National child project under the GEF Africa Mini-grids Program Comoros

Part I: Project Information

Name of Parent Program
GEF-7 Africa Minigrids Program

GEF ID
10473

Project Type
MSP

Type of Trust Fund
GET

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

Project Title
National child project under the GEF Africa Mini-grids Program Comoros

Countries
Comoros

Agency(ies)
UNDP

Other Executing Partner(s)
DGEME at Ministry of Economy, Investments and Energy

Executing Partner Type
Government

GEF Focal Area
Climate Change

Taxonomy

United Nations Framework Convention on Climate Change, Climate Change, Focal Areas, Enabling Activities, Climate Change Mitigation, Energy Efficiency, Technology Transfer, Agriculture, Forestry, and Other Land Use, Financing, Renewable Energy, Influencing models, Transform policy and regulatory environments, Deploy innovative financial instruments, Convene multi-stakeholder alliances, Demonstrate innovative approache, Stakeholders, Private Sector, Individuals/Entrepreneurs, SMEs, Large corporations, Capital providers, Type of Engagement, Partnership, Participation, Consultation, Information Dissemination, Beneficiaries, Communications, Awareness Raising, Public Campaigns, Education, Behavior change, Indigenous Peoples, Civil Society, Academia, Community Based Organization, Non-Governmental Organization, Gender Equality, Gender Mainstreaming, Women groups, Sex-disaggregated indicators, Gender-sensitive indicators, Capacity, Knowledge and Research, Capacity Development, Innovation, Knowledge Generation, Knowledge Exchange, Learning, Theory of change

Rio Markers

Climate Change Mitigation

Climate Change Mitigation 2

Climate Change Adaptation

Climate Change Adaptation 0

Submission Date

6/19/2021

Expected Implementation Start

4/1/2022

Expected Completion Date

3/31/2026

Duration

48In Months

Agency Fee($)

114,288.00

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 electric drive technology and electric mobility	GET	1,269,863.00	42,159,603.00
		Total Project Cost($)	**1,269,863.00**	**42,159,603.00**

B. Project description summary

Project Objective

Supporting access to clean energy by increasing the financial viability, and promoting scaled-up commercial investment, in renewable minigrids in Comoros 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	Stakeholder ownership in a national minigrid delivery model is advanced, and appropriate policies and regulations are adopted to facilitate investment in renewable minigrids.	1.1. An inclusive national dialogue to identify minigrid delivery models is facilitated, clarifying priority interventions for an integrated approach to off-grid electrification	GET	345,432.00	255,000.00
			1.2. A review of the political and regulatory frameworks on the possible minigrid delivery models and suitable incentives is proposed in close collaboration with the National Dialogue Platform members and other development partners			
			1.3. Templates of tender documents and contracts for the implementation and operation of minigrids (between community and private operator) are			

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)
Component 2 - Project and Business Model Innovation with Private Sector Engagement	Investment	Innovative business models based on cost reduction operationalized, with strengthened private sector participation in renewable minigrid development	2.1. Opportunities to boost economic and social activities through electricity access and productive use, with focus on minigrids, are identified and innovation is promoted	GET	279,725.00	
Component 2 - Project and Business Model Innovation with Private Sector Engagement	Technical Assistance	Innovative business models based on cost reduction operationalized, with strengthened private sector participation in renewable minigrid development	2.2. Pilots developed, including on productive use/innovative appliances and modular hardware/system design, leading to cost-reduction in minigrids 2.3. Capacities of private minigrid developers and communities are strengthened 2.4. Group of Private Sector RE Services Providers is formalized, operational and its capacities are strengthened	GET	195,830.00	30,629,034.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)
Component 3 - Innovative Financing	Technical Assistance	Financial sector actors are ready to invest in a pipeline of renewable minigrids and concessional financial mechanisms are in place to incentivize scaled-up investment	3.1. The design and operations of a Minigrid Funding Facility under the Electricity Code is supported 3.2. General market intelligence study on minigrids prepared and disseminated amongst public officials and finance community 3.3. Capacities of the national financial sector (including philanthropic) in terms of business models and innovative financial solutions (including digital) in connection with minigrids are strengthened and facilitate access to financing	GET	93,856.00	

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)
Component 4 - Knowledge Management and Monitoring & Evaluation	Technical Assistance	Data and digitalization are mainstreamed, across stakeholders, into local minigrid market development. Increased knowledge, awareness and network opportunities in the minigrid market and among stakeholders, including benefitting from linkages to international good practice	4.1. A Digital Strategy is developed and implemented, including linkages to and following guidance from the regional project 4.2. Minigrids data management platform implemented to run tenders and manage data from pilots, and to support minigrids scale-up and cost-reduction 4.3. A Quality Assurance and Monitoring Framework for measuring, reporting and verification of the sustainable development impacts of all minigrids pilots supported, including GHG emission reductions, is adopted and operationalized based on standardized guidance from the regional project 4.4. Monitoring and Evaluation (M&E) and	GET	244,620.00	7,391,748.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)
				Sub Total ($)	**1,159,463.00**	**38,275,782.00**
Project Management Cost (PMC)						
				GET	110,400.00	3,883,821.00
				Sub Total($)	**110,400.00**	**3,883,821.00**
				Total Project Cost($)	**1,269,863.00**	**42,159,603.00**

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($)
GEF Agency	UNDP TRAC resources	Grant	Investment mobilized	400,000.00
Recipient Country Government	MoEIE/DGEME	In-kind	Recurrent expenditures	42,326.00
Recipient Country Government	SONELEC	In-kind	Recurrent expenditures	1,036,736.00
Recipient Country Government	ANADEN	In-kind	Recurrent expenditures	39,636.00
Donor Agency	European Union	Grant	Investment mobilized	2,712,695.00
Donor Agency	African Development Bank/PASEC (grant)	Grant	Investment mobilized	1,328,210.00
Donor Agency	World Bank/Comorsol (grant)	Grant	Investment mobilized	36,600,000.00
			Total Co-Financing($)	**42,159,603.00**

Describe how any "Investment Mobilized" was identified

All ?investment mobilized? were identified in consultation with the government, the donor community in Comoros, development banks and stakeholder. A series of workshops (some of them online due to Covid) were held during the PPG phase. This includes a validation workshop on January 19th 2021 in Moroni.

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	Comoros	Climate Change	CC STAR Allocation	1,269,863	114,288
				Total Grant Resources($)	**1,269,863.00**	**114,288.00**

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 **true**

PPG Amount ($)

91,325

PPG Agency Fee ($)

8,219

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount($)	Fee($)
UNDP	GET	Comoros	Climate Change	CC STAR Allocation	91,325	8,219
			Total Project Costs($)		**91,325.00**	**8,219.00**

Please provide justification

On exceptional basis, GEF Agencies can request a higher PPG amount with justification. The higher PPG amount in Comoros is based on bottom-up cost estimates for a PPG team of international and national consultants to develop the CEO Endorsement Request. These cost estimates, itemized by consultant, are set out below, totaling USD 91,325. Of note, the PPG costs in Comoros are elevated by two factors: ? Comoros is the only Small Island Development State (SIDS) national child project in the AMP. SIDS represent a particular challenge for private sector investment in mini-grids, in particular given limitations around smaller market sizes and achieving economies of scale. To date there are few successful models which engage the private sector. The PPG mini-grid expert will be tasked with specifically looking into this issue and developing an AMP approach for SIDS. ? These estimates reflect that the geographic profile of Comoros results in high transaction costs as regards undertaking stakeholder consultations (particularly with the private sector). PPG Team Leader International $39,247 Mini-Grid Expert International $17,800 Social & Environmental Safeguards Expert International $7,889 Gender Specialist International $10,299 National Consultant National $16,000 TOTAL $91,325

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	11951	0	0
Expected metric tons of CO?e (indirect)	0	9000	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)				
Expected metric tons of CO?e (indirect)				
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)		11,951		
Expected metric tons of CO?e (indirect)		9,000		
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		0.45		
Energy Storage select		1.14		

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		1,521		
Male		1,521		
Total	0	3042	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

Based on the stakeholder consultations, additional data collected during the PPG phase and the regional AMP programme design, a few updates and changes have been made while developing the CEO Endorsement document even if the main structure and nature of the project remained the same. The table below describes the main changes between the approved PIF and the CEO Endorsement document.

Outputs with GEF budget at Concept Note	Outputs with GEF budget at CEO ER	Change	Justification

Outputs with GEF budget at Concept Note		Outputs with GEF budget at CEO ER		Change	Justification
1.1 A minigrid regulatory framework including tariff model, tax regime and incentives is developed in close coordination with other development partners	$ 262,975	1.1. An inclusive national dialogue to identify minigrid delivery models is facilitated, clarifying priority interventions for an integrated approach to off-grid electrification	$ 345,432	Adding a national dialogue platform	As Comoros is a nascent market in terms of renewable mini-grids, involving all stakeholders via a national dialogue platform from the very beginning is key. Adoption and scale-up would be better supported and even accelerated. The existing but inactive Energy Task Force developed as part of the IOC?s Energy Project will be used as a basis and adapted with clear ToR and objectives, as well as leveraging best practices in Senegal (South-South Cooperation) and lessons learnt from such platforms. Relevant stakeholders (incl. government, public sector, private sector, communities, OSCs, technical and financial partners, etc.) will be members of the platform and meet on a regular basis. Sub-committees will take care of clearly defined topics and objectives. A particular focus will be put on developing a suitable national delivery model. At project launch, terms of reference

Outputs with GEF budget at Concept Note		Outputs with GEF budget at CEO ER		Change	Justification
1.2 Assessment of negative impact of competing fossil-fuel subsidies on competitiveness of minigrids, and recommendations for subsidy reform		1.2. A review of the political and regulatory frameworks on the possible minigrid delivery models and suitable incentives is proposed in close collaboration with the National Dialogue Platform members and other development partners		Assessment of negative impact of fossil-fuel subsidies is added to output 1.4. as part of relevant studies to be conducted to facilitate development and up-scaling of a minigrids market in Comoros	Focus will be put on clearly translating the suitable minigrid delivery model into the political and regulatory frameworks (further clarifying it in Article 19 of Comoros? Electricity Code) as well as supporting cost-reduction efforts of equipment through existing but not sufficient and not properly enforced tax exemptions.
1.3 Institutional set-up for rural electrification assessed and supported, and institutional capacity building provided on technical, managerial, and regulatory issues		1.3. Templates of tender documents and contracts for the implementation and operation of minigrids (between community and private operator) are prepared		Focus put more on institutional capacity-building rather than set-up (Output 1.7.)	As a nascent market especially, it is critical to elaborate suitable tender documents and contracts ? homogenized. They are made available on the national minigrids data management platform (see Output 4.2.)

Outputs with GEF budget at Concept Note		Outputs with GEF budget at CEO ER		Change	Justification
1.4. Minigrid DREI techno-economic analyses carried out to propose most cost-effective basked of policy and financial derisking instruments		1.4. Geospatial, techno-economic modelling of least-cost off-grid renewable electricity technologies (mini-grids, grid expansion, solar home systems)		Changed to output 1.5.. Adding other key studies to facilitate the development and scaling-up of the national minigrids market in Comoros	To ensure a suitable scale-up of pilot projects supported by the project while having all relevant data and capacities, other studies will be undertaken including a geospatial (GIS) analysis to identify communities eligible for isolated minigrid implementation at national level, a national grid analysis to identify potential for interconnected minigrid application, as well as a minigrid tariffication analysis and an assessment of the impact of fossil-fuels subsidies on tariffs and viabilities of innovative minigrid business models.
1.5. Capacity building provided to public officials (regulator, ministries) specifically to design procurement tender processes that incorporate cost-reduction levers and innovative business models		1.5. 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 1.5. moved to 1.7. Previous Output 1.4 on DREI analyses moved to 1.5.	

Outputs with GEF budget at Concept Note		Outputs with GEF budget at CEO ER		Change	Justification
n.a.		1.6. Pre-feasibility studies conducted for selected mini-grid sites to enhance sector planning and decision-making on a delivery model for minigrid development		Additional output on pre-feasibility studies ? taken out from an activity under Output 2.2. on pilot sites.	Pre-feasibility studies of the pilot sites along with the environmental and social impact study are critical to support the development (Output 1.1.) and integration in the policy and regulatory framework (output 1.2.) of a national delivery model in Comoros. It is also a prerequisite for electrification planning at rural and national level hence incorporated in Component 1 on Policy & Regulation.
		1.7. Institutional capacities at technical, managerial and regulatory levels, in particular to design procurement and tendering processes incorporating cost-cutting levers and innovative business models, are strengthened		Initial Output 1.3. focusing more on capacity building efforts	During PPG, the need for institutional capacity building around minigrids. (in every aspect) has been raised at inception and validation workshops,

Outputs with GEF budget at Concept Note		Outputs with GEF budget at CEO ER		Change	Justification
		1.8. Public programmes (apprenticeships, certificates, university programs) to develop competitive, skilled labor market in minigrids facilitated		Additional output on public programmes around minigrids	The limited competencies at national level on minigrids represent a hurdle for the minigrid market development. National programmes, with a modular approach and at different levels to cover specific needs, will be facilitated, based on the existing local offer, the AMP regional e-training platform, South-South collaboration (for instance the one existing with the University of La R?union), etc.
2.1. National report on opportunities to boost economic activities through electricity access and productive use, with focus on minigrids	$589,439	2.1. Opportunities to boost economic and social activities through electricity access and productive use, with focus on minigrids, are identified and innovation is promoted	$799,060	Wording change	In addition to the national report on opportunities to boost economic activities through electricity access and productive use, with focus on minigrids (including the 3 pilot sites of Output 2.2.), innovation should be further promoted hand in hand with targeted stakeholders via an innovation contest

Outputs with GEF budget at Concept Note		Outputs with GEF budget at CEO ER		Change	Justification
2.2. Renewable energy off-grid production sites with a least-cost high-efficiency management systems are developed in rural areas		2.2. Pilots developed, including on productive use/innovative appliances and modular hardware/system design, leading to cost-reduction in minigrids		Output 2.3 in the PIF became Output 2.2. (and slight rewording) Output 2.2. in the PIF redundant with 2.3	Redundant ? merged More funding allocated to pilot project as key for the development of a nascent minigrid market in Comoros, as well as to prove its value proposition and enabling the potential of scaling up to be unleashed
2.3. Pilots developed, including on productive use/innovative appliances and modular hardware/system design, using innovative business models and cost reduction levers		2.3. Capacities of private minigrid developers and communities are strengthened		Output 2.3 in the PIF became Output 2.2. (and slight rewording) Part of Output 2.5. in the PIF is included in Output 2.3. in the ProDoc	Capacities of local private minigrid developers (winning tender bidders are not) as well as communities, sole requesters and owners of minigrids by law, will be build and/or reinforced. A modular approach based on knowledge level, needs and capacities required will be put in place for better results, adoption and application.

Outputs with GEF budget at Concept Note		Outputs with GEF budget at CEO ER		Change	Justification
2.4. New public-private partnerships in renewable energy sector are established		2.4. Group of Private Sector RE Services Providers is formalized, operational and its capacities are strengthened		Output 2.4. in the PIF no longer in ProDoc as included in Output 2.2	According to Comoros? Electricity Code (and its review (Output 1.2.), a collaboration exists between a minigrid requesting community and the MoEIE as well as between a community and a private sector developer and/or operator (contract). Hence, such partnerships are an integral part of the pilot sites under Output 1.2.
2.5. Capacity of winning tender bidders (private sector developers) strengthened to develop and implement innovative business models and cost reduction levers		n.a.		Part of Output 2.5. in the PIF is included in Output 2.3. in the ProDoc	

Outputs with GEF budget at Concept Note		Outputs with GEF budget at CEO ER		Change	Justification
3.1. Innovative financing solutions for minigrid development are identifies and implemented	$178,575	3.1. The design and operations of a Minigrid Funding Facility under the Electricity Code is supported	$93,856	Output 3.1. in the PIF became Output 3.2. (and slight rewording as included in the MFF)	In order to facilitate the minigrids? market development in Comoros and because communities are the owners of the minigrids, it seems critical to develop an MFF. The AMP Comoros project could support the design and operationalization of the MFF, along with some seed capital to support CAPEX costs of pilot sites (Output 2.2). Additional financing and funding mechanisms through other projects and investors should be sought.
3.2. General market intelligence study on minigrids prepared and disseminated amongst public officials and finance community		3.2. General market intelligence study on minigrids prepared and disseminated amongst public officials and finance community		n.a.	

Outputs with GEF budget at Concept Note		Outputs with GEF budget at CEO ER		Change	Justification
3.3. Facilitate in-country discussions and convene finance development institutions and philanthropic organizations to attract additional financing		3.4. Capacities of the national financial sector (including philanthropic) in terms of business models and innovative financial solutions (including digital) in connection with minigrids are strengthened and facilitate access to financing		Focus on capacity building and better understanding of the minigrid sector and its opportunities for the financial sector.	Minigrids are rather new in Comoros including also for the finance and investment community and / interested in Comoros. Thus, to stimulate and facilitate additional financing towards minigrids, it is critical to build the capacities of these players (incl. derisking efforts ? DREI study ? Output 1.4.)
4.1. Lessons learned captured and disseminated at the national level	$ 141.432	4.1. A Digital Strategy is developed and implemented, including linkages to and following guidance from the regional project	$279,620	Added	During the PPG phase, identifying and gathering data and studies around energy, renewable energy, GIS mapping etc. at national level has shown to be a real challenge. While access to relevant data and analyses for targeted stakeholders is key, and even critical. As such, a project Knowledge and Data Strategy will be designed along with a strategy action plan. Linkages with and guidance from the regional AMP project will support this effort.

Outputs with GEF budget at Concept Note		Outputs with GEF budget at CEO ER		Change	Justification
4.1. Lessons learned captured and disseminated at the national level	$ 141.432	4.1. A Digital Strategy is developed and implemented, including linkages to and following guidance from the regional project		Output 4.1. in the PIF is included in Output 4.7. in the ProDoc Importance of digitalization for minigrid development and scaling-up	Lessons learned are included in the awareness raising campaigns at all levels and will be shared at AMP regional level The importance of digitalization for minigrid development and the ?digital opportunity? as it relates to minigrid cost reduction have been acknowledged since the PIF. This digital platform will provide key functionality in terms of acting as the (i) national digital convening platform for key minigrid stakeholders (public/private), (ii) providing ongoing data gathering and M&E on minigrids, including linking to the AMP regional project and (iii) acting as the mechanism for tenders for minigrid developers/sites. During the PPG phase, identifying and gathering data and studies around energy, renewable energy, GIS mapping etc. at national level has shown to be a real challenge. While access to relevant data and analyses for targeted stakeholders is key, and even critical.

Outputs with GEF budget at Concept Note		Outputs with GEF budget at CEO ER		Change	Justification
4.2. Replication plan (incl. investment plan) for scaling up rural energy access developed		4.2. Minigrids data management platform implemented to run tenders and manage data from pilots, and to support minigrids scale-up and cost-reduction		Output 4.2. in the PIF is moved to Output 4.8. in the ProDoc	In line with 4.1. as well as with the entire project?s components, a minigrids data management platform suitable to Comoros? needs will be implemented. It shall facilitate the tendering process from A to Z, onitoring of pilot sites and other indicators, cost optimization. It shall also act as a repository of all relevant data, studies, reports and more around minigrids at national level.
4.3. Knowledge network / Community of Practice established to promote minigrids development/ rural energy access		4.3. A Quality Assurance and Monitoring Framework for measuring, reporting and verification of the sustainable development impacts of all minigrids pilots supported, including GHG emission reductions, is adopted and operationalized based on standardized guidance from the regional project		Output 4.3. in the PIF is integrated in Output 4.5. in the ProDoc as part of the engagement of AMP Comoros national child project with AMP regional project and other national child projects Output 4.4. in the PIF is moved ot Output 4.3. in the ProDoc	n.a.

Outputs with GEF budget at Concept Note		Outputs with GEF budget at CEO ER		Change	Justification
4.4. Quality Assurance and Monitoring Framework for measuring, reporting and verification of the sustainable development impacts of minigrids, including GHG emission reductions is developed and operationalized		4.4. Monitoring and Evaluation (M&E) and Reporting, including (i) Conducting Inception workshop and preparing report, (ii) Ongoing M&E, (iii) Mid-Term Evaluation and (iv) Terminal Evaluation		Added	A dedicated output on monitoring & evaluation has been added to comply with GEF and UNDP processes and facilitate potential corrective measures to achieve the expeted project?s results
		4.5. Engage with regional project, including, but not limited to, via (i) participating in Communities of Practice and (ii) capturing and sharing lessons learnt			As regional AMP will develop various AMP Communities of Practice to share knowledge and know-how, targeted national stakeholders will integrate some of them. Lessons learnt are part of knowledge sharring efforts too.

Outputs with GEF budget at Concept Note		Outputs with GEF budget at CEO ER		Change	Justification
n.a.		4.6. A Community of Practice to promote minigrids development and rural energy access is established, in close collaboration with Communities of Practice at AMP regional level and others at SIDS, regional, continental and international levels			A national Community of Practice with relevant stakeholders will interact among each other, as well as with other AMP Communities of Practice, among SIDS (RMI project, IRENA Lighthouse, etc.), as well as at continental and international levels. This will support Comoros to leverage lessons learnt and best practices (possibly to even leapfrog), as well as share its own experiences and feedbacks.
n.a.		4.7. Awareness raising campaigns, including lessons learned, are developed and disseminated at all levels nationally (incl. intervention zones) and with the regional project		Added	To support visibility, adoption and minigrid market development and scale-up, targeted awareness raising campaigns at national, and AMP regional levels will be designed and rolled out. This will include climate change risks and mitigation efforts.
n.a.		4.8. Replication plan (including investment plan) for scaling up rural energy access developed		Output 4.2. in the PIF is moved to Output 4.8. in the ProDoc	

Outputs with GEF budget at Concept Note	Outputs with GEF budget at CEO ER	Change	Justification
GEF Core Indicator 6 - Greenhouse gas emissions mitigated		Direct GHG emissions from 8,200 to 11,951 tCO2e Indirect GHG emissions from 10,000 to 9,000 tCO2e	While at PIF stage, general assumptions were made; during PPG phase, 3 pilot sites were pre-selected and validated by stakeholders. A demand survey has been undertaken in each of the 3 sites enabling to calculate this indicator based on the surveys? results. In addition a comprehensive methodology for the GHG emission reduction potential has been elaborated and detailed in Annex S.
GEF Core Indicator 6.4 - Increase in installed solar PV capacity (MW) and battery storage (MWh)		Installed PV capacity from 0.18 to 0.449 MW Installed battery storage no specified at PIF to 1.137 MWh at PPG	While at PIF stage, general assumptions were made; during PPG phase, 3 pilot sites were pre-selected and validated by stakeholders. A demand survey has been undertaken in each of the 3 sites enabling to calculate this indicator based on the surveys? results.

Outputs with GEF budget at Concept Note	Outputs with GEF budget at CEO ER	Change	Justification
GEF Core Indicator 11 ? Number of beneficiaries benefitting from energy access via minigrids, disaggregated by gender and by customer segment		32,126 to 3,042 beneficiaries	While at PIF stage, general assumptions were made; during PPG phase, 3 pilot sites were pre-selected and validated by stakeholders. A demand survey has been undertaken in each of the 3 sites enabling to calculate this indicator based on the surveys? results. The reason for the decrease in indicator 11 (number of direct beneficiaries) is that at CEO ER stage, the number of connections per kW of installed Solar PV capacity has been revised downwards. At PIF stage, it was assumed that a 30 kWp Solar PV minigrid could serve 6,000 people (1,200 household connections); that is, an average of 40 residential connections per kW of installed Solar PV capacity. At CEO ER stage, a system configuration has been estimated to serve an indicative market that includes residential, social, and commercial/PUE users. Based on the system sizing formulas used, instead of 40 connections, a total of 2.19, 1.63 and 1.15

1a. *Project Description*. Elaborate on: 1) the global environmental and/or adaptation problems, root causes and barriers that need to be addressed (systems description); 2) the baseline scenario and any associated baseline projects; 3) the proposed alternative scenario with a brief description of expected outcomes and components of the project; 4) alignment with GEF focal area and/or Impact Program strategies; 5) incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, and co-financing; 6) global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF); and 7) innovativeness, sustainability and potential for scaling up.

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

General context in Comoros

The Union of Comoros is an archipelago of 4 islands ? Grande Comore, Moh?li, Anjouan and Mayotte (under French rule), with an area of 2.235km2, located in the Indian Ocean between Mozambique and Madagascar. Comoros is Africa?s third smallest country and is considered a fragile State, a Least Developed Country (LDC) and a Small Island Developing State (SIDS). It has about 870,000 inhabitants in 2020[1][1] (and a population growth of 2.2% per annum), out of which 53% are under the age of 20, 29% live in cities (2.8% urbanization growth per year) and a high population density of 467.3 inhabitants/km2. 44% of its population lives under the poverty line[2][2]. It is a small and fragmented market with limited natural resources, and a weak economic diversification and competitiveness ? mainly subsistence agriculture (contributing to 50% of GDP and 80% of the active population), a large informal sector and limited number of services. About 90% of Comoros ?export revenues are related to vanilla, cloves and ylang-ylang[3][3]. However, the country imports about 70% of its food needs, mainly rice, vegetables and animal products. It also relies heavily on its diaspora whereby remittances represent about 20% of its GDP, as well as donor assistance, according to World Bank.Comoros is facing a turbulent political environment after years of heavy rotation of Presidents and a controversial reelection of today?s President in March 2019, who suspended the constitutional court, cracked down on the opposition, centralized executive power, stopped the Presidential rotation between Comoros?s three islands under the 2018 constitution, enabling him to potentially remain under power until 2029.

The country is increasingly vulnerable for the past years to natural disasters and climate change effects (recent cyclone Kenneth, tropical storms, floods and volcano eruptions), which negatively impact the socio-economic situation across the archipelago.

COVID-19 has further enhanced Comoros? fragility and hampered trade and tourism post-Kenneth leading to an economic slowdown (-1.4% GDP growth expected in 2020 and only 1.5% growth in 2019).

Carbon emissions and Energy situation in Comoros

Electricity production heavily relies on thermal diesel generation and imported fossil fuels to nurture disseminated small-scale diesel generators throughout the three islands amounting to a total installed capacity of 31.5MW. However, due to high transmission losses (35%), lack of suitable maintenance

and rehabilitation of equipment, limited power infrastructure investment, poor management at SONELEC (the national power utility), the available generation capacity is significantly lower. Load shedding are common daily practice, and many places have access to electricity only a few hours a day (often between 6pm and midnight). High electricity cost at USD 0.75 per kWh[4][4] (imported fuel with low economies of scale and struggles in the fuel supply chain) compared to an end-user price of USD 0.29 per kWh (national uniform tariff of KMF 120/kWh as per law), billing collection issues and theft, are putting the power sector, and SONELEC in particular, under extremely high financial pressure. The Comorian government often has to replenish SONELEC?s funds, negatively impacting already fragile public finances. While the 82%[5][5] national electrification rate is one of the highest in Africa, the effective access to electricity is way lower, leading to a *per capita* electricity supply comparable to quite a few Sub-Saharan countries with significantly lower electrification rates. Thus, a large majority of Comorians have to fall back on alternative solutions such as kerosene or candles for lighting, commercial charging stations for their mobile phones, and disposable batteries for small appliances. In addition, according to the Third National Communication (TNC) of Comoros to the UNFCCC, the energy sector in Comoros is one of the largest GHG emitters in the country (33.7% or 248 Gg CO_{2eq}) and under a business-as-usual scenario energy could increase to 48% of GHG emissions by 2030. Energy demand growth is evaluated to increase by 69.6% in Comoros by 2030 especially due to demographic growth. This has been further emphases in the NDC (Nationally Determined Contributions) of the country. The Energy sector is the second emitter of carbon emissions in Comoros, after the AFOLU sector. Both the TNC and the NDC highlighted the potential of GHG emission reductions of in the energy sector.

Recent efforts, especially in terms of power infrastructure investments in renewable energy, should contribute to an improvement of the situation, at least in part of the country. Comoros is endowed with significant renewable energy resource potential despite its relatively small country size. Solar energy in particular constitutes the most uniformly distributed renewable resource of the archipelago with an average sunshine level of 6 kWh/m2/day, i.e., a potential of 3,600 GWh per annum. Recent power investments include grid-interconnected solar plants of about 3MW each respectively on the three islands (by private sector developers, and the European Union) and a 10MW geothermal power plant around the Karthala volcano on Grande Comore under a GEF6/UNDP project. Some critical reforms of the energy related legal and regulatory frameworks are undergoing with the support of various players including AfDB, World Bank, the EU, and UNDP, but are slowed down especially due to a lack of institutional and technical capacity within the government.

In order to reach SDG 7 to ensure access to affordable, reliable sustainable and modern energy for all, especially in rural areas outside the power grid, minigrids based on renewable energy sources or low-carbon can be a powerful lever can be a powerful lever in terms of price (cheaper in terms of demand and supply through avoided large grid investments in infrastructures), time (faster), scale (cross-sectorial) and GHG emissions (reduced significantly). According to the latest Tracking SDG 7: The Energy Progress Report (2021), while the number of people not having access to electricity has decreased from 1.2 billion to 759 million between 2010 to 2019 (SDG 7.1.) and the share of total final energy consumption from renewables has increased from 16.4% to 17.1% (SDG 7.2) worldwide, it is still not sufficient to reach the targets by 2030. In addition, the COVID-19 pandemic had a reverse effect on energy access. It is estimated that in 2020, more than 30 millon people who already benefited from access to electricity would not anymore due to a lack of affordability. This situation is especially noticeable in Least Developed Countries, such as Comoros. Nevertheless, the pandemic has proven that renewable energy solutions were more resilient than imported fossil fuel solutions. Prices of renewable energy equipments have dropped and innovative business models are flourishing (including around minigrids). As such, efforts should be made at international up to local level to leverage the situation and further promote reneable energy solutions to contribute to reaching SDG 7.

Problem Statement, root causes and barriers, project solutions

This challenging energy and electricity situation hampers the socioeconomic development and green growth of an already fragile country. It is worsening poverty especially in rural and remote areas as well as for vulnerable parts of the population such as smallholder farmers and fishermen, women and youth. **Access to sustainable, reliable, affordable and cleaner electricity (SDG 7) in rural areas in Comoros** is key to contribute to durable improved livelihoods and inclusive poverty alleviation while reducing GHG emissions. The figure below presents the problem (center part ? blue), its root causes and barriers (lower part ? brown), as well as how the project plans to address these barriers (upper part ? green).

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[1] UN Country Stats, visited on December 28, 2020 http://data.un.org/en/iso/km.html

[2] African Development Bank Group and UN Women, 2015: *Dimension de la Pauvret? et du Genre aux Comores*

[3] World Food Programme, 2019 : *Annual Country Report 2019*

[4] Government of Comoros, 2019: Plan Comores ?mergent 2030 ? Boucle ?nerg?tique des Comores

[5] ESMAP Statistic, visited on December 29,2020 https://trackingsdg7.esmap.org/country/comoros

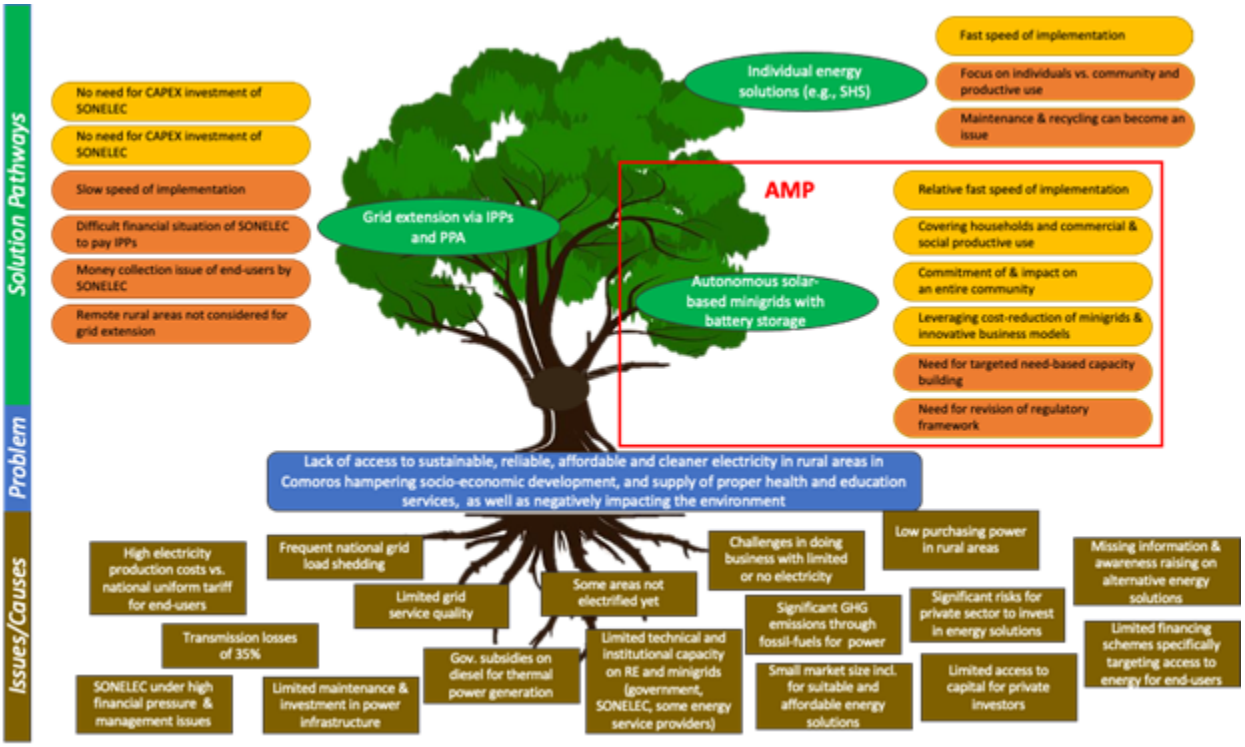


FIGURE 1 ? ROOT CAUSES AND SOLUTIONS TREE

While some efforts are made in Comoros to include renewable energy into the energy mix, isolated minigrids are not yet considered as a suitable alternative by the government. This is mainly due to favoring a national grid extension approach for electrification (vs. off-grid solutions), a lack of technical and institutional capacity, and a market distortion through fossil-fuel subsidies for thermal power plants (representing 96% of the electricity production) of KMF 3bn (?USD 7.2M) per year (according to the Loi de Finances - Finance Law). Investments in and scale-up of autonomous minigrids in Comoros are confronted to 6 main barriers as stated below:

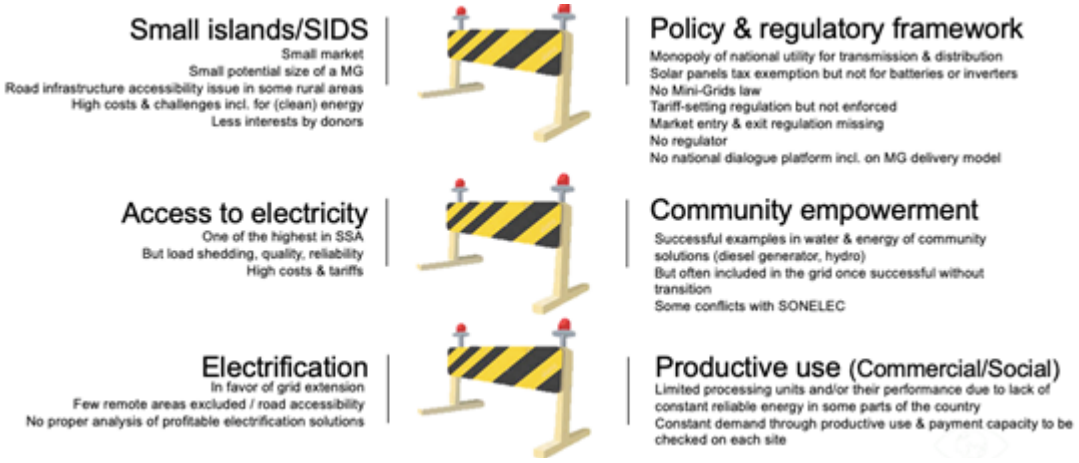


FIGURE 2- BARRIERS TO PRIVATE SECTOR INVESTMENT IN AND SCALE-UP OF MINIGRIDS IN COMOROS

2) The baseline scenario and any associated baseline projects

Comoros has made some efforts to create a regulatory framework on energy and climate.

International environmental treaties

The vulnerability of Comoros to climate change has generated a great interest in environmental protection. The country has thus become part of this global interest in the environment by acceding to or ratifying the relevant treaties. The Union of Comoros is linked to the international community by the signature and ratification of several agreements aimed at preserving ecological integrity for sustainable development. The Comorian government strives to observe and implement international standards in terms of socio-economic and environmental development indicators. In this context, the institutions of the United Nations system, by virtue of their mandate, constitute privileged technical and financial partners of the Union of the Comoros to assist the latter in implementing these international agreements.

The following are some of the international conventions on environmental protection to which Comoros is a party

- United Nations Framework Convention on Climate Change (Authorization for ratification by Law #94-010/AF of 6 June 1994)

- KYOTO Protocol to the United Nations Framework Convention on Climate Change (Authorization of ratification by Law #08-003/AU)
- Amendment to the Kyoto Protocol on Climate Change (Authorization for ratification by Law #13-012/AU of 6 December 2013 promulgated by Decree #13- 142/PR of 14 December 2013)
- Paris Agreement on Climate Change (Authorization for ratification by Law #16- 001/AU of 5 November 2016, promulgated by Decree # 6-258/PR of 7 November 2016)
- Financing Agreement of the Solar Energy Platform Project with the International Development Association (Authorization of promulgation by Law #20- 014/AU of 7 December 2020)
-

International energy treaties

Comoros ratified the statute of the International Renewable Energy Agency (IRENA) by Law #15-005 /AU of 16 June 2015, promulgated by Decree #15-127/PR of 28 August 2015.

Texts related to energy and the environment

(See 7. Consistency with National Priorities)

The domestic law on energy includes fundamental texts, the most illustrative of which is the Electricity Code issued by Law #94-036 of 21 December 1994 and Law #17-020/AU of 25 December 2017 on Renewable Energy in the Union of Comoros promulgated by Decree #18-008/PR.

The production of energy is the sole responsibility of the State. Under the terms of Article 16 of the law, "[SONELEC]?, responsible for the operation of the public power utility service at national level, is solely competent to ensure the management of the transmission network, distribution networks serving the entire national territory as well as the production works of hydraulic, thermal or other origin, which supply them."

The law does, however, provide for an exception, namely the possibility for communities to manage minigrids. In Comoros, many village communities have taken on the responsibility of fulfilling certain regulatory functions not performed by the State, for various reasons, including economic ones. Some of these communities have financed the purchase of energy production units and a local electricity grid. Moreover, the law provides for the financing of these communities.

The Electricity Code has therefore focused primarily on the production and distribution of energy. Environmental concerns, although stated from the outset, are not addressed by the Code. The monopolistic situation has of course evolved as private companies have started to produce electrical energy.

Development policy and energy strategies

(See 7. Consistency with National Priorities)

The SCA2D - Accelerated Growth and Sustainable Development Strategy 2018-2021, the Emerging Comoros Plan 2030 (Replacing the SCA2D) as well as the National Energy Sector Strategy and its Action Plan have a particular focus on energy as a driver of the structural transformation of the country. These include the following:

- accelerate the geothermal energy project
- renovate and strengthen the hydraulic infrastructures in Anjouan and Moh?lil
- launch a study on the potential of hydro (according to recent results, Comoros benefits from stable marine currents all year round: this energy, already successfully exploited in other places, can be an alternative to wind energy, whose potential is limited in Comoros)

- launch a national program of photovoltaic power plants (with possible reinforcement by wind turbines) for collective or individual self-consumption (SHS) on the roofs of public buildings, hospitals, schools, businesses and houses. These power plants, which could be connected to form a "mass", will initially be "off-grid", with the possibility of being connected to the grid as soon as the latter has been rehabilitated, brought up to standard and secured
- implement a national energy efficiency program targeting end-consumers whether they are households, public or private organizations, or production tools, or the national grid to minimize losses.
- support biomass promotion and sustainable management (with a particular emphasis on the sustainable uses of firewood, the fight against deforestation, waste-to-energy and waste-to-organic fertilizer promotion).
-

Baseline projects

Existing energy projects with the support of various partners and donors in Comoros tend to focus on:

- rehabilitation of exisiting power generation capacities
- grid extension (both with fossil and renewable energy)
- energy sector capacity building

For instance, the largest investment taking place in the energy sector is a US$41.6million (Exim Bank India) for the construction of a 16 MW heavy fuel oil (HFO) thermal power plant and strengthening of the national grid.

A few donors and partners are promoting renewable energy in Comoros? energy mix such as:

- World Bank?s ComorSol programme ? Comoros Solar Energy Integration Platform ? aiming at improving national utilities SONELEC?s infrastructure and commercial performance to leverage future private sector and donors? investment towards renewable energy sources
- The Global Environment Facility (GEF) is funding the project entitled ?Sustainable development of Comoros Islands by promoting the geothermal energy resources? (July 2018 ? June 2024, US$5.9million), which aims to formulate the policy and regulatory framework for the development and use of geothermal energy on Grande Comore and to promote investments in the development of geothermal resources for base load power generation. The project will also develop a 10MW geothermal power plant as a replacement and an alternative to the usual fossil fuel power generation. It is a structuring project that will completely restructure the national energy system and at the same time the other economic sectors.
- Innovent, a French energy services provider, implementing a 3 MW solar plant in Grande Comore based on a 20-years PPA with SONELEC

While some efforts are made, some communities in rural areas especially remain without access to electricity or with a rather unreliable power output ? with an availability only between 7 pm and midnight. While, the catalyzing role of energy in economic and social activities (including public services) and the two-way relationship (vicious circle) between access to suitable and affordable energy services and poverty are undeniable and have been proven and demonstrated many times. During various consultations at PPG phase, examples of negative impact on business and income generating activities have been emphasized upon.

Nevertheless, isolated minigrids, especially renewable ones, remain very limited across the archipelago, and are mainly supported and rolled out at community level in rural areas. Thanks to GEF?s Small Grant Programme, a few of these renewable energy based minigrids are developed. This is the case on the island of Moh?li, where a biodigestor of 12m3 is being implemented or a pico hydro plant is being modernized.

Associated baseline projects with some potential synergies with the project (non-exhaustive list) can be found in the table below:

Name of Donor/Project Holder	Name of the project	Description of the project	Potential synergies
AfDB / DGEME at MoEIE	PASEC ? Projet d?Appui au Secteur de l??nergie aux Comores	Support Project to the Energy Sector in Comoros Objective: supporting the Ministry via DGEME in terms of regulatory aspects, rehabilitation of thermal and hydraulic power plants, rehabilitation of the power grid, training planning for SONELEC and DGEME agents on all 3 islands	? Regulatory framework on reforming the energy sector to be launched in 2020 ? Capacity building of DGEME agents
Indian Ocean Commission (IOC) and European Union	IOC ? ENERGIES (regional project)	Objective: support the reduction of consumption and the development of renewable energies, to prepare the islands and their populations to adapt to climate change. But at the same time, the energy strategy of the countries in the zone must guarantee equitable access and development for each of the 29 million inhabitants of the IOC islands.	? Communication tools designed for minigrdids and energy efficiency for households
IFAD	PREFER - Productivit? et R?silience des Exploitations agricoles familiales	Objective: improve food security and livelihoods of the rural poor via sustainably increasing the availability of local produce and the agricultural incomes of supported households	? Nexus Water-Agriculture-Energy-Food (tank and cold room installation) ? Gender aspect with Association Culturelle des Femmes (ACFM) in Miringoni

Name of Donor/Project Holder	Name of the project	Description of the project	Potential synergies
World Bank/ MoEIE	ComorSol	Improve the commercial capacity of SONELEC through the generalization of prepaid meters, the increase of commercial agencies but also to help SONELEC to better manage renewable energies through a dispatching center, storage and a solar installation.	? Regulatory framework ? Capacity building
SGP/UNDP/GEF/ ACDI (Community Association of Idjikoundzi Dimani)	Solar Electrification of the locality of Idjikoundzi Dimani	Provide a solar electrification system for all community infrastructures Set up a solar electricity management, maintenance and servicing system managed by the users' committee in order to ensure sustainable community electrification	
SGP/UNDP/GEF/Miremani	Upgrading pico-hydro power plant at community level	Existing pico-hydro power supporting households needs to be upgraded	? Included in the ?Super Hybrid? pilot site in Moh?li
SGP/UNDP/GEF/Association ADESCO Ouallah II	Biodigester	Biodigester for waste from the ecolodge in Ouallah II (12m3)	? Included in the ?Super Hybrid? pilot site in Moh?li
SGP/UNDP/GEF/ASDEI Association	Solar Mamas Itsamia	Provide a solar electrification system for all community infrastructures Provide training for Solar Mamas at Barefoot College (India)	? Training of rural electricians ? Focus on women
CRDE Badasamlini (Centre R?gional de D?veloppement ?conomique)		Supporting farmers, reducing harvest losses, increasing farmers' incomes and reducing poverty among the rural population	? Settlement of 100 young people in the Bandassamlini-Sangani area, pilot site of the AMP project

Name of Donor/Project Holder	Name of the project	Description of the project	Potential synergies
World Bank / Ministry of Health	COMPASS	Support the health sector through several activities incl. self-consumption of solar energy by health centers on the national territory	? Health centers are targeted by AMP
GEF/World Bank	SWIOFish - South West Indian Ocean Fisheries Governance and Shared Growth Project	improve the management effectiveness of selected priority fisheries at regional, national and community	? Support access to (renewable) energy for the fishery value chain
AfDB / Environment Department of MoAE	Women Empowerment	Focus on the urgent need to tackle household poverty through the development of income-generating activities for women's groups operating along the Sima/Moya (Anjouan) and Moroni/Foumbouni road axes. The overall objective of this project is to improve the livelihoods of targeted populations in the project intervention zone.	? Even if not targeting same intervention zones some synergies could be found on gender mainstreaming and promotion

rehabilitation of exisiting power generation capacities
grid extension (both with fossil and renewable energy)
energy sector capacity building

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

-

The strategy adopted by the project to overcome the development challenge relies on improving the financial viability and promoting scaled-up commercial investment in renewable minigrids.

The project aims to overcome the barriers to the development and scale-up of the early-stage renewable minigrid market in Comoros by mitigating risks for the private sector, and leveraging:

- Clearly defined and regulated minigrid delivery model(s) (see Box 1 below)
- Minigrid costs reduction, by benefiting from reduced hardware, soft and financing costs, as well as digitization (See Box 2 below)
- Suitable innovative minigrids business models development and implementation
- Energy for productive use?s high potential and sustainable energy demand, be it commercial (agriculture, fishing, services, etc.) or social (health and education facilities)
- No need to invest in diesel generators
- Minigrid Funding Facility development with financial insitutions and more to support private energy services providers to reduce risks in terms of services discontinuities due to financial or physical impacts
- Batteries and other wastes disposal with the support of the UNDP/GEF ISLAND Comoros child project, which objective is to prevent the accumulation of materials and chemicals containing POPs, mercury and other harmful chemicals in the environment of Comoros, and also to manage and eliminate existing harmful chemical products and materials in the Union of Comoros.

AMP Comoros puts a particular focus on increasing economic and social resilience to COVID-19, any other pandemic outbreaks, as well as natural disaster (such as cyclone Kenneth) by ensuring and strengthening access to power for key public services facilities (health centers, hospitals and clinics) as well as supporting economic recovery by accessing a sustainable, reliable and affordable electricity for productive use and households.

The project?s theory of change can thus be summarized in the figure below:

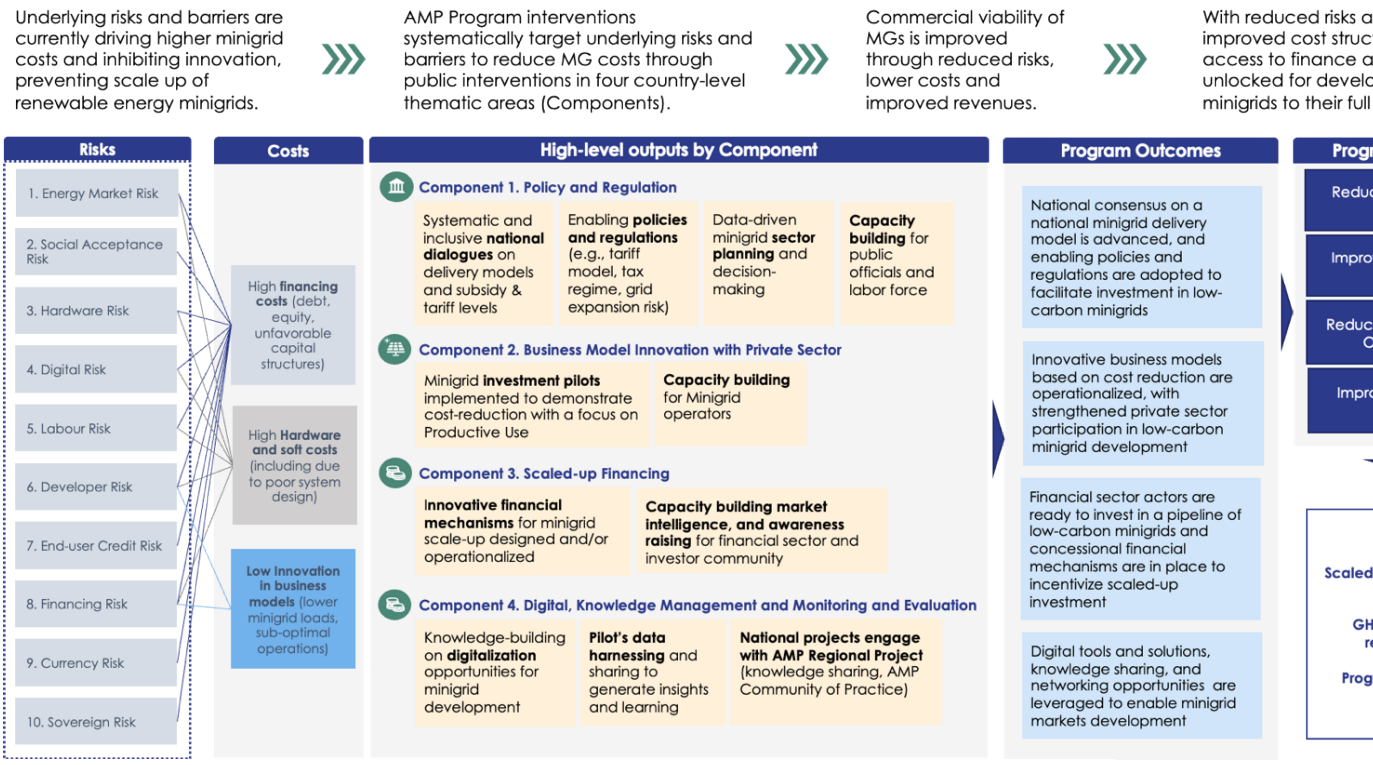


FIGURE 3- PROJECT?S THEORY OF CHANGE (TOC)

By increasing the financial viability of renewable energy minigrids, communities and private sector are stimulated to invest in such energy clean tech solutions, and effectively and efficiently facilitating access to reliable and affordable energy for end-users in rural areas in Comoros, while reducing GHG emissions. As such they contribute to improving livelihoods, economic and social activities and inclusive sustainable development in rural communities.

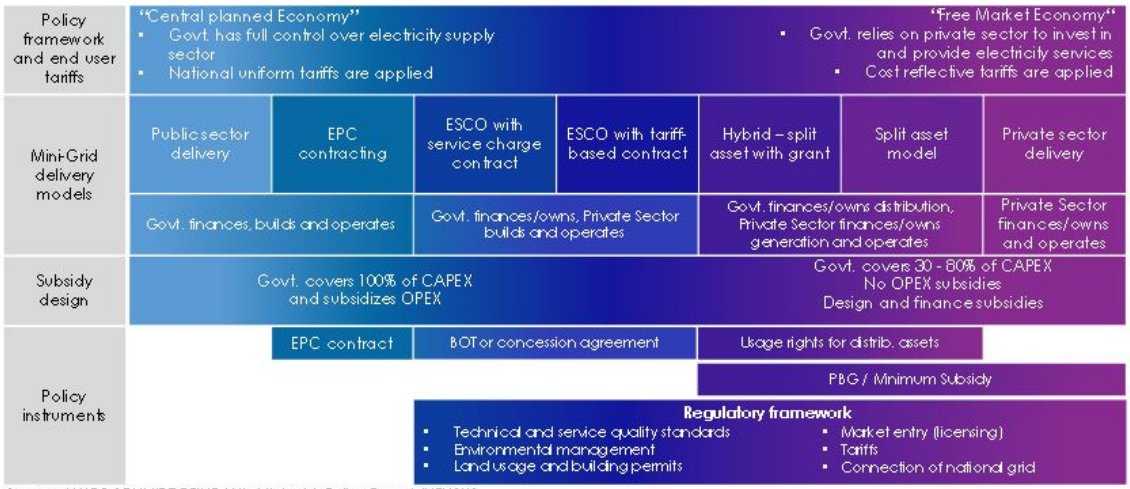
The financial viability of minigrids, especially in nascent market such as Comoros, goes hand in hand with a suitable and well-accepted delivery model. The concept of a minigrid ?delivery model? is hence a key concept for this project. Further details on the delivery model can be found in the box below.

The concept of a minigrid ?delivery model? is a key concept for this project. This text box seeks to set out a common understanding of the concept, its importance to the project, and the current status of the minigrid delivery model in Comoros.

BOX 1 – MINIGRID DELIVERY MODEL

Definition: A minigrid delivery model, determined by the national government, is the cornerstone of a country's over-arc minigrid regulatory framework. It defines who finances, builds, owns and who operates and maintains the minigrids. Wh applicable, it seeks to engage the private sector. A minigrid delivery model is closely associated to other key components minigrid framework, including tariff structures/mechanisms and subsidy levels/mechanisms.

In each country, including Comoros, identifying one (or more) delivery models will provide a framework for all sector st to plan for the longer term, particularly with regard to mobilizing private investment as one of the main objectives of the The figure below describes the spectrum of design options for delivery models, across a number of different elements (ov policies, finance etc.)



Source: JAKOB SCHMIDT-REINDAHL, Mini-grids Policy Expert, INENSUS

FIGURE 4 - CONCEPTUAL OUTLINE OF MINIGRID DELIVERY MODELS

This decision-making process around identifying a delivery model is complex and should ideally be done in the form of a dialogue involving all relevant stakeholders to varying degrees (different ministries such as energy, finance, health and environment, local authorities, the public, the media, the beneficiary communities, utilities, the private sector, and other k stakeholders) in order to build a national consensus on the basis of which large-scale deployment of mini-grids can be ac and have a sustainable impact.

Pilot projects planned under this project will also seek to fit into this framework. The more clarity there is on the part of t government regarding the choice of delivery model, the easier it is to develop or plan business models which can reduce costs. A clearly identified delivery model minimizes the risk of investments being made based on assumptions that are no with government expectations and may lead to conflicts and economic losses down the line. It also helps the government the important questions related to the rural electrification sector to provide clarity for private investors and operators and confidence.

Financial viability is also interlinked with cost optimization which is generated especially thanks to the ?digital opportunity?

BOX 2 – DIGITALIZATION OF MINIGRIDS

Digital technologies and solutions are fundamental to enabling off-grid electrification. In fact, the emergence of minigrids as a viable solution to electrify remote and isolated communities relies strongly on certain digital technologies such as *remote monitoring* of minigrid operations and the use of *digital money* to collect customers' payments. The figure below represents an initial categorization of the digital and data opportunities for minigrids under the AMP.

Digital opportunity for minigrids. It's increasingly clear that digital is a key entry point across minigrid market development. The figure below shows different categories of digital solutions in the minigrid sector: (i) digital planning, (ii) digital operations, (iii) digital aggregation platforms, and (iv) digital payments. In common to all these is the potential of digital technologies – whether used by policy makers, financiers or minigrid developers - to lower minigrid costs, reduce risks, and address barriers to scale. `

Data use opportunity for minigrids. Many opportunities around digitalization are related to leveraging the large amount of data generated by minigrid projects to surface actionable insights, learning and optimization to consolidate business models and technical solutions for scaling-up minigrids. For instance, the use of operational performance information from existing systems to forecast demand and design future minigrid can help avoid a very common pitfall of many minigrid systems which are significantly oversized and hence not financially viable.

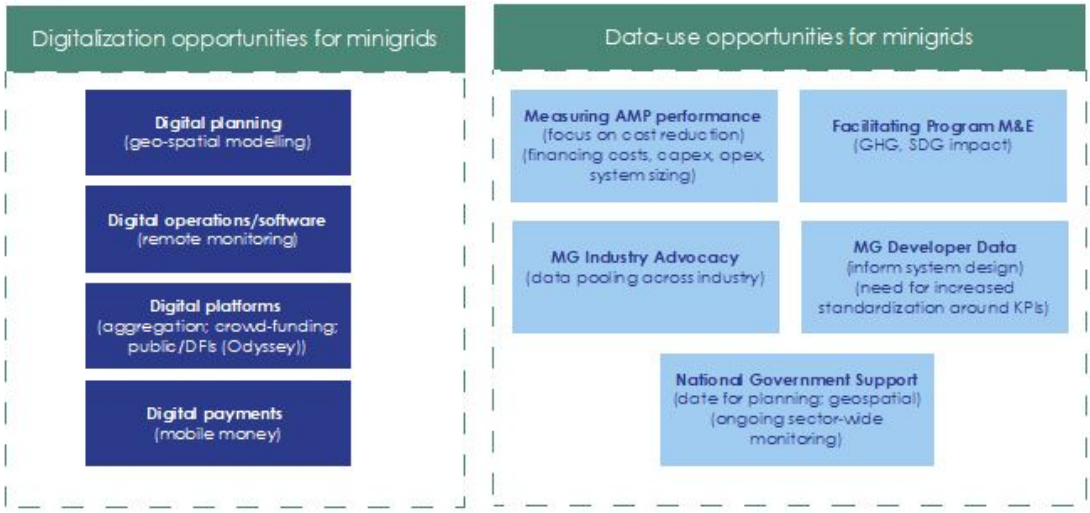


FIGURE 5 - DIGITAL AND DATA OPPORTUNITIES FOR MINIGRIDS IN THE AMP

The potential for using data and digital tools and solutions to add value at various stages of the minigrids value chain remains largely untapped. With enhanced capacity, **minigrid developers** could streamline their operations though smart metering and remote control of their assets and potentially reduce operations and maintenance costs by about 15% to 30% (*)through reduced site visits, labor and component replacement costs. **Government stakeholders** could leverage digital solutions for energy sector planning, to streamline licensing, monitor quality of service and broadly improve sector oversight. However, data of sufficient quality is not always available for these purposes, and government stakeholders often lack the necessary technical capacity. And while data could be a tremendously valuable asset in the minigrid sector, this potential that remains largely underutilized due to the lack of standardization and common data reporting protocols and the fact that this sector is still very nascent and remains relatively fragmented.

Opportunities across the Program, and with the AMP regional project. The AMP provides a unique opportunity to develop a single set of metrics and guidelines for data collection and use them to collect data from minigrid investment pilots across different national projects which the AMP Regional Project can then aggregate, derive insights from, and systematically disseminate knowledge with participating AMP countries and with the broader minigrids sector in Africa. At the same time, the link between the regional project and the total of eighteen (18) national child projects provides a unique ?distribution channel? opportunity across Africa for AMP to mainstream the use of digital tools and solutions for minigrids cost-reduction and scale-up.

(*) AMMP Technologies. ?Reducing the cost of operations and maintenance for remote off-grid energy systems.? September 2018.

Four components and outputs have been developed to increase the access to energy in rural areas and stimulate the uptake of renewable minigrids (mainly solar-based) in Comoros by improving the financial viability and promoting scaled-up commercial investment in such systems. The project focuses on the cost-reduction (hardware, soft and financing costs) and innovative business models for minigrids. UNDP?s derisking approach will be adopted to catalyze private sector investments in the off-grid rural energy market. In doing so the activities proposed under the four project outcomes will seek to:

1. Provide the enabling conditions for the development of Comoros' minigrids nascent market through a suitable policy and regulatory framework
2. Promote innovative and sustainable minigrids business models through pilot sites with communities and private sector investments
3. Facilitate access to supply and demand financing via innovative financial mechanisms
4. Support the scaling up of rural electricity access for the sustainable development of communities through a sound and robust knowledge management and M&E framework

Project Objective:
Supporting access to clean energy by increasing the financial viability, and promoting scaled-up commercial investment, in renewable minigrids in Comoros with a focus on cost-reduction levers and innovative business models

An inclusive and participatory approach has been used to develop the project document. A particular emphasis has been put on involving all key stakeholders from the beginning of the project design throughout the implementation and monitoring (see Stakeholder Engagement Plan in Annex 9). Gender and socio-environmental considerations are inherent to the inclusive and participatory approach, complying with UNDP and GEF guidelines (see Annexes 10 & 11). Specific needs and realities were considered to design a project as adapted and inclusive as possible. The additionality aspect has clearly been explained and complied with throughout the project document. Collective efforts, commitment and ownership of beneficiaries and other relevant stakeholders were sought to ensure efficient and effective sustainable impacts in rural areas, also reflected by several co-financing letters.

Innovation is at the very basis of the AMP theory of change, reflected throughout the AMP Comoros project components, outcomes, outputs and activities. The particular situation of Comoros (SIDS, high

electrification rate, climate risks, etc.) combined with its nascent minigrids market led to leveraging lessons learnt and best practices in other countries (AMP countries, SIDS countries, SADC, etc.). A leapfrog should be achieved to the benefit of targeted beneficiaries and other stakeholders in the country.

An adaptative approach has also been employed in the development process. Changes have been brought to the project design at PPG phase based on more informed and updated baseline assessments since the validation of the PIF in December 2019. Baseline assessments and stakeholder consultations have provided ample evidence for focusing the project on a high involvement of the communities in minigrids to be implemented. In fact, the government is not willing to liberalize the energy sector (except for power generation). However, there is an exception in the Energy Code stipulating that a community can seek the approval of the government to get its own minigrid. Once approved, the community can then hire a private sector operator to develop, install and/or operate the minigrid. The community shall inform the Government about the tariff negotiated with the private sector operator. Such a tariff does not fall into the national uniform tariff of KMF 120/kWh (?$0.29) regulation that only applies to the national grid of SONELEC (national power utilities). In addition, due to the high electrification rate in the Comoros (82%[1]) and the grid expansion plan, solar minigrids targeted in the project will also encompass sites with limited or unreliable access to electricity, and hybrid solutions, on the one hand, and potential interconnection to the grid on the other. A particular focus is put on energy for productive use be it for business purposes or for public services (health centers, schools, etc.).

Climate risks over the period 2020-2050 have been carefully taken into account in the project?s objectives and outputs. The archipelago is already affected by the multiplication of cyclones (especially Cyclone Kenneth in 2019), droughts and floods, sea-level rise, deforestation, as well as volcanic (Mount Khartala in the main island of Grande Comore) and seismic activities. The review of the existing Electricity Code (Output 1.2.) and the eligibility of other sites in addition to the project?s pilot sites (Output 1.3) will encompass climate risks and relevant mitigation aspects. The feasibility and subsequently the design and operationalization of the minigrids in the 3 pilot sites (Output 2.1.) of the project will include existing and potential climate risks of each of them (e.g., optimizing the location of the minigrid, securing the generation, transmission and distribution systems, etc.). The introduction and scaling-up of renewable energy generation systems is an impactful and sustainable way to reduce GHG emissions. The focus on productive use, e.g., agricultural and fishery produce conservation and processing, will contribute to increase the resilience of targeted communities. Training of targeted stakeholders (institutional staff, developers, communities, financial institutions staff) as well as national campaigns (Output 4.3) and AMP Communities of Practice will encompass climate change, risks and mitigation measures, both for mitigation and adaptation. In addition, ongoing efforts at government and national levels, including Natural Disaster Risk Reduction programmes and activities, revised Nationally Determined Contribution (NDC) including a future MRV system, are and will be supporting measures to reduce the impact of climate change on the archipelago and its population.

Component 1 ? Policy and Regulation

Component 1 focuses on creating a conducive environment for private sector participation and engagement in facilitating access to renewable and reliable electricity in rural areas in Comoros, which is closely linked to defining suitable minigrid delivery model(s) nationwide (Box 3 below). It aims at de-risking specific barriers, as depicted in II - Development Challenge and in the paragraph below on Risks, especially related to energy market, social acceptance, hardware, digital, labor, developer, end-user credit, currency and sovereign risks as defined in the DREI Minigrid Derisking Methodology developed by UNDP.

The baseline assessment (including at inception workshop and further) showcased inadequate policy, regulatory and institutional framework to facilitate the uptake of solar and hybrid minigrids across the country, and in rural areas in particular. This includes favoring electrification via public grid extension, granting SONELEC with the monopoly of electricity transmission and distribution, and no liberalization towards the private sector except via communities as stated above. Quality standards around solar systems and ancillary equipment should be implemented and tested through a potential support of SACREEE?s EELA project, including adapting national standards to regional and international norms.

Adapted policy and regulatory framework related to a suitable delivery model will create the necessary conditions and confidence for private sector (as well as communities) to invest in and commit to minigrids in rural Comoros.

Box 1 ? Current Status of Minigrid Delivery Model in Comoros

As the market in Comoros not yet very developed, key aspects of the mini-grid delivery models are still undefined and need to be evaluated. The Table below provides a summary of the current status of key aspects of minigrid delivery models in Comoros.

Aspect	**Current Status**
Ownership and Operation	The government is willing to keep the ownership of minigrids to communities requesting their own power solutions or to the national power utilities SONELEC. The private sector can be contracted by communities to operate the minigrid.
Tariff mechanisms	Tariff applied at isolated minigrids owned by communities do not have to comply with the national uniform electricity tariff. A study on isolated minigrids tariff will be conducted under Component 1 and should support the definition of acceptable and affordable tariffs. As the national uniform tariff is rather high (?USD 0.29/kWh), isolated minigrids tariff could remain competitive without any tariff subsidy.
Subsidy mechanisms	Support in terms of CAPEX could be supported by other technical and financial partners as well as the diaspora. The GoC is not in the capacity to directly support the investments but envisages to create an Energy Fund which could support CAPEX and potentially also OPEX of minigrids *(Assises de l??nergie - 2019).*
Regulations	The DGEME is ready to adapt Article 19 of the Electricity Code (and more) to clearly define the delivery model applicable in the country (See Output 1.2.).

Table 2 - Current status of minigrid delivery models in Comoros

The possible options for each aspect need to be thoroughly understood by stakeholders and substantiated with real examples. The decisions for/against certain options must be openly discussed and weighed up in terms of the interplay between the aspects and the resulting consequences for the sector. These decisions are often influenced by the historical and cultural background on the one hand, and by the current political and economic situation of a country on the other.

To this end, one of the first activities envisaged in the project is to get all relevant stakeholders on board and initiate a process of national dialogue to weigh up all aspects of mini-grid delivery models (Output 1.1.) with the aim of defining one or several sector-wide delivery models. The project?s pilots will also explore delivery models by testing different level of operations management by the private sector, potentially different tariffs (including per service instead of kWh), with a modular approach on installed minigrid capacity/units and hence CAPEX support level. This can further contribute to the development of the regulatory framework.

During PPG, discussions with DGEME and the national power utilities SONELEC have been undertaken to ensure that isolated minigrids are part of the national (rural) electrification efforts. Identified pilot projects (Component 2) have been thoroughly selected based on objective selection criteria. One of the main and eliminatory criteria is that the site is not part of the grid expansion or improvement strategy.

Output 1.1. An inclusive national dialogue to identify minigrid delivery models is facilitated, clarifying priority interventions for an integrated approach to off-grid electrification

The national platform is envisaged to be a discussion forum and coordination mechanism addressing rural electrification, clean energy and minigrids among all relevant stakeholders ? government/public sector, communities and OSCs, private sector, technical and financial partners, etc. Especially in an early-stage or nascent market such a multi-stakeholder platform is key to achieve consensus on a given minigrid vision and related delivery model across the country. This encompasses:

? the buy-in from all national stakeholders including the government

? identifying a clear need and space for minigrids in the country?s electrification

? developing a shared vision for minigrids electrification and related suitable delivery model

? the need to determine clear private sector roles and responsibilities along with communities, as well as suitable business models as early as possible

? determining and enforcing measures to mitigate minigrids risks including including discontinue of services due to financial or physical impacts, disposal of batteries and other wastes, and adapting to change of demand of electricity

Activity 1.1.1. Support the set-up and operationalization of the National Dialogue Platform

At PPG phase, the existence of a working group on energy ? called Energy Task Force ? has been identified. This task force needs to be revitalized and adapted to become more impactful, sustainable and complying with the objectives of the AMP project. At project launch, terms of reference of the National Dialogue Platform will be developed, including the activities, expected outcomes, membership, operations, communication and budget.

All relevant stakeholders will be part of the platform, including Government of the Comoros, local authorities, civil society and communities, private sector, technical and financial partners, local media. Representatives of the minigrids implemented under Component 2 should be represented (and added once determined). A special focus will be put on ensuring the usefulness and sustainability (especially post-project).

The Platform will enable to design solutions together for all 4 components of the project (and further). This will include topics such as a suitable minigrid delivery model, procurement approach, adapted

policy, regulatory and institutional frameworks, related business models with private sector involvement, innovative financing, knowledge sharing, monitoring, etc.

The National Dialogue Platform will be located under the administrative leadership of the Energy Department. The platform will be supported by the project as well as other baseline projects identified focusing on access to energy (inc. World Bank and AfDB). The project management unit (PMU) established under the DGEME/ Energy Department will initially act as the secretariat of the proposed platform. As decided by the stakeholders during the validation workshop, the national platform will be added to the project management set-up. Staff from the DGEME and other members of the platform will be selected to further support it on a regular basis in order to mainstream its functions under the DGEME upon project completion (sustainability). Sub-committees could be envisaged to work on specific topics. One of them will support the evaluation of the Call for Projects for pilot projects under Component 2.

Efforts will be made to use gender mainstreaming as well as integrating socio-environmental aspects on all topics and solutions discussed in the National Dialogue Platform framework.

Output 1.2. A review of the political and regulatory frameworks on the possible minigrid delivery models and suitable incentives is proposed in close collaboration with the National Dialogue Platform members and other development partners

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Activity 1.2.1. Draft minigrid regulation paragraphs in the Electricity Code and adopt a ?regulation by contract in the meantime

Under the Electricity Code (Law # 94-36 of December 21st, 1994) Chapter 4 on Rural Electrification - Article 19, the principle of creating isolated grids/minigrids in Comoros for all rural communities willing to do so is allowed. An approval of the Ministry in charge of Energy based on the project proposal and cost is a pre-requisite. An inter-connection with SONELEC?s national grid can be envisaged with the technical approval of SONELEC. Article 20 depicts the financing conditions that could be put in place for an autonomous grid in rural areas (with SONELEC and a Special fund ? that does not exist yet ? and could be the Minigrid Facility Fund as depicted in Component 3 of the project).

While there are some indications on minigrids in rural areas, a clear framework, delivery model and related business models, financing schemes and tariffs, including with private sector role and involvement, would be helpful to support the uptake of the minigrid market in Comoros. This should encompass Generation ? Distribution ? Sales of the minigrid and specify further content. A review of these articles within the Electricity Code is envisaged after discussion with the MoEIE and other relevant departments complying with the ongoing efforts in terms of reforms and governance at Government level (with the General National Planning Commission ? Commissariat G?n?ral au Plan) with the support of AfDB, World Bank and UNDP (incl. a Power Sector Master Plan, the country?s first grid code, Renewable Energy Law reform, and the adoption of standard power purchase agreements). In addition, minigrid risk and mitigations measures identified through the DREI analysis (see Output 1.5) should be included (to a certain extent) into the revision of the Electricity Code and any other relevant strategy. Plans and provisions related to electricity service discontinuity due to financial or physical impacts, disposal of batteries and other wastes, and adapting to electricity demand evolutions should be considered.

For instance, the AMP project will coordinate with the UNDP/GEF ISLAND Comoros child project (GEF ID 10185), which objective is to prevent the accumulation of materials and chemicals containing POPs, mercury and other harmful chemicals in the environment of Comoros, and also to manage and eliminate existing harmful chemical products and materials in the Union of Comoros. The project aims to directly benefit 256,418 people (127,230 women + 129,188 men), reduce / eliminate / prevent and/or

avoid 52 tons of chemicals of global concern and their wastes (~130 tons/year of car batteries are imported into Comoros, and 23 tons are collected/exported). Synergies between the two projects will be developed to include sound management of solar batteries and converters in recycling mechanisms that will be put in place within the national waste management system. The UNDP/GEF ISLAND project will specifically concentrate on the efficient management of waste and chemicals generated daily in the Union of Comoros, including necessary legal and regulatory texts (based on the Minamata and the Stockholm Conventions), as well as economic and financial instruments that will allow system operation. The system will promote the development, operation and monitoring of PPPs for waste collection and disposal and the Increase of the capacity of entities (private sector / NGOs) operating in the field of waste management. The project will set an enabling environment to foster the establishment of a business incubator partnership with support structures to support the creation, training, and financing of SMEs in the field of waste management, recycling (in country and abroad) and/or export in the long term, with the ultimate objective of creating jobs and business opportunities in this sector. In addition to that, the ISLAND project will Establish a regional private sector partnership for export/recycling/processing abroad of recyclables/hazardous waste (in collaboration with the regional component of the project).

The drafting of the articles 19 and 20 of the Electricity Code will be done under the impulse of DGEME along with members of the National Dialogue Platform to ensure that all stakeholders? voices and needs are taken into account. A dedicated sub-committee of the platform, including the MoEIE and SONELEC, will concretely draft these paragraphs and present them to the Platform for discussion, adaptation and validation, before submission to the Government. Climate risks and mitigation efforts shall be considered.

Until the adaptation and adoption of the revised Electricity Code, a ?regulation by contract? will be enforced. The Contract Template to be developed under Activity 1.3.2 could as such cover all aspects relevant to the minigrids? operations by private entities (legal status, tariffs, standards, etc.) and compliant to the existing legal framework. The template would then be filled in to each individual minigrid project.

Activity 1.2.2. Adapt and enforce customs procedures and import requirements, and strengthen capacities of public officials to implement and enforce simplified import process

While some tax exemptions for some renewable energy equipment (including solar) have been made under the Joint Order #02-0/VP-MPEEIA/CAB and #12-088/VP-MFEBICEW/Cap of 19 September 2012, they do not include all equipment and are not properly enforced. Inverters are for instance in practice often charged with customs taxes.

An assessment of existing import procedures and taxation/duty rules for mini-grid components in Comoros will be conducted. For this purpose, a comprehensive list of relevant minigrid-related equipment, in cooperation with minigrids developers, will be developed and compared with the relevant law. The enforcement of such procedures and rules will also be carefully analyzed both with law enforcers and importers, including local energy services providers. A benchmark of existing practices (incl. best practices and lessons learnt) in AMP countries and in the SADC and Indian Ocean regions will be carried out. Potential gaps will be identified. The report will be shared and presented to relevant ministries and authorities (including MoEIE, Customs Department).

A support to relevant ministries and authorities will be provided and include, depending on the assessment findings, the following: the drafting of proposals for change, calculation and assessment of macroeconomic effects, the drafting of new text in the relevant law or regulation, as well as means to ensure suitable enforcement of the new text. The improvement proposed will comply with official administrative procedures prevailing in Comoros.

It is worth mentioning that quality standards for RE equipment in general and solar mini-grid components should be taken care by two different initiatives: one by SACREEE (ongoing for solar PV panels and solar lighting) and one by Comorsol ? World Bank (to be initiated later in 2021). AMP will ensure to be involved and integrated, via DGEME, in those two processes.

Output 1.3. Templates of tender documents and contracts for the implementation and operation of minigrids (between community and private operator) are prepared

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Activity 1.3.1. Develop a procedure and templates for tenders on minigrids

The procurement approach retained will be a solicited approach under which the government selects clusters of communities and launches a tender for project implementation and operation by private sector firms ? either in two contracts (EPC and operation) or combined. A clear procedure will be developed, and relevant tendering templates will be elaborated. (Relevant training at the DGEME as part of the PCAT measures to mitigate risk are included in Output 1.5.)

As indicated in Component 2, after a demand and capacity study in each of the sites (covered by the project) as well as awareness raising efforts targeting the communities, a Call for Proposal for combined EPC and operation will be designed and initiated targeting private sector operators.

The tendering procedure and templates will be made available on the Project?s Digital Platform (see Output 4.2.).

Activity 1.3.2. Prepare contract templates for minigrid implementation and operation

Today, there is no clear contract type for autonomous minigrids in rural areas in the Comoros while standard contract templates between a community and its minigrid private sector operator would:

guaranty a clear framework, and roles and responsibilities of each of the two parties, the requesting community and the private operator. This should also include some risk mitigation clauses including related to service discontinuity, maintenance, disposal of batteries and other wastes, as well as adating to electricity demand changes
? facilitate the evaluation and approval of the Government towards the future autonomous minigrid
The contract should also include an article on negotiated tariffs for the given isolated minigrid between the community and the private sector operator. Cost-reflective tariffs will be favored in such a setting, while ensuring a tradeoff with affordable pricing on the demand side (end-users). As mentioned above, the national uniform electricity tariff is not applicable to isolated minigrids. Climate change, environmental and social safeguards as well as gender aspects will be taken into account. The contract should also encompass clauses and plans supporting the mitigation of specific risks. This should include:

preventing from discontinuity of services due to financial or physical impacts
disposal of batteries and other wastes
adapting to electricity deman evolution (i.e., number of customers or increase in demand)
A tripartite contract (community ? private sector ? SONELEC), in places where the national grid exists, could be envisaged whereby SONELEC would provide some services: connection, use of their existing grid, etc.

Output 1.4. Geospatial, techno-economic modelling of least-cost off-grid renewable electricity technologies (mini-grids, grid expansion, solar home systems)

Activity 1.4.1. Conduct a geospatial (GIS) analysis to identify communities eligible for isolated minigrid implementation (in addition to pilot sites selected in Component 2)

A geospatial analysis of the archipelago is useful to evaluate:

- on the supply side: the most cost-effective electricity option in rural areas (extension of the grid, minigrids, stand-alone systems). Techno-economic competitiveness of each option is calculated, mainly based on the levelized cost of energy (LCOE) of each solution/technology. Climate risks and measures to mitigate them will be included in the analysis.
- on the demand side: the electricity needs of end-users (households and productive use ? commercial and public services) considering demographic, social and economic aspects.

A simple non-exhaustive GIS analysis has been undertaken by consulting company Tractabel as part of another project. However, this is not sufficient to be able to clearly identify communities eligible for isolated minigrid implementation but will be leveraged upon.

Activity 1.4.2. Conduct a national grid analysis to identify potential for interconnected minigrid application

Given the high electrification rate in Comoros, the recent and upcoming interconnection of solar plants of an average of 3MW in each of the three islands (two of which are private-led by Innovent and VIGOR) and some past experience of SONELEC taking over functioning community-led minigrids, a study on the potential of minigrid interconnection to the national grid makes total sense. Such a study shall include technical, organizational, economic, market-related and environmental considerations. The GIS analysis under activity 1.4.2 will be used for this study. Electrification planning through distributed generation and microgrid modeling software[2], especially rural electrification, is key here.

Activity 1.4.3. Conduct a minigrid tariffication analysis

While a tariffication study for the national grid has been undertaken by the PASEC project (AfDB), during PPG phase, the lack of competencies in terms of minigrids and related tariffs has been put forward including at Ministry level. The minigrid tariffication study aims at supporting a better understanding and a robust negotiation foundation on tariffs for all relevant stakeholders (communities, private sector developers/operators, Government, etc.).

Activity 1.4.4. Conduct an assessment of negative impact of competing fossil-fuel and main-grid utility subsidies on competitiveness of minigrids

In Comoros most of the energy production remains thermal diesel based and a national uniform tariff for the grid is applied whereby imported fossil-fuels are highly subsidized. While the national uniform tariff is not applicable to isolated power generation systems, the impact of the main-grid utility subsidies on competitiveness of minigrids exists. It is worth mentioning that the national uniform tariff of USD 0.29/kWh enables minigrids to remain competitive especially when CAPEX costs are not considered.

Output 1.5. 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

Activity 1.5.1. Conduct initial, full quantitative national DREI analysis

A full quantitative DREI application will be conducted in the first year of project implementation. The PMU will assemble a task team to perform the national DREI analysis including consultants (international, national), government stakeholders, and members of PMU. Deliverables will include

interviews, completed financial models, and national reports/knowledge products. This national analysis will be funded by the national project. The AMP Regional Project can in turn provide various support on DREI to the national project: including finalizing TORs for the country-level, recommendations (in the form of a vetted roster of consultants) on international consultants that are trained on DREI already, as well as resources and tools (Excel models etc.) to conduct the DREI analysis. Results from the full quantitative national DREI analysis will be shared with the regional project to feed into a regional flagship AMP knowledge product, across all AMP countries, on DREI and lowering mini-grid costs. This regional AMP knowledge product will be funded by the regional project. Risks assessment and mitigation measures will be integrated in the relevant outputs of Component 1.

Activity 1.5.2. Disseminate DREI analysis and adaptive management

In the first half of Year 2, the project will disseminate the national DREI analysis and, in the second half of Year 2, the flagship DREI regional knowledge product (south-south learning) through dissemination activities at the national level. Together, these dissemination activities will encompass 3 or 4 round-table workshops with government, private sector and other key stakeholders, over a 12-month period. Along-side these dissemination activities, the PMU will utilize the findings of the national DREI analysis to inform any adaptive management of the national project?s outputs/activities, to address identified needs for public measures arising from the national DREI analysis. These activities will be funded by the national project.

Activity 1.5.3. Coordinate with regional project on national DREI analysis update

In the final year, or year 4, of the national project?s implementation period , whichever happens first, the original national-level DREI analyses will be refreshed to track evolutions in financing costs as well as in hardware and soft costs. For administrative efficiency, the regional project will fund and execute this update (a ?light quantitative DREI analysis?), on behalf of the national project. The deliverable will be a brief note of 2-5 pages on the DREI national update. The data from the national refreshed DREI analysis will be fed into an update note to the year 2 flagship regional DREI knowledge product , which will provide an end-of-program overview of the evolution in mini-grid costs across AMP countries. The national project?s contribution to this activity will be: facilitating the DREI national update (to be executed by the regional project); disseminating the findings of the national DREI update note, and the update to the regional flagship DREI product.

Output 1.6. Pre-feasibility studies conducted for selected mini-grid sites to enhance sector planning and decision-making on a delivery model for minigrid development

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Activity 1.6.1. Conduct preliminary feasibility studies for pilot sites (demand forecast, minigrid sizing, providers mapping) incl. an environmental and social impact study

For each of the pilot sites (Component 2), a feasibility study will be carried out and covered by project funds to objectively assess the potential viability of the solution as well as significantly reduce costs for the developer as well as of the end-user tariff. This will include a thorough analysis of the demand (based on the demand profile study undertaken at PPG phase in each of the 3 sites), its forecast and potential stimulation and aggregation of loads. Energy demand includes households as well as commercial players (artisans, food processors, etc.) and public services (health centers, schools), as well as anchor customers i.e., players who are financially sound and guaranteeing electricity purchase such as telecom towers etc. The accurate prediction of the demand combined with the potential supply to be provided, as well as the acceptable tariff for end-users, will support the correct sizing and financial viability of the future minigrid business models. A mapping of rural commercial and social players using or willing to use energy (e.g., providers of education, health, agriculture as well as various associations and groups incl. youth and women) will be undertaken on each pilot site. Existing

and potential risks and ways to mitigate them to optimize the sustainable impact of renewable minigrid solutions will be considered.

An environmental and social impact study for all of the 3 pilot sites combined will also be undertaken and added to the pre-feasibility studies package.

Communities as well as local authorities and any other relevant partner in each of the sites will be highly involved in these studies.

In addition, a directory of existing and aspiring local commercial minigrid actors, local vendors of solar and solar ancillary equipment, applicable taxes and importation considerations, will be created to facilitate the work of minigrid developers as well as the evaluators (incl. DGEME), the communities and contribute to the viability of the minigrid solution.

All pre-feasibility studies and the environment and social impact study will be shared on the digital platform (see components 2 and 4) and be part of the Call for Projects for each pilot site (see Output 2.2.).

Output 1.7. Institutional capacities at technical, managerial and regulatory levels, in particular to design procurement and tendering processes incorporating cost-cutting levers and innovative business models, are strengthened

Activity 1.7.1. Analyze the knowledge gaps related to minigrids

Knowledge disparity among government decision makers and agents (Directorate of Energy, MoEIE, regional representations), national utility SONELEC as well as all members of the National dialogue platform is a given and has to be bridged. The needs of each type of players (especially government and national utility) in respect to isolated renewable minigrids will be determined (including climate risks and mitigation efforts). For example, for executives and clerks of the Energy Directorate, a special focus will be put *inter alia* on procurement and tendering processes, as well as tools on determining the ?right? tariffs. Gaps will then be evaluated at different levels namely technical, managerial and regulatory.

Activity 1.7.2. Offer comprehensive training materials

Depending on the needs and knowledge level of each targeted training participant, a modular approach will be adopted. Remote training will be offered on the regional AMP learning management platform. Some training materials from different partners (including from existing documentation such as the Green Mini Grid initiative of AfDB, IRENA, SE4All, etc.) will be available, including in French.

In addition, national face-to-face training will be offered to comply with country-specific needs and as physical training is favored in the country. This activity will be undertaken in close relationship with the University of Comoros as well as other Francophone AMP countries including Burkina Faso and Djibouti based on South-South collaboration.

Activity 1.7.3. Conduct Training of Trainers (ToT)

A training of trainers will be provided to both the University of Comoros and the Directorate of Energy to contribute to ownership and sustainability of the various training modules.

Output 1.8. Public programmes (apprenticeships, certificates, university programs) to develop competitive, skilled labor market in minigrids facilitated

Climate risks and mitigation efforts as well as gender considerations will be included in the activities below.

Activity 1.8.1. Identify minigrid market needs in terms of competencies and jobs

A comprehensive analysis of the needs of the minigrids market to contribute to its scaling up should be conducted. This preliminary study is critical to pave the way for the development of suitable training programmes and modules by academics to the market?s needs. Such trainings should integrate a large part of practice and hands-on work to facilitate ownership and direct application of learnings.

Activity 1.8.2. Analyze existing university and higher learning institutions programs and gap analysis

An assessment of the studies portfolio (including modules) around renewable energy and minigrids in particular at the University of Comoros and other high learning institutions across the Comoros is carried out. Potential gaps compared to the market?s needs (see 1.6.1) are identified, and recommendations are made. Bridging these gaps include strategic partnerships with the University of La R?union and targeted higher learning institutions in Madagascar and Mauritius, leveraging some initial discussions as part of a former COI project on Energy, as well as SACREEE, IRENA?s Lighthouse Initiative and RMI?s SIDS projects.

The analysis? findings will be introduced and shared to universities and higher learning institutions as an opportunity, as well as to the authorities in charge of providing budgets to these institutes.

Activity 1.8.3. Analyze existing vocational training programs and gap analysis

An assessment of the training portfolio (including modules) around solar PV installation, becoming a rural electrician and other relevant trainings, including at the training center on renewable energy in Moh?li (not operational but ToT provided to targeted staff at SONELEC Moh?li) and by energy service providers for their staff will be conducted. A particular focus will be put on certification aspects and their enforcement as this is key to raise awareness of, and ensure ownership by end-users (residential, commercial and social) of reliable quality cleantech solutions as an alternative, especially minigrids. Gaps compared to the market?s needs (see 1.6.1) will be identified, and recommendations drawn. The latter shall include discussions with SACREEE, IRENA?s Lighthouse Initiative and RMI?s SIDS projects as well as with AMP regional project and national child projects on how they go about for instance with the certification of solar PV and minigrids installers.

The analysis? findings will be introduced and shared to vocational training centers as an opportunity, as well as to the authorities in charge of providing budgets to these institutes.

Activity 1.8.4. Train the trainers of relevant institutions in Comoros

Based on the findings of activities 1.6.3. and 1.6.4., and the support of the targeted training institutions, the project will support some ToT activities of these institutions in collaboration with identified partners (see above).

Component 2: Project and Business Model Innovation with Private Sector Engagement

Given Comoros' electricity, and specifically minigrids', situation, policy and regulatory framework, and being a nascent minigrid market, the project aims at enabling the proof of concept of minigrids with private sector engagement backed by communities in rural areas. Thanks to innovative business models of demonstration pilots, rural communities will gain access to and reliability of power. Lessons learned

in other countries have highlighted, especially in SSA and in SIDS, that a minigrid can only become profitable and sustainable when based on productive use and cost-reduction. Such players, be it commercial (for-profit) or social (health centers, schools), are energy intensive during the day where the sun is largely available and represent a relatively stable and significant electricity demand source. The project will support the identification of relevant energy intensive value chains across the archipelago (Output 2.1).
Implementation of the pilot projects will follow a list of clear principles as indicated below.

Implementation of the pilot projects will follow a list of clear principles as indicated below and will not invest in any diesel generator.

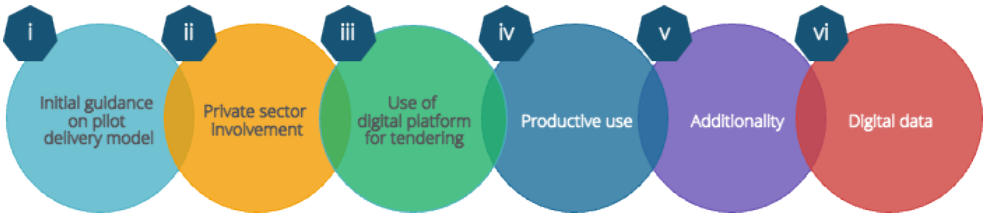

Figure 6 - List of clear principles for pilot projects implementation

Pilots? delivery model

It?s currently envisaged that pilots will be aligned with the current national delivery model with a pilot assets ownership in the hands of communities, with the development of greenfield minigrids as demonstration projects in a nascent market. It?s possible that other delivery models can also be considered during implementation. Combination of minigrids with existing or planned microgrids with alternative RE solutions (biogas and hydro) will be considered. Each pilot project will also consider climate risks and mitigation measures.

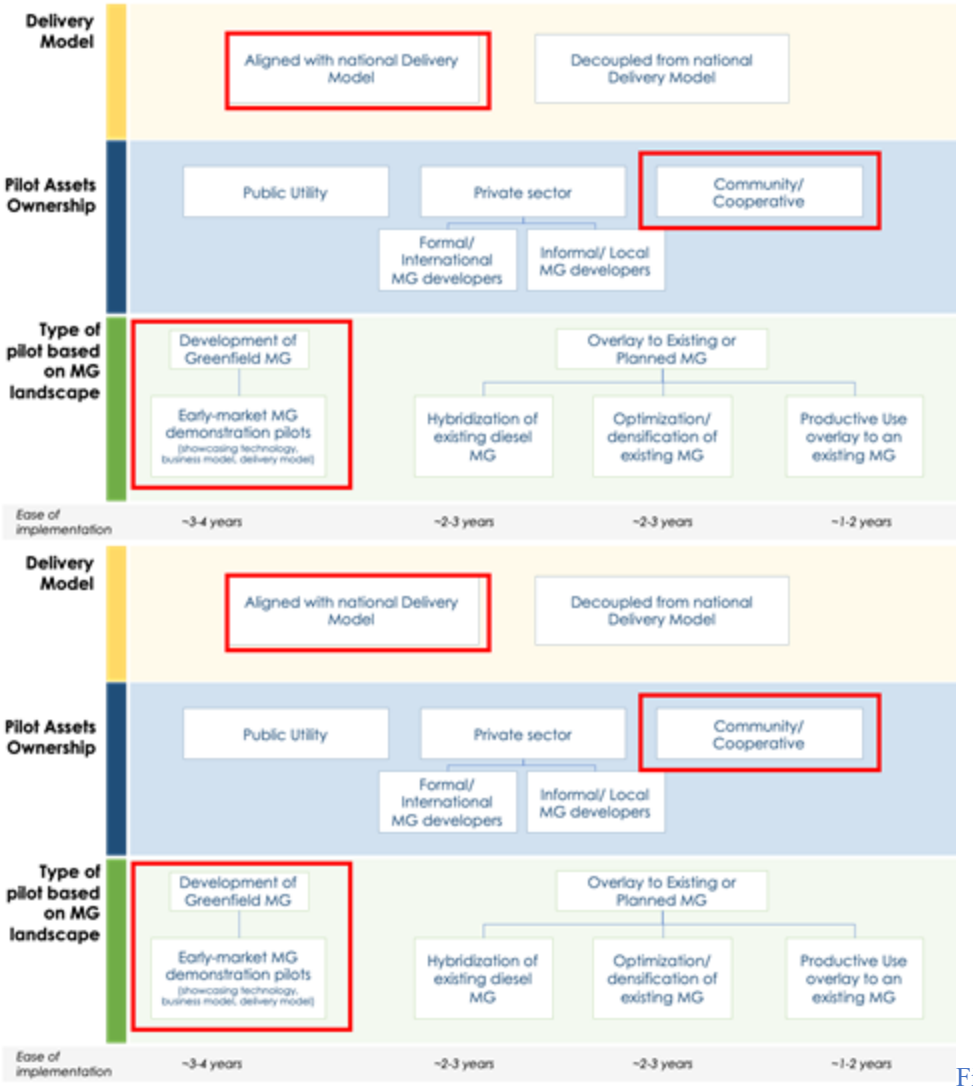

Figure 7- Proposed COMMUNITY-BASED Delivery Model FOR PILOTS

As stated in Component 1, in Comoros, minigrids can currently only be commissioned and owned by a community, with the approval of the government, while contracting a private operator (see Component 1). Hence, it is envisaged that the pilots will follow a delivery model with community-led pilot projects, although other delivery models may also be considered. Pilot asset ownership will lay at community level. The role of the communities is key and consulting the community has been done at PPG through field missions, the demand profile survey and taking part in the validation workshop.

Such models rely not only on ownership of the minigrid by the community but also on an ecosystem approach:.

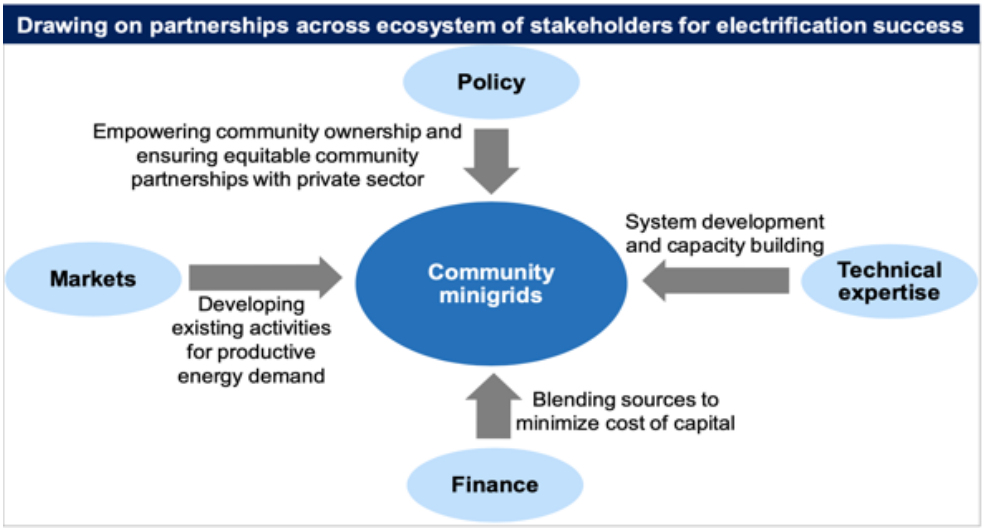

Figure 8- Stakeholders ecosystem approach for electrification success - Source: RMI

1. Private sector involvement

The delivery model for pilots will incorporate private sector involvement as a contractor of the communities. Indeed, private sector engagement is conducive to minigrids? sustainability as well as to scaling-up minigrids.This will be on a spectrum from private sector for Engineering, Procurement and Construction (EPC), to private sector for Operations and Maintenance (O&M).

2. Use of digital platform for tendering

A national digital platform for minigrids will be used for the tendering process of pilot projects ensuring transparence, efficient knowledge management and cost reduction (see Component 1 and Output 2.2.).

3. Productive use

All pilots will include productive use of energy (business and social). This is at the very heart of the project?s theory of change, where the economics of minigrids can improve in a virtuous cycle of higher loads resulting in lower LCOEs. Many pilots will financially support the purchase of productive use equipment (GEF INV). However, the project will only provide its support via a third-party ownership model. This involves that either the community owning the minigrid or a private sector player (local energy services provider for instance) purchase the productive use equipment, and then effectively leasing it back to the end-user, as part of an energy as a service offer. The involvement of financing institutions (see Component 3) can be a solution. Other examples can be found in Annex 20. Some specific capacity building around energy for productive use will be provided as part of Output 2.3. This will be limited though as focus is put on activities specifically reducing GHG emissions as part of climate finance.

4. Minimum concessionality of GEF INV support to pilots

The final design of the minigrid pilots, as set out in the minigrid pilot plan (output 2.1, activity 2.1.1 below), will ensure the efficient and appropriate use of GEF donor funding to the pilots. It will set out a clear methodological basis, for example to ensure LCOE parity with a reference tariff; or based on willingness/ability to pay (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 pilot sites/developers. The community will provide in-kind contributions itself which will be valuated during implementation phase. This may include land and installation labor, as well as, thanks to capacity building efforts provided by the project, local monitoring and basic maintenance (with technical expertise support of the private sector minigrid operator), and local payment collection support and greater system security. Financial inputs may also come rom diaspora, the private sector (productive use players of the community, KeyMaker model players, etc.), UNDP (via its co-financing grant) and other technical and financial partners.

vi. Digital data

In return for benefiting from GEF INV support as a pilot, the asset owner or operator of the minigrid pilot will be obliged to share digital data from the minigrid?s performance with the AMP national project thanks to relevant digital equipment. More details can be found in the Box below.

Box 4 - Digital data sharing for mini-grids

Pilot beneficiaries (e.g., minigrid operators) receiving support from the project will be required to share minigrid performance data with the national project.

Specific terms and conditions for data-sharing and how best to operationalize the commitment and its adoption by the beneficiaries will be defined and agreed upon with minigrid operators during project implementation, including details of what data can and cannot be used, based on consultations with industry stakeholders and with support from the AMP Regional Project.

The specifications around the data generation by the demonstration pilots supported by the project will consult and follow guidance/standards provided by the AMP Regional Project. A standardized Quality Assurance and Monitoring Framework (QAMF) for application in all minigrid pilots supported under the project will be developed in year 1 of the regional project and disseminated to all national projects.

A data platform will be procured by the project (under Component 4, Output 4.2) to serve different purposes including: (1) running digital tenders by which minigrid developers will be selected as beneficiaries to receive support under the project and (2) managing all technical and financial data related to minigrid sites.

Through the implementation of this data management platform, minigrid developers selected to implement minigrid pilots with support from the project will have access to a set of best-in-industry tools for analyzing minigrids (e.g., demand forecasting, system optimization, distribution network design, detailed financial

Relevant digital hardware and software will be part of the required specifications and evaluation criteria as part of the tendering process on the digital tender platform. More details on initial specifications for minigrid digital hardware and software can be found in annex 20.

For equality and commitment reasons, 1 pilot site per island will be implemented. There are 3 islands in the Comoros archipelago and there are 3 main different types of rural villages with their specific needs and situations. 3 pilot sites have been identified and pre-selected during PPG based on objective criteria (See Evaluation Grid in Annex 18), and validated by the IP, responsible parties and relevant stakeholders at the PPG validation workshop held in January 2021. This pre-selection of sites at PPG phase will not only prevent from any site changes based on subjective criteria and high political

turnovers but also enable a more efficient implementation of pilot projects. The selected sites are representative of the different type of villages present across the archipelago e.g., in terms of focused value chains (fishery, agriculture, ecotourism, etc.), geographical settings (coastal, hinterland and mountain) and electricity situation (from no national grid to a hybrid model with grid, biogas and hydro). The selected sites have been approved by the national utility SONELEC complying with their electrification planning and interests in reducing some pressure exerted on their grid. A demand profile survey in each of the pilot sites has been undertaken in December 2020 to get a better sense of the electricity situation, the electricity consumption, payment habits, trends as well as gender aspects. Main results of the survey can be found in Annex 19. This will be useful for the procurement process of the minigrids which will be undertaken through a Call for Projects. Pre-feasibility studies will be taken care by the project and made available on the digital platform to contribute to a transparent tendering process (Component 1). Potential set-up per site can be found in Annex 20 and will be adapted accordingly during implementation phase (incl. based on pre-feasibility studies).

Output 2.1. Opportunities to boost economic and social activities through electricity access and productive use, with focus on minigrids, are identified and innovation is promoted

Activity 2.1.1. Conduct an analysis on key national rural economic outputs and their value chains, and social activities

As part of the minigrid market development and scale-up efforts, a mapping of relevant high potential value chains (in economic and social terms) with possible linkages between those and energy use will be focused upon (incl. stakeholder mapping) at national level, including the 3 selected pilot sites (See Output 2.2). The analysis will include optimization opportunities through better energy services (e.g., more reliable and/or affordable) for value chains using energy and more high-touch opportunities to support new initiatives in rural areas.

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Activity 2.1.2. Organize an innovation start-up contest around rural electrification through minigrids

With the support of ANADEN (National Agency for Digital Development), the technical university IUT and NGO Girls and Tech, a national contest on innovation along rural development through solar minigrids will be organized. All contestants will be invited to showcase the innovative side of their products, services, business models that can be applied to at least one of the 3 pilot sites (can also be used at national level or more). Businesses related to energy services, value chains fostered by energy such as food production and processing, purchasing, financing, money collection, etc. are welcome to join. Start-ups led by youth and women will be favored to participate to this event. A monetary prize, increased visibility and integration into one or more minigrid sites will be granted for the winner(s).

Output 2.2. Pilots developed, including on productive use/innovative appliances and modular hardware/system design, leading to cost-reduction in minigrids

Targeted communities have been involved since the project design phase (PPG) and will continue to be a critical part of the pilot project design, implementation, operationalization and sustainability.

BOX 5: PILOTS AND THE PROJECT'S ENVIRONMENTAL SAFEGUARDS MANAGEMENT FRAMEWORK (ESMF)

Pilot minigrids funded by GEF INV are required to comply with all the relevant national standards of the country as well as UNDP standards on social and environmental safeguards, gender equity and stakeholder consultation. In support of this, an Environmental Safeguards Management Framework (ESMF), developed for the program, a gender action plan and stakeholder engagement plan accompany this ProDoc. The ESMF is structured as a program-wide framework that provides guidance that is both generically applicable to all AMP country projects as well as country specific. This guidance will have to be incorporated and considered in developing the environmental and social impact assessments and management plans for pilot minigrids.

A critical consideration under this ESMF is the need to ensure environmentally sound management of replaced equipment, including batteries, inverters and solar panels, after their usage. The responsible handling of waste with recycling of batteries and other recyclable equipment, should be clearly documented, budgeted and monitored in compliance with national and UNDP safeguards requirements.

Activity 2.2.1. Develop a detailed project plan (the project?s ?Minigrid Pilot Plan?) for advancing the project?s minigrid pilot(s).

Building on the initial guidance in this prodoc, the PMU will lead and 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 pilot(s). Once prepared, the project?s Minigrid Pilot Plan will first be reviewed for clearance by UNDP (CO and BPPS NCE), and then shared with the Board. This activity should be completed by the end of year 1.

Building on the initial guidance in this prodoc, the project?s Minigrid Pilot Plan will finalize, among other aspects, the following:

- Clear objective for the pilot(s)
- The minigrid delivery model(s) which will be demonstrated in the pilot(s)
- The proposed type of pilot(s), which can include: (i) greenfield pilots, including productive use and (ii) productive use overlays, on existing pilots.
- The estimated target number of pilot(s), based on ex-ante estimates of available GEF INV
- Inputs, as necessary, on site selection, including based on geo-spatial mapping, for the pilot(s)
- Site-specific assessments and other requirements (e.g., demand sizing, social and environmental safeguards (SES) assessments, gender assessments, e-waste disposal). Some assessments may be needed to be performed by the project ex-ante, to inform follow-up competitive tenders
- The use of the digital platform for
- Competitive tendering, as necessary.
- Ongoing data collection from mini-grid pilot(s), including data-sharing requirements from mini-grid pilot(s) (Box 4, above), as well as digital hardware requirements (Box 6, below)
- The project?s approach to ensure minimal concessionality for the level of GEF INV support to the pilot(s) (when there are private sector beneficiaries)

•Review of the IP?s modalities for transfer of GEF INV support to the pilot(s), ensuring they are aligned with UNDP?s policies and financial rules.
•If a pilot includes GEF INV support for productive use, ensuring the pilot takes a third party ownership model to productive use equipment
•Coordination and rationale on any associated project technical assistance activities which may benefit the minigrid pilot(s)

Box 6: Initial Indicative Specifications for Minigrid Digital Hardware and Software

INDICATIVE MINIMUM REQUIREMENTS AND COSTS REFERENCES FOR HARDWARE/SOFTWARE FOR DATA-SHARING

Offering	Details
Hardware requirements per site	• Inverter monitoring (monitoring & control) • Distribution monitoring • Optional current transformers for energy meter if more than 10 kW (single phase) or 30 kW (three-phase) • 24V power supply (50€) • Various data cables and installation material

Activity 2.2.2. Design a tender process for pilots using a digital platform

The project?s pilot(s) may involve private sector engagement in various forms, including models involving private sector minigrid ownership, private sector EPC, and private sector O&M services. Where there is private sector engagement in the pilot(s), a competitive tender process will be executed using the digital tendering feature of the digital platform procured under Component 4.

The digital platform will have, at a minimum, the following features:

•Complete end-to-end management of e-tenders for mini-grids customized to specific project needs
•Complete data management for financial schemes, including customized technology solutions for claims submissions and independent verification
•Remote verification of connections through smart meter integrations
•Automated M&E analytics for all project/program indicators (connections deployed, amounts paid, gender/environmental impact metrics, etc.

Under this activity, the PMU, working with the digital platform vendor, specialist engineering, financial, procurement, and legal expertise, and the AMP regional project, will translate the approach set out in the project?s Minigrid Pilot Plan into the design of a customized tendering process on the digital platform, including requirements, specifications and evaluation criteria. At the end of this activity, the tendering process on the digital platform will be ready to launch. The tender process itself should be launched before the end of Year 2.

This activity may also include capacity building for government personnel with the digital platform, as well as planning for capacity building to be available to private sector developers who will participate in the tender. This could also encompass support in proper dimensioning of the renewable minigrid, minimization of outages and means to manage loads, e.g. via artificial intelligence, machine learning and stochastic optimization

Activity 2.2.3. Prepare tender on digital platform, conduct contracting and payments to the selected pilot beneficiaries

The tender will be set up using the digital platform to be procured under Component 4, according to the Implementing Partner?s procurement policies. The PMU will work with the vendor to set-up and customize the digital platform based on the specific needs of the tender.

The tender ? a call for projects for each site - will be launched and run according to the design in activity 2.2.1. It shall target local private sector operators, with a possible collaboration of international developers. Different types of pilots will be tested and implemented as stated above. Evaluation and selection of the submissions will be competitively assessed against evaluation criteria (technical and financial) and will be undertaken by a Project Site sub-committee of the National Dialogue Platform. The process and results will be made transparent and clear on the digital platform.

Contracting and payments will be done with the winners of the tenders. Payments will be made on pre-defined milestones, including on commissioning of plants. The digital platform and relevant collected data will support the validation of the various milestones and of the payments.

The suitable business model and governance will be determined during the tendering and/or contracting phase with the relevant stakeholders incl. the IP, the Project Site Sub-Committee of the National Dialogue Platform, the community and the applicants or winner of the tender.

Activity 2.2.4. Monitor pilots, collect and aggregate data shared by pilots

Data generated by the pilot(s) will be collected using the digital platform, connecting directly to remote monitoring and smart metering equipment. Data that are not amenable to be collected by remote sensing will be collected either by the mini-grid operator or some alternative way to be defined by the PMU.

Data collected from the pilots will be used, among other purposes: (i) track the performance of the minigrid systems in real-time; (ii) validate the underlying pilot assumptions and business case; (iii) track performance enhancement in minigrid capacity utilization; and (iv) generate insights and lessons learned to share with the AMP Regional Project.

Data collected will facilitate automated M&E analytics for all project/program indicators (connections deployed, amounts paid, gender/environmental impact metrics, etc, and will contribute to developing field- and data-based knowledge products.

Activity 2.2.5. Provide technical assistance to support viability of the minigrid

Support to innovative business modelling, cost-effectiveness and commercial viability will be provided especially to private sector developers, as well as, to a certain extent, to communities, service providers, etc. This may include, (based on needs) assistance on cost optimization, demand stimulation, productive use development, levers to increase energy utility, potential electricity reliability failures resilience options (without resorting to diesel generators). Such support will be evaluated based on a needs? assessment of relevant players. It will be provided through workshops, access to best practices and lessons learnt at AMP regional level (and AMP countries) and further, as well as linking up to support organizations and other funding schemes.

Output 2.3. Capacities of private minigrid developers and communities are strengthened

Activity 2.3.1. Provide training and support to local private sector developers and operators

Once the minigrid tendering process is underway, training and support will be provided to local private sector developers and operators (as identified in Output 2.1). This will encompass properly writing tenders considering tender specifications, innovative business models, cost-effective methodologies and best practices. In addition to initial CAPEX support provided by UNDP?s co-financing, information on fund mobilization opportunities (at national, region and international level) will be provided. Support after winning the tender will be offered on a needs-oriented and demand-led manner, including technical design, suitable business models, demand shaping, time-of-use tariffs, monitoring, digitalization and the national digital minigrids platform, etc. Climate risks and concrete mitigation efforts will also be part of the training and support. Capacity building will be provided through workshops (to be delivered with the support of the University of Comoros and the DGEME as stated in Component 1) and webinars (based on existing repositories and the AMP regional platform).

Activity 2.3.2. Raise awareness and building capacities of communities

Communities of the 3 pilot sites will benefit from continuous awareness raising at launch and during implementation of the project as a whole, and pilot site construction and operation in particular. This will include general benefits of the minigrid (including climate change aspects), demand profile, forecast and stimulation, support in money collection for the provision of power, etc. A specific training will be provided to targeted youth and women in the communities on becoming rural electricians (incl. power connection), on basic maintenance of the minigrid, as well as other competencies depending on the implemented business model. It is worth mentioning that maintenance requiring higher technical skills will be provided by the private sector operator. In addition, private sector operators will play a role in knowledge transfer, capacity building and regular support of these targeted youth and women.

Output 2.4. Group of Private Sector RE Services Providers is formalized, operational and its capacities are strengthened

Activity 2.4.1. Formalize and operationalize a national association of private sector RE providers

A former non-operational group of RE engineers (individuals), created with the support of the IOC, will be used as a basis for the creation of a national association of private sector RE providers (legal entities). The creation of the association (or national chapter) will be conducted at project launch. It will include structuring (ToR), formalizing (association status) and operationalizing. This will enable local private sector operators to have a voice at the National Dialogue Platform and further, nationally as well as continentally and internationally (advocacy). Common interests include taxes and import conditions of solar and solar ancillary equipment, collaborating as a consortium of players to answer specific larger bids and competing with international developers, as well as a better outreach. The association could then have thematic sub-committees (if applicable) including one dedicated to minigrids. The association also considered as a national chapter will seek collaboration with AMDA ? African Mini-grid Developers Association ? as discussed during PPG with the AMDA Bureau. AMDA will become a member of the national chapter (an AMDA consultant located in Comoros should become the chair of the minigrid committee of the association and could support on advocacy, fund mobilization and interaction with its AMDA members (mainly private sector led associations and individual developer companies).

Activity 2.4.2. Strengthen the capacities of the RE private sector association

During PPG phase, private sector energy providers indicated the need to build their capacities as an association. Indeed, an association operates in different ways compared to a private company.

Capacities to be focused on encompass structuring, managing and moderating the association to ensure its well-functioning and its sustainability.

Component 3: Scaled-up Financing

Access to low-cost, commercial capital (equity and debt), for both supply and demand, ideally in local currency, is key to reducing the cost of minigrids, and the scalability and sustainability of a minigrid market. Being an early stage minigrid market, there is no dedicated financial scheme and funding around minigrids in the Comoros.

Output 3.1. The design and operations of a Minigrid Funding Facility under the Electricity Code is supported

Activity 3.1.1. Identify existing financing schemes available in the country supporting access and use of energy

During PPG phase a preliminary mapping of available financing mechanisms related to access and use of energy in general has been undertaken. Some available financing products identified are:

On the demand side:

? Productive loans for micro-entrepreneurs and vulnerable households in food production and processing, including machines and equipment as well as energy autonomy. In addition to the evaluation of the project, the savings and credit union MECK, located in all the islands, offers training and especially financial education to the loan takers. At MECK Domoni (in the Nioumak?l?-Domoni area) 40% of the customers are women.

? A revolving mechanism inspired from quite common ?tontine? system (very present especially in rural areas in francophone Africa) is offered by the MFI Sanduk to communities with weekly collection of each member?s participation to the common pot. The Sanduk in the main island of Moh?li has 48% of women as customers.

? Leasing with solar home systems (SHS) and appliances for household are offered by local energy service provider All Fam Trade (AFT) in collaboration with Sanduk

On the supply and demand side:

? Commercial loans are also offered by BDC

Main local financial institutions (MECK, Sanduk, BDC and BIC Comores) expressed their will and interest to adapt existing products and develop new ones for beneficiaries of the AMP project in Comoros (and in the long run) based on 1-on-1 discussions during PPG phase. Technical assistance will be provided by the project through outputs under Component 3.

Activity 3.1.2. Design the MFF

Under the revision of the Electricity Code (see Output 1.2.), a Minigrid Funding Facility (MFF) will be included and put in place to support rural electrification via minigrids as well as the development of a minigrids market in Comoros. This Fund, at the beginning at least, would especially be supported by and used for the 3 AMP pilot sites. Main funding will be covered at first by GEF INV and co-financing (incl. from UNDP) and for the 3 pilot sites. Other funding sources will be listed and facilitated as part of the MFF as identified in activity 3.1.1, as such various options could be chosen upon by financial means seeker both on the supply and demand side. The MFF should be designed so that it can become

a sub-fund of a future multi-donor Energy Fund in the Comoros as stated in the *Assises de l??nergie* in 2017 (and not yet put in place in December 2020).

Mechanisms and governance of the Fund should be determined during project implementation ? based on best practices, contextualization (Comoros), consultations with relevant stakeholders via the National dialogue platform and the DGEME.

Activity 3.1.3. Operationalize the MFF

The MFF will be supervised by the DGEME and located and managed by a local commercial bank on the supply side and local MFIs MECK and Sanduk on the demand side (connection fees, solar ancillary equipment, etc.).

On the demand side, UNDP will support the setting up of a draw-down loan fund ? possibly located at well geographically disseminated and well accepted microfinance institutions Sanduk and MECK.

Fund mobilization by private and public institutions will be supported by a dedicated fund mobilization strategy. This shall include:

? identifying and involving available financing mechanisms in Comoros (Output 3.1.) in the design and operationalization of the MFF as well as innovative financing solutions available elsewhere with telecom operators, digital platforms, etc. especially in the Indian Ocean and across Africa. It is worth mentioning that some players including private financial institutions and other private sector players (e.g., telecom operators), part of larger pan-African or international groups, are investing in green energy solutions and looking to nurture their CSR efforts.
? building capacities and raising awareness of these players (Output 3.3.)
? contributing to a better understanding of minigrids opportunities and potentials in Comoros (Output 3.2.) for financing players.

Output 3.2. General market intelligence study on minigrids prepared and disseminated amongst public officials and finance community

Activity 3.2.1. Conduct a general market intelligence study

At project launch, a general market study on minigrids will be undertaken based on desk research and interviews to facilitate getting an overview and a better understanding on the energy, electrification and minigrid market situation (baseline) and trends in Comoros. The study will be shared to public officials and the finance community in Comoros.

Activity 3.2.2. Prepare a report summarizing all findings from GIS analysis and site identification efforts to quantify the size of the potential mini-grid pipeline

Market sizing is key especially in a small country with a nascent minigrids market. This report will place an emphasis on the potential sites? suitability and risks as investible assets (for the 3 pilot sites and other potential sites in the country).

Output 3.3. Capacities of the national financial sector (including philanthropic) in terms of business models and innovative financial solutions (including digital) in connection with minigrids are strengthened and facilitate access to financing

Activity 3.3.1. Build the capacities of the national financial sector

The local financial sector (including philanthropic) will only offer suitable and affordable financing solutions (demand and supply) once it gains awareness on and appetite for the minigrids market. De-

risking means and lucrative opportunities around lending in the minigrids market in Comoros will be put forward. Workshops will be conducted with representatives of the finance community whereby a variety of business models and financing schemes, as well as the best practices will be shared and discussed about. Capacity building will be carried out with financial institutions to design and implement adapted financing schemes in close collaboration with the other Component 3 outputs. Links will be developed between local financial institutions, relevant government representatives (DGEME, agriculture and more) and international donors in order to explore hybrid and innovative schemes focused on unlocking finance and reducing risks and capital costs (e.g., first loss pools, currency hedging facilities, etc.). This includes for instance IRENA?s marketplace, an online investment catalyzer and connecting platform for technical and commercial RE solutions. In addition, awareness will be raised on climate risks and mitigation measures through the introduction and operationalization of renewable minigrids as well as the financial impacts of green solutions.

To ensure a good understanding and ownership of these solutions, capacity building for local financing solutions providers, local developers and energy solutions providers, government representatives, SONELEC, etc. will be provided.

Component 4: Knowledge Management and Monitoring & Evaluation

Output 4.1. A Digital Strategy is developed and implemented, including linkages to and following guidance from the regional project

Activity 4.1.1 ? Develop and implement a project Digital Strategy

During the PPG phase, identifying and gathering data and studies around energy, renewable energy, GIS mapping etc. at national level has shown to be a real challenge. While access to relevant data and analyses for targeted stakeholders is key, and even critical. As such, a project Digital Strategy will be designed along with a strategy action plan. Linkages with and guidance from the regional AMP project will support this effort.

Studies (e.g., GIS mapping, DREI analysis under Component 1) and other data collected (for instance by demonstration pilot projects under component 2), will all be made available on the project website.

Output 4.2. Minigrids data management platform implemented to run tenders and manage data from pilots, and to support minigrids scale-up and cost-reduction

A data platform will be procured by the project to serve different purposes including:
Specifically, for minigrid investment pilots under Component 2:
? Running digital tenders by which minigrid developers will be selected as beneficiaries to receive support under the project
? Managing all technical and financial data related to minigrid sites
? Provide minigrid developers - selected to implement minigrid pilots with support from the project - access to a set of best-in-industry digital tools for analyzing minigrids (e.g., demand forecasting, system optimization, distribution network design, detailed financial modeling at the site and portfolio level)
? Capacity building for minigrid developers and government stakeholders around the use of the minigrids data management platform

The implementation of this data management platform by DGEME, the Implementation Partner, to run and manage minigrid tenders and then systematically monitoring minigrid pilots and collected data from pilots, is expected to result in improved project design and system optimization, reduced uncertainties and more transparency in minigrid tenders attracting more bidders and increasing competition, and lower transaction costs associated with bidding.

For the project and minigrid sector more generally:

- Provide a centralized database for all distributed energy projects/programs at national level
- Collect, manage and aggregate data from all minigrid sites
- Run digitized tenders and administer grants (other than for Component 2 pilots)
- Performance verification of minigrid systems for improved sector oversight
- Real-time monitoring and evaluation of electrification projects/programs
- Applying advanced analytics of minigrid portfolios to generate critical insights to advance the sector

Similarly, as part of the roll-out of the data platform, minigrid developers (as well as key government and other stakeholders) will receive capacity-building and in-depth training to use analytical tools and data management technologies.

Activity 4.2.1 ? Develop Terms of Reference (TORs) for procuring Minigrids data management platform

All national child projects will use standardized TOR provided by the AMP Regional Project and tailor them to the specific country/project needs.

Activity 4.2.2 ? Procure Minigrids data management platform

All national child projects will procure a country-level minigrids data management platform.

Output 4.3. A Quality Assurance and Monitoring Framework for measuring, reporting and verification of the sustainable development impacts of all minigrids pilots supported, including GHG emission reductions, is adopted and operationalized based on standardized guidance from the regional project

Activity 4.3.1 Provide inputs and feedback to the regional project on the development of a standardized Quality Assurance and Monitoring Framework (QAF)

A standardized Quality Assurance and Monitoring Framework (QAF) for application in all minigrid pilots supported under AMP national projects will be developed in year 1 of the regional project and disseminated to all national project staff. It is expected that national project staff will provide both inputs and feedback on the development of this framework as well as on how best to operationalize the committing to its adoption by the minigrid operators receiving support from the national project.

Activity 4.3.2 Adopt and utilize the standardized Quality Assurance and Monitoring Framework (QAMF)

The adoption and utilization of this framework and associated data reporting protocols will be a mandatory requirement for all minigrid pilots supported under AMP (e.g., applicable to all national projects) and each minigrid operator/sponsor who is the beneficiary of investment subsidies and technical support by the project will be required to formally commit to using the QAMF as a condition of assistance. The adoption of the QAMF by all minigrid operators/sponsors supported under AMP national projects will ensure that the regional project can aggregate common data metrics and track a standardized set of key performance indicators across all minigrid pilots supported by AMP across all partner countries and report this data to the donor on a programmatic level.

In order to operationalize this, the parties operating the minigrids will be supported with the installation of smart meters and/or remote monitoring equipment as appropriate. Provision will also be made to support the operators to access this data and extract potentially valuable insight on their minigrid operations.

If appropriate, provision will be made to train relevant government agency representatives (and members of the Communities of Practice) in the use of a national minigrid dashboard reporting data on all of the Comoros minigrid projects.

Output 4.4. Monitoring and Evaluation (M&E) and Reporting, including (i) Conducting Inception workshop and preparing report, (ii) Ongoing M&E, (iii) Mid-Term Evaluation and (iv) Terminal Evaluation

Activity 4.4.1 - Conduct inception workshop and prepare report

A project inception workshop held to officially launch the project and, among other aims, familiarize key stakeholders with the detailed project strategy, roles and responsibilities of the project team. Planning and carrying out national inception workshop: The national inception workshop will be carried at the beginning of project implementation (within 60 days of CEO endorsement of this project). The workshop will be organized by the PMU with support from the IP. An Inception workshop report will be prepared by the PMU and submitted to UNDP within 90 days of CEO endorsement of this project

Activity 4.4.2 ? Undertake ongoing project monitoring

Data on Results Framework Indicators systematically collected and analyzed to provide decision-makers, managers, and Stakeholders with information on progress in the achievement of agreed objectives and the use of allocated resources, as set out in the Monitoring and Evaluation Pla

Monitoring provides management and the main stakeholders of an ongoing intervention with indications of the extent of progress and achievement of objectives and progress in the use of allocated funds. It provides regular feedback on performance of projects and programs taking into account the external environment. This also includes co-financing commitment materialization. Information from systematic monitoring serves as a critical input to ongoing management decisions (adaptive management), evaluation, and learning.

The GEF Core indicators included in the UNDP Project Document (Annex 15) will be used to monitor global environmental benefits and will be updated for reporting to the GEF prior to MTR and TE. Also, the indicators found in the Results Framework will be monitored as per the Monitoring Plan in Annex 5 and the M&E Plan and Budget in Section VI of this project document.

The UNDP-GEF project document is accompanied by various plans including Stakeholder Engagement Plan (Annex 9), mitigation plan for project risks (Risk Register in Annex 7), and Gender Action Plan (Annex 11). These plans will be reviewed according to the monitoring and evaluation requirements.

According to the project?s social and environmental risk rating, there is a need to carry out continuous monitoring of the social and environmental safeguards as proposed in the Environmental Social Management Framework (ESMF) and other SES frameworks/plans (Annex 10). The ESMP that will emanate from the ESMF will also be monitored under this activity.

Data collected by monitoring GEF Core indicators, Results Framework indicators, project plans and social and environmental safeguards will be used to prepare the PIR to report to the GEF.

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Activity 4.4.3 ? Undertake a mid-term review

An independent mid-term review (MTR) will take place at the half-way mark of project implementation and will be conducted according to guidance, rules and procedures for such evaluations established by UNDP and GEF as reflected in the UNDP Evaluation Guidance for GEF Financed Projects. The MTR will be made widely available to all project stakeholders in the relevant language.

Activity 4.4.4 ? Conduct a terminal evaluation

An independent terminal evaluation (TE) will take place upon completion of all major project outputs and activities.

The project?s terminal GEF PIR along with the TE report and corresponding management response will serve as the final project report package. The final project report package shall be discussed with the Project Board during an end-of-project review meeting to discuss lessons learned and opportunities for scaling up.

Output 4.5. Engage with regional project, including, but not limited to, via (i) participating in Communities of Practice and (ii) capturing and sharing lessons learnt

Activity 4.5.1 Participate in AMP Communities of Practice (CoP)

One of the primary ways national ?child? project staff will interface with the regional project is via the ?Communities of Practice? (CoPs) and associated activities/platforms. While it is expected that many of the activities under the Regional Project Component will be undertaken virtually (via internet-based platforms, webinars or digital platforms) it is also expected that the CoPs will include actual in-person workshops, meetings or training events.

Activity 4.5.2. Share lessons learned with the regional AMP project

Research, lessons learned as well as the awareness raising campaigns will be systematically shared with the regional AMP project including the tracking of the indicators and possible adaptations. Guidelines will be defined by the regional project and shared at the project?s Inception Workshop. Capacity building will be provided to the Project Management Unit to compile lessons learned and share knowledge effectively.

Activity 4.5.3. Collaborate with the regional project on an ?Insight Brief?

Every national ?child? project is expected (in the course of the four-year implementation cycle) to collaborate with regional project staff on the development of at last 1 ?insight brief? capturing (in an accessible format) selected key highlights from a successful national project activity. The ?insight brief? can cover any activity of the project and take the form of a written brief or video brief. The regional project has budgeted resources for the production of ?insight briefs? under Component 1 Knowledge Tools, but the success of regional staff in producing insight briefs highlighting national project activities will be dependent on content and data provided by the national project team and stakeholders. In order to facilitate such collaboration each national project is required to hire a consultant or local firm to gather data and audio-visual content (video footage, photos, etc.) on the subject for the ?insight brief?. The information and data collected at the national level will be provided to the regional project staff who will utilize this content and produce an ?insight brief? according to a standardized communications format for all AMP knowledge products for external audiences. The ?insight brief? will be produced in both the local/national language of the relevant national project as well as English for dissemination by the regional project to regional stakeholders and publishing on the AMP website.

Output 4.6. A Community of Practice to promote minigrids development and rural energy access is established, in close collaboration with Communities of Practice at AMP regional level and others at SIDS, regional, continental and international levels

Activity 4.6.1. Establish a national Community of Practice

To facilitate practical knowledge sharing among practitioners and peers around minigrids development and rural energy access (private and public sectors, government, technical and financial partners) while reducing climate risks in Comoros, a Community of Practice will be created. It is worth mentioning that many of its members will be also part of the National Dialogue Platform as stated in Component 1. The Community will meet twice a year (organized by the PMO in close collaboration with the IP ? DGEME to ensure sustainability) and will share its experiences and more at these meetings as well as regularly throughout the year on a dedicated sharing platform which can be a part of the project website (see Activity 4.3.1). This knowledge sharing platform will also act as a national centralized repository of all relevant studies on the energy situation and market in Comoros (not only done as part of this project), including the ones that have been carried out in the past.

Activity 4.6.2. Link up the Community of Practice with other knowledge networks at various levels

Initiated links during PPG will be further strengthened and expanded at project implementation to create win-win relationships and benefit from each other?s experiences and lessons learned. Other knowledge networks include national Communities of Practice of the other AMP countries, RMI?s SIDS projects in the Caribbean and soon Pacific Islands, IRENA SIDS Lighthouse Initiative, AMDA, SACREEE, African Mini-Grids Community of Practice for government members of various African countries (Africa LEDS Partnership), etc.

Output 4.7. Awareness raising campaigns, including lessons learned, are developed and disseminated at all levels nationally (incl. intervention zones) and with the regional project

Activity 4.7.1. Design a communication strategy

A communication strategy will be elaborated based on awareness raising campaigns and lessons learned. The awareness raising campaign experience on energy efficiency as part of the Energy Project with the Indian Ocean Commission (IOC) will be leveraged. Available communication materials on demand-side management (Hamidi family example of the previous campaign) will be adapted. This includes radio spots in local languages and banners. In addition, with the two only telecom operators in Comoros, Comores Telecom and Telma, SMS campaigns will be rolled out ? 1 SMS per operator per month over the entire duration of the project. SMS content will be provided by the PMO. Digital means will also be leveraged to raise awareness for instance with the national digital promotion agency, ANADEN, and the association Girls and Tech Comores, supporting digital access for the rural youth. As the GoC aims at offering online education and training across Comoros as a post-COVID response, with the Girls and Tech association, some sensitization on energy demand, renewable energy and energy efficiency, climate change and relevant solutions, could be shared among the rural youth.

The project will develop its own website or a dedicated part in a potential AMP regional website.

Field visits will be organized on pilot sites to see, understand and discuss with local communities on their experience with the minigrids and energy access. Other communities in each of the islands (especially the ones eligible for isolated minigrids identified in the GIS analysis ? see activity 1.4.2).

The leveraging role of schools and children will be envisaged to communicate on the need to shift to renewable sources of energy and the catalyzing role of access to energy in rural areas to have access to lighting, cooking, productive use, etc. The experience of Junior International Chamber of Comoros on awareness raising on environment targeting children in 3 schools will be considered.

Activity 4.7.2. Implement and monitor the communication strategy

The communication strategy will be rolled out and specific indicators defined in the communication strategy will be tracked to ensure the expected impacts. The communication strategy will be adapted if necessary, accordingly when gaps appear.

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Output 4.8. Replication plan (including investment plan) for scaling up rural energy access developed

Activity 4.8.1. Develop a replication plan for scaling up investment in minigrids

Based on the 3 implemented pilot sites, the various studies (incl. GIS) in Component 1, and Outputs 3.3. and 4.4., on the one hand, and AMP countries lessons learned, other GEF-funded minigrid projects worldwide, experiences of SIDS worldwide (AMP, RMI, etc.) as well as climate change risks and potential mitigation measures, a replication plan will be elaborated to support the scale up of rural energy access especially through minigrids. The replication plan will include an investment plan as well as potential financing sources as identified in Component 3 on Innovative Financing. AMP?s comprehensive approach to reduce financing, hardware and soft costs will create the enabling environment to attract public and private investments. This coupled with sound knowledge management underpinned by a robust theory of change is expected to catalyze the minigrid market in Comoros.

Activity 4.8.2. Conduct relevant market survey

A more detailed market survey will be carried in Comoros to assess scaling-up and replication impact potential.

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

The program is aligned with Objective 1 of the Climate Change Focal Area to ?Promote innovation and technology transfer for sustainable energy breakthroughs?, and through CCM1-1 - Promote innovation and technology transfer for sustainable energy breakthroughs for de-centralized renewable power with energy storage.

It also contributes to points 113 and 119 of the GEF-7 Programming Directions (chapter on the Climate Change Focal Area Strategy) 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 and reliable renewable energy is unavoidable for sustainable development, particularly in a context where Comoros is struggling to secure reliable energy access to off-grid communities. At the very heart of AMP lies innovation which can only unleash its potential and impact combined with a

conducive environment and enabling conditions through policy and regulatory framework reforms (point 120). As renewable minigrids will be developed and operational, supported by innovative business models that can be scaled-up, the programme also aligns 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).

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

Incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF and UNDP TRAC fund

The business as usual scenario would see the persistence of the aforementioned barriers and challenges (see points 1 and 2 above) including the fact that in the targeted pilot sites as well as other villages, either electrification is not planned in the medium run by SONELEC or the access to an available, reliable, affordable and greener energy is not granted. Autonomous low carbon minigrids were not really considered as part of the solution of sustainable and universal energy access in Comoros. Stakeholder consultations combined with a plaidoyer on innovative business models and reduced costs of minigrids, including at top management level at the Ministry of Economy, Investments and Energy and national utilities, paved the way for seriously considering autonomous renewable minigrids as an effective means for access to available, reliable, affordable and greener energy in rural areas with no or insuffienct electricity. The AMP project is a lever to test and validated the suitable proof of concept of various types of renewable minigrids in Comoros (technology, management, costs, etc.) and to stimulate the scale-up of Comoros? nascent minigrids market.
The incremental project reasoning covers various critical aspects:
- Adapting the policy and regulatory framework accordingly to create a conducive environment for an adapted development and scaling up of renewable minigrids in Comoros (Component 1), while remaining compliant with national policies, strategies and positions (e.g., not opeining power generation to private sector but to community through isolated minigrids)
- Contributing to the adoption of innovative technology solutions and business models of minigrids while leveraging cost reductions through existing and successful projects in other countries, technology transfer, South-South cooperation and strategic partnerships, as well as supporting investment in base units of minigrids in 3 carefully selected pilot sites (Component 2)
- Building the necessary capacities of relevant stakeholders: institutional staff, communities, project developers and implementers, youth and women (across all Components)
- Promoting community engagement and private sector investment in isolated renewable minigrids, and creating the necessary linkages and contracts (Components 1 and 2)
- Supporting innovative supply and demand financing contributing to the scaling up of minigrids in the country (including ancillary renewabled energy equipment) (Component 3)
- Sharing knowledge and raising awareness at large scale in the country (national awareness raising campaigns), for targeted stakeholder through Communities of Practice sharing with other ones under the AMP umbrella and further (Component 4)

Expected contributions from co-financing

The project will work with a variety of partners and initiatives to achieve the project?s objective including the global environmental benefits, many in the form of co-financing (see Annex J?s co-financing letters). Through their various contributions including solar power plants and grid enhancement among others, co-financiers will support access to renewable energy in rural areas.

An overview of the co-financiers, their current efforts to overcome the development challenge, their expected role in the project as well as the expected results to be achieved, can be found in the table

below. It is worth mentioning that each of the partner and partner type will be represented at the National Dialogue Platform.

TABLE 2 - PARTNERSHIPS ? PROJECT CO-FINANCIERS? INITIATIVES AND ROLE IN THE PROJECT

Name of stakeholder/initiative	What is the stakeholder/initiative currently doing to address the development challenge	What will be the role of the partner in the project?s implementation ?	What are the expected outputs that partners are expected to partially or fully contribute to?

Name of stakeholder/initiative	What is the stakeholder/initiative currently doing to address the development challenge	What will be the role of the partner in the project?s implementation ?	What are the expected outputs that partners are expected to partially or fully contribute to?
DGEME - General Department of Energy, Mining and Water (Direction G?n?rale de l??nergie, des Mines et de l?Eau) **at Ministry of Economy, Investments and Energy**	? Ensure leadership on energy related topics ? In charge of reforms on the energy sub-sector ? Design, implement and monitor the energy policy ? Coordinate and monitor energy related projects ? Implementing Partner for the Comorsol program financed by the World Bank	Implementing Partner (assisted by UNDP) ? Responsible for managing and implementing the project (day-to-day), including the monitoring and evaluation of project interventions, the achievement of project results, and the effective use of UNDP resources for the GEF. However, as an assisted NIM, support services will be covered by UNDP (HR and procurement) ? Chair the PSC and host the PMU ? Provide leadership for institutional, legal and regulatory reforms related to minigrids ? Coordinate and animate the National Dialogue Platform ? Lead the selection out of the Call for Projects in collaboration with the selection sub-committee of the National Dialogue Platform ? Support the regional energy	? Output 1.1. An inclusive national dialogue to identify minigrid delivery models is facilitated, clarifying priority interventions for an integrated approach to off-grid electrification ? Output 1.2. A review of the Electricity Code explaining the possible minigrid delivery models (including tariff model, tax regime and incentives) is proposed in close collaboration with the National Dialogue Platform members and other development partners ? Output 1.7. Institutional capacities at technical, managerial and regulatory levels, in particular to design procurement and tendering processes incorporating cost-cutting levers and innovative

Name of stakeholder/initiative	What is the stakeholder/initiative currently doing to address the development challenge	What will be the role of the partner in the project?s implementation ?	What are the expected outputs that partners are expected to partially or fully contribute to?
SONELEC	? In charge of electricity production, transmission, distribution and sales ? Negotiate purchasing contracts ? Improve and maintain power grid ? Improve and maintain power plants	? Support autonomous minigrid pilot projects as a provider of transmission and distribution equipment, installation and maintenance (for pilot minigrid projects) ? Facilitate the scale up of low carbon minigrids and sustainability of the project?s outcomes by leveraging lessons learnt and best practices of innovative technology solutions, business models, financing mechanisms etc. ? Support project management costs Co-financing of $986,736 for Component 2 and $50,000 for Project Management Costs	? Output 1.2. A review of the Electricity Code explaining the possible minigrid delivery models (including tariff model, tax regime and incentives) is proposed in close collaboration with the National Dialogue Platform members and other development partners ? Output 1.7. Institutional capacities at technical, managerial and regulatory levels, in particular to design procurement and tendering processes incorporating cost-cutting levers and innovative business models, are strengthened ? Output 2.2. Pilots developed, including on productive use/innovative appliances and modular hardware/system design, leading to cost-reduction in minigrids

Name of stakeholder/initiative	What is the stakeholder/initiative currently doing to address the development challenge	What will be the role of the partner in the project?s implementation ?	What are the expected outputs that partners are expected to partially or fully contribute to?
ANADEN ? National Digital Promotion Agency	? Contribute to improved livelihoods through digital solutions ? In charge of the digital and innovation aspects at and for the Government ? Develop and implement the Digital Comoros Strategy 2028 (Strat?gie Comores Num?rique 2028) ? Support digital start-ups across the country incl. through incubation services	? Assist in the organization of an innovation start-up contest around rural electrification through minigrids at national level ? Contribute to promoting innovation and digital solutions throughout the project ? Support awareness raising efforts around the project topics through digital means Co-financing of $6,098 for Component 2 and $33,538 for Component 4	? Output 2.1. National report on opportunities to boost economic and social activities through electricity access and productive use, with focus on minigrids, is produced and innovation is promoted ? Output 2.2. Pilots developed, including on productive use/innovative appliances and modular hardware/system design, leading to cost-reduction in minigrids ? Output 4.7. Awareness raising campaigns, including lessons learned, are developed and disseminated at all levels nationally ? Output 4.6. A Community of Practice to promote minigrids development and rural energy access is established, in close collaboration with Communities of Practice at AMP regional level

Name of stakeholder/initiative	What is the stakeholder/initiative currently doing to address the development challenge	What will be the role of the partner in the project?s implementation ?	What are the expected outputs that partners are expected to partially or fully contribute to?
UNDP	? Carry out reforms of the policy and regulatory framework related to energy and renewable energy ? Support the implementation of inter-connected power plants (IPPs) ? Support the development and uptake of small scale RE solutions at community/last mile level ? Contribute to increase electricity access especially in rural areas specifically through solar solutions	? Contribute to investment costs for minigrids pilot projects ? Support independent evaluation efforts ? Support project management costs and provides support assistance Co-financing of $323,505 for Component 2, $35,000 for Component 4, $41,495 for Project Management Costs	? Output 2.2. Pilots developed, including on productive use/innovative appliances and modular hardware/system design, leading to cost-reduction in minigrids ? Output 4.4. Monitoring and Evaluation (M&E) and Reporting, including (i) Conducting Inception workshop and preparing report, (ii) Ongoing M&E, (iii) Mid-Term Evaluation and (iv) Terminal Evaluation

Name of stakeholder/initiative	What is the stakeholder/initiative currently doing to address the development challenge	What will be the role of the partner in the project?s implementation ?	What are the expected outputs that partners are expected to partially or fully contribute to?
AfDB **EU** **World Bank**	? Carry out reforms of the policy and regulatory framework related to energy and renewable energy ? Support the implementation of inter-connected solar power plants (IPPs) ? Support the development and uptake of small scale RE solutions at community/last mile level ? Contribute to increase electricity access especially in rural areas specifically through solar solutions	? Generate synergies, collaborate on relevant topics and activities, and avoid duplication of work ? Support project management costs AfDB co-financing of $255,000 for Component 1, $1,023,210 for Component 4, $50,000 for Project Management Costs EU co-financing of $2,712,695 for Component 2 (2 solar power plants in Moh?li and energy access) World Bank Co-financing of $28,450,000 for Component 2 (9MW solar power plant, storage and grid enhancement), $7,950,000 for Component 4, $200,000 for Project Management Costs	? Tbd based on a pragmatic approach and sharing of activities and potential synergies especially through the National Dialogue Platform

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

The introduction of renewable minigrids in Comoros will contribute to reducing 11,951 tCO_{2e} direct GHG emissions and 9,000 tCO_{2e} indirect ones.

The emission reductions will emanate from pilot project investments but also the ancillary equipment based on renewable energy and energy efficiency that will be used (Output 2.2.).

Indirect emission mitigation will mostly come from creating an enabling investement environment, including from the private sector, and subsequent investment flows. The conducive environement created, supported by the revision of Electricity Code?s Articles 19 and 20, will facilitate the development and scaling up of the nascent renewable minigrids market in Comoros. This will have an additional impact in the medium and long run on GHG emissions.

The methodology for the contributions is following the financial model developed at PPG stage to take a standardized approach at analyzing minigrid pilots which will receive support from national child projects in AMP and provide revised estimations for the projects? target contributions to GEF-7 Core Indicators to replace those developed during the PFD Phase. For the purpose of estimating greenhouse gas (GHG) emissions reductions (ER), assumptions are made in terms of what level of concessionality is applied to the use of GEF INV funds to support minigrid pilots (defined in terms of a percentage of capital expenditure costs (CAPEX) to be covered by GEG INV hereinafter referred to as ?CAPEX subsidy levels?. More details on the calculations of the global environmental benefits for this project are provided in Annex S.

Pilot sites supported by the project (including by covering minigrid feasibility studies as well as supporting some CAPEX costs critical for demonstration purposes in particular) will lead to increasing the communities? resilience towards climate change (improved practices for post-harvesting, conservation, processing; coastal fisheries improvement, etc.) as well as providing the proof of concept to scaling-up renewable minigrids in other villages (incl. through the GIS analysis in Component 1, study tours and demonstration under Component 2, awareness raising efforts under Component 4, and access to adapted financing solutions under Component 3).

As the project is national child project, the global environmental benefits as well as some adaptation benefits will be summed up and leveraged at regional AMP level. Hence, creating a multiplier effect.

7) Innovativeness, sustainability and potential for scaling up

Innovativeness

Innovation is inherent to AMP?s DNA and applied in various aspects:

1. The project?s rationale focuses on the cost-reduction niche of minigrids ? hardware, soft and financial costs - as an efficient and effective solution to attract private investment and *in fine* enable rural communities in Comoros to have access to sustainable, reliable, affordable and greener energy.

2. A particular focus and *sine qua none* condition of minigrid projects under AMP is energy for productive use. It is a pillar of the financial viability of minigrids in rural areas. Productive uses include both commercial (e.g., solar pumping, agricultural produce conservation and processing, artisans and shops) and social (e.g., health and education facilities).

3. Innovative technology solutions are pout forward and will be implemented in the pilot projects. Various technological solutions are envisaged such as containerized minigrid solutions including for productive use (freezers and ice machines for the fishery value chain) or agrivoltaism (where solar minigrids are installed on top of an agricultural field to produce power while saving space and supporting crop productivity). Smart meters and innovative payment solutions (mobile payment etc.) are considered too.

4. The cost optimization aspect is combined with innovative minigrid business models. The innovative aspect of business models relies, on the one hand, on cleantech solutions such as the key maker model and all-inclusive containerized solutions (see Component 2), and on a hybridized setup whereby a close collaboration between communities and private sector, as well as with the government and public sector (development, management and operations) is created.

5. Innovative suitable financing solutions targeting minigrids both for supply and demand are put forward including crowdfunding and -lending, mobile money, and diaspora digital shopping carts (see Component 3) under a Minigrid Funding Facility umbrella.

6. A market-based intervention is applied to effectively contribute to sustainability of the minigrids. As such the private sector plays a key role from PIF and PPG phase up to implementation and post-project phase.

7. A participatory approach is applied since preparation of the project to ensure collaboration with and between all relevant stakeholders, commitment and ownership, as well as the project?s sustainability (including post -project.

Gender mainstreaming and social and environmental safeguards are incorporated to the entire project design and implementation to ensure social inclusivity, gender equity and environmental protection.

The regional programmatic approach, with a regional chapeau project, facilitates access and sharing of expertise, best practices, lessons learnt, training materials, etc., *inter alia* through a pool of experts, AMP Communities of Practice, a regional digital platform, etc.

Sustainability

Sustainability of the project is safeguarded through the active participation of the private sector to establish viable and innovative business models in the minigrid sector. By seeking durable profitability, private sector players will ensure the activities continue well after the end of the project. Private sector players (especially energy services providers) oversee the operations and maintenance of the minigrids, possibly along with local support (incl. trained rural electricians) towards the entire lifetime of the project. In their contract it will be stipulated that they have to take care of replacing and disposing batteries, converters and other equipment. The disposal will be facilitated thanks to the collaboration with the GEF/UNDP waste project. The market-based approach around pilot projects (Component 2)

along with technical and financial assistance provided by the GEF and its partners (incl. co-financiers) will highly contribute to the sustainability of the project outcomes and objective.

Thanks to smart meters and related digital systems, monitoring minigrids systems for lifetime will be facilitated. Private sector minigrid developers will be able to streamline their operations though smart metering and remote control of their assets and potentially reduce operations and maintenance costs by about 15% to 30% through reduced site visits, labor and component replacement costs. They will also be able to monitor the performance, usage and potential issues to increase sustainability. The Government (DGEME) along with stakeholders including national utilities SONELEC could use these digital solutions for energy sector planning, to streamline licensing, monitor quality of service and broadly improve sector oversight over the minigrids lifetime. In the contract for pilot sites, benefitting from project?s investment grants should incorporate a binding clause on operating and maintaining the minigrids during its lifetime and sharing relevant data.

The replicability plan (incl. an investment plan) developed during project implementation will further support the project?s exit strategy and continuity. Hands-on capacity building (technical and managerial) of private sector players (developers, energy services providers as well as businesses using energy for productive uses) and communities (incl. youth and women rural electricians) is another lever contributing to sustainability.

The Minigrid Funding Facility and its various innovative options from various financial institutions and potential donors is designed to last.

The conducive environment created by a suitable policy and regulatory framework and the adapted institutional setup and capacities around minigrids will also support the market scale-up and durability at national level.

At institutional level, the creation of a structured national RE services providers association (with industry associations, such as AMDA) as well as the national dialogue platform should be able to survive after the project because of its utility. The platform shall be integrated at MoEIE with the support of the operations of the producers represent a substantial financial burden for the member organizations, which is another metrics for sustainability.

The structural anchorage of RE and electrification at lower cost and increased reliability as priorities in the PCE and various strategies and plans at national level as well as in international conventions signed by the Comoros should also enable the long-term thinking and implementation of minigrids as a solution for universal, reliable, affordable and green energy access on the archipelago.

Potential for scaling-up

Scaling-up the minigrids market, especially through private sector investment and innovative business models, is the main objective of the AMP. As such the potential for scaling-up has been thought through during the inception phase of the project (PIF and PPG) and a holistic scaling up plan is elaborated below.

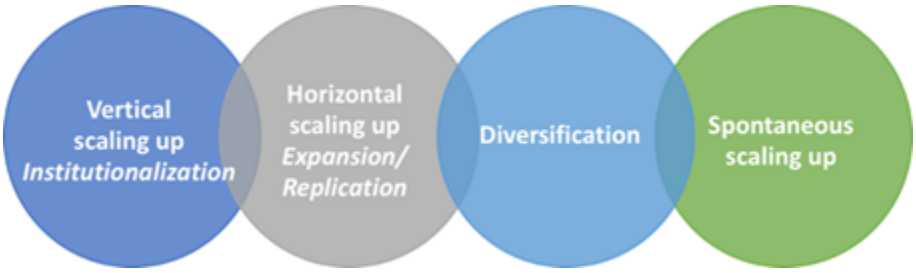


Figure 7- Scaling-Up Approach

? Vertical scaling up is envisaged in the context of actions targeting institutionalized capacity building at policy, political, legal, regulatory, and budgetary planning actions as well as via the creation and operationalization of a private sector association for RE service providers in the Comoros. Component 1 envisages creating a national dialogue platform around minigrids and rural electrification, which will facilitate synergies and common action through a multi-stakeholder dialogue, a cross-sectoral approach as well as offering targeted needs-based capacity building. In component 2, vertical scale-up is ensured by structuring the private sector along the RE value chain by establishing an umbrella association of all these players. Dissemination and advocacy will be ensured (Component 4) and will provide the necessary scale-up effect.

? Horizontal scale-up ? expansion/ replication ? will be fostered and promoted especially through the support to innovative and viable business models and pilot projects on minigrids considering cost-reduction and energy for productive use (commercial and social). Thanks to capacity building, education and large-scale public awareness campaigns, the outreach and impact will be bigger and contribute to the expansion and replication of demonstrated business models and pilot projects. Awareness raising, capacity building, technical and financial assistance of businesses along with the catalyzing role of the private sector will facilitate the replication of the innovative business models and pilot projects to other geographical areas and to other communities in Comoros. The replication plan (Output 4.6.) will crystalize and support market development and business model replication. Component 3 through the MFF and capacity building of financial institutions and partners should also support the replicability of the minigrids and innovative business models in other rural communities in Comoros. Once financial partners are convinced of the return on investment (RoI) and the potential of supporting minigrids systems and more, scaling-up will be facilitated. Relevant financial products both for supply and demand shall be promoted.

? Diversification in the scaling-up potential is also sought by the project. Business models that are evaluated to be viable would be promoted in the context of the project strategy for diversification or functional scaling-up. For example, adding energy efficiency measures and appliances was discussed. Continuous improvement and additional innovations will be further added in the context of the pilot projects? implementation (Component 2) as well as best practices and knowledge sharing with AMP Communities of Practice or any other knowledge network, trainings and community outreach activities (Component 4).

? Spontaneous scaling-up may also be realized as part of the direct project result and beyond, and these will be documented through the knowledge management actions in Component 4. Therefore, as part of the project implementation plans, the scaling-up strategy and its roll-out will be drawn. The project will also support systematic monitoring of the implementation of planned activities and based on achieved results, document the profiles of those which could be promoted for scaling-up, and to be included in the replication plan (Output 4.6.).

[1] ESMAP Statistic, visited on December 29,2020 https://trackingsdg7.esmap.org/country/comoros

[2] such as HOMER Pro (Hybrid Optimization of Multiple Energy Resources) or others

[1] UN Country Stats, visited on December 28, 2020 http://data.un.org/en/iso/km.html

[2] African Development Bank Group and UN Women, 2015: *Dimension de la Pauvret? et du Genre aux Comores*

[3] World Food Programme, 2019 : *Annual Country Report 2019*

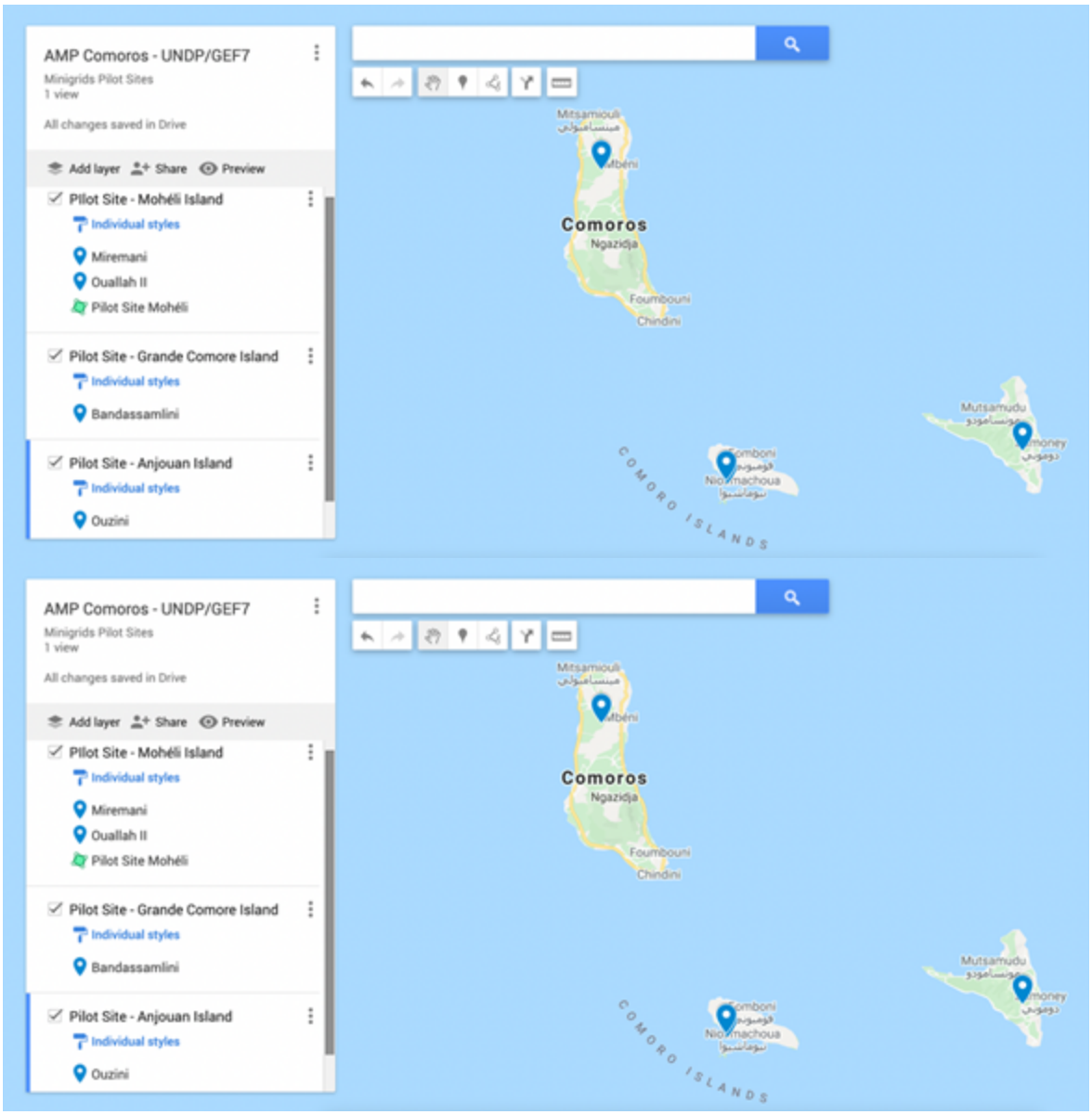
[4] Government of Comoros, 2019: *Plan Comores ?mergent 2030 ? Boucle ?nerg?tique des Comores*

[5] ESMAP Statistic, visited on December 29,2020 https://trackingsdg7.esmap.org/country/comoros

1b. Project Map and Coordinates

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

The Project map and relevant coordinate can be found under this GoogleEarth link: https://www.google.com/maps/d/u/0/edit?mid=1aLcbE-7E1nwi8WfVL0ktQH-KgScj_FtK&usp=sharing



	Latitude	Longitude	Altitude	Precision
Miremani (Mwali/Moh?li Island)	-12.357735	43.6745031	23.4554443359375	4.883
Ouallah II (Mwali Moh?li Island)	-12.34689	43.66975	0.0	3334.0
Ouzini (Ndzuani/ Anjouan Island)	-12.27046325	44.47946715	594.134521484375	6.068
Bandassamlini (Ngadzija/Grande Comore Island)	-11.5212649	43.3310015	669.212646484375	4.288

1c. Child Project?

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

As part of the AMP network, the project will have access to 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 modeling, mini-grid business models, etc.) hired, retained, contracted and paid for by the AMP regional project and made available to all participating national project staff and selected beneficiaries on as needed basis. The areas of support, listing of available firms/individual consultants 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 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 this 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 terms of reference (ToR) 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.
5. **Specialized advisory support for implementing UNDP?s minigrid DREI analyses.** During project implementation, the UNDP DREI Core team, working with the regional project, will make available to national teams and consultants the resources and tools to conduct full quantitative DREI applications, and will provide ongoing support and quality assurance.

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 regional project and at the inception workshop of each national project

2. Stakeholders

Please provide the Stakeholder Engagement Plan or equivalent assessment.

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 participatory and inclusive approach adopted by the project since PPG is part of its DNA. A stakeholder analysis (to be continuously updated) was undertaken to identify all relevant stakeholders at PPG phase. Extensive and numerous stakeholder consultations, one-on-one, in groups and at workshops (inception and validation) were carried out at PPG phase and will be pursued during project implementation to ensure ownership and sustainability of the project after closure. Comments, questions, requests and commitments are stimulated at every project stakeholder.
Particular efforts were put since design phase and will continue during the entire project implementation phase:

? Promote effective engagement, as well as inclusive and meaningful consultation. This encompasses a two-way process between the stakeholders and UNDP as GEF executing agency to ensure continuous insights, feedback and involvement of project stakeholders. Sharing information and knowledge is critical and supported at PPG as well as during implementation through different specific tools and activities.

? Forge stronger partnerships, particularly with civil society, communities and the private sector. It requires continuous work, based on transparency, engagement and dialogue, outreach, awareness building, listening, and respect for the importance and contributions of all stakeholders.
? Harness the knowledge and expertise of stakeholders which includes acknowledging the fact that stakeholders are a great source of information and knowledge, and that these should be shared through various means including via knowledge management and monitoring & evaluation (Component 4).
Stakeholder engagement since PPG put a high emphasis on conducting it in an inclusive and gender responsive manner.
During PPG phase, relevant stakeholders were asked to provide inputs and comments on the project and their specific role in contributing to overcome the development challenge together. This largely contributed to nourishing the project document and adapting it to local realities and needs as much as possible. At validation workshop and after sharing the final draft of the project document and annexes, feedback was provided by stakeholders and integrated into the final version of the document.
During project implementation, stakeholders will continue to actively contribute and engage in achieving the overall goal of the project. The Stakeholder Engagement Plan in Annex K provides further details on the stakeholder groups, their roles and responsibilities.
Different actions are provided to stimulate and sustain stakeholder engagement throughout project duration (and even after):

? Inception workshop at project launch gathering all key stakeholders to present the project and the inception report to facilitate project implementation. Participants will be invited to share their insights and updates to adapt the workplan. The official project launch and main outcomes of the inception workshop will be broadcasted to a larger audience as part of the awareness raising campaign (Component 4).

? The National dialogue platform (Component 1) is a powerful tool to support exchanges between project stakeholders and with the PMU on various topics (especially through sub-committees). This multi-stakeholder media is critical to effectively and efficiently contribute to the development of a

nascent minigrids market in Comoros. Sub-committees will be created to further facilitate implementation, ownership and engagement.

? The national Community of Practice is another means to engage with all relevant stakeholders and motivate them to be involved in the project, sharing their experience, learning, and growing.

? Continuous stakeholder interactions and consultations through meetings, workshops, trainings, awareness raising campaigns, etc. will also be used to foster stakeholder engagement.

? The Project Board/Steering Committee is the ultimate platform for stakeholder engagement and decision-making including beneficiary representatives, the project executive and the development partner (see below). Topics such as workplan, activities and results will be debated, decisions taken together, and necessary corrective measures proposed.

South-South cooperation is particularly fostered in this project. AMP is a regional programme in Sub-Saharan Africa with a minimum of 11 countries participating. Various knowledge sharing tools among AMP countries and AMP?s regional chapeau project will be provided (Component 4). Cooperation and partnerships with other initiatives and organizations promoting South-South cooperation will be offered under the AMP umbrella including RMI, AfDB, IRENA, SE4All, AMDA, etc. Discussions with SACREEE (that Comoros joined recently) and MASEN in Morocco should be developed at project launch. Cooperation with AMP Burkina Faso for francophone training on specific topics as well as with Senegal?s successful national dialogue platform on energy will be fostered.
As a SIDS, during PPG phase, exchanges with RMI, on their programme for islands in the Caribbean and upcoming one for islands in the Pacific, are very promising i.e., quite some similarities, lessons learnt, and best practices could be shared. This could be also reinforced by IRENA?s Lighthouse initiative.
In addition, to bring the voice of Comoros to global and regional fora, the project will explore opportunities for meaningful participation in specific events where UNDP could support engagement with the global development discourse on low carbon minigrids. The project will, furthermore, provide opportunities for regional cooperation with countries that are implementing initiatives on low carbon minigrids in geopolitical, social and environmental contexts relevant to the proposed project in Comoros.

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.

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; Yes

Executor or co-executor;

Other (Please explain)

3. Gender Equality and Women's Empowerment

Provide the gender analysis or equivalent socio-economic assesment.

Gender Equality and Women's Empowerment. Provide the gender analysis or equivalent socio-economic assessment. In Annex M

Comoros is considered as a matrilineal society whereby women hold an important role in society in terms of asset ownership and heritage. However, gender inequalities in the Comoros are well entrenched. Religious, traditional and modern aspects are mixed up leading to traditionally matrilineal aspects while a patriarchal perspective is present for religious reasons. As such land is often, in the end, in favor of male ownership in the end or at least controlling the management of this land. UNDP?s Human Development Index (HDI) in the Comoros amounts to 0.504 for women in 2018 vs. 0.568 for men, resulting in a Gender Development Index value of 0.888, placing it slightly below the average for Sub-Saharan Africa. While gender equality is enshrined in the Comorian Constitution, women have significantly lower access to healthcare, to school completion and standard of living, as well as higher unemployment rates. The latter indicates that they disproportionally perform unpaid work. This is particularly the case in rural areas (focus of the project). Rural women are expected to work in the field, undertake household duties including taking care of children, cooking, collecting wood and water, etc. while not really earning a living. Men in rural areas are either fishermen on the coast, or artisans (carpenter, mechanician, etc.), or small livestock herder and only a few works in agricultural fields. Men and women collect and carry firewood, contrary to many other African countries where women are solely in charge of this task. Women?s participation in the labor force is only 33%. This participation rate is one of the lowest in the region and compounds women?s economic vulnerability. In terms of decision making and control, rural women often have to ask for a man?s authorization for instance regarding the household budget or for productive activities. However, women tend to reach out to an older woman such as a mother to plead one?s cause in front of men. Women on the islands of Moh?li and Anjouan are more reserved than in Grande Comores according to a women?s focus group and field observations during PPG phase. They are significantly underrepresented in the political sphere (3% of the deputies at the National Assembly while growing number of female candidates according to AfDB). In terms of access to energy, while biomass is often managed and collected by women, decision to access to electricity is often taken by men.

As such gender mainstreaming is considered essential in the project. Taking women, youth and other vulnerable groups, as well as their situation and role, into account is reflected in all project components as indicated in the Gender Action Plan (Annex 11). Inclusiveness and a gender responsive manner has been brought since the project?s design phase. Women?s and youth association in addition to women and youth in the project?s intervention?s communities are consulted since PPG?s beginning for their role as catalyzer for local sustainable development, their influencing role (and focal point) as well as for awareness raising, training and monitoring purposes. The associations have proven to be largely influencing communities. which are at the very heart of the minigrid delivery model, in Comoros. They also act as a trustful implementing and informing player.

The project aims at integrating gender-responsive measures to address identified gender gaps across the 4 project?s components. It is classified as gender transformative with a strong gender-sensitive approach, whereby gender equality in participation will be incorporated in the project design as per the Gender Action Plan in Annex 11. The Gender Action Plan will guide the project implementation to

build project partner capacity to mainstream gender and bring along strategies that empower women and youth as efficient change agents. This plan will be facilitated by the Stakeholder Engagement Plan (See Annex K), which outlines the multiple ways in which women and youth will be engaged in the project implementation.

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; Yes

Improving women's participation and decision making Yes

Generating socio-economic benefits or services or women Yes

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

4. Private sector engagement

Elaborate on private sector engagement in the project, if any

Private sector engagement is at the very heart of the project as a catalysor of the development and scaling up of renewable minigrids in Comoros.

Both private sector developers and implementers of minigrids, as well as businesses and cooperatives using energy are essential to the project?s success. They are beneficiaries as well as respectively operators and energy users.

Energy service providers/minigrid developers and operators will design, manage/co-manage with communities (depending on the chosen model), install, operate and maintain the minigrids. They will contribute to marketing activities, raising awareness and train pilot project communities on minigrids systems (benefits, usage, etc.). They will also offer ancillary equipment to the energy users ? solar and energy efficiency (EE) - be it household (residential), businesses and cooperatives (commercial) and social institutions such as schools and health centers (institutional). Energy services providers could become potential providers of specific studies where there would not be any conflict of interest (Component 1). They will also create local jobs and ensure knowledge sharing to rural electricians and more (Component 2). They will also facilitate the structuring and animation of an existing group of RE service providers to become an association and benefit from relevant capacity building. Foreign innovative energy solutions providers shall also be invited to take part to the Call for Projects and collaborate with local players to provide innovative technology solutions (e.g., containerized solutions with energy for productive use options, agri-voltaism, etc.). They will also share best practices and lessons learnt with local providers and other relevant stakeholders.

The call for project and related contracts will include clear business arrangements between the communities and the energy service providers to ensure clear roles and responsibilities of each party and a smooth and functioning collaboration throughout the minigrid system?s lifetime (Components 1

and 2). The acceptable balance between social acceptance (ability and willingness to pay) and profitability for minigrids has to be found.

Business and cooperatives on pilot sites are proven to significantly contribute to the viability and profitability of the minigrid. They can also act as co-operators of minigrid systems or contribute to payment collection. In addition, anchor clients such as telecom operators that need electricity 24/7 are engaged in the project.

Private finance and micro-finance institutions are also partners of the projects and willing to provide suitable financing products and services for supply and demand around renewable minigrids. They will contribute to the design and operations of the MFF as part of Component 3. They will benefit from capacity building and a market study to help them better understand the minigrid value chain. (incl. energy for productive use). They will then be able to grasp the potential and RoI of autonomous energy access solutions as well as how risks can be mitigated, for them to invest in this value chain. In addition, financial institutions in Comoros are already involved to a certain extent to supporting agicultural value chains, key in rural communities. They also offer credits for households, business and energy services (for some of them).

The project will further ensure the private sector?s engagement, initated at PPG phase, via their active participation to the National Dialogue Platform (Output 1.1.) as well through the creation of a Private Sector RE association and support of its capacity building and operations during the project duration.

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):

During the PPG and based on the Derisking Renewable Energy Investment - DREI Methodology developed by UNDP, the key risks, which could jeopardize the achievement of the project's overall objective and outputs, have been evaluated. Information sources were mainly stakeholder consultations, field missions and desk review. For each of the risks identified, mitigation measures were proposed. The table below describes these risks and mitigation measures.

Risk Category	Description/Underlying Barriers	Risk Level	Risk Mitigation Measures

Risk Category	Description/Underlying Barriers	Risk Level	Risk Mitigation Measures
Energy market risk	Policy & regulatory framework, market access, competition and grid expansion: ? Lack of clear targets in terms of rural electrification through minigrids and favoring grid extension ? No dedicated minigrid strategy/plan ? Electricity Code (law) allowing communities to request and own minigrids, and contract private sector operators to install and operate the minigrid. But private developers cannot own the minigrid/no liberalization planned ? Limited capacities and outlook at government and national utilities level in terms of minigrid ? No energy regulator	High	? Component 1 to include the conduction of GIS analysis to identify communities eligible for isolated minigrid implementation as well as national grid analysis to identify potential for interconnected minigrid application. The second study could possibly be supported by some AfDB remainder ? Minigrids allowed through communities contracting private operators at a negotiated tariff. Hence a way to include private sector (operations) and communities ? Will of the DGEME/Ministry to consider minigrids as part of the electrification efforts and backed by the replicable pilot sites under Component 2 ? Leveraging the recent development of main grid solar power plants by private sector developers with a PPA negotiated directly with the government at specific tariffs ? Open to revise the Electricity Code to clarify the minigrid delivery model and the related procurement process under Component 1. This would be based on a participatory approach via the creation of a national dialogue platform, as well as South-South Cooperation with the AMP Regional Programme as well as RMI's SIDS expertise in the Caribbean. ? Selected pilot sites as part of Component 2 will be supported by a Call for Projects and some CAPEX and OPEX support by the project and co-financiers

Risk Category	Description/Underlying Barriers	Risk Level	Risk Mitigation Measures
	Market understanding and outlook: ? Relatively small potential minigrid market perspectives due to the high electrification rate (82%) and relatively small size of minigrids to be installed and operationalized ? Several studies undertaken on the energy situation and market but not consolidated in a centralized repository	High	? Potential for isolated minigrids and interconnection to the national grid to be covered through targeted studies under Component 1, including GIS and DREI analyses across the country ? Innovative financing to support communities incl. existing trusted mechanisms and players incl. microfinance, diaspora remittances, mobile money, etc. as well as new suitable mechanisms based on success stories inland and abroad ? Modular sizing approach whereby a subsidy by the project could support a first module of the minigrid. Additional modules to cover a larger spectrum of users (and considering the increasing electricity demand trend), would be financed by the community and its backers ? Facilitate the centralization of all relevant energy and energy market studies in a central repository at the Ministry to avoid reinventing the wheel and wasting money and time - knowledge sharing (component 4)

Risk Category	Description/Underlying Barriers	Risk Level	Risk Mitigation Measures
	Tariffs & competing subsidies: ? Subsidized and uniform nationwide electricity tariff at KMF120 (?USD 0.29) for the national grid only (SONELEC) ? No tariff set for community-based tariffs. Each community with an isolated minigrid negotiates its tariff directly with the private operator	Low	? Subsidized national grid tariff leaves space for minigrid private operators to offer competitive prices when CAPEX is not covered by the private sector player ? Existing set-up for isolated minigrid tariffs enables cost-reflective tariffs ? Study on minigrids tariffs to be conducted to facilitate ensuring affordable tariffs for end-users as well as profitable tariffs for private sector developers and operators

Risk Category	Description/Underlying Barriers	Risk Level	Risk Mitigation Measures
	Competition of fossil-fuel solutions: ? Diesel generation industry could sabotage the development of minigrids in electricity-underserved rural areas in Comoros	Low	? Given the high prices of imported diesel, generators and maintenance (spare parts, local know-how) and the insularity aspects of the Comoros (with multiple islands), diesel generators are barely present in rural villages so far. In the pre-selected pilot sites (validated by all relevant stakeholders), there are (almost) no diesel generator (or if any of very small capacity and only for a very limited number of users). ? In the case of potential local diesel or petrol generator owners are operating in a given site, alternative income generating activities will be offered to them including related to the renewable minigrid. A case-by-case approach will be favored at minigrid project level. ? Renewable power solutions are developing more and more including solar home systems, biodigesters, or pico-hydro at rural levels. In addition, solar power plants and a geothermal plant of 3-10MW are planned to support the national grid.

Risk Category	Description/Underlying Barriers	Risk Level	Risk Mitigation Measures
	Technical standards: ? Lack of government technical requirements for minigrids regarding (i) quality of service and (ii) grid integration should it occur ? Interconnected minigrids respectively on 3 islands do not seem to include clear technical standards ? Low quality generic equipment and products could jeopardize the proof of concept of pilot sites under this GRF/UNDP project	Medium/High	? Call for Projects under Output 2.2. on pilot project sites should include clear technical specifications and products and service quality requirements ? Government, rural communities and private sector operators will have their capacity built around minigrids, procurement process, minigrid management and operations, quality standards, etc. under Components 1 and 2 ? Existing tax incentives on RE products should encompass quality standards to avoid importing lower quality RE products and enforcement measures and means (Component 1)

Risk Category	Description/Underlying Barriers	Risk Level	Risk Mitigation Measures
Social Acceptance risk	? Communities are used to take care of building and operating some public services aspects e.g., road, school, health center, etc., and in some cases of minigrids (mini-hydro, diesel generator, biodigester) ? Limited awareness on solar minigrid and solar solutions in general for both household and productive use especially in rural areas (targeted by the project) Ability and willingness to pay for electricity can become critical. Social services in Comoros, for instance, tend not to pay their electricity bills. In some rural areas, communities are not used to pay for electricity as not connected to the grids and just a few SHS, gas lanterns, etc.	Medium	? During PPG, various stakeholders have been met during stakeholders? consultations & workshops, field missions and a demand profile survey in potential pilot project sites in rural areas. Some preliminary awareness raising, and social acceptance has been initiated ? During project implementation, several activities will support social acceptance further: the national dialogue platform (Component 1), the demo projects and national study on productive use (social and commercial) (Component 2), Innovative financing to facilitate both demand and supply of electricity via minigrids as well as dedicated awareness-raising campaigns and efforts with the support of Telco operators (Component 4) ? The minigrid tariff study (Component 1), the CAPEX subsidies for pilot sites as well as the private sector?s experience in finding the ?right? balance between profitability and social acceptance

Risk Category	Description/Underlying Barriers	Risk Level	Risk Mitigation Measures
Hardware risk	? *Quality of hardware:* Lack of access to information on quality, reliability (performance) and cost of hardware; lack of clarity or uncertainty regarding government technical standards to ensure safety of minigrid hardware; lack of availability of warranties for components ? *Availability of hardware:* Lack of quality solar products on the market especially batteries and inverters ? *Customs:* Customs tariff exemption for some RE products but not always enforced by customs agents and some equipment are excluded such as inverters ? Still relatively nascent market even for SHS with a few local private players sourcing their hardware themselves	Medium/ High	? Quality efforts by other partners to develop standards based on international and regional norms (initiated with SACREEE) and as part of the revision of the Renewable Energy Law by the UNDP GEF Geothermal project and the Ministry of Energy tbc ? Technical specifications for pilot sites and in relevant procurement process to include quality standards to be respected (Component 2) ? Building capacity of all relevant players including ministry, SONELEC, customs, private operators and communities around technical and quality specifications of solar products (MINIGRIDs, solar ancillary equipment, etc.) (Components 1 & 2)

Risk Category	Description/Underlying Barriers	Risk Level	Risk Mitigation Measures
Digital & knowledge sharing risk	? Relatively acceptable mobile penetration rate (75% in 2019) , despite lack of telco antennas in some rural areas including on one pilot site (Ouzini); mobile money still in its relative beginning but expanding ? Lack of experience and understanding on the use of minigrid based electricity: payment, potential fees, consumption control, etc. ? Lack of digital presence and knowledge sharing around energy and RE at all levels	Medium	? Co-financing and concrete activities with the 2 existing telecom operators in the country. This included SMS awareness-raising campaigns on a monthly abscess over the 48-month implementation (Component 4). Mobile money is offered by one telco operator (and soon by the incumbent telco operator) and a local bank (BDC) which is included in Component 3 on Innovative Financing. ? Efforts in terms of awareness raising (clear communication plan, leveraging efforts made in a previous project with the Indian Ocean Commission). This should also include an effective live awareness raising with all community members of pilot sites to understand how the MINIGRID works and how payment collection, etc. will function ? Community of practice based on the national dialogue platform and a digital presence while interacting with other communities of practices (AMP projects and regional project, SACREEE, etc.) of Component 4 will enable sharing of best practices, lessons learned and more

Risk Category	Description/Underlying Barriers	Risk Level	Risk Mitigation Measures
Service discontinuity risk	? Abandoned assets (minigrid systems) before the lifetime end due do various potential issues: payment collection, profitability, maintenance, management, qualified staff, etc. ? Batteries and other equipment will not be properly replaced during the lifetime of the system ? Maintenance is not properly ensured	Medium	? Partial CAPEX investements of minigrid systems covered by the project and co-financiers. Communities commited to provide land, workforce and basic maintenance support. ? Contractualization after call for projects stipulating service discontinuity provisions and consequences and proning smooth cooperation between communities (owners) and private service providers (operators) ? SONELEC is involved in the project from the very beginning as a partner and co-financier as well as in identifiying potential communities out of or with limited grid access for some years at least (energy planning) hence limiting the risks of the grid to become a potential competitor ? However, a study on the potential to connect the minigrid system to the national grid is planned and could possibly resolve potential profitability and discontinuity issues for minigrid operators

Risk Category	Description/Underlying Barriers	Risk Level	Risk Mitigation Measures
Developer risk	? Limited local minigrid developers and capacities except for a few energy service providers focusing more on SHS & ancillary equipment but some experience with micro-grids (e.g. KAMAR Solaire and with a UNDP Small Grant in a village, SunPower Energy) and collaborating on specific areas with interconnected solar-farms developers, e.g., local N?tisse with French Innovent). This is also due to the fact the market is relatively nascent and limited demand so far. ? Inability of developers to secure low-cost financing from investors due to lack of credit worthiness, or insufficient cash flows to meet investors' return requirements ? Finding the ?right? balance between profitability and social acceptance	High	? Cooperation with international developers (see labour risk below) and local energy service providers for knowledge and technology transfer (Component 2) ? Facilitating supply financing for local developers contracted by communities for minigrids (Component 3) ? The minigrid tariff study (Component 1), the CAPEX subsidies for pilot sites as well as the private sector?s experience in finding the ?right? balance between profitability and social acceptance

Risk Category	Description/Underlying Barriers	Risk Level	Risk Mitigation Measures
Labor risk	? Limited capacities of the DGEME and SONELEC in terms of minigrids' delivery model, procurement procedures, tariffs, etc.) ? Lack of competitive labor market of educated, skilled and qualified potential employees (, leading to higher costs, hiring non-local staff and suboptimal performance) and of maintenance technicians on the ground	High	? Capacity building of government and national utilities to be built in collaboration with the University of Comoros and external expertise incl. in collaboration with AMP Child Project in Burkina Faso (Component 1). The training would be modular to adapt to the needs and knowledge level of the participant. ? Capacity building of local private energy services providers and communities on minigrids, operations and management, awareness raising, etc. will be provided under component 2. As for the government and SONELEC the training would be modular. ? Particularly for local private sector operators, knowledge transfer would occur with international minigrid developers and operators. Fact is that today in Comoros, there is only some expertise and experiences in minigrids (especially pico and nano), way more in SHS and solar-based equipment. Hence, a partnership between international developers and local private operators to design, install and operate at least at the beginning of the operations) could be thought of especially for innovative solutions targeted in Output 2.2. ? In order to ensure the sustainability of such training, ToT for targeted trainees with high potential will be undertaken for each of the targeted audience: government/SONELEC, private sector energy services providers, communities ? At community level, selected youth and women will be in trained to cover basic

Risk Category	Description/Underlying Barriers	Risk Level	Risk Mitigation Measures
End-user credit risk	? Lack of end-user credit scoring mechanism to assess the ability of end-users to pay for initial connection fees, ongoing electricity bills and ancillary equipment (e.g., solar appliances, lights, etc.) ? Limited energy-focused consumer finance products related except for individual credits where credit for electricity connection and appliances is included ("social loan" of MECK and SANDUK), productive loans (MECK) including solar equipment for small businesses, as well as leasing of solar PV and ancillary equipment with SANDUK and Sunpower Energy, a local energy service provider ? Low purchasing power of rural communities and risks of non-payment of electricity bills as it is the case today with SONELEC where ? of the bills are not paid ? Public services such as schools and health centers have an agreement with SONELEC whereby they don't pay electricity bills	Medium/ High	? Leveraging the efforts of IMFs such as Meck and SANDUK, co-financiers of the project, very close to the population and with a large customer base in rural areas and some credit data. Mobile money payment is growing but still at its earlier stages (offered by one telco and one bank) ? Facilitate consumer finance access and design/adaptation of relevant consumer finance products, including mobile banking and other innovative financing (fintech, service-based and equipment financing by the diaspora, etc.) - Component 3 as well as to be included in the Call for Proposals under Output 2.2. ? Promote productive use of energy (businesses) to reduce the risks of non-payment of electricity bills and improve creditworthiness of end-users ? Leverage anchor tenants in the private sector (e.g. telco towers) for each site - e.g. Telco operators as co-financiers and using energy for their towers ? Electricity for schools and health centers in minigrid areas could be covered by the communities and local taxes based on a local agreement with relevant stakeholders

Risk Category	Description/Underlying Barriers	Risk Level	Risk Mitigation Measures
Financing risk	? Limited access to capital in Comoros for private investors (equity and debt), especially for RE ? No domestic investor experience and familiarity with minigrid as nascent market and lack of information, assessment skills and track-record for minigrid ? Co-financing commitments do not materialize. Co-financing commitments, expressed in letters, are not binding. Hence due to various parameters related to each co-financier, some could not materialize their pledge. This would lead to reducing the planned impacts of the AMP Comoros project.	High	? Build capacities of domestic finance sector on MINIGRIDs, business models, de-risking, and innovative suitable finance products (Output 3.3) ? Support the realization of an Electricity Fund as suggested during the Assises de l'?nergie at the Ministry. This should be developed with other technical and financial partners incl. World Bank, AfDB and the ministry. Multi-donor fund to support electrification efforts across the country and including isolated minigrids in rural areas ? Co-financing commitments have been confirmed by various players including UNDP TRAC (critical for the pilot sites) as well as the government (DGEME), the national utilities SONELEC, a national agency ANADEN and various donors. ? Private sector players ? financial institutions, telecom operators, energy service providers ? have indicated their will to actively participate to the project. This encompasses support to the national awareness campaigns via SMS campaigns with telecom operators, or adapted financing products for both the supply and demand of autonomous minigrids, or trainings on renewable energy and minigrid maintenance by energy service providers ? Monitoring of co-financing materialization will be conducted by the PMU and UNDP. Efforts will be made to ensure these commitments do materialize. In addition, during implementation, additional partnerships and co-financing will be sought by the PMU and UNDP supported by the members of the National

Risk Category	Description/Underlying Barriers	Risk Level	Risk Mitigation Measures
Currency risk	? Fixed FX rate between the Comorian Franc (KMF) and the Euro EUR 1 = KMF 491.96775) limiting the volatility of the local currency, but volatile towards under currencies such as the USD ? No sufficient domestic currency revenues to cover hard currency debt/equity servicing as well as high interest rate and collateral requirements from local financial institutions	Medium	? CAPEX related to project site implementation to be covered by communities according to the Electricity Code. The project will support preliminary CAPEX through a modular approach of minigrids whereby initiation investment will be supported largely by the GEF and its co-financiers (incl. UNDP) as well as communities' in-kind contributions. Extension of the minigrids would be supported by additional financing incl. diaspora, other partners and potential future Electricity Fund.

Risk Category	Description/Underlying Barriers	Risk Level	Risk Mitigation Measures
Sovereign risk	? Turbulent political environment in Comoros after years of heavy rotation of Presidents, today's president Azali Assoumani ? a former coup leader who won the 2016 presidential elections and his controversial reelection in March 2019, suspended the constitutional court, cracked down on the opposition, centralized executive power, stopped the Presidential rotation between Comoros?s three islands under the 2018 constitution, enabling him to potentially remain under power until 2029 ? Initial international pledges of USD 6.8bn after an investors' round table led by the Comorian President in December 2019 to support the Plan Comores ?mergent (PCE) are likely to be reduced or suspended due to COVID-19 and its impacts ? While some agricultural products are exported at a relatively acceptable price (vanilla), climate risks and limited resilience, country isolation (island) and small market size (<900k inhabitants) are contributing to a fragile economy. Fragility enhanced through COVID-19 effects especially on	High	? Access to energy and RE is a priority in the Plan Comores ?mergent 2030 ? Selecting pilot sites at PPG phase to avoid any risks of subjective selection at project implementation on an assisted NIM basis and where communities are dynamic and taking care of basic infrastructure themselves (one of the objective selection criteria is the various efforts made by communities to find solutions for public service goods and more) ? Complying with and leveraging existing policy on minigrids for communities with a revision of the Electricity Code planned to clarify delivery model, tariffs, procurement procedures, etc. ? Focus on rural areas and villages with high replicability rate of installed and operational minigrids across the country ? Suitable consumer and supply financing mechanisms put in place (Component 3)

Risk Category	Description/Underlying Barriers	Risk Level	Risk Mitigation Measures
Sanitary risk / COVID-19	? On December 6, 2020, Comoros has had 616 COVID-19 cases and 7 deaths ? COVID-19 has hampered the economic and social recovery post-cyclone Kenneth ? High socio-economic impact on informal economy which accounts for 79% of jobs in Comoros the most vulnerable households may face economic difficulties in meeting their basic needs such as water and electricity supply ? Considering that electricity production in Comoros relies on 96% fossil fuels, a disruption in hydrocarbon imports due to COVID-19 would directly impact the country's energy security. ? Healthcare is critical in Comoros where life expectancy is respectively 62 for men and 67 for women. Government expenses per capita for healthcare are low at USD 32 per capita per year and there are only 1.5 medical physicians per 10,000 inhabitants. Malaria is one of the main diseases in the country. ? Procurement delays due to restrictions on imports, affecting the pilot projects	Low	? Relying on COVID-19 assessments undertaken in Comoros by UNDP, UN Country Teams and International Financial Institutions (IFIs) ? Pilot sites include access to electricity for health centers (when there is a health center) to facilitate lighting, power medical devices, provide clean water, enable cold chains for vaccines and other medications available, sterilization, etc. As health centers are used not to pay their electricity in Comoros, a community tax could support the payment of the electricity bills for public services including healthcare facilities ? Pilot sites focus as well as on productive use and households to support productivity and provide social protection to vulnerable populations in rural areas. Electrical clean-cooking appliances could be promoted where suitable ? Adopting a holistic approach integrating electricity for households, businesses and social services (schools, health centers, etc.) and a energy-food-water nexus persective ? Solar energy solutions as a means to contribute to energy security and autonomy. Comorians and especially vulnerable communities lacking access to energy or with an energy that is not available and reliable enough shall find that renewable energys solutions are more suitable to their needs. It shall also improve Comoros? negative trade balance by reducing the dependency on imported fossil fuels across the country. ? Procurement to be started as

Risk Category	Description/Underlying Barriers	Risk Level	Risk Mitigation Measures
Environment & Climate risk	? No real measures, standards and arrangements for the disposal of used batteries, solar panels, converters and other grid equipment ? Comoros is increasingly subject to cyclones such as cyclone Kenneth in April 2019 with a negative impact on Comoros' population, its livelihood and economy ? Rain-patterns, sea-level rise (expected to reach 20 cm by 2050 according to IPCC) and deforestation are negatively impacting Comoros, its agriculture, food production and water supply. These can be reflected either by dramatic droughts or heavy rainfalls (e.g., in 2012 affecting 65k people and damages of USD 18-20 million) ? Volcanic (Mount Karthala) and seismic activities represent a climate risk	High	? Coordination with the UNDP/GEF ISLAND Comoros child project to include sound management of solar batteries and converters in recycling mechanisms that will be put in place within the national waste management system. The UNDP/GEF ISLAND project will specifically concentrate on the efficient management of waste and chemicals generated daily in the Union of Comoros, including necessary legal and regulatory texts (based on the Minamata and the Stockholm Conventions), as well as economic and financial instruments that will allow system operation. ? Pilot sites design will incorporate the climate risks and suitable solutions with higher security vs. disaster situation (Component 2) ? Close collaboration with the GEF/UNDP project: "Strengthening Comoros Resilience Against Climate Change and Variability Related Disaster" to work on improving climate resilience of communities and their infrastructure incl. power by integrating climate change and disaster risk management in the development.
Overall Risk	? Based on the evaluation of the different risks, the overall risk of the project is set to HIGH	High	? See above per risk type identified the mitigation measures carefully planned by the project.

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.

Implementing Partner

Originally, at PIF, the Project executing entity was the Ministry of Environment, Agriculture, Fisheries and Energy (MEAFE). On April 3rd, 2020 (after the PIF approval in December 2019), a Decree changed some ministries' scope including the MEAFE. As such, Energy is, since part of the Ministry of Economy, Investments and Energy (MEIE). For this project, the Minister appointed the DGEME - Direction G?n?rale de l'?nergie, des Mines et de l'Eau i.e., the Directorate General for Energy, Mining and Water located at the Ministry of Economy, Investments and Energy as the implementing partner.

An HACT (Harmonized Approach to Cash Transfers) assessment has been provided by an independent entity in June 2020 on the DGEME. The overall evaluation rated the risks as **significant** i.e., between high and moderate. A significant risk indicates an underdeveloped financial management system or control framework with a significant likelihood of negative impact on the Partner?s ability to execute the programme in accordance with the work plan. In the assessment, there are 3 areas with a high risk:

? Project management capacity (lack of standardized project management policies and procedures shared with all employees, M&E procedures, suitable data collection for monitoring purposes, and do not seem to have applied the previous recommendations made in 2014)

? Organizational structure and staff (no HR procedures manual, existence of an organizational chart but no definition of roles & responsibilities of each job, accounting is taken care by only one person without clear roles and responsibilities, no staff training plans, apparently recruitment is not clearly compliant with transparency and competitivity principals

? Fixed assets and inventories (lack of assets protection mechanism, no fixed assets register, no insurance on fixed assets and inventories, lack of frequent inventory process)

According to the POPP in relation to Significant or High Risk HACT micro-assessment ratings of implementing partners, direct cash transfer or reimbursement are not possible. As such, the Project will be Full NIM, using the direct payments modality. UNDP will be providing direct payment services to the project.

Direct payment is a cash transfer modality not be confused with UNDP support services to national implementation. In both cases, payments are made by UNDP from a UNDP bank account. But with direct payments, as stated in UNDP procedures, the government assumes responsibility for the contracting process, performs recruitment or procurement, and signs the contract according to its own rules and regulations. The request for direct payment must be done through the approved FACE form, requesting UNDP to make payment directly to the vendor on behalf of the Partner. Complete vendor banking details approved by the Partner?s authorized signatory should be attached to the FACE form.

This Financial Management of payment will basically include:

? Make direct payments to vendors,

? Establish checks,

? Create vendor profiles,

? Expenditure verification,

? Preparation of budget revisions.

The Implementing Partner 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 Implementing Partner 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 Implementing Partner 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.

Responsible Parties:
N.a.

Project stakeholders and target groups:
The participatory and inclusive approach adopted by the project since PPG is part of its DNA. Extensive and numerous stakeholder consultations, one-on-one, in groups and at workshops (inception and validation) were carried out at PPG phase and will be pursued during project implementation to ensure ownership and sustainability of the project after closure. Comments, questions, requests and commitments are stimulated at every project stakeholder.
During PPG phase, relevant stakeholders were asked to provide inputs and comments on the project and their specific role in contributing to overcome the development challenge together. This largely contributed to nourishing the project document and adapting it to local realities and needs as much as possible. At validation workshop and after sharing the final draft of the project document and annexes, feedback was provided by stakeholders and integrated into the final version of the document.
During project implementation, stakeholders and target groups will continue to actively contribute and influence the decision making for the project. Different media will be used to do so:
? Inception workshop at project launch gathering all key stakeholders to present the project and the inception report to facilitate project implementation. Participants will be invited to share their insights and updates to adapt the workplan. The official project launch and main outcomes of the inception workshop will be broadcasted to a larger audience as part of the awareness raising campaign (Component 4).

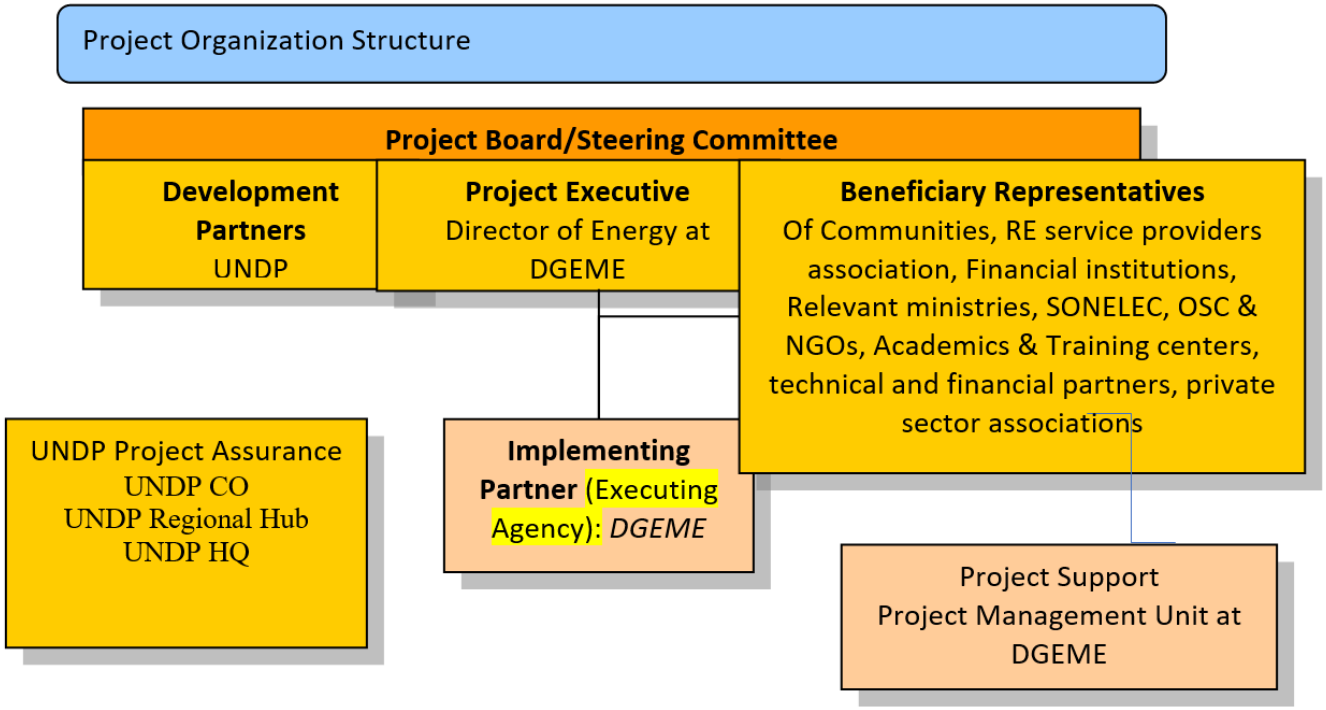
? The National dialogue platform (Component 1) is a powerful tool to support exchanges between project stakeholders and with the PMU on various topics (especially through sub-committees). This multi-stakeholder media is critical to effectively and efficiently contribute to the development of a nascent minigrids market in Comoros. Sub-committees will be created to further facilitate implementation and decision making.

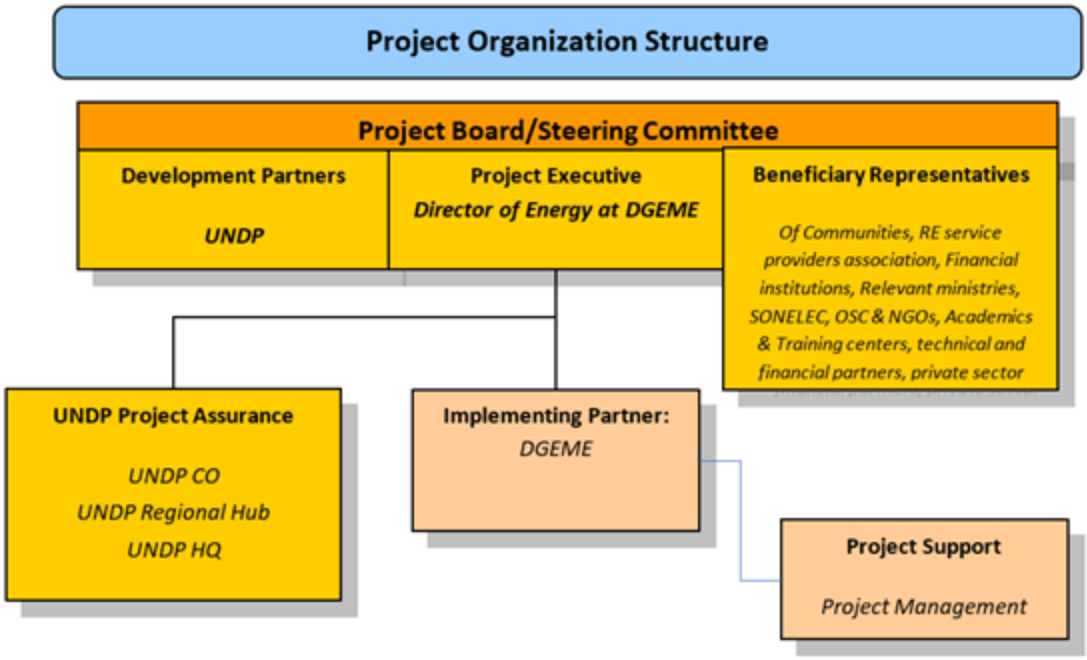
? The Project Board/Steering Committee is the ultimate platform for decision making including beneficiary representatives, the project executive and the development partner (see below). Topics such as workplan, activities and results will be debated, decisions taken together, and necessary corrective measures proposed.

? Continuous stakeholder interactions and consultations through meetings, workshops, trainings, awareness raising campaigns, etc. will also be used to facilitate decision making based on stakeholders? insights.

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 organization 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 implementing partner;
? 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 lessons learned and opportunities for scaling up.
? Ensure highest levels of transparency and take all measures to avoid any real or perceived conflicts of interest.

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. Sa?d Mohamed Nassur, Director of Energy, General Department for Energy, Mining and Water (DGEME) located at the Ministry of Economy, Investments and Energy

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 representatives are:
? A representative of the pilot communities (possibly via an association in the community and on a rotational basis)
? Renewable energy service providers association on
? Association of consumers
? Ministry of Economy, Investments and Energy
? Ministry of Agriculture
? Ministry of Health
? Ministry of Education
? General Planning Commission
? Gender Commission
? Representative of NGOs &CSOs
? Representative of Financial Institutions
? Telco operators (2)
? Representative of technical and financial partners

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:
Fenella Frost, UNDP Resident Representative

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.

Project extensions: The UNDP Resident Representative and the UNDP-GEF Executive Coordinator must approve all project extension requests. Note that all extensions incur costs and the GEF project budget cannot be increased. A single extension may be granted on an exceptional basis and only if the following conditions are met: one extension only for a project for a maximum of six months; the project management costs during the extension period must remain within the originally approved amount, and any increase in PMC costs will be covered by non-GEF resources; the UNDP Country Office oversight costs in excess of the CO?s Agency fee specified in the DOA during the extension period must be covered by non-GEF resources.

<u>Coordination</u>

In terms of coordination the current project builds on the experiences, lessons and partnerships developed under closed and ongoing GEF projects that are being implemented by UNDP in Comoros as well as other partners (including co-financiers). The National Dialogue Platform will play a key role in ensuring that synergies are leveraged with these ongoing projects, implemented by various implementing agencies including UNDP. This will encompass:

? ?Sustainable Development of Comoros Islands by Promoting the Geothermal Energy Resources? a GEF-6 project by benefiting from their upcoming draft of a Renewable Energy Code in Comoros, further promoting renewable energies as well as creating a conducive environment for the development and upscaling of renewable energy in the country. It shall include legal provisions around rural electrification and minigrids (off-grid or interconnected) as well as tariff structures.

? ?Strengthening Comoros Resilience Against Climate Change and Variability Related Disaster? a closed GEF-6 project by leveraging the efforts made in terms of climate change disaster management, critical for the AMP project to design and implement the minigrids as well as transmission lines taking climate risks into consideration. Awareness raising efforts around climate change and mitigation and adaptation efforts will be leveraged

? UNDP/GEF ISLAND Comoros child project by enabling the sound management of solar batteries, converters and other equipment waste in recycling mechanisms that will be put in place within the national waste management system of this project.

? AfDB?s PASEC contributing to paving the way for a conducive environment around electricity. Trainings on renewable energy and project management developed in PASEC could benefit to the trainings and curricula planned in Component 1. These materials could support the University of Comoros and other training institutions identified to support building suitable human capital around renewable energy and minigrids in the country (incl. for government and public sector representatives ? see Component 1)

? World Bank?s Comorsol project should support the Government of Comoros in updating its energy strategy including on renewable energy and improve the energy governance. The AMP project should also collaborate with World Bank on interconnection studies, bidding documents, etc. Training and capacity building in transmission and dispatch system operations and maintenance are planned to be provided by the World Bank to SONELEC staff and should be helpful to training and capacity building efforts for the AMP project. AMP could also provide some of its trainings to some SONELEC staff. All in all this should contribute to a better understanding and collaboration between SONELEC and private sector players. Technical support provided to DGEME and SONELEC will be helpful to the success of the AMP project too.

The EU project will support the solar electrification of part of the island of Moheli. A coordination with activities related to awareness raising and training will be done hand in hand on the island.

? The IOC-Energies project (closed) developed and rolled out some campaigns around EE which could be leveraged for the large awareness raising campaign around RE and minigrids (Component 4)

? Some GEF SGP projects with UNDP, on a biodigester and another one on modernizing a pico-hydro in the targeted villages of Moh?li, and on a biodigester in Bandassamlini in Grande Comore will allow to develop a minigrid energy mix in two of the three pre-selected sites.

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 consistent with national priorities, policies and strategies as well as regional and international commitments, including:

? **SCA2D - Accelerated Growth and Sustainable Development Strategy 2018-2021** where access to energy plays a key role. Investment credits should be granted by the government for infrastructure and equipment related to energy as a key production factor and driver of economic growth, with a particular focus on renewable energy.

  o AMP acknowledges the role of energy as a catalyzer of sustainable development and includes subsidies of CAPEX investment for 3 sites as well as the promotion of private sector investment to support the minigrid market upscaling.

? **PRSP ? Poverty Reduction Strategy Paper** aims at improving access by the population to energy, strengthening economic growth and the development of income-generating activities notably in the agriculture, energy and transport sectors.

  o AMP acknowledges the role of energy as a catalyzer of economic growth especially in rural areas.

? **National Energy Sector Strategy and its Action Plan** The overall objective of the Strategy is to (i) Manage the level of energy dependency; (ii) Increase access to energy; (iii) Develop credible and sustainable economic viability of the energy sector; and (iv) Promote sustainable development.

  o AMP, through the development and upscaling of the solar minigrid market in Comoros contributed to reducing energy dependency towards imported fossil fuels (especially during COVID times) as well as increase energy security, AMP?s aim is to increase access to energy in rural areas where the grid is absent or limited. AMP is also aligned with the Strategy and Action Plan as it leverages cost reductions in terms of hardware, finance and more, and promotes innovative business models and solutions that are sustainably viable for the private sector.

? **PCE ? Emerging Comoros Plan 2030** targets a structural transformation of the economy especially through the catalyzing role of both national and international private sectors. Specifically, the Comoros Energy Loop, considers the integration of renewables into the energy mix including through solar energy.

  o AMP is fully aligned with the PCE as it focuses on the role of the private sector to provide suitable energy solutions and investments in renewable minigrids in rural areas. It is particularly focusing on solar energy.

? **IDP ? Intermediary Development Plan 2020-2024**, launched in August 2020 by the President, closely linked to the PCE, highlights the role of energy as a lever of Comoros? socio-economic development including in contributing to unleashing the high potential of agriculture and fishing as well as the youth and their capacity building.

- o AMP relies on the catalyzing role of renewable energy for socio-economic development while being green and environmental-friendly. The project focuses on the productive use aspects for the sustainability of minigrids in rural communities especially around agriculture (preselected sites in Grande Comore and Anjouan) and fishing (in Moh?li). Youth and women play a particular role in the project including as lever for scaling-up and profitability while creating jobs and providing capacity building.

? **NDC ? Nationally Determined Contributions 2015-2030,** insists on reducing its energy dependency and satisfying the energy demand of its most vulnerable populations by promoting renewable energy. Combined with other sectors including agriculture, forestry and waste management, Comoros aims at reducing its GHG emissions by 84% by 2030 (and 69% by 2025).

- o AMP targets vulnerable populations (rural communities) and supports the fulfillment of their energy demand while reducing GHG by using solar technologies exclusively.

? **Third National Communications (TNC) under UNFCCC** highlight the State?s and population?s will to achieve the GHG emissions reduction especially by unleashing Comoros? renewable energy potential.

- o AMP focus exclusively on solar minigrid systems and targets GHG emissions reduction.

? **NAPA - National Adaptation to climate change Action Plan,** submitted in 2006, considers energy as one of the most vulnerable sectors to climate change (10.5% of the population) while agriculture is the most vulnerable one, impacting 26.2% of the Comorian population. NDC thus includes energy as one of its programmes aiming at ?ensuring a regular supply in energy at low cost?, which encompasses the promotion of renewable energy.

- o AMP targets both energy and agriculture, and climate change mitigation. It aims at contributing to provide access to an affordable, available, reliable and clean energy to vulnerable populations in rural areas through innovative business models, technology and financing solutions around off-grid solar minigrids.

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.

Knowledge management plays a significant role of the AMP national child project and the regional programme (among AMP countries). Component 4 is especially dedicated to knowledge development and sharing ? reflected in the name of the component ?Knowledge Management and Monitoring & Evaluation?. Knowledge shall be shared at different levels :

? Locally among the project stakeholders in Comoros as well as the population at large (nation-wide awareness raising campaign)

? AMP level between AMP countries Community of Practices as well as the regional knowledge sharing platform

? Regionaly and internationaly through energy, renewable energy and minigrids communities, networks and platforms.

A variety of knowledge products will be developed throughout the project life and further:

? A minigrids digital platform to share knowledge and data around minigrids projects (incl. pilot sites of AMP from tendering to results), training and capacity-building at national level

? A Community of Practice sharing best practices, lessons learnt, trainings, etc. on rural energy access and minigrids with other Communities of Practice of other AMP countries and the larger energy and minigrids community, including SIDS. This shall be done mainly online through webinars or digital platforms

? Design of an ?Insight Brief? to showcase the AMP project or a specific activity via a video or pictures to be covered by the regional project and shared within Comoros as well as at regional and international level

? Awareness raising efforts at community level as well as nationwide on renewable energy, minigrids, pilots projects, SDG7, GHG emission reduction, etc.

? 2 independent evalutations at mid-term and at the end of the project which constitute important data and analysis for the scaling up of the minigrids market in Comoros

The knowledge and experience gained in the project will be carefully documented, including by the Project Management Unit and relevant consultants and contractors.

This will include a regular and systematic data collection at the 3 project pilot sites which will be systematically filed and archived by PMU with easy retrieval system, smart meters and other monitoring efforts (through a Quality Assurance and Monitoring Framework).

A collaboration with the digital platform on climate change (P3C ? Plateforme Comores Changement) has been conceived within the framework of the Climate Promise initiative to gather climate change data and provide a national digital repository for all climate-related initiatives will be ensured. (launch planned in Q4 in 2021). A Community of Practice has been created as well. The team working for the implementation of this tool can support the set-up and operationalization of the National Dialogue Platform.

Once the project closes all the data and information generated will be diligently archived by the PMU and transferred to DGEME.

The project will also seek two-ways knowledge shring with other projects at national and regional level. This includes UNDP/GEF projects as stated above (on geothermal, waste management for batteries and other equipment, etc.) as well as for instance through the training on renewable energy and project management provided by the PASEC (AfDB) or the large scale awareness raising campaigns of the IOC-Energies regional project. In accordance with the Geothermal project, public relations and investment promotion campaigns will be conducted with private sector and other financial and technical partners Evaluation reports of past and ongoing project (when available) along with close collaboration should support a steep learning curve and avoid ?reinventing the wheel?. The National Dialogue Platform should encompass representatives from other projects to discuss, share and leverage best practices and lessons learnt.

The learning process throughout the collection of data, analysis, assessment and reporting will also benefit the Government in view of its desire to support access to available, reliable, affordable and greener energy and hence contributing to sustainable development in rural areas especially. The experiences of working with communities and the private sector to reduce GHG emissions, promote gainful employment as well as demonstrating the proof of concept of renewable minigrids will provide opportunities for the government and other key stakleholders to adopt them for upscaling.

The knowledge management approach is rolled out throughout the project duration and should be pursued post-project thanks to various tools: replication plan, data strategy and coolaboration with the climate change digital platform, the AMP regional platform and other projects. The tracking of key indicators at pilot site levels through digital monitoring systems at minigrid level should be pursued through the lifetime of the minigrid for increased and sustainable performance and viability. The related budget is mainly covered under Component 4 for a GEF financed amount of USD 244,620.

9. Monitoring and Evaluation

Describe the budgeted M and E plan

The project results, corresponding indicators and mid-term and end-of-project targets in the project results framework will be monitored annually and evaluated periodically during project implementation. If baseline data for some of the results indicators is not yet available, it will be collected during the first year of project implementation. The Monitoring Plan included in Annex details the roles, responsibilities, and frequency of monitoring project results.

Project-level monitoring and evaluation will be undertaken in compliance with UNDP requirements as outlined in the UNDP POPP and UNDP Evaluation Policy. The UNDP Country Office is responsible for ensuring full compliance with all UNDP project monitoring, quality assurance, risk management, and evaluation requirements.

Additional mandatory GEF-specific M&E requirements will be undertaken in accordance with the GEF Monitoring Policy and the GEF Evaluation Policy and other relevant GEF policies[1]. The costed M&E plan included below, and the Monitoring plan in Annex, will guide the GEF-specific M&E activities to be undertaken by this project.

In addition to these mandatory UNDP and GEF M&E requirements, other M&E activities deemed necessary to support project-level adaptive management will be agreed during the Project Inception Workshop and will be detailed in the Inception Report.

Additional GEF monitoring and reporting requirements:

Inception Workshop and Report: A project inception workshop will be held within 60 days of project CEO endorsement, with the aim to:

1. Familiarize key stakeholders with the detailed project strategy and discuss any changes that may have taken place in the overall context since the project idea was initially conceptualized that may influence its strategy and implementation.
2. Discuss the roles and responsibilities of the project team, including reporting lines, stakeholder engagement strategies and conflict resolution mechanisms.
3. Review the results framework and monitoring plan.
4. Discuss reporting, monitoring and evaluation roles and responsibilities and finalize the M&E budget; identify national/regional institutes to be involved in project-level M&E; discuss the role of the GEF OFP and other stakeholders in project-level M&E.
5. Update and review responsibilities for monitoring project strategies, including the risk log; SESP report, Social and Environmental Management Framework and other safeguard requirements; project grievance mechanisms; gender strategy; knowledge management strategy, and other relevant management strategies.
6. Review financial reporting procedures and budget monitoring and other mandatory requirements and agree on the arrangements for the annual audit.
7. Plan and schedule Project Board meetings and finalize the first-year annual work plan.
8. Formally launch the Project.

GEF Project Implementation Report (PIR):
The annual GEF PIR covering the reporting period July (previous year) to June (current year) will be completed for each year of project implementation. Any environmental and social risks and related management plans will be monitored regularly, and progress will be reported in the PIR. The PIR submitted to the GEF will be shared with the Project Board. The quality rating of the previous year?s PIR will be used to inform the preparation of the subsequent PIR.

GEF Core Indicators:
The GEF Core indicators included as Annex will be used to monitor global environmental benefits and will be updated for reporting to the GEF prior TE. Note that the project team is responsible for updating the indicator status. The updated monitoring data should be shared with MTR/TE consultants prior to required evaluation missions, so these can be used for subsequent ground truthing. The methodologies to be used in data collection have been defined by the GEF and are available on the GEF website.

Independent Mid-term Review (MTR):
The terms of reference, the review process and the final MTR report will follow the standard templates and guidance for GEF-financed projects available on the UNDP Evaluation Resource Center (ERC).

The evaluation will be ?independent, impartial and rigorous?. The evaluators that will be hired to undertake the assignment will be independent from organizations that were involved in designing, executing or advising on the project to be evaluated. Equally, the evaluators should not be in a position where there may be the possibility of future contracts regarding the project under review.

The GEF Operational Focal Point and other stakeholders will be actively involved and consulted during the evaluation process. Additional quality assurance support is available from the BPPS/GEF Directorate.

The final MTR report and MTR TOR will be publicly available in English and will be posted on the UNDP ERC by 31 May 2023. A management response to MTR recommendations will be posted in the ERC within six weeks of the MTR report?s completion.

Terminal Evaluation (TE):
An independent terminal evaluation (TE) will take place upon completion of all major project outputs and activities. The terms of reference, the evaluation process and the final TE report will follow the standard templates and guidance for GEF-financed projects available on the UNDP Evaluation Resource Center.

The evaluation will be ?independent, impartial and rigorous. The evaluators that will be hired to undertake the assignment will be independent from organizations that were involved in designing, executing or advising on the project to be evaluated. Equally, the evaluators should not be in a position where there may be the possibility of future contracts regarding the project being evaluated.

The GEF Operational Focal Point and other stakeholders will be actively involved and consulted during the terminal evaluation process. Additional quality assurance support is available from the BPPS/GEF Directorate.

The final TE report and TE TOR will be publicly available in English and posted on the UNDP ERC by *(add date included on cover page of this project document)*. A management response to the TE recommendations will be posted to the ERC within six weeks of the TE report?s completion.

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.

All M&E related activities will be supervised by the Executing Entity. The mid-term evaluation and part of the Terminal Evaluation will be financially covered by UNDP TRAC resources. Both evaluations will be handled independently to ensure a full objectivity

GEF M&E requirements	Indicative costs (US$)	Time frame
Inception Workshop	2,000	Within 60 days of CEO endorsement of this project.
Inception Report	None (part of the PMUs work)	Within 90 days of CEO endorsement of this project.
M&E of GEF core indicators and project results framework	None (part of the PMUs work)	Annually and at closure
GEF Project Implementation Report (PIR)	None (part of the PMUs work)	Annually typically between June-August

Monitoring of environmental and social risks, gender action plan, and corresponding management plans as relevant	None (part of the PMUs work)	On-going.
Supervision missions	None (part of the project management budget)	Annually
Independent Mid-term Review (MTR)	35,000	31-May-23
Independent Terminal Evaluation (TE)	55,000	31-May-25
TOTAL indicative COST	92,000	

Final Report:

The project?s terminal GEF PIR along with the terminal evaluation (TE) report and corresponding management response will serve as the final project report package. The final project report package shall be discussed with the Project Board during an end-of-project review meeting to discuss lesson learned and opportunities for scaling up.

Agreement on intellectual property rights and use of logo on the project?s deliverables and disclosure of information**:** To accord proper acknowledgement to the GEF for providing grant funding, the GEF logo will appear together with the UNDP logo on all promotional materials, other written materials like publications developed by the project, and project hardware. Any citation on publications regarding projects funded by the GEF will also accord proper acknowledgement to the GEF. Information will be disclosed in accordance with relevant policies notably the UNDP Disclosure Policy[1] and the GEF policy on public involvement[2].

According to the GEF?s indicative caps on the total M&E costs, 5% of the GEF & UNDP budget costs can be allocated for M&E when the GEF project grant is up to USD 5 million. As MTR is not mandatory for mid-sized GEF projects, the costs related to the MTR (USD 35k) will be covered by UNDP TRAC sources.

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[1] See http://www.undp.org/content/undp/en/home/operations/transparency/information_disclosurepolicy/

[2] See https://www.thegef.org/gef/policies_guidelines

[1] See https://www.thegef.org/gef/policies_guidelines

[2] See http://www.undp.org/content/undp/en/home/operations/transparency/information_disclosurepolicy/

[3] See https://www.thegef.org/gef/policies_guidelines

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)?

Socioeconomic benefits of the project are considerable as it encompasses a large part of the population by focusing on households, private sector business and cooperatives as well as public services including schools and health centers/hospitals in rural areas.

The successful implementation of the project will:

? Ensure access to an available, reliable, affordable and greener energy in the 3 pilot sites and further

? Potentially improve the stability of the grid as less pressure will be exerted on it through the implementation of minigrids in the medium and long run

? Secure existing incomes and provide additional incomes to MSMEs and cooperatives

? Empower women and youth by building their capacity and promoting entrepreneurial activities including as rural electrician, money collector, etc. directly related to the minigrid and adding income generating opportunities through access to energy such as food conservation, processing and selling; handicraft, services and trade; etc.

? Increase greated awareness on climate change and environment protection, minigrids, gender mainstreaming

? Grant access to better public services especially schools and health centers/hospitals

? Facilitate access to telecom and Internet services

? Improve livelihoods of vulnerable populations in particular e.g. women, youth, people with disabilities

The socioeconomic benefits of the project are not only measurable at the local and national levels but also at the regional and global level. At regional level, through the regional AMP umbrella socio-economic benefits, lessons learnt and best practices will be shared upon national projects. In addition, knowledge and experience sharing will be taking place within the Indian Ocean area, between SIDS and various partners (IRENA, RMI, etc.). Finally at global level, environmental benefits generated by this project will support the efforts in reducing GHG emissions and thus improving livelihoods.

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.

Supporting Documents

Upload available ESS supporting documents.

Title	Module	Submitted
Annex 10_ESMF_AMP Comoros	CEO Endorsement ESS	
PMIS 6469 ANNEX_06-SESP-2021_JM_EGA Comoros CLEAN jbf_JM	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).

This project will contribute to the following Sustainable Development Goal (s):

? SDG7: Ensure access to affordable, reliable, sustainable and modern energy for all

- o SDG 7.1 By 2030, ensure universal access to affordable, reliable and modern energy services
- o SDG 7.2 By 2030, increase substantially the share of renewable energy in the global energy mix

? SDG13: Take urgent action to combat climate change and its impacts

? SDG5: Achieve gender equality and empower all women and girls

This project will contribute to the following country outcome (UNDAF/CPD, RPD, GPD):

UNDAF 2015-2021:

? Outcome 4: By 2021, the most vulnerable populations ensure their resilience to climate change and crises.

? Output 4.4: Public institutions, the private sector, and vulnerable communities have the appropriate technical and technological capacity to sustainably improve access to renewable energy and energy efficiency.

CPD 2015-2021:

? Outcome 3: The most vulnerable populations build resilience to climate change and crises

? Output 9: The country has the policy, legal and regulatory framework for the promotion and development of renewable energy

	Objective and Outcome Indicators (no more than a total of 20 indicators)	Baseline	Mid-term Target	End of Project Target
	Indicator 1/GEF Core Indicator 6 Greenhouse gas emissions mitigated (*Units of measure:* metric tons of carbon dioxide equivalent *(tCO2e)*)	Zero, since the project has not yet started	Zero, since the project pilot(s) have not yet been commissioned	Direct: 11,951 tCO2e Indirect: 9,000 tCO2e

	Indicator 2/GEF Core Indicator 6.4.: Increase in installed solar PV capacity (MW) and battery storage (MWh)	Zero, since the project has not yet started	Zero, since the project pilot(s) have not yet been commissioned	0.449 MW installed PV capacity 1.137 MWh installed battery storage
	Indicator 3/GEF Core indicator 11: Number of direct beneficiaries benefitting from energy access via minigrids, disaggregated by gender and by customer segment (residential, social, commercial/productive use), as co-benefit of GEF investment. (number of people, number of connections)	Zero, since the project has not yet started	Zero, since the project pilot(s) have not yet been commissioned	3,042 people (of which 50% women) ------- 2,990 people (residential) 16 people (social) 36 people (commercial/PUE) 3042 people (total) ------- 98 connections (residential) 4 connections (social) 12 connections (commercial/PUE) 614 connections (total)
	Indicator 4: Number of direct and indirect primary jobs created in the minigrid sector, disaggregated by gender, for [mini-grid development, operation and productive use].	Zero, since the project has not yet started	? 3 Women (10 indirect) ? 5 Men (8 indirect)	? 15 Women (50 indirect) ? 25 Men (30 indirect)
Project component 1	Policy and Regulation			

Project Outcome 1 Stakeholder ownership in a national minigrid delivery model is advanced, and appropriate policies and regulations are adopted to facilitate investment in renewable minigrids.	Indicator 5: Number of policy derisking instruments[1] for minigrid investments - whose development has been supported by the project - are endorsed/adopted by the national government (Units of measure: Absolute number of policy derisking instruments)	1 GIS study carried out but rather superficial Weak knowledge about minigrids at Government level Limited regulatory framework for minigrids, especially autonomous ones Limited enforcement of tax exemption for renewable energy equipment	At least 2 policy derisking instrument(s). 1 proposal for an appropriate regulatory framework for renewable minigrids made 1 Enforcement of tax exemption for renewable energy equipment generalized	At least 2 policy derisking instrument(s). 1 proposal for an appropriate regulatory framework for renewable mini-grids finalized, validated and adopted by the Government 1 Enforcement of tax exemption for renewable energy equipment generalized
	Indicator 6: A minigrid delivery model to enable minigrid development is endorsed/adopted by the national government through a consultative process involving key stakeholders (e.g. relevant ministries, local authorities, rural populations, private sector, media, etc.) (Units of measure: binary (1/0))	A stand-alone mini-grid delivery model not exhaustively explained, exists (Electricity Code - Article 19)	Multi-stakeholder, national dialogue platform on minigrid delivery models established and active.	At least one minigrid delivery model is identified and endorsed by the government through the work of the multi-stakeholder platform and dialogue. (1)

Outputs to achieve Outcome 1	Output 1.1. An inclusive national dialogue to identify minigrid delivery models is facilitated, clarifying priority interventions for an integrated approach to off-grid electrification Output 1.2. A review of the political and regulatory frameworks on the possible minigrid delivery models and suitable incentives is proposed in close collaboration with the National Dialogue Platform members and other development partners Output 1.3. Templates of tender documents and contracts for the implementation and operation of minigrids (between community and private operator) are prepared Output 1.4. Geospatial, techno-economic modelling of least-cost off-grid renewable electricity technologies (mini-grids, grid expansion, solar home systems) Output 1.5. 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 1.6. Pre-feasibility studies conducted for selected mini-grid sites to enhance sector planning and decision-making on a delivery model for minigrid development Output 1.7. Institutional capacities at technical, managerial and regulatory levels, in particular to design procurement and tendering processes incorporating cost-cutting levers and innovative business models, are strengthened Output 1.8. Public programmes (apprenticeships, certificates, university programs) to develop competitive, skilled labor market in minigrids facilitated
Project component 2	Business Model Innovation with Private Sector

Outcome 2 Innovative business models based on cost reduction operationalized, with strengthened private sector participation in renewable minigrid development	Indicator 7: Minigrid pilots implemented that demonstrate a delivery model, cost-reduction measure(s) and/or productive use of electricity (binary (1/0))	0 As the project has not started yet	The project?s detailed design plan (the ?Minigrid Pilot Plan?) for advancing the minigrid pilots is developed, and cleared by UNDP and the Project Board. (1) Any project tendering process, as applicable, for minigrid pilots is launched. (1)	At least 3 renewable mini-networks are developed and operational (1 in Grande Comore, 1 in Moh?li and 1 in Anjouan, respectively) (1) A minigrid delivery model to enable minigrid development is endorsed/adopted by the national government through a consultative process involving key stakeholders (e.g. relevant ministries, local authorities, rural populations, private sector, media, etc.) (1)

	Indicator 8: Capacity of communities, as well as minigrid developers and operators, is enhanced to implement innovative business models and incorporate cost-reduction levers in minigrid projects (binary (1/0))	0 As the project has not started yet	Planned capacity building activities for year 1 and 2 are implemented. (1) The capacity of targeted recipients is assessed by survey towards the end of year 2. On a scale of 1 to 5, an average score of at least 2 is achieved. - 1 represents a low level of capacity - 5 represents a strong capacity to understand relevant issues and apply knowledge and skills to find effective solutions. (1)	Planned capacity building activities for year 3 and 4 are implemented. (1) The capacity of targeted recipients is assessed by survey towards the end of the project. On a scale of 1 to 5, an average score of at least 4 is achieved. - 1 represents a low level of capacity - 5 represents a strong capacity to understand relevant issues and apply knowledge and skills to find effective solutions. (1)
Outputs to achieve Outcome 2	Output 2.1. Opportunities to boost economic and social activities through electricity access and productive use, with focus on minigrids, are identified and innovation is promoted Output 2.2. Pilots developed, including on productive use/innovative appliances and modular hardware/system design, leading to cost-reduction in minigrids Output 2.3. Capacities of private minigrid developers and communities are strengthened Output 2.4. Group of Private Sector RE Services Providers is formalized, operational and its capacities are strengthened			
Project component 3	Scaled-up Financing			

Outcome 3 Financial sector actors are ready to invest in a pipeline of renewable minigrids and concessional financial mechanisms are in place to incentivize scaled-up investment.	Indicator 9: Capacity of financial institutions is enhanced through training, knowledge sharing, and/or awareness raising events aimed at increasing the financial sector?s capacity to evaluate investments in MINIGRID (binary (1/0))	Finance institutions are not involved in mini grid development due to lack of training/knowledge-sharing/awareness raising	Planned capacity building activities for year 1 and 2 are implemented. (1) The capacity of targeted recipients is assessed by survey towards the end of year 2. On a scale of 1 to 5, an average score of at least 2 is achieved. - 1 represents a low level of capacity - 5 represents a strong capacity to understand relevant issues and apply knowledge and skills to find effective solutions. (1)	Planned capacity building activities for year 3 and 4 are implemented. (1) The capacity of targeted recipients is assessed by survey towards the end of the project. On a scale of 1 to 5, an average score of at least 4 is achieved. - 1 represents a low level of capacity - 5 represents a strong capacity to understand relevant issues and apply knowledge and skills to find effective solutions. (1)
	Indicator 10: Number of government or impact investor-supported financing mechanisms offering concessional finance for renewable minigrids (binary (1/0))	No concessional financing mechanism for renewable mini-grids exists	A Minigrid Funding Facility (MFF) dedicated to minigrids is designed within the framework of the Electricity Code (1)	A Minigrid Funding Facility (MFF) dedicated to minigrids is designed within the framework of the Electricity Code (1)

Outputs to achieve Outcome 3	Output 3.1. The design and operations of a Minigrid Funding Facility under the Electricity Code is supported Output 3.2. General market intelligence study on minigrids prepared and disseminated amongst public officials and finance community Output 3.3. Capacities of the national financial sector (including philanthropic) in terms of business models and innovative financial solutions (including digital) in connection with minigrids are strengthened and facilitate access to financing			
Project component 4	Digital, Knowledge Management and Monitoring & Evaluation			
Outcome 4 Digitalization and data are mainstreamed, across stakeholders, into local minigrid market development. Increased knowledge, awareness and network opportunities in the minigrid market and among stakeholders, including benefitting from linkages to international good practice	Indicator 11: A digital strategy for the project is prepared and implemented by the PMU to contribute to project implementation and local minigrid market development (binary (1/0))	No digital strategy as the project has not yet started	The project digital strategy is developed and being implemented. (1)	The project digital strategy is implemented. (1) Recommendations for rolling out digital solutions for minigrids at national level have been shared with key national stakeholders. (1)
	Indicator 12: Number of minigrid pilots sharing data on minigrid performance with the regional project and other stakeholders following best practices and guidance provided by the AMP Regional Project (binary (1/0))	Zero, as the project has not started yet	The project?s ?digital & data management platform? is procured and operational, ready for data collection from the project?s mini-grid pilot(s), and for data sharing with the AMP regional project?s digital platform. (1)	100% of the planned minigrid pilots, as identified in the project?s Minigrid Pilot Plan, are collecting and sharing data with the AMP Regional Project using the project?s ?digital & data management platform?. (1)

Outputs to achieve Outcome 4	Output 4.1. A Digital Strategy is developed and implemented, including linkages to and following guidance from the regional project Output 4.2. Minigrids data management platform implemented to run tenders and manage data from pilots, and to support minigrids scale-up and cost-reduction Output 4.3. A Quality Assurance and Monitoring Framework for measuring, reporting and verification of the sustainable development impacts of all minigrids pilots supported, including GHG emission reductions, is adopted and operationalized based on standardized guidance from the regional project Output 4.4. Monitoring and Evaluation (M&E) and Reporting, including (i) Conducting Inception workshop and preparing report, (ii) Ongoing M&E, (iii) Mid-Term Evaluation and (iv) Terminal Evaluation Output 4.5. Engage with regional project, including, but not limited to, via (i) participating in Communities of Practice and (ii) capturing and sharing lessons learnt Output 4.6. A Community of Practice to promote minigrids development and rural energy access is established, in close collaboration with Communities of Practice at AMP regional level and others at SIDS, regional, continental and international levels Output 4.7. Awareness raising campaigns, including lessons learned, are developed and disseminated at all levels nationally (incl. intervention zones) and with the regional project Output 4.8. Replication plan (including investment plan) for scaling up rural energy access developed

[1] A list of policy derisking instruments can be found in the Derisking Table found in the ?DREI: Off-Grid Electrification? (UNDP, 2018) report. As an illustration, example policy derisking instruments can include: off-grid planning/site mapping; mini-grid policies/regulations/tenders; grid service and technical standards; awareness campaigns; technical skill building programs.

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. Comoros national project measures. (i) 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	Comoros CEO endorsement request: Part II, 1a. 5) p.52-56, p.25-27, and Annex K, 6. p. 12-21 - Comoros national project document: Part IV, p.48-55, and Annex 15, 6. p.12-21 Regional project document: Section IV. RESULTS AND PARTNERSHIPS: - Description of Component 5); - Key Risks (Table 9)

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 Comoros 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 Comoros has been identified as the Directorate General for Energy, Mining and Water at the Ministry of Economy, Investments and Energy.	Comoros CEO endorsement/ approval request document: - Part II, Section 6 - Institutional Arrangement and Coordination p.76 - Annex K Stakeholder Engagement Plan p.12-21 Comoros Project document: - Part IV. Results & Partnerships p.48-57 - Annex 15 Stakeholder Engagement Plan p.12-21

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**: Comoros National project: Component 2 activities, which include GEF INV for minigrid pilots, for the AMP in Comoros 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*	Comoros CEO endorsement/ approval request document: - Part II, 1a., 3 Proposed Alternative Scenario p.40-46 - Part II, 1a., 3 Proposed Alternative Scenario ? Theory of Change p.28-30 Comoros National project document: - Section IV. RESULTS AND PARTNERSHIPS, Component 2 description, p.33-40 - Section III. STRATEGY, Theory of Change, p.13-14

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 Comoros in year 1, in Output 1.5. 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. Skilled technical staff is considered as a risk and targeted capacity building is envisaged by the project. This encompasses capacity building for: Technical staff at the Ministry, the national utilities and other relevant agencies (Output 1.7,) Training of trainers at the University of Comoros, higher learning institutions and vocational training institutes (Output 1.8.) Training of private sector developers and operators (Output 2.3.) Training of rural electricians in pilot sites (Output 2.3)	Comoros CEO endorsement/ approval request document: - Part II, 1a., 3) Proposed alternative scenario p.38 - Part II, 5) Risks, p.69-70 - Part II, 3) Proposed alternative scenario p.39, 40, 45) Comoros national project document: - Section II ? Development Challenge p.10 - Section IV. RESULTS AND PARTNERSHIPS

Comment & Response	Reference
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 Comoros 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 Comoros 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

Comment & Response	Reference
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. In Comoros, this output 3.2. ?General market intelligence study on minigrids prepared and disseminated amongst public officials and finance community? is intended to complement existing local market intelligence on minigrid opportunities in an effort to improve the financial sector?s understanding of and familiarity with the minigrid business opportunity, its risks and challenges. Comoros is a nascent market in terms of renewables in general and minigrids in particular. Therefore, the knowledge on these topics are rather limited among public officials and the finance community in general and in the Comorian context in particular. Existing market intelligence in Africa will be incorporated in this study but will also take into consideration Comoros? particular context (i.e. nascent market, SIDS/small market, etc.). Market sizing, potential sites suitablily, financing needs and risks will be critical analyzed. Such a study at national level shall enable financial partners to be willing to support the development and up-scaling of the reneable minigrids market across the archipelago. Regional project: Knowledge tools Comment targeted at program level and addressed in the regional project response.	Comoros CEO endorsement/ approval request document: - Part II, 1a., 3) Proposed alternative scenario p.47 Comoros national project document: Section IV. RESULTS AND PARTNERSHIPS ? Description of Component 3, p.41-42

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	Comoros CEO endorsement/ approval request document: - Part II, 1a., 3) Proposed alternative scenario p.42 Comoros national project document: Section IV. RESULTS AND PARTNERSHIPS ? Description of Component 2, p.35

Comment & Response	Reference
Council Comments (Canada):	
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 Comoros, the 3 pre-selected pilot sites are all located in rural areas (one in a remote location) and have today no or very limited access to energy. Based on the demand survey undertaken in each of the pre-selected localities, access to available, reliable, affordable and green energy will contribute to improve livelihoods of households as well as health and education services, public lighting, and productive uses (including agriculture). The AMP project will closely collaborate with current initiatives to support rural development.	Comoros CEO endorsement/ approval request document: - Part II, 1a., 3) Proposed alternative scenario p.38-43, p.25-27 Comoros national project document: Section IV. RESULTS AND PARTNERSHIPS ? Description of Component 2] p.33-36, p.54-55

Comment & Response	Reference
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 Comoros seeks to create multiple entry points for the private sector. This includes (but is not limited to): - Output 1.1. on national dialogues, where delivery models will be explored and identified that engage private sector. - Output 1.5. on DREI techno-economic analyses, where the private sector will undergo structured interviews on their risk perceptions. - Output 2.2. on pilots, where possibly private sector involvement includes operations and maintenance of minigrids as well as supporting awareness raising and training of rural electricians - Output 2.4. on formalizing a private sector association of renewable energy providers in Comoros for advocacy of green energy solutions and green economy in the archipelago - Output 3.2. on sharing market intelligence on minigrids in Comoros especially to private sector financial institutions and further (e.g., telecom operators) to support the development of the minigrids market in Comoros	Comoros CEO endorsement/ approval request document: - Part II, 1a., 3) Proposed alternative scenario p.34, 38, 43-45, 45-46, 47 Comoros national project document: Section IV. RESULTS AND PARTNERSHIPS, p.27, 30-31, 36-39, 40, 41-42
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 Comoros 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 Comoros 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 (Annex K). 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.	Comoros CEO endorsement/ approval request document: - Annex K - Part II, 1a., 3) Proposed alternative scenario p.34 Comoros national project document: - Annex 15 - Section IV. RESULTS AND PARTNERSHIPS, p.27

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 Comoros.	Comoros CEO endorsement/ approval request document:
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). They will be involved in the development of minigrids and close interaction with local communities (owners of the minigrid as per Electricity Code). They will oversee O&M of minigrids. Local businesses are also included in the project as they will be able to benefit from access to green energy as well as improve their productivity and potentially their revenues. Local labor is particularly fostered in the project through capacity building of various player along the value chain: engineers, technicians, rural electricians, sales and marketing representatives, academics, government, and public sector staff, as well as labor from local businesses other than related to energy.	- Part II, 1a., 3) Proposed alternative scenario p.31-51 - Part II, 4 Private Sector Engagement p.62-63
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.	Comoros national project document: - Section IV. RESULTS AND PARTNERSHIPS, p.26-47
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.	Regional Project Document: Section IV. RESULTS AND PARTNERSHIPS

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	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.	Comoros CEO endorsement/ approval request document: - Part II, 1a., 3) Proposed alternative scenario p.28-30 Comoros national project document: - Section III. STRATEGY, p.13-16 Regional Project Document: Section III. STRATEGY

Comment & Response	Reference
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	

Comment & Response	Reference
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.

Comment & Response	Reference
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.	Comoros Prodoc: 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. (See Activities 2.2.2 and 2.2.5)	Comoros CEO endorsement/ approval request document: - Part II, 1a., 3) Proposed alternative scenario p.45-46 Comoros national project document: - Section III. STRATEGY, p.38-39

Comment & Response	Reference
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).	Comoros CEO endorsement/ approval request document: - Part II, 5) Risks p.66 Comoros national project document: - Section II. DEVELOPMENT CHALLENGE p.9 - Annex 7 p. 151-152

Comment & Response	Reference
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 as Annex L to Comoros CEO Endorsement Request	Comoros CEO endorsement/ approval request document: - Annex L Comoros national project document: - Annex 6 (p117-149) and Annex 10
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	

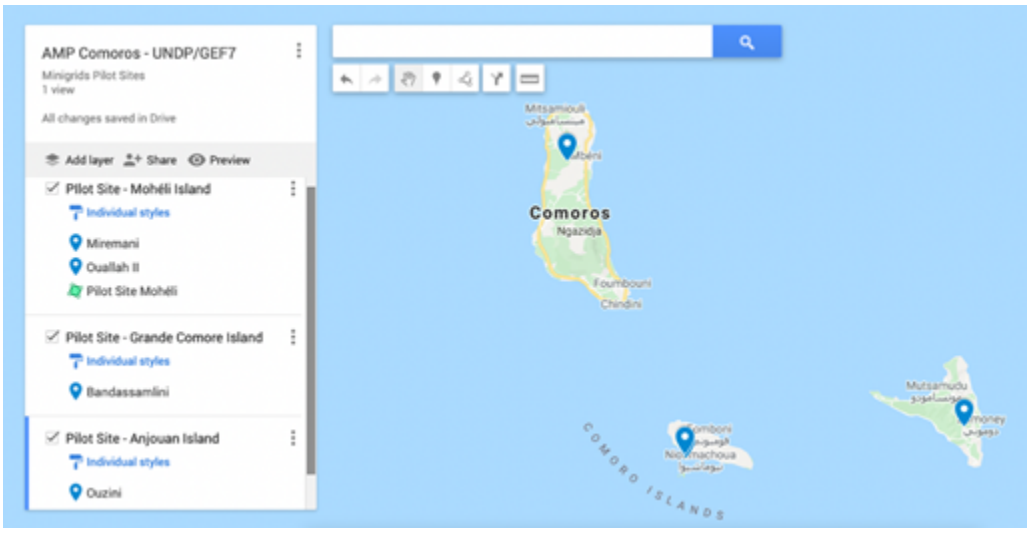
Comment & Response	Reference
16. What overall approach will be taken, and what knowledge management indicators and metrics will be used? **Comment**: Identified and details adequately provided. projects. **Response:** NA	

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

Project Preparation Activities Implemented	*GETF/LDCF/SCCF Amount ($)*		
	Budgeted Amount	*Amount Spent Todate*	*Amount Committed*
Project preparation grant to finalize the UNDP-GEF project document for National child project under the GEF Africa Mini-grids Program. Technical assistance (design technical elements as well as all the required financial and administrative components of the project).	91,325	44,113.54	44,113.54
Total	91,325	44,113.54	44,113.54

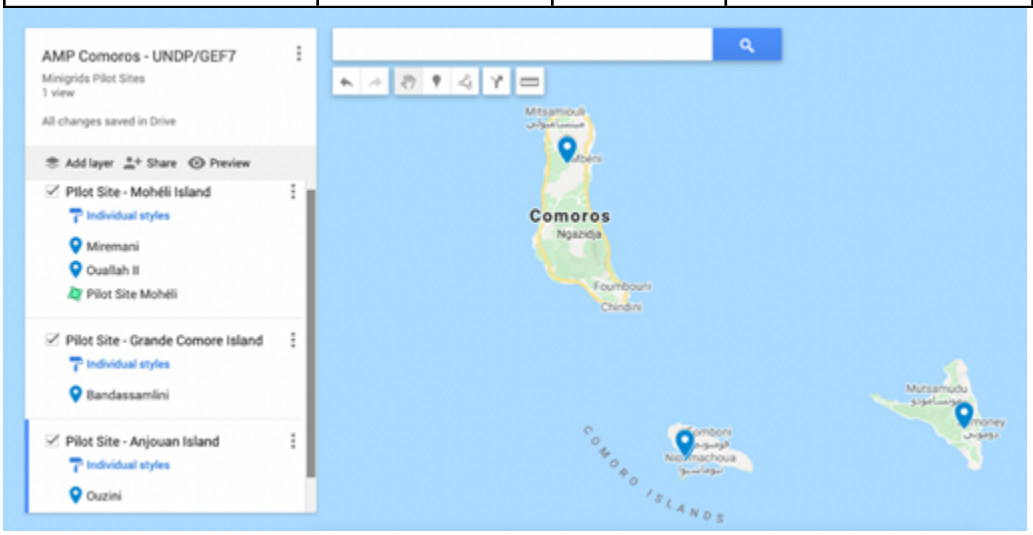
ANNEX D: Project Map(s) and Coordinates

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



The Project map and relevant coordinate can be found under this GoogleEarth link: **https://www.google.com/maps/d/u/0/edit?mid=1aLcbE-7E1nwi8WfVL0ktQH-KgScj_FtK&usp=sharing**

	Latitude	Longitude	Altitude	Precision
Miremani (Mwali/Moh?li Island)	-12.357735	43.6745031	23.4554443359375	4.883
Ouallah II (Mwali Moh?li Island)	-12.34689	43.66975	0.0	3334.0
Ouzini (Ndzuani/ Anjouan Island)	-12.27046325	44.47946715	594.134521484375	6.068
Bandassamlini (Ngadzija/Grande Comore Island)	-11.5212649	43.3310015	669.212646484375	4.288



ANNEX E: Project Budget Table

Please attach a project budget table.

Expenditure Categor	Detailed Description	Component (USDeq.)	Total (USD eq.)	Responsible Entity

y		*Component 1*	*Component 2*	*Component 3*	*Component 4*	*Sub-Total*	*M&E*	*PMC*		(Executing Entity receiving funds from the GEF Agency)[1]
Equipment	1.4. GIS study: software, licenses, etc. / $5,0001.7. Institutional capacities materials & goods -$5K yearly for 2 years / $10,000	15,000				15,000			15,000	**DGEME** - Direction G?n?rale de l'?nergie, des Mines et de l?Eau, i.e., Directorate General for Energy, Mining and Water

Equipment	2.2. Partial CAPEX costs for: Anjouan containerized solution (with 4.08 kWp solar power and 15.84 kWh battery capacity and inverter, capacity with 350 powerbanks, Wifi hotspot, Community solar fridge); Bandassamlini-Sangani agrivoltaics solution, 3t blast freezer for fish storage and 1t ice block maker all solar powered with 250kW / $259,7252.3. Various training equipment incl. solar PV panels etc. / $6,0002.4. Furnitures and other goods for the association's office / $4,000		269,725			269,725			269,725	**DGEME** - Direction G?n?rale de l'?nergie, des Mines et de l?Eau, i.e., Directorate General for Energy, Mining and Water
Equipment	2.3. IT hardware and software useful for trainings / $3,0002.4. Laptop, printers, software for a functioning office of the RE private sector association / $3,000		6,000			6,000			6,000	**DGEME** - Direction G?n?rale de l'?nergie, des Mines et de l?Eau, i.e., Directorate General for Energy, Mining and Water

Equipment	Laptops, software, printers, etc. / $6,000							6,000	6,000	**DGEME** - Direction G?n?rale de l'?nergie, des Mines et de l?Eau, i.e., Directorate General for Energy, Mining and Water
Contractual services-Individual	2.1. 3 prizes for the innovation contest ($5,000, $3,000, $2,000) / $10,000. Innovation contest will follow UNDP rules and procedures.		10,000			10,000			10,000	**DGEME** - Direction G?n?rale de l'?nergie, des Mines et de l?Eau, i.e., Directorate General for Energy, Mining and Water

Contractual services-Company	1.5. DREI Analysis on Year 1 / $50,000; 4 roundtable workshops with key stakeholders / 4*$2,500= $10,000 ; total = $60,0001.6. Pre-feasibility studies (demand assessment and technical aspects incl. demand assessment at each site, so in-house surveys, focus groups, identification of productive end-users, topographical survey) for each of the 3 pilot sites / $5,000 * 3 sites = $15,000; and 1 social & environmental impact study for the 3 pilots sites combined/$6,000 ; total = $21,0001.8. Local company to conduct study on existing training offer and relevant gaps, as well as recommendations to overcome then / $16,000	97,000				97,000			97,000	**DGEME** - Direction G?n?rale de l'?nergie, des Mines et de l?Eau, i.e., Directorate General for Energy, Mining and Water

Contractual services-Company	2.1. ANADEN to organize and communicate on the innovation start-up contest (incl. venue, etc.) / $33,0002.2. installation and annual offshore support service, training of local partners, communities, rural electricians at the 3 sites / $56,949 over 4 years2.4. Development of the Private Sector RE association and relevant communications strategy and roll-out / $4,000		93,949			93,949			93,949	**DGEME** - Direction G?n?rale de l'?nergie, des Mines et de l?Eau, i.e., Directorate General for Energy, Mining and Water
Contractual services-Company	3.1. Conduct a benchmarking of existing financial products supporting access and use of energy design the MFF, develop an operation manual, recommend resource mobilization sources, etc. / $39,0003.2. General market intelligence study and dissemination of the main findings etc./ $20,000			59,000		59,000			59,000	**DGEME** - Direction G?n?rale de l'?nergie, des Mines et de l?Eau, i.e., Directorate General for Energy, Mining and Water

Contractual services-Company	4.1. Digital strategy: Same company as for Lessons Learned taking care of all Knowledge Management / $9,0004.2. National digital convening platform for key stakeholders /$8,000, Financing platform for running tenders to select minigrid pilot beneficiaries $8,000, National monitoring and evaluation platform (remote monitoring & analytics) 300/site/year data collection, storage, and management fee / $300*3sites*3 year = $2,700; additional training and support of IP & co /$3,000 total = $21,7004.3. Setting up the Quality Assurance and Monitoring Framework for the project complying and in coordination with the AMP regional requirement. Training the PMU and other targeted consultants / $9,3124.4. Project Monitoring support: Same company as for Lessons Learned taking				67,012	67,012			67,012	**DGEME** - Direction G?n?rale de l'?nergie, des Mines et de l?Eau, i.e., Directorate General for Energy, Mining and Water

International Consultants	1.1. Senegalese delegation of 2 consultants paid at USD 500/day for 5+2travel days to provide training and advisory for the national dialogue platform / 2 consultants * 7 days * $500 = $70001.2. 15 days for international consultant work for the drafting of minigrid paragraphs in the Electricity Code and adopting a ?regulation by contract? in the meantime, as well as 5 days to adapt and enforce customs procedures and import requirements / 20 days * $600 = $12,0001.3. 20 days to develop a procedure and templates for tenders and contract templates for minigrid implementation and operation / 20 days * $600 = $12,0001.4. GIS analysis: 28 days; Interconnection potential: 12 days; Minigrid tariffication analysis: 20 days / (28+12+20) days * $600 = $36,0001.7. International consultants for knowledge gap analysis,	93,000				93,000			93,000	**DGEME** - Direction G?n?rale de l'?nergie, des Mines et de l?Eau, i.e., Directorate General for Energy, Mining and Water

International Consultants	2.1. 20 days Analysis on key national rural economic outputs and their value chains, and social activities / 20 days * $600 = $12,0002.3. Pedagogical engineering, Training and ToT on business models, cost-reduction levers, new technologies depending on the topics, tariff negotiation, understanding of anchor loads, remote monitoring, etc. all services - several modules; and knowledge transfer / 30 days *$500 = $15,000		27,000			27,000			27,000	**DGEME** - Direction G?n?rale de l'?nergie, des Mines et de l?Eau, i.e., Directorate General for Energy, Mining and Water
International Consultants	3.3. 25 days to develop and conduct relevant training on business models and innovative finance solutions for national financial institutions (incl. philanthropic) / 25 days * $500 = $12,500			12,500		12,500			12,500	**DGEME** - Direction G?n?rale de l'?nergie, des Mines et de l?Eau, i.e., Directorate General for Energy, Mining and Water

International Consultants	4.8. Replication plan ? 12 days of work ? remotely / 12 days * $600 = $7,200				7,200	7,200			7,200	**DGEME** - Direction G?n?rale de l'?nergie, des Mines et de l?Eau, i.e., Directorate General for Energy, Mining and Water
International Consultants	Mid-Term Evaluation costs International consultant/ $20,000Terminal Evaluation costs / $40,000						60,000		60,000	**DGEME** - Direction G?n?rale de l'?nergie, des Mines et de l?Eau, i.e., Directorate General for Energy, Mining and Water

Local Consultants	1.1. National consultant to facilitate National Dialogue Platform meetings (incl. meeting organization) / $300 per meeting x 20 meetings over 4 years = $6,0001.2. 20 days for international consultant work for the drafting of minigrid paragraphs in the Electricity Code and adopting a ?regulation by contract? in the meantime, as well as 10 days to adapt and enforce customs procedures and import requirements / 25 days * $300= $7,5001.3. GIS analysis: 20 days; Interconnection potential: 12 days / (20+12) days * $300 = $9,6001.7. 60 days national consultant?s knowledge gap analysis, developing comprehensive modular training materials, conducting training / 60 days * $200 = $12,000	35,100				35,100			35,100	**DGEME** - Direction G?n?rale de l'?nergie, des Mines et de l?Eau, i.e., Directorate General for Energy, Mining and Water

Local Consultants	2.1. 30 days Analysis on key national rural economic outputs and their value chains, and social activities incl. field visits on key value chains and stakeholder consultations / 30 days * $300 = $9,0002.3. Pedagogical engineering, Training and ToT on business models, cost-reduction levers, new technologies depending on the topics, tariff negotiation, understanding of anchor loads, remote monitoring, etc. all services - several modules; and knowledge transfer / 40 days *$200 = $8,0002.4. An assistant (or similar) in charge of the bureau and association, updates the website, organizes meetings etc. / part time for 3 years / 36 months * $180 = $6,480		23,480			23,480			23,480	**DGEME** - Direction G?n?rale de l'?nergie, des Mines et de l?Eau, i.e., Directorate General for Energy, Mining and Water

Local Consultants	4.3. 2 consultants - 1 SES and 1 Gender - 12 days per year per consultant for 4 years in charge of monitoring and recommending corrective measures where needed for Quality Assurance and Monitoring Framework / 12 days *4 years * 2 consultants * $200 = $19,2004.8. Replication plan: 25 days incl. field visits in all islands incl. on the 3 pilot sites and some eligible communities according to the DREI and GIS analyses (Component 1) / 25 days * $300 = $7,500				26,700	26,700			26,700	**DGEME** - Direction G?n?rale de l'?nergie, des Mines et de l?Eau, i.e., Directorate General for Energy, Mining and Water
Local Consultants	Mid-Term Evaluation costs local consultant / $15,000Terminal Evaluation costs/ $15,000						30,000		30,000	**DGEME** - Direction G?n?rale de l'?nergie, des Mines et de l?Eau, i.e., Directorate General for Energy, Mining and Water

Local Consultants	PMU - full time for 4 years/partial: Project Manager, Project Assistant/Coordinator (incl. M&E)/ (salary $1083*12 months *4 years)+(salary $800*12month *4years) = $90,400							90,400	90,400	**DGEME** - Direction G?n?rale de l'?nergie, des Mines et de l?Eau, i.e., Directorate General for Energy, Mining and Water
Staff Costs	1.3. 15 days for a UNV to support the international consultant in developing relevant tender documents and contracts / 15 days * $200 = $3,000	3,000				3,000			3,000	**DGEME** - Direction G?n?rale de l'?nergie, des Mines et de l?Eau, i.e., Directorate General for Energy, Mining and Water

Staff Costs	2.1. Support to organize innovation start-up contest around rural electrification through minigrids / 30 days * $200 = $6,000		6,000			6,000			6,000	**DGEME** - Direction G?n?rale de l'?nergie, des Mines et de l?Eau, i.e., Directorate General for Energy, Mining and Water

Training, Workshops, Meetings	1.1. 1.1. Various workshops for National Dialogue Platform members including workshop with Senegalese delegation for 2 days / $6,3751.2. 1.2. Stakeholder validation workshop for the regulatory framework and a workshop on customs procedures etc. / $5,3751.3. 1.3. Validation workshop related to tender documents and management & operation contract between communities and private sector player / $2,3751.4. 1.4. 1 restitution workshop half day per study (DREI, GIS Analysis, Interconnexion potential) / $4,3751.5. 1.5. 4 roundtable workshops to present the full DREI analysis to various key stakeholders in Year 2 / $6,3751.6. 1.7. 4 trainings over 2 years incl. 2 ToT sessions in Moroni, and 1 training in Moh?li and 1 in Anjouan ? for institutional capacity building / $10,3751.7. 1.7. 4 trainings including	43,000				43,000			43,000	**DGEME** - Direction G?n?rale de l'?nergie, des Mines et de l?Eau, i.e., Directorate General for Energy, Mining and Water

Training, Workshops, Meetings	2.1. Half day workshop on the analysis and recommendations to boost economic and social activities through electricity access and productive use / $1,5002.3. Venue & co for 3 trainings for private minigrid developers and communities of the 3 pilot sites / $6,0002.4. Venue, breaks for meetings & study tour, fees to attend conferences, fairs etc. / $5,001		12,501			12,501			12,501	**DGEME** - Direction G?n?rale de l'?nergie, des Mines et de l?Eau, i.e., Directorate General for Energy, Mining and Water
Training, Workshops, Meetings	3.1. Workshops (stakeholder consultations, validation/awareness raising) presenting at part of the fund mobilization efforts (incl. dissemination at training) on the MFF / $3 sessions * $3,000 = $9,0003.3. Venue and related costs for the 3 training sessions to strengthen the capacities of the national financial sector / 3 sessions * $1,500 = $4,500			13,500		13,500			13,500	**DGEME** - Direction G?n?rale de l'?nergie, des Mines et de l?Eau, i.e., Directorate General for Energy, Mining and Water

Training, Workshops, Meetings	4.1. Digital Strategy validation workshop / $2,0004.2. Training venue and related costs for up to 3 trainings of DGEME and relevant stakeholders around the minigrids data management platform / $1,3004.5. Various workshops for Knowledge networks / Communities of Practice / industry associations / Other strengthened to promote minigrids development / rural energy access / $5,0004.8. Replication plan validation workshop / $3,000				11,300	11,300			11,300	**DGEME** - Direction G?n?rale de l'?nergie, des Mines et de l?Eau, i.e., Directorate General for Energy, Mining and Water

Training, Workshops, Meetings	4.4. Inception workshop / $2,000						2,000		2,000	**DGEME** - Direction G?n?rale de l'?nergie, des Mines et de l?Eau, i.e., Directorate General for Energy, Mining and Water

Travel	1.1. 1.1. One Exchange visit with Senegal's successful national dialogue platform $4,380.1.2. 1.1. Local travels for National dialogue members to participate to the meeting $14,370.1.3. 1.2. International travel costs for a total of 14 days over 1 mission to conduct stakeholder consultations and work on the review of the Electricity Code $5,332.1.4. 1.3. 7 days of mission from international expert incl $3,666.1.5. 1.4. 2 international consultants - 1 mission to Comoros each for GIS analysis and interconnection potential study $8,284.1.6. 1.4. GIS analysis on the ground data collection local travel $2,110.1.7. 1.7. 2 missions to Comoros - 1 for initial phase and ToT, 1 for ToT on Year 2 for institutional capacities $7,808.1.8. 1.7. 2 return tickets to Anjouan and Moh?li to	53,532				53,532			53,532	**DGEME** - Direction G?n?rale de l'?nergie, des Mines et de l?Eau, i.e., Directorate General for Energy, Mining and Water

Travel	2.1. 1 mission to Comoros for the analysis on opportunities to boost economic and social activities through minigrid power access $4,1422.1. 4 return tickets (international & local consultant) to Anjouan and Moh?li for field visits and stakeholder consultations $3,1162.3. 1 mission to Comoros for ToT to build/strengthen the capacities of private minigrid developers and communities in pilot sites $4,1422.4. Travel costs for relevant conferences / $10,500		21,900			21,900			21,900	**DGEME** - Direction G?n?rale de l'?nergie, des Mines et de l?Eau, i.e., Directorate General for Energy, Mining and Water
Travel	3.4. 3 visits for 3 trainings in Comoros / (3 international return tickets * $2000) + (3 missions *4 days *$238 DSA) = $ 8,856			8,856		8,856			8,856	**DGEME** - Direction G?n?rale de l'?nergie, des Mines et de l?Eau, i.e., Directorate General for Energy, Mining and Water

Travel	4.3. Quality Assurance & Monitoring Framework $7,5154.4. Visits to Moh?li & Anjouan of 2 PMU members as part of the Inception workshop $3,3524.5. Attend events hosted by regional project (1 AMP Comoros Community of Practice rep per event) / $18,7154.8. Field visits to elaborate the replication plan for the national consultant to Anjouan and Moh?li $2,826				32,408	32,408			32,408	**DGEME** - Direction G?n?rale de l'?nergie, des Mines et de l?Eau, i.e., Directorate General for Energy, Mining and Water
Office Supplies	1.7. Supplies related to training / $4,000	4,000				4,000			4,000	**DGEME** - Direction G?n?rale de l'?nergie, des Mines et de l?Eau, i.e., Directorate General for Energy, Mining and Water

Office Supplies	2.4. Office supplies for the RE private association / $3,000		3,000			3,000			3,000	**DGEME** - Direction G?n?rale de l'?nergie, des Mines et de l?Eau, i.e., Directorate General for Energy, Mining and Water
Other Operating Costs	Auditing services / yearly flat fee $2,500 * 4 years = $10,000							14,000	14,000	**DGEME** - Direction G?n?rale de l'?nergie, des Mines et de l?Eau, i.e., Directorate General for Energy, Mining and Water

Other Operating Costs	1.7. Printing training materials costs / $1,0001.8. Printing training materials costs / $800	1,800				1,800			1,800	**DGEME** - Direction G?n?rale de l'?nergie, des Mines et de l?Eau, i.e., Directorate General for Energy, Mining and Water
Other Operating Costs	2.4. Communication materials for the RE private association / $2,000		2,000			2,000			2,000	**DGEME** - Direction G?n?rale de l'?nergie, des Mines et de l?Eau, i.e., Directorate General for Energy, Mining and Water

Other Operating Costs	4.7. Audio visual & Print production costs for national promotion campaign on minigrids, access to available, reliable, affordable and greener energy, EE, etc. / $8,000				8,000	8,000			8,000	**DGEME** - Direction G?n?rale de l'?nergie, des Mines et de l?Eau, i.e., Directorate General for Energy, Mining and Water
		345,432	**475,555**	**93,856**	**152,620**	**1,067,463**	**92,000**	**110,400**	**1,269,863**	

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).