 - Development of a viability gap funding mechanism is an important activity in the project. This will be developed in light of Afghanistan Government's discussions on setting up a Renewable Energy Fund which has thus far not yet materialised. Mechanisms that involve using possible revenues from donor

⁵¹ IRENA, Renewable Energy Technical Costs, 2012.

⁵² Bloomberg, New Energy Outlook, 2017.

supported mini-grids to be used for setting up a Renewable Energy Fund will be part of possible solutions to discuss. Although this project will not directly implement revolving funds nor channel concessional funding (e.g. loans), it is aimed for that by the end of the project, a funding strategy for the most promising financial de-risking package is developed and ready to be capitalized in order to ensure financial sustainability after the project ends.

- Long-term improvement in macroeconomic conditions and household income, coupled with evidence of more reliable and convenient electricity supply from the mini-grid (vs. diesel generators), should lead to long-term tariff increases, which will reduce the need for concessionality in future projects. The potential for gradual tariff increases in the 3 mini-grids (e.g. in 5-year intervals) will be explored during the project period.
- The upscaling platform is specifically designed with replicability in mind. The knowledge platform (step-by-step implementation handbook, online data and resources, and preparation of an additional 5 mini-grids designs ready for implementation), coupled with clear green procurement and ESG guidelines, will reduce the time and transaction costs of mini-grid design, legal and financial arrangements, implementation and monitoring. The fact that the upscaling platform will be developed in conjunction with the proof-of-concept implementation of 3 mini-grids is aimed at maximizing its future effectiveness and applicability.
- A team of 100 MRRD and DABS staff will benefit from extensive capacity building, including hands-on involvement in the implementation of the 3 mini-grids under activity 3.1. Capacity building will aim to enable MRRD (and later on the RED under DABS) to lead independently the whole process.
- International best practices will be incorporated at every step of the mini-grid implementation and reflected in the upscaling platform and MRRD and DABS capacity building. The application of such practices will not only improve quality of execution but also facilitate the future involvement of international stakeholders, including donors, investors/operators and contractors.

99. If mini-grids are to play a significant role in providing access to reliable and affordable electricity, a robust policy and regulatory framework is essential. **Regulatory sustainability** will be developed in the project through a combination of regulations for mini-grids and tariff mechanisms and technical standards and guidelines for design and operation of mini-grids.

100. **Institutional sustainability** through policy de-risking and ecosystem development by way of mini-grid policy and Rural Electrification Department (under DABS) will ensure that upon GCF's exit beyond 5 years, the rural renewable markets are sustainable and expanding. With the funding from the GCF to create and train RESCOs for mini-grid development, operation and maintenance, the project proposes significant private sector involvement in the development and operations and maintenance (O&M) of 3 solar mini-grids implemented in the project. The expectation is thereby that private sector participation will be increased in the rural renewable energy sector. This is the pattern already evident in Afghanistan's grid-connected energy supply where a period of grant-funded capital investments resulted in the track-record necessary for private sector investment. Ultimately, as these systems become de-risked from a policy, technical and operating perspective in rural off-grid supply with a clear regulatory framework and institutional mechanisms in place, RESCOs will be able to raise finance from local banks to build, own and operate (B-O-O) these systems.

101. In addition, the proposed project will generate valuable knowledge as well as curriculum development for universities and vocational centers that will contribute to other projects and initiatives in this sector beyond the project end. Simultaneously, it will also help in creating knowledge within the MRRD on good management and governance practices that would be shared with other Ministries and departments. Specifically, the process of conceptualizing, creating and strengthening the mini-grids RESCOs will be a valuable knowledge product to be applied in other sectors across Afghanistan and in RE sector in other neighboring countries. Learning is expected to be significant on the impact of energy interventions on climate change adaptation through encouragement of productive uses combined with design of RE mini-grids. The body of evidence created shall result in replication and scaling up of similar interventions.

102. If mini-grid investment in Afghanistan is to truly scale up, then private sector investment will be central. **Market knowledge sustainability** is therefore created in the project by means of supporting and training Renewable Energy Service Companies (RESCO) in order to grow a nascent private sector mini-grid industry in Afghanistan. By the end of the project, 1,000 people will have been trained on various aspects of rural RE mini-grids such as system sizing, design and installation (resource assessment, supply and demand analysis, design, installation considering the technical standards, guidelines and regulations developed under Output 1) while on the financial side, capacity building will

address mini-grid and RE system business models, including financing options, administration and tariff setting and the critical role of productive uses. This will allow the RESCOs not only to be able to offer O&M services but also initiate mini-grid development once the financial viability gap funding mechanism is in place.

103. **Social sustainability** will be ensured by extensive stakeholder involvement in the communities benefiting from the 3 implemented mini-grids and the additional 5 to be designed. Willingness-to-pay studies have already been conducted to ensure the affordability of mini-grid tariffs and to avoid creating an excessive financial burden on users, which could ultimately jeopardize the successful implementation of the mini-grids. The outcome of these studies and prospective tariffs will be extensively socialized in the target communities to ensure that they fully appreciate the benefits of a reliable supply of electricity from a renewable source and the fairness of the proposed tariffs. Similarly, the business-enhancing potential of reliable electricity will be explained to local business owners.
104. **Gender-based sustainability.** The proposed project will generate gender analysis through stakeholder engagement and project interventions which will support in addressing the cross-cutting gender issue in the relevant sector after the project life. The assessment and implementation of the gender-related activities in responding to the expanding threat of climate change, including gender roles and responsibilities, resource use and management, and decision making raised by the project will help the women to be an active player in the sector. The interventions of the proposal will support the engagement, development and input into the design of responding to the expanding threat of climate change and building the resilience of the most vulnerable communities through sustainable energy access.

C. FINANCING INFORMATION							
C.1. Total financing							
(a) Requested GCF funding (i + ii + iii + iv + v + vi + vii)		Total amount			Currency		
		17,198,843			USD (\$)		
GCF financial instrument		Amount	Tenor	Grace period	Pricing		
(i)	Senior loans	Enter amount	Enter years	Enter years	Enter %		
(ii)	Subordinated loans	Enter amount	Enter years	Enter years	Enter %		
(iii)	Equity	Enter amount	Enter years		Enter % equity return		
(iv)	Guarantees	Enter amount					
(v)	Reimbursable grants	Enter amount					
(vi)	Grants	17,198,843					
(vii)	Result-based payments	Enter amount					
(b) Co-financing information		Total amount			Currency		
		4,200,000			USD (\$)		
Name of institution		Financial instrument	Amount	Currency	Tenor & grace	Pricing	Seniority
Ministry of Rural Rehabilitation and Development		Grant	1,000,000	USD (\$)	Enter years Enter years	Enter%	Options
UNDP		Grant	1,000,000	USD (\$)	Enter years Enter years	Enter%	Options
Ministry of Rural Rehabilitation and Development		In kind	2,200,000	USD (\$)	Enter years Enter years	Enter%	Options
Click here to enter text.		Options	Enter amount	Options	Enter years Enter years	Enter%	Options
• Total financing (c) = (a)+(b)		Amount			Currency		
		21,398,843			USD (\$)		
(d) Other financing arrangements and contributions (max. 250 words, approximately 0.5 page)		N/A					
C.2. Financing by component							
Output	Activity	Indicative cost Options	GCF financing		Co-financing		
			Amount Options	Financial Instrument	Amount Options	Financial Instrument	Name of Institutions
Output 1: Energy Market Risk de-risked by policy, regulatory and institutional development for improved renewable energy (RE) services in rural areas	Activity 1.1 Regulations for mini-grids and tariff mechanisms and structure developed and approved	764,748	564,748	Grants	200,000	In-kind	MRRD
	Activity 1.2 Technical standards and guidelines developed for	464,000	264,000	Grants	200,000	In-kind	MRRD

	design and operation of mini-grids						
	Activity 1.3 Policy on fostering institutional reform and coordination mechanism among responsible institutions for mini grid development developed	605,560	405,560	Grants	200,000	In-kind	MRRD
	Activity 1.4 Framework for financial de-risking RE mini-grids designed	503,960	303,960	Grants	200,000	In-kind	MRRD
Output 2: Capacity and engagement of the existing and potential mini-grid market actors and stakeholders strengthened on RE mini-grids	Activity 2.1 Capacity strengthening activities designed and delivered for government entities on technical, managerial, administrative and financing aspects of RE mini-grids	738,268	538,268	Grants	200,000	In-kind	MRRD
	Activity 2.2 Community commitment activities designed and delivered for beneficiaries of 3 solar mini-grids	558,000	358,000	Grants	200,000	In-kind	MRRD
	Activity 2.3 Capacity strengthening activities designed and delivered for private sector on designing, operating and maintaining mini-grids and maintaining mini-grids as well as incentivizing	975,000	775,000	Grants	200,000	In-kind	MRRD

	productive use aimed at increasing resilience						
3. Construction of 3 greenfield solar mini-grids and set-up of an “upscaling platform” to facilitate additional mini-grid investments	3.1 Construction of 3 greenfield solar mini-grids	13,393,588	11,893,588	Grants	1,000,000 500,000	Grants Grants	MRRD UNDP
	3.2 Set-up of knowledge platform	1,877,500	1,177,500	Grants	500,000 200,000	Grants In-kind	UNDP MRRD
	3.3 Green procurement policy for mini-grids developed and mainstreamed	357,500	157,500	Grants	200,000	In-kind	MRRD
	3.4 Social and environmental safeguards policy for mini-grids developed and mainstreamed	354,000	154,000	Grants	200,000	In-kind	MRRD
4. Project management		806,719	606,719	Grants	200,000	In-kind	MRRD
Indicative total cost (USD)		21,398,843	17,198,843		4,200,000		

C.3 Capacity building and technology development/transfer (max. 250 words, approximately 0.5 page)

C.3.1 Does GCF funding finance capacity building activities? Yes No

C.3.2. Does GCF funding finance technology development/transfer? Yes No

If the project/programme is expected to support capacity building and technology development/transfer, please provide a brief description of these activities and quantify the total requested GCF funding amount for these activities, to the extent possible.

105. Output 2 will undertake capacity building of institutions on demand-side as well as supply-side of energy systems and services. On the supply-side, the ability of relevant ministries and government institutes to extend their expertise on rural RE mini-grids with specific professional staff to be further trained in technical, managerial and financial aspects of RE mini-grids, thus creating capacity at scale. On the demand-side, capacity in the agricultural cooperatives, self-help-groups, community development councils, and the population served by the 3 solar mini-grids will be enhanced to understand and accept RE systems as a means to provide energy to enhance their incomes and other benefits. The total GCF funding for these activities will be USD 1,671,268.

106. Capacity building of the private sector will focus on technical training for RE developers and RE service providers on various aspects of rural RE mini-grids such as system sizing, design and installation (resource assessment, supply and demand analysis, design, installation considering the technical standards, guidelines and regulations developed under Output 1), for a total budget of USD 6.8 million excluding MRRD’s in-kind co-finance. On the financial side, capacity building will address mini-grid and RE system business models, including financing options, administration and tariff setting and the critical role of productive uses. Finally, training of local technicians for O&M of solar PV and hydropower mini-grids as well as operators’ and administrators’ manuals in local languages will be part of this activity.

D. EXPECTED PERFORMANCE AGAINST INVESTMENT CRITERIA

D.1. Impact potential (max. 500 words, approximately 1 page)

107. Overall, the project will contribute to a lower GHG emissions trajectory while triggering increased resilience and enhanced livelihoods of the most vulnerable people, communities and regions. Sustainable access to reliable and cost-effective energy through the RE mini-grids shall strengthen community-level coping strategies and improve income. The 3 implemented solar mini-grids address 49,000 beneficiaries (of which 23,500 are women) as users of electricity at homesteads, for agriculture and enterprise development. About 12 schools, 3 RE-enabled health centres and approx. 1,050 small businesses will be addressed in the 3 implemented solar mini-grids in this project.
108. The 3 solar mini-grids implemented under Activity 3.1 will have a mitigation potential of 173,082 tCO₂eq over their 25-year lifetimes. In most cases, RE electricity will replace and/or avoid the use of diesel fuel and in some cases kerosene. The Table 1 below summarises the project's mitigation benefits. Please refer to Annex II Pre-Feasibility Study for the detailed calculations.
109. The 5 additional mini-grids designed as part of Activity 3.2 are expected to be implemented after the GCF project and have a mitigation potential of 379,746 tCO₂eq (not included in CO₂ emission reduction in this FP submission).

Table 1 Estimated CO₂ emission mitigation potential of 3 solar mini-grids implemented in Kandahar, Parwan and Khost

Sectors	Potential for mitigation (kWh/year)	System for replacement	Emission factor	Annual Emission Reduction (tCO ₂ e)	Useful life of system (years)	Total mitigation potential (tCO ₂)
3 solar mini-grids implemented	4,555,200	3 solar mini-grids	Varying emission factors ⁵³	~3,600	25 (from first year of operation)	173,082
<i>Expected emission reductions after project implementation (not included in this FP submission):</i>						
5 mini-grids designed	8,935,200 ⁵⁴	3 solar and 2 hydro mini-grids	Varying emission factors ⁵⁵	15,189	25	379,746 ⁵⁶

D.2. Paradigm shift potential (max. 500 words, approximately 1 page)

110. **Potential for scaling-up and replication.** The project is specifically designed for replication and scale-up by providing (i) policy de-risking for mainstreaming mini-grids, (ii) providing a platform for private sector engagement through training and supporting private sector RESCOs and a Rural Electrification Department (under DABS), (iii) supporting technical and commercial packages of interventions (e.g. mini-grids + RESCOs), (iv) developing a track-record of mini-grid designs ready for procurement or tendering, (vi) implementing 3 proof-of-concept solar mini-grids and (vii) necessary capacity building among public, private and community groups for effective management of technology. Taken together, these factors enable a transformational shift to clean energy delivery in rural areas explicitly linked to improving climate resilience and establishing a low-carbon model of economic development. The barrier each activity addresses and its ability to support rural renewable energy market transformation and thereby strengthened adaptive capacity, is illustrated in the Theory of Change.
111. **Potential for knowledge sharing and learning.** The creation of the upscaling platform in Output 3, and particularly the knowledge platform in Activity 3.2, is specifically meant to formalize and mainstream any data evidence, best practices and procurement and ESG policies developed by the project and put in place in the implementation of the 3 solar mini-grids. The knowledge platform will include a step-by-step mini-grid

⁵³ Using AMS I L methodology, see Annex II

⁵⁴ Based on 2.5 MW solar mini-grids with capacity factor of 20% and 1.3 MW hydro mini-grids with capacity factor 40% and excluding degradation.

⁵⁵ Using AMS I L methodology, see Annex II

⁵⁶ Calculated based on an average emission factor of 1.7 as estimated from emission calculation for 3 solar mini-grids in Annex II

implementation manual, an online data and information service and 5 ready-to-implement mini-grid designs. The knowledge platform is crucial to both learning and scaling-up/replication objectives.

112. **Contribution to the creation of an enabling environment.** The project approach takes into account the fact that current financial constraints in Afghanistan preclude immediate public or private investment for capital costs of the RE interventions at the scale required to achieve this paradigm shift. However, by addressing the non-financial barriers that hinder private investment including setting up a Rural Electrification Department (under DABS), by taking policy de-risking measures, and through proof-of-concept construction of 3 mini-grids (with concessionality provided by GCF), the conditions are established (as in the case of grid-connected private power supply) to catalyze private sector capital investments for future renewable energy off-grid interventions. On the supply-side, the ability of private sector operators to extend their expertise to operate as RESCOs will be developed, along with the development of a networking platform to share knowledge, thus creating capacity at scale.
113. **Contribution to regulatory framework and policies.** The project's construct is focused on creating an enabling environment through improved legislation and regulations as well as capacity building and improved green procurement and ESG processes. Systematic capacity building is foreseen for public institutions and research organizations while also agricultural cooperatives, self-help-groups, community development councils and NGOs will receive capacity building to support understanding and acceptance of RE systems as a means to provide energy to enhance their incomes and other benefits in order to guarantee the demand for RE systems now and in the future.
114. **Overall contribution to climate-resilient development** In summary, the project is highly scalable. 89% of Afghanistan's rural population does not have grid connectivity, surveys have repeatedly demonstrated community willingness to pay for reliable and modern forms of energy, and the Government and international development partners place energy access as a top priority for national development and climate change response efforts. It should also be noted that these conditions are shared in other countries, and that the potential for replication and scale-up is not restricted to Afghanistan.

D.3. Sustainable development (max. 500 words, approximately 1 page)

115. **Economic co-benefits.** The 3 solar mini-grids implemented under activity 3.1 will result in the employment of 29 staff hired by the mini-grid operators during the 25-year project lifespan. More importantly, the mini-grids will provide reliable electricity to over 1,050 small enterprises, contributing to business continuity and growth. Other small businesses may be launched as a result of the availability of a reliable source of power. In general, the reliability of energy supply as well as the ease of obtaining a connection (time, cost, procedures) contribute to the business environment of a country, and are one of the ten criteria used by the World Bank in compiling its *Doing Business* rankings.⁵⁷ Further, the project can potentially catalyze local manufacturing of some of the solar equipment that will result in savings of import duties currently being levied.
116. **Number of jobs created.** RE interventions will result in employment being generated through jobs in the enterprises that will benefit from enhanced access to energy. In addition, the project seeks to contribute to securing livelihoods in the 3 sites for solar mini-grid implementation as well as 5 designs for RE mini-grids. These livelihoods are expected to be in agriculture, farm-based and off-farm livelihood options. Further, the project can potentially catalyze local manufacturing of some of the RE equipment that will result in savings of import duties currently being levied. The establishment of RESCOs will create jobs as well.
117. **Social and environmental benefits.** Introduction of cleaner energy sources replacing diesel generated electricity will result in reduction of exposure to air pollution. Electrification of health clinics allows the provision of medical services at night, greater use of more advanced medical equipment, helps retain qualified staff in rural health centers, and allows local clinics to keep needed medicines on hand among other benefits. An Environmental and Social Safeguards Screening was conducted (See Annex) which categorized the project as Medium Risk due to potential risks related to land use for mini-grids, potential waste resulting from mini-grids and potentially adverse impacts on gender equality.
118. **Gender-sensitive development.** Women represent 47% of direct beneficiaries in the 3 mini-grids implemented by the project, and a similar percentage can be expected in the 5 additional mini-grids designed under activity 3.2. The project is designed to enhance the development of women. Access to energy is an intervention that has proven to contribute to economic empowerment of women. A study in South Africa found that electrification of rural communities resulted in a 9% increase in female employment⁵⁸. Another

⁵⁷ <https://www.doingbusiness.org/en/methodology/getting-electricity>

⁵⁸ Dinkelman, Taryn. 2011. "The Effects of Rural Electrification on Employment: New Evidence from South Africa." *American Economic Review*, 101(7): 3078-3108.

study conducted in Guatemala also shows a similar result where electrification increases women's employment⁵⁹. Both studies attribute the increase in employment to the fact that electricity frees up women's time by increasing their efficiency of domestic chores, such as cooking, and reducing the time they spend on collecting wood, thus allowing them to spend more time on education and other skill building activities. The project specially targets the development of agricultural cooperatives, and the final evaluation of the UNDP Afghanistan Gender Equality Programme (GEP II) found that women's income on average has increased by 200% where cooperatives were supported by the programme.

119. A gender assessment was undertaken to provide an overview of the gender situation in Afghanistan, with a specific focus on climate change resilience, and identify gender issues that are relevant to the proposed 'Afghanistan rural energy market transformation initiative - Strengthening resilience of livelihoods through sustainable energy access' project, while examining potential gender mainstreaming opportunities. On the basis of analysis of the gender dimension along political, social and cultural domains in Afghanistan, gender mainstreaming activities for the project are described in the gender action plan (Annex IV).
120. **Grievance mechanisms.** The project makes provision for a complaint's register along with a two-tiered Grievance Redress Mechanism, appropriate for the project and consistent with the UNDP's Stakeholder Response Mechanism: Overview and Guidance (2014) and World Bank Group Safeguards Policies. The Grievance Redress Mechanism establishes goals and objectives along with eligibility requirements to make a complaint and/or grievance. It has been designed that all parties will act in good faith throughout the process and more importantly, that it will be arbitrary in nature in trying to achieve mutually acceptable resolutions for all parties. The Grievance Redress Mechanism also provides for the covering of costs for legitimate complaints or grievances so as individuals and/or groups are not disadvantaged by bringing complaints to the attention of CSO and UNDP. Finally, if complainants remain dissatisfied with the outcomes at the project level, the Grievance Redress Mechanism allows individuals and/or groups to also file a complaint with the Social and Environmental Compliance Unit within the Office of Anticorruption and Integrity within the UNDP or the appropriate national legal or judicial authority e.g., the Courts.
121. The operationalization/development of a Project Level Grievance Mechanism (GRM) is planned for the first year of implementation. The full details of these GRM will be agreed upon during the Inception Phase, a process that will be overseen by the Project Manager. Interested stakeholders may raise a grievance at any time to the Project Management Unit, the Executing Agency (UNDP) or the Implementing Agency (MRRD). In addition to the project-level and national grievance redress mechanisms, complainants have the option to access UNDP's Accountability Mechanism, with both compliance and grievance functions. The UNDP's Social and Environmental Compliance Unit (SECU⁶⁰) investigates allegations that UNDP's Standards, screening procedure or other UNDP social and environmental commitments are not being implemented adequately, and that harm may result to people or the environment.
122. **Stakeholder engagement.** As part of the consultation of relevant stakeholders, six workshops were organized in 6 different regions throughout Afghanistan⁶¹. During the workshops, discussions took place about climate change and the GCF, about the energy deficits in the region and the benefit of renewable energy and finally about the project design, including discussion about possible mini-grid sites and the theory of change of the project. Stakeholders present in the workshops included representatives of MRRD, MEW, MAIL, NEPA, where relevant international agencies, NGOs, private sector representatives from AREU and Community Development Councils. On the basis of the involvement of stakeholders during the project design, a stakeholder engagement plan was developed that identifies relevant stakeholders for each of the project activities, see Annex II Chapter 8.

D.4. Needs of recipient (max. 500 words, approximately 1 page)

123. Afghanistan is a high-risk profile country according to the NRVA 2012⁶². The Global Adaptation Index ranks it as the most vulnerable in 2012 country in the world, taking into account the country's exposure, sensitivity and ability to cope with climate related hazards, worsened by the socio-political conflicts and security. Coping with the impacts of climate change is a major challenge for development in Afghanistan given that its

⁵⁹ "Electrification and the Household", Grogan & Sadanand 2009

⁶⁰ For more details see www.undp.org/secu-srm

⁶¹ Workshops were organised in the North Region, South Region, East Region, West Region, Central South East Region and Southeast Region.

⁶² National Risk and Vulnerability Assessment (NRVA 2012)

- negative effects are likely to be most severely felt by the poor and marginalized due to their high dependence on subsistence agriculture and limited capacity to cope with the impacts of climate variability and extremes.
124. The Climate Change Strategy and Action Plan (CCSAP) for Afghanistan identified high levels of exposure and vulnerability to climate change for most parts of Afghanistan. There is evidence of an increase in extreme events, with floods almost an annual occurrence in spring (every year between 2012 and 2015). There also were dry years in the country between 1996-2003, while the drought of 2008 was particularly severe. The CCSAP indicates that several key sectors are seriously vulnerable to climate change impacts including agriculture, water resources, forest and soil conservation, health and others.
 125. The project is aligned to Afghanistan's NDCs which targets GHG reductions. It builds upon one of the key learnings from previous development efforts and targets clean energy delivery for improved economic, social and health outcomes. Site and technology selection were geared towards economic activity, health centres, and schools in areas recognized as among the most vulnerable to climate change, as well as emphasizing solutions that target local water resource management and health effects upon women and children.
 126. The concerns of the Government of Afghanistan to prevent greenhouse gas emissions to contribute to mitigation are well reflected in Afghanistan's Nationally Determined Contribution (NDC) as submitted as INDC to the UNFCCC Secretariat in September 2015 and converted to NDC in November 2016. In the NDC, Afghanistan outlines its intended contribution of reducing its greenhouse gas (GHG) emissions by 13.6% below the 2030 business-as-usual scenario, by 2030. It explains that this contribution is conditional on the receipt of international support.
 127. On the financial side, the country faces serious constraints. Per capita GDP of Afghanistan is among the lowest in the world, while access to energy is lower than most developing countries. The Afghan economy is still recovering from decades of civil war and conflict. Levels of industrialization are yet to reach pre-1980 levels, while the tax regime is weak with low levels of compliance. Most of the development activity in the country is carried out by development partners. This is one of the reasons why MRRD and the Government of Afghanistan seek GCF support in implementation of the proposed project.
 128. Please refer to section B.5 for a detailed discussion concerning the unavailability of other sources of funding from the project, including from GoA, international donors and the private sector.
 129. Nearly 24.5 million people in Afghanistan⁶³ are not connected to modern energy. Mostly rural settlements are faced with lack of energy access while often being dependent on costly and unhealthy kerosene for lighting or diesel for power generators. Gaps in key rural energy infrastructure services not only prevent the electrification of vulnerable communities, but also limit the potential for local economic and social development. There is a clear connection between energy access and level of living standards while it can also contribute to gender equality and improvements in health⁶⁴. Providing universal energy access for households, however, is not enough to ensure economic and social development. Energy also needs to be available for productive uses such as agriculture and industry to help achieve the SDG goal on poverty. This project therefore not only foresees in clean energy access to 49,000 beneficiaries (of which over 23,500 are women) but also puts strong emphasis on encouraging productive use of energy. Especially productive use potential contributing to higher agricultural productivity, decreased post-harvest losses, increased electricity based small industries and decreased loss of live-stock due to extreme weather will be emphasized in order to contribute to increased resilience to climate change.
 130. Energy is the backbone of the national economy of each country and also, living standard of each country's citizens is indicated by GDP of the country which is claimed to be about 90% dependent on per capita energy consumption. Afghanistan with its \$520 GDP per capita⁶⁵ and 148 kWh electricity consumption per capita in 2018⁶⁶, ranks among the lowest in the world. The main reasons that only 9% rural and 30% of the whole country's population has access to electricity is the fact that the majority of the population live in the rural area, and expansion of the existing transmission network will be very expensive. Since 2001, the main focus of endeavors has been on reconstruction and expansion of the national power grid. However, given that the national grid is being developed almost from scratch, it is accepted that there are swathes of the country, that the national grid will not be able to serve them in the near future.⁶⁷ The needs of the recipients in the project targeted areas are therefore high in the context of ensuring energy access.

⁶³ On the basis of estimated 35.5 mln population in 2017: <http://data.worldbank.org/country/afghanistan>.

⁶⁴ WEO 2017 Special Report: Energy Access Outlook, IEA, 2017

⁶⁵ <https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=AF>

⁶⁶ <https://www.worlddata.info/asia/afghanistan/energy-consumption.php>

⁶⁷ [Theoretical potential and utilization of renewable energy in Afghanistan](#), Gul Ahmad Ludin, [Mohammad Amin Amin](#), [Assadullah Aminzay](#)^m [Tomonobu Senjyu](#): *AIMS Energy*, 2017, 5(1): 1-19. doi: 10.3934/energy.2017.1.1.

D.5. Country ownership (max. 500 words, approximately 1 page)

131. Development of renewable energy is one of the priority areas for low-emission development for Afghanistan (NAMA, 2015), particularly in the context of energy access to rural communities. The Afghanistan CCSAP 2015⁶⁸ strengthens the legal and institutional framework for taking action on climate change in Afghanistan by adopting a judicious mix of adaptation and mitigation measures.
132. The CCSAP acknowledges that Afghanistan still has low levels of carbon emissions per capita as well as gross emissions; while it is still committed to stabilizing greenhouse gas concentrations in the atmosphere and adopt a development path that is climate friendly, without compromising on rapid economic growth and human development. Hence, the short and medium terms goals of CCSAP are to strengthen the core sectors of agriculture and rural development to protect them from adverse impacts of climate change. The CCSAP has four targets: protect its population from climate-change related extremes; improve rural livelihood security; prevent land degradation; and increase the share of renewable energy in the overall energy mix.
133. The NAMA 2015⁶⁹ for Afghanistan has identified renewable energy, energy efficiency, efficient transportation, and waste management as priority areas for low emissions development. Promotion of Renewable Energy (RE) systems for enhancing energy access in rural areas with an objective of enterprise development is one of the focus areas of the NAMA.
134. Afghanistan submitted its INDC in September 2015 and converted it to NDC in November 2016 which covers energy, natural resources management, agriculture, waste management and mining as focus areas⁷⁰. The NDC targets a 13.6% reduction in GHG emissions by 2030; energy production using hydropower, solar energy-based systems, wind and biomass, clean cooking-cum-heating devices and clean fuels feature as prominent mitigation contributors. The adaptation actions include a focus on development of a system to monitor and assess vulnerability and adaptation to climate change; development of water resources through rehabilitation and reconstruction of small, medium and large-scale infrastructure; planning for proper watershed management; and increased irrigated agricultural land and regeneration of degraded forests.
135. The Renewable Energy Roadmap for Afghanistan, RER2032, indicates the ambition to reach a renewable energy target of 5000 MW by 2032. MEW thereby considers rural renewable energy programs as a crucial part of such development and the need for RESCOs is mentioned as one of the preconditions to guarantee sustainable operation of rural renewable energy projects.
136. The Ministry of Rural Rehabilitation and Development (MRRD) will be the National Executing Partner (Implementing Partner of UNDP). Within its mandate, the MRRD is responsible for developing and implementing programs promoting responsible social and financial growth in rural areas, primarily in the non-farm sector. The MRRD has a Renewable Energy and Enterprise Development (REED) department which is responsible for rural energy development up to a size of 1 MW installed capacity. Similarly, the Ministry of Energy and Water (MEW) has a Renewable Energy Department (RED) which is responsible for developing renewable energy and rural energy projects of 1 MW or higher installed capacity.
137. Da Afghanistan Breshna Sherkat (DABS) is the government owned national vertically integrated utility electricity utility which provides electricity primarily in urban and peri-urban areas. DABS will take responsibility as the initial owner of the mini-grids up until the Rural Electrification Department (under DABS) has been established.
138. The MRRD has been a partner of UNDP for more than a decade, since early 2002. The MRRD has implemented all three phases of the NABDP from 2002-2016 and the AREDP in Kandahar and Helmand 2013 -2015. The NSP and NABDP have focused on rural development and electrification programmes, implemented and managed through CDCs. Recently, the MRRD is the implementing partner of the ASERD 2016-2018 project which focused on increasing access to electricity, clean cooking and heating options, developing innovative financing models and capacity development of key stakeholders.
139. In addition, MRRD is implementing the project on Livelihood Improvement in Tajik-Afghan Cross-border Areas (LITACA), which is a new three-year cross border initiative, implemented by UNDP Tajikistan in cooperation with UNDP Afghanistan and the MRRD. The project aims to promote stability and security in the districts of Khatlon Region of Tajikistan and Kunduz and Takhor Provinces of Afghanistan through improving livelihoods and resilience of bordering rural communities. The MRRD, MEW and DABS will provide support in

⁶⁸ Climate Change Strategy and Action Plan (CCSAP 2015)

⁶⁹ Nationally Appropriate Mitigation Actions (NAMA 2015)

⁷⁰ Afghanistan's first Intended Nationally Determined Contribution or INDC, September 2015:

http://www4.unfccc.int/ndcregistry/PublishedDocuments/Afghanistan%20First/INDC_AFG_20150927_FINAL.pdf

terms of local community involvement, liaising with other institutions such as cooperatives and RESCOs, regulatory development and local field support.

140. MRRD, being the executing entity (implementing partner in UNDP terminology), is responsible for managing the project and achieving the results defined in the proposal. MRRD has committed a total of US\$ 1.0 million in cash co-financing and US\$ 2.0 million in in-kind contributions. The accountability of MRRD is specifically defined as the responsibility to:
- Manage the overall conduct of the project; implement activities by mobilizing goods and services; checking on progress and watching for plan deviations; ensuring that changes are controlled and problems addressed; monitoring risks; and, reporting on progress.
 - Report, fairly and accurately, on project progress against agreed work plans in accordance with the reporting schedule and formats included in the project agreement;
 - Maintain documentation and evidence that describes the proper and prudent use of project resources in conformity with the project agreement and in accordance with applicable regulations and procedures. This documentation will be available on request to project monitors and designated auditors.

D.6. Efficiency and effectiveness (max. 500 words, approximately 1 page)

141. As discussed in section B.5, the project structure combines a series of public-good type activities – necessary to de-risk and facilitate the scale-up of renewable mini-grids in Afghanistan – with investment in the construction and implementation of 3 solar mini-grids to act as concrete proof-of-concept for public and private capital providers. Public-good activities are ideally suited to grant financing. GCF grants are also necessary for the implementation of the 3 mini-grids, whose financial profile is currently unattractive due to their remote location and ensuing high costs, impossibility of a power purchase agreement and the need to maintain electricity tariffs at affordable levels. Other than a grant contribution from MRRD and UNDP, other sources of public and private finance are currently unavailable, as verified by interviewing a range of potential capital providers. The crowding-out risk is therefore absent in this project.
142. Concessionality will be minimized by sizing the GCF grant for the 3 mini-grid construction to a level that is just about sufficient to turn an otherwise negative financial IRR into an approx. 20% IRR. Achievement of the latter, thanks to the GCF grant, is critical to demonstrating to future, prospective private investors that renewable mini-grids in Afghanistan can be financially attractive, with the appropriate level of concessionality. This will facilitate the scaling-up of additional mini-grids, in conjunction with the long-term improvement in the country's macroeconomic and security conditions.
143. Financial IRR calculations are relevant for Activity 3.1 (implementation of 3 solar mini-grids), the only one that generates financial reflows. As detailed in section B.5 and the financial model in Annex 3, the financial IRR of all 3 mini-grids without concessionality would be negative (Kandahar -6.4%, Parwan -13.5%, Khost -4.4%). A GCF grant covering 86%, 93% and 86% of capex for the Kandahar, Parwan and Khost mini-grids, respectively, would increase their financial IRRs to +22.0%, +18.9% and 19.0%.
144. The amount of concessionality required to make future mini-grids, including the 5 designed within the knowledge platform, financially attractive is expected to decline, in line with the declining cost of RE technology, the standardization of processes promoted by the upscaling platform, and lower risk premia required by private investors with the long-term improvement in the country's macroeconomic and security conditions. In summary, the project aims to minimize concessionality while at the same time putting in place the optimal conditions for sustainability and replicability.
145. In terms of efficiency and effectiveness, the GCF cost per tCO₂eq removed is USD 99 based on emissions from the 3 solar mini-grids implemented (173,082 tCO₂eq⁷¹). This is based on a total GCF grant of USD 17.2 million.
146. The economic analysis results show that the project generates a positive EIRR of 11%, which is higher than the 10% rate conventionally targeted in similar economic analyses. Using a fixed hurdle rate or 6-12% as discount rate/hurdle rate for economic analysis is inline with generally accepted practice by several DFIs such as ADB,⁷² and it is also UNDP's guidelines for economic analysis of projects. In fact, ADB's latest economic analysis guidelines actually now recommend 9% discount rate for economic analysis (6% for social sector

⁷¹ Emission reduction over the 25-year lifetimes of 3 solar mini-grids

⁷² <https://www.adb.org/sites/default/files/institutional-document/32256/economic-analysis-projects.pdf> (Page 52, section on 'Minimum required discount rate')

projects). Hence, the 10% discount rate used for this economic analysis is actually more stringent than ADB guidelines. See Annex 3 for detailed assumptions.

147. The mini-grids design is in accordance with international standards and applicable national standards. Specifications of materials and equipment ensures the selection of latest technologies available in the market. For example, the crystalline silicon solar photovoltaics for the mini-grids are in accordance with IEC 61215, Battery Energy Storage System (BESS) design uses IEEE and IEC standards. Market analysis shows that latest technologies are accessible and in-use for the solar mini-grids.
148. The mini-grids are designed to use pre-paid smart meters where the users will pay beforehand for the use of electricity. For the maximum use of electricity from the grids and thus for maximum emission reduction, MRRD will create rural economic zones around the mini-grids where off-peak hour electricity can be used for small-industry and production activities.

E. LOGICAL FRAMEWORK		
E.1. Paradigm shift objectives		
Please select the appropriated expected result. For cross-cutting proposals, tick both.		
<input checked="" type="checkbox"/> Shift to low-emission sustainable development pathways <input checked="" type="checkbox"/> Increased climate resilient sustainable development		
E.2. Core indicator targets		
E.2.1. Expected tonnes of carbon dioxide equivalent (t CO ₂ eq) to be reduced or avoided (mitigation and cross-cutting only)	Annual	6,923 tCO ₂ eq
	Lifetime	173,082 tCO ₂ eq
E.2.2. Estimated cost per t CO ₂ eq, defined as total investment cost / expected lifetime emission reductions (mitigation and cross-cutting only)	(a) Total project financing	21,398,843_ USD
	(b) Requested GCF amount	17,198,843_ USD
	(c) Expected lifetime emission reductions	<u>173,082</u> tCO ₂ eq (direct)
	(d) Estimated cost per t CO₂eq (d = a / c)	124 USD / t CO₂eq (direct)
	(e) Estimated GCF cost per t CO₂eq removed (e = b / c)	99 USD / t CO₂eq (direct)
E.2.3. Expected volume of finance to be leveraged by the proposed project/programme as a result of the Fund's financing, disaggregated by public and private sources (mitigation and cross-cutting only)	(f) Total finance leveraged	<u>4,200,000</u> USD
	(g) Public source co-financed	<u>4,200,000</u> Choose an item.
	(h) Private source finance leveraged	___ Choose an item.
	(i) Total Leverage ratio (i = f / b)	<u>0.24</u>
	(j) Public source co-financing ratio (j = g / b)	<u>0.24</u>
	(k) Private source leverage ratio (k = h / b)	___
.2.4. Expected total number of direct and indirect beneficiaries, (disaggregated by sex)	Direct	N/A
	Indirect	N/A
	<i>For a multi-country proposal, indicate the aggregate amount here and provide the data per country in annex 17.</i>	
E.2.5. Number of beneficiaries relative to total population (disaggregated by sex)	Direct	N/A
	Indirect	N/A
	<i>For a multi-country proposal, leave blank and provide the data per country in annex 17.</i>	

E.3. Fund-level impacts						
Expected Results	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term	Final	
<i>M1.0 Reduced emissions through increased low-emission energy access and power generation</i>	<i>M1.1 Tonnes of carbon dioxide equivalent (t CO2eq) reduced or avoided - gender-sensitive energy access power generation</i>	<p>Site visits</p> <p>Implementation quarterly reports by MRRD and technology vendors</p> <p>Third party independent verification reports (not conducted by mini-grid operators nor government)</p>	0 direct emissions reduced (CO ₂ emissions from the use of diesel generators)	4,408 tCO ₂ emissions reduced (Cumulative emission reduction mid of year 2 (mid-term))	20,519 tCO ₂ emissions reduced (Cumulative emission reduction by the end of year 5 (Final) derived from 3 solar mini-grids)	Emission factor based on assumption of diesel generators in baseline/alternative scenario
	<i>Social and economic co-benefits in terms of productive use of electricity including enhanced climate resilience (linked to M6.0)</i>	<p>Meter readings from RESCO's</p> <p>Questionnaire-based surveys (QBS / Interviews)</p> <p>Third party independent verification reports (not conducted by mini-grid operators nor government)</p>	<p>Average annual total electricity use for productive uses in 3 mini-grids:</p> <p>0 MWh</p>	<p>Average annual total electricity use for productive uses in 3 mini-grids:</p> <p>>300 MWh</p>	<p>Average annual total electricity use for productive uses in 3 mini-grids:</p> <p>>600 MWh</p>	<p>No major disaster occurred in the project locations that may delay the installation of the RE technology.</p> <p>The political and security situation enables timely project implementation</p>

E.4. Fund-level outcomes						
Expected Outcomes	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term)	Final	
M5.0 Strengthened institutional and regulatory systems	<i>M5.1 Institutional and regulatory systems that improve incentives for low-emission planning and development and their effective implementation</i>	<p>Government reports demonstrating approval and dissemination of the policies/regulations/guide lines</p> <p>Online publication of policies and standards</p>	Absent dedicated government entity capacitated to design, plan, incentivize and implement rural electrification projects promoting mini grids	<p>Mandate for Rural Electrification Department prepared</p> <p>Drafts available of:</p> <ul style="list-style-type: none"> • Mini-grid policy (1) • Technical standards for mini-grids (8) 	<ul style="list-style-type: none"> • Rural Electrification Department (under DABS) established (1) capacitated to design, plan, incentivize and implement rural electrification projects 	Constructive relations for collaboration between national Government entities, regional and local government to refine policy, regulatory and planning frameworks.

			Mini-grid development is not guided by appropriate policies, regulations and technical standards	<ul style="list-style-type: none"> Green procurement policy for RE mini-grids (1) Social and environmental safeguards regulations for RE mini-grid developed (1) 	<p>promoting mini grids</p> <ul style="list-style-type: none"> Mini-grid policy developed and government approved (1) Technical standards for mini-grids developed and government approved and applied to 5 mini-grid designs(8) Green procurement policy for RE mini-grids in place (1) Social and environmental safeguards regulations for RE mini-grid in place (1) 	
	<i>M5.2 Number and level of effective coordination mechanisms</i>	Minutes of the coordination meetings	Baseline = level 1 ⁷³	Midterm = level 2	Final = level 4	
M6.0 Increased number of small, medium and large low-emission power suppliers	<i>M6.2 Number of households and individuals (males and females) with improved access to low-emission energy sources</i>	<p>Site visits, Implementation quarterly reports by MRRD and technology vendors.</p> <p>Third party independent verification reports (not conducted by mini-grid operators nor government)</p>	0 households with access to mini-grids in the selected areas	2,600 households; 16,330 people (7,700 women) with access to solar mini-grids	7,800 households; 49,000 people (23,500 women) with access to solar mini-grids	Capacity of services provider to manage RE technology remains sufficient to service the market/demand
	<i>M6.3 MWs of low-emission energy capacity installed, generated and/or rehabilitated as a</i>	Site visits, Implementation quarterly reports by MRRD and technology vendors.	Absent RE mini-grids for energy access in the selected areas. No	1.6 MW solar mini-grid capacity installed (1 MW solar mini-grid)	2.6 MW solar mini-grid capacity installed (1 MW solar mini-grid)	

⁷³ Level 1 = no coordination mechanism; Level 2= 1 coordination mechanism in place; Level 3 = 1 coordination mechanism in place, meeting regularly with appropriate representation (gender and decision-making authorities); Level 4 = 1 coordination mechanism in place, meeting regularly, with appropriate representation, with appropriate information flows and monitoring of action items/issues raised.

	<i>result of GCF support</i>	Third party independent verification reports (not conducted by mini-grid operators nor government)	relevant CO ₂ reductions.	Kandahar installed and 600 kW solar mini-grid Parwan installed)	Kandahar installed and 600 kW solar mini-grid Parwan installed and 1 MW solar mini-grid Khost installed)	
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E.5. Project/programme performance indicators						
Expected Results	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term	Final	
1. Energy Market Risk de-risked by policy, regulatory and institutional development for improved renewable energy (RE) services in rural areas	1.1 Risk perception among mini-grid stakeholders with regard to market risk (regulatory and institutional environment) as a result of mini-grid policy, technical standards and O&M guidelines and institutional coordination.	Stakeholder/private sector surveys to assess the impact of the policy de-risking measures on the risk perception to invest into mini-grids (after policies/standards are approved /issued)	Risk perception = level 1 ⁷⁴	Risk perception = level 2	Risk perception = level 4	The government remains committed to approve the policies and disseminate the relevant guidelines
	1.2 # Level of capacity of Government and non-Government officials (20% females) in mini-grid policy, technical standards for design & operation of mini-grids	Survey among government officials to assess the level of capacity in mini-grid policy, technical standards for design & operation of mini-grids	Level of capacity = level 1 ⁷⁵	Level of capacity = level 2	Level of capacity = level 4	Lessons learned are identified and analyzed in a timely manner, supporting the effective sharing of knowledge.

⁷⁴ “Risk perception” is based on a scale where 1 = high risk (risk perception related to policy and regulatory environment among 80-100 percent of the total surveyed stakeholders/private sector to invest into RE mini-grids in Afghanistan), 2 = medium high risk (risk perception related to policy and regulatory environment among 60-80 percent of the total surveyed stakeholders/private sector to invest into RE mini-grids in Afghanistan), 3 = medium risk (risk perception related to policy and regulatory environment among 40-60 percent of the total surveyed stakeholders/private sector to invest into RE mini-grids in Afghanistan), 4 = low risk (risk perception related to policy and regulatory environment less than 40 percent of the total surveyed stakeholders/private sector to invest into RE mini-grids in Afghanistan)

⁷⁵ Level of capacity on mini-grid policy, technical standards for design & operation of mini-grids is based on a scale where 1 = level of capacity is low (less than 20% of officials have good understanding of difference between on-grid and off-grid energy development, good understanding of economic impact of mini-grids, good understanding of productive use for mini-grids, good understanding of gender aspects in mini-grid development) 2 = level of capacity is modest (between 20% and 40% of officials have good understanding of difference between on-grid and off-grid energy development, good understanding of economic impact of mini-grids, good understanding of productive use for mini-grids, good understanding of gender aspects in mini-grid development), 3 = level of capacity is moderate (between 40% and 60% of officials have good understanding of difference between on-grid and off-grid energy development, good understanding of economic impact of mini-grids, good understanding of productive use for mini-grids, good understanding of gender aspects in mini-grid development), 4 = level of capacity is good (more than 60% of officials good understanding of difference between on-grid and off-grid energy development, good understanding of economic impact of mini-grids, good understanding of productive use for mini-grids, good understanding of gender aspects in mini-grid development)

	1.3 Level of understanding of Government officials with on gender impact and opportunities for gender inclusiveness of rural mini-grid development	Survey among government officials on understanding gender impact and opportunities of rural mini-grid development	Level of understanding = 1 ⁷⁶	Level of understanding = 2	Level of understanding = 4	Survey exercise during training understood by participants
2. Capacity and engagement of the existing and potential mini-grid market actors and stakeholders strengthened on RE mini-grids	2.1 Level of capacity of national provincial and local governments staff on rural RE mini-grid systems planning	Survey among staff of national, provincial and local governments to assess the level of capacity in rural RE mini-grid systems planning	Level of capacity = level 1 ⁷⁷	Level of capacity = level 2	Level of capacity = level 4	Willingness of stakeholders at national, regional and village level to participate in trainings and of females to participate (see also Gender assessment)
	2.2 Level of capability ⁷⁸ of community and local business representatives in Khost, Parwan and Kandahar in understanding and	Surveys, disaggregated by gender	Level = 1	Level = 2	Level = 4	

⁷⁶ Level of understanding on gender impact and opportunities for gender inclusiveness of rural mini-grid development is based on a scale where 1 = less than 20% of officials have a positive perception towards including gender inclusiveness in future mini-grid design and procurement of RE mini-grids (e.g. mandate female productive use opportunities and female entrepreneurship); level 2 = between 20% and 40% of officials have a positive perception towards including gender inclusiveness in future mini-grid design and procurement of RE mini-grids (e.g. mandate female productive use opportunities and female entrepreneurship); level 3 = between 40% and 60% of officials have a positive perception towards including gender inclusiveness in future mini-grid design and procurement of RE mini-grids (e.g. mandate female productive use opportunities and female entrepreneurship); level 4 = more than 60% of officials have a positive perception towards including gender inclusiveness in future mini-grid design and procurement of RE mini-grids (e.g. mandate female productive use opportunities and female entrepreneurship)

⁷⁷ Level of capacity on rural mini-grid systems planning is based on a scale where 1 = less than 20% of staff has good understanding of on-grid versus off-grid energy systems planning, limited understanding of renewable energy resource planning and selection, limited understanding of measurement and reporting of GHG emission changes from off-grid electrification 2 = between 20% and 40% of staff has good understanding of on-grid versus off-grid energy systems planning, good understanding of renewable energy resource planning and selection, good understanding of measurement and reporting of GHG emission changes from off-grid electrification, 3 = between 40% and 60% of staff has good understanding of on-grid versus off-grid energy systems planning, good understanding of renewable energy resource planning and selection, good understanding of measurement and reporting of GHG emission changes from off-grid electrification, 4 = more than 60% of staff has good understanding of on-grid versus off-grid energy systems planning, good understanding of renewable energy resource planning and selection, good understanding of measurement and reporting of GHG emission changes from off-grid electrification

⁷⁸ "Capable of identifying productive use opportunities" is based on a scale where 1 = limited to no knowledge on productive use; Level 2 = households and businesses aware of renewable energy and know how/where to get related information; Level 3 = households and businesses engaged with support activities and requesting additional information on productive use for their specific situation; Level 4 = households and business knowledgeable about productive energy use and identified concrete opportunities by means of expanding business or introducing new business

	identifying productive use opportunities					Availability of good experts to deliver trainings and workshops
	2.3 Level of business interest ⁷⁹ in RE mini-grid development of private sector and energy service companies /RESCOs (10% females)	Surveys, disaggregated by gender	Level = 1	Level = 2	Level = 4	
3. Construction of 3 greenfield solar mini-grids and set-up of an “upscaling platform” to facilitate additional mini-grid investments	3.1 Level of customer satisfaction on the Operation and Maintenance of mini-grids by RESCOs.	Surveys among mini-grid users on effectiveness of Operation and Maintenance of mini-grids by RESCOs	Level = 1 ⁸⁰	Level = 2	Level = 4	Extreme weather does not damage infrastructure works.
	3.2 Level of adequateness ⁸¹ of knowledge platform serving the needs and interest of private sector for future mini-grid development	Surveys among relevant private sector stakeholders	Level = 1	Level = 2	Level = 4	Availability of good experts to deliver knowledge platform
	3.3 Customers connected and using electricity	Meter readings from RESCO's Questionnaire-based surveys (QBS / Interviews) Third party independent verification reports (not conducted by mini-grid operators nor government)	Average annual total electricity use in 3 mini-grids: 0 MWh of which for productive uses: 0 MWh	Average annual total electricity use in 3 mini-grids: 2,220 MWh of which for productive uses: >300 MWh	Average annual total electricity use in 3 mini-grids: 4,188 MWh of which for productive uses: >600 MWh	No major disaster occurred in the project locations that may delay the installation of the RE technology. The political and security situation enables timely project implementation

⁷⁹ Level of business interest is based on a scale where 1 = limited to no knowledge of mini-grids; Level 2 = businesses aware of various aspects of rural RE electrification and know how/where to get related technical support; Level 3 = businesses engaged with support activities and indicating interest in follow-up training; Level 4 = business knowledgeable about mini-grid development and developing or capable of developing mini-grid business plans

⁸⁰ Level of effectiveness of Operation and Maintenance by RESCOs is based on a scale where 1 = no Operation and Maintenance by RESCOs in place; 2 = Operation and Maintenance by RESCOs in place, mini-grid users are moderately satisfied (e.g. unclarities on billing, no full responsiveness) 3 = Operation and Maintenance by RESCOs in place, mini-grid users are satisfied (e.g. no unclarities on billing, RESCOs are responsive to most queries); 4 = Operation and Maintenance by RESCOs in place, mini-grid users are highly satisfied (e.g. no unclarities on billing, RESCOs are responsive to all queries)

⁸¹ Level of adequateness is based on a scale where 1 = no knowledge platform existing; Level 2 = businesses have heard of knowledge platform but do not know how to use the information; Level 3 = businesses know the knowledge platform and know where to find specific information but have only used the information in 1 case; Level 4 = businesses know the knowledge platform, know where to find specific information and used the information for (future) mini-grid development in at least 3 cases

E.6. Activities			
Activity	Description	Sub-activities	Deliverables
Activity 1.1 Regulations for mini-grids and tariff mechanisms and structure developed and approved			
<p>1.1.1 Conduct De-risking Renewable Energy Investment (DREI) analysis⁸² simulation for solar mini-grids to inform the development of de-risking policies and tailored interventions to support RE mini-grid development.</p> <p>1.1.2 Conduct a baseline market study analysing energy systems, actors, productive use potential, impacts on beneficiaries and business models to inform the development of regulations and incentives for mini-grids</p> <p>1.1.3 Conduct complementary analysis on willingness to pay for energy in rural areas, to inform mini-grid policy and tariff structure development</p> <p>1.1.4 Develop regulations to ensure fair tariff structure for mini-grids</p> <p>1.1.5 Develop Mini-grid Policy to align with the National Energy Supply Program (NESP) and Renewable Energy Policy (RENP), including licensing, rural electrification strategies and institutional arrangements.</p> <p>1.1.6 Organize consultation process involving Ministry of Rural Rehabilitation and Development (MRRD), Ministry of Energy and Water (MEW), Da Afghanistan Breshna Sherkat (DABS), and market actors of Afghanistan Renewable Energy Union (AREU) and beneficiaries to discuss the draft mini-grid regulations and tariff structure by conducting workshops and business forum</p> <p>1.1.7 Disseminate government approved mini-grid regulation and tariff structure results in workshops in all relevant regions as well as through regular government communication channels to relevant government and private sector stakeholders</p> <p>1.1.8 Conduct a Gender mainstreaming training for</p>	<p>A baseline market study analysing energy systems, actors, productive use potential, impacts on beneficiaries and business models will inform the development of the mini-grid policy as well as a DREI analysis simulation to come to clear understanding of the energy market risk to be addressed by the mini-grid policy. Assessment how gender is currently mainstreaming in the energy sector will be part of the baseline study. Further analysis on willingness to pay for energy in rural areas will inform the development of regulations that will ensure fair tariff structure for mini-grids.</p> <p>The mini-grid policy will be developed through a consultative process by involving public sector players MRRD, MEW, DABS, beneficiaries and private sector players of the Afghanistan Renewable Energy Union (AREU), and will address alignment with the National Energy Supply Program (NESP) and Renewable Energy Policy (RENP), permits and approvals, generation licensing, land rights, rural electrification strategies and institutional arrangements.</p>	<ul style="list-style-type: none"> • Procure expertise services to develop DREI simulation study • Procure expertise services to conduct a market study on rural renewable energy mini-grid development • Conduct surveys on Willingness-To-Pay for energy in rural areas • Undertake the development of mini-grid policy (legal and technical services) • Undertake the development of tariff structure regulations for mini-grids (legal and financial services) • Plan workshops for consultation process on newly developed draft policies • Plan national and regional awareness raising workshops/meetings to sensitize all key stakeholders on new policies and regulations 	<ul style="list-style-type: none"> • DREI simulation study developed • Market study on rural renewable energy mini-grid development conducted • Surveys on Willingness-To-Pay for energy in rural areas conducted • Mini-grid policy (legal and technical services) developed • Tariff structure regulations for mini-grids (legal and financial services) developed • Workshops for consultation process on newly developed draft policies conducted • National and regional awareness raising workshops/meetings to sensitize all key stakeholders on new policies and regulations conducted

⁸² The DREI methodology was developed by UNDP, see http://www.undp.org/content/undp/en/home/librarypage/environment-energy/low_emission_climateresilientdevelopment/derisking-renewable-energy-investment.html

MRRD, MEW and DABS government staff.			
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Activity 1.2 Technical standards and guidelines developed for design and operation of mini-grids

<p>1.2.1 Conduct review of existing technical standards and needs assessment for complementary technical standards for mini-grid development</p> <p>1.2.2 Develop/update draft technical standards and guidelines for design and operation of mini-grids (generation equipment, distribution grid, and electricity service standards) purposefully designed for rural contexts</p> <p>1.2.3 Organize consultation process involving MRRD, MEW, DABS, and market actors of AREU and beneficiaries to discuss the draft technical standards for design and operation for mini-grids by conducting workshops</p> <p>1.2.4 Provide technical assistance to the government to facilitate approval of the technical standards and guidelines for mini-grids – including enforcement mechanisms - and get government approval</p> <p>1.2.5 Disseminate government approved technical standards and guidelines for mini-grids in workshops in all regions as well as through regular government communication channels</p>	<p>Under this activity, a set of technical standards and guidelines for mini-grids will be developed in relation to material choice, system design and service level for generation equipment, distribution grid, and electricity service standards and purposefully designed for rural contexts in Afghanistan.</p> <p>A review of existing technical standards and needs assessment for complementary standards for mini-grid development will inform the development of the technical standards for mini-grids. The mini-grid policy will be developed through a consultative process by involving public sector players MRRD, MEW, DABS, beneficiaries and private sector players of the Afghanistan Renewable Energy Union (AREU) and will follow the steps of common policy development procedures.</p>	<ul style="list-style-type: none"> • Procure expertise services to review existing technical standards for mini-grid development • Procure expertise services to develop technical standards and guidelines for design and operation of mini-grids • Organize workshops for consultation process on newly developed draft technical standards • Organize national and regional awareness raising workshops/meetings to sensitize all key stakeholders on new technical standards 	<ul style="list-style-type: none"> • Existing technical standards for mini-grid development reviewed • Technical standards and guidelines for design and operation of mini-grids developed • Workshops for consultation process on newly developed draft technical standards organised • National and regional awareness raising workshops/meetings to sensitize all key stakeholders on new technical standards organised
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Activity 1.3 Policy on fostering institutional reform and coordination mechanism among responsible institutions for mini grid development developed

<p>1.3.1 Organize stakeholder consultations on coordination mechanism (e.g. containing inter-ministerial platform or Energy Sector Coordination Group, and coordination with regional administrations and village electrification committees) to coordinate on-grid and off-grid electrification.</p> <p>1.3.2 Establish coordination mechanism among responsible institutions to coordinate on-grid and off-grid planning and national, regional and village level interaction and to allow for continuous updating of mini-grid</p>	<p>The project will initiate the creation of a separate Rural Electrification Department (under DABS) (RED) that will be capacitated to design, plan and implement rural electrification projects mainly based on RE technologies. This is aligned to the recently finalized Renewable Energy Roadmap 2032 (RER2032⁸³). The Rural Electrification Department (under DABS) may be given responsibilities for generation, transmission and distribution exclusively in rural areas.</p>	<ul style="list-style-type: none"> • Organize workshops for consultation process on setting up a coordination mechanism • Organize workshops for consultation process on developing a Rural Electrification Department • Procure expertise services to develop an organizational charter for a Rural Electrification Department (under DABS) • Procure services to develop training material on rural renewable energy development for newly established Rural Electrification Department • Conduct training for staff of for newly established Rural Electrification Department 	<ul style="list-style-type: none"> • Workshops for consultation process on setting up a coordination mechanism organized • Workshops for consultation process on developing a Rural Electrification Department organized • Organizational charter for a Rural Electrification Department (under DABS) developed • Training material on rural renewable
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⁸³ Renewable Energy Roadmap 2032 (RER2032), ADB, March 2017

<p>policy, financial mechanisms and technical standards.</p> <p>1.3.3 Organize stakeholder consultations on possible arrangements for a Rural Electrification Department (under DABS), including possibilities of twinning arrangement with similar institutions in the region</p> <p>1.3.4 Develop mandate and operational conditions for a Rural Electrification Department (under DABS)</p> <p>1.3.5 Develop the organizational charter for a Rural Electrification Department (under DABS)</p> <p>1.3.6 Provide training to Rural Electrification Department staff on rural RE mini-grid systems and mandate of RED in encouraging rural RE development in Afghanistan</p>	<p>The department, once fully operational, will undertake all activities related to rural electrification including site identification, land acquisition, raising and managing finances and regulatory approvals, including support to local enterprises such as RESCOs. The project will develop the organizational charter for the RED after conducting wide stakeholder consultations, including possibilities of twinning arrangement with similar institutions in the region.</p>		<p>energy development for newly established Rural Electrification Department developed</p> <ul style="list-style-type: none"> • Training for staff of for newly established Rural Electrification Department conducted
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Activity 1.4 Framework for financial de-risking RE mini-grids designed

<p>1.4.1 Set up expert panel to discuss findings of DREI Analysis simulation (Activity 1.1.1) in order to draft most suitable financial de-risking scenarios for mini-grid development in the project specifically and for renewable energy development in general.</p> <p>1.4.2 Develop the structure of a mini-grid viability gap funding mechanism, including potential sources of (climate) finance to be used for capitalizing a viability gap funding mechanism as well as a roadmap for medium- and longer-term financing need for rural electrification.</p> <p>1.4.3. Develop financial de-risking packages for mini-grid development combining the viability gap funding mechanism with additional incentives (e.g. tax holidays, facilitation of land acquisition, streamlining permit procedures) based on findings from Activity 1.4.1 and 1.4.2</p> <p>1.4.4 Organize consultation process involving MRRD, MEW, DABS, and market actors of AREU and beneficiaries to discuss the financial de-risking packages for rural mini-grid development</p>	<p>The project proposes to design a framework for financial de-risking RE mini-grids based on DREI analysis simulation⁸⁴ to eventually come to a strategy to finance and/or co-finance both public and private sector rural RE mini-grid development e.g. by means of viability gap funding mechanism in combination with other stimuli such as tax incentives.</p> <p>The development of a financial de-risking strategy will be informed by a rigorous process, consisting of expert panel discussions and consultation involving all relevant stakeholders consisting of MRRD, MEW, DABS, and market actors of AREU and beneficiaries. Strategies to be discussed can include mechanisms to transfer risk and mechanisms to compensate for risks. A viability gap funding mechanism will be discussed in light of Afghanistan Government's discussions on setting up a Renewable Energy Fund. Mechanisms that involve using possible revenues from donor supported mini-grids to be</p>	<ul style="list-style-type: none"> • Procure expertise services to develop de-risking scenarios addressing overall risk levels and access to finance constraints for rural RE mini-grids • Procure expertise services to develop the structure of a mini-grid viability gap funding mechanism as well as long term roadmap • Procure expertise services to develop financial de-risking packages for mini-grid development • Organize workshops for consultation process on financial de-risking packages for rural mini-grid development • Procure expertise services to develop funding strategy for most promising financial de-risking package 	<ul style="list-style-type: none"> • De-risking scenarios addressing overall risk levels and access to finance constraints for rural RE mini-grids developed • Structure of a mini-grid viability gap funding mechanism as well as long term roadmap developed • Financial de-risking packages for mini-grid development developed • Workshops for consultation process on financial de-risking packages for rural mini-grid development organized • Funding strategy for most promising financial de-risking package developed
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⁸⁴ The DREI methodology was developed by UNDP, see http://www.undp.org/content/undp/en/home/librarypage/environment-energy/low_emission_climate-resilient-development/derisking-renewable-energy-investment.html

<p>1.4.5 Develop funding strategy for most promising financial de-risking package containing viability gap funding mechanism and additional incentives (including accessing climate finance to implement mini-grids)</p>	<p>used for setting up a Renewable Energy Fund will be part of possible solutions to discuss.</p>		
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Activity 2.1 Capacity strengthening activities designed and delivered for government entities on technical, managerial, administrative and financing aspects of RE mini-grids

<p>2.1.1 Conduct capacity needs assessment of national and local government entities on RE mini-grids to map the gaps in technical, planning and managerial capacity of government entities and assess capacity needs</p> <p>2.1.2 Build technical, planning and managerial capacities of national government entities such as MEW, MRRD and other key ministries and provincial and local governments on rural RE mini-grid systems planning</p> <p>2.1.3 Develop greenhouse gas (GHG) emission monitoring, verification and reporting methodology for the measurement and estimation of (changes) in GHG emissions from off-grid and renewable energy technologies at national and (sub)national level</p> <p>2.1.4 Build capacities of NEPA in measurement and reporting of GHG emission changes from off-grid electrification to support formulation of NDS and other climate reporting</p>	<p>The project will start a process of strengthening capacities across MEW, MRRD and other key ministries and provincial governments on technical, managerial, administrative and financing aspects of RE projects, which will need to grow towards a scheme of continuous process of knowledge acquisition and knowledge management, in order to stay updated with the latest developments in the RE sector internationally and also to incorporate lessons learned from local as well as international experiences.</p> <p>The development of a suitable capacity building package will be informed by a capacity needs assessment of national and local government entities to map the gaps in technical, planning and managerial capacity of government entities with regard to mini-grid development and assess capacity needs.</p> <p>The project will develop a system for GHG monitoring, verification and reporting to UNFCCC and train the capacities of NEPA in order to be able to take up the responsibilities related to reporting off-grid GHG emission reduction contribution.</p>	<ul style="list-style-type: none"> • Procure expertise services to conduct a capacity needs assessment and to develop a suitable training package • Organize workshops for capacity building of national and local government entities on technical, planning and managerial capacities for rural RE mini-grid systems planning • Procure expertise services to develop a greenhouse gas (GHG) emission monitoring, verification and reporting methodology for the measurement and estimation of (changes) in GHG emissions from off-grid and renewable energy technologies at national and (sub)national level • Conduct training for NEPA in measurement and reporting of GHG emission changes from off-grid electrification 	<ul style="list-style-type: none"> • Capacity needs assessment conducted and suitable training package developed • Workshops organized for capacity building of national and local government entities on technical, planning and managerial capacities for rural RE mini-grid systems planning • A greenhouse gas (GHG) emission monitoring, verification and reporting methodology developed for the measurement and estimation of (changes) in GHG emissions from off-grid and renewable energy technologies at national and (sub)national level • Training for NEPA organized in measurement and reporting of GHG emission changes from off-grid electrification
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Activity 2.2 Community commitment and local business interest activities designed and delivered for beneficiaries of 3 solar RE mini-grid systems

<p>2.2.1 Conduct assessment to identify present local business and other relevant players in the communities that are served by 3 mini-grids that are important for creating commitment at village level to mini-grid development as well as conduct additional surveys to collect further detailed gender disaggregated data such as women headed households in the three project sites, baselines of women's organizations, women lead enterprises, women farmer</p>	<p>The project will start a process of strengthening capacities across communities, agricultural cooperatives, self-help groups and community development councils to address the characteristics, economics, business models and financial instruments used for rural and renewable energy while an all-encompassing and multi-stakeholder targeted national level campaign on RE is</p>	<ul style="list-style-type: none"> • Procure expertise services to conduct a capacity needs assessment and to develop a suitable training package • Organize workshops for capacity building of relevant community stakeholders on productive use potential and community contributions to identified mini-grids for investment design reports • Procure expertise services to develop a communication campaign to raise awareness for the social and economic benefits of renewable energy mini-grids 	<ul style="list-style-type: none"> • Capacity needs assessment conducted and suitable training package developed • Workshops organized for capacity building of relevant community stakeholders on productive use potential and community
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<p>cooperatives and specific data on female youth and elderly.</p> <p>2.2.2 Support relevant community stakeholders identified for consultation during development of investment design reports, including to discuss potential contributions from the community by means of land, labor or resources. Build capacities of local enterprises on productive use potential and importance of a fee-for-service in order to keep the mini-grids operational. Organise training on basic business operations and added value creation for existing enterprises by using electricity from the mini-grids. Support local enterprises in accessing micro-finance to invest in technology that can create added value to existing businesses.</p> <p>2.2.3 Organise a communication campaign to raise awareness for the social and economic benefits of renewable energy mini-grids</p>	<p>expected to help overall understanding of the sector.</p> <p>The development of a suitable capacity building package will be informed by an assessment to identify present local business and other relevant players in the communities that are served by the 3 solar mini-grids that are important for creating commitment at village level to mini-grid development..</p>		<p>contributions to identified mini-grids for investment design reports</p> <ul style="list-style-type: none"> • Communication campaign developed to raise awareness for the social and economic benefits of renewable energy mini-grids
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Activity 2.3 Capacity strengthening activities designed and delivered for private sector on designing, operating and maintaining mini-grids and maintaining mini-grids as well as incentivizing productive use aimed at increasing resilience

<p>2.3.1 Conduct capacity needs assessment of private sector players to map the gaps on design, installation, operation, planning and finance of off-grid RE systems</p> <p>2.3.2 Engage with relevant stakeholders to establish RESCO model and develop a RESCO model that serves the conditions for mini-grid development in Afghanistan.</p> <p>2.3.3 Technical training designed and delivered for private sector players and energy service companies/RESCOs on various aspects of rural RE electrification: design, installation, resource and least-cost assessment, supply and demand analysis, payment systems, design and planning of productive uses, RESCO models, voluntary certification guidelines for RE service providers, formulation of feasibility studies and bankable proposals</p>	<p>The project will set up Renewable Energy Service Companies (RESCOs) who will be trained to be able to operate and maintain the equipment of a mini-grid and to collect a fee-for-service. RESCOs will be selected through a solicitation and due diligence process and would be organised into a RESCO networking platform. Capacity building of the private sector will focus on technical training for RE developers and RE service providers on various aspects of rural RE mini-grids such as system design and installation (resource assessment, supply and demand analysis, design, installation considering the technical standards, guidelines and regulations developed under Output 1). On the financial side, capacity building will address mini-grid and RE system governance and business models, including financing options,</p>	<ul style="list-style-type: none"> • Procure expertise services to conduct a capacity needs assessment and to develop a suitable training package • Set up a local expert panel and procure expertise to establish a RESCO model that serves the conditions for mini-grid development in Afghanistan • Organize workshops for capacity building of for private sector players and energy service companies/RESCOs on various aspects of rural RE electrification: design, installation, resource and least-cost assessment, supply and demand analysis, payment systems, design and planning of productive uses, RESCO models, voluntary certification guidelines for RE service providers, formulation of feasibility studies and bankable proposal • Set up a RESCO networking platform • Set up a local expert panel and procure expertise to establish voluntary certification of RE technology installers and rural 	<ul style="list-style-type: none"> • Capacity needs assessment conducted and suitable training package developed • Local expert panel set up and RESCO model established that serves the conditions for mini-grid development in Afghanistan • Workshops organized for capacity building of for private sector players and energy service companies/RESCOs on various aspects of rural RE electrification: • RESCO networking platform set up • Local expert panel set up and voluntary certification established of RE technology installers
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<p>2.3.4 Create a RESCO networking platform to exchange good practices and learning (including financing of mini-grids).</p> <p>2.3.5 Develop guidelines for the voluntary certification of RE technology installers and rural energy service companies (RESCOs), managed by the RE industry itself</p>	<p>administration and tariff setting (revenues at least covering operating costs including salaries, loan payments, and repair and maintenance) and the role of productive uses. Finally, training of local technicians for O&M of solar PV and hydropower mini-grids as well as operators' and administrators' manuals in local languages will be part of this activity.</p>	<p>energy service companies (RESCOs), managed by the RE industry itself</p>	<p>and rural energy service companies (RESCOs), managed by the RE industry itself</p>
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Activity 3.1 Construction of 3 greenfield solar mini-grids (2.6 MW in total)

<p>3.1.1: Organization of tender processes to appoint the construction contractor(s) and the mini-grid operator(s), and to procure equipment, according to international best practices.</p> <p>3.1.2: Negotiation and signing of mini-grid legal and regulatory agreements, including the outsourcing agreement with operator (including competitive pricing and KPIs aimed at ensuring adequate service quality) and a regulatory agreement with MRRD mirroring, to the extent possible, those typical of energy PPPs. The regulatory agreement will also stipulate the treatment of excess cashflows and related MRRD obligations by means of an escrow account.</p> <p>3.1.3: Implementation and supervision of mini-grid construction to ensure it is on time, on budget and in compliance with technical specifications prescribed to the contractor.</p> <p>3.1.4: Monitoring and evaluation of mini-grid performance, including collection of data and evidence (e.g. regarding tariff collection, service quality, compliance with budget, unforeseen risks and lessons learnt) to feed into the knowledge platform</p>	<p>The project will use the technical designs available for 3 solar mini-grids in Khost, Kandahar and Parwan province as a basis for procuring services needed to implement the 3 greenfield solar mini-grids. This will include organizing the tender processes, drafting the necessary legal agreements, setting up the agreements for outsourcing operation and maintenance to RESCOs. Once procurement is finalized, the project will closely supervise and monitor implementation of the mini-grids as well as monitor the results of the mini-grid in terms of technical performance but also in terms of social and economic impact. All monitoring results and impact evaluation will feed into the knowledge platform being developed under Activity 3.2.</p>	<ul style="list-style-type: none"> • Procurement of expertise to develop procurement packages on the basis of technical designs of 3 solar mini-grids, containing all the design information plus preparation of the special conditions of contract for the implementation or selection of construction contractor for the project • Procurement of expertise services to construct solar mini-grid Kandahar • Procurement of expertise services to construct solar mini-grid Parwan • Procurement of expertise services to construct solar mini-grid Khost • Procurement of expertise to monitor and supervise implementation of mini-grid construction to ensure timely execution and quality assurance • Procurement of expertise services to monitor mini-grid performance including data collection to feed into the knowledge platform 	<ul style="list-style-type: none"> • Procurement packages developed on the basis of technical designs of 3 solar mini-grids, containing all the design information plus preparation of the special conditions of contract for the implementation or selection of construction contractor for the project • Solar mini-grid Kandahar constructed and operational • Solar mini-grid Parwan constructed and operational • Solar mini-grid Khost constructed and operational • Monitoring and supervision of implementation of mini-grid construction in place to ensure timely execution and quality assurance • Mini-grid performance monitored including data collection to feed into the knowledge platform
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Activity 3.2 Set-up of knowledge platform

<p>3.2.1: Production of a detailed, step-by-step mini-grid implementation handbook for use by MRRD and DABS for the design, tendering, construction and operation of future mini-grids.</p> <p>3.2.2: Set-up of online knowledge sharing platform and materials.</p> <p>3.2.3: Development of investment design reports in an additional 5 solar mini-grids sites already identified. The design reports will</p>	<p>Using international experience as well as results from the 3 solar mini-grids implemented in the project, an implementation handbook for the design, tendering, construction and operation of future mini-grids will be developed.</p> <p>The green procurement policy and safeguards standards will</p>	<ul style="list-style-type: none"> • Procure expertise to develop a step-by-step mini-grid implementation handbook • Procure expertise to set-up structure of an online knowledge sharing platform and materials • Procure expertise to input data and information on the online knowledge sharing platform in local language • Procure expertise services to conduct participatory mapping, 	<ul style="list-style-type: none"> • A step-by-step mini-grid implementation handbook developed • Structure of an online knowledge sharing platform and materials set up • Data and information on the
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<p>comply with the green procurement and ESG guidelines developed under activities 3.3 and 3.4 (see below).</p>	<p>be applied to developed Detailed Investment Design Reports for 5 solar mini-grids at selected locations for distribution of electricity to the target population. Site selection was based on analysis of demand and supply patterns, potential loads, ability to pay for energy services, the national grid extension plan from DABS and a security assessment on the basis of UN Security Map.</p> <p>Pre-feasibility studies for 5 solar mini-grids are available that will provide the basis for detailed technical designs. The project will thereby specifically look into opportunities for encouragement of productive use and demand-side issues (e.g., availability of social services, productive uses of energy in relation to livelihoods; roles of women and female household heads).</p>	<p>vetting, and siting of solar mini-grid systems in 5 pre-identified areas including identification of exact location</p> <ul style="list-style-type: none"> • Procure expertise services to develop detailed assessment to support customized design of solar mini-grids in 5 pre-identified areas • Procure expertise services to develop Detailed Investment Design Reports for solar mini-grids in 5 pre-identified areas in line with green procurement guidelines, social and environmental safeguards regulations and productive use perspectives 	<p>online knowledge sharing platform input in local language</p> <ul style="list-style-type: none"> • Participatory mapping, vetting, and siting of solar mini-grid systems in 5 pre-identified areas conducted including identification of exact location • Detailed assessment developed to support customized design of solar mini-grids in 5 pre-identified areas • Detailed Investment Design Reports developed for solar mini-grids in 5 pre-identified areas in line with green procurement guidelines, social and environmental safeguards regulations and productive use perspectives
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Activity 3.3 Green procurement policy for mini-grids developed and mainstreamed

<p>3.3.1 Conduct review of existing procurement regulation and needs assessment for complementary standards for green procurement policy for mini-grid development</p> <p>3.3.2 Develop/update green procurement policy and guidelines for mini-grid procurement including manual and green procurement database with online-reporting system</p> <p>3.3.3 Organize training to build capacities of national entities, especially MEW, MRRD and where relevant other key ministries on green procurement guidelines for mini-grid development</p>	<p>The project will develop a green procurement policy for mini-grids procurement to facilitate the use and purchase of most environmentally friendly services and products for mini-grids.</p> <p>The capacities of the relevant ministries involved in mini-grid procurement processes, especially MEW, MRRD and the newly established RED (under DABS) will be strengthened to be able to apply the green procurement guidelines.</p>	<ul style="list-style-type: none"> • Procure expertise services to review of existing procurement regulation and needs assessment for complementary standards for green procurement policy for mini-grid development • Procure expertise services to develop/update green procurement policy and guidelines for mini-grid procurement including manual and green procurement database with online-reporting system • Organize workshops for capacity building of national entities, especially MEW, MRRD and where relevant other key ministries on green procurement guidelines for mini-grid development 	<ul style="list-style-type: none"> • Existing procurement regulation reviewed and needs assessment conducted for complementary standards for green procurement policy for mini-grid development • Green procurement policy updated/developed and guidelines for mini-grid procurement in place including manual and green procurement database with online-reporting system • Workshops organized for capacity building of national entities, especially MEW, MRRD and where relevant other key ministries on green procurement guidelines for mini-grid development
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Activity 3.4 Social and environmental safeguards policy for mini-grids developed and mainstreamed

<p>3.4.1 Conduct review of existing social and environmental safeguards standards and needs assessment for complementary standards for mini-grid development</p> <p>3.4.2 Develop/update standards related to social safeguards and environmental sustainability of mini-grids (recycling of components at end-of-life, social and environmental considerations of mini-grid location and mini-grid construction, ensuring minimal impact on river flora and fauna).</p> <p>3.4.3 Develop a grievance redress mechanism related to social and environmental safeguards regulations for mini-grid development</p> <p>3.4.4 Design and conduct trainings for national and local government entities such as MEW, MRRD and other key ministries and provincial governments on social and environmental safeguards for mini-grid development</p>	<p>In order to mitigate any potential environmental and social impact of mini-grid development, the project foresees in the development of standards related to social safeguards and environmental sustainability of mini-grids. Such regulatory instruments should also provide safeguards and balance the interests of the village energy users and the rural energy service provider and lay out the principles which encourage long term service delivery and specify mechanisms to resolve and redress conflicts.</p>	<ul style="list-style-type: none"> • Procure expertise services to review of existing social and environmental safeguards standards and needs assessment for complementary standards for mini-grid development • Procure expertise services to develop/update standards related to social safeguards and environmental sustainability of mini-grids • Procure expertise services to develop a grievance redress mechanism related to social and environmental safeguards regulations for mini-grid development • Organize workshops for capacity building of national entities, such as MEW, MRRD and other key ministries and provincial governments on social and environmental safeguards for mini-grid development 	<ul style="list-style-type: none"> • Existing social and environmental safeguards standards reviewed and needs assessment for complementary standards for mini-grid development • Standards related to social safeguards and environmental sustainability of mini-grids developed/updated • Grievance redress mechanism developed related to social and environmental safeguards regulations for mini-grid development • Workshops organized for capacity building of national entities, such as MEW, MRRD and other key ministries and provincial governments on social and environmental safeguards for mini-grid development
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E.7. Monitoring, reporting and evaluation arrangements (max. 500 words, approximately 1 page)

Besides the arrangements (e.g. annual performance reports) laid out in AMA, please give a summary of the project/programme specific arrangements for monitoring and evaluation. Please provide the types of interim and final evaluations. Describe Accredited Entity (AE) project reporting relationships, including to the NDA/Focal Point and between AE and Executing Entity (EE) as relevant, identifying reporting obligations from the EE to the AE. This should relate to the frequency of reporting on project indicators, implementation challenges and financial status.

149. Project-level monitoring and evaluation will be undertaken in compliance with the UNDP POPP and the UNDP Evaluation Policy. The primary responsibility for day-to-day project monitoring and implementation rests with the Project Manager, supported by a highly experienced and qualified international Chief Technical Advisor (CTA). The Project Manager will develop annual work plans to ensure the efficient implementation of the project. The Project Manager will inform the Project Board and the UNDP Country Office of any delays or difficulties during implementation, including the implementation of the Monitoring & Evaluation (M&E) plan, so that the appropriate support and corrective measures can be adopted. The Project Manager will also ensure that all project staff maintain a high level of transparency, responsibility and accountability in monitoring and reporting project results.

150. The UNDP Country Office will support the Project Manager as needed, including through annual supervision missions. The UNDP Country Office is responsible for complying with UNDP project-level M&E requirements as outlined in the UNDP POPP. Additional M&E, implementation quality assurance, and troubleshooting support will be provided by the UNDP Regional Technical Advisor as needed. The project target groups and stakeholders including the NDA Focal Point will be involved as much as possible in project-level M&E.

151. A project inception workshop will be held after the UNDP project document has been signed by all relevant parties to: a) re-orient project stakeholders on the project strategy and discuss any changes in the overall context that influence project implementation; b) discuss the roles and responsibilities of the project team, including reporting and communication lines and conflict resolution mechanisms; c) review the

results framework, re-assess baselines as needed, and discuss reporting, monitoring and evaluation roles and responsibilities and finalize the M&E plan; d) review financial reporting procedures and mandatory requirements, and agree on the arrangements for the annual audit; e) plan and schedule Project Board meetings and finalize the first year annual work plan. The Project Manager will prepare the inception report no later than one month after the inception workshop. The final inception report will be cleared by the UNDP Country Office and the UNDP Regional Technical Advisor, and will be approved by the Project Board.

152. A project implementation report (PIR) will be prepared for each year of project implementation. The Project Manager, the UNDP Country Office, and the UNDP Regional Technical Advisor will provide objective input to the annual PIR. The Project Manager will ensure that the indicators included in the project results framework are monitored annually well in advance of the PIR submission deadline and will objectively report progress in the Development Objective tab of the PIR. The annual PIR will be shared with the Project Board and other stakeholders. The UNDP Country Office will coordinate the input of the NDA Focal Point and other stakeholders to the PIR. The quality rating of the previous year's PIR will be used to inform the preparation of the next PIR. The final project PIR, along with the terminal evaluation report and corresponding management response, will serve as the final project report package.
153. An independent mid-term review (MTR) process will be undertaken and the findings and responses outlined in the management response will be incorporated as recommendations for enhanced implementation during the final half of the project's duration. The terms of reference, the review process and the final MTR report will follow the standard templates and guidance available on the UNDP Evaluation Resource Centre. The final MTR report will be cleared by the UNDP Country Office and the UNDP Regional Technical Advisor, and will be approved by the Project Board. The final MTR report will be available in English. An independent terminal evaluation (TE) will take place no later than three months prior to operational closure of the project. The terms of reference, the review process and the final TE report will follow the standard templates and guidance available on the UNDP Evaluation Resource Centre. The final TE report will be cleared by the UNDP Country Office and the UNDP Regional Technical Advisor, and will be approved by the Project Board. The TE report will be available in English. The UNDP Country Office will include the planned project terminal evaluation in the UNDP Country Office evaluation plan, and will upload the final terminal evaluation report in English and the management response to the public UNDP Evaluation Resource Centre (ERC) (erc.undp.org). The MTR and TE will be carried out by an independent evaluator. The evaluation report prepared by the independent evaluator is then quality assessed and rated by the UNDP Independent Evaluation Office.
154. The UNDP Country Office will retain all M&E records for this project for up to seven years after project financial closure in order to support ex-post evaluations. A detailed M&E budget, monitoring plan and evaluation plan will be included in the UNDP project document.
155. UNDP will perform monitoring and reporting throughout the Reporting Period, including semi-annual reporting, in accordance with the AMA and Funded Activity Agreement (FAA). UNDP has country presence and capacity to perform such functions. In the event of any additional post-implementation obligations over and above the AMA, UNDP will discuss and agree these with the GCF Secretariat in the final year of the project and will prepare a post-implementation monitoring plan and budget for approval by the GCF Board as necessary

F. RISK ASSESSMENT AND MANAGEMENT

F.1. Risk factors and mitigations measures (max. 3 pages)

Selected Risk Factor 1

Category	Probability	Impact
Technical and operational	Medium	Medium

Description

Possible delays in project implementation due to major disasters, political unrest or a deteriorating security situation.

Mitigation Measure(s)

UNDP manages a US\$1 billion portfolio in Afghanistan with activities in every province. Over the past 15 years, UNDP has developed business continuity and contingency plans to respond to the eventuality of a worsening security environment. In selecting project sites for this intervention, the province-level security risk was one of the key selection criteria. Provinces with a 'high' security risk profile were not considered for project interventions. Security risk was mitigated through the site selection process for mini-grids where short-listed districts were screened through a security assessment on the basis of the UN Security Map and categorized as 'high' and 'low'. Only sites with 'low' security risk profile are considered for mini-grid development. The project will also engage in coordinated planning with the local Government. The security situation in the selected districts will be monitored closely and if necessary, project activities will be shifted to more secure areas.

Selected Risk Factor 2

Category	Probability	Impact
Technical and operational	Low	Medium

Description

Mini-grid policies and regulations are not a priority for Government.

Mitigation Measure(s)

Rural energy access is a priority for the Government of Afghanistan. The Afghanistan National Development Strategy (ANDS) and the Rural Energy Roadmap 2032⁸⁵ emphasize that the overall policy focus for rural areas should be the expansion of rural energy and electricity services. Rural energy access is also a key focus of the Agriculture and Rural Development Cluster of the National Priority Programmes. Through its active engagement in the SE4ALL process, the Government has shown that it is committed to providing an enabling environment, including the required policies and regulations. Nonetheless, UNDP and the project management unit (PMU) will actively engage with MRRD and other Government agencies from the outset to create awareness, provide advice and facilitate legislation.

Selected Risk Factor 3

Category	Probability	Impact
Technical and operational	Low	Medium

Description

Commitment and participation by the private sector in energy service operations is weak.

Mitigation Measure(s)

The project will create the necessary conditions to incentivize and attract private sector interest and participation in mini-grid development and energy service operations. Experience from other countries has shown that this can lead to increased private sector confidence, which in turn can lead to increased investment and systems that can be replicated with the private sector contributing to capital investment. By creating this type of demand that can be met by local supply, the project provides the next critical link in transforming Afghanistan's energy sector from grant-based

⁸⁵ Renewable Energy Roadmap 2032 (RER2032), March 2017

models to private sector-led growth. At the same time, MRRD and the PMU will raise awareness about partnership opportunities and directly engage with prospective partners to strengthen policy, regulatory and financial support in order to mitigate operational and business risks.		
Selected Risk Factor 4		
Category	Probability	Impact
Technical and operational	Low	Medium
Description		
Limited human resources and capacity in government at national and sub-national levels delay project activities.		
Mitigation Measure(s)		
Output 1 focuses on strengthening institutional and local capacity to design and implement RE mini- grid projects while Output 2 involves targeted capacity building of government institutions, energy and non-energy institutions at both the national and sub-national level including community development councils. With these measures, it is expected that the human resource capacity in Government ministries and agencies will be sufficient to ensure successful implementation of project activities. Efforts will also be made to ensure that the PMU is adequately resourced including the securing of positions to be recruited for key technical support, notably the Chief Technical Advisor. Furthermore, the governance arrangement for the project will include a Technical Advisory Team consisting of technical level staff from all Ministries, as well as the private sector and civil society. It will provide a platform to exchange information and discuss project outputs at a technical and working level. Finally, the project will closely monitor progress to identify any limitations or gaps in a timely manner and allow for alternative arrangements to be implemented.		
Selected Risk Factor 5		
Category	Probability	Impact
Technical and operational	Low	Medium
Description		
Energy industry in Afghanistan unable to support project needs.		
Mitigation Measure(s)		
The targeted capacity building of mini-grid RESCOs and other energy sector stakeholders will build the capacity of the energy industry to support the high-tech, high quality equipment envisaged under the project for implementation of mini-grids after the project ends. In addition, a networking platform will be developed to share knowledge in order to create capacity at scale. Finally, the PMU will establish technical standards and implement a quality- and cost-based procurement system and will employ a supplier rating system.		
Selected Risk Factor 6		
Category	Probability	Impact
Other	Low	Low
Description		
Project interventions are not implemented in a gender- and culturally-sensitive manner.		
Mitigation Measure(s)		
Steps will be taken to ensure that the project team is sensitized to gender and cultural sensitivities. Project implementation will closely involve Civil Society, NGOs and traditional authority structures to ensure the gender and cultural sensitivity of project interventions. In addition, the project will implement the recommendations put forward in the gender action plan. It will involve women cooperatives, which provide income generation opportunities to its members, have a positive effect on the empowerment of women including a boosted role in household decision-making as well as an elevation in social status.		
Selected Risk Factor 7		

Category	Probability	Impact
Other	Low	Low
Description		
Project interventions are subject to fraud, corruption or money-laundering		
Mitigation Measure(s)		
<p>UNDP uses the UNDP Policy against Fraud and other Corrupt Practices⁸⁶ as a basis for all its interventions. The policy applies to all activities and operations of UNDP, including UNDP-funded programmes and projects, services provided by UNDP to other organisations and management service agreements. The policy is based on the principle of zero-tolerance for fraud or corruption. meaning that UNDP staff members, non-staff personnel, vendors, implementing partners and responsible parties are not to engage in fraud or corruption. In case of any suspected event of fraud and corruption, this will be reported, assessed and, as appropriate, investigated in accordance with the Investigation Guidelines of the UNDP Office of Audit and Investigations (OAI) and the UNDP Legal Framework for Addressing Non-compliance with UN Standards of Conduct (“UNDP Legal Framework”), when applicable. UNDP will pursue rigorously disciplinary and other actions against perpetrators of fraud, including recovery of financial loss suffered by UNDP. In conducting due diligence in selecting project partners, UNDP makes use of the Harmonised Approach to Cash Transfer (HACT) mechanism, which dictates policies and procedures for capacity assessment, cash transfer modality, audit, assurance and monitoring. HACT applies to government and civil society organization/non-governmental organization (CSO/NGO) participation in UNDP projects and is performed before an entity can be engaged as an Implementing Partner (IP) or Responsible Party (RP) on a UNDP project, The results of the HACT assessment determine the selection of the cash transfer modality used for each IP or RP and the level of assurance activities used, which is why in the case of MRRD the Direct Payment Modality was chosen where no funds are transferred to the Implementing Partner and all payments will be done by UNDP to vendors directly. The UNDP Policy against Fraud and other Corrupt Practices and the HACT assessment ensure that the probability of project interventions being subject to fraud or corruption will be low.</p>		
Selected Risk Factor 8		
Category	Probability	Impact
Other	Low	Low
Description		
Risk of Escrow mechanism not being adhered to; use of funds in escrow account for purposes other than battery replacement / reinvestment as stated in FP		
Mitigation Measures		
<p>UNDP will ensure that the escrow account will be set up as part of the project implementation to ensure that withdrawals from the fund can only take place at the occasion of a “trigger event”, in this case at first instance the payment for battery replacement in year 15. Trigger events will be defined and can only consist of investments related to battery replacement for the 3 mini-grids in the project until year 15. After year 15, trigger events can be the development of new mini-grids designs (e.g. funding technical studies), updated handbook for mini-grid development or further support to the knowledge sharing platform and materials⁸⁷.The escrow account will be set up such that it cannot contribute to capital investment in additional mini-grids but can only be spent on investments in the public goods domain.</p>		

⁸⁶ UNDP policy against Fraud and other Corrupt Practices:

https://www.undp.org/content/dam/undp/documents/about/transparencydocs/UNDP_Anti-fraud_Policy_English_FINAL.pdf

⁸⁷ Given that the financial analysis shows a net cash flow from year 15 to 25 of 2.93 mln\$ (see Annex IIIb), this can be attributed for 14 additional mini-grid designs (200 k\$ each) and development of an updated mini-grid handbook.

G. GCF POLICIES AND STANDARDS

G.1. Environmental and social risk assessment (max. 750 words, approximately 1.5 pages)

156. An Environmental and Social Safeguards Screening (SESP) was conducted (See Annex) which categorized the project as Medium Risk due to potential risks related to land use for mini-grids, potential waste resulting from mini-grids and potentially adverse impacts on gender equality.
157. This project has completed an Environmental and Social Impact Assessment (ESIA), resulting in an Environmental and Social Management Plan (ESMP) (see Environmental and Social Assessment Report, including ESIA and ESMP, attached as Annex VI (b)). This assessment was undertaken to ensure that the proposed project complies with UNDP's Social and Environmental Standards. UNDP's Social and Environmental Standards were reviewed by the GCF accreditation panel and deemed sufficient to accredit UNDP to submit low and medium risk projects. Based on the ESIA, the overall social and environmental risk category for this project is Medium. It is unlikely that the project will have any medium to long term and/or irreversible impacts, and potentially moderate risks associated with the proposed construction of mini-grid structures can be sufficiently managed. There are several key factors that determine that this project is classified as a Category B (or Moderate Risk) project:
- Two of the three PV systems proposed for implementation will be located on public land with bare soil or marginal rangeland vegetation. One of the sites is on irrigated arable land, which is privately used and will be acquired by MRRD with respective compensation paid to the current owner/user.
 - Land clearing for the construction of solar mini-grids is considered minimal by area and intensity of impact and will not cause significant permanent loss of vegetation. None of the project sites are located in proximity to important archaeological or other type of cultural heritage site.
 - The electricity distribution lines in the currently planned design would cause a high risk of electrocution of birds including of globally threatened species. This risk has to be mitigated by constructing all distribution lines in a bird-safe design, which would also become part of the technical standards and designs developed under Activity 1.2 and will also be the standard for the 5 mini-grid investment designs under Activity 3.2.
 - There is a risk of hazardous waste during operation from used batteries of photovoltaic systems, including lead carbon batteries. This risk will be mitigated by maintenance contracts for future replacement of system parts to include the safe removal, disposal and recycling of changed elements in accordance to environmental standards and regulations.
158. Appropriate and relevant avoidance and mitigation options are required following the ESAR, which will significantly reduce the potential impacts of the project to an acceptable level. Moreover, the project will have significant environmental and social benefits that will be achieved more generally. Neither individual nor community livelihoods will be negatively altered by the project, but the access to electricity from alternative sources will improve the livelihoods of the target groups, while future expansion and replication will benefit more people. There are no indigenous peoples located within the project areas.
159. The end result will be that there will be avoided negative impacts on environment (in particular on bird populations and from hazardous waste) and stronger and improved resilience to the impacts of climate change, healthy ecosystems, more knowledgeable communities and overall improvement in the quality of life of the population as an investment in the future of the people of rural areas of Afghanistan. The project has a high replication potential and the avoidance and mitigation activities proposed in this ESAR and ESMP can be implemented in similar situations. The required design changes for making medium voltage (MV) distribution lines bird-safe should be used for the revision of the standards on such lines to mitigate this substantial threat to bird populations, including migratory bird populations and endangered species, all over the country.

G.2. Gender assessment and action plan (max. 500 words, approximately 1 page)

160. The gender analysis undertaken at the onset and design of this project acts as an entry point for gender mainstreaming throughout implementation. It is important to note that in order to create transformational change, women are not just seen as climate change victims or beneficiaries. Women are imperative to climate change adaptation efforts. They practice adaptive measures as a part of daily life – through farming and in the face of increasing risks – through disaster recovery and preparation. By utilizing these existing skills into project design and implementation and by providing a platform in which to empower women

enables women's influence to rise from a household to a community and national level. Leadership and decision-making capacities and opportunities increase. Women from the poorest households often pay the most, sacrifice the most, are the most disadvantaged and the least resilient.

161. Women are impacted differently by climate change in the following ways:
- Women rely more on natural resources for their livelihoods, with staple crops providing up to 90 percent of food in farming districts of some countries and 60–80 percent of food in most developing countries. Women struggle to fulfill their key responsibility for the production of food, in spite of the detrimental impacts of climate change on agriculture.
 - Women and children are often responsible for gathering water and fuel in traditional agrarian societies, tasks that are laborious, challenging and time consuming. These tasks become more time intensive due to the impact of climate change;
 - Climate change is linked to increased incidences of tropical diseases such as cholera and malaria, which have severe impacts on women because of their limited access to medical services and their responsibility to care for the sick;
 - In some societies more women are dying during natural disasters because men receive preferential treatment in rescue and relief efforts;
 - Women are disproportionately affected due to vulnerability and the capacity to adapt to the process of climate change are affected by various factors, including age, education, social status, wealth, access to resources, sex, gender and many other social dimensions;
 - In addition, at the time of crisis, women's needs are not considered priority in recovery programs.
162. The project is designed to enhance the development of women. Access to energy is an intervention that has proven to contribute to economic empowerment of women. This proposal identifies and integrates interventions to provide gender responsive and transformative results. The project will take into consideration the following gender implications:
- Women's access to, and control over, natural resources and the goods and services that they provide (Increasing women's access to and control over resources, improves the effectiveness of such projects);
 - Possibilities and potential of women participation in Rural Energy Service Companies (RESOs);
 - Identification of gaps in equality through the use of sex-disaggregated data enabling development of gender action plan to close those gaps, devoting resources and expertise for implementing such strategies, monitoring the results of implementation, and holding individuals and institutions accountable for outcomes that promote gender equality;
 - Assess how gender is currently mainstreaming in the energy sector, to develop need assessments, enable planning, and be effective in monitoring and evaluation;
 - Involve women and men both at macro and micro level in climate resilience process;
 - Evaluation of women's work time, both as paid and unpaid;
 - Gather data on the time women spent collecting biomass fuel;
 - Identify specific strategies to include / target female-headed households; and
 - Promote advocacy and awareness adjusted to most effectively reflect gender-specific differences. Strategies used in the project are tailored, taking into account such differences;
 - Division of labor on small farms, taking into consideration gender specific views on management;
 - Inclusion of a Gender Specialist position within the project to implement gender related activities;
 - Inclusion of all stakeholders involved in the project to develop awareness raising / training aimed at drawing attention to the implication of climate resilience adaptation and gender equality;
 - Targeting women agricultural cooperatives; and
 - Undertaking community discussions and dialogue in relation to gender and climate resilience and adaptation strategies with the inclusion of indigenous knowledge.
163. A gender assessment was undertaken to provide an overview of the gender situation in Afghanistan, with a specific focus on climate change resilience, and identify gender issues that are relevant to the proposed 'Afghanistan rural energy market transformation initiative - Strengthening resilience of livelihoods through sustainable energy access' project, while examining potential gender mainstreaming opportunities. On the basis of analysis of the gender dimension along political, social and cultural domains in Afghanistan, gender mainstreaming activities for the project are described in the gender action plan (Annex VIII).
164. On the basis of the Gender Action Plan, the project is aiming to achieve the following results in advancing gender equality and women's empowerment:
- Increased entrepreneurship opportunities for women among the communities in the three sites for solar

mini-grid implementation, resulting from capacity building on productive use of energy

- Improved understanding and best practices in delivering gender responsive renewable energy services and rural mini-grid development in the target areas
- Increased women's technical expertise in the area of renewable energy in general, and mini-grid development specifically, at national level as a result of capacity building activities

G.3. Financial management and procurement (max. 500 words, approximately 1 page)

165. The financial management and procurement of this project will be subject to UNDP financial rules and regulations available online⁸⁸. Further guidance is outlined in the financial resources management section of the UNDP Programme and Operations Policies and Procedures (POPP), also available from UNDP's website⁸⁹ UNDP has comprehensive procurement policies in place as outlined in the 'Contracts and Procurement' section of UNDP's POPP. The policies outline formal procurement standards and guidelines across each phase of the procurement process, and they apply to all procurements in UNDP⁹⁰.
166. The project will be implemented following the National Implementation Modality (NIM) following publicly-available NIM guidelines⁹¹. UNDP has ascertained the national capacities of the implementing partner, MRRD, by undertaking an evaluation of capacity following the Framework for Cash Transfers to Implementing Partners (part of the Harmonised Approach to Cash Transfers - [HACT](#)) and has determined that they are sufficient to implement the project. All projects will be audited following the UNDP financial rules and regulations noted above and applicable audit guidelines and policies.
167. The NIM Guidelines are a formal part of UNDP's policies and procedures, as set out in the UNDP Programme and Operations Policies and Procedures (POPP) which are also publicly available online⁹². The NIM Guidelines were corporately developed and adopted by UNDP, and are fully compliant with UNDP's procurement and financial management rules and regulations.
168. The national executing entity Ministry of Rural Rehabilitation and Development (MRRD) - also referred to as the national 'Implementing Partner' in UNDP terminology - is required to implement the project in compliance with UNDP rules and regulations, policies and procedures (including the NIM Guidelines). In legal terms, this is ensured through the national Government's signature of the UNDP Standard Technical Assistance Agreement (STAA), together with a UNDP project document which will be signed by the Implementing Partner to govern the use of the funds. Both of these documents require compliance. Prior to signature of the project document, all national Implementing Partners need to have undergone a HACT assessment by UNDP to assess capacities to implement the project. During implementation, UNDP will provide oversight and quality assurance in accordance with its policies and procedures, and any specific requirements in the Accreditation Master Agreement (AMA) and project confirmation to be agreed with the GCF. This may include, but not limited to, monitoring missions, spot checks, facilitation and participation in Project Board meetings, quarterly progress and annual implementation reviews, and audits at project level on the resources received from UNDP.
169. The Harmonized Approach to Cash Transfer (HACT) framework consists of four processes: (1) macro assessments; (2) micro assessments; (3) cash transfers and disbursements; and (4) assurance activities. Assurance activities include planning, periodic on-site reviews (spot checks), programmatic monitoring, scheduled audits and special audits. During micro-assessment, there can be weaknesses identified for which actions are required to address the gaps. When a spot check finds that the gaps are not addressed it will mean that the level of assurance activities will have to remain higher and modalities of engaging with that implementing partner will have to be reviewed if necessary.⁹³
170. On the basis of the HACT assessment conducted for MRRD, showing that the area of Procurement activities has significant risk, the Direct Payment Modality has been chosen as a key risk mitigation measure. Direct payment refers to the arrangement where payments are made directly by UNDP to vendors and other third parties providing goods or services for agreed upon programme activities on behalf of the implementing partner upon request and following completion of the activities. Under this modality, the Executing Entity ((Implementing Partner (IP))) is responsible/accountable for the project expenses and carries out the

⁸⁸ <http://web.undp.org/execbrd/pdf/UNDPFinRegsRules.pdf>

⁸⁹ <https://popp.undp.org/SitePages/POPPRoot.aspx>

⁹⁰ <https://popp.undp.org/SitePages/POPPBSUnit.aspx?TermID=254a9f96-b883-476a-8ef8-e81f93a2b38d&Menu=BusinessUnit>

⁹¹ http://www.rw.undp.org/content/dam/rwanda/img/pubcovers/UNDP_RW_NIM_for_GoR.pdf

⁹² <https://popp.undp.org/SitePages/POPPRoot.aspx>

⁹³ <https://popp.undp.org/SitePages/POPPSubject.aspx?SBjid=167&Menu=BusinessUnit>

procurement actions for procurement activities up to 500,000 Af (~ 7,000 US\$), but requests UNDP to make the payments to vendors. For procurement activities higher than 500,000 Af (~ 7,000 US\$), UNDP will also conduct procurement activities as well as payment to vendors. UNDP provides accounting services and banking services to the EE/IP. The UNDP and the Government of Afghanistan acknowledge and agree that those services are not mandatory and will be provided upon Government request and specified in the Letter of Agreement.

171. In the selection of partners, the PCAT/HACT tools assess the capacity of the partner, which includes the assessment of whether an organisation is listed on the Consolidated United Nations Security Council Sanctions List, the UNDP vendor sanctions list or the UN Global Marketplace. At the level of our procurement processes, restrictions are built into the policy on vendor sanctions⁹⁴.
172. The project will be audited in accordance with UNDP policies and procedures on audits, informed by and together with any specific requirements agreed in the AMA. According to the current audit policies, UNDP will be appointing the auditors. UNDP scheduled audits are performed during the project cycle as per UNDP assurance/audit plans, on the basis of UNDP's guidelines. A scheduled audit is used to determine whether the funds were used for the appropriate purpose and in accordance with the work plan. A scheduled audit can consist of a financial audit or an internal control audit.

G.4. Disclosure of funding proposal

No confidential information: The accredited entity confirms that the funding proposal, including its annexes, may be disclosed in full by the GCF, as no information is being provided in confidence.

With confidential information: The accredited entity declares that the funding proposal, including its annexes, may not be disclosed in full by the GCF, as certain information is being provided in confidence. Accordingly, the accredited entity is providing to the Secretariat the following two copies of the funding proposal, including all annexes:

- full copy for internal use of the GCF in which the confidential portions are marked accordingly, together with an explanatory note regarding the said portions and the corresponding reason for confidentiality under the accredited entity's disclosure policy, and
- redacted copy for disclosure on the GCF website.

The funding proposal can only be processed upon receipt of the two copies above, if containing confidential information.

⁹⁴ The vendor sanctions policy can be found [here](#).

H. ANNEXES

H.1. Mandatory annexes

- Annex 1 NDA no-objection letter(s)
- Annex 2 Feasibility study
- Annex 3a Financial and Economic Analysis
- Annex 3b Financial and Economic Model
- Annex 4 Detailed budget plan
- Annex 5 Implementation timetable including key project/programme milestones
- Annex 6a Social and Environmental Screening Procedure
- Annex 6b Environmental and Social Assessment Report
- Annex 7 Summary of consultations and stakeholder engagement plan
- Annex 8 Gender assessment and action plan
- Annex 9 Legal due diligence (regulation, taxation and insurance)
- Annex 10 Procurement plan
- Annex 11 Monitoring and evaluation plan
- Annex 12 AE fee request
- Annex 13 Co-financing commitment letters
- Annex 14 Term sheet

H.2. Other annexes as applicable

- Annex 15 Evidence of internal approval
- Annex 16 Map(s) indicating the location of proposed interventions
- Annex 17 Multi-country project/programme information
- Annex 18a Appraisal Report
- Annex 18b Evaluation Report of the Baseline Project
- Annex 19 Procedures for controlling procurement by third parties or executing entities undertaking projects financed by the entity
- Annex 20a Partner Capacity Assessment Tool
- Annex 20b HACT Assessments
- Annex 21 Operations manual (Operations and maintenance)
- Annex 22 Responses to GCF comments on FP
- Annex 23 Cost Data
- Annex 24 Mitigation Model
- Annex 25 Co-financing
- Annex 26 AE Track Record
- Annex 27 Sanctions Letter



Annex 28 Annex Disclosure form

** Please note that a funding proposal will be considered complete only upon receipt of all the applicable supporting documents.*

No-objection letter issued by the national designated authority(ies) or focal point(s)



Government of the Islamic Republic of Afghanistan
National Environmental Protection Agency



Number: 2764
Date: 24/10/2019

Chief of Staff

To: Mr. Yannick Glemarec
Executive Director
Green Climate Fund Secretariat
Seoul, Republic of Korea

Date: 24 Oct 2019

Dear Mr. Glemarec,

Re: Funding proposal for the GCF by United Nations Development Programme (UNDP) regarding "Afghanistan rural energy market transformation initiative - Strengthening resilience of livelihoods through sustainable energy access" project.

We refer to the project "Afghanistan rural energy market transformation initiative - Strengthening resilience of livelihoods through sustainable energy access" in Afghanistan as included in the funding proposal submitted by UNDP to the National Environmental Protection Agency (NEPA) on 23 October 2019.

The undersigned is the duly authorized representative of the National Environmental Protection Agency (NEPA), the National Designated Authority/Focal Point of the Government of the Islamic Republic of Afghanistan. Pursuant to GCF decision B.08/10, the content of which we acknowledge to have reviewed, we hereby communicate our no-objection to the project as included in the funding proposal.

By communicating our no-objection, it is implied that:

- The Government of the Islamic Republic of Afghanistan has no-objection to the project as included in the funding proposal;
- The project as included in the funding proposal is in conformity with Government of the Islamic Republic of Afghanistan's national priorities, strategies and plans;
- In accordance with the GCF's environmental and social safeguards, the project as included in the funding proposal, is in conformity with relevant national laws and regulations.

We also confirm that our national process for ascertaining no-objection to the project "Afghanistan rural energy market transformation initiative - Strengthening resilience of livelihoods through sustainable energy access" as included in the funding proposal, has been duly followed.

We acknowledge that this letter will be made publicly available on the GCF website.

Kind regards,


Shah-Zaman Maiwandi
Director General
National Environmental Protection Agency
Islamic Republic of Afghanistan



Environmental and social safeguards report form pursuant to para. 17 of the IDP

Basic project or programme information	
Project or programme title	Afghanistan rural energy market transformation initiative - Strengthening resilience of livelihoods through sustainable energy access
Existence of subproject(s) to be identified after GCF Board approval	No
Sector (public or private)	Public
Accredited entity	United Nations Development Programme (UNDP)
Environmental and social safeguards (ESS) category	Category B
Location – specific location(s) of project or target country or location(s) of programme	Afghanistan
Environmental and Social Impact Assessment (ESIA) (if applicable)	
Date of disclosure on accredited entity's website	Sunday, May 3, 2020
Language(s) of disclosure	English and Dari
Explanation on language	Dari is an official language of Afghanistan and spoken by the beneficiary communities.
Link to disclosure	<p>English:*</p> <p>https://www.undp.org/content/dam/afghanistan/docs/EnvEnergy/Environment%20and%20Social%20Assessment%20Report.pdf</p> <p>Dari:*</p> <p>https://www.af.undp.org/content/dam/afghanistan/docs/EnvEnergy/Environment%20and%20Social%20Assessment%20Report%20Translation.pdf</p>
Other link(s)	<p>UNDP Afghanistan website:</p> <p>https://www.af.undp.org/content/afghanistan/en/home/library/environment%20energy/Environment-and-Social-Assessment-Report.html</p> <p>Ministry of Rural Rehabilitation and Development (MRRD) website:</p> <p>English:</p> <p>https://mrrd.gov.af/reports-0</p> <p>Dari:</p> <p>https://mrrd.gov.af/dr/%DA%AF%D8%B2%D8%A7%D8%B1%D8%B4%E2%80%8C%D9%87%D8%A7</p> <p>Additional UNDP website:</p> <p>https://www.gcfprojects-undp.org/tp/project/6485</p>

Remarks	An ESIA consistent with the requirements for a Category B project is contained in the Environmental and Social Assessment Report (ESAR).
Environmental and Social Management Plan (ESMP) (if applicable)	
Date of disclosure on accredited entity's website	Monday, May 4, 2020
Language(s) of disclosure	English and Dari
Explanation on language	Dari is an official language of Afghanistan and spoken by the beneficiary communities
Link to disclosure	English:* https://www.undp.org/content/dam/afghanistan/docs/EnvEnergy/Environment%20and%20Social%20Assessment%20Report.pdf Dari:* https://www.af.undp.org/content/dam/afghanistan/docs/EnvEnergy/Environment%20and%20Social%20Assessment%20Report%20Translation.pdf
Other link(s)	UNDP Afghanistan website: https://www.af.undp.org/content/afghanistan/en/home/library/environment_energy/Environment-and-Social-Assessment-Report.html MRRD website: English: https://mrrd.gov.af/reports-0 Dari: https://mrrd.gov.af/dr/%DA%AF%D8%B2%D8%A7%D8%B1%D8%B4%E2%80%8C%D9%87%D8%A7 Additional UNDP website: https://www.gcfprojects-undp.org/tp/project/6485
Remarks	An ESMP consistent with the requirements for a Category B project is contained in Chapter 6 of the ESAR.
Environmental and Social Management System (ESMS) (if applicable)	
Date of disclosure on accredited entity's website	N/A
Language(s) of disclosure	N/A
Explanation on language	N/A
Link to disclosure	N/A
Other link(s)	N/A
Remarks	N/A
Any other relevant ESS reports, e.g. Resettlement Action Plan (RAP), Resettlement Policy Framework (RPF), Indigenous Peoples Plan (IPP), IPP Framework (if applicable)	
Description of report/disclosure on accredited entity's website	N/A
Language(s) of disclosure	N/A
Explanation on language	N/A
Link to disclosure	N/A
Other link(s)	N/A

Remarks	N/A
Disclosure in locations convenient to affected peoples (stakeholders)	
Date	Monday, May 4, 2020
Place	<p>Hardcopies of the ESAR and ESMP made available at:</p> <p>UNDP Afghanistan Country Office P.O Box # 05 Jalalabad Road, UNOCA Complex Kabul, Afghanistan</p> <p>MRRD Neela bagh road, Darul Aman Kabul, Afghanistan</p> <p>Parwan Rural Rehabilitation and Development Directorate, Mostofiat street, Charikar city, Parwan Province</p> <p>Khost Rural Rehabilitation and Development Directorate, Da Ghondi Shata, Da Projee Baq street, Gardiz city, Khost Province</p> <p>Kandahar Rural Rehabilitation and Development Directorate, Aino Mina, Kandahar City, Kandahar Province</p>
Date of Board meeting in which the FP is intended to be considered	
Date of accredited entity's Board meeting	N/A
Date of GCF's Board meeting	Tuesday, June 23, 2020

Note: This form was prepared by the accredited entity stated above.

*Subsequent to the disclosure of this form to the Board and active observers on 22 May 2020, the following update has been made to the ESAR contained in these links: Annex 4 titled "Livelihood Action Plan Framework" was added.

Secretariat's assessment of FP129

Proposal name:	Afghanistan Rural Energy Market Transformation Initiative - Strengthening Resilience of Livelihoods Through Sustainable Energy Access
Accredited entity:	United Nations Development Programme (UNDP)
Country/(ies):	Afghanistan
Project/programme size:	Small

I. Overall assessment of the Secretariat

1. The funding proposal is presented to the Board for consideration with the following remarks:

Strengths	Points of caution
The project will lay the necessary groundwork and pilots for the development of a rural mini-grid sector in Afghanistan by addressing key barriers for uptake through implementing policy strengthening and capacity-building activities, which include investment structuring and developing mini-grid design reports to scale up renewable energy mini-grid development, and implementing three solar mini-grids to demonstrate potential for scaling up	Implementation of solar mini-grids and their operation and maintenance will be carried out by public and private actors. An operations manual will be put in place to lay out responsibilities and procedures for sustainable operations of the mini-grids. An escrow account will be established to ensure transparency and sustainability of investment operations
The project will encourage private sector engagement by improving enabling conditions and making available mini-grid investment design reports ready for implementation and scaling up	
The green procurement guidelines for the mini-grids to be developed under the project will ensure that future and long-term mini-grid development in Afghanistan incorporates social and environmental considerations	

2. The Board may wish to consider approving this funding proposal with the terms and conditions listed in the respective term sheet and addendum XVIII, titled "List of proposed conditions and recommendations".

II. Summary of the Secretariat's assessment

2.1 Project background

3. Afghanistan faces severe energy shortages owing to an ailing energy infrastructure, high dependency on diesel and kerosene fuels, and weak power sector policy and regulatory frameworks. Renewable energy mini-grids are expected to play an important role in bridging the electricity access deficit in Afghanistan in a timely manner, while at the same time offering clean, low-emission energy services.

4. The objective of the project is to kick-start market transformation of the rural renewable energy sector in Afghanistan and to create the conditions for upscaling and long-term sustainability of the sector through a combination of (1) policy and regulatory design, facilitating public and private sector financing; (2) capacity-building and awareness-raising of the public and private sectors and end users; and (3) investment in setting up three greenfield solar mini-grids and creating an “upscaling platform” to facilitate additional solar mini-grid investments. The upscaling platform will consist of (1) a knowledge platform, including a solar mini-grid practical development manual, online evidence and data sharing tools, and full technical studies for five additional mini-grids; (2) development and mainstreaming of green procurement policies for solar mini-grids; and (3) development and mainstreaming of environmental and social governance policies for solar mini-grids.

5. The project addresses the short-, medium- and long-term vision of the Afghanistan renewable energy mini-grid market. It clarifies how the project will contribute to kick-start the market through viable demonstration pilots and by creating case studies of lessons learned in the country, including strengthened institutional and regulatory systems. The theory of change describes the foreseen medium- and long-term development, including anticipated electricity use for increased resilience to climate change.

2.2 Component-by-component analysis

Output 1: Energy Market Risk de-risked by Policy, regulatory and institutional development for improved renewable energy services in rural areas (total cost: USD 2.33 million; GCF cost: USD 1.53 million, or 66 per cent)

6. This output will address the development of a mini-grid policy that will institutionalize and support the development of renewable energy mini-grids in the country for the purpose of rural electrification. The mini-grid policy developed under this output will signal the Government of Afghanistan’s intention to encourage renewable energy in rural energy markets and will provide a direction for private sector participation. This will set the foundation for market transformation for rural renewable energy systems. The mini-grid policy will be developed through a consultative process by involving public sector players (namely, the Ministry of Rural Rehabilitation and Development (MRRD), the Ministry of Energy and Water and Da Afghanistan Breshna Sherkat (DABS), the government-owned national vertically integrated power generation utility), beneficiaries and the private sector.

7. A baseline market study analysing energy systems, actors, productive use potential, impacts on beneficiaries and business models, together with a DREI analysis feasibility study (simulation)¹ on the renewable energy investment, will inform the development of the mini-grid policy. Economic sustainability of mini-grids encompasses affordable tariffs for consumers while ensuring the financial viability of the project over the long term. Further analysis on willingness to pay for energy in rural areas, and the creditworthiness of end users, will inform the development of regulations that will balance financial viability and a fair tariff structure for mini-grids.

¹ A de-risking renewable energy investment (DREI) analysis.

Output 2: Social Acceptance Risk and Labour Risk de-risked by enhanced awareness and knowledge of government entities, beneficiaries and market actors in RE mini-grids (total cost: USD 2.27 million; GCF cost: USD 1.67 million, or 73 per cent)

8. The second output of the project will undertake capacity-building of institutions on the demand side and of energy systems and services on the supply side.
9. Regarding the supply side, this will include the ability of relevant ministries and government institutions to extend their expertise to cover rural renewable energy mini-grids with specific professional staff to be further trained in technical, managerial and financial aspects of renewable energy mini-grids, thus creating capacity at scale.
10. Regarding the demand side, this will include enhancing capacity in agricultural cooperatives, self-help groups, community development councils, non-governmental organizations, research organizations and public institutions to enable them to understand and accept renewable energy systems as a means to provide energy to enhance their incomes and other benefits.
11. Capacity-building is particularly important for this market sector because the intention of the project is to build the capacity private sector entities to become fully fledged actors in the second, scale-up phase of mini-grid development immediately after this project ends. To meet this need, private sector capacities will be built in the areas of design, installation, operations and building maintenance skills, but also in tariff design and revenue collection mechanisms, as well as increasing their knowledge about how to promote productive uses of energy using a mini-grid system.

Output 3: Construction of three greenfield solar mini-grids and set-up of an “upscaling platform” to facilitate additional mini-grid investments (total cost: USD 15.98 million; GCF cost: USD 13.38 million or 84 per cent)

12. This output will set up three greenfield solar mini-grids in the Kandahar, Parwan and Khost provinces, resulting in a combined capacity of 2.6 MW, providing electricity to approximately 7,800 households (49,000 people) and 1,050 small businesses. The construction of the mini-grids will cost USD 12.4 million and will be funded by GCF with a small amount of co-finance from MRRD and the accredited entity (AE), United Nations Development Programme (UNDP).
13. In addition, this output will establish an upscaling platform to facilitate the implementation of additional mini-grids, leveraging on the knowledge and best practices developed from the initial three mini-grids. This will consist of (1) a knowledge platform, including a solar mini-grid practical development manual, online evidence and data sharing tools, and full technical studies for five additional mini-grids; (2) development and mainstreaming of green procurement policies for solar mini-grids; and (3) development and mainstreaming of environmental and social governance policies for solar mini-grids. Ultimately, the project aims to contribute, in a phased approach, to a large volume of solar mini-grid development in Afghanistan and – with the long-term improvement in macroeconomic and security conditions – the eventual involvement of private investment in the sector.

Project management (total cost: USD 806,719; GCF cost: USD 606,719 or 75 per cent)

14. The project will be implemented by UNDP through its national implementation modality (NIM), and UNDP will provide oversight and quality assurance of project deliverables through its headquarters, regional and country offices. UNDP will hire dedicated project staff at the sites to deliver outputs and administrative, operational and financial support. Direct payments to vendors and other third parties will be made by UNDP for goods and services procured under the project.

III. Assessment of performance against investment criteria

3.1 Impact potential

Scale: Medium–high

15. Given the relatively nascent stage of the rural energy market in Afghanistan, the proposed three solar mini-grids will, when implemented, deliver a mitigation potential of 173,179 tonnes of carbon dioxide equivalent (tCO₂eq) over their 25-year lifespan. The project will therefore contribute to a lower greenhouse gas emission trajectory, fostering a pioneering spirit in the country that struggles with access to reliable and cost-effective renewable sources of energy for its dispersed rural population. The needs of 49,000 beneficiaries (of which 23,500 are women) will be addressed alongside 12 schools and approximately 1,050 small businesses. In most cases the renewably sourced electricity will replace and/or avoid usage of diesel fuel and in some cases kerosene.

16. The project will also prepare designs for five additional mini-grids as part of Activity 3.2, which are expected to be implemented after the GCF project is complete and have additional mitigation potential of 379,746 tCO₂eq (these estimates are not included in the specific CO₂ emission reductions calculation for this funding proposal).

3.2 Paradigm shift potential

Scale: High

17. The project is specifically designed to act as a catalyst in the nascent enabling environment for the rural energy sector in Afghanistan; in particular, for replication and scaling up by (1) providing policy de-risking for mainstreaming mini-grids; (2) providing a platform for private sector engagement through training and supporting private sector renewable energy services companies and a Rural Electrification Department; (3) supporting technical and commercial packages of interventions; (4) developing a track record of mini-grid designs ready for procurement or tendering; (5) implementing three proof-of-concept solar mini-grids; and (6) necessary capacity-building among public, private and community groups for effective management of technology. Taken together, these factors will enable a transformational shift to clean energy delivery in rural areas explicitly linked to improving climate resilience and establishing a low-carbon model of economic development.

3.3 Sustainable development potential

Scale: High

18. **Economic co-benefits.** The three solar mini-grids, once implemented, will result in the employment of 29 staff hired by the mini-grid operators during the 25-year project lifespan. Importantly, the mini-grids will provide reliable electricity to over 1,050 small enterprises, contributing to business continuity and local economic growth. Livelihoods will also be catalysed in agriculture, farm-based and off-farm livelihood options across rural communities targeted by the project intervention.

19. **Social and environmental benefits.** The introduction of cleaner energy sources replacing diesel- and kerosene-generated electricity/light and heating sources will contribute to a reduction of exposure to air pollution. Electrification of health clinics allows the provision of medical services at night and allows, inter alia, local clinics to use cooling facilities, including cold storage for medical supplies. An environmental and social safeguards screening exercise categorized the project as medium risk because of the potential risks related to land use for mini-grids, potential waste resulting from mini-grids and potentially adverse impacts on gender equality.

20. **Gender-sensitive development.** Women represent 47 per cent of direct beneficiaries for the three mini-grids implemented by the project and a similar percentage can be expected in

the follow up for the five mini-grids beyond the scope of this GCF project, as designed under Activity 3.2. The current project intervention is designed to enhance the development of women. Access to energy is an intervention that is proven to contribute to the economic empowerment of women.

3.4 Needs of the recipient

Scale: High

21. Afghanistan is a high-risk profile country according to the National Risk and Vulnerability Assessment (2012). The Global Adaptation Index ranked it as one of the most vulnerable countries in the world in 2012, taking into account the country's exposure, sensitivity and ability to cope with climate-related hazards, worsened by the socio-political conflicts and security. Coping with the impact of climate change is a major challenge for development in Afghanistan, given that the negative effects of climate change are likely to be most severely felt by the poor and marginalized because of their high dependence on subsistence agriculture and limited capacity to cope with the impacts of climate variability and extremes.

3.5 Country ownership

Scale: High

22. Development of renewable energy is one of the priority areas for low-emission development for Afghanistan, particularly in the context of energy access for rural communities. The Afghanistan CCSAP (2015) strengthens the legal and institutional framework for taking action on climate change in Afghanistan by adopting a balanced mix of adaptation and mitigation measures.

23. Afghanistan submitted its intended nationally determined contribution (NDC) in September 2015 and converted it to an NDC in November 2016, covering energy, natural resources management, agriculture, waste management and mining as focus areas. The NDC targets a 13.6 per cent reduction in greenhouse gas emissions by 2030; energy production using hydropower, solar, wind and biomass, clean cooking-cum-heating devices and clean fuels feature as prominent mitigation contributors.

24. MRRD will be the national executing partner (implementing partner of the UNDP under its direct implementation modality structure). DABS, the government-owned power generation utility, provides electricity primarily in urban and peri-urban areas, and will take responsibility as the initial owner of the mini-grids up until MRRD (under DABS) has been established.

3.6 Efficiency and effectiveness

Scale: Medium

25. The project structure combines a series of public-good activities, necessary to de-risk and facilitate scaling up of renewable energy mini-grids in Afghanistan. Concessionality will be minimized by calibrating the GCF grant for the construction of the three mini-grids to a level that is just about sufficient to turn an otherwise negative financial internal rate of return (IRR) into a positive IRR. Reflows will be managed by a dedicated committee chaired by the AE, UNDP, and all proceeds will be reinvested to pay for O&M and opex of the three solar mini-grids. It is important to note that, other than the grant contributions from GCF, MRDD and UNDP, no other sources of public and private finance are currently available, as verified by the AE by interviewing a range of potential donors and capital providers. The risk of crowding out is therefore absent from this project.

26. In terms of efficiency and effectiveness, the GCF cost is USD 99 per tCO₂eq avoided, on the basis of emission reductions attributed to the three solar mini-grids when fully implemented (173,179 tCO₂eq).

27. From a financial perspective, Outputs 1 and 2 are public goods, which are appropriate for grant financing. Output 3 will generate financial reflows, but current conditions in Afghanistan preclude financing from other sources.
28. From an economic perspective, the project is cost-effective, with an economic IRR of 11 per cent, which is slightly above the social discount rate of 10 per cent. The largest benefit streams result from (1) additional time resulting from higher quality and more reliable energy supply and (2) cost savings compared with fossil energy sources, so the economic IRR could drop below the hurdle if energy consumption is lower than expected.
29. The financial and economic analysis speak directly to GCF core indicators, theory of change and logical framework. Financial and technical assumptions provided in the model appear realistic, comprehensive and consistent across the three mini-grids. IRRs and net present values have been properly computed, as have the levelized cost of electricity values for each mini-grid, with and without concessionality. A comprehensive set of sensitivity analyses on both the financial and economic IRRs has been correctly articulated.

IV. Assessment of consistency with GCF safeguards and policies

4.1 Environmental and social safeguards

30. The AE has screened the project using its Social and Environmental Screening Procedure (SESP) and has assessed the project to be of moderate risk equivalent to Category B. The Secretariat confirms the classification given the project would only involve targeted de-risking activities to address key mini-grid investment risks, creation of an upscaling platform to enable the government to manage implementation of additional solar mini-grids and investment in the implementation of three solar mini-grids with a combined capacity of 2.6 MW in the provinces of Kandahar, Parwan and Khost.
31. The project has prepared an Environmental and Social Assessment Report (ESAR) which is consistent with the requirements for a Category B project and is disclosed both in English and in Dari which is an official language in Afghanistan and spoken by the beneficiary communities.
32. The following summarizes the assessment of the project's consistency to GCF's environmental and social safeguards (ESS) standards and requirements:
33. **ESS 1: Assessment and Management of Environmental and Social Risks and Impacts.** The project has assessed the potential risks and impacts of the project, including its physical, biological and social aspects. The project has likewise developed the avoidance and mitigating measures and identified the responsible parties that will implement them. It has also provided for the performance criteria that needs to be monitored and reported and has estimated a budget to implement them.
34. **ESS 2: Labour and Working Conditions.** The ESAR ensures compliance with Afghanistan labour and occupational health and safety laws consistent with the International Labour Organisation's principles and standards ensuring no forms of child labour will be tolerated and where possible, employing local residents for all construction-related activities. The project will also ensure protection of the workers' health and safety including being trained in occupational health and safety.
35. **ESS 3: Resource Efficiency and Pollution Prevention.** The ESAR provided for adequate measures for resource use efficiency and the prevention of pollution during project construction and operation. It has assessed the potential impacts and proposed mitigation measures on various environmental and social issues including impacts related to excavation works such as on vegetation removal and disposal of excavated soil, construction material storage and solid waste generation, and occupational health and safety risks. Operation of the

mini-grids also require management of damaged and/or used solar panels including batteries which may be considered hazardous.

36. **ESS 4: Community Health, Safety and Security.** The ESAR indicated that the solar mini-grids will engage guards from among the local communities to ensure there is no unauthorized entry into the facilities that will pose risks to the community members. Community consultation on the purpose and benefits of planned activities will also be undertaken and grievance redress mechanism will be put in place to address any concerns.
37. **ESS 5: Land Acquisition and Involuntary Resettlement.** The project will require 26 kilometres (km) of medium voltage (MV) and 51 km of low voltage (LV) distribution lines with an estimated total of almost 1,800 poles in the distribution system but with no requirements for private lands to be acquired as most poles will be installed on government owned, community used lands. The distribution poles needed for delivery to individual households may also be installed on lands of the neighbouring households. Current design has also not identified the need for widening of access roads. Nevertheless, the land user or users of the irrigated land needed for the PV installation in Parwan are expected to be affected economically as a result of land use changes caused by the project. Hence an Economic Displacement and Livelihood Restoration Plan (EDLRP) will be necessary for the affected households in Parwan and will have to be developed at the start of project implementation.
38. **ESS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources.** While the proposed project sites are not within or adjacent to environmentally sensitive areas, the ESAR indicated a high risk of electrocution for birds that would perch on the poles which are at risk of being affected. The ESMP has recommended interventions on the design of the distribution lines to consider bird safety. The ESAR further noted that “Before any tendering, the PMU will have to agree with Da Afghanistan Breshna Sherkat (DABS) on a bird-safe design of power lines as specified above. Bird safe power lines will be a condition in the tendering documents for the solar mini grids”. The report also indicated that a flora and fauna management program will be implemented and monitored.
39. **ESS 7: Indigenous Peoples.** The AE identifies that there are no indigenous peoples in the project areas. While there are nomadic pastoralists in Afghanistan, the ESAR states that all people living permanently or seasonally (nomadic people) in the project areas, independent of their ethnical, religious or social affiliation, are equally involved and benefit from the project as far as technically possible.
40. **ESS 8: Cultural Heritage.** The ESAR ruled out any project activities that would impact on cultural heritage. None of the mini-grid sites are determined to be located in areas known to have archaeological and/or cultural heritage values.
41. **Institutional arrangements and capacity building.** The three solar mini grids will be owned by the government through the Ministry of Rural Rehabilitation and Development (MRRD) but will be operated and maintained by private sector developers. MRRD is responsible for overall oversight of the implementation of the ESMP by the Project Management Unit (PMU) and the contractors. The project intends to engage national consultants to provide capacity building to project staff and contractors and include among its training module, topics on environmental and social governance. Further, the project should ensure that environmental and social management systems are adopted by the developers to serve as framework on environmental and social issues during the construction and operation of the facilities.
42. **Stakeholder Engagement.** The project has conducted intensive consultations with the local communities during the design of all the three mini-grids including with the Community Development Councils (CDCs) as well as with community members to inform them of the issues and potentials challenges in the development of the mini-grids. Various ministries and government authorities were also consulted including relevant international agencies, non-government organizations, private sector representatives and national level and sub-regional

level development councils. The project also intends to conduct more detailed mapping of potential local beneficiaries and stakeholders to be informed of the potential environmental and social risks of the project and offer opportunity to raise issues and concerns that may require establishing appropriate management measures.

43. **Grievance Redress Mechanism.** The AE's entity level Grievance Redress Mechanism (GRM) will be implemented by the project. At the AE level, grievances shall be acted upon by the AE's focal points at country, regional and headquarters levels who will work in coordination with the concerned stakeholders and partners to address and resolve the concerns. At the activity level, the ESMP of the project further provides for a project level Grievance Redress Mechanism for potentially affected people and stakeholders. A safeguards officer at the PMU will be in charge of the GRM at the project level and ensure that local communities and other interested stakeholders can raise grievances at all times. In line with the GCF Indigenous Peoples Policy, the GCF independent Redress Mechanism and the Secretariat's indigenous peoples focal point are also available for affected local communities.

4.2 Gender policy

44. The AE has provided a gender assessment and gender action plan and therefore complies with the requirements of the Gender Policy of the GCF.

45. The gender assessment provided by the AE has described the existing enabling environment and conditions that support gender equality and women's empowerment. This includes the ratification of the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW), articles in Afghanistan's constitution guaranteeing equal rights to man and women, and the abolishment of the harmful practices that inhibit the well-being of Afghan women. Likewise, many other articles of the constitution make specific reference to women's needs in education, health and political participation, including targets for women's representation in parliament. Further international laws also provide a legal framework for protecting women. Another key national document is the National Action Plan for the Women of Afghanistan, a ten-year plan towards addressing gaps in gender equality and women's rights and empowerment in Afghanistan; and the 2010 National Priority Programmes include women's empowerment as one of the national priority programmes.

46. The assessment also provides insights into the root causes and challenges that women face in Afghanistan. Although the policies, plans and frameworks exist to potentially improve the conditions of women throughout Afghanistan, implementation is a challenge. Gender inequality is driven by political, social and cultural dimensions. It is closely linked to poverty and other development challenges which are deeply rooted in sociocultural norms. Violence against women is a serious and widespread crisis across Afghanistan. Gender-based violence also intersects with issues around access to and control over natural resources. Research has shown that gender-differentiated roles related to land and resources can put women in a more vulnerable position to suffer gender-based violence while carrying out daily responsibilities, such as collecting fuel, firewood and water. When attempting to enter into agricultural markets, women can experience intimate partner violence as their partners seek to control finances and maintain economic dependencies. The Taliban regime had rendered women with very little to no freedoms and, post fall of the regime, very few or no girls were in schools, there are deficits of women professionals such as teachers and doctors, limited women's participation in the labour force, women are missing from political activities and decision-making at all levels, resulting in a near complete removal of women from public life.

47. The assessment indicates that women face challenges in accessing electricity and financing for small and medium-sized businesses. In 2014, only 17 per cent of Afghan women reported that their household always has access to electricity. Only 2 per cent of Afghan women are connected to the Internet for obtaining information, although 88 per cent of the population

lives within the combined network of the four largest mobile network organizations. Although 80 per cent of women have some access to a mobile phone, six out of ten Afghan women still do not use mobile phones for accessing information. Small and medium-sized enterprises face challenges and obstacles with regard to access to finance, while women-led businesses in particular have difficulties acquiring loans. Commercial banks and microfinance institutions do offer loans, but the insurance for those loans largely relies on property or land ownership, which is limited for Afghan women. Historically, properties are registered by male household members.

48. The benefits of access to electricity can dramatically cut the amount of time spent on household work, and considerably impact women's time use. This frees up time for women and girls to participate in things like education, capacity-building and income-generating activities. When women became directly involved in electricity supply, they gain a new type of skill, as well as higher status in their households and in their communities.

49. The AE has provided a gender action plan in fulfilment of the requirements of the Gender Policy of the GCF. The gender action plan recognizes the importance of gender mainstreaming throughout project interventions. The gender action plan provides details of activities, indicators, targets, responsible parties and timelines for completion of activities. It includes activities linked to the findings of the gender assessments and includes further data collection to establish baselines and ensure that the impact of the project on women is more fully understood. The project incorporates renewable energy technologies that would benefit women by giving them access to cleaner energy, better health and education facilities, and also involves and benefits women-led enterprises on the supply side of renewable energy development by involving women agricultural cooperatives and tailoring shops at the community level. Additionally, the project interventions will build the capacity of women in the area of renewable energy at the national level. The activities in the project are targeted towards increasing entrepreneurship opportunities for women and technical expertise in the area of renewable energy in general, and mini-grid development in particular. The project will also work with the religious leaders and Mullahs that are active in the three locations where solar mini-grids are being implemented, to raise awareness on women's rights and opportunities that energy access may offer in strengthening women's rights. Although not a direct topic in this project, the issue of gender-based violence may also be raised during such consultations. Stakeholder consultations were carried out during the development of the gender assessment and gender action plan and more consultations are planned during the implementation of the project that include women and women-based organizations. The AE will put in place a gender expert to support the implementation of the gender action plan.

4.3 Risks

4.3.1. Overall programme assessment (medium scale)

50. The funding proposal is for grant financing of USD 17.2 million towards total project cost of 21.4 million. The project includes policy, regulatory and institutional development for improved renewable energy in rural areas; capacity development of government entities; and construction of three greenfield solar mini-grids. Some 70 per cent of GCF financing is towards the cost of three mini-grids construction.

51. The mitigation impact of the project is estimated at 173,179 tCO₂eq of emission reductions over the 25-year lifespan of the mini-grids. Achieving this impact requires a certain amount of capital expenditure for 15 years after the construction of the mini-grids. However, the AE will oversee the project only during the implementation period of five years. In the logic framework, the final target for GCF-level mitigation impact is 20,607 tCO₂eq of emission reductions.

4.3.2. Accredited entity/executing entity capability to execute the current programme(medium scale)

52. UNDP will act as AE of the project and provide co-finance amounting to USD 1 million. MRRD will be the executing entity (EE) for the project. The EE will co-finance USD 3.2 million (USD 2.2 million in-kind contribution) towards the project cost. The EE has been a partner of UNDP for more than a decade, since early 2002 in the country, and has implemented other projects with UNDP including cross-border projects. The mini-grids will be owned by MRRD and operated by private sector companies under simple outsourcing contracts to be selected on the basis of a competitive tendering process. The exact minimum eligibility criteria for the renewable energy services companies to be selected for the operation and maintenance aspects on the basis of a competitive tendering process will be determined as part of project implementation.

4.3.3. Programme specific execution risks (high risk)

53. **Mini-grid operations and AE oversight.** The three mini-grids will have a 25-year lifespan. The mini-grids will charge a residential tariff of USD 0.10/kWh and a commercial tariff of USD 0.20/kWh. Both tariff levels have been determined through ability-to-pay surveys already conducted in the target communities and are sufficient to cover the operation, maintenance and management costs of the mini-grids. During the operations period the mini-grids will require further capital expenditure towards battery replacement at the end of 15 years, which will be financed through the surplus generated by the projects. The surplus will be kept in an escrow account until such battery replacement expenditure is incurred. As per the term sheet, the AE will submit to GCF, before the second disbursement, an operational manual that shall outline the modalities for the management of an escrow account to be set up by the EE within five years from the effectiveness of the funded activity agreement. The AE has explained that it can only assume the responsibility of oversight over the project implementation for the duration of the project as indicated in the funding proposal (five years). As the actual withdrawal from escrow will happen after 15 years, it will not be overseen by the AE. Also, the AE will not report to GCF the actual capital expenditure incurred for battery replacement or the mitigation impact achieved beyond five years. The project may benefit if the AE does a prudent check on the costs of battery replacement (in year 15) and also provides oversight beyond the implementation period of five years.

54. The project includes a component which will be generating revenue for MRRD, the owner of the mini-grids. However, considering the macroeconomic and fiscal situation of the country, the AE has proposed that the entire grant financing of the project be by grants. The surplus revenue generated from the operation of the mini-grids during the initial 15-year period will be used to pay for battery replacement, and the surplus over the life of the project will be used for developing new mini-grid designs, updating the handbook for mini-grid development or for providing further support to the knowledge-sharing platform and materials. The need for such investments to be financed through grants depends on the macroeconomic situation of the country. The AE is of the opinion that the investments to be financed through the surplus can be considered investments in public goods and therefore not subject to discussion of concessionality.

55. The surplus as projected by the AE's model is 28 per cent of the GCF capital expenditure grant. However, the actual surplus could be more, because of further reductions in battery costs over the next 15 years (e.g. the cost has reduced by 79 per cent since 2010). Thus, the project structure as proposed by the AE may offer concessionality in excess of that required for the viability of the project. GCF may mitigate this risk by offering financing through a reimbursable grant wherein the surplus to the extent not required by the country can flow back to GCF; and at the same time the country does not bear any additional debt burden.

4.3.4. GCF portfolio concentration risk (low risk)

56. In case of approval, the impact of this proposal on the GCF portfolio concentration in terms of result area and single proposal is not material.

4.3.5. Compliance risk (medium risk)

57. The AE has conducted a harmonized approach to cash transfers assessment, which identifies the weaknesses and strengths of its counterparties. The AE has indicated that it has policies and procedures in place to handle and address any risks identified by the assessment and, by its own estimate, determines the relative risks to be in the lower range area. The AE has also confirmed that there are no issues regarding United Nations Security Council financial sanctions that would be of concern in this project. While generally, the Secretariat recognizes the AE’s efforts to evaluate, assess and mitigate the compliance risks in this project, given the challenges in working in a remote environment and the capacity challenges in working with local and provincial communities, Compliance would retain a medium compliance risk assessment for this project.

4.3.6. Summary risk assessment and recommendation

Summary risk assessment	
Overall programme	Medium
Accredited entity/ executing entity capability	Medium
Project-specific execution	High
GCF portfolio concentration	Low
Compliance	Medium

4.4 Fiduciary

58. The GCF grant will be administered by UNDP following its NIM.

59. The overall role of UNDP as an AE is to provide oversight and quality assurance through its headquarters, regional and country office units. A UNDP programme officer, or monitoring and evaluation officer, will hold the project assurance role on behalf of UNDP at the country level, with support from the Global Environmental Finance Unit (responsible for managing GCF resources) at the UNDP headquarters and at the regional level.

60. The (national) EE for this project is MRRD, which is accountable to UNDP for managing the project, including the monitoring and evaluation of project interventions, and achieving project outcomes, as well as for the effective use of resources made available by UNDP. Using practices established under NIM, the Government of Afghanistan will designate a national project director who will be the Deputy Minister of MRRD.

61. The macro capacity assessment of the EE was conducted by UNDP through a third party audit firm (KPMG) in 2016, in accordance with the relevant UNDP guidelines. The overall assessment rating for MRRD (EE) is “moderate risk”. Because this assessment risk rating is substantial, the direct payment modality has been chosen as a key risk-mitigation measure for this project: the AE will manage the funds from GCF and will disburse them based on the direct payment modality instead of providing a quarterly cash advance to EE. Since the KPMG

assessment report identified that the EE procurement area has significant risk, UNDP will conduct procurement activities as well as executing payments to vendors and project staff and consultants. The financial management and procurement activities of this project will be subject to UNDP financial rules and regulations.

62. The project will be audited in accordance with UNDP policies and procedures on audits, informed by and together with any specific requirements agreed in the accreditation master agreement (AMA). According to the current audit policies, UNDP will be appointing the auditors.

4.5 Results monitoring and reporting

63. The arrangements for monitoring, evaluation and reporting (Section E.7) are adequate. A detailed monitoring and evaluation budget, monitoring plan and evaluation plan will be included in the AE project document which will be signed by the EE, MRRD, to govern the use of the funds during year 1.

64. Clear linkages between project results/outputs, outcomes and impacts (including long-term impacts) have been provided, and there is a clear articulation of barriers. The theory of change and the logical framework follows this rational and the funding proposal provides useful results monitoring and reporting.

65. The implementation period covers only five years, and it is likely that the expected climate impacts will mostly occur later. However, the Secretariat recommends that the AE consider including more elaborate monitoring of adaptation through ex-post verification at the fund level. For example, in addition to monitoring the number of beneficiaries with access to electricity, it could be relevant to monitor beneficiaries' opportunities to aim for more climate-resilient livelihoods by using electricity for productive uses, since such data are likely to be part of the mini-grids' operational log.

66. The logical framework has been designed with relevant details including reporting on core indicators for mitigation and adaptation, and the respective impact, outcome and output indicators for the results area and the project targets as per the results management framework and performance management framework of the GCF.

67. There are three clear results areas and they in turn are given appropriate monitoring indicators.

68. Fund-level outcomes and impacts are specified in line with the GCF pre-set result area guidelines. They are given quantitative as well as qualitative indicators. Regarding the qualitative indicators, a change process is explained with anticipated, gradual levels of progress towards the final target.

69. The funding proposal implementation timetable has been completed appropriately. It shows all activities and key milestones associated with each phase of the project and they are consistent with the logical framework. The Operations Manual, as well as the completed installation of the three mini-grids, has been included as an essential deliverable, as requested by the Secretariat.

4.6 Legal assessment

70. The AMA was signed with the AE on 5 August 2016, and it became effective on 23 November 2016.

71. The AE has provided a certificate confirming that it has obtained all internal approvals and it has the capacity and authority to implement the project.

72. The proposed project will be implemented in Afghanistan, a country in which GCF is not provided with privileged and immunities. This means that, among other things, GCF is not protected against litigation or expropriation in this country, which risks need to be further assessed. Currently, the GCF and the Islamic Republic of Afghanistan are at the stage of informal discussions on GCF privileges and immunities.

73. The Heads of the Independent Redress Mechanism and Independent Integrity Unit have both expressed that it would not be legally feasible to undertake their redress activities and/or investigations, as appropriate, in countries where the GCF is not provided with relevant privileges and immunities. Therefore, it is recommended that disbursements by the GCF are made only after the GCF has obtained satisfactory protection against litigation and expropriation in the country, or has been provided with appropriate privileges and immunities.

4.7 List of proposed conditions (including legal)

74. In order to mitigate risk, it is recommended that any approval by the Board is made subject to the following conditions:

- (a) Signature of the funded activity agreement in a form and substance satisfactory to the Secretariat within 180 days from the date of Board approval; and
- (b) Completion of legal due diligence to the satisfaction of the Secretariat.

Independent Technical Advisory Panel's assessment of FP129

Proposal name:	Afghanistan Rural Energy Market Transformation Initiative - Strengthening Resilience of Livelihoods Through Sustainable Energy Access
Accredited entity:	United Nations Development Programme (UNDP)
Country/(ies):	Afghanistan
Project/programme size:	Small

I. Assessment of the independent Technical Advisory Panel

1.1 Impact potential

Scale: Medium/High

1. Afghanistan is a landlocked country located in South-Central Asia with total population of 35 million. About 70 per cent of the Afghan population live in rural areas and are largely dependent on agriculture. While the country has been making efforts to rebuild the economy since the advent of democracy, it still remains one of the poorest countries in the world with a gross domestic product (GDP) and GDP per capita of USD 19.363 billion and USD 520.9, respectively (2018).
2. The country is suffering a severe infrastructure deficit as a result of a long period of neglect and underinvestment due to decades of instability and war. Disparity in infrastructure service between urban and rural areas is also high. According to the Afghanistan Living Conditions Survey 2016–2017, only 31 per cent of the population is connected to the electric grid. While 92 per cent of the population in urban areas have access to electricity, the penetration is far below in rural areas (only 13 per cent). In terms of electrification rate, the country is in the lowest 5 per cent in per capita energy consumption in the world.
3. The country's electricity supply depends heavily on imported electricity. Currently, the country has a total available generation capacity of 1,504.6 megawatts (MW), of which 900 MW, or 60 per cent, is imported.
4. Domestic power supplies are largely dependent on electricity generation from diesel generators, which is costly and environmentally unsustainable. Of the total domestic capacity of 604.6 MW, 56 per cent is thermal (diesel and furnace oil) with a generation cost of USD 0.25–0.35 per kilowatt-hour (kWh), which is four times higher than that of imported electricity. The remaining 44 per cent (254 MW) is from hydropower, which is seasonal and has a capacity factor of less than 40 per cent.
5. With no connection to the electricity grid, most communities in rural areas are dependent on traditional biomass (such as firewood, dung cakes and crop residues) for cooking and heating, which aggravate indoor air pollution and accelerate deforestation. As per the United Nations Environment Programme, forests in Afghanistan will disappear within 30 years if the current rate of wood consumption and deforestation continues. According to the World Bank, Afghanistan is among the top 10 countries worst affected by indoor air pollution.
6. The country is richly endowed with renewable energy resources. Solar energy resources are plentiful with over 300 sunny days per year, with annual average insolation levels of 4.7–5.4 kWh/square metre (m²). The country also has rich wind resources with annual average wind

speeds of 4.3 to 5.6 metres/second at 10 metre heights, which is suitable for wind power generation. Its hydropower potential is estimated at 25,000 MW, including 800 MW of micro-hydro and mini-hydro.

7. Renewable energy mini-grids are considered sufficient for Afghanistan to establish additional, clean and low-emission generation capacity critical, especially, for communities in rural areas, where grid extension remains sluggish. However, the traditional power sector policy and regulatory frameworks in Afghanistan focus on the national grid and centralized generation. Therefore, the regulatory frameworks require further development to promote and scale up renewable energy mini-grids and commercial investment in Afghanistan.

8. The proposed mitigation project supports the groundwork for rural renewable energy market transformation in Afghanistan to mitigate policy and regulatory risks of private investment in mini-grids. The project includes (1) policy and regulatory design, setting the groundwork for public and private sector financing; (2) capacity-building and awareness-raising for both the public/private sectors and end users; and (3) the implementation of three greenfield solar mini-grids of a combined capacity of 2.6 MW, together with the creation of an up scaling platform to enable the Government of Afghanistan to lead the future implementation of additional renewable energy mini-grids.

9. The United Nations Development Programme is the accredited entity (AE) of the project. The Ministry of Rural Rehabilitation and Development (MRRD) of Afghanistan is the executing entity.

10. The project has three components (outputs 1, 2 and 3). The first component (output 1) aims to address and mitigate the energy market risk associated with renewable energy services in rural areas through policy, regulations and institutional development. Regulations and tariff mechanisms as well as technical standards and guidelines for mini-grids will be developed. Policies to promote institutional reform and coordination among responsible institutions will be prepared.

11. The second component (output 2) will enhance the capacity and engagement of public and private sector stakeholders in developing renewable energy mini-grids. It includes capacity strengthening activities for government entities on the technical, managerial, administrative and financing aspects for renewable energy mini-grids. It also includes activities to promote community commitment and local business interests relating to the implementation of the three solar mini-grids. The private sector capacity critical for designing, operating and maintaining mini-grids will be promoted. Productive use of electricity will be incentivized to increase resilience.

12. The third component (output 3) includes the construction of three solar mini-grids and the setup of an up scaling platform to facilitate additional mini-grid investments. Three greenfield solar mini-grids, with a total capacity of 2.6 MW, will be constructed in the Kandhar, Khost and Parwan regions. The mini-grids will be owned by MRRD but operated by private sector entities to be selected competitively. Construction contracts will be tendered competitively as well.

13. In addition, the component will establish a knowledge platform to support MRRD to further promote the development of renewable mini-grids with private sector investments in the future. It will prepare a mini-grid implementation handbook for MRRD, which includes industry best practices as well as knowledge gained through the implementation of three solar mini-grids. A green procurement policy will be prepared to facilitate the use and purchase of the most environmentally friendly services and products for mini-grids, and a social and environmental safeguard policy for mini-grids will be developed.

14. The total project cost is estimated to be USD 21.4 million. The GCF is requested to provide USD 17.2 million in a form of grant. MRRD and AE will each provide a USD 1 million

grant. In addition, MRRD will contribute in-kind support equivalent to USD 2.2 million. The project will be implemented in five years.

15. The AE estimates that the project will achieve a greenhouse gas (GHG) reduction of 6,923 tonnes of carbon dioxide equivalent (tCO₂eq) per annum from the implementation of the three solar mini-grids, resulting a total GHG reduction of 173,082 tCO₂eq during the project life of 25 years. If an additional five mini-grids (three solar and two mini-hydro) are implemented after the project ends, the AE further estimates that an additional GHG reduction of 15,189 tCO₂eq will be achieved per annum.

16. The methodology and assumptions used to calculate emission reductions are appropriate and reasonable. The emission reductions are estimated based on emission factors of different energy consumer groups (households and commercial facilities). Annual emission reductions (in tCO₂eq) are calculated over the 25-year lifetime of the mini-grids. The assumptions take into account the annual degradation of the solar photovoltaic panels and the replacement of battery energy storage systems during the project life.

17. The implementation of three solar mini-grids will benefit 49,000 people (of which 23,500 are women) as users of electricity in homesteads for agriculture and enterprise development. Approx. 12 schools, 3 health centres and 1,050 small businesses will have access to electricity from the three solar mini-grids resulting from this project.

18. The impact potential is considered moderate given the small amount of renewable energy to be generated by the three solar mini-grids. However, energy consumption per capita in Afghanistan remains low. As a result, the number of beneficiaries is expected to be notable.

19. Accordingly, the independent Technical Advisory Panel (TAP) views the impact potential of the proposed project as *medium/high*.

1.2 Paradigm shift potential

Scale: Medium/High

1.2.1 Potential for scaling up and replication

20. The proposed project aims to establish a policy and regulatory environment favourable to the development of rural renewable energy mini-grids with private sector participation in Afghanistan. Mini-grids have the potential to play a significant role in providing access to reliable and affordable electricity in rural areas. Dedicated policies on mini-grids are therefore critical in promoting their development. Institutional setup and support, in combination with technical, economic and social agendas, is also essential; otherwise the project may result in ineffective or unsustainable mini-grid systems.

21. The project includes technical assistance to enhance policy and regulatory frameworks and to provide a platform to promote private sector engagement through training. The project further includes the implementation of three solar mini-grids with private sector participation. Experiences and lessons learned from the implementation will be incorporated into capacity-building for public, private and community stakeholders on the effective management of the technology, including for the development of five renewable energy mini-grids in the future.

1.2.2 Potential for knowledge-sharing and learning

22. The project proposes setting up a knowledge platform that formalizes and mainstreams technical and operational data, best practices, and procurement and safeguard policies developed by the project and through the implementation of the three solar mini-grids. The knowledge platform will include a step-by-step mini-grid implementation manual, an online data and information service and designs for five renewable mini-grids for implementation.

1.2.3 Contribution to the creation of an enabling environment

23. The project aims to promote renewable energy development in rural areas in Afghanistan, where grid extension is limited and the predominant electricity generation source is diesel, by implementing renewable minigrids with private sector investment and operation. The project will provide technical assistance to mitigate legal and regulatory risks, provide training to promote business interest in renewable mini-grids and implement three solar mini-grids to demonstrate the technical and operational viability for private sector participation. A knowledge platform will be established, where technical and operational data of the three solar mini-grids, together with lessons learned through their implementation, are formalized and shared.

1.2.4 Contribution to regulatory framework and policies

24. The project's technical assistance will contribute to improving legislation and regulations as well as procurement and environment, social and corporate governance processes. The policy and regulatory framework for mini-grids will be developed in consultation with governmental agencies and private sector entities. The framework includes standards and guidelines for mini-grids and approvals and licenses required for effective mini-grid development. The project will further support the establishment of a separate office under Da Afghanistan Breshna Sherkat (DABS) to promote rural electrification projects mainly based on renewable energy technologies in accordance with the Renewable Energy Roadmap for Afghanistan (2032). A green procurement policy will be developed for mini-grid procurement to facilitate the purchase and use of the most environmentally-friendly services and products for mini-grids.

25. The project contains technical and financial assistance to address challenges identified in Afghanistan for private sector investment in renewable energy mini-grids. The assistance is structured to ensure it is comprehensive enough to enhance the awareness of public, private and community stakeholders of the benefits brought by renewable energy mini-grids and mitigate policy and regulatory risks for private sector investors. The implementation of the three solar energy mini-grids will serve as examples, and information and experience gathered through the implementation will be formalized and applied to the development of renewable energy mini-grids in the future. The development of an additional five renewable energy mini-grids as part of the project will be effective in further advancing the project objectives in the sector in Afghanistan by attracting private sector investment. Nevertheless, the sustainability of the project initiative after the project has ended will remain dependent on the availability of concessional funding.

26. Accordingly, the independent TAP considers the paradigm shift potential of the project as medium/high.

1.3 Sustainable development potential

Scale: High

1.3.1 Economic co-benefits

27. Dependence on diesel generators for rural energy access hampers the productivity of rural economies. The three solar mini-grids implemented in the project will supply renewable and reliable electricity to over 1,050 small enterprises, contributing to business continuity and growth. It will create 29 jobs for its operations during the 25-year project life. Additional job opportunities would be generated during construction.

28. The project contributes to private sector development in Afghanistan. It will heighten private sector awareness of the technical and financial viability of renewable mini-grids through technical assistance and the implementation of the three solar mini-grids. Private sector

constructors and operators (renewable energy service companies) will participate in the implementation. The project will also prepare investment design reports to implement five additional mini-grids with private sector finance and operation.

1.3.2 Social and environmental co-benefits

29. The three solar mini-grids will provide reliable electricity in the areas where the 12 schools, 3 health centres and 230 public centres are located. It is estimated that 49,000 people (of which 23,500 are women) will benefit as users of electricity in homesteads for agriculture and enterprise development. Afghanistan is among the top 10 countries worst affected by indoor air pollution.

30. The provision of cleaner energy supplies to replace diesel-generated electricity will result in a reduction of exposure to air pollution.

1.3.3 Gender-sensitive development

31. Women represent 47 per cent of direct beneficiaries of the three mini-grids implemented by the project. Access to energy has proven to contribute to the economic empowerment of women through employment.

32. The independent TAP considers the sustainable development potential of the proposed project as high.

1.4 Needs of the recipient

Scale: High

1.4.1 Vulnerability of the country

33. According to the Notre Dame Global Adaptation Index, Afghanistan is the 11th most vulnerable country to climate change and the 14th least ready country for climate change in the world. The Climate Change Strategy and Action Plan (CCSAP) for Afghanistan identified high levels of exposure and vulnerability to climate change in most parts of Afghanistan.

34. Afghanistan is experiencing an increase in extreme climate events with floods almost an annual occurrence in spring, as well as dry years. The country's economy is largely dependent on the agriculture sector. About 70 per cent of population lives and works in rural areas, mostly on farms, and 61 per cent of all households derive their income from agriculture as per the World Bank. The CCSAP indicates that agriculture is the sector that is most seriously vulnerable to climate change impacts, together with the water resources, forest and soil conservation, and health sectors.

35. Afghanistan's nationally determined contributions to the United Nations Framework Convention on Climate Change (UNFCCC) indicates that climate change impacts could further exacerbate extreme hunger and poverty, the fundamental challenges of the country, by reducing livelihood opportunities, agricultural production, and the availability of energy, water and other natural resources.

1.4.2 Absence of alternative sources of financing

36. Afghanistan has the lowest per capita GDP in the world. As a recipient of an International Monetary Fund Extended Credit Facility, the Government of Afghanistan operates

under severe financial constraints with restricted borrowing capacity. The IMF expressly recommends that any external financing be in the form of grants or concessional funding.¹

37. The domestic financial sector in Afghanistan remains ineffective. Ninety per cent of investments needed by businesses were financed by own/internal sources, and only 3.4 per cent of businesses had a bank loan/credit.

38. International commercial borrowing, especially for the long term, is limited due to the country risk profile. Currently, most of the development activities are funded by development partners with a primary focus on security, peace, governance, women's empowerment and health. The independent TAP observed assistance in energy sector, though it was limited and with a different focus.

39. Given the present situation, the independent TAP believes that there are no sources of financing alternative to GCF for the project.

1.4.3 Need for strengthening institutions and implementation capacity

40. The current power sector policy and regulatory frameworks in Afghanistan focus on the national grid and centralized generation. Therefore, the regulatory framework requires further development to promote and scale up renewable energy mini-grids and commercial investment in Afghanistan.

41. The project will enhance government policy and regulatory framework as well as the capacities of the government, beneficiaries and private sector through various technical and advisory supports and the implementation of the three solar mini-grids. With respect to the government, a team of 100 MRRD and DABS staff will benefit from extensive capacity-building, including hands-on involvement in the implementation of the three solar mini-grids of the project. The project will mitigate the political, regulatory and operational risks of installing rural renewable energy mini-grids in Afghanistan to the extent necessary to promote private sector investment and funding.

42. Electricity consumption per capita in Afghanistan ranks among the lowest in the world. The majority of the population lives in rural areas, which the existing transmission network does not cover. Only 9 per cent of the rural population and 30 per cent of the whole country's population has access to electricity. Presently, most communities in rural areas are dependent on traditional biomass (such as firewood, dung cakes and crop residues) for cooking and heating, and kerosene for lighting. The need for reliable and clean electricity among the rural population is high.

43. Consequently, the independent TAP views that the needs of the recipient for the proposed project is high.

1.5 Country ownership

Scale: High

1.5.1 Coherence with existing policies

44. Afghanistan submitted its NDC to the UNFCCC Secretariat in November 2016, outlining its intended contribution of reducing its GHG emissions by 13.6 per cent below the 2030 business-as-usual scenario with a condition of the receipt of international support.

¹ International Monetary Fund Country Report 19/157 (June 2019): <https://www.imf.org/en/Publications/CR/Issues/2019/06/07/Islamic-Republic-of-Afghanistan-Fifth-Review-Under-the-Extended-Credit-Facility-Arrangement-46973>.

45. According to its nationally appropriate mitigation action (2015), the promotion of renewable energy systems for enhancing energy access in rural areas with an objective of enterprise development is one of the focus areas.
46. One of the four targets in the CCSAP (2015) is to increase the share of renewable energy in the overall energy mix. The other targets are to protect the population from climate change-related extremes, improve rural livelihood security and prevent land degradation.
47. The Renewable Energy Roadmap for Afghanistan (2032) includes the Government of Afghanistan's target to establish a renewable energy capacity of 5,000 MW by 2032.
48. The proposed project is in alignment with the existing government policies.

1.5.2 Capacity of accredited entities or executing entities to deliver

49. The AE presently operates 140 energy projects in close to 100 countries with more than USD 550 million in grant funding channelled via the AE. The project portfolio includes mini-grid projects in 26 developing countries. The portfolio includes mini-grid projects in 22 developing countries and multi-country mini-grid programmes in 11 African countries.
50. The technical support from the AE into energy projects typically supports the government in designing and implementing a suitable policy and regulatory framework to create an enabling environment to attract private sector investment.
51. The AE has implemented the Afghanistan Sustainable Energy for Rural Development (ASERD) project with the MRRD. ASERD, which developed feasibility studies for five mini-grids in rural areas in Afghanistan, is considered as the foundation of the proposed project. The implementation of ASERD also provided the AE and government stakeholders such as DABS (a national government-owned vertically integrated electricity utility), the Ministry of Energy and Water (MEW) and MRRD with the relevant experience required to implement the project.
52. The AE mobilizes a team for the implementation that includes experts with backgrounds and experience suitable for the project.
53. The AE is considered to have sufficient capacity to implement the project.

1.5.3 Engagement with civil society organizations and other relevant stakeholders

54. Six workshops were organized in six different regions as a part of consultations on climate change and GCF, the energy deficits in the region, the benefits of renewable energy and finally the project design, including discussions on possible mini-grid sites and the theory of change of the project. Participants in the workshops include representatives from the Afghanistan Research and Evaluation Unit, Ministry of Agriculture, Irrigation and Livestock, MEW, MRRD, the National Environmental Protection Agency, international agencies, non-governmental organizations and community development councils. Subsequently, a stakeholder engagement plan was developed that identifies relevant stakeholders for each of the project activities.
55. A non-objection letter issued by National Environmental Protection Agency (the national designated authority of Afghanistan) is attached to the funding proposal. The independent TAP also notes that the commitment of MRRD to the project is demonstrated through its USD 1.0 million financial and USD 2.2 million in-kind contribution.
56. Accordingly, the independent TAP regards the country ownership of the proposal as high.

1.6 Efficiency and effectiveness

Scale: Medium

1.6.1 Cost-effectiveness and efficiency regarding financial and non-financial aspects

57. The project is expected to achieve GHG reductions of 6,923 tCO₂eq per annum from the implementation of the three solar mini-grids, resulting the total GHG reduction of 173,082 tCO₂eq during the project lifetime of 25 years. Against a total cost of USD 21.4 million, the project's cost of GHG reduction is estimated to be USD 123.6 per tCO₂eq. With respect to the GCF grant amount of USD 17.2 million, it will be USD99 per tCO₂eq.

58. The GCF grant will finance the construction of the three solar mini-grids to be owned by MRRD. With the GCF grant, the financial return of the solar mini-grids is estimated to increase from between -4.4 and -13.5 per cent to between +18.9 and 22.0 per cent. As per the AE, the return should satisfy the MRRD cost of capital of 15 per cent. In principle, the independent TAP does not consider it appropriate to use the GCF grant to subsidize or increase project financial return beyond a reasonable threshold. Given that the solar mini-grid projects are public sector undertaking, the target financial return could be reduced with a lower GCF grant. The independent does not share the presumption of the AE that a higher financial return is required to demonstrate the commercial feasibility of mini-grids to attract private sector capital in the subsequent transactions. The subsequent transactions with greater private sector involvement, if they take place, will have a different capital structure and hurdle rate.

59. The independent TAP nevertheless supports the proposed grant amount given the commitment from the MRRD that any excess cash flow from the solar mini-grids will be utilized for the purpose of their operations. Given the risk associated with their implementation and operation, it would be prudent to ensure an adequate financial buffer is maintained for the projects. Otherwise, MRRD would need to look for another source of funding to satisfy unexpected needs for cash for the solar mini-grids in the future.

1.6.2 Amount of co-financing

60. The GCF grant contribution of USD 17.2 million will be co-financed with a USD 1.0 million grant each from the AE and MRRD. In addition, MRRD will provide a USD 2.2 million in-kind contribution to the project. The co-financing ratio against the GCF grant is therefore 0.24.

1.6.3 Programme/project financial viability and other financial indicators

61. The financial internal rate of return of the three solar mini-grids is estimated to be in the range of 18.9 per cent to 22.0 per cent, above a hurdle rate of 15 per cent of the estimated cost of capital of MRRD. Without the GCF grant, the return would be between -4.4 per cent and -13.5 per cent. The financial viability of the three solar mini-grids can be established with GCF grant support.

1.6.4 Industry best practices

62. The project is expected to promote international standards in the design, implementation and operation of renewable mini-grids in Afghanistan. Experience gained and lessons learned during the implementation of the three solar mini-grids by the project will be disseminated through a knowledge platform to be established by the project for the additional development of renewable mini-grids in Afghanistan.

63. The project offers a comprehensive and organized approach to mitigate investment risk and promote private sector participation in mini-grid development through public-private partnerships in Afghanistan.

64. The independent TAP notes that the cost-effectiveness of the project with respect to its GHG emission reductions is rather low. That is considered justifiable, however, given that the

number and capacity of solar mini-grids implemented in the project is limited only to three and 2.6 MW, respectively.

65. The independent TAP considers the efficiency and effectiveness of the proposed project as medium.

II. Overall remarks from the independent Technical Advisory Panel

66. The independent TAP recommends that the Board support the project as proposed.

67. The project proposes to take a structured and holistic approach to promoting renewable energy mini-grid development with private sector investment in rural Afghanistan, where communities heavily rely on electricity supply from diesel generation.

Response from the accredited entity to the independent Technical Advisory Panel's assessment (FP129)

Proposal name:	Afghanistan Rural Energy Market Transformation Initiative - Strengthening Resilience of Livelihoods Through Sustainable Energy Access
Accredited entity:	United Nations Development Programme (UNDP)
Country/(ies):	Afghanistan
Project/programme size:	Small

Impact potential
<i>The medium/high rating is noted.</i>
Paradigm shift potential
<i>The medium/high rating is noted.</i>
Sustainable development potential
<i>The high rating is noted.</i>
Needs of the recipient
<i>The high rating is noted.</i>
Country ownership
<i>The high rating is noted.</i>
Efficiency and effectiveness
<i>The medium rating is noted.</i>
<i>Overall remarks from the independent Technical Advisory Panel:</i>
The ITAP recommends that the Board support the project as proposed.
<i>UNDP acknowledges the iTAP assessment and is pleased to see the funding proposal being rated overall positively, as the project constitutes an important market building milestone for minigrids in Afghanistan.</i>



Gender Assessment and Action Plan

Afghanistan Rural Energy Market Transformation Initiative –
Strengthening Resilience of Livelihoods Through Sustainable
Energy Access

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I. Introduction

This gender assessment aims to provide an overview of the gender situation in Afghanistan, with a specific focus on climate change resilience, and identify gender issues that are relevant to the proposed ‘Afghanistan rural energy market transformation initiative - Strengthening resilience of livelihoods through sustainable energy access’ project, and to examine potential gender mainstreaming opportunities. The assessment was based upon available data from studies conducted by the government of Afghanistan, donor agencies, and multilateral development banks; and includes:

- 1) Undertaking a desktop review and aligning approaches in this proposal with the national priorities of Afghanistan.
- 2) Incorporating information and lessons learned from past studies and assessments on gender in Afghanistan from the government, the United Nations, civil society organizations, and multilateral development banks.
- 3) Conducting stakeholder consultations and engaging women affected by the project and incorporating all points raised; and
- 4) Integrating gender considerations in the project indicators, targets and activities, identifying women as leaders and decision-makers.

II. Resilience of smallholder farmers in Afghanistan to climate variability and extreme events

Afghanistan is one of the most vulnerable countries to the impacts of climate change. A complex mix of social, political and ecological factors – low levels of development, high dependence on climate sensitive sectors, pervasive conflict and the fragility of dry mountain ecosystem- limit the adaptive capacities of communities to climate change impacts. The Climate Change Strategy and Action Plan (CCSAP) for Afghanistan identified high levels of exposure and vulnerability, to climate change for most parts of Afghanistan. There are evidences of extreme events, with floods almost an annual occurrence in spring (every year between 2012 and 2015). There also were dry years in the country between 1996-2003, while the drought of 2008 was particularly severe. The CCSAP indicates that several key sectors are seriously vulnerable to climate change impacts including agriculture, water resources, forest and soil conservation, health and others.

Afghanistan is predominantly an agrarian society. Seven out of ten people rely on climate sensitive farming and herding for their livelihoods. Agriculture, which is the mainstay of rural economy, is primarily dependent on precipitation (rain and snow), as the climate is generally arid, and 40% of the rural households relying on agriculture do not receive any income during winter months. (With over 3000 HDDs/year the country experiences severe winter conditions). In terms of livelihood means, irrigated agriculture, livestock herders and dryland farmers are considered the most susceptible to the impacts of the various climatic hazards. The most likely adverse impacts of climate change in Afghanistan are drought related, including associated dynamics of

desertification and land degradation. Floods due to untimely rainfall and a general increase in temperature are of secondary importance. However, their impacts may be amplified due to more rapid spring snow melt as a result of higher temperatures, combined with the downstream effects of land degradation, loss of vegetative cover and land mismanagement.

In its Fourth Assessment Report, the IPCC indicated that the severity of climate change impacts depends not only on changes in temperature and precipitation patterns but on a host of other factors related to the various dimensions of poverty. Human development impacts are generally exaggerated where climate patterns interact with pre-existing social and economic vulnerabilities. The poor are most vulnerable to the effects of climate change in Afghanistan. According to the 2014 National Risk and Vulnerability Assessment (NRVA), 39.1% of population lives below the poverty line, with majority working in the agricultural sector. The Initial National Communications (INC) of the Afghanistan government to the UNFCCC mentions that climate change impacts could deepen hunger and poverty by reducing livelihood opportunities, agricultural production, and the availability of energy, water and other natural resources.

The distributional effects are more likely to fall upon women and children, and upon those involved in subsistence agriculture or pastoralism. Gender inequality is an important characteristic of poverty in Afghanistan. The vast majority of women do not participate in paid economic activities making them highly dependant on their husbands or families. Literacy rates are much lower than for men. During periods of drought, young women and children may be sold into marriage so that their families can afford to eat. Children are also highly vulnerable to climate change, given that they are responsible for small scale livestock herding and wood collection.

It is widely recognized that access to energy is a prerequisite for human development, overcome poverty, promote economic growth and employment opportunities, support the provision of social services, and essential for meeting basic and productive needs in households, enterprises and community institutions¹. Access to energy improves people's general physical and economic well-being which in turn provides the prerequisites for resilience adaptation. Access to energy allows rural population for diversification of livelihoods away from vulnerable activities which is a key factor in building resilience to adverse events, including the impacts of climate change.

In Afghanistan, only around a third of the population has access to modern and clean energy while in the rural areas most communities are not connected to the electricity grid. The share of energy in the total spending of rural households is high, up to 30% of income² which is a heavy burden

¹ Energy and Adaptation: Exploring how energy access can enable climate change adaptation.
<https://assets.publishing.service.gov.uk/media/57a08a19ed915d3cfd0005b8/Energy-Adaptation-Paper.pdf>
Energy, Poverty, and Development.

http://www.iiasa.ac.at/web/home/research/Flagship-Projects/Global-Energy-Assessment/GEA_Chapter2_development_hires.pdf

² Socio-Economic Impacts of Climate Change in Afghanistan: A Report to the Department for International Development

on the already tied budget of the rural population. The lack of access to energy, especially for agriculture and enterprise development, has considerably reduced rural livelihood options at the community level in Afghanistan. The Women Economic Empowerment- Rural Development Program (WEE-RDP) which supports rural enterprises, has identified specific instances where productivity and viability of rural industries such as agro-processing, food- processing and apiculture have been constrained due to lack of energy supply.

The proposed ‘Afghanistan rural energy market transformation initiative - Strengthening resilience of livelihoods through sustainable energy access’ is aimed at building the adaptive capacity of rural population. Services derived from energy, including lighting, cooking, and water heating, would enable development and help rural poor to meet basic needs. Support to cooperatives will result in higher economic productivity and increase in income. Electrification of community institutions, such as schools, health clinics and mosques will help in attracting greater provision and efficiency of support, adding to the quality of life and livelihoods.

III. Existing Gender Inequality in Afghanistan

Gender inequality is one of the main indicators of inequality and is played out along political, social and cultural dimensions. It is closely linked to poverty and other development challenges which is deeply-rooted in social norms and economic conditions with a greater impact on the poor, particularly women and young people.

a. Root causes for inequality

As a consequence of the Taliban rule in Afghanistan, the situation of women in Afghanistan is one of concern. During the Taliban regime, women had very little to no freedom, specifically in terms of civil liberties. The Taliban declared that women were forbidden to go to work and they were not to leave their homes unless accompanied by a male family member. When they did go out it was required that they had to wear an all-covering burqa. Under these restrictions, women were denied formal education while women were usually forced to stay at home.

After the fall of the Taliban regime, Afghanistan faced daunting challenges in terms of gender equality after years of abuse and oppression that left very few or no girls in school, a deficit of women professionals such as teachers and doctors, limited women’s participation in the labor force, women missing from political activities and decision making at all levels, and a near complete removal of women from public life.

There have been a number of areas of progress as well as setbacks for women in Afghanistan and gender equality since 2001. While there are no areas where the government has failed, there are also no areas where women perceived that they have met their commitments, according to the countries’ Gender Equality Report Card³.

<https://www.weadapt.org/sites/weadapt.org/files/legacy-new/placemarks/files/5345354491559sei-dfid-afghanistan-report-1-.pdf>

³ <https://reliefweb.int/sites/reliefweb.int/files/resources/GERC-English.pdf>

b. Poverty, food-security and labor force

Afghanistan is a Least Developed Country (LDC). With a population of around 30 million plus, Gross Domestic Product (GDP) was USD 19.36 billion in 2018. The GDP per capita is USD 521.

Agriculture is the main economic source for majority of the population. 40% of labor force is engaged in agricultural sector. However, the sector only accounts for 22% of GDP. Due to low agricultural production rate, 46.3% of households engaged in agricultural sector live below poverty line (National Risk and Vulnerability Assessment).

The Human Development Index (HDI) value for Afghanistan 2017 is 0.465 which put the country in the low human development category—positioning it at 168 out of 189 countries and territories. As per the multidimensional poverty index (MPI) developed by the Oxford Poverty & Human Development Initiative (OPHI), 66.2% of the population lives in multidimensional poverty where intensity of deprivation is 53.4%. Among the poor, 39.1% face severe multidimensional poverty. According to the OPHI, 72% of rural population lives in multidimensional poverty where intensity is 54.1%.⁴

Data on food security provides a better picture of poverty profile in Afghanistan. Based on the food consumption score and food-based coping strategies, food insecurity is estimated at 33% of total population, where 12% are severely food insecure, and 21% moderately food insecure. The proportion of the food insecure is significantly higher in rural areas, with 36 percent of the rural population being food insecure, compared to 30 percent of the urban population (ibid).

While poverty is a widespread phenomenon in Afghanistan, it has strong gender dimension too. Female headed household are much more vulnerable to food insecurity. According to the NRVA data, 67.1% of food-insecure households are headed by women while food-insecurity rate of male-headed household is 34.%. Low dietary diversity (consumption of non-diversified, unbalanced and unhealthy diet) is also much higher in female-headed households (63.2%) compare to male headed households (36.2%).

Women participation in labor force is significantly lower than men. While men's labor force participation rate is at 89%, the rate for women is low, at 29% of the working age population. Of total population of women that participate in the labor force, 73% are unpaid family workers while the rate of unpaid family workers among men is only 19%. Majority of the unpaid family female workers live in the rural area and are engaged in the agricultural sector. Women make up for 70%

⁴ oxford Poverty and Human Development Initiative. “Afghanistan Country Briefing”, Multidimensional Poverty Index Data Bank. OPHI, University of Oxford.

and 44% of the labor forces of homestead based craft industries and agricultural & livestock sectors respectively

In recent years' participation of women in the labor force has increased. In urban areas, women mainly work in small and medium enterprises (SMEs) and a growing number of female entrepreneurs have established SMEs. Women businesses association is now an active body in the Afghanistan Chamber of Commerce and Industries (ACCI). According to the Afghanistan Women's Business Federation (AWBF), women's entrepreneurship and economic activity participation in the past decade has changed such that, for example, women who formerly traded individually have gradually started forming groups.

In rural areas too, women are becoming more economically active. Through number of government and donor agency development programs, there has been a surge in establishment of women cooperatives. These cooperatives work in different areas, such as horticulture, livestock, poultry and food processing. Research on women cooperatives shows significant increase in income of members of cooperatives which in turn has positive effect on empowerment of women including boosted role in household decision-making as well as having better social status. The final evaluation of the UNDP Afghanistan Gender Equality Program (GEP II) found that women's income on average has increased by 200% where cooperatives were supported by the program. Aliabad Cooperative- women owned- quadrupled its sell of processed food after receiving food processing machines and solar panels for operating them. The GEP intervention also created additional 40 jobs in the Aliabad area.

In sum, despite widespread poverty and lower female labor participation, the country has also witnessed number of success cases in the recent years. Afghan women entrepreneurs are slowly increasing their share of the local market and rural women are coming together in the form of cooperatives to reap higher benefits from working together. While economic participation of women is still at infancy, the potential for growth and maturity is enormous particularly if specific development intervention targets them.

Access to energy is one such intervention that has proven to contribute to economic empowerment of women. A study in South Africa found that electrification of rural communities resulted in a 9% increase in female employment (Dinkelman). Another study conducted in Guatemala also shows similar result where electrification increases women employment (Grogan & Sadanand 2009). Both studies attribute the increase in employment to the fact that electricity frees up women's time by increasing their efficiency of domestic chores, such as cooking, and reducing the time they spent on collecting woods, thus allowing them to spend more time on education and other skill building activities.

c. Health

Over the past decade Afghanistan has made notable progress in increasing access to health services through construction of hospitals and health clinics, trainings of medical doctors and professionals and development of institutional framework governing the health sector. Life expectancy has increased from 44 to 60 years and maternal mortality has decreased from 1600 to 324 per 100,000 births. Despite recent progress, overall health condition of Afghanistan is still far from optimal. Per capita total expenditure on health is USD 55, one of the lowest in the world, and availability of physician per 10,000 people is only 2.7 (WHO). According to the estimates of the Ministry of Public Health, around 40% of population, all in rural areas, lives more than 2 hours of walking distance from nearest health facility.

Similar to poverty, health also has strong gender dimension. While majority of both Afghan men and women do not have access to high quality health services, women relatively suffer more. The current maternal mortality rate is one of the highest in the world. In 2011, Save the Children declared Afghanistan “the worst place in the world to be a mother.” According to UNICEF, around 41 per cent of deaths occur during pregnancy, 40 per cent during delivery, and 19 per cent in the two months after delivery. High fertility rate (5.3), poor antenatal care, low rates of skilled attendance at birth, adolescent pregnancies, maternal malnutrition, unequally distributed health care services and lack of obstetric care in rural areas are the major underlying causes of maternal deaths.

With 95% of rural households using traditional biomass fuels (dung, crop residues, wood, charcoal) for daily cooking, exposure (particularly for women and children) to indoor air pollutants is very high in Afghanistan. This has direct impact on health by increasing the risk of chronic obstructive pulmonary disease, worsening lung function and contributing to childhood pneumonia and lung cancer. Indoor air pollution is the biggest cause of premature deaths in Afghanistan estimated at 54,000 per year (WHO, 2009, country profile of environmental burden of disease in Afghanistan).

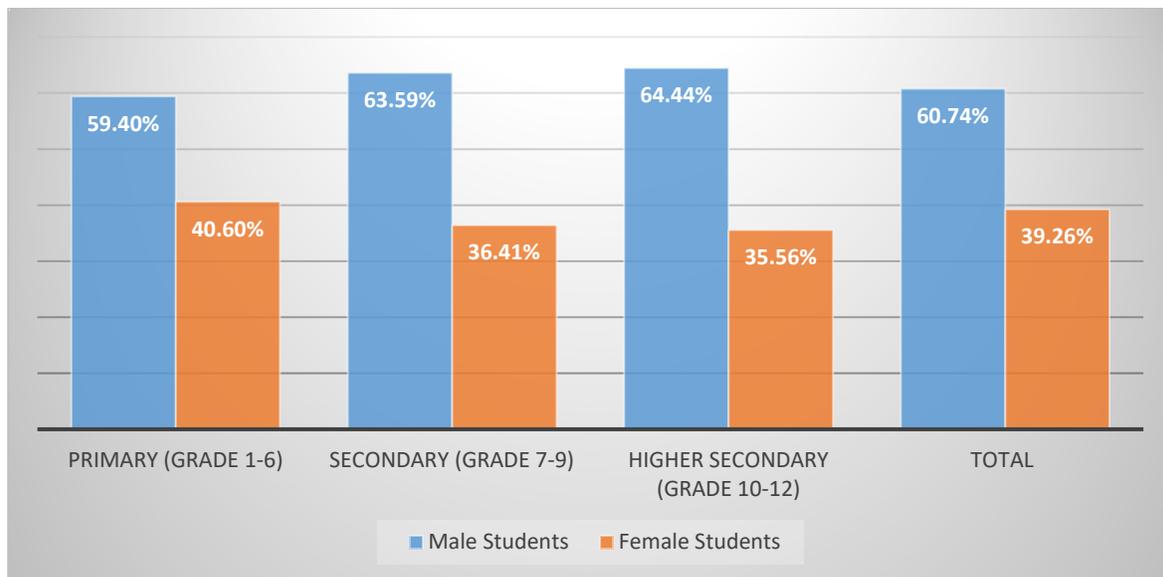
Climate change will have significant impact on health condition of majority of population. IPCC states that “climate change is projected to increase threats to human health”. Impacts of climate changes will have a negative effect on women’s health, if gender equality is not addressed in congruence with adaptation measures. Women are more vulnerable to effects of climate change in rural areas where they shoulder the major responsibility for household water supply, firewood fetching collection for cooking and heating. Women are more exposed to water borne diseases due to the nature of their roles in the community. During incidents of natural disaster, food prices increase and leads to a reduction in the quality or quantity of the food rural poor families are able to purchase. Afghan women that are already more food-insecure than men will have even less nutrient diet available to them.

Introduction of cleaner energy sources provide alternatives to fuel wood for cooking and heating resulting in significantly reduction of exposure of women and children to indoor air pollution. The use of renewable energy also reduces the overall reliance of communities on timber which in turn slows down deforestation and landslides thus reducing damaging force of natural disasters. Access to modern and affordable forms of energy can also play an important role in improving access to safe water for domestic use. Electrification of health clinics allows the provision of medical services at night, greater use of more advanced medical equipment, helps retain qualified staff in rural health centers, and allows local clinics to keep needed medicines on hand among other benefits.

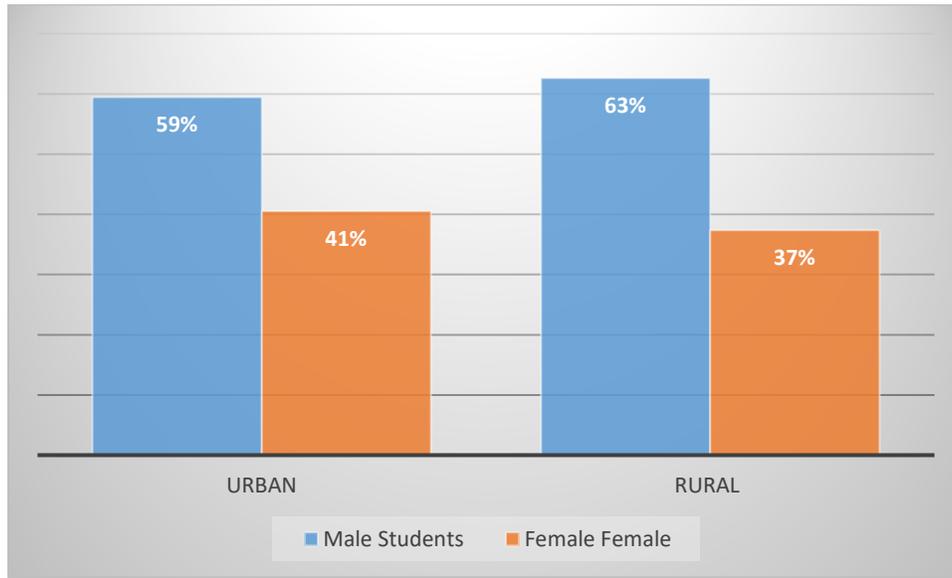
d. Education

Education has been the epicenter of development efforts since 2002. School enrollment has jumped from 0.8 million in 2001 to over 9 million in 2015, of which more than 3 million are female students. Number of schools has also tripled within on decade reaching to 15,510 school in 2012 from 6039 in 2002. Literacy rate has also increased but with significant gender and rural-urban gaps: 62 % of urban men and 33 % of urban women are literate, compared with only 35 % of rural men and 7 % of rural women.

The government of Afghanistan and donor agencies have made significant achievement in increasing female school enrollment. Currently more than 3 million girls go to school while the number in 2001 was almost zero. However still the ratio of male/female student is eschewed towards male students where for every two male students there is one female student. The male/female student ratio increases in higher grades; in other words, the number of female students decreases in secondary and higher secondary grades as shown in the following chart:



School enrollment gender gap is wider in rural areas. As the following charts illustrates, female students comprise 41% of students in urban areas while the figure for rural area is 37%. Lack of availability of secondary and higher secondary schools in a village is one of the reason that overall enrollment of girls is lower than boys as Afghan families not often allow their girls to walk a long distance to attend school.



School enrollment gender gap also varies among the provinces of Afghanistan. Female school enrollment is lower in Eastern and Southern provinces while it is relatively higher in Central, Northern and Western provinces. The following table shows school enrollment in provinces to be covered under the ‘Strengthening Resilience of Rural Livelihoods to Climate Risk through Sustainable Energy Access’ program. The male/female student enrollment ration is much higher in Bamiyan (Central), Herat (Western) and Sar-e-Pul (Northern) provinces while the gap significantly increases in Kandahar & Uruzgan (Southern) and Paktika (Eastern) provinces.

Province	Urban		Rural	
	Male Students	Female Students	Male Students	Female Students
Bamyan	61%	39%	53%	47%
Daikundi	53%	47%	55%	45%
Laghman	63%	37%	57%	43%
Parwan	61%	39%	65%	35%
Khost	67%	33%	66%	34%
Kandahar	69%	31%	79%	21%
Paktika	86%	14%	79%	21%
Uruzgan	87%	13%	85%	15%

e. Political Participation

Women have the same rights to vote and stand for electoral seats as men. The Constitution of Afghanistan ensures that for each province, there is at least one seat for a woman in the national Parliament. Due to this affirmative action, 25% of members of the parliament are women. Women participation has also been guaranteed at the provincial, district and community level. Similar to the parliament, women have reserved seats in the provincial councils which has the main responsibility of monitoring of government programs and projects and service delivery. Members of the parliament and the provincial councils are directly elected through votes where both men and women of age 18 and higher can vote.

In addition to the electoral bodies, international development organizations in a coordination with the government of Afghanistan have also established councils and committees at the district and community level to have direct decision making and oversight role in implementation of development programs. For example, Community Development Councils (CDCs) is elected rural institution actively involved in implementation and oversight of the Citizen Charter funded by the World Bank and implemented by the MRRD. CDCs play much wider role in decision making and conflict resolution at the community level than only being involved with the implementation of the mentioned development programmes. Recognized as representative bodies at the district and community level, CDCs are also involved in development of the provincial development plans and lobby for their communities at the provincial and national level.

The role of women in government leadership positions has also increased over the last decade. Women have been holding ministerial positions since 2001. Currently, four out of twenty-five ministers are women. Women are also appointed as deputy ministers, governors, mayors, and directors.

Although there has been progress in advancing women's political participation, more needs to be done in this direction. Overall political participation and involvement in decision-making and government leadership positions is still much lower compare to men. However, over the last decade a strong civil society advocating for women's right has emerged which constantly works towards greater representation of women in Afghanistan's policymaking. The country is in the right path of advancing women's rights and representation in political arena, but achieving complete equality will take much longer time.

f. Gender-based violence

Afghanistan is one of the worst countries in the world to be born female. It ranks 168 out of 185 on the UNDP's 2017 Gender Inequality Index. Often the news of brutal cases of violence against women in Afghanistan makes international headlines.

The report published by the Afghanistan's Independent Human Rights Commission indicates that

the total number of incidences of violence against women obtained from the incidences registered by the complainants in 2017 amounts to 4873 incidences. The most widespread and common type of violence against women is physical violence, especially beating. Out of the registered figures of violence against women in 2017 almost 1468 incidences which make up 30.1 percent of the registered incidence of violence against women are related to physical violence. A total of 412 other incidences which cover 8.5 percent of all the incidences of violence against women occurred during this period are related to different types of sexual violence while 1482 incidences which make up 30.4 percent of all the registered incidences of violence against women are related to verbal and psychological violence. Similarly, 1024 incidences which make up 21 percent of all incidences of violence against women are related to economic violence against women. The remaining 487 incidences which included 10 percent of the registered incidences are related to other types of violence against women. (AIHRC Report on Violence Against Women).

The Government has taken a number of initiatives to facilitate prosecution of perpetrators. These measures include establishment of special courts for the cases of violence against women in 26 provinces and this is expected to increase to 34 provinces, national coverage. Also a decision has been made to establish a special branch within the Supreme Court to specifically rule on the cases of violence against women, juvenile and family disputes.

Child marriage, a form of gender-based violence (GBV), is illegal but widespread in Afghanistan. Afghanistan's minimum age of marriage for girls is 16 or 15 years old, which is well below the internationally recommended standard of 18. Child marriages mainly happen in rural areas, especially along the borders with Pakistan (UNFPA Afghanistan⁵).

Gender-based violence also intersects with issues around access to and control over natural resources. For example, research has shown that gender-differentiated roles related to land and resources can put women in a more vulnerable position to suffer GBV while carrying out daily responsibilities, such as fuel, firewood and water collection activities. When attempting to enter into agricultural markets, women can experience intimate partner violence as their partners seek to control finances and maintain economic dependencies (IUCN⁶).

g. Gender Inequality Index

Through the years, several indices have been developed to quantify the concept of gender inequality. The United Nations Development Programme uses the Gender Inequality Index (GII) and Gender Development Index (GDI). The GII is a composite measure that shows inequality in achievement between women and men in reproductive health, empowerment and the labor market while measuring achievement in human development in three areas: health, education, and command over economic resources. The GDI considers the gender gaps on human development between men and women.

⁵ UNFPA Afghanistan: <https://afghanistan.unfpa.org/en/node/15233>

⁶ IUCN Gender-based violence and environment linkages: <https://portals.iucn.org/library/node/48969>

Afghanistan has a GII of 0.653 as of 2017. The GDI value as of 2017 is 0.625, which has ranked Afghanistan as 168 out of 185. Afghans ranks lower in both GDI and GII compare to its neighboring countries as shown in the following table.

	Gender Development Index	Gender Inequality Index
Afghanistan	0.625	0.653
Pakistan	0.750	0.541
India	0.841	0.524
Iran	0.871	0.461
Tajikistan	0.933	0.317
Uzbekistan	0.945	0.274

IV. Legal and Administrative Framework Protecting Women and Protecting Gender Equality

With the UN-convened Bonn agreement of 2001 signaling a different phase in Afghan history, significant achievement for women’s rights have been seen in Afghanistan. Nationally, the processes for these include:

- the 2001 Brussels Afghan Women’s Summit for Democracy;
- the 2001 creation of the first Ministry of Women’s Affairs;
- the 2002 Declaration of the Essential Rights of Afghan Women; the 2002 National Area Based Development Program;
- the establishment of the Afghanistan Independent Human Rights Commission in 2002;
- the 2003 National Solidarity Program (NSP);
- Twenty percent female representation in the Constitutional Loya Jirga;
- the establishment of a 27 percent baseline quota for women’s political representation in the Wolesi Jirga (House of People);
- a baseline 17 percent quota in the Meshrano Jirga (House of Elders);
- a statutory requirement of female representation in 25 percent of Provincial Council seats;
- the successful passage of the 2004 Afghan Constitution;
- the 2005 Interim Afghanistan National Development Strategy;
- the 2005 Afghanistan Millennium Development Goals;
- the 2008 Afghanistan National Development Strategy (2008-13);
- the 2006 Action Plan on Peace, Reconciliation, and Justice in Afghanistan;
- the 2007 National Action Plan for Women of Afghanistan (2007-17)
- The 2009 Law on the Elimination of Violence against women

- the 2010 National Priority Programs with Women empowerment being one of the national priority programs.

Article 22 of the constitution guarantees equal rights to man and women; it reads: “*Any kind of discrimination and distinction between citizens of Afghanistan shall be forbidden. The citizens of Afghanistan, man and woman, have equal rights and duties before the law.*” This article guarantees the application of the principles of equality in implementation of all articles of the constitution. Recognizing the fact that the women of Afghanistan do not benefit from the same means and opportunities to impact development and benefit from development in the country, the need for affirmative action, where necessary, is also justified in alignment with application of Article 22 of the constitution.

Article 54 of the Constitution also calls for abolishment of the harmful practices that inhibit the wellbeing of the Afghan women. Likewise, many other articles of the constitution make specific reference to women’s needs in education, health, political participation etc. Articles 83 and 84 of the Constitution guarantees election of at least two women from province to the Lower House of the Parliament and selection of 50% women members by the President for the Upper House of the Parliament.

In addition to the constitution, international laws also provide legal framework for protecting women. The government of Afghanistan ratified the Convention on the Elimination of all forms of Discrimination against Women (CEDAW), without any reservations, in March 2003, which obligates governments to:

- Incorporate the principle of equality of men and women and non-discrimination in its legal system and abolish all discriminatory laws;
- Take all appropriate measures, including legislation and temporary special measures, so that women can enjoy all their human rights and fundamental freedoms without any discrimination, systematic or otherwise, by persons, organizations or enterprises.
- Establish tribunals and other public institutions to ensure the effective protection of women against discrimination;

Countries that have ratified or acceded to the Convention are legally bound to put its provisions into practice. They are also committed to submit national reports, at least every four years, on measures they have taken to comply with their treaty obligations. Afghanistan submitted its combined periodic and interim report on CEDAW in 2011.

Another key national document is the National Action Plan for the Women of Afghanistan (NAPWA) with the timeframe of 2008-2018, a ten-year plan towards addressing gaps in gender equality and women’s rights and empowerment in Afghanistan. As the central instrument for women’s rights and empowerment, the plan envisions creation of “*a condition where women take*

control and determine the direction of their lives, develop their full potential, make enlightened decisions, and exert positive influence over processes, mechanisms, and decisions that affect their well-being.”

The broad strategy towards implementation of NAPWA focuses on the three following areas:

- Elimination of discrimination against women
- Development of women’s human capital
- Promotion of women’s leadership

In general, the three board areas above, will address the needs of women for conducive environments, their access to opportunities, resources and services as well as their share of power.

The government of Afghanistan also endorsed its National Action Plan on implementation of United Nations Security Council Resolution 1325 on Women, Peace and Security in 2015. The Resolution stresses the importance of women’s participation in conflict resolution and post recovery development, as well as their protection during and after conflicts. Strategic priorities and objectives of the NAP 1325, fall into the four categories of; participation of women at all levels of decision making in political and peace processes as well in civil service; protection of women from the vulnerabilities during and after conflict; prevention of sexual and other kinds of violence against women; relief and recovery of women by providing them with access to resources and opportunities and providing a space for their involvement in the post conflict development processes.

While above mentioned key regulatory documents provide the overall legal framework for protecting women’s right and guarantees gender equality, the government of Afghanistan has also put in place administrative system for working towards gender equality and protection of women’s rights. Established in 2002, the Ministry of Women Affairs (MoWA) has policymaking role to promote women’s rights and monitoring and evaluation responsibility to monitor development and administrative work of other ministries in relation to women’s rights. In recent years all line ministries have also established designated gender units responsible for all gender related issues of the ministry. The gender units are part of the planning and budgeting committees of the ministry and have the right to formally push for gender considerations in planning and budgeting process. The current administration has also established the high level gender subcommittee of the cabinet chaired by the Second Vice President. All ministers are members of the gender subcommittee of the cabinet where they report on activities related to gender. Through technical support of UNDP and UN-Women, the Ministry of Finance has also introduced gender budgeting. The initiative is currently being piloted in 6 line ministries with plan to be rolled over to all budgetary units of the government.

V. Gender issues in response to the impact of climate change

It is important to note that in order to create transformational change, women are not just seen as

climate change victims or beneficiaries. Women are imperative to climate change adaptation efforts. They practice adaptive measures as a part of daily life – through farming and in the face of increasing risks – through disaster recovery and preparation⁷. By utilizing these existing skills into project design and implementation and by providing a platform in which to empower women enables women’s influence to rise from a household to a community and national level. Leadership and decision-making capacities and opportunities increase.

Women from the poorest households often pay the most, sacrifice the most, are the most disadvantaged and the least resilient.

Women are impacted differently by climate change in the following ways:

- Women rely more on natural resources for their livelihoods, with staple crops providing up to 90 percent of food in farming districts of some countries and 60–80 percent of food in most developing countries. Women struggle to fulfill their key responsibility for the production of food, in spite of the detrimental impacts of climate change on agriculture.
- Women and children are often responsible for gathering water and fuel in traditional agrarian societies, tasks that are laborious, challenging and time consuming. These tasks become more time intensive due to the impact of climate change;
- Climate change is linked to increased incidences of tropical diseases such as cholera and malaria, which have severe impacts on women because of their limited access to medical services and their responsibility to care for the sick;
- In some societies more women are dying during natural disasters because men receive preferential treatment in rescue and relief efforts;
- Women are disproportionately affected due to vulnerability and the capacity to adapt to the process of climate change are affected by various factors, including age, education, social status, wealth, access to resources, sex, gender and many other social dimensions;
- In addition, at the time of crisis, women’s needs are not considered priority in recovery programmes.

Gender issues in relation to the project

The Afghanistan Gender Equality Report Card illustrates the level of gender inequality in Afghanistan in related to energy access⁸. While access to water and electricity has improved, in 2014, only 17% of Afghan women reported that their household always has access to electricity, compared to 18% who reported they only sometimes have access, 14% whom rarely have access, and 34% who never have access to electricity. 64% of women were somewhat or very dissatisfied with electricity in their area. Related to electricity access is connection to the

⁷ <http://asiapacificadapt.net/gender-sourcebook/wp-content/themes/iges/pdf/integrating-gender-sourcebook.pdf>

⁸ Equality for Peace and Democracy, 2015, Gender Equality Report Card

internet. Only 2% of Afghan women are connected to the Internet for obtaining information, and though 88% of the population lives within the combined network of the four largest mobile network organizations and 80% have some access to a mobile phone, six out of ten Afghan women still do not use mobile phones for accessing information. Access to electricity is a crucial issue for gender equality. Access to electricity can dramatically cut the amount of time spent on household work, and access to electricity can considerably impact women's time use. This furthermore frees up time for women and girls to participate in things like education, which has long-term implications for gender equality.

Electricity may increase women's knowledge in important ways. In contexts where women became directly involved in electricity supply, they gained a new type of skills as well as higher status⁹. This exemplifies how the gendered organisation of supply may affect women's human resources and their wider empowerment. In Afghanistan, women's access to television and radio programmes provided them with information about women's rights, which they believed had enhanced their role in family decision-making (ibid.).

Studies on gender-sensitive electricity interventions have documented that women's direct involvement in supply increased their decision-making power and that this positively affected gender norms and women's social position in the communities¹⁰. This occurred through an expansion in the type of roles considered possible and appropriate for women. In Afghanistan, training women to install and maintain SHS was reported to change some men's perceptions of a woman's possible roles. As expressed by a man, himself being a mullah, in the aftermath of the project: 'I saw that women and men are equal in this and that women have capabilities'¹¹. Also contributing to women's higher esteem was the trained women's ability to endure the hardship experienced when parting from their family during the 6 months' training period. Their 'sacrifice' of leaving behind what is seen as the most important institution in life; family and community, in order to help bring development, was often mentioned by both women and men as warranting much respect and reflecting the women's strength (ibid.).

Stakeholder consultations took place at the Gender Focal Team Meetings consisting of government agencies, NGOs, CSOs and UN agencies which resulted in several observations regarding gender related challenges as well as opportunities:

Access to funding/lack of funding

According to the Afghanistan Research and Evaluation Unit, 85% of the private sector consists of Small and Medium Enterprises. SMEs, however, face challenges and obstacles with regard to access to finance while women-led businesses in particular have difficulties acquiring loans. Access to finance for women-led businesses is more complicated than for male-led businesses. While commercial banks and microfinance institutions offer loans, the insurance for those loans

⁹ Winther et al, Women's empowerment through electricity access: scoping study and proposal for a framework of analysis, Journal of Development Effectiveness, Vol 9, no. 3, 389-417

¹⁰ Winther et al, Women's empowerment through electricity access: scoping study and proposal for a framework of analysis, Journal of Development Effectiveness, Vol 9, no. 3, 389-417

¹¹ Standal, K. 2008. "Giving light and hope in Rural Afghanistan: Enlightening women's lives with solar energy." Master Thesis, University of Oslo, Norway

largely relies on property or land ownership, which is limited for Afghan women¹². Historically, properties are registered by male household members. Involvement of women in capacity building activities targeting private sector (RESCO) development, should therefore ensure sufficient female participation (addressed in Activity 2.3).

Female under-representation in senior level (decision-making) positions

Current challenges in Afghanistan include high maternal mortality rates and unequal pay for women for similar work as compared to men. With fewer women elected to office, women have a weaker voice and influence than men in politics. Female representation in legislator, senior official and manager roles and Afghanistan's political atmosphere is still very low. Involvement of women in government targeted capacity building is therefore crucial (addressed in Activity 1.1, Activity 1.2, Activity 1.3, Activity 3.3 and Activity 3.4).

Limitation in the technology field

As described previously, the ratio of male/female student is still eschewed towards male students where for every two male students there is one female student. It also has been observed that the number of female professionals in the technology field is limited. Skills and access to technology of rural women and girls are also quite low. Skilled technicians for off-grid electrification still are in shortage. It is essential to build capacity in the energy sector with a limited quantity of female participants. Women participation and capacity building should be encouraged through various stages of the project life-cycle (addressed in Activity 2.1, Activity 2.2 and Activity 2.3).

VI. Recommendations

a. Gender analysis

The gender analysis undertaken at the onset and design of this project acts as an entry point for gender mainstreaming throughout implementation. Stakeholder consultations took place at the Gender Focal Team Meetings consist of government agencies, NGOs, CSOs and UN agencies. Results from the consultations are detailed below in the Stakeholder engagement section further below.

The gender analysis, through stakeholder engagement and consultation enabled:

- Assessment of the gender-related activities in responding to the expanding threat of climate change, including gender roles and responsibilities, resource use and management, and decision making raised by the project;
- Engagement, development and input into the design of responding to the expanding threat of climate change and building the resilience of the most vulnerable communities through sustainable energy access;
- Demonstration of the need for gender-disaggregated data and indicators to establish a

¹² Afghanistan Research and Evaluation Unit, 2014, Small and Medium Enterprises Development and Regional Trade in Afghanistan

baseline in which to measure improvements and identify areas of focus; and

- Establishment of recommendations to incorporate into the Gender Assessment Action Plan.

Through the stakeholder engagement and consultations, the gender related activities resulting from the assessment and the recommendations for design of project activities, e.g. related to encouraging productive use aimed at higher agricultural productivity through decreased post-harvest losses and decreased loss of livestock due to extreme weather, have been included in the project design. Gender disaggregated data has been included in the Logical Framework for the project.

b. Project design and implementation

Addressing gender dimensions within the project design and implementation, this proposal identifies and integrates interventions to provide gender responsive and transformative results.

The project design will take into consideration the following gender implications:

- Women’s role in agricultural production; analysis of gender division of labor (e.g. gender-differentiated roles, responsibilities, and needs);
- Women’s access to, and control over, natural resources and the goods and services that they provide (Increasing women’s access to and control over resources, improves the effectiveness of such projects);
- Possibilities and potential of women participation in Rural Energy Service Companies (RESCOs);
- Identification of gaps in equality through the use of sex-disaggregated data enabling development of gender action plan to close those gaps, devoting resources and expertise for implementing such strategies, monitoring the results of implementation, and holding individuals and institutions accountable for outcomes that promote gender equality;
- Assess how gender is currently mainstreaming in the energy sector, to develop need assessments, enable planning, and be effective in monitoring and evaluation;
- Involve women and men both at macro and micro level in climate resilience process;
- Evaluation of women’s work time, both as paid and unpaid;
- Gather data on the time women spent collecting biomass fuel;
- Identify specific strategies to include / target female-headed households; and
- Promote advocacy and awareness adjusted to most effectively reflect gender-specific differences. Strategies used in the project are tailored, taking into account such differences;

The project implementation will take into consideration the following gender implications:

- Division of labor on small farms, taking into consideration gender specific views on management;
- Inclusion of a Gender Specialist position within the project to implement gender related activities;
- Inclusion of all stakeholders involved in the project to develop awareness raising / training aimed at drawing attention to the implication of climate resilience adaptation and gender equality;
- Targeting women agricultural cooperatives; and
- Undertaking community discussions and dialogue in relation to gender and climate resilience and adaptation strategies with the inclusion of indigenous knowledge.

During project implementation, qualitative assessments will be conducted on the gender-specific benefits that can be directly associated to the project. This will be incorporated in the annual Project Implementation Report, Mid-Term Report, and Terminal Evaluation. Indicators to quantify the achievement of project objectives in relation to gender equality will include men and women who had access to affordable solutions, number of men and women employed from the jobs created by the project, training opportunities, knowledge management and information dissemination.

c. Stakeholder engagement

The stakeholder consultations and engagement of women’s organizations promote gender equality at the local as well as at national level. The involvement of women’s organizations in the project design will assist in the identification of relevant gender issues within the country’s social context, and implementation and monitoring of gender aspects of the project.

Number of consultations with the Gender Focal Team (GFT) took place during project design. The target populations were women and men as representatives of all stakeholder groups affected by this proposal.

The stakeholder engagement component of this annex, captures the specific issues and difficulties that women face in responding to the impacts of climate change and building the resilience of the most vulnerable communities through sustainable energy access.

The results captured as are follows:

- Overall knowledge about climate change issues is little;
- There is a gap in capacity (finance, human, knowledge and skill) to mainstream climate issues in relation to gender;
- There is a gap in capacity for women led business to access finance, which relates to RESCO development;
- There is underrepresentation of women in governmental decision making

positions;

- There is a limited number of female professionals in technology
- There is no work integration between the Ministry of Women Affairs, Ministry of Energy and Water and the Ministry of Rural Rehabilitation and Development on issues related to gender and access to energy; and
- Lack of sex-disaggregated data in all sectors (e.g. livelihoods, disasters' preparedness, protection of environment, health and well-being) often leads to an underestimation of women's role and contribution.

The recommendations by the Gender Focal Team include:

- Community level awareness raising at all levels;
- (Government) staff capacity building on gender and climate change analysis, planning, budgeting and mainstreaming;
- Identification of the issues and challenges that hinder men, women in accessing all levels of policy and decision-making processes;
- Engagement of women in order to play a leadership role promoting access to sustainable energy, including in RESCOs;
- Engagement of civic associations;
- Identification and analysis of traditional versus modern community structure in relation to climate resilience and coping mechanisms. Here 'traditional structure' refers to indigenous institution and their auxiliary functions while modern community structure refers to Government and NGOs backed community organizations such as Community Development Councils (CDCs), and District Development Assemblies (DDAs); and
- Engagement of women in encouraging income generating activities in relation to productive use potential from energy access.

Stakeholder consultations at the sites of the 3 solar mini-grids to be constructed in the project also identified opportunities for productive use of energy whereby women can have an important role to play as women are usually interested to generate additional income for their households. The consultations indicated a high level of entrepreneurship among the communities in the sites. At the same time, power access seems to be the principal hurdle in the way of greater enterprise development. With a strong horticulture sector, a prominent ramp-up business model could include cold storages for agricultural products and fruits. Given the strong focus on animal husbandry, dairy and milk-product development is another significant area where the project can support enterprise development. Finally, electricity powered, mechanical shearing and slaughterhouses are promising activities with good returns on an investment. Productive use of energy with a strong focus on productive use potential that leads to higher agricultural productivity (decreased post-harvest losses and decreased loss of livestock due to extreme weather) should therefore be a prominent element in capacity building of community beneficiaries and should have a specific focus on women.

d. Monitoring and evaluation

Through onset analysis, data has been collated to establish a baseline. This data shall be monitored against throughout implementation and evaluation.

The analysis identified the differences between men and women within at-risk populations. In order to monitor and evaluate progress of the project, the following indicators can be measured:

Quantitative Outcomes:

- Women and men as beneficiaries of project activities related to workshops for policy development and setting-up and training of RESCOs;
- Female/male-headed households as beneficiaries in relation to development of investment design reports for mini-grids;

Qualitative outcomes:

- Opportunities to generate additional income as a result of energy access. Women are more likely to respond to incentives that address their family's basic needs, such as better health and nutrition, linking agriculture and food security improvements;
- Contribution to self-esteem raised and empowerment of women in the community, e.g. as a result of RESCO training;
- Effectiveness of awareness increasing; and
- Ability of women and men to identify their environmental changes and risks based on their different roles and access to resources.

VII. Proposed Gender Action Plan

The project recognizes the importance of gender inclusion in the project interventions. Hence, the project not only incorporates renewable energy technologies that would benefit women by giving them access to cleaner energy, better health and education facilities; but also involves and benefits women enterprises on the supply side of renewable energy development by involving women agricultural cooperatives and tailoring shops at community level. Additionally, the project interventions will build capacity of women in the area of renewable energy at national level.

The project will also work with the religious leaders and Mullahs that are active in the three locations where solar mini-grids are being implemented, to raise awareness on women's rights and opportunities that energy access may offer in strengthening women's rights. Although not a direct topic in this project, the issue of gender-based violence may also be raised during such consultations.

The project is expected to achieve the following results in advancing gender equality and women's empowerment:

- Increased entrepreneurship opportunities for women among the communities in the three sites for solar mini-grid implementation, resulting from capacity building on productive use of energy
- Improved understanding and best practices in delivering gender responsive renewable energy services and rural mini-grid development in the target areas.
- Increased women's technical expertise in the area of renewable energy in general, and mini-grid development specifically, at national level as a result of capacity building activities

This Gender Action plan provides suggested entry points for gender-responsive actions to be taken under each of the Activity areas of the project. In addition, specific indicators are also proposed to measure and track progress on these actions at the activity level. This can be incorporated into the detailed M&E plan which will be developed at the start of implementation, and provides concrete recommendations on how to ensure gender (including disaggregated data) continues to be collected and measured throughout implementation.

Activities	Targets and Indicators	Timeline	Partner Institutions	Budget (USD)
Output 1: Energy Market De-risking by policy, regulatory and institutional development for improved renewable energy (RE) services in rural areas				
<ul style="list-style-type: none"> • Ensure involvement of women in government targeted capacity building • Support women’s professional development and decision-making roles in the renewable energy sector, including government and the private sector • Conduct training for MRRD, MEW and DABS government staff on gender sensitization of energy sector policies and strategies. • Ensure involvement of women in government targeted capacity building, including training technical standards for design & operation of mini-grids to project beneficiaries including both men and women. If deemed necessary, organize separate training • Assess if the intervention has the potential to promote gender equality and/or women’s empowerment or is likely to have an adverse gender impact or increases women’s exposure to risk. 	<ul style="list-style-type: none"> • Baseline: 0 • 160 female government and non- government officials trained with enhanced capacity in mini-grid policy, technical standards for design & operation of mini-grids; at least 75% assesses applicability in daily work to be “useful” for assignment tasks • Indicator: nr of female staff trained; % of participants assessing training as “useful” for assignment tasks • Baseline: 0 • Target: 500 Government and non- Government officials trained (of which 100 women): 80% indicate to have better understanding of gender impact and opportunities for gender inclusiveness of rural mini-grid development • Indicator: Government and non-Government officials (20% females) with enhanced understanding of gender impact and opportunities for gender inclusiveness of rural mini-grid development 	<p>Q4 2020 – Q3 2022</p> <p>Q4 2020 - Q4 2023</p>	<ul style="list-style-type: none"> • Project Management Office (PMO), Gender Specialist • PMO and Ministry of Rural Rehabilitation and Development (MRRD) 	<p>Included in training budget</p> <p>Included in training budget</p>
Activities	Targets and Indicators	Timeline	Partner Institutions	Budget (USD)
Output 2: Social Acceptance Risk and Labour Risk de-risked by enhanced awareness and knowledge of government entities, beneficiaries and market actors on RE mini-grids				

<ul style="list-style-type: none"> • Provide technical training to project beneficiaries including both men and women. If deemed necessary, organize separate training classes for male and female participants. Ensure that training and coaching program includes how to use mini-grids to increase family income benefit. • Work with the religious leaders and Mullahs to raise awareness on women’s rights during the Friday prayers. • Ensure mini-grid implementation addresses productive use issues priorities by women • Ensure that training activities are gender inclusive and participatory • Increase awareness on the gender-related issues on RE productive use and demand-side issues, particularly those areas prioritized by women 	<ul style="list-style-type: none"> • Baseline: 0 • Target: 400 women involved in capacity building on productive use potential trained in rural RE mini-grid systems planning • Indicator: # of women in communities trained <ul style="list-style-type: none"> • Baseline = Level 1 • Target = Level 4 • Indicator: Level of capability¹³ of community and local business representatives in Khost, Parwan and Kandahar in identifying productive use opportunities 	<p>Q1 2021 – Q1 2023</p> <p>Q3 2021 – Q3 2023</p>	<ul style="list-style-type: none"> • PMO, Gender Specialist and Ministry of Rural Rehabilitation and Development (MRRD) • PMO, Gender Specialist and Ministry of Rural Rehabilitation and Development (MRRD) 	<p>Included in training budget</p> <p>Included in training budget</p>
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Activities	Targets and Indicators	Timeline	Partner Institutions	Budget (USD)
Output 3. Construction of three solar mini-grids and set-up of upscaling platform				
<ul style="list-style-type: none"> • Assess if the construction of 3 solar mini-grids - mini-grid in Kandahar, Khost and Parwan has the potential to promote gender equality and/or women’s empowerment or is likely to have an adverse gender impact or increases women’s exposure to risk. • Develop gender responsive standards for social and environmental safeguards regulations for RE mini-grid development 	<ul style="list-style-type: none"> • Baseline: 0 • Target: Implementation Assessments of 3 Solar Mini-grids mini-grids in Kandahar, Khost and Parwan include substantive analysis of gender considerations, including women’s priorities for productive use and demand side issues. 	<p>Q1 2020 – Q4 2023</p>	<ul style="list-style-type: none"> • PMO, Gender Specialist and Ministry of Rural Rehabilitation and Development (MRRD) 	<p>Included in budget development 3 solar mini-grids</p>

¹³ “Capable of identifying productive use opportunities” is based on a scale where 1 = limited to no knowledge on productive use; Level 2 = households and businesses aware of renewable energy and know how/where to get related information; Level 3 = households and businesses engaged with support activities and requesting additional information on productive use for their specific situation; Level 4 = households and business knowledgeable about productive energy use and identified concrete opportunities by means of expanding business or introducing new business

<ul style="list-style-type: none"> • Collect sex-disaggregated data and gender specific information related to the 5 mini-grid locations for which investment design reports will be developed. • Assess if the design packages of-mini-grids have the potential to promote gender equality and/or women’s empowerment or is likely to have an adverse gender impact or increases women’s exposure to risk. 	<ul style="list-style-type: none"> • Indicator: # of Implementation Assessments with substantive analysis of gender considerations • Baseline: 0 • Target: 5 detailed investment design reports developed for RE mini-grids in pre-identified areas in line with gender responsive green procurement guidelines and social and environmental safeguards regulations, including women’s priorities for productive use and demand side issues • Indicator: # of investment design reports with gender responsive green procurement guidelines and safeguards regulations including women’s priorities for productive use and demand side issues 	<p>Q1 2020 – Q4 2023</p>	<ul style="list-style-type: none"> • PMO, Gender Specialist and Ministry of Rural Rehabilitation and Development (MRRD) 	<p>Included in budget development 5 mini-grid design reports</p>
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