Sudan, National Child Project under the GEF Africa Mini-grid Programme

Part I: Project Information

Name of Parent Program
GEF-7 Africa Minigrids Program

GEF ID
10827

Project Type
FSP

Type of Trust Fund
GET

CBIT/NGI
CBIT **No**
NGI **No**

Project Title
Sudan, National Child Project under the GEF Africa Mini-grid Programme

Countries
Sudan

Agency(ies)
UNDP

Other Executing Partner(s)
Ministry of Energy and Petroleum

Executing Partner Type
Government

GEF Focal Area
Climate Change

Taxonomy

Climate Change, Focal Areas, United Nations Framework Convention on Climate Change, Paris Agreement, Nationally Determined Contribution, Enabling Activities, Climate Change Mitigation, Renewable Energy, Energy Efficiency, Financing, Technology Transfer, Influencing models, Transform policy and regulatory environments, Deploy innovative financial instruments, Strengthen institutional capacity and decision-making, Convene multi-stakeholder alliances, Demonstrate innovative approache, Stakeholders, Beneficiaries, Local Communities, Type of Engagement, Private Sector, Civil Society, Gender Equality, Gender Mainstreaming, Capacity, Knowledge and Research, Innovation, Capacity Development, Knowledge Generation, Learning

Rio Markers

Climate Change Mitigation

Climate Change Mitigation 2

Climate Change Adaptation

Climate Change Adaptation 2

Submission Date

6/19/2021

Expected Implementation Start

4/1/2022

Expected Completion Date

3/31/2026

Duration

48In Months

Agency Fee($)

237,353.00

A. FOCAL/NON-FOCAL AREA ELEMENTS

Objectives/Programs	Focal Area Outcomes	Trust Fund	GEF Amount($)	Co-Fin Amount($)
CCM-1-1	Promote innovation and technology transfer for sustainable energy breakthroughs for decentralized power with energy usage	GET	2,637,246.00	5,550,000.00
		Total Project Cost($)	**2,637,246.00**	**5,550,000.00**

B. Project description summary

Project Objective

Supporting access to clean energy by increasing the financial viability, and promoting scaled-up commercial investment, in low carbon mini grids in Sudan, with a focus on cost reduction levers and innovative business models

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)
Component 1: Policy and Regulation	Technical Assistance	Outcome 1.1.Stakeholder ownership in a national mini-grid delivery model is advanced, and appropriate policies and regulations are adopted to facilitate investment in low-carbon mini-grids	Output 1.1.1. Mini-grid delivery model(s) identified from national dialogues on mini-grid delivery models Output 1.1.2. Registration process for Low Voltage mini-grids in place and disseminated among stakeholders Output 1.1.3. A full mini-grid regulatory framework is in place and adopted by MoEP and ERA through a series of inclusive national dialogues, with a streamlined licensing process and clear rules and requirements defined. Output 1.1.4. Mini-grid DREI techno-economic analyses carried out to propose most cost-effective basket of policy and financial de-risking instruments and contribute	GET	446,700.00	650,994.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)
Component 2: Business Model Innovation with Private Sector	Technical Assistance	Outcome 1.2 Innovative business models based on cost reduction are operationalized, with strengthened private sector participation in solar PV-battery or low-carbon mini-grid development	Output 1.2.1 Two to four (2-4) solar PV diesel hybrid mini-grids successfully implemented, operational, and maintained by the private sector, involving women?s vocational training and participation, leading to cost-reduction in mini-grids Output 1.2.2 Capacity of potential tender bidders (private sector developers) strengthened to consider innovative business models and cost-reduction levers. This output will also benefit from Activity 3.1.2.1 (hands-on coaching on mini-grid developers) Output 1.2.3 A ?solar sister? (brand name) programme is in place, that supports and capacitates Sudanese women on technical, managerial, and economic	GET	417,127.00	423,135.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)
Component 2: Business Model Innovation with Private Sector	Investment	Outcome 1.2 Innovative business models based on cost reduction are operationalized, with strengthened private sector participation in solar PV-battery or low-carbon mini-grid development	Output 1.2.1 Two to four (2-4) solar PV diesel hybrid mini-grids successfully implemented, operational, and maintained by the private sector, involving women?s vocational training and participation, leading to cost-reduction in mini-grids Output 1.2.2 Capacity of potential tender bidders (private sector developers) strengthened to consider innovative business models and cost-reduction levers. This output will also benefit from Activity 3.1.2.1 (hands-on coaching on mini-grid developers) Output 1.2.3 A ?solar sister? (brand name) programme is in place, that supports and capacitates Sudanese women on technical, managerial, and economic	GET	1,189,878.00	3,169,000.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)
Component 3: Innovative Financing for Mini-grids	Technical Assistance	Outcome 1.1.Stakeholder ownership in a national mini-grid delivery model is advanced, and appropriate policies and regulations are adopted to facilitate investment in low-carbon mini-grids	Output 1.3.1. Design support for mini-grid innovative financing mechanisms Output 1.3.2. Financing needs to support the uptake of mini-grids are assessed and identified Output 1.2.3. Feasibility study support provided to mini-grid developers, creating a pipeline of investible assets in unelectrified communities in Sudan	GET	223,821.00	537,627.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)
Component 4: Digital, Knowledge Management, and Monitoring and Evaluation	Technical Assistance	Outcome 1.4 Digitalization and data mainstreamed, across stakeholders, in particular into the existing public mini-grid infrastructure where digital data is currently non existing. Increased knowledge, awareness and network opportunities in the mini-grid market among stakeholders, including benefiting from linkages to international good practices	Output 1.4.1. A Digital Strategy is developed and implemented, including linkages to a following guidance from the regional project Output 1.4.2. Mini-grids digital platform implemented to run tenders and manage data from pilots, and to support mini-grids scale-up and cost-reduction Output 1.4.3. A Quality Assurance and Monitoring Framework (QAMF) for measuring, reporting and verification of the sustainable development impacts of all mini-grids pilots supported, including GHG emission reductions, is adopted an operationalized based on standardized guidance from the regional project	GET	234,722.00	523,744.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)
				Sub Total ($)	**2,512,248.00**	**5,304,500.00**
Project Management Cost (PMC)						
				GET	124,998.00	245,500.00
				Sub Total($)	**124,998.00**	**245,500.00**
				Total Project Cost($)	**2,637,246.00**	**5,550,000.00**

C. Sources of Co-financing for the Project by name and by type

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount($)
GEF Agency	UNDP	Grant	Investment mobilized	300,000.00
Recipient Country Government	Electricity Regulatory Authority	Grant	Investment mobilized	1,000,000.00
Recipient Country Government	Energy Research Center	Grant	Investment mobilized	3,000,000.00
Recipient Country Government	Higher Council for Environment and Natural Resources	In-kind	Recurrent expenditures	250,000.00
Recipient Country Government	Ministry of Energy and Petroleum, Renewable Energy General Directorate	In-kind	Recurrent expenditures	500,000.00
Recipient Country Government	Sudan Electricity Holding Company	In-kind	Recurrent expenditures	500,000.00
			Total Co-Financing($)	**5,550,000.00**

Describe how any "Investment Mobilized" was identified

UNDP Sudan will support the project with USD 300,000 from its annual core resources, including USD 167,000 for contribution to the pilot projects. This is an investment mobilized. In addition, the UNDP CO screened the ongoing projects by other Recipient Government in Sudan and identified projects by the Ministry of Energy and Petroleum; the Sudan Electricity Holding Company; the Higher Council for Environment and Natural Resources and the Electricity Regulatory Authority. These are recurrent expenditures. In addition to recurrent expenditures, investments were also mobilized through partnerships with the Energy Research Centre and the Electricity Regulatory Authority. The Energy Research Centre will invest USD 3 million on local assembling of solar modules that reduce the cost of solar panels by 30%. The Electricity Regulatory Authority committed USD 1 million to work on regulatory issues related to electrification in Sudan.

D. Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount($)	Fee($)
UNDP	GET	Sudan	Climate Change	CC STAR Allocation	2,637,246	237,353
				Total Grant Resources($)	**2,637,246.00**	**237,353.00**

E. Non Grant Instrument

NON-GRANT INSTRUMENT at CEO Endorsement

Includes Non grant instruments? **No**

Includes reflow to GEF? **No**

F. Project Preparation Grant (PPG)

PPG Required **false**

PPG Amount ($)

PPG Agency Fee ($)

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount($)	Fee($)
				Total Project Costs($)	**0.00**	**0.00**

Core Indicators

Indicator 6 Greenhouse Gas Emissions Mitigated

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO?e (direct)	0	61934	0	0
Expected metric tons of CO?e (indirect)	0	1944000	0	0

Indicator 6.1 Carbon Sequestered or Emissions Avoided in the AFOLU (Agriculture, Forestry and Other Land Use) sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO?e (direct)		61,934		
Expected metric tons of CO?e (indirect)		1,944,000		
Anticipated start year of accounting				
Duration of accounting				

Indicator 6.2 Emissions Avoided Outside AFOLU (Agriculture, Forestry and Other Land Use) Sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO?e (direct)				
Expected metric tons of CO?e (indirect)				
Anticipated start year of accounting				
Duration of accounting				

Indicator 6.3 Energy Saved (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Total Target Benefit	Energy (MJ) (At PIF)	Energy (MJ) (At CEO Endorsement)	Energy (MJ) (Achieved at MTR)	Energy (MJ) (Achieved at TE)
Target Energy Saved (MJ)				

Indicator 6.4 Increase in Installed Renewable Energy Capacity per Technology (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Technology	Capacity (MW) (Expected at PIF)	Capacity (MW) (Expected at CEO Endorsement)	Capacity (MW) (Achieved at MTR)	Capacity (MW) (Achieved at TE)
Solar Photovoltaic select		2,500.00		
Energy Storage select		6.93		

Indicator 11 Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Female		72,001		
Male		72,001		
Total	0	144002	0	0

Provide additional explanation on targets, other methodologies used, and other focal area specifics (i.e., Aichi targets in BD) including justification where core indicator targets are not provided

Part II. Project Justification

1a. Project Description

describe any changes in alignment with the project design with the original pif

The proposed strategy in this Project Document builds upon the strategy presented in the Concept Note for this project. It continues to be aligned with the GEF focal area on Climate Change Mitigation (CCM-1-1) targeting the promotion of innovation and technology transfer for sustainable energy breakthroughs for de-centralized renewable power with energy usage. The project is also aligned with the UN?s Sustainable Development Goals (SDGs) and contributes to achieving SDG-7 which identifies electricity as an essential ingredient for lifting people out of poverty, improving health, boosting educational levels, reducing gender inequities, and enabling sustainable economic development. The project also contributes to achieving SDG-13 by contributing to integrating climate change measures into national policies, strategies, and planning, and SDG-5 by utilizing all project activities as opportunities to promote diversity and gender-balance to help achieve gender equality and empower women and girls.

The project?s title has not been changed during PPG development. The objective, components, and outcomes have been updated by the AMP Regional Project team for all countries participating in the AMP. Perhaps the most substantial change from Concept Note to PPG stage is about pilots; while the concept note proposed the development of 10 green minigrids (newly developed minigrids) this project document proposes to hybridize with solar PV power plants existing diesel minigrids (off grid stations), a low-hanging fruit opportunity that presents great potential to displace CO2 emission with renewable energy electricity generation. This shift in the proposed pilots has been identified as a key opportunity during the several bilateral consultations between the PPG Team Lead and the Executing Agency.

Furthermore, some of the proposed outputs have been rephrased to enhance their clarity and specificity, while new outputs have been introduced to address specific challenges identified during PPG development. The following table presents a summary of the changes proposed to the project outputs from the Concept Note to the CEO ER.

Change	Justification for change or explanation

<table>
<tr><td>Budget. The total project budget has not changed, but the distribution of each component. More weight has been given for Component 1 and Component 2.</td><td><table>
<tr><th>Component</th><th>Project Document</th><th>Concept Note</th></tr>
<tr><td>Component 1</td><td>19.05%</td><td>17.03%</td></tr>
<tr><td>Component 2</td><td>54.14%</td><td>51.54%</td></tr>
<tr><td>Component 3</td><td>11.03%</td><td>13.43%</td></tr>
<tr><td>Component 4</td><td>9.75%</td><td>13.15%</td></tr>
</table></td></tr>
<tr><td>Activity 1.1.1.5 ? Institutional set-up support has been deleted from the Concept Note phase</td><td>During the consultations with Ministry of Energy and Petroleum, their stated this activity is not desired</td></tr>
<tr><td>1.4. Institutional capacity of Sudan Standards and Meterology Organisation (SSMO) strengthened to publicize and enforce domesticated standards has been deleted from the Concep Note phase</td><td>There is significant work to be done with MoEP, ERA and the electricity companies in capacity building and the budget is limited</td></tr>
<tr><td>Communities of Practice. Originally one activity within Component 4 was the establishment of communities of practice for mini-grids and knowledge Networks. This is no longer the case</td><td>There is an existing working group / community of practice called ?The National Sustainable Energy Network? that this project proposes to piggyback for the purpose of the communities of practice</td></tr>
<tr><td>Pilot projects. During the concept note stage it was planned that the project will support the development of mini-grids, ?Greenfields?. The pilot project no longer recommends to support the development of new Greenfields but the hybridization of existing brownfields with solar PV assets.</td><td>For the IP, MoEP, the hybridization of existing off-grid stations is of utmost importance and urgency due to the current fuel crisis the country has been experiencing recently. Reducing OPEX costs on fuel is key for MoEP and also to move away from fossil fuels.</td></tr>
<tr><td>Co-financing</td><td>The total co-financing committed to this project is now USD 5,550,000.

The Energy Research Centre is replacing the co-financing from the States of Sudan</td></tr>
</table>

1a. *Project Description*. Elaborate on:

1) the global environmental and/or adaptation problems, root causes and barriers that need to be addressed (systems description);

Sudan has a population of 42.8 million (2019) with 34.2% living in urban centers. About 14.9% of the population lives in extreme poverty (less than US$1.9 per day), and the Human Development Index is quite low at 0.502. The agriculture sector contributes 30.1% of GDP and it generates 52% of total employment. Sudan is in debt distress, reducing its capacity to mobilize domestic resources or to

borrow from international markets. By September 2019, outstanding public and publicly guaranteed external debt was estimated at about $60 billion, up from $53.6 billion in 2016 and $56 billion in 2018.

Sudan is among the most vulnerable countries in the world to climate change and climate variability. Increased frequency of droughts and high rainfall variability over the past few decades have already put stress on the region?s rainfed agriculture and pastoralist way of living, a dominant livelihood in rural areas.

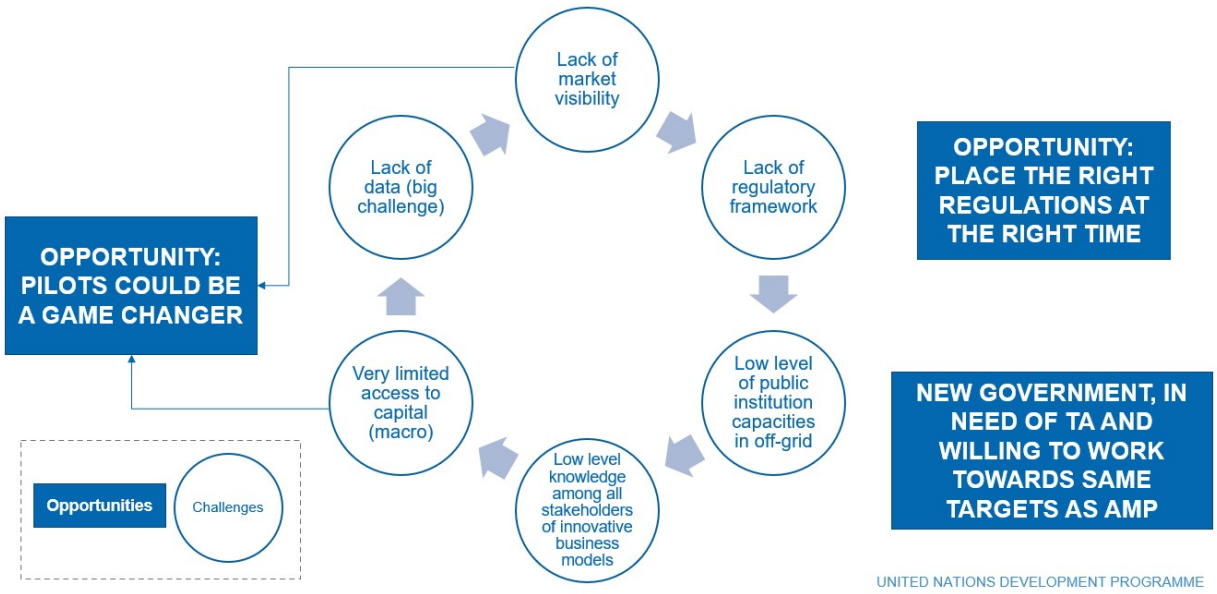
Access to electricity is low (at 38.5% in 2016), and there is a large discrepancy between the population with access to electricity in urban areas (70%) and those in rural areas (22%).[1][1] **The residential sector consumed 56.7% of all electricity in 2015.** Also, where it is available, the reliability of electricity is not assured.[2][2] To address the low electricity access, the Sudanese Electricity Distribution Company (SEDC) is undertaking ?The Rural Area Electrification by Solar Energy Project?, which aims to serve over one million households by 2035[3][3] with solar home systems (SHS).[4][4] In early2020, the rural electrification department at SEDC, the RE general directorate under the Sudanese Hydro Generation Company and the RE General directorate under the SEHC were merged to form the Renewable Energy General Directorate under the Sudan Electricity Holding Company.

Electricity retailing prices have long been criticized by many as the key to the sector?s long-term sustainability in Sudan. In January 2021 the government of Sudan dramatically increase electricity prices in the local currency as per the following table:

	2021 January		2020 and before		
	Consumption range (in kWh)	Price in SDG/kWh	Consumption range	Price in SDG/kWh	*2021 increment*
Residential	0-100	0.8	0-200	0.15	433%
	100-200	1		0.15	567%
	201-300	1.2	200-400	0.26	362%
	301 ? 400	1.4		0.26	438%
	401 ? 500	1.6	400-600	0.32	400%
	501 ? 600	1.8		0.32	463%
	> 600	6.35	> 800	0.85	647%
Commercial	NA	10.2	NA	1.6	*538%*
Industrial	NA	6.35	NA	1.6	*297%*
Government	NA	10.2	NA	0.7	*1357%*
Agriculture	0-200	0.8	NA	1.6	*-50%*
	200-500	1	NA		*63%*
	> 500	1.6	NA		*100%*
	Foreign investment	6.35	NA		*397%*

Although the average unit retailing prices still remains very low (0.01USD/kWh[5][5]) the average increase of electricity retailing prices in comparison to the past tariffs is 429%. This increase is an important step by the government towards shifting from a heavy subsidy electricity price approach to a less subsidy-heavy, more cost-reflective model. The social acceptance of these new electricity retailing prices is yet to be seen[6][6]. On the other hand, the cost of service is estimated to be around 0.20 USD/kWh[7][7], which makes the energy sector completely unsustainable and heavily subsidy dependent. Furthermore, electricity demand has grown by 11 percent since 2013.

The renewable energy sector lacks visibility to the international community and donors for many years, besides UNDP very few other international organizations are active in the renewable energy space in Sudan. There is an opportunity for renewable energy minigrids, through the AMP programme, to unlock the potential of renewable energy projects in Sudan, in particular by harvesting the low-hanging fruits that the existing diesel off-grid stations represent. Additionally, due to the lack of specific off-grid regulations, AMP has the right opportunity to help Sudan moving in a direction in alignment with Sudan?s vision while also stimulating the market through a bottom-up approach. The following graphic illustrates a high-level assessment in Sudan?s electricity sector and identifies the opportunities for renewable energy minigrids (including the retrofitting of existing diesel based minigrids with renewable energy) to flourish under the AMP programme:



2) the baseline scenario and any associated baseline projects;

The Electricity Act of 2001 still governs the electricity sector in Sudan. There is a new drafted 2019 Electricity Act[8][8] that is yet to be passed by the government of Sudan. There is also a renewable

energy act and renewable energy master plan in the making that will target a total renewable energy deployment of 1,600MW by 2031 (solar PV and wind). There is no specific off-grid legislation or regulations in Sudan[9][9].

Ministry of Energy and Petroleum (MoEP) holds the 4 electricity companies by sector (hydropower generation, thermal power generation, transmission, and distribution) under a holding company, Sudan Electricity Holding Company (SEHC) and also the Electricity Regulatory Authority (ERA).

Although Sudan presents a high opportunity for renewable energy mini-grids, the uptake of this technology solution for rural electrification has been overlooked in the past. The Sudanese Thermal Generation Company (STGC) operates several of the so-called diesel off-grid stations, which are essentially diesel mini-grids.

The operation of these diesel-based state-owned infrastructures are expensive, and the Sudanese Thermal Generation Company (STGC) direct owner and responsible, under the Ministry of Energy and Petroleum (MoEP) are looking into retrofitting the existing power generation infrastructure with solar PV power plants. Additionally, MoEP and other actors recognize that in smaller towns and communities there are several informal mini-grids serving basic level of electricity to their neighbors with diesel generation. These informal electricity providers are not legally recognized, nor licensed, but are serving a market.

This Africa Mini-grids Program national child project for Sudan will support the uptake of solar PV in mini-grids, as a cornerstone to help Sudan?s renewable energy uptake, decrease their fuel dependency (in particular in off-grid settings), boost new electricity connections and piggyback on previous, existing efforts towards gender equality and gender opportunities too. In this regard, Sudan?s target of achieving 80% electrification rate by 2030 is supported by this Child project.

3) the proposed alternative scenario with a brief description of expected outcomes and components of the project;

As introduced, Sudan is one of the countries in Africa that has a large population without access to clean, safe and reliable electricity (around 50% of the total population). The baseline is characterized by highly subsidized national tariffs for decades, which have resulted in an unsustainable model that the government is in the process of reforming, moving towards a less subsidized, more cost-reflective model. The offgrid baseline is characterized by existing diesel mini-grids (off-grid stations) operated by public electric companies, this represents a low-hanging fruit for the integration of solar PV power plants (i.e. hybridization) to displace diesel consumption and CO2 emissions. The objective of the AMP in Sudan is to ?support access to clean energy by increasing the financial viability, and promoting scaled-up commercial investment, in low-carbon mini-grids in Sudan, with a focus on cost reduction levers and innovative business models?.

The project strategy corresponds to the unique nature of the energy sector in Sudan, and to the broader AMP?s strategy and objectives on clean energy through mini-grids, by focusing on digital

transformation and supporting the sector on adopting solar PV technologies, promoting hybridization of diesel sites as a financially viable path to driving down tariffs and costs while reducing GHG emission and increasing the private sector participation. This will be achieved through supporting the government of Sudan on the national and sub-natinal levels with:

1. Development of mini-grid policies and delivery models with continuous dialogue with stakeholders led by Ministry of Energy and Petroleum. Digital transformation will play an important role here, including performing techno-economi analyses, registration process for Low Voltage mini-grids (i.e. light-handed regulations to stimulate the market), designing tools for tariff calculation and supporting capacity building of the energy sector
2. Implementing a pilot project to showcase the benefits of hybridization with solar PV and remote monitoring technologies, as well as establishing a ?solar sister? program to build women?s sector capacity to design, operate, maintain and manage solar PV hybrid mini-grids, thus contributing towards a more gender-balanced model
3. Financing needs support, assessment of the current market offerings in terms of financing and their adequacy for financing solar PV mini-grids, including design support and feasibility study support provided to mini-grid developers, creating a pipeline of investible projects in unelectrified communities
4. Digital transformation of the energy sector, knowledge management under the AMP Regional Project and Monitoring and Evaluation

The project is comprised of 4 components, with the following outcomes and outputs per component:

Component 1. Policy and Regulation

This component will work on having the necessary policy dialogues and producing adequate regulations at the right time as the mini-grid market evolves over the 48 months of the project duration. As the mini-grid market in Sudan is in its infancy, continuous dialogue through working groups and capacity building is essential under this component, as an attractive, enabling environment for mini-grids is yet to be developed in Sudan in comparison with other countries[1].

Sudan electricity market is still governed by the 2001 Electricity Act, although a new, 2019, Electricity Act[2] has been drafted, is in the approval final stages. There is an existing energy working group established in Sudan, ?The National Sustainable Energy Network?, that could be used as the basis to set-up the deliver model working group proposed in the following activities.

Outcome 1.1: Stakeholder ownership in a national mini-grid delivery model is advanced, and appropriate policies and regulations are adopted to facilitate investment in low-carbon mini-grids

Output 1.1.1 Mini-grid delivery model(s) identified from national dialogues on mini-grid delivery models

Output 1.1.2 Registration process for Low Voltage mini-grids in place and disseminated among stakeholders

Output 1.1.3 A full mini-grid regulatory framework is in place and adopted by MoEP and ERA through a series of inclusive national dialogues, with a streamlined licensing process and clear rules and requirements defined

Output 1.1.4 Mini-grid DREI techno-economic analyses carried out to propose most cost-effective basket of policy and financial de-risking instruments and contribute to AMP Flagship Report on Cost Reduction

Output 1.1.5 Pre-feasibility studies for mini-grid sites to enhance sector planning and decision-making on a delivery model for mini-grid development, including geospatial studies

Output 1.1.6 Capacitate public institutions, in particular MoEP and ERA on technical, managerial, and regulatory issues including design procurement and tender processes that incorporate cost-reduction levers and innovative business models

Component 2. Business Model Innovation with Private Sector

This component will target deploying solar PV power plant pilots in existing off-grid infrastructure in Sudan. The pilots will aim at developing, implementing, operate and maintain, and monitor at least 2 projects piloting the hybridization (or retrofitting) of existing diesel based mini-grids (or off-grid stations as per the term used by MoEP and STGC) in order to reduce the O&M costs of operating these power plants with fuel only. It is recommended that the implementation of these solar PV power plants and its associated infrastructure will be done by the private sector, through a Build, Own, Operate and Transfer (BOOT) model (concession). The pilot implementation will be done in a ?phased-approach? aiming at fast-tracking the deployment of these solutions and to reduce the risk and lower the initial CAPEX investment required:

Phase 1: Low-penetration solar PV-diesel mini-grids. In the first phase of the project, the existing diesel-based mini-grids will be retrofitted with a low solar share energy penetration (less than 20% of the total energy) as the integration into the existing assets will be easier and the CAPEX will be lower, therefore pace of implementation will be faster.

Phase 2: Medium or High solar PV-diesel mini-grids. After 1 year of O&M and M&E of the phase 1, the project will be ready to move into phase 2 in which a second retrofitting intervention could be made. By expanding the solar PV power plant and introducing batteries, the mini-grids will move from low penetration to medium to high solar share penetration (20% to 50% energy penetration for medium penetration and more than 50% for high penetration). This will require a more sophisticated control and the inclusion of batteries.

For the tender phase and private sector selection the IP will use a digital platform as a one-stop-shop of all documents, questions and evaluations performed as part of the procurement and call for proposals exercise. By using digital platforms for pilots, capacity of key stakeholders will be developed, which can then set the foundation for later using digital platforms for sector-wide large scale tenders.

The main objectives of this component are:

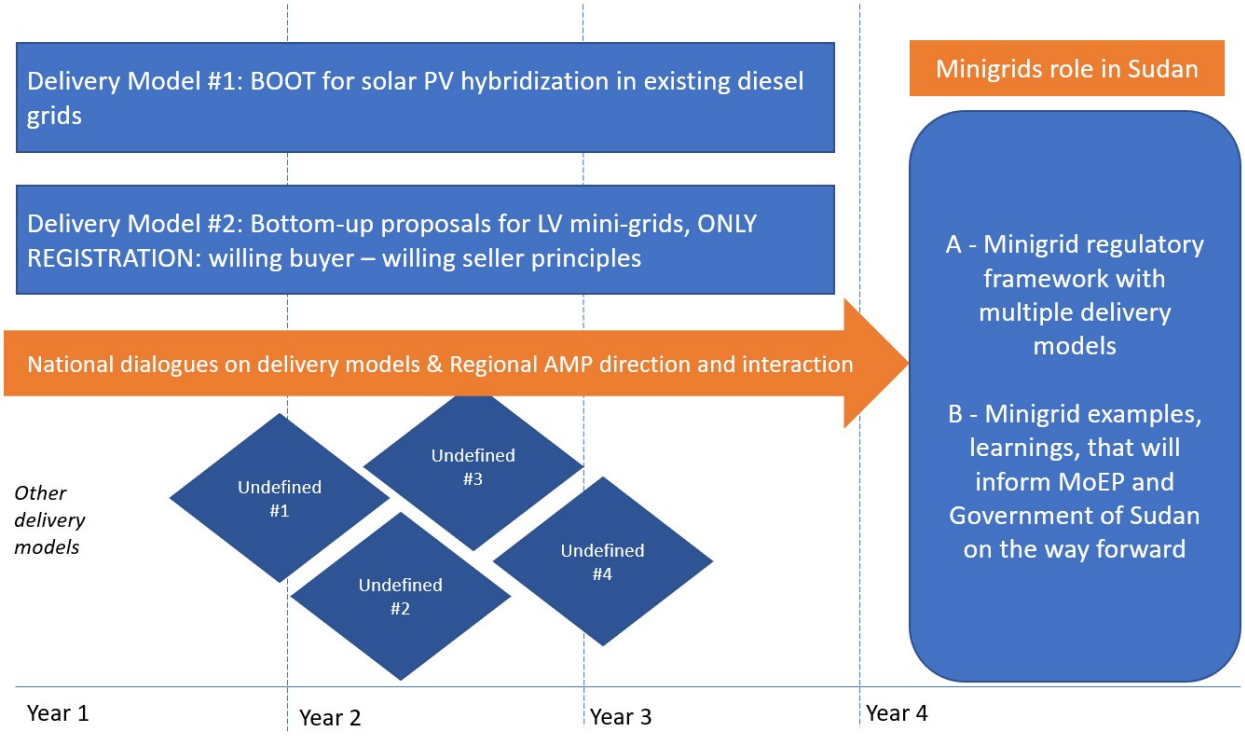
1 ? Increase the private sector participation in the off-grid market of Sudan
2 ? Reduce existing fuel consumption in off-grid sites
3 ? Use digital platforms for the procurement, implementation and monitoring of this component intervention
4 ? Women?s inclusion in the pilot intervention and beyond

Outcome 1.2 Innovative business models based on cost reduction are operationalized, with strengthened private sector participation in solar PV-battery or low-carbon mini-grid development

Output 1.2.1 Two to four (2-4) solar PV diesel hybrid mini-grids successfully implemented, operational, and maintained by the private sector, involving women?s vocational training and participation, leading to cost-reduction in mini-grids

Output 1.2.2 Capacity of potential tender bidders (private sector developers) strengthened to consider innovative business models and cost-reduction levers. This output will also benefit from Activity 3.1.2.1 (hands-on coaching on mini-grid developers)

Output 1.2.3 A ?solar sister? (brand name) programme is in place, that supports and capacitates Sudanese women on technical, managerial, and economic aspects of solar hybrid mini-grids



Component 3: Innovative Financing for Mini-grids

As this child project aims at helping Sudan in transitioning from almost no experience in private sector participation into a more inclusive, multilateral rural electrification approach for other actors (private sector, states and potentially cooperatives or non for profit), innovative and adequate financing mechanisms need to be formulated and availed to support the financing needs of eventual projects. Similarly, it will be essential for this child project to identify and help other actors in developing a list of sites that are best served by mini-grid technologies, in order to bring these sites into funding stages and support pipeline development activities.

The Bank of Sudan, after the complete islamization of the banking system in 1992, eliminated treasury bills and government bonds that carried interest rates. In their place, the bank issues financial certificates conforming to the Islamic system.

Outcome 1.3 Innovative financing mechanisms explored at local and regional level, and final design options with recommendations on financing needs and opportunities for the uptake of both (i) solar PV greenfield mini-grids, and (ii) solar PV hybridization in brownfield mini-grids

Output 1.3.1 Design support for mini-grid innovative financing mechanisms

Output 1.3.2 Financing needs to support the uptake of mini-grids are assessed and identified

Output 1.3.3 Feasibility study support provided to mini-grid developers, creating a pipeline of investible assets in unelectrified communities in Sudan

Component 4. Digital, Knowledge Management, and Monitoring and Evaluation

This component aims to ensure that the AMP in Sudan is well aligned and piggybacks on the activities of Knowledge Management under the AMP Regional Project level, while also complying with UNDP/GEF M&E requirements. In terms of KM, the results of Component 4 activities will feed data and lessons learned to the AMP Regional Project for onward sharing with other participating countries and the mini-grids ecosystem as a whole. There will also be opportunities for these results to be shared directly with other countries through corresponding KM activities built into each national project looking to promote interaction between other AMP national child projects. Hence, the AMP in Sudan will participate in AMP Communities of Practice (CoPs) which will be set-up and managed by the AMP Regional Project. Participation on the part of national child projects will include attending actual in-person workshops, meetings, or training events. In addition, Component 4 explicitly includes the activities required to comply with M&E requirements from both UNDP and GEF.

Outcome 1.4 Digitalization and data mainstreamed, across stakeholders, in particular into the existing public mini-grid infrastructure where digital data is currently non existing. Increased knowledge, awareness and network opportunities in the mini-grid market among stakeholders, including benefiting from linkages to international good practices

Output 1.4.1 A Digital Strategy is developed and implemented, including linkages to a following guidance from the regional project

Output 1.4.2 Mini-grids digital platform implemented to run tenders and manage data from pilots, and to support mini-grids scale-up and cost-reduction

Output 1.4.3 A Quality Assurance and Monitoring Framework (QAMF) for measuring, reporting and verification of the sustainable development impacts of all mini-grids pilots supported, including GHG emission reductions, is adopted an operationalized based on standardized guidance from the regional project

Output 1.4.4 M&E and Reporting, including (i) Conducting inception workshop and preparing report, (ii) Ongoing M&E, (iii) Mid-term Review (MTR), and (iv) Terminal Evaluation (TE)

Output 1.4.5 Engage with the AMP Regional Project, including, but not limited to, via (i) Participating in Communities of Practice (CoPs), and (ii) Capturing and sharing lessons learnt

4) alignment with GEF focal area and/or Impact Program strategies;

This project is a Child project under the PFD (Program Framework Document) Africa Mini-Grid Program. The whole program is aligned with Objective 1 of the Climate Change Focal Area to ?Promote innovation and technology transfer for sustainable energy breakthroughs?, through CCM1-1 - Promote innovation and technology transfer for sustainable energy breakthroughs for de-centralized power with energy usage.

It also contributes to points 113, 118, and 119 of the GEF-7 Programming Directions to accelerate ?the speed and scale of sustainable energy investment in developing countries?, to develop ?innovative business models that go beyond business as usual? and to foster innovation. The overall contribution towards supporting ?transformational shifts towards low emission and climate-resilient development pathways? is particularly important given access to affordable renewable energy is unavoidable for sustainable development, particularly in a context where countries are struggling to extend national grids to secure energy access to off-grid communities.

In addition to the program, the child project in Sudan is also aligned with the objective to focus ?on the demonstration and early deployment of innovative technologies to deliver sustainable energy solutions that control, reduce or prevent GHG emissions? (117).

When discussing the most appropriate design of the AMP pilot project with stakeholders and in particular with the Implementing Partner, the majority reflected on the widespread use of diesel generators in mini-grids (i.e. off-grid stations) and the lack of greenfield locations (yet to be developed). Hence, their recommendation was for the AMP to focus on the promotion of hybridization with solar PV, as a low-hanging fruit and as a faster strategy than introducing new 100% renewable mini-grids, with the following list of identified benefits from hybridization:

1) Utilize existing infrastructure for energy generation and distribution;

2) Reduce the disruption which a complete shift to solar will cause and the risks associated with a loss of power (as a result of teething problems arising from the installation of an entirely new generation infrastructure);

3) The Levelized Cost of Energy (LCOE) when adding solar (with or without batteries) to an existing fuel based mini-grid will be lower than the LCOE when replacing an existing generator with batteries, assuming all existing energy needs will be met - which need to be the case to avoid an irate community;

4) The lower investment required per site will also mean that more sites can be hybridized and therefore more GHG mitigation results realized using the AMP budget;

5) Utilize the private sector expertise (national and international) in solar PV infrastructure and willing to invest in hybridization

Therefore, the AMP intends to invest in hybridizing existing diesel mini-grids using the incumbent generators as a replacement for the need to invest in large batteries for over-night storage. This approach helps to capitalize on the pre made investment in diesel generators and limits the immediate investment in batteries to small battery banks ? to serve as backup for short-term solar supply interruptions and supply smoothing. Nevertheless, the project design and finance agreement will include a strategy for eventually phasing out diesel at the end of the generators? lifetime.

For the pilot to be a demonstration of other activities undertaken as part of the AMP in Sudan project, the supply of solar PV components will be preceded by the supply of sensors to measure their diesel consumption and monitor their electricity generation before implementing the hybridization process. Sample end-users connected to the pilot mini-grid will be supplied with smart meters for consumption tracking. Following the installation and commissioning of the solar components, performance monitoring and consumption tracking activities will continue, creating a comparative dataset for in-depth analysis and further study.

5) incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, and co-financing;

The main objective of the AMP in Sudan is to ?supporting access to clean energy by increasing the financial viability, and promoting scaled-up commercial investment, in low carbon mini grids in Sudan, with a focus on cost reduction levers and innovative business models?. The development challenge which the project aims to address is the need to increase the profitability of the solar based mini-grid systems to encourage private sector engagement, while maintaining the end-user tariff in a range that is presently paid by communities residing in social housing complexes and peri-urban areas for grid-connected electricity. The business-as-usual scenario is the continuity of the utility?s monopoly of the off-grid energy market, slowing down the Government?s ability to achieve its renewable energy development and energy access goals and maintaining high levels of GHG emissions due to continuing use of diesel generators by off-grid users.

The project follows the theory of change developed in the AMP PFD. More specifically for Sudan, the project aims to support the Government to create an enabling environment for innovative business models centered on cost reduction and demand simulation. The incremental reasoning underlying the project is that the implementation of de risking (policy and financial) instruments will reduce, eliminate or transfer the risks faced by private investors in mini-grids in Sudan, hence, reduce the costs of capital. This will reduce overall project costs and allow for profitable operation at a reduced tariff. In parallel, the project will also use levers to support the private sector to self-organize and become an active partner in the development of the mini-grid sector in the coming years, and promote regional collaboration through continuous interaction with the AMP Regional Project.

The GEF funds allocated for implementing demonstration projects under the AMP in Sudan is USD 1,676,000 which will server to hybridize at least 2 existing diesel mini-grids with participation and cofinancing from the private sector. Based on the current regulatory framework and low market

visibility and international private sector participation in Sudan, the disbursement of these GEF funds will happen in a phased-approach in which in Year 2 around USD 1,250,000 will be disbursed to enable the procurement and execution of solar PV power plants without battery storage and in Year 4 around USD 426,000 will be disbursed to enable the second phased of the hybridization which will consist in incremental solar PV capacity and electrical batteries for storage. More information on these modality to be used by the UNDP for the release of the GEF investment fund to Ministry of Energy and Petroleum will be based on the outcome of the DREI techno economic analyses to be performed at project start. Nonetheless, the following requirements and criteria are suggested:

? The solar PV power plant pilots will be implemented through a Built, Own, Operate and Transfer model in which the Government of Sudan will grant a concession of at least 10 years for the solar PV power plant

? The solar PV power plants will require a co-finance from the private sector in between 50% (preferred) to 30%

? The private sector selected to operate the BOOT will recoup the co-investment through an agreed tariff or monthly payment (take-or-pay structure) that will result into savings to the Government of Sudan compared to the existing cost of electricity through diesel

? A small portion of the grant, yet to be determined, will be dedicated to the upgrading of the meters of some clients, aiming to contribute to the digital transformation objective of the programme across its components

Using the GEF investment, the project will implement pilot projects with a total solar PV capacity of 2,500 kW (1,500kW in one location and 1,000kW in a second location), resulting in direct GHG emission mitigation of about 61,934 tCO2eq. During the 20 years following project closure, the project is expected to result in 1,944,000 tCO2eq of consequential GHG emission reduction.

The total cost of the project is USD 8,18,246. This is financed through a GEF grant of USD 2,637,246 administered by UNDP, a USD 300,000 additional cash-cofinance grant financed and administered by UNDP and a parallel cofinancing of a total USD 5,550,000. The UNDP, as the GEF Implementing Agency, is responsible for the oversight of the GEF resources and the cash cofinancing transferred to the UNDP bank account only. The following table presents the summary of funds from GEF and the other financing sources broken down per year:

	Y1, USD	Y2, USD	Y3, USD	Y4, USD	Total (USD)
GEF	413,802	933,362	740,198	549,884	2,637,246
UNDP	78,802	87,851	111,747	21,600	300,000
Sudan Electricity Holding Company	97,136	178,186	50,964	173,714	500,000
National Energy Research Centre	722,136	828,668	737,339	711,857	3,000,000
Higher Council for Environment and Natural Resources	137,661	68,911	43,428		250,000

Electricity Regulatory Authority	250,000	250,000	250,000	250,000	1,000,000
Ministry of Energy and Petroleum, Renewable Energy General Directorate	125,000	125,000	125,000	125,000	500,000
TOTAL	**1,824,537**	**2,471,978**	**2,058,676**	**1,832,055**	**8,187,246**

6) global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF);

In Sudan, where arid and semi-arid areas occupy the vast majority of the territory climate adapation interventions are urgent as the climate projections by the international community predict an average of 0.5-3 degrees celsius in temperatures by 2050, increased unpredictability of seasonal rains and an increased indicende of drought. This, coupled with the upcoming commissioning of the Grand Ethiopian Renaissance Hydropower Dam, will negatively affect Sudan's ability to produce electricity thorugh its hydropower potential. The heavy reliance of diesel in mini-grids (off-grid stations) by the government of Sudan presents an opportunity to reduce its GHG emissions by displacing part of this diesel consumption and at the same time increase the indigineous energy sources for electricity production (i.e. solar energy which Sudan is rich). Climate change will also increase Sudan's energy needs for power, in particular for cooling and ventilation (due to increased temperatures) and in water pumping (due to increased unpredictability of seasonal rains). As the goal of the AMP program is to provide affordable, clean electricity to remote areas, low-carbon minigris provide means for Sudan to mitigate climate change effects in their remote communities which otherwise will be relying in not reliable, not clean electricity.

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and 7) innovativeness, sustainability and potential for scaling up.

Innovativeness

Given the existing reliance on diesel mini-grids, and little private sector investment in Sudan's energy context innovativeness is a primary concern for the AMP and is an overarching goal in all project components. Therefore, the AMP in Sudan starts the work on each output by investigating the most suitable way for enhancing the competitiveness of low-carbon mini-grids by exploring innovative ways to (1) encourage the private sector and actors, and (2) finance the infrastructure in an effort to increase the market visibility. This is achieved by conducting detailed studies, analyses, and assessments that aim to propose tailored practices and develop fit-for-purpose regulatory, organizational, and operational solutions.

For example, and building on the assessments and discussions during PPG development, a registration process for Low Voltage mini-grids development aims to encourage mini-grid developers (private sector, non-profit, states) to put mini-grid proposals forward to the Energy Regulatory Authority, resulting in a higher and depper market understanding but also in diversifying the options to achieve SDG7 in Sudan, embracing other alternatives than top-down rural electrification iniatives lead by the government. This activity is is conceived to be a fast-track avenue for green mini-grids in Sudan.

Digital transformation; Sudan needs to embrace digital technolgies within the energy sector, to be able to increase to data centralization for better, informed decision making but also to increase its transparency on energy indicators to stakeholders, including private sector. The project will support digital transformation through a series of activities in the Child Project such as the adoption of a mini-grid platform to handled procurement and remote monitoring information of the pilots, but also through the AMP Regional project with workshops and tehcnical assistance provided on this aspect. Digitalization and remote monitoring for the pilots will be happening at the generation part (solar PV power plants) but also on the end-user side, through the upgrade of existing meters to smart-meters of a fraction of the existing customers in the diesel mini-grids.

The project also aims to promote a mini-grid business model that builds upon the developments achieve by projects financed by the government and other development partners. The proposed pilots aim to demonstrate this model and showcase the impact of balancing private-lead development in the energy sector with national plans for energy access and low-carbon economic development. Recognizing that the role envisioned form public parties is relatively new to the Somali market, the project focuses heavily on capacity building for public and private actors to ensure smooth transition into the proposed model and ensure it is not counter-productive in terms of attracting new investment in the renewable and hybrid mini-grid sector.

Sustainability

From operational sustainability perspective, the partnership with public and private parties does not only facilitate project implementation, but also increase the medium and long-term sustainability of all project outcomes. Sustainability was one of the main aspect guiding the inclusion of outputs of Component 1 and Component 2 of the proposed project. Within all project components a significant amount of resources is dedicated to capacity building activities to Ministry of Energy and Petroelum and other key governamental agencies, along with other project stakeholders such as the private sector, finance instiutions and others. These workshops, activities and experts (like the senior mini-grid embedded expert at Ministry of Energy and Mines) should considerably help for the sustainability of the project.

From the perspective of sustainable approach to knowledge production and sharing, Component 4 dedicates resources to KM on the national and regional levels. These aspects are stronger in this project than other mini-grid projects and initiatives in the country since the AMP in Sudan is part of a regional programme, giving it access to a regional hub for mini-grid technical support, a wealth of experience sharing between the participating countries, and an opportunity to become part of the Communities of Practice (CoP) to be established by the Regional AMP Project.

From a climate change perspective, increasing the commercial viability of low-carbon mini-grids will have long-term positive environmental and economic impacts. The proposed project activities contribute significantly towards helping remote communities from some of the risks of climate change. With the potential for increased adverse weather events, the delivery of diesel to support conventional mini-grids may be interrupted for significant periods. The use of solar-powered mini-grids significantly reduces the needs for diesel delivery therefore enhancing the sustainability of communities and their resilience to climate change.

Furthermore, promoting low-carbon development is also in line with the recommended global response to COVID-19 crisis and helps to reduce the risk of emerging infectious diseases in the future, while increasing the resilience of the ecologic and socio-economy systems to emergency situations

Equipment replacement: through the *Build, Own, Operate and Transfer (BOOT) implementation model (via a concession agreement or similar arrangement)* the private sector will have both, (i) the financial capabilities and the time horizon to plan and replace batteries, converters, other hardware as well as to perform any preventive and corrective O&M activities as required, and (ii) the incentives (i.e. obligations) to do it as per the agreement. Through the revenues the private sector will be receiving from the Sudanese Electricity companies (the off-takers), the private sector will be capable of carrying out any O&M activity, including the purchase and replacement of major hardware. Failure to comply with equipment replacement or O&M activities within the concession terms will result in penalties (or lack of payment as per the final details of agreement) or contract termination, details will and should be developed in the concession agreement in this regard. The revenues will allow the private sector to obtain reasonable returns on their investment while also sparing some funds for equipment replacement and O&M. Additionally, due to the proposed nature of the project, a *phased-approach*, initially the diesel mini-grids will only be retrofitted with a solar PV component in a first phase, and then in a second phase will be retrofitted with additional solar PV and batteries ? this is described in the section ***Component 2. Business Model Innovation with Private Sector Participation*** of the CEO ER. This means the battery replacement will be necessary only after the phase 2 of the project is completed.

Environmentally sound management; during the PPG phase and through the various consultations and document revisions, no national applicable waste management law, requirements or guidelines has been identified. However, the project will piggyback on another GEF funded project: ?*PIMS 5674 - UNDP-GEF ProDoc for Leapfrogging EE?*, in particular to its? *Component 5 ? Enhancing environmentally sound management of lighting products and air conditioners?* and to the ?*Outcome 5.1: Reduction/minimization of leakage of hazardous materials to the environment by reducing the input?*. Awareness campaigns among stakeholders and involvement of recycling companies are activities planned in this project that the IP will benefit from and will use to tackle the dimension of a sustainable waste management plan.

Potential for scaling-up:

Given the existing low electrification rates in Sudan, low involvement of the private sector and large distances to cover in the south and western regions of the country, mini-grids (and off-grid technologies in general) and innovation associated around mini-grids will be key for Sudan achieving its own rural electrification targets and SDGs. Private-Public-Partnerhsips will play a major role in the sustainability

of mini-grids in Sudan (and more broadly the energy sector in Sudan) as the government alone cannot achieve these targets.

The potential for scaling up mini-grids in Sudan is enormous, with 20 million people currently not having access to modern, reliable electricity, many mini-grids of different sizes, technologies and ownership models could be implemented in the next decade shall the government of Sudan embrace this solution. The scale up opportunities will also depend on the successful uptake of digital technologies as explained in earlier sections of this document.

More broadly, increasing the commercial viability of solar PV mini-grids will have long-term positive environmental and economic impacts. Promoting low-carbon development is also in line with the recommended global response to the COVID-19 crisis and helps to reduce the risk of emerging infectious diseases in the future, while increasing the resilience of the ecologic and socio-economy systems to emergencies.

Component 3 of the project, Innovative Financing and Business Models with Private Sector Participation, will contribute to the scale-up potential by working with finance institutions in identifiying the needs for the finance sector to support the adoption of mini-grids and help them in the design process for future financing solutions

Replication, through the pilot projects, the AMP Sudan will pave the way for more solar PV hybridization projects to happen in Sudan. Detailed feasibility studies on the selected pilots will be important to ensure the success of the pilots (and therefore allow for replication) as well as early announcements and engagement with the private sector in regards to the envsioned BOOT model.

Furthermore, the multi-dimensional COVID-19 crisis creates opportunities for the AMP to mitigate country- and project-level impacts, to contribute toward green recovery and building back better, and also to leverage global responses to COVID-19 to deliver global environmental benefits and/or climate adaptation and resilience benefits**.** The following opportunities are identified as relevant for the AMP in Sudan:

? **Leveraging economic recovery and stimulus plans**. Governments across the continent have been structuring and implementing stimulus and economic recovery plans, social programs and even policy reforms during the crisis. These offer a good opportunity to accelerate the energy transition and step-up climate ambition. Putting people back to work will be an important part of stimulus plans and clean energy is an important source for new job creation and has great potential to spur local economic activity. This creates opportunities for AMP as increased funding availability and public support for renewable energy projects could be leveraged to augment AMP?s results. Also, increased support to energy consumers could address widening affordability gaps which pose risks for project implementation.

? **Mini-grid site selection with COVID-19 considerations.** AMP projects could also seek to help policymakers and regulators integrate elements from government strategies to respond and recover

from the pandemic into energy sector planning. For instance, rural electrification strategies and plans could prioritize areas based on the presence of essential health facilities, key economic activities, particularly vulnerable populations, or other factors to concentrate efforts where COVID-19 impacts are highest. AMP national child projects can help enhance coordination between the energy and health sectors to ensure national electrification plans and mini-grid sector planning consider the energy needs of the health sector.

? **Health facilities as beneficiaries of specific mini-grid investment pilots.** AMP projects provide support to a number of specific mini-grid investment pilots across AMP countries. Projects could use digital mapping tools to proactively identify mini-grid sites that can benefit health facilities in addition to households, commercial, and productive users.

? **Improved business case for mini-grids providing energy for health facilities.** With its focus on mini-grid cost-reduction, AMP could potentially add value in reducing the cost and increasing the commercial viability of mini-grids providing energy for healthcare facilities in several ways including supporting governments: (i) to improve data collection on energy access in the health sector and conducting comprehensive community energy needs assessments of health facilities that consider both electricity and thermal energy needs; and (ii) to utilize specialized digital tools to assist mini-grid operators in targeting health care providers and designing appropriate mini-grid systems for rural health clinics.

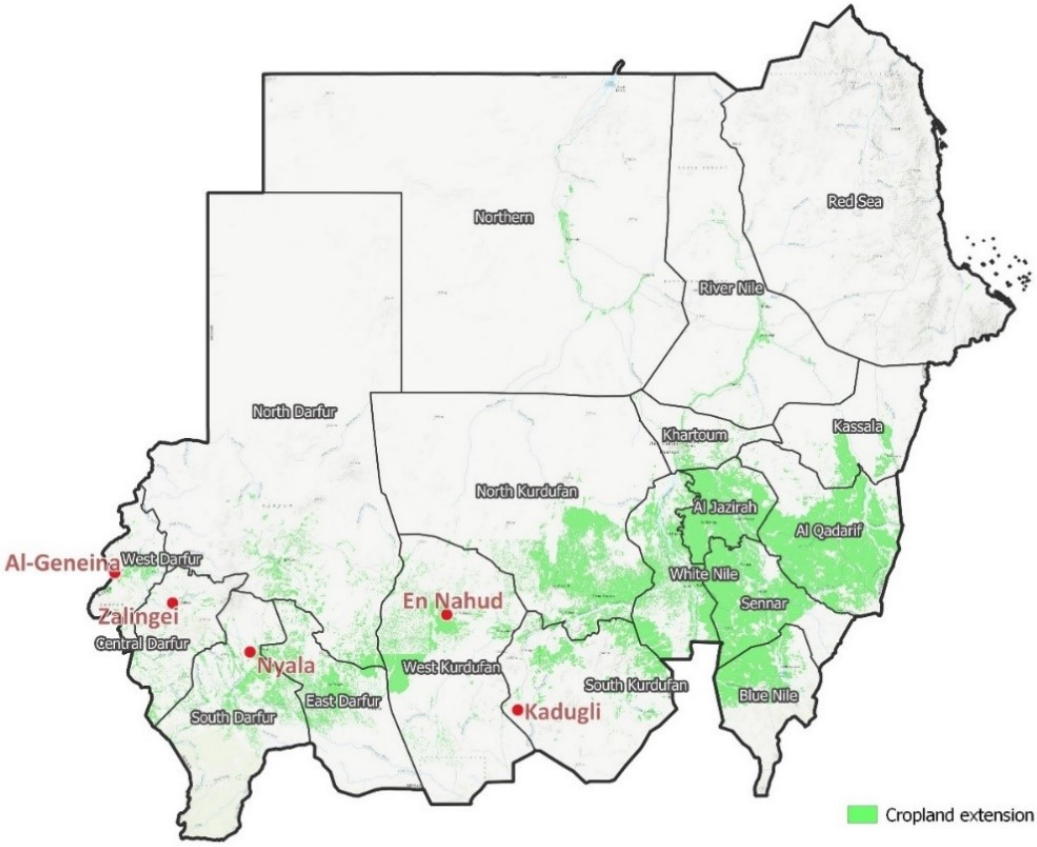
Communities of Practice focused on COVID-19 impacts. If there was enough interest among several countries AMP could create a specific Community of Practice (CoP) to focus on impacts, risks and opportunities around mini-grids and the global pandemic. This would allow AMP countries to document and exchange experiences and knowledge on how off-grid lighting and electrification can alleviate some of the disadvantages and challenges experienced by households, productive users, health facilities and communities without access to electricity in facing the different stages of the COVID-19 pandemic and bolster recovery efforts.

1b. Project Map and Coordinates

Please provide geo-referenced information and map where the project interventions will take place.

The PPG team has been proposed 5 sites in the Kordofan and Darfur states, the south and west states in Sudan for the pilot project AMP selection. After in-depth discussions and review of documentation, the PPG team has selected 2 sites out of the 5 proposed for the implementation of solar PV power plants pilot project. The two selected sites are large towns in which the Sudanese Electricity Distribution Company and the Sudanese Thermal Generation company operate diesel mini-grids without any renewable energy infrastructure. There is an increasing need for these public electricity companies (dependent of Ministry of Energy and Petroelum) to be hybridized with solar PV infrastructure to reduce the fuel consumption, in particular as the government of Sudan moves away from fossil-fuel subsidies. The following table and map provide geo-referenced information on the proposed project intervention:

Name	Installed Capacity (MW)	First year of operation	MV length (km)	No of clients as of 2020	Coordinates
Al Junaynah	8.8	1987	63.6	10,595	13.4442, 22.4421
Kadugli	6.6	2004	34.2	14,137	11.00554, 29.7119



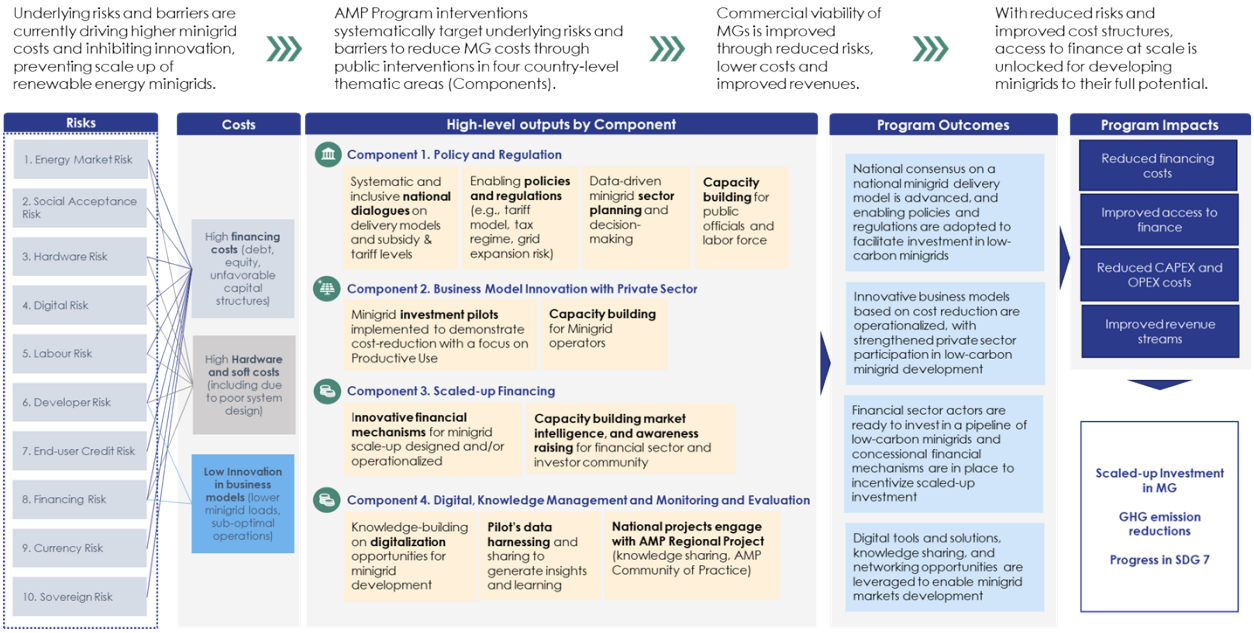
The green areas shown in the map are croplands, that show the amoung of croplands as per satellite imagery in the different regions of Sudan and in the 5 proposed sites for pilot intervention (names in red on the map). Both Al-Geneina and Kadugli have cropland within their administrative borders, showing potential for a productive uses of electricity programme. When Ministry of Energy and Petroelum prepares the Call for Proposals for the solar PV hybridization of the selected 2 sites, private sector will also be requierd to survey the sites and come up with solutions and proposals of producvtive uses of electricity, the pilots will incentivize the uptake of productive uses of electricity such as water pumps, electric mills, agroprocessing machines and the like through a third-party ownership model.

1c. Child Project?

If this is a child project under a program, describe how the components contribute to the overall program impact.

Mini-grids lie at the nexus between rural electrification, community empowerment and education, climate resilience and sustainable development. As technology advances and downward cost trends have markedly improved the business case for RE mini-grids, in many countries they are not yet competitive with fossil-fuel based alternatives[1].

The overall AMP Theory of Change (TOC) is premised on the understanding that the high costs of RE mini-grids are partly attributed to a range of risks[2], each of which contributes a premium to the development costs of mini-grid infrastructure.



Cost reduction is one of the key themes guiding the strategy of the AMP in Sudan as will be seen in leaning towards hybridization, increasing the funds dedicated to technical capacity building of public electric companies to reduce operational losses, and focusing on enhancing tariff collection systems to reduce commercial losses.

In addition, components under the AMP in Sudan are in line with the harmonized results framework developed by the AMP Regional Project to provide guidance to participating national projects and streamline program implementation on the regional level. Furthermore, and in line with the protocol established in the AMP Program PFD, 10% of the consequential/indirect GHG impacts calculated for this project are allocated to the regional child project core results indicator, in line with the apportioning of the overall program budget. This reflects the benefits of this and all other national child projects accessing the regional child project?s support

Specifically, Sudan?s child project will have the unique opportunity to contribute with the overall programme impact in the following ways:

(i) Deploy MW-scale off-grid projects unlike in many other child projects and markets, thus having a greater impact on emissions and economics on project basis.

(ii) Become a pioneer in a stagnant market that is need of improving its energy landscape and move away from fossil fuel in off-grid settings through funding the pilots, programme dissemination and consultation with stakeholders, policy and regulation work and working with financiers

(iii) Data sharing through continuous remote monitoring. Sudan lacks data in the energy space, through the interventions proposed in Sudan?s child project and in particular through the implementation of remote monitoring, a large amount of useful data will be gathered. This data will not only be useful for Sudan, but for the regional project to examine in detail technical patterns and issues on MW-scale solar PV diesel hybrid mini-grids

(iv) Regulation and policy; unlike other African nations where mini-grid regulations have been developed over the past years, in Sudan no off-grid regulations or laws have been stablished or drafted. This represents a unique opportunity for the regional programme to put its best efforts, state-of-the-art regulations and policy practices, lessons learned and best practices to ensure Sudan embraces a set of adequate regulations for its context and unique challenges

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[1] This is greatly due to fossil fuels being heavily subsidized by governments too

[2] Based on risks identified in consultation with numerous stakeholders in the Derisking of Renewable Energy Investment studies conducted for utility scale and off grid solutions in a range of markets.

2. Stakeholders

Select the stakeholders that have participated in consultations during the project identification phase:

Civil Society Organizations Yes

Indigenous Peoples and Local Communities

Private Sector Entities Yes

If none of the above, please explain why:

Please provide the Stakeholder Engagement Plan or equivalent assessment.

The Stakeholder Engagement Plan (SEP) is designed to ensure effective engagement between various stakeholders throughout the Sudan National Child Project's lifecycle under the GEF Africa Minigrid

Programme. This plan will build on other works taking place within the umbrella programme regarding planning and impact processes. This child project will maintain a dialogue with the relevant government ministries, relevant local community groups and NGOs, cooperatives, private sector actors and the international community.

The following SEP will consider a range of good practice stakeholder engagement mechanisms including, but not limited to, targeted consultations, public involvement and inclusive participation during key stages of the project. This document will highlight the various methods for engaging specific groups, frequency with which stakeholders are engaged and indicate who is responsible for initiating and organizing the engagement activities.

LEGAL REQUIREMENTS FOR PUBLIC CONSULTATION IN SUDAN

Sudan is currently revising its constitution, policies and strategies. Draft documents show favorable constitutional and policy back-up to address political participation. However, there is little explicit mention of legislation concerning embedded public participation in decision-making processes at an energy sector level. The Environment (Protection) Act, 2001, The National Investment Encouragement Act 2013 and the draft Electricity Act 2019 do not communicate the necessity to foster public consultation and participation. Nevertheless, current enabling policies, laws and pieces of legislation that include the reference to private sector participation and PPP facilitation can be sited in the following institutional and legal frameworks:

- National Strategic Plan for Sudan 2007 ? 2011
- Sudan Renewable Energy Master Plan 2005
- Petroleum Wealth Act, 1998
- Regulation of Protection of the Environment in the Petroleum Industry 2001

IDENTIFICATION OF STAKEHOLDERS FOR ENGAGEMENT AND METHODS OF COMMUNICATION

In order to ensure inclusive participation and consultation, the following stakeholders have been identified for consultation on an on-going basis. The list includes the identified social groups and persons that are associated with the project in different ways at all stages:

? Persons and social groups affected directly or indirectly by the outcomes of the Project implementation,

? Persons and social groups that participate in the project directly or indirectly,

? Persons and social groups who are able to influence and decide the outcomes and the manner of the Project implementation or make decisions based on the outputs of the project.

Stakeholders have been identified in accordance with the above classification as shown below. **More detail is provided under Annex 8 of project document**

Stakeholders to be affected, directly or indirectly, by the outcomes of the Project implementation	**Stakeholders that participate in the Project implementation**	**Stakeholders being able to influence and decide on the Project implementation or use the project outcome for decision making**
At the level of *Component 1 ? Policy and Regulation* the project affects the Republic of Sudan and its citizens, who would all be considered stakeholders. However, local counties in the five locations proposed (Kadugli, El Nahud, Nyala, Zalingei and Geneina) and the inhabitants that will be direct beneficiaries/ end users of RE services will be classified as key stakeholders. Vulnerable social groups, (the elderly, the disabled, women and children) Non-governmental organizations (NGOs) operating at the local, regional, national and international level (including energy and environmental organizations) Local inhabitant-supporting organizations Local mass media	Project Staff and consultants GEF secretariat **Ministry of Energy and Petroleum (MoEP)** Energy Regulatory Authority (ERA) Sudanese Thermal Generation Company (STGC) Sudanese Electricity Distribution Company (SEDC) National Sustainable Energy Network Sudanese Knowledge Society (SKS) Private Sector Developers Development Partners (UNDP and Sudan Country Office, BOAD, Carbon Trust/DFID, World Bank ESMAP, UN Foundation, UNIDO, UNEP, DBSA, Shell Foundation)	State Government State Departments County governments Local authorities (Traditional Leadership/local Leadership) Sudan Standards and Metrology Organization (SSMO) Higher Council for Environment and Natural Resources (HCENR) National Energy Research Centre (NERC) Private Sector Focus Group Practical Action

In addition, provide a summary on how stakeholders will be consulted in project execution, the means and timing of engagement, how information will be disseminated, and an explanation of any resource requirements throughout the project/program cycle to ensure proper and meaningful stakeholder engagement

The project aims to involve stakeholders that represent the government, private sector and civil society, including: government standards and test agencies; customs; standardization institutes; certification and accreditation bodies; private sector solar energy providers and distributors; manufacturers; consumer organizations; NGOs and CBOs; and targeted women's groups or cooperatives.

The main stakeholders involved in carrying out the activities of this project are:

- Ministry of Energy and Petroleum (MoEP)
- Electricity Regulatory Authority (ERA), under MWRIE;
- Sudanese Thermal Generation Company (STGC)
- Sudanese Electricity Distribution Company (SEDC);

Other target groups and potentially affected groups by the project include:

- Solar Energy companies and associated manufacturers and distributors;
- End-users of Solar PV minigrids.
- Institutions in charge of gender issues at national level such as: Ministries with gender components in their mandates, the gender focal point for the Ministry of Energy, civil society organizations working in the fields of gender and climate change as well as research institutions and development partners working on gender issues.

Furthermore, the proposed strategy for the AMP in Sudan should capitalize as much as possible on the project being part of the AMP Regional Project and use all possible opportunities for South-South and Triangular Cooperation. Hence, the AMP in Sudan will have access to (if requested) a variety of dedicated technical and operational support from the AMP Regional Project as follows:

1) **Access to specialized expert international consultants in selected areas** (DREI, data, GIS modelling, mini-grid business models, etc.) hired, retained, contracted, and paid for by the AMP regional project and made available to all participating national ?child? project staff and selected beneficiaries on as needed basis. The areas of support, listing of available firms/ICs under contract by the regional project and protocol for how the project can request and/or access such expertise (if needed/requested) will be elaborated in the first year of regional project implementation and disseminated to this project and the staff of all other participating AMP national ?child? projects. This support may range from virtual assistance to in-country missions. All requests for such assistance must be approved by the project manager of the AMP regional project management unit.

2) **Provision of a database of qualified international consultants and firms** disaggregated by their expertise in the four main components of the national project and other key operational areas (procurement, M&E, communications, etc.). These individuals will not be retained or contracted under the regional project but rather provided to the project for informational purposes only in an effort to assist in identifying high-quality experts and firms who may be available for contracting by national governments under their own procurement rules and modalities.

3) **Provision of generic ToRs for various standard activities** (mentioned above) under the four main components of the national project.

4) **Advisory support by the AMP regional project management unit** to staff of the project on trouble shooting (operational support, ToR reviews and problem solving) on an ad-hoc and as-needed

basis. These services will be paid for the regional project and available on a first-come/first-serve bases under a protocol to be established by the regional project.

Sudan AMP: Stakeholder Consultation and Engagement during PPG Development

As part of the PPG development, and in addition to the desk review and data collection exercise, the PPG team composed three International Consultants (Technical, Gender and Safeguard consultants) and two national consultants (Technical Consultant and Gender consultants). Different Key stakeholders were identified and engaged (See attached complete list of invitees). The following represent the key stakeholders with them the PPG consultants led series of in-person and online meetings and discussions:

- ? Ministry of Energy and Petroleum (MoEP)
- ? National Energy Research Center (NERC)
- ? Ministry of Finance & National Economy (MoF)
- ? Sudan Standards and Metrology Organization (SSMO)
- ? Renewable Energy Directorate (MoP)
- ? Higher Council for Environment and Natural Resources (HCENR)
- ? Sudan Electricity Holding Company
- ? Public Electricity Companies
- ? Commercial Banks
- ? Private Solar Companies
- ? Practical Actions
- ? World Bank

1) AMP Mini-Grid Sudan project: Sudan PPG inception meeting 08th September 2020. In this meeting the project concept and strategy were presented by the International Consultants. Participate in meetings discussed the project idea, opportunities, and possible challenges.

2) Bilateral Meetings with representatives of all different types of stakeholders mentioned above. In these meeting roles and responsibly of stakeholders were discussed and how these roles can contribute to the successful implementation of the project.

3) AMP Mini-Grid Sudan project: Validation workshop 19-April 2021. In this workshop the project?s components, logical framework and the proposed project budget were presented. Participants in meetings discussed project components and provided input to the budget allocation, institutional structure and assessment of assumptions that is being proposed as part of the project theory of change.

For preparation of data collection, virtual meetings with above stakeholders were besides in-person meeting conducted by the national consultants. Comments and feedback from participants in these meetings and workshops led the project design. The comments and recommendations from stakeholders and the UNDP review team shaped the updated project strategy which has been presented to stakeholders in the validation workshop to obtain final comments on the design and validate the overall project strategy before submission to GEFSEC.

Type of information disclosed along the PPG phase is as follows:

Table 1 - Stakeholder engagement during project development

Interaction type	Type of information disclosed	Location and dates	Individuals, groups and/or organizations consulted	Key issues discussed and concerns raised	Responses to issues raised	Process to provide feedback to stakeholders
Inception Workshop	Introduction to the scope of AMP program and national project, priorities, next steps (stakeholder bilateral meeting)	Stakeholders gathered in UNDP premises to facilitate the online communications with the Internationals consultants (PPG team Lead) held on 8th of Sept. 2020 -Alberto Rodr?guez - TTA- alberto.rodriguez@tta.com.es -Heran Tadesse herantadesse4@gmail.com and face to face consultation between stakeholders and the National Consultants during 10 September to 20 October 2020 to collect data. -Samah Hashim samah_hashim@hotmail.com -Mawahib Ahmed ahmed.mawahib@gmail.com	All types of stakeholders were represented (24 participants), including government, agencies, private sector, academia and research centers see list of attendees in the attached annex	Interactive sessions focusing on (i) After the introductions, AMP Sudan PPG Team Leader and the Gender Expert presented the main chapters and sections of the project document. (ii) definition of mini-grid and to link with productive use of electricity identified by the participants (specific value chains ? commercial and social (iii) Involvement of mini-grid developer (iv)The approach to gender and social and environmental safeguards was shared with stakeholders.	The theory of change revised, and relevant value chains integrated in the ProDoc.	Stakeholder interview process initiated to reach those stakeholders were not able to participate in the inception workshops.

Stakeholder interviews	Obtaining input from stakeholders regarding priorities and needs, as well as challenges to overcome barriers and to structure the project frame and design.	Conducted online and face to face between September 2020 to February 2021, including via focus groups, virtual meetings and bilateral interviews.	All the ones listed above in addition bilateral meetings were also held with international organization: -World Bank on 2nd Nov. 2021. -Practical Action on 15th Dec. 20202. (Minutes of meetings attached)	o Community based models and their capacities o Private sector barriers to participate in the project scale up plan and scaling-up potential of the minigrid. o Sustainability of post-project o Align with stakeholders? current mini-grid or similar energy access projects.	Incorporated into the Project Document and concrete solutions proposed.	Validation workshop and documentation Minutes of meetings for the views were circulated for comments and/or amendments on the proposed project frame and gender participation.
Sharing of project information with workshop invitation	Project result framework up to activities level, preliminary budget allocated per component and funding source (GEF/UNDP and others) for preparation.	March 2021	Invitations across all stakeholder categories	Allocations of budgets among the different activities.	Budget allocation was revised and agreed upon.	A revised project document was circulated to receive comments and propose correction actions.

Validation Workshop	Overview of project design and	The validation workshop was held on the 19th April 2021 from 11:00-2:00 pm in Corinthia Hotel Face to face participation with the local consultants and the international consultants virtually participated.	24 participants from all stakeholder categories participated in this meeting (list of participants attached)	Highlights of the proposed project?s: o Co-finance commitments by the project and endorsement. o Climate change impact, mitigation options and activities o Climate change mitigation measures and interventions o Potential market for a minigrid constraints and opportunities. o The role of the line ministries and government entities in the project implementation	Project Document amended to reflect these concerns including framework and activities, budget per component and type of funding source (GEF/UNDP grant and other donors). ? Status and gaps in the implementation. ? Identification of roles for the different stakeholders in the project implementation ? Identification of the information gap and the required research for market, gender issues and other related fields during the initial stages of project implementation.	Amended the Project Document, Result Framework and budget allocatiosn

A full detailed elaboration of these offerings and the protocols attached to each service will be communicated to the project at the inception workshop of the AMP Regional Project and at the inception workshop of each national child project.

Select what role civil society will play in the project:

Consulted only;

Member of Advisory Body; Contractor; Yes

Co-financier;

Member of project steering committee or equivalent decision-making body;

Executor or co-executor;

Other (Please explain)

3. Gender Equality and Women's Empowerment

Provide the gender analysis or equivalent socio-economic assesment.

Key considerations taken into account in proposing the following activities include ?Legal and policy environment, existing institutional structures, alignment with project?s components, recommendations from stakeholders consultations and linkages with SDG, UNDP/GEF Gender equality and women empowerment standards (Ensuring projects do not exacerbate gender inequality and be responsive of women and men development needs and priorities).

It should be also noted that gender dynamics and institutional readiness vary in different contexts and responsive mechanisms should be context specific while capitalizing on existing opportunities and resource. For this reason, conducting specific gender analysis and participatory action planning using the mini-grid gender analysis framework is strongly recommended particularly in the pilot sites. The unique opportunity for Sudan AMP to integrate gender dimension in the overall project focus is that an NGO called Practical Action Sudan is selected to be one of the implementing partners bringing ample experience in gender and clean energy interventions. Therefore, this action plan will serve as an input to the overall gender integration efforts to be technically led by Practical Action.

Project Outputs	**Proposed Activities**	**Indicator**	**Responsible body**
Component 1 Policy and Regulations			

Professional women engaged in mini-grid policy dialogues and policy formulation such as Delivery Model working group, consultations on regulatory frameworks, the national sustainable energy network	1.Identify professional women in the energy sector to engage them in mini-grid related policy making and consultations	# Women engaged in mini-grid policy making process and consultations	Ministry of energy and petroleum/ Practical Action Sudan/UNDP Sudan
Women and youth voices and concerns integrated in ongoing delivery model conversations at different levels and studies to be conducted to inform mini grid	2. Invite women and youth representatives from institutions and at community level to engage them in mini-grid focused consultations	# women participated in consultations # youth (18-24) age participated in mini-grid related consultation	Ministry of energy and petroleum/Practical Action/ AMP project staff/UNDP Sudan
Component 2. Business Model innovation with private sector engagement			
Sudanese women accessed vocational training opportunities to be trained in technical, managerial and economic aspects of mini grids	3.Recruit and enroll potential women candidates in emerging field of mini grid at vocational schools	#women successfully completed vocational training on mini-grid related knowledge and skills	Ministry of energy and petroleum/Practical Action/AMP project staff/ UNDP Sudan
Pilots based on the potential of agricultural activity and agro-processing opportunities equally benefited men and women	4.Conduct gender analysis action plan on the position of women in agricultural and agro-processing contexts in the areas where pilots will be deployed	Yes/No	Practical Action/UNDP Sudan
Component 3Innovative financing model			
Gender dimensions integrated in the mapping/study of financial services for renewable energy market	5.Integrate gender dimensions from the design to analysis of planned studies such as willingness and ability to pay, energy demand assessments	Yes/No	Ministry of energy and petroleum/Practical Action/UNDP Sudan

Women owned business are targeted and benefited from emerging mini grid financial services	6.Provide targeted finance/incentivize women owned enterprises, purchase of electrical appliances to start-up or improve business	#women owned enterprises benefited from financial services	Ministry of energy and petroleum/Practical Action/UNDP Sudan
Component 4 Knowledge Management (KM) and Monitoring and Evaluation (M&E)			
Gender and clean energy issues become integral part of knowledge agenda in the community of practice to be established by this project	7. Set gender as an agenda to be explored, discussed and new evidences to be shared as it relates with Community of Practice	# COP meetings where gender and energy issues discussed	Ministry of energy and petroleum/Practical Action/UNDP Sudan
Lessons from pilots, findings from specific studies that integrate gender dimensions compiled and shared to stakeholders	8.Develop success stories and technical briefs on gender and mini grid topics	# Success stories/ technical brief produced on topics of gender and mini grids	Ministry of energy and petroleum/Practical Action/UNDP Sudan
All data to be generated through AMP project disaggregated by sex and used to inform decisions and future programing	9. Track project beneficiaries by sex and age	# women benefited from AMP interventions at various levels	Ministry of energy and petroleum/Practical Action/UNDP Sudan

Does the project expect to include any gender-responsive measures to address gender gaps or promote gender equality and women empowerment?

Yes

Closing gender gaps in access to and control over natural resources;

Improving women's participation and decision making Yes

Generating socio-economic benefits or services or women Yes

Does the project?s results framework or logical framework include gender-sensitive indicators?

4. Private sector engagement

Elaborate on the private sector's engagement in the project, if any.

The AMP program as a whole has defined three generic categories of pilot:
Greenfield solar-battery minigrids (which often will include productive use
Productive use overlays (on an existing solar-battery minigrid)
Hybridization of an existing diesel minigrid (with new solar-battery equipment)

For AMP Sudan, the pilot is a hybridization of existing diesel minigrids with solar PV and battery equipment. As outlined in the PILOT PROJECT ZOOM IN this has been designed in a phased-approach.

Private sector involvement in pilots.

Each pilot will have a de facto delivery model it is demonstrating. The delivery model does not need to be finalized at the design stage and can wait until implementation.
However, in selecting the delivery model during implementation, a key principle should be stated that the delivery model for pilots should seek to incorporate private sector involvement to the degree possible. This will be on a spectrum from private sector for Engineering, Procurement and Construction (EPC), to private sector for Operations and Maintenance (O&M), to private sector for a build own operate model (BOO). While recognizing the importance of national context, market maturity and other factors, the AMP program is taking a normative position that private sector engagement in the minigrid sector is conducive to scaling-up minigrids.

For AMP Sudan, the pilot delivery model and private sector involvement has the following features:
- Built Own Operate and Transfer (BOOT) delivery model through a concession with private sector co-investment in the generation infrastructure
- Private sector co-investment in the solar PV power plant, based on the market understanding it is anticipated that around 50% of the CAPEX could be requested by the private sector for the first phase of the project, the hybridization with solar PV power plants

More detail is provided under annex 15 of the project document

5. Risks to Achieving Project Objectives

Elaborate on indicated risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and, if possible, the proposed measures that address these risks at the time of project implementation.(table format acceptable):

#	Description	Risk Category	Impact & Probability	Risk Treatment / Management Measures	Risk Owner
1	IP Capacity to effectively lead the AMP Sudan child project	Operational Organizational	P = 3 I = 5	Embedded Senior Mini-grid Expert at MoEP HACT and PCAT assessments done by UNDP already	MoEP

2	Lack of appropriate private sector involvement	Political Regulatory Market Dynamics	P = 3 I = 4	- Pilots as soon as possible - Light-handed regulations for mini-grids under a certain generation capacity (bottom-up proposals) - Mini-grid digital platform	Project Board
3	Currency fluctuations	Financial	P = 4 I = 4	- A hard currency payment guarantee - Establishment of a financing mechanism with the electricity distribution company	MoEP
4	The security situation in Sudan may pose some risks or perceived risks. Such perception may hinder investment by main parties.	Political	May slow investment P = 3 I = 3	- Data transparency - Pipeline of projects - Mini-grid digital platform	Project Board
5	Inability to meet digitalization objectives and activities within component 4. Lack of adequate and reliable market data to facilitate the monitoring of project impacts and planning of further policy measures	Operational and infrastructural	P = 2 I = 3	- Extensive support from AMP Regional Programme - Establishment of baseline data through a baseline survey and the results of GIS mapping exercise - Robust MRV arrangements will be put in place	MoEP

6	Persistence of COVID-19 throughout the project implementation	Health	P = 4 I = 3	The implementation of the project during a pandemic can potentially lead to (i) change in national priorities and context, (ii) procurement delays due to restrictions on imports, and (iii) exposure risks for the project team, consultants, partners, and communities during implementation Mitigation actions; - Supporting the government with energy access goals readily supports COVID-19 responses by facilitating the stay-home conditions for people, and ensures more reliable energy access for health facilities. - Supporting digital transformation and promoting remote performance monitoring and consumption tracking serves to increase system efficiency while minimize in-person contact to ensure sustainability during pandemic emergencies without putting the different target groups at exposure risks.	MoEP
7	Climate risk	Environmental Climate Change	P =3 I=3	If anything this project and the project?s proposed pilot intervention will make the targeted communities more resilience against climate change as it will diversify the energy generation and will decrease the diesel consumption (and therefore the CO2 emissions). This is an external risk to the project that will be mitigated in the context of a variety of other third-party activities from the Government.	MoEP Project Board
8	Ethnic conflict and violence, civil unrest	Security, political	P = 2 I = 5	The ESMF will capture this risk, to be further assessed and managed through the ESIA/ESMP.	MoEP Project Board

9	Battery and Hazardous Waste Disposal	environmental, health	P = 3 I = 5	ESMF	MoEP and Project Board
10	Land acquisition and resettlements	Environmental, political	P = 2 I = 4	ESMF The priority will be to avoid any potential resettlement by emphasizing the use of government owned land for the construction of mini-grids. Stakeholder Engagement Plan captures this Grievance Redress Mechanism (GRM)	
11	Agriculture and biodiversity	Environmental	P = 2 I = 2	ESIA Any critical habitats will be identified and avoided	MoEP and Project Board
12	Community Health and Safety Issues	Environmental, health	P = 3 I = 2	ESMF captures prevention for child labor, gender-based violence, sexual harassment and sexual exploitation and risk reduction for communicable disease	MoEP and Project Board
13	Social exclusion of some potential beneficiaries in project target areas due to social status and/or inter-community relations	Political, security	P = 3 I = 3	The project will incorporate approaches to avoid or mitigate discrimination and ensure equitable access to project benefits, with risks captured in the ESMF and subsequent ESIA/ESMP providing preventative measures and monitoring.	MoEP and Project Board
14	Localized pollution	Environmental	I = 2 P = 2	The ESMF will capture this risk; the ESIA will assess the impact of constructing the mini-grids and solar PV power plants, discuss the potential with communities and local stakeholders	MoEP and Project Board

15	Project might have unintentional impacts that will affect women in terms of access to resources, decision-making, and socio-economic benefits of the project.	Gender	P = 1 I = 3	The project incorporate gender several gender considerations, including the output ?solar sister? programme to promote the inclusion of women in the design, O&M of solar PV mini-grids	MoEP and Project Board
16	Unidentifiable risks from as yet defined activities and changing economic, health and travel circumstances, for example related to changes in conflict situations and COVID-19.	Political, climate change, security	P = 2 I = 2	Quarterly reports, annual project implementation reports (PIRs), and the mid-term review (MTR) will screen for additional risks that develop during project implementation. Any additional risks identified will be added to monitoring, and mitigation measures designed by the Project Management Unit (PMU) and consultants as required, in discussion with the Project Steering Committee and UNDP Country Office.	MoEP and Project Board

6. Institutional Arrangement and Coordination

Describe the institutional arrangement for project implementation. Elaborate on the planned coordination with other relevant GEF-financed projects and other initiatives.

Executing Agency: The Executing Agency for this project is: ***Ministry of Energy and Petroleum.***

The Executing Agency is the entity to which the UNDP Administrator has entrusted the implementation of UNDP assistance specified in this signed project document along with the assumption of full responsibility and accountability for the effective use of UNDP resources and the delivery of outputs, as set forth in this document.

The Executing Agency is responsible for executing this project. Specific tasks include:

•

•Project planning, coordination, management, monitoring, evaluation and reporting. This includes providing all required information and data necessary for timely, comprehensive and evidence-based project reporting, including results and financial data, as necessary. The Executing Agency will strive to ensure project-level M&E is undertaken by national institutes and is aligned with national systems so that the data used and generated by the project supports national systems.

? Risk management as outlined in this Project Document;

? Procurement of goods and services, including human resources;

? Financial management, including overseeing financial expenditures against project budgets;

? Approving and signing the multiyear workplan;

? Approving and signing the combined delivery report at the end of the year; and,

? Signing the financial report or the funding authorization and certificate of expenditures

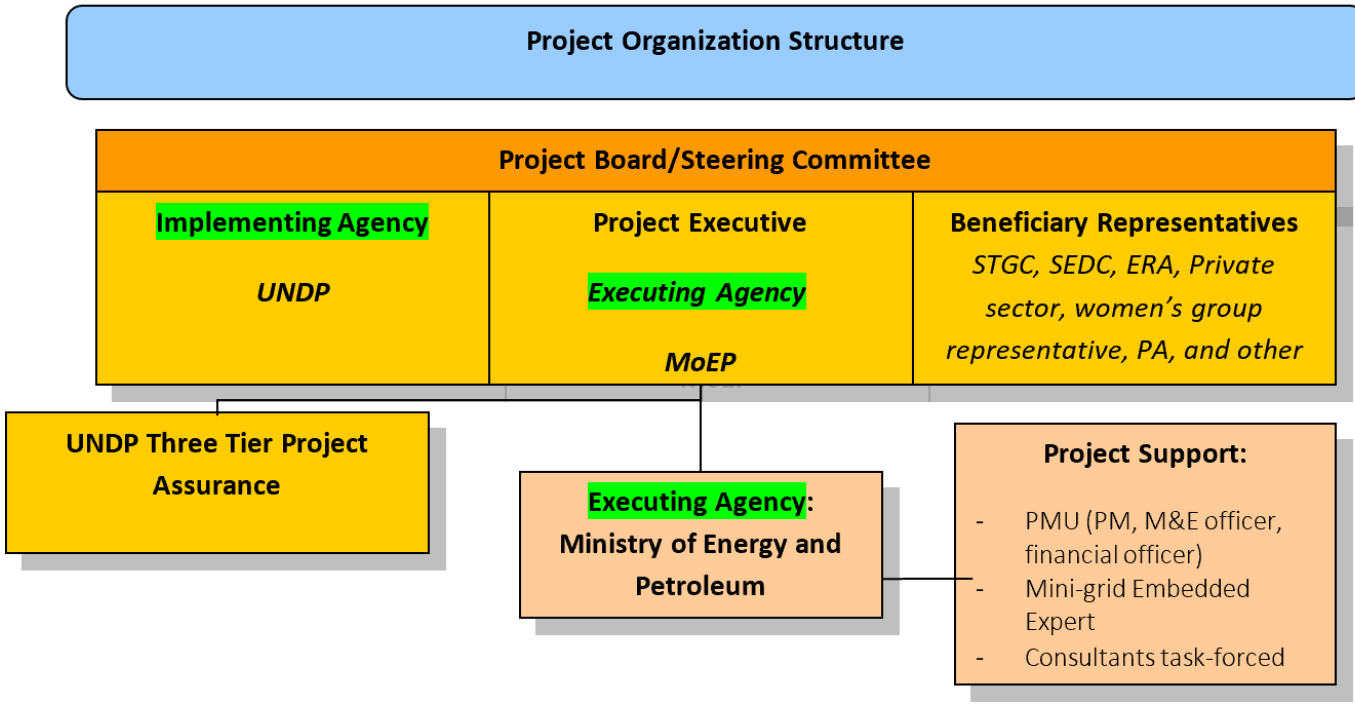
A representative of the project will sit on the project board/steering committee of the AMP regional project in a role as ?beneficiary representative.? It is expected that all AMP regional project board meetings will be held virtually (i.e. not in-person) and that beneficiary representatives will participate in steering committee meetings via video-conference. The representative of the project on the AMP regional board will be Mr. Yasir Abdalla from MoEP. It is expected that the AMP regional project board will meet a maximum of twice per year.

Project stakeholders and target groups

Stakeholder	Roles and Responsibilities
Sudanese Thermal Generation Company (STGC)	Smooth cooperation throughout the project, in particular related to the pilot project component Support MoEP in anything as required Facilitate knowledge, personnel, and infrastructure (vehicles, etc.) for the studies pilot implementation Engagement and assistance in the trainings, workshops and capacity building activities
Sudanese Electricity Distribution Company (SEDC)	Smooth cooperation throughout the project, in particular related to the pilot project component Support MoEP in anything as required Facilitate knowledge, personnel, and infrastructure (vehicles, etc.) for the studies pilot implementation Engagement and assistance in the trainings, workshops and capacity building activities
Electricity Regulatory Authority	Lead all activities, in conjunction with MoEP related to Component 1 Engage with AMP Regional activities related to digitalization, licensing mini-grids, tariff regulation as established in component 1,2,3 and 4 of the results and partnership Review bottom-up proposals coming out of Activity 1.1.1.1 in a timely and efficient manner Assist and represent ERA in all stakeholder consultations and workshops as part of 1.1.1.2
Private Sector	Attendance in all stakeholder consultations and workshops as part of 1.1.1.2 Proposal submission during the request for proposals for the pilot project implementation
Sudanese Knowledge Society	Engagement and leadership in the gender-based activities related to the project, ?solar sister? Smooth cooperation throughout the project, in particular related to the pilot project component
Practical Action	Engagement and leadership in the gender-based activities related to the project, ?solar sister? Smooth cooperation throughout the project, in particular related to the pilot project component

State governments and state departments	Smooth cooperation throughout the project, in particular related to the pilot project component Support MoEP in anything as required Facilitate knowledge, personnel, and infrastructure (vehicles, etc.) for the studies pilot implementation
Sudan Standards and Metrology Organization	Smooth cooperation throughout the project, in particular related to the pilot project component Engagement, input and feedback in relevant activities
National Energy Research Center	Smooth cooperation throughout the project, in particular related to the pilot project component Engagement, input and feedback in relevant activities
World Bank and other development partners	Smooth cooperation throughout the project Appropriate coordination with IP on other initiatives to avoid potential overlapping, conflict related to lack of coordination. The IP is in a good position to avoid overlapping between the World Bank programme (SETAO) and AMP Sudan Child project Complementarity
Higher Council of Environment and Natural Resources	Smooth cooperation throughout the project, in particular related to the pilot project component Input, leadership and feedback in all activities related to environmental and natural resources in particular the ESMF

UNDP: UNDP is accountable to the GEF for the implementation of this project. This includes oversight of project execution to ensure that the project is being carried out in accordance with agreed standards and provisions. UNDP is responsible for delivering GEF project cycle management services comprising project approval and start-up, project supervision and oversight, and project completion and evaluation. UNDP is also responsible for the Project Assurance role of the Project Board/Steering Committee.



Project organisation structure:

The Project Board (also called Project Steering Committee) is responsible for taking corrective action as needed to ensure the project achieves the desired results. In order to ensure UNDP?s ultimate accountability, Project Board decisions should 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 consensus cannot be reached within the Board, the UNDP Resident Representative (or their designate) will mediate to find consensus and, if this cannot be found, will take the final decision to ensure project implementation is not unduly delayed.

Specific responsibilities of the Project Board include:

? Provide overall guidance and direction to the project, ensuring it remains within any specified constraints;

? Address project issues as raised by the project manager;

? Provide guidance on new project risks, and agree on possible mitigation and management actions to address specific risks;

? Agree on project manager?s tolerances as required, within the parameters set by UNDP-GEF, and provide direction and advice for exceptional situations when the project manager?s tolerances are exceeded;

? Advise on major and minor amendments to the project within the parameters set by UNDP-GEF;

- ? Ensure coordination between various donor and government-funded projects and programmes;
- ? Ensure coordination with various government agencies and their participation in project activities;
- ? Track and monitor co-financing for this project;
- ? Review the project progress, assess performance, and appraise the Annual Work Plan for the following year;
- ? Appraise the annual project implementation report, including the quality assessment rating report;
- ? Ensure commitment of human resources to support project implementation, arbitrating any issues within the project;

? Review combined delivery reports prior to certification by the Executing Agency;

? Provide direction and recommendations to ensure that the agreed deliverables are produced satisfactorily according to plans;

? Address project-level grievances;

? Approve the project Inception Report, Mid-term Review and Terminal Evaluation reports and corresponding management responses;

•Review the final project report package during an end-of-project review meeting to discuss lesson learned and opportunities for scaling up.
•Ensure highest levels of transparency and take all measures to avoid any real or perceived conflicts of interest.
? Designate the ?beneficiary representative? of the project on the AMP Regional Project?s Steering Committee/Project Board

The composition of the Project Board must include the following roles:

a. Project Executive: Is an individual who represents ownership of the project and chairs the Project Board. The Executive is normally the national counterpart for nationally implemented projects. The Project Executive is: *Mr. Yasir Abdalla Saied, Director General, Directorate of Renewable Energy, Ministry of Energy and Petroleum.*

b. Beneficiary Representative(s): Individuals or groups representing the interests of those who will ultimately benefit from the project. Their primary function within the board is to ensure the realization of project results from the perspective of project beneficiaries. Often civil society representative(s) can fulfil this role. The Beneficiary representative (s) is/are: *El Khitma El Awad Mohammed Acting secretary General, Higher Council for Environment and Natural Resources.*

c. Development Partner(s): Individuals or groups representing the interests of the parties concerned that provide funding and/or technical expertise to the project. The Development Partner(s) is/are: Yuri Afanasiev, *UNDP RR.*

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d. Project Assurance: UNDP performs the quality assurance and supports the Project Board and Project Management Unit by carrying out objective and independent project oversight and monitoring functions. This role ensures appropriate project management milestones are managed and completed, and conflict of interest issues are monitored and addressed. The Project Board cannot delegate any of its quality assurance responsibilities to the Project Manager. UNDP provides a three ? tier oversight services involving the UNDP Country Offices and UNDP at regional and headquarters levels. Project assurance is totally independent of project execution.

7. Consistency with National Priorities

Describe the consistency of the project with national strategies and plans or reports and assesments under relevant conventions from below:

NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc.

The project is aligned with NDC (Paris agreement) to the UNFCC, national communications (to UNFCCC) and the national energy policy.

? Nationally Determined Contributions (NDC, May 2021): Sudan is committed to pursue a low emission and resilient sustainable development in the energy sector. The first objective of the NDC is to transform the electricity sector towards low emission power generation through among others, mini grids. In this commitments Sudan wants to achieve 796MW of installed capacity by 2030 via minigrids and decentralized, off-grid technologies

? National Communications: Sudan?s Second National communications (2013) also pointed out that Energy is the most promising sector to reduce GHG emissions. Development of Solar PV is at the core of the CC Mitigation strategies.

? National Energy Policy: annexed to this file we are attaching a summary of the ?ENARA Lighting?, which can be considered as the Government of Sudan energy plan that was submitted to Paris Conference on April 2021.

8. Knowledge Management

Elaborate the "Knowledge Management Approach" for the project, including a budget, key deliverables and a timeline, and explain how it will contribute to the project's overall impact.

Part of ensuring the sustainability of the project activities and prolonging its impact beyond the project duration is to maintain a system of monitoring, evaluation, knowledge sharing, and knowledge dissemination. The information contributing to knowledge production will be collected in an organized

manner and constantly feeding the project operation as well as the design of new interventions, this part will be very important for Sudan as data on energy is scarce and limited. More specifically, the outcomes under Component 4 serve to ensure that knowledge management, monitoring and evaluation are accounted for as independent tasks, but also integrated in all aspect of project implementation. This includes project participation in the Communities of Practice (CoP) to be established and managed by the AMP Regional Project.

The dedicated budget for Knowledge Management by GEF under Component 4 is 59,166 USD. Outside of this budget but also relevant is the provision, under Project Management Costs (PMC) of an M&E officer with will be collecting and centralizing all the data collected during this project.

Through the M&E officer and the remote monitoring requirements by the AMP regional project, as well as best practices that AMP regional project will be capable of advisiong on to the Child Project, the project will be capable of adopting best practices in i) gather remote monitoring data, ii) interpreting data and validating hypothesis as the project progresses, iii) fine-tune and modify program activities as required.

A Quality Assurance and Monitoring Framework (QAMF) for measuring, reporting and verification of the sustainable development impacts of all mini-grids pilots supported, including GHG emission reductions, is adopted an operationalized based on standardized guidance from the regional project

Another clear example of this is found in the proposed Indicator 16: Number of replication plans, including detailed budgets, for scaling up the deployment of sustainable minigrids in Sudan (based on annual lessons learned and geospatial modelling of least-cost technology options for off-grid electrification)

To overcome the COVID restrictions, many of the tools developed under the Knowledge Management (KM) system will take the form of online portals, reducing in-person contact and ensuring the work can proceed in case there continues to be restrictions on mobility during project implementation. More details on the deliverables, timeline and budget for the KM scope of project implementation are presented in the Results Framework and M&E plan under Component 4.

9. Monitoring and Evaluation

Describe the budgeted M and E plan

Monitoring and Evaluation Plan and Budget:

This M&E plan and budget provides a breakdown of costs for M&E activities to be led by the Project Management Unit during project implementation. These costs are included in Component 4 of the Results Framework and TBWP. For ease of reporting M&E costs, please include all costs reported in the M&E plan under the one technical component. The oversight and participation of the UNDP Country Office/Regional technical advisors/HQ Units are not included as these are covered by the GEF Fee.

GEF M&E requirements	Indicative costs (US$)	Time frame
Inception Workshop	5,000	Within 60 days of CEO endorsement of this project.
Inception Report	None	Within 90 days of CEO endorsement of this project.
M&E of GEF core indicators and project results framework	Zero, as M&E of GEF core indicators is part of PIR or MTR and TE	Annually and at mid-point and closure.
GEF Project Implementation Report (PIR)	Zero, as GEF PIRs are prepared by the M&E specialist and Project Manager as part of their TORs	Annually typically between June-August
Monitoring of environmental and social risks, gender action plan, fuel displaced by project pilots and corresponding management plans as relevant	*22,417*	On-going.
Supervision missions	None	Annually
Independent Mid-term Review (MTR)	*30,000*	1/9/2023
Independent Terminal Evaluation (TE)	*30,000*	1/6/2025
TOTAL indicative COST	*87,417.00*	

In addition, the project will provide (on a bi-annual/annual basis and to the extent feasible if requested on an ad-hoc basis) the following M&E information to the AMP Regional Project staff:

? Standard reporting on all indicators in the results framework for aggregation and reporting to GEFSEC (by the regional project) on the impacts of all participating national ?child? projects for the program as a whole.

? Reporting on all additional Key Performance Indicators (KPIs) adopted by the project.

10. Benefits

Describe the socioeconomic benefits to be delivered by the project at the national and local levels, as appropriate. How do these benefits translate in supporting the achievement of global environment benefits (GEF Trust Fund) or adaptation benefits (LDCF/SCCF)?

The project will have the following socioeconomic benefits both at the national and local level:

? Gender benefits. Through the ?solar sister? programme this project will train women in the local communities where the pilot projects will be executed in the design, operation and maintenance of solar PV minigrids. This will result in increase literacy within these communities and a more gender-balanced context

? Clean energy. Through the reduction of diesel consumption the local communities and Sudan as a whole will be positively impacted in the CO2 emissions

? Job creation. The project will create jobs for women and men in both, the local targeted communities, but also at the national level through the various activities planned. For more information on the number of jobs the results project framework provides information

? Knowledge. As a result of the various technical assistances and interventions, and starting from the Executing Agency to the end-users the project will be a platform where knowledge about minigrids and rural electrification will be at the forefront

? Digitalization . Through various activities planned for the project the digitalization of the energy sector and in particular the offgrid sector will result in a more accessible and transparent data in the energy sector, which will also enable a more informed decision making

11. Environmental and Social Safeguard (ESS) Risks

Provide information on the identified environmental and social risks and potential impacts associated with the project/program based on your organization's ESS systems and procedures

Overall Project/Program Risk Classification*

PIF	CEO Endorsement/Approval	MTR	TE
	High or Substantial		

Measures to address identified risks and impacts

Elaborate on the types and risk classifications/ratings of any identified environmental and social risks and impacts (considering the GEF ESS Minimum Standards) and any measures undertaken as well as planned management measures to address these risks during implementation.

There are 21 potential risks have been identified for this project, 12 are assessed as MODERATE and 9 are Substantial so the overall risk is Substantial. More detail is provided in SESP and ESMF document

Supporting Documents

Upload available ESS supporting documents.

Title	Module	Submitted
SUDAN SESP Oct 4 2021 _CLEAN_ (1)	CEO Endorsement ESS	
ANNEX 10 - ESMF for 10 UNDP AMP Child Projects_06Oct2021_clean (3)	CEO Endorsement ESS	
PIMS6321 Sudan AMP - ESMF 20210711	CEO Endorsement ESS	
PMIS 6321 ANNEX_06-SESP - Sudan 20210616_clean and cleared	CEO Endorsement ESS	

ANNEX A: PROJECT RESULTS FRAMEWORK (either copy and paste here the framework from the Agency document, or provide reference to the page in the project document where the framework could be found).

ANNEX B: RESPONSES TO PROJECT REVIEWS (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF).

Compilation of Comments submitted by Council Members of the GEF December 2019, Work Program. Regional project, GEF 7 Africa Mini-grids Program, UNDP (GEF Program Financing: $24,235,308) (GEF ID: 1043).

Table 1: Council Comments and Responses

Comment & Response	Reference
Council Comments (Germany):	

Comment & Response	Reference
1. Comment: *"Germany requests that the risk and co-financing sections of the document are revised to provide more information about how the project implementers intend to mobilize the proposed finance and what alternatives will be pursued in the event of delays or changes to the indicative funds. With around 344 Mio. USD, provided by 51 financiers, a well-managed and guaranteed flow of co-financing will be crucial to the project?s success. However, at this stage, co-financing sources and amounts are still indicative, thereby giving no assurance that finances will be made available."* **Response**: Indeed, co-financing and partnerships with the private sector and capital providers will be critical to the program?s success. During the PPG phase, discussions with co-financiers have been deepened and formalized. Details on this have been captured on this in both the CEO endorsement requests and project document. Measures to ensure that co-financing materializes will be addressed as follows, at the regional project and national project level: Regional project measures: (i) The AMP regional project will, as part of its monitoring activities under Component 5, track overall co-financing for the program, including co-financing for the regional project as well as for national projects. As per the regional project?s Stakeholder Action Plan (Annex 8), the regional project will be in a position to identify new sources of co-financing as a mitigation action for any of the sources confirmed at CEO Endorsement stage that do not materialize during implementation. (ii) UNDP is part of the Minigrid Funders Group (MGF), which represents the main donors and development agencies active in minigrids, which will provide a mechanism to coordinate with other key funders in the minigrids sector. (iii) UNDP?s oversight team for the regional project, and the regional project?s PMU, will monitor the realization of co-financing on an annual basis in the GEF PIR, and in the mid-term and terminal evaluation. (iv) The regional project?s Board is tasked in its TOR with tracking and monitoring co-financing. Sudan national project measures.) UNDP?s Country Office, and the national project?s PMU, will monitor the realization of co-financing on an annual basis in the GEF PIR, and in the mid-term and terminal evaluation. (ii) The national project?s Board is tasked in its TOR with tracking and monitoring co-financing. (iii) During the PPG phase, stakeholder consultations have been conducted including with private sector players to ensure their engagement from the very beginning. Various players have expressed their will and potential concrete measures to support the success of the AMP project. (iv) The PMU and UNDP?s Country Office will also stimulate confirmed co-financiers to materialize their commitments and identify other co-financing opportunities related to new projects and other players	Sudan CEO endorsement request: Part II, - Sudan national project document: Part IV. Regional project document: Section IV. RESULTS AND PARTNERSHIPS: - Description of Component 5); - Key Risks (Table 9) Sudan CEO endorsement request: Part II, Sudan national project document: Annex 6 UNDP Risk Register

Comment & Response	Reference
2. Comment: *"Germany requests **clear identification of relevant stakeholders for all countries and all program components**, including regional and national agencies, technical stakeholders (implementation phase), strategic partners and relevant companies for e.g. capacity building. The program includes 11 African countries and numerous stakeholders. For some countries, relevant ministries and relevant technical implementation partners have been appointed, for others not."* **Response**: All relevant stakeholders have been identified for Sudan and included in the project document?s comprehensive Stakeholder Engagement Plan. [Stakeholders identified as partners and potential partners are also highlighted in project document, [Section IV]] The Executing Agency/implementing partner for Sudan has been identified as the Ministry of Energy and Petroleum	Sudan CEO endorsement/ approval request document: - Part II, Section 6 - Institutional Arrangement and Coordination Sudan Project document: - Part IV. Results & Partnerships - Annex 8 Stakeholder Engagement Plan

Comment & Response	Reference
3. Comment: *"Germany requests a **breakdown of component 2 activities**, including more details on the project approach under Component 2. A large part of the program?s allocated funding is for investments in this component (49% of total budget). However, the activities in this component are not sufficiently described. Given the importance to the project outcomes, Germany would also **recommend further describing how project activities contribute to the project?s overall theory of change.**"* **Response**: Sudan National project: Component 2 activities, which include GEF INV for minigrid pilots, for the AMP in Sudan are comprehensively described in the project document, Section IV, RESULTS AND PARTNERSHIPS. [The contribution of the respective components to the national project?s theory of change has been detailed in the project document Section III, strategy, immediately following the TOC diagram.] Regional project. At the program level, the contribution of minigrid investment pilots to the program?s overall TOC has been further explained in the Strategy Section of the AMP Regional project document as follows: *?Minigrid investment pilots contribution to the Program?s TOC: National Projects include funds, under Component 2 (Business model innovation and private sector), for supporting minigrid investment pilots seeking to demonstrate innovative business models and cost-reduction opportunities. Minigrid pilots have a key role within AMP by contributing to demonstrate cost-reduction which can be leveraged to improve the financial viability of renewable energy minigrids. Minigrid pilots are aligned with one or more of the three key areas of opportunity mentioned above by demonstrating: (i) a particular delivery model or elements of a delivery model around which the government wishes to build capacity and engage with minigrid developers; (ii) productive uses of electricity and their potential to reduce costs and enable minigrid development at scale; and/or (iii) opportunities around digitalization and the use of data for minigrid cost reduction. Feedback loops to other national project activities (e.g., national dialogues, capacity building) and with the AMP Regional Project (e.g. Community of Practice) are intended to actively disseminate the learnings from the pilots to inform both the policy and regulatory environment as well technical capacity building.?*	Sudan CEO endorsement/ approval request document: - Part II Sudan National project document: - Section IV. Section III. Regional Project Document: Section III. STRATEGY

Comment & Response	Reference
4. Comment: *"Experiences with implementing mini-grids in Africa have proven that high financial costs are linked to high financial risks in local markets. The proposal considers the risk, but* ***Germany recommends that special attention should be given to financial risk reduction and risk-hedging approaches****. The risk section should be revised accordingly.* ***The lack of skilled technical staff is a further risk that requires greater consideration****. Germany recommends a greater focus on capacity building for skilled technicians."* **Response**: Effectively and efficiently addressing investment risks will be key to transforming local minigrid markets. AMP?s design - both at national and regional project levels - will use UNDP?s innovative Derisking Renewable Energy Investment (DREI) framework to identify, quantify and then target the underlying risks that are driving high financing, investment and operation costs. The DREI framework facilitates selection from a menu of possible policy and financial derisking instruments which can then reduce, transfer of compensate for these risks. Following the performance of a DREI techno-economic analyses in Sudan in year 1, in Output 1.4. findings can then shape follow-on project and partner activities. Lessons learnt at national level in each country will be aggregated into regional knowledge products by the AMP Regional Project and disseminated widely. In the risk section, issues and mitigation measures related to financing risks are detailed.	Sudan CEO endorsement/ approval request document: - Part II. Sudan national project document: - Section II - Section IV. - Annex 6 UNDP Risk Register
Council Comments (Norway/Denmark):	
5. Comment: *"USD 1,303,576 is budgeted for Program Management Cost (i.e. ca. 5%) presumably for implementing the various components"* **Response**: Comment targeted at program level and addressed in the regional project response. Details of Sudan AMP co-financing, fees and Project Management Costs are included in the documents.	
6. Comment: *"USD 2,181,178 in addition is requested from the UNDP, i.e. ca. 8.3% - is this on top of the fee above? "* **Response**: Comment targeted at program level and addressed in the regional project response. Details of Sudan AMP co-financing, fees and Project Management Costs are included in the documents.	

Comment & Response	Reference
7. Comment: *"Estimated co-financing is USD 344,310,000 ? of this only about USD 95 mill is loans (from WB, GCF, AfDB and GIZ), or ca. 28%. This is to be expected as there are still not strong business models for mini-grids without significant grant financing. "* **Response**: Agreed. Minigrids still require grant financing and concessional lending which is why the co-financing sources identified for AMP include a mix of grants and loans with loans representing a smaller fraction of the total co-financing.	
8. Comment: *"Output 2.1 stipulates that ?Pilots developed, including on productive use/innovative appliances and modular hardware/system design, leading to cost-reduction in mini-grids? ? **are there not a lot of lessons that can be gained from existing mini-grid programs now**? "* **Response**: While the program builds on lessons learned from previous projects and programs, minigrid markets in many countries overall remain immature, and there is a strong need for continued piloting of minigrids. The emphasis for minigrid pilots (Output 2.1) will be on piloting and showing proof-of-concept business models. To provide a better recount of lessons learned the program builds off from, a section on lessons learned has been added to regional project document, section III Strategy.	Regional Project Document: Section III. STRATEGY
9. Comment: *"Output 3.3 ?General market intelligence study on minigrids prepared and disseminated amongst public officials and finance community? ? **how will this be different from existing market intelligence,** for example:* *o https://www.esmap.org/mini_grids_for_half_a_billion_people* *o https://eepafrica.org/wpcontent/uploads/EEP_MiniGrids_Study_DigitalVersion.pdf* *o https://www.reeep.org/mini-grid-development-africa* *There is also at least one existing ?community of practice?:* *o http://ledsgp.org/community/africa-mini-grids-community-ofpractice/?loclang=en_gb* *Similarly, **how will the knowledge tools (4.1) be different from/build on others**?"* **Response**: National Market Intelligence Studies. This comment is not applicable to [Country x], as it does not have this output. Regional project: Knowledge tools - Comment targeted at program level and addressed in the regional project response.	Sudan CEO endorsement/ approval request document: - Part II. Sudan national project document: Section IV

Comment & Response	Reference
10. Comment: *"**How will the implementers ensure that markets are not undermined?** There are currently several minigrids invested in by commercial actors (e.g., Norfund in Madagascar - https://www.norfund.no/newsarchive/lighting-up-madagascar) and the program should provide assurances that it will not undermine markets through **(overly) subsidized** new minigrids (e.g., if a few villages are connected to a minigrid which has been commercially invested in and pay a relatively high tariff, **it can lead to discontent** if another few nearby villages are connected to a new mini-grid that due to a higher level of grant financing pay a lower tariff)."* **Response**: Risk of overly subsidization of new minigrids. In order to risk any over subsidization, the level of subsidy that will be applied to GEF ?Investment? (INV) funds will be based on a minimum concessionality principle. This principle can be achieved methodologically in different ways, for example by ensuring LCOE parity with a reference tariff; or based on willingness/ability to pay (which may be determined by a study during implementation). Such methodological assessments will be part of an overall package of financial due diligence/assessments that will be performed during the tender process to select recipients of pilot support. Each project?s CEO endorsement/approval request document (and UNDP Project Document) elaborates on this principle and establishes the need for each national project to develop, in close collaboration with other stakeholders and support from the AMP Regional Project, a detailed project plan (the project?s ?Minigrid Pilot Plan?) for advancing the minigrid pilot(s). Among other key aspects, the project?s Minigrid Plan Pilot Plan will determine the project?s approach to ensure minimal concessionality for the level of GEF INV support to the pilot(s). The project?s Minigrid Pilot Plan will first be reviewed for clearance by UNDP (CO and BPPS NCE), and then shared with the Project Board. Potential social discontent on tariffs. Even when avoiding the risk of over subsidization of minigrid pilots by applying the minimum concessionality principle, there is a possibility that new minigrids have lower tariffs than existing minigrids which were developed with a lower grant element and/or in general incurred in relatively higher costs. As minigrids scale, and costs decline over time, electricity tariffs (particularly cost-reflective electricity tariffs) are expected to decline as well. Mitigation for this risk comes from the systematic national dialogue that national projects will promote and support under Component 1, concretely under Output 1.1 ?Mini-grid delivery model(s) identified from national dialogues on minigrid delivery models?. Results from activities implemented in parallel under the other outputs will loop their respective (pre-)results back into the national dialogue discussions. This will include, but not be limited to, activities which can shed light on trends and progress regarding minigrid cost reduction, and the interplay between subsidies and electricity tariffs.	Sudan CEO endorsement/ approval request document: - Part II Sudan national project document: Section IV Sudan CEO endorsement/ approval request document: - Part II. Sudan national project document: Section IV.
Council Comments (Canada):	

Comment & Response	Reference
11. Comment: *"Mini-grids can have important impacts on development, including on energy access, agriculture, health and education.* ***It would be interesting if the project could explore opportunities to make further linkages with rural development programs****."* **Response**: Indeed, energizing productive uses of energy in rural communities unlocks agricultural value and rural economic development that initiates a virtuous cycle of growth: increased and more predictable demand for electricity that improves the viability of minigrid operations, lowers the costs of supply and in turn improves affordability and gives more people access. In Sudan, the electricity access rate in total areas is only 22%. The work of the AMP project on regulations and enabling environment will help reduce the high tariffs.	Sudan CEO endorsement/ approval request document: - Part II. Sudan national project document: Section IV.
12. Comment: *"The minigrids program has value for engagement where there are market failures,* ***and there should be entry points for the private sector****.* *The project is also well-aligned with Ethiopia?s Growth and Transformation Plan and its objective of ?Building Climate Resilient Green Industry? and ?Expanding Energy Infrastructure and Ensuring its Quality?.* **Response**: We agree with this statement. AMP seeks to scale commercial and private investment in minigrids. Market failures will be identified and addressed. The design and activities of AMP Sudan seeks to create multiple entry points for the private sector.	Sudan CEO endorsement/ approval request document: - Part II. Sudan national project document: Section IV.
Council Comments (United States):	

Comment & Response	Reference
13. Comment: *"The proposal addresses social acceptance risk but offers the use of policy and financial de-risking measures as a way to reduce cost, thereby increasing social acceptance risk. It does not address the value of messaging or public promotions and education campaigns to lower that risk further. Also, the program mentions working groups, but does not elaborate on make-up of the groups or state a commitment that the working groups will include representatives from local and community consumer and user stakeholders. Reviewers suggest a mechanism to ensure these groups include consumer stakeholders, indigenous representatives, and local authorities to educate and seek input on unexpected effects or consequences of the project at the local level."* **Response**: AMP Sudan has considered risks arising from lack of awareness and resistance to renewable energy and minigrids in communities, among other risks driving high costs for minigrid development. Social acceptance issues are usually due to due to unfamiliarity with electricity and renewable energy sources; misinformation/perceptions and lack of awareness for mini-grid offerings; resistance from incumbent businesses (e.g., diesel-based generation) and users (e.g., SHS), which can get disrupted by minigrids. AMP Sudan seeks to address this risk by engaging and consulting with a diverse array of stakeholders, including representatives from local and community consumer and user stakeholders as per the Stakeholder Engagement Plan. In addition, salient among opportunities to engage and consult with representatives from local and community consumer and user stakeholders, is the national dialogue on delivery models Output 1.1.	Sudan CEO endorsement/ approval request document: - Part II Sudan national project document: - Annex 8 - Section IV.

Comment & Response	Reference
14. Comment: *"Finally, the program will promote a value chain approach to technology transfers that will integrate local labor and local industries / service providers in the development of solar PV-battery minigrids. Reviewers note that monitoring the value chain periodically to ensure sufficient local integration (or make the necessary adjustments) will be important to the success of the project. GEF may want to consult with experts at the U.S. Department of Energy?s Office of Electricity, which works with U.S. state and local electricity officials and industry groups, to share data and best practices"* **Response**: Local labor and industries, together with local private sector developers and service providers, will be a key element in the long-term viability and sustainability of the minigrid market in Sudan. At the national project level, local developers, operators, and energy service providers are considered as key stakeholders and been involved and engaged since project formulation (incl. through a dedicated focus groups and one-on-one meetings). At the regional project level, component 1 ?Knowledge Tools? will curate and disseminate materials and reports detailing examples of good practice in this area. The work developed by the U.S. Department of Energy?s Office of Electricity, with U.S. state and local electricity officials and industry groups, is one of the resources that will be leveraged for this purpose. In addition, supply chain actors and the private sector are stakeholders that will participate as members of the AMP community of practice and benefit from South-South cooperation, knowledge sharing, identifying common challenges, and reviewing outputs of the AMP.	Sudan CEO endorsement/ approval request document: - Part II, Sudan national project document: - Section IV. Regional Project Document: Section IV.

Table 2: STAP Comments and Responses

Comment & Response	Reference

Comment & Response	Reference
1. Comment: *Mini-grids have much potential to bypass old development pathways for electrification. However, there is also growing literature on their pitfalls, which should be addressed. As with other GEF project proposals, more effort is needed to engage with the peer-reviewed literature on the topics. Examples of literature in this genre include:* ? *Mini-Grids for the Base of the Pyramid Market: A Critical Review* ? *(https://www.mdpi.com/1996-1073/11/4/813);* ? *Mini-grid based off-grid electrification to enhance electricity access in developing countries: What policies may be required? (https://www.sciencedirect.com/science/article/pii/S0301421516301781);* ? *Rethinking the sustainability and institutional governance of electricity access and mini-grids: Electricity as a common pool resource* ? *(https://www.sciencedirect.com/science/article/pii/S2214629617303638);* ? *Institutional Innovation in the Management of Pro-Poor Energy Access in East Africa (https://www.sussex.ac.uk/webteam/gateway/file.php?name=2015-29-swps-gollwitzer-etal.pdf&site=25).* **Response**: The program design has been informed by extensive literature review and consultations with technical experts and development partners. This has informed (1) the overall design of the program, as well as (2) the program?s three main key areas of opportunity: **(i) National dialogues on minigrid delivery models; (ii) Productive use of electricity; and (iii) Data & Digitalization,** and in turn been translated to national projects. This literature exercise review is documented in the AMP regional project document, given its overall knowledge management function for the program. 1. Overall Program Design ? Key Literature - GIZ, GET.transform (2020). A Renewable Energy Minigrid Technical Assistance Guide. Take-aways from 15 years of GIZ support in minigrid market development. April 2020 (link) - AMDA (2020). Benchmarking Africa?s minigrids. - SEforAll, BNEF and MGP (2020). State of the Global mini-grids Market Report 2020. Trends of renewable energy hybrid mini-grids in Sub-Saharan Africa, Asia and Island Nations. (link) - IRENA (2016). Innovation Outlook: Renewable Mini-grids. (link) - ESMAP (2019). Mini Grids for half a billion people. Market Outlook and Handbook for Decision Makers. Technical Report 014/19. (link) - The World Bank, AFD (2019). Electricity Access for Sub-Saharan Africa. (link) - RMI (2018). Minigrids in the Money: Six Ways to Reduce Minigrid Costs by 60% for Rural Electrification (link) - GET.transform (2021). Nigeria Case Study: Financing Instruments for the Mini-Grid Market. (link)	Regional Project Document: Section IV RESULTS AND PARTNERSHIPS, Box 2.

Comment & Response	Reference
2. Comment: Furthermore, there is considerable literature on the opportunities presented by blockchain technology for energy projects like this, including for renewable energy generation, distribution and management. STAP recommends that the project proponents explore the possibilities of using this technology to enhance the global environmental benefits of the project. Examples of relevant literature on this include: ? STAP?s blockchain paper (http://stapgef.org/harnessing-blockchain-technology-delivery-global-environmentalbenefits); ? Blockchain technology in the energy sector ? (https://www.sciencedirect.com/science/article/pii/S1364032118307184); ? Blockchain meets Energy (https://fsr.eui.eu/wp-content/uploads/Blockchain_meets_Energy_-_ENG.pdf); ? Blockchain: A true disruptor for the energy industry (https://www2.deloitte.com/content/dam/Deloitte/us/Documents/energy-resources/us-blockchaindisruptor-for-energy-industry.pdf). **Response**: As part to the PFD addendum approved in June 2021, a new component has been added to the regional project focused on mainstreaming the use of digital tools and solutions across national child projects and other national stakeholders. This is premised upon the notion that digitalization offers great potential for minigrid cost reduction. While no specific emphasis has been placed within AMP on developing Blockchain applications, the Regional Project will knowledge-build on and identify opportunities to add value via the use of digital tools and solutions for planning, operations, financing, and other key applications.	

Comment & Response	Reference
3. Comment: A generic diagram of the theory of change for minigrids is presented which starts with a diagnosis of risks and then proposes how to address them. However, this is linear and has only one step. There needs to be consideration of how particular kinds of policies could lead to change rather than just stating that policies will address the diagnostics. This diagram needs to be refined with more steps that unpack points like ?innovative financing? and ?business model and innovation? and ?policies and regulations.? Please see STAP paper on theory of change for further guidance: http://stapgef.org/theory-change-primer **Response**: The theory of change diagram for the program has been now further developed and refined to unpack key policies/activities under each of the four main components, which indeed feedback to address the originally identified risks. A new outcome column has also been inserted. This new theory of change is now reflected in the national project documents, as well as regional project documents.	Sudan CEO endorsement/ approval request document: - Part II Sudan national project document: - Section III. STRATEGY Regional Project Document: Section III. STRATEGY
3. Is the objective clearly defined, and consistently related to the problem diagnosis? **Comment**: Yes. **Response:** NA	
4. A brief description of the planned activities. Do these support the project?s objectives? **Comment**: Nicely described with clear objectives. **Response:** NA	
5. A description of the expected short-term and medium-term effects of an intervention. **Comment**: These are adequately provided. **Response:** NA	
6. A description of the products and services which are expected to result from the project.Is the sum of the outputs likely to contribute to the outcomes? **Comment**: Adequately provided. **Response:** NA	
7. Is the baseline identified clearly? **Comment**: Baselines are linked to earlier Child projects. **Response:** NA	

Comment & Response	Reference
8. What is the theory of change? **Comment**: There is a growing literature on the barriers to minigrid adoption. As with other GEF project proposals, more effort is needed to engage with the peer-reviewed literature on the topic. An example of an article in this genre which is open source is linked here: https://www.mdpi.com/1996-1073/11/4/813 **Response**: It is indeed critical to have a good understanding of minigrid barriers. AMP?s overall approach to minigrid barriers has been informed by (1) UNDP?s own Derisking Renewable Energy Investment (DREI) Framework for off-grid electrification (link), a leading publication in the field which identifies a taxonomy 9 investment risk and 25 investment barriers for minigrids, itself based on extensive consultations and literature review. (2) An independent review of recent literature on the subject, including the documents listed below: - GIZ, GET.transform (2020). A Renewable Energy Minigrid Technical Assistance Guide. Take-aways from 15 years of GIZ support in minigrid market development. April 2020 (link) - AMDA (2020). Benchmarking Africa?s minigrids. - SEforAll, BNEF and MGP (2020). State of the Global mini-grids Market Report 2020. Trends of renewable energy hybrid mini-grids in Sub-Saharan Africa, Asia and Island Nations. (link) - IRENA (2016). Innovation Outlook: Renewable Mini-grids. (link) - ESMAP (2019). Mini Grids for half a billion people. Market Outlook and Handbook for Decision Makers. Technical Report 014/19. (link) - The World Bank, AFD (2019). Electricity Access for Sub-Saharan Africa. (link) - RMI (2018). Minigrids in the Money: Six Ways to Reduce Minigrid Costs by 60% for Rural Electrification (link) - GET.transform (2021). Nigeria Case Study: Financing Instruments for the Mini-Grid Market, (link) Please also see the earlier response to STAP Comment #1.	Regional Project Document: Section IV. RESULTS AND PARTNERSHIPS, Box 2.
9. GEF trust fund: will the proposed incremental activities lead to the delivery of global environmental benefits? **Comment**: Cost reasoning is well defined. Monitoring and evaluation is noted adequately through the Child projects phase. The prior usefulness of these monitoring mechanisms should be reviewed. **Response:** At a national project level monitoring and evaluation has been expanded into a Quality Assurance and Management Framework (QAMF) that will aggregate data across the program and will link to specific outputs (e.g. publications and insight briefs) and intelligence to ensure the usefulness of collected data.	Sudan national project document: Section IV. RESULTS AND PARTNERSHIPS

Comment & Response	Reference
10. Are the benefits truly global environmental benefits, and are they measurable? **Comment**: The proposal identifies carbon mitigation benefits with adequate referencing of methods. Tradeoffs are not discussed but should be, in terms of reliability failures that can happen with minigrids. What are the backups to prevent diesel generators from still being frequently used? Resilience needs to be built into the grid architecture to address times of power outages. **Response**: Minigrids are generally characterized by a very high availability. A recent report by the Africa Minigrid Developers Association (Benchmarking Africa?s Minigrids) shows that uptime of all monitored minigrids is 99% on average, which is significantly higher than all national interconnected grids. When power outages occur in minigrids, it is rarely due to inverter failure, but rather because the system shuts down due to overload or low battery state-of-charge (if there is no diesel generator), or because the diesel generator fails. Recent evidence is revealing that diesel generators are now more prone to failure than the renewable energy components. To prevent power outages, a minigrid should be sufficiently dimensioned. This can lead to larger amounts of excess energy being available at non-peak times, which cannot normally be used and reduce the overall system efficiency. Currently, new approaches are being developed that take advantage of artificial intelligence to manage loads, based on machine learning and stochastic optimization. Examples include intelligent control of diesel generators to minimize fuel consumption, demand side management to precisely control deferrable loads (e.g., water pumps) that can consume excess energy. All this leads to minimizing outages and the need to use diesel generators.	Sudan CEO endorsement/ approval request document: - Part II. Sudan national project document: - Section III. STRATEGY.
11. Is the project innovative, for example, in its design, method of financing, technology, business model, policy, monitoring and evaluation, or learning? **Comment**: Proponents have partnered with Rocky Mountain Institute which has a distinguished record of innovative approaches to energy policy and there are clear highlights of scaling out (even though they note this as scaling ?up?). There is a focus on finding innovative ways of cost reduction and also to consider financing linkages between minigrids to promote resilience following the Rockefeller Foundation?s CrossBoundary Energy Access (CBEA) investment. projects. **Response:** NA	

Comment & Response	Reference
12. Have all the key relevant stakeholders been identified to cover the complexity of the problem, and project implementation barriers? **Comment**: Adequate presentation of stakeholders through the UNF Minigrid Partnership. However, diesel generation industry is quite widespread in Africa and how to ensure they don?t sabotage prevalence of project and have incentives for new livelihoods should be considered. **Response**: Experience shows that deep-rural villages are usually not a market for the diesel generator industry as such. In many villages, however, individual owners of diesel or petrol generators can be found selling electricity to the neighborhood(s). These business models no longer work when a minigrid supplies the village with electricity. However, there is a significant demand for skilled labor in the minigrid sector. The local diesel generator operators can become important here, as they have the technical know-how on the one hand and know the respective village very well on the other. These skills can be put to good use, for example, for the rapid establishment of PUE, or in the context of rural industrialization approaches (e.g., KMM). Where relevant, this risk and related mitigation actions have been added to the risks log and elaborated upon in the CEO Endorsement request/approval document (Part II section 5).	Sudan CEO endorsement/ approval request document: - Part II. Sudan national project document: - Section II.
13. Have gender differentiated risks and opportunities been identified, and were preliminary response measures described that would address these differences? **Comment**: Yes ? there is a fairly detailed section on gender aspects of this project. projects. **Response:** NA	
14. Are the identified risks valid and comprehensive? Are the risks specifically for things outside the project?s control? **Comment**: Identified. Detailed climate risk assessment should be carried out. **Response:** A climate risk assessment has been performed and included in the table risks of the Sudan CEO Endorsement Request.	Sudan national project document: - Annex 6
15. Are the project proponents tapping into relevant knowledge and learning generated by other projects, including GEF projects? **Comment**: Good coordination details provided based on historical relations as well. projects. **Response:** NA	

Comment & Response	Reference
16. What overall approach will be taken, and what knowledge management indicators and metrics will be used? **Comment**: Identified and details adequately provided. projects. **Response:** NA	

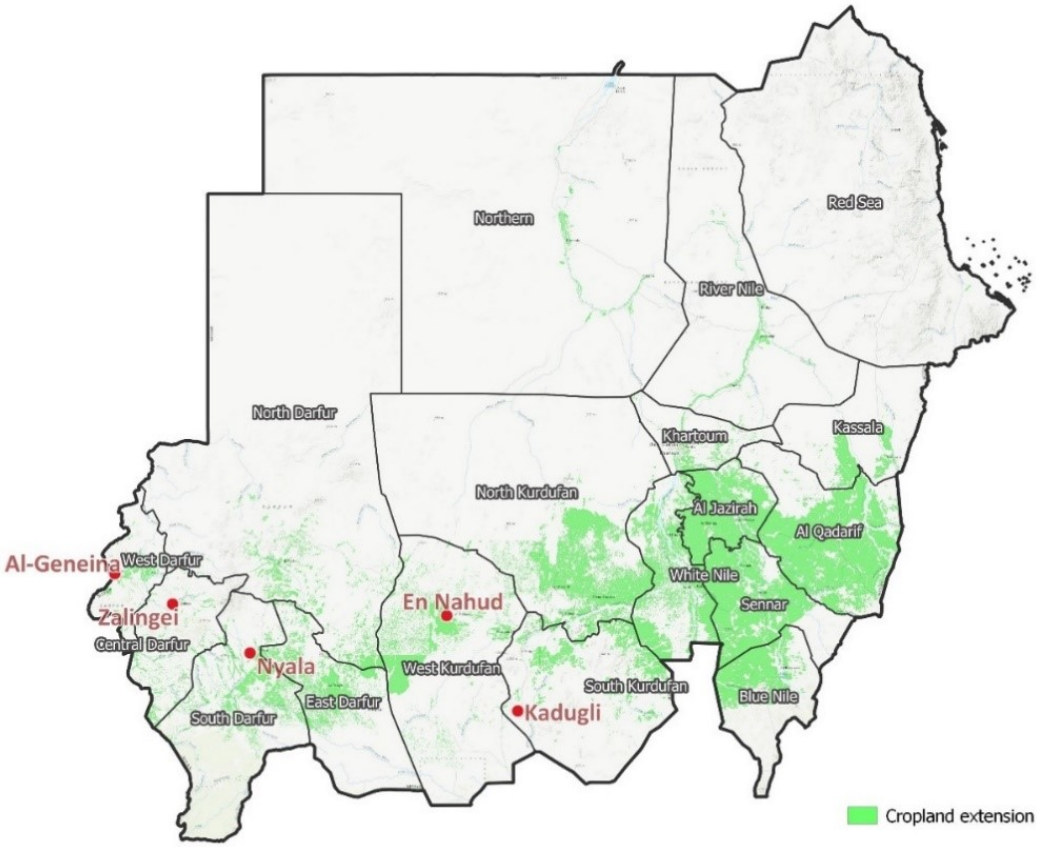
ANNEX C: Status of Utilization of Project Preparation Grant (PPG). (Provide detailed funding amount of the PPG activities financing status in the table below:

N/A this PPG was not funded by the GEF. All resources in formulation phase were funded with the UNDP TRAC

ANNEX D: Project Map(s) and Coordinates

Please attach the geographical location of the project area, if possible.

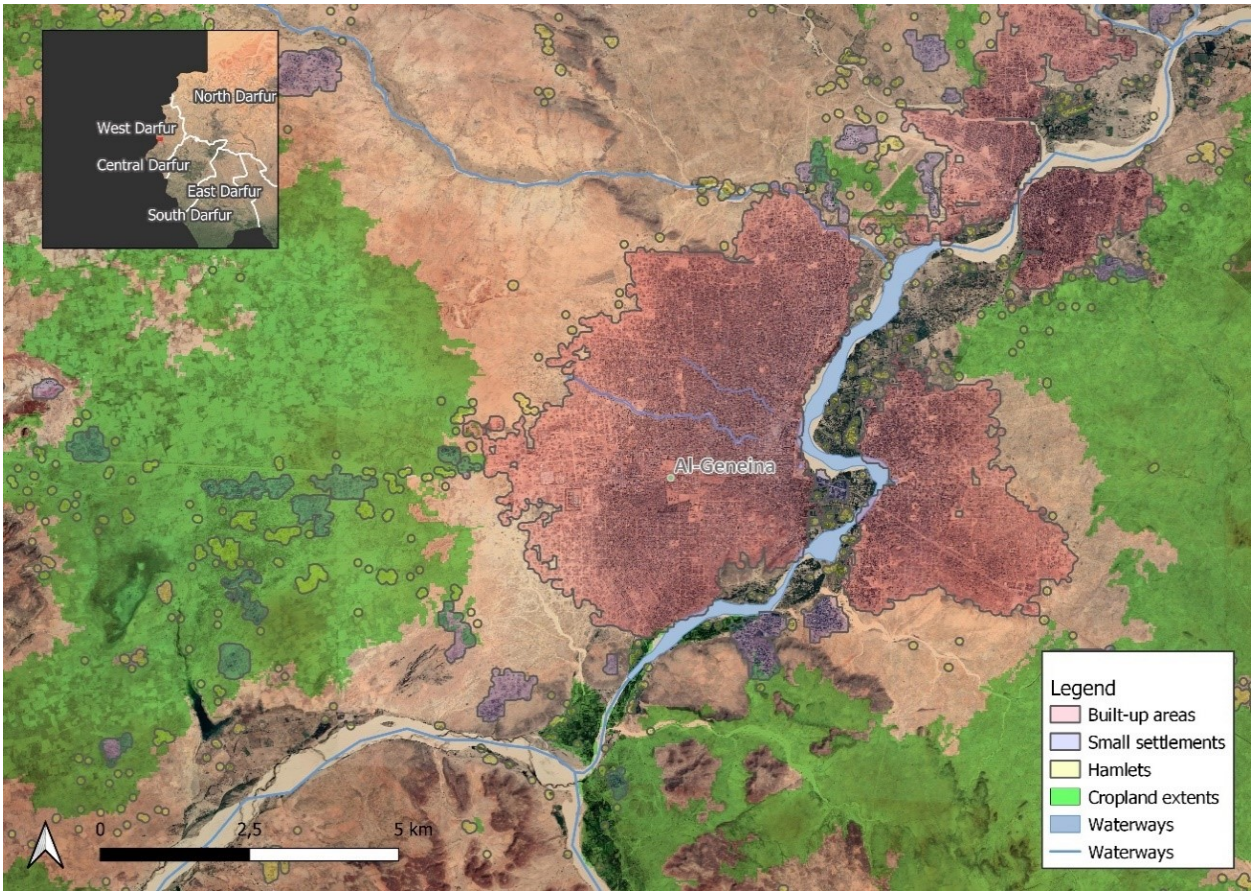
1.



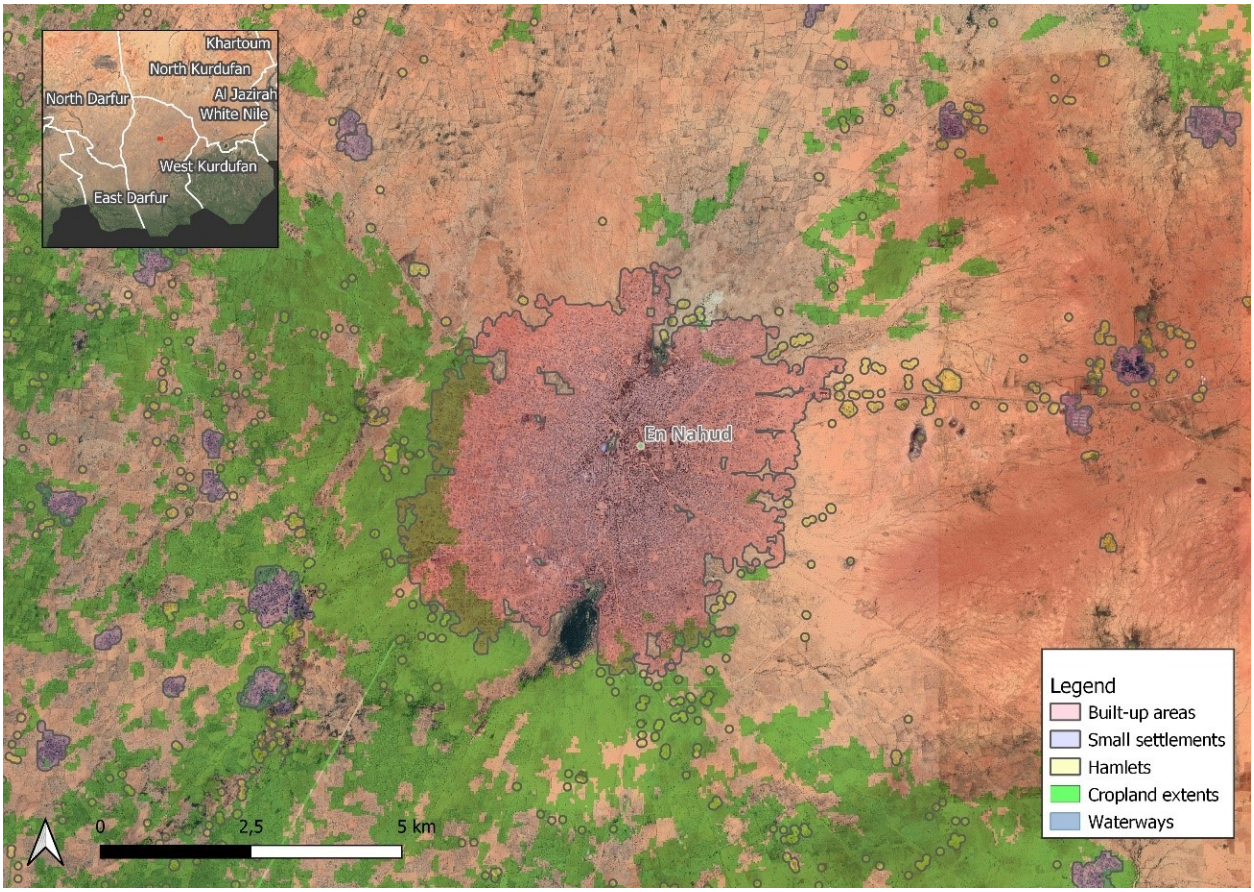
2.


Northern
Red Sea
River Nile
North Darfur
Khartoum
Kassala
North Kurdufan
Al Jazirah
Al Qadarif
Al-Geneina
West Darfur
White Nile
En Nahud
Sennar
Zalingei
Central Darfur
Nyala
West Kurdufan
South Kurdufan
Blue Nile
East Darfur
Kadugli
South Darfur

3.


North Darfur
West Darfur
Central Darfur
East Darfur
South Darfur
Al-Geneina
Legend
Built-up areas
Small settlements
Hamlets
Cropland extents
Waterways
Waterways
0
2,5
5 km

4.


Khartoum
North Kurdufan
North Darfur
Al Jazirah
White Nile
West Kurdufan
East Darfur
En Nahud
Legend
Built-up areas
Small settlements
Hamlets
Cropland extents
Waterways
0
2,5
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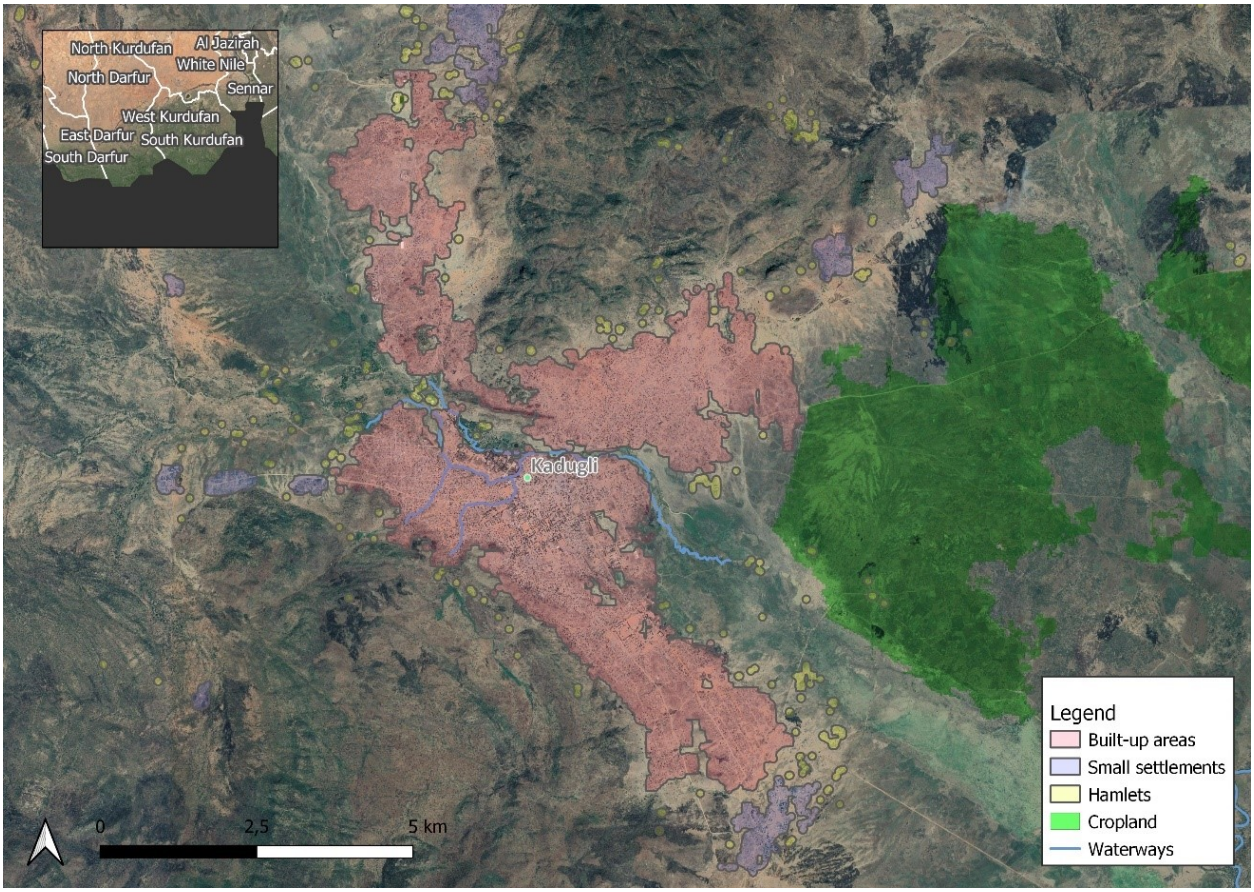
5.


North Kurdufan
Al Jazirah
White Nile
North Darfur
Sennar
West Kurdufan
East Darfur
South Kurdufan
South Darfur
Kadugli
Legend
Built-up areas
Small settlements
Hamlets
Cropland
Waterways
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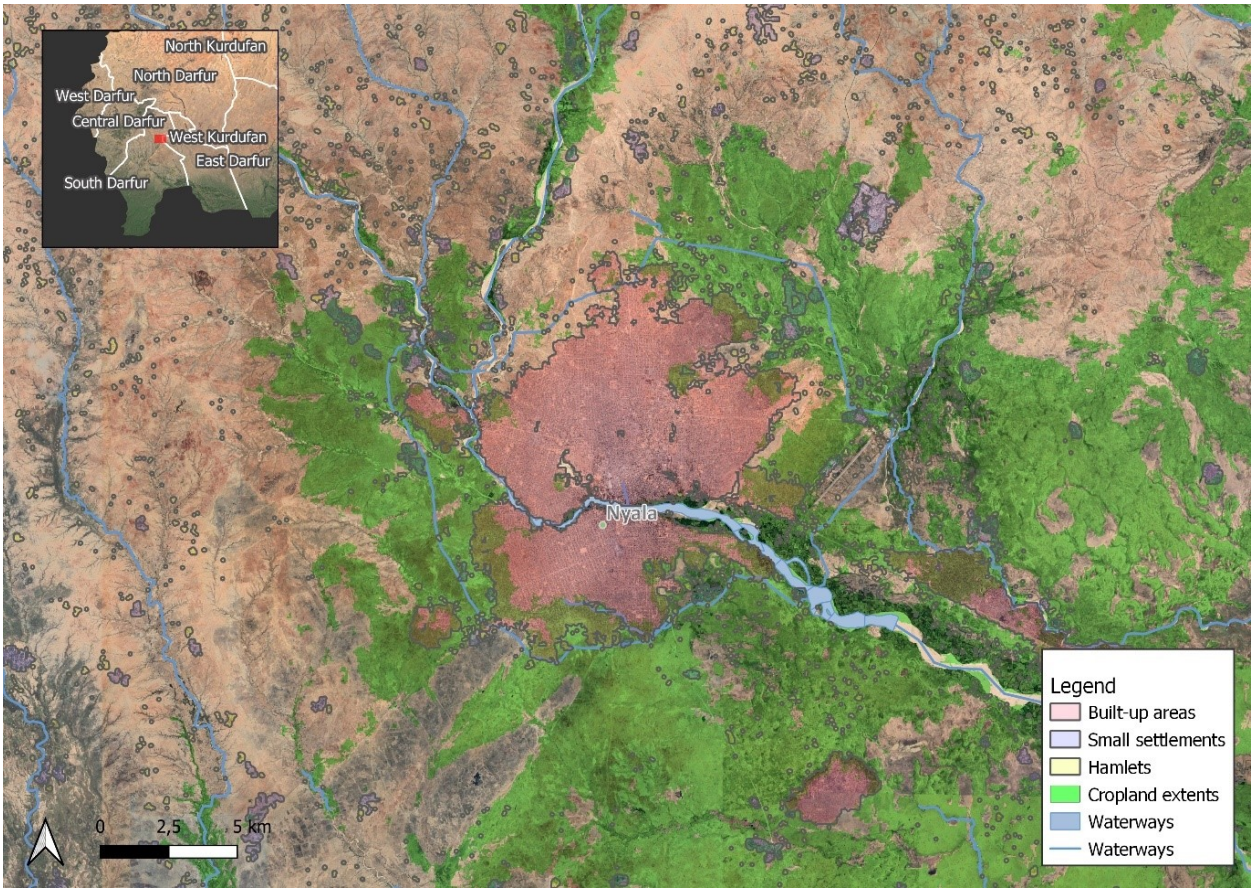
6.


North Kurdufan
North Darfur
West Darfur
Central Darfur
West Kurdufan
East Darfur
South Darfur
Nyala
0
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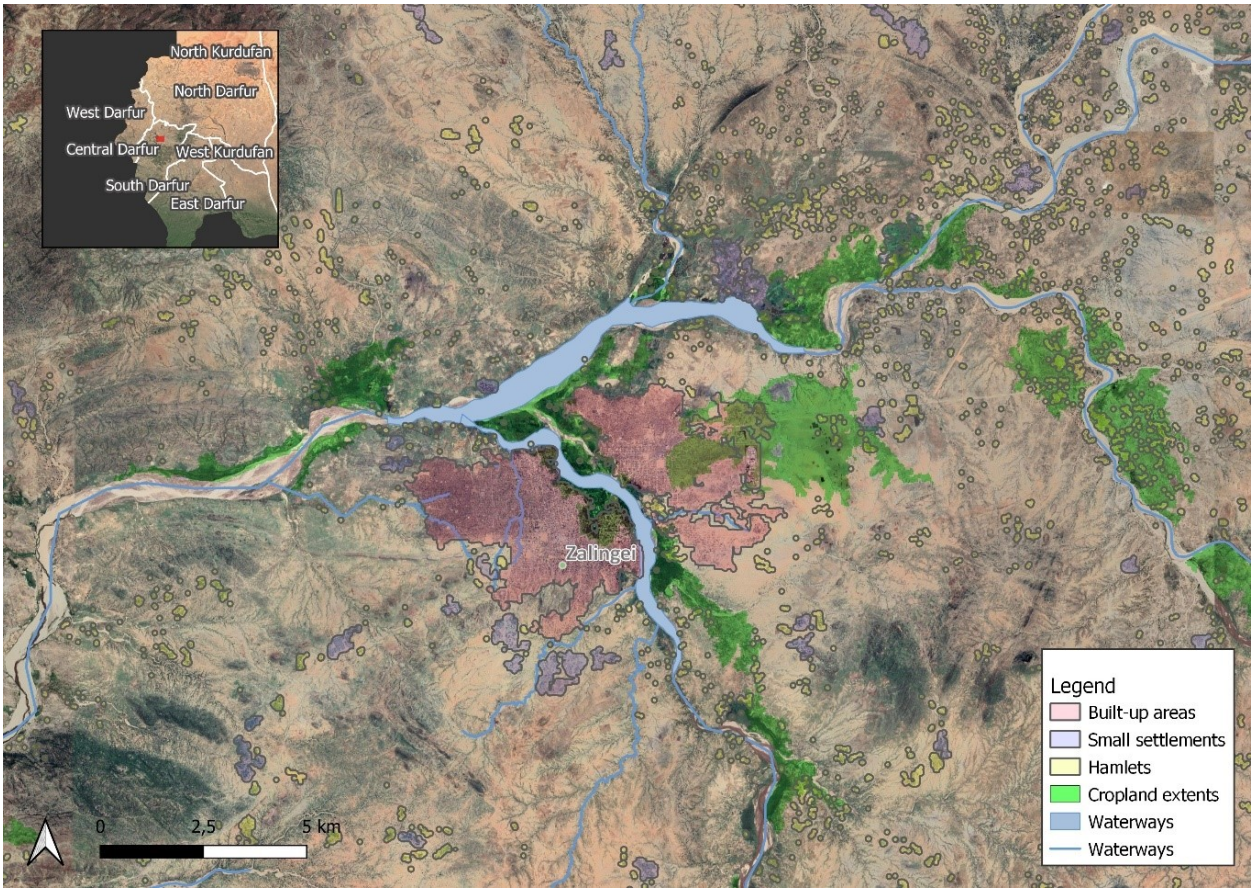
Legend
Built-up areas
Small settlements
Hamlets
Cropland extents
Waterways
Waterways

7.



ANNEX E: Project Budget Table

Please attach a project budget table.

Expenditure Category	Detailed Description	Component (USDeq.)							Total (USD eq.)	Responsible Entity
		Component 1	*Component 2*	*Component 3*	*Component 4*	*Sub-Total*	*M&E*	*PMC*		(Executing Entity receiving funds from the GEF Agency) [1]
		Sub-component 1.1	*Sub-component 2.1*	*Sub-component 3.1*	*Sub-component 4.1*					

Furniture/ Equipment	IT equipment for MoEP, ERA, STGC, SEDC such as required computers and computer accessories. 20 computers @ 800 USD (including accessories). Another provision for 5,982 USD for other IT equipment as needed. The total for this budget line is therefore USD 21,982	21,982				21,982			21,982	MoEP
Furniture/ Equipment						-			-	MoEP

Furniture/ Equipment - Vehicle	Provision for MoEP to buy electrical equipment necessary during construction and commissioning of the PV pilots (power analyzers, multimeters, infrared cameras) and electrical safety equipment: (a) 2 power analyzer for 5,000USD = 10,000 USD (b) 4 x 1,000 for multimeters and clamp meters = 4,000 USD (c) an infrared camera for 6,000 USD Total = 20,000 USD		20,000			20,000			20,000	MoEP
Furniture/ Equipment - Vehicle						-			-	MoEP
Furniture/ Equipment - Vehicle						-			-	MoEP
Grants						-			-	MoEP

Contractual Services ? Company	An international company hired to produce 1) a light-handed regulations and 2) a full regulatory framework for a total of USD 252,790	252,790				252,790			252,790	MoEP
Contractual Services ? Company	Company in charge of the construction and equipment of CAPEX grant subsidy to be disbursed for the private companies to construct the solar PV power plants of the selected pilots = 1,189,878 USD An international engineering company that assists the IP as an independent engineer during construction = 171,058 USD Total= 1,360,936		1,360,936			1,360,936			1,360,936	MoEP

Contractual Services ? Company	Company to conduct a market assessment on existing financing mechanisms and capacity assessment of local financing institutions. Total = 134,450			134,450		134,450			134,450	MoEP
Contractual Services ? Company	Monitoring of environmental and social risks, gender action plan, fuel displaced by project pilots and corresponding management plans as relevant					-	22,417		22,417	MoEP

Contractual services-Individual	Management Unit; which will composed of A) a project manager with an annual salary of 18,000 USD B) A financial and admin associate with an annual salary of 11,000. As this project is considered a full NIM all the services should be implemented by the IP with no UNDP execution support provided. Total = 116,000 USD					-		116,000	116,000	MoEP
International Consultants	International consultant working on DREI analysis for a total of 40,000 USD	40,000				40,000			40,000	MoEP

International Consultants	Senior Energy Mini-grid Expert embedded at MoEP for the project duration, full time. During the first 3 years of the project. 42332 USD per year Total = 126,996 USD		126,996			126,996			126,996	MoEP
International Consultants	An international consultant to support MoEP create the monitoring framework for the 2 pilot projects and minigrids in general Total = 77,305				77,305	77,305			77,305	MoEP

Local Consultants	Local consultants for the following: A/ Local consultant supporting DREI analysis = 3,965 USD B/ Local consultants full time working with MoEP and ERA to support on the work of light-handed regulations and a other pieces for a full regulatory framework = 50,000 for the four years. Total = 53,965	53,965				53,965			53,965	MoEP
Local Consultants	National consultants and technical temporary staff (i.e. electrical engineers) to be hired by MoEP, STGC and SEDC for assisting during the pilot implementation for a total of USD 79,373		79,373			79,373			79,373	MoEP

Local Consultants	Consultant to conduct a series of trainings aimed a increasing the financial sector's capacity to evaluate investments in minigrids Total = 38,415 USD			38,415		38,415			38,415	MoEP
Local Consultants	30,000 USD for the mid-term review in year 2 by an national consultant, including the cost of translating into English 30,000 USD for the end-term reviewTerminal Evaluation in year 4 by a national consultant, including the cost of translating into English Total = 60,000						60,000		60,000	MoEP
Trainings, Workshops, Meetings	Venues to conduct workshops Total = 43,963	43,963				43,963			43,963	MoEP

Trainings, Workshops, Meetings	Workshops with selected bidders during CfP and after, workshop to present results on phase 1 of the pilots. Total = 7,500 USD		7,500			7,500			7,500	MoEP
Trainings, Workshops, Meetings	International company developing and conducting a trainings to local developers on mobilizing financing Total = 50,956 USD			50,956		50,956			50,956	MoEP

Trainings, Workshops, Meetings	Expenditures for organizing consultation meetings, stakeholders? engagement conferences, capacity building workshops, and round table discussions, to support the implementation of activities under Component 4. Translation for MTR, TE and other documents/reports from M&E and coordination @ $6,000 in Y2 and $5,000 in Y4.				15,000	15,000			15,000	MoEP
Trainings, Workshops, Meetings	Inception workshop $5,000 in Y1.					-	5,000		5,000	MoEP

Travel	Travel budget broken down into the following: A/ Travel for MoEP and ERA officials to attend regional workshops for mini-grid regulations = 12,000 USD B/ ERA official travel to other African regulator offices to be exposed to other regulatory practices and past experiences = 10,000 USDC/ T international consultant to travel as part of the DREI analysis =12,000 Total = 34,000 USD	34,000				34,000			34,000	MoEP
Travel	Various travels to the pilots during project preparation and implementation Total = 12,200 USD		12,200			12,200			12,200	MoEP

Travel	Travel expenses for missions conducted by international consultants contracted to perform activities under Component 4.				15,000	15,000			15,000	MoEP
Office Supplies	Office Supplies					-		998	998	MoEP
Other Operating Costs	Contracting visual editing to a company for various materials for 10,000 USD per year for the last 3 years; Y1 = 0 USD, Y2 = 10,000 USD, Y3 = 10,000 USD, Y4 = 10,000 USD Total = 30,000				40,000	40,000			40,000	MoEP
Other Operating Costs	Audit every year at 2,000 USD per year Total = 8,000 USD					-		8,000	8,000	MoEP
Grand Total		446,700	1,607,005	223,821	147,305	2,424,831	87,417	124,998	2,637,246	

ANNEX F: (For NGI only) Termsheet

Instructions. Please submit an finalized termsheet in this section. The NGI Program Call for Proposals provided a template in Annex A of the Call for Proposals that can be used by the Agency. Agencies can use their own termsheets but must add sections on Currency Risk, Co-financing Ratio and Financial Additionality as defined in the template provided in Annex A of the Call for proposals. Termsheets submitted at CEO endorsement stage should include final terms and conditions of the financing.

ANNEX G: (For NGI only) Reflows

Instructions. Please submit a reflows table as provided in Annex B of the NGI Program Call for Proposals and the Trustee excel sheet for reflows (as provided by the Secretariat

or the Trustee) in the Document Section of the CEO endorsement. The Agencys is required to quantify any expected financial return/gains/interests earned on non-grant instruments that will be transferred to the GEF Trust Fund as noted in the Guidelines on the Project and Program Cycle Policy. Partner Agencies will be required to comply with the reflows procedures established in their respective Financial Procedures Agreement with the GEF Trustee. Agencies are welcomed to provide assumptions that explain expected financial reflow schedules.

ANNEX H: (For NGI only) Agency Capacity to generate reflows

Instructions. The GEF Agency submitting the CEO endorsement request is required to respond to any questions raised as part of the PIF review process that required clarifications on the Agency Capacity to manage reflows. This Annex seeks to demonstrate Agencies? capacity and eligibility to administer NGI resources as established in the Guidelines on the Project and Program Cycle Policy, GEF/C.52/Inf.06/Rev.01, June 9, 2017 (Annex 5).