Funding Proposal

FP105: BOAD Climate Finance Facility to Scale Up Solar Energy Investments in Francophone West Africa LDCs

Multiple Countries | Banque Ouest Africaine de Développement (BOAD) | Decision B.22/24

20 March 2019

GREEN CLIMATE FUND

Funding Proposal

Version 1.1

The Green Climate Fund (GCF) is seeking high-quality funding proposals.

Accredited entities are expected to develop their funding proposals, in close consultation with the relevant national designated authority, with due consideration of the GCF's Investment Framework and Results Management Framework. The funding proposals should demonstrate how the proposed projects or programmes will perform against the investment criteria and achieve part or all of the strategic impact results.

Project/Programme Title:	BOAD Climate Finance Facility to Scale Up Solar Energy Investments in Francophone West Africa LDCs
Country/Region:	Benin, Burkina Faso, Guinea-Bissau, Mali, Niger and Togo
Accredited Entity:	West African Development Bank (BOAD)
Date of Submission:	20/07/2018

Contents

Note to accredited entities on the use of the funding proposal template

- Sections **A, B, D, E** and **H** of the funding proposal require detailed inputs from the accredited entity. For all other sections, including the Appraisal Summary in section F, accredited entities have discretion in how they wish to present the information. Accredited entities can either directly incorporate information into this proposal, or provide summary information in the proposal with cross-reference to other project documents such as project appraisal document.
- The total number of pages for the funding proposal (excluding annexes) is expected not to exceed 50.

Please submit the completed form to:

fundingproposal@gcfund.org

Please use the following name convention for the file name:
"[FP]-[Agency Short Name]-[Date]-[Serial Number]"

List of Abbreviations

ABREC	African Biofuel and Renewable Energy Company
ACCF	Africa Climate Change Fund
AE	Accredited Entity
AECF	Africa Enterprise Challenge Fund
AEMP	Africa Energy Market Place
AFD	French Development Agency
AfDB	African Development Bank
AMA	Accreditation Master Agreement
AREF	Africa Renewable Energy Fund
BAU	Business as Usual
BCEAO	Central Bank of West African States
BOAD	West African Development Bank
CCAC	Climate & Clean Air Coalition
CDM	Clean Development Mechanism
CEB	Communauté Electrique du Bénin
COP	Conference of the Parties
CSP	Concentrated Solar Power
DAC	Development Assistance Committee
DAO	Tender Dossiers
DBSA	Development Bank of South Africa
DFI	Development Finance Institution
ECOWAS	Economic Community of West African States
ECREEE	Centre for Renewable Energy and Energy Efficiency
EDM	Energie du Mali
EE	Energy Efficiency
EE	Executing Entity
EF	Emission Factor
EIB	European Investment Bank
ElectriFi	Electrification Finance Initiative
EREI	Renewable Energy Investment Initiative
EREP	Renewable Energy Policy
ESAP	Environmental and Social Action Plan
ESIA	Environmental and Social Impact Assessment
EU	European Union
EU-AITF	EU-Africa Infrastructure Trust Fund
FAA	Funded Activity Agreement
FDE	Energy Development Fund
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse Gas
IFC	International Finance Corporation
IMF	International Monetary Fund
IPP	Independent Power
IRED	Regional Initiative for Sustainable Energy
IRENA	International Renewable Energy Agency
KfW	German Development Bank

kWh	kilowatt per hour
LDC	Least Developed Country
MAI	Notice of Expression of Interest
MDGs	Millenium Development Goals
MRV	Monitoring, Reporting and Verification
MW	MegaWatt
NAMA	Nationally Appropriate Mitigation Action
NDA	National Designated
NDC	Nationally Determined Contributions
NEAP	National Environmental Action Plan
NEMP	National Environmental Management Plan
NEPAD-IPPF	New Partnership for Africa Development –
NFI	National Financial Institutions
NGO	Non-Governmental Organisation
NREAP	National Renewable Energy Action Plan
NREPs	National Renewable Energy Policy
NSDP	National Sustainable Development Policy
ODA	Official Development Assistance
OFID	OPEC Fund for International Development
PDA	Detailed Project Study
PIDG	Private Infrastructure Development Group
PPA	Power Purchase Agreement
PPIAF	Public-Private Infrastructure Advisory Facility
PRODERE	Regional Program for the Development of RE and EE
PV	PhotoVoltaic
RCC	Regional Collaboration Centre
RE	Renewable Energy
REF	Rural Energy Fund
SAGSD	Strategy for Accelerated Growth and Sustainable Development
SDGs	Sustainable Development Goals
SE4ALL	Sustainable Energy for All
SEFA	Sustainable Energy Fund for Africa
SF-SLM	Strategic Framework for Sustainable Land Management
SOGEM	Société de Gestion de l'Energie de Manantali
TA	Technical Assistance
TWh	Terawatt per hour
UNFCCC	United Nations Framework Convention on Climate Change
USADF	United-States African Development Foundation
VAT	Value-Added Tax
WAEMU	West African Economic and Monetary Union
WAPP	West African Power Pool
XOF	CFA Franc

A.1. Brief Project / Programme Information		
A.1.1. Project / programme title		BOAD Climate Finance Facility to Scale Up Solar Energy Investments in Francophone West Africa LDCs
A.1.2. Project or programme		programme
A.1.3. Country (ies) / region		Benin, Burkina Faso, Guinea-Bissau, Mali, Niger and Togo
A.1.4. National designated authority (ies)		Benin: Ministry of Living Environment and Sustainable Development Burkina Faso: Prime Minister's office Guinea-Bissau: Secretariat of State of the Environment/General Direction of the Environment Mali: The Environment and Sustainable Development Agency Niger: National Council of the Environment for Sustainable Development Togo: Directorate of Environment, Ministry of Environment and Forest Resources and Forests Resources
A.1.5. Accredited entity		**West African Development Bank (BOAD)**
A.1.5.a. Access modality		☒ Direct ☐ International
A.1.6. Executing entity / beneficiary		Executing Entity: West African Development Bank (BOAD) Beneficiary: Project developers, primarily from the six beneficiary countries, local public institutions and BOAD
A.1.7. Project size category (Total investment, million USD)		☐ Micro (≤10) ☐ Small (10<x≤50) ☒ Medium (50<x≤250) ☐ Large (>250)
A.1.8. Mitigation / adaptation focus		☒ Mitigation ☐ Adaptation ☐ Cross-cutting
A.1.9. Date of submission		20 July 2018
A.1.10. Project contact details	Contact person, position	Yacoubou BIO-SAWE, Director for Environment and Climate Finance Ibrahim Traore, Head of Climate Finance Division
	Organization	BOAD
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	Telephone number	+228 22 23 26 92
	Mailing address	68 Avenue de la Libération 1172 Lomé Togo

A.1.11. Results areas *(mark all that apply)*

Reduced emissions from:

☒ Energy access and power generation
(E.g. on-grid, micro-grid or off-grid solar, wind, geothermal, etc.)

☐ Low emission transport
(E.g. high-speed rail, rapid bus system, etc.)

☐ Buildings, cities and industries and appliances
(E.g. new and retrofitted energy-efficient buildings, energy-efficient equipment for companies and supply chain management, etc.)

☐ Forestry and land use
(E.g. forest conservation and management, agroforestry, agricultural irrigation, water treatment and management, etc.)

Increased resilience of:

☐ Most vulnerable people and communities
(E.g. mitigation of operational risk associated with climate change – diversification of supply sources and supply chain management, relocation of manufacturing facilities and warehouses, etc.)

☐ Health and well-being, and food and water security
(E.g. climate-resilient crops, efficient irrigation systems, etc.)

☐ Infrastructure and built environment
(E.g. sea walls, resilient road networks, etc.)

☐ Ecosystem and ecosystem services
(E.g. ecosystem conservation and management, ecotourism, etc.)

A.2. Project / Programme Executive Summary (max 300 words)

Please provide a brief description of the proposed project/programme, including the objectives and primary measurable benefits (see investment criteria in section E). The detailed description can be elaborated in section C.

About half of the population in the West Africa Region do not have access to electricity. Countries from this region face interrelated challenges of energy access, energy security and high cost of electricity. This is attributed to the high dependence on fossil fuels, the insufficient availability of public funds to invest in energy infrastructure to meet the growing electricity demand, the inability to attract private capital in power generation at scale, and the inefficiencies along the value chain. This situation hampers the social, economic, and industrial development of the region.

The region's energy mix mostly comprises diesel and heavy fuel oil (76%). Hydropower and solar represent respectively 19% and 5%. Given the continuous decline in the cost of solar electricity generation[1], the region would benefit from investing massively in solar technologies to reduce its dependence on expensive fossil fuels for power generation, while supporting a shift towards cheaper, cleaner and reliable sources of electricity generation. With large financing needs over the sector's entire value chain, the solar sector increasingly relies on the private sector to deploy grid-connected solar power generation projects. While the region is endowed with high solar irradiation especially in the Sahel[2], the total installed solar PV capacity in the countries targeted by the proposed programme was only around 70 MW at the end of 2017[3], which is far below the national plans and NDC targets of 1,192 MW solar energy capacity by 2030.

The rationale of the proposed GCF programme "BOAD Climate Finance Facility to Scale Up Solar Energy Investments in Francophone West Africa LDCs" (hereafter the "programme") is to decarbonise the energy mix of the Francophone West Africa Region and to improve access to clean energy by scaling up cost-competitive solar technologies through private capital leveraging. The programme aims to accelerate private sector investments in the medium/large scale on grid-connected solar sector and to create a market for investments in solar technologies (PV and CSP) in the Francophone West African region. Initially, the programme will focus on the six Least Developed Countries (LDC) of this region, namely Benin, Burkina Faso, Guinea-Bissau, Mali, Niger and Togo.

BOAD will play a catalytic role with a blended finance approach to increase solar investment by providing long term debt financing to qualifying private sector companies for solar projects that are commercially viable but that cannot currently attract affordable financing at scale. The programme will contribute to a paradigm shift to low-emission development pathways through the mobilisation at scale of private climate finance to add 215 MW of new solar energy capacity; equivalent to a 400% increase of the regional solar capacity in the targeted six LDCs.

The total programme cost is EUR 122 million, of which EUR 61 million is GCF financing and EUR 61 million is co-financing from BOAD. The proposed programme envelope is expected to leverage another EUR 125 million from project developers and other lenders (private and public sector banks in the region). The total programme capital cost is expected to result in the reduction or avoidance of approximately 4.8 million tCO_{2e} during the lifetime of the programme. This increased investment will help fill the current investment shortfall to achieve West Africa's Nationally Determined Contributions (NDCs).

A.3. Project/Programme Milestone

Expected approval from accredited entity's Board (if applicable)	25/02/2019

[1] Solar PV module prices dropped by more than 80 percent since 2009 (IRENA, 2018. Renewable Power Generation Costs in 2017).
[2] The average solar radiation is of 5-6 kWh/m2 per day throughout the year (ECOWAS renewable energy policy, 2013)
[3] IRENA, Renewable Energy Statistics, 2018

Expected financial close (if applicable)	
Estimated implementation start and end date	Start: 01/06/2019 End: 01/06/2026
Project/programme lifespan	20 years

B.1. Description of Financial Elements of the Project / Programme

The proposed programme envelope aims to provide EUR 117 million of senior debt and standby loans (tenor extension instrument) to selected solar projects in Least Developed Countries (LDCs) from the Francophone West Africa region and EUR 5 million of technical assistance to local stakeholders (from private and public sectors).

The GCF contributions will account for 50% of the total funding of EUR 122m required to deliver the Programme. The GCF financing will include a loan to BOAD for on-lending to selected projects in solar PV and CSP technologies. BOAD will provide 50% co-financing and blend GCF funds with its existing funds.

The programme is designed to maximize total investment, using limited public funds to leverage greater private investment. The total commitment is expected to leverage a substantial amount of financing from project developers and private sector banks.

Table 1: Financial structure of the proposed programme

Components	GCF Financing (EUR)	BOAD Co-financing (EUR)	Total co-financing amount (EUR)	Private sector leverage	
				Equity from Private Sector Actors (EUR)	Loans from Commercial and Public Banks (EUR)
Component 1: To scale up commercial and sustainable financing for solar investments - Direct lending (loan component)					
Component 1.1: Senior Loan Facility	45 000 000	60 000 000	105 000 000	50 000 000	78 100 000
Component 1.2: Standby Loan Facility (credit enhancement in the form of tenor extension)	12 000 000		12 000 000		
Component 2: Technical assistance (grant component)					
Component 2.1 Technical assistance to BOAD and local project developers	2 000 000	250 000	2 250 000		
Component 2.2 Technical assistance to national institutions to address legal and regulatory barriers in the market	2 000 000	250 000	2 250 000		
Component 2.3 Marketing and Awareness Raising		500 000	500 000		
TOTAL (EUR)	**61 000 000**	**61 000 000**	**122 000 000**	**50 000 000**	**78 100 000**

Financial barriers are a significant obstacle to the mobilization and scaling up of climate finance (i.e. inadequate pricing, inflexible grace periods and loan tenors that are not adapted to the characteristics of renewable energy investments). The lack of sufficient private financing and the short tenor (5-7 years from local commercial investors) have been identified as key barriers for renewable energy (RE) project financing in the West Africa region.

Participation of local investors in solar projects has been hindered by their limited capacity to source and assess solar projects, limited track record in the sector, and high-risk perception. The Progamme financing scheme will address financial barriers specific to each country's market context and contribute to increasing market confidence, reducing risk perception and attracting private investors into the target market segment.

Under this programme, BOAD's financing scheme will primarily bridge the financing gap for solar projects by providing an adequate volume of finance with longer tenors. An important feature of the financing scheme is that it leverages a tenor extension instrument (standby loans) from BOAD and the GCF to crowd-in participation from interested and credible commercial banks. The participation of commercial banks in the loans for each project will be determined on the basis of the terms offered, while the final arrangement will be up to the decision of selected project sponsors.

The proposed financing structure will create a sustainable market for private investment with strong local participation, supported by credit enhancement instruments to make the overall price and tenor competitive. The concessional funds from the GCF will also allow to bring the electricity tariff to an attractive level that is competitive with electricity produced from fossil fuels. This financial structure is expected to 1) kick-start the market for private capital investment into the target sector by leveraging the potential of commercial banks and project developers for solar project financing and 2) enhance the countries ownership as it paves the way for active participation from local financial institutions and local project developers.

B.2. Project Financing Information

	Financial Instrument	Amount	Currency	Tenor	Pricing
(a) Total project financing	**(a) = (b) + (c)**	122	Options		
(b) GCF financing to recipient	(i) Senior loans and standby loans (ii) Grants *	57 4	million euro (€) Options Options Options Options Options		
	** Please provide economic and financial justification in section F.1 for the concessionality that GCF is expected to provide, particularly in the case of grants. Please specify difference in tenor and price between GCF financing and that of accredited entities. Please note that the level of concessionality should correspond to the level of the project/programme's expected performance against the investment criteria indicated in section E.*				
	Total requested (i+ii+iii+iv+v+vi)	61	Options		

	Financial Instrument	Amount	Currency	Name of Institution	Tenor	Pricing	Seniority
(c) Co-financing to recipient	Senior Loans Grant	60 1*	million euro (€) million euro (€) Options Options	BOAD BOAD			Options Options Options
	Lead financing institution: BOAD						

	* BOAD's grant will be in-kind contribution.
	** Please provide a confirmation letter or a letter of commitment in section I issued by the co-financing institution.*
(d) Financial terms between GCF and AE (if applicable)	*In cases where the accredited entity (AE) deploys the GCF financing directly to the recipient, (i.e. the GCF financing passes directly from the GCF to the recipient through the AE) or if the AE is the recipient itself, in the proposed financial instrument and terms as described in part (b), this subsection can be skipped.* *If there is a financial arrangement between the GCF and the AE, which entails a financial instrument and/or financial terms separate from the ones described in part (b), please fill out the table below to specify the proposed instrument and terms between the GCF and the AE.*

Financial instrument	Amount	Currency	Tenor	Pricing
	……	Options	( ) years	( ) %

Please provide a justification for the difference in the financial instrument and/or terms between what is provided by the AE to the recipient and what is requested from the GCF to the AE.

B.3. Financial Markets Overview (if applicable)

BOAD is the development finance institution of the member countries of the West African Economic and Monetary Union (WAEMU) which includes Benin, Burkina-Faso, Côte d'Ivoire, Guinea Bissau, Mali, Niger, Senegal and Togo.

The Central Bank of West African States (Banque Centrale des États de l'Afrique de l'Ouest - BCEAO) is the central bank serving the eight west African countries (Benin, Burkina Faso, Ivory Coast, Guinea-Bissau, Mali, Niger, Senegal and Togo) which share the common West African CFA franc currency and comprise the WAEMU.

In addition to centralizing the cash reserves of the Union, the main mandates of the Central Bank are: to issue currency, to manage monetary policy, to organize and monitor banking activities and to provide assistance for the WAEMU member States.

Overview of commercial market interest rates

Commercial market interest rates in the region are high, and in most cases steady as can be been in Table 2 below. In terms of average lending rates according to the type of borrower, rates remained unchanged for all types of borrowers in Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Senegal and Togo, with the exception being Niger from November to December 2017.

Table 2: Average lending rates according to the type of borrower (%) – for tenors mainly below 5 years.

	State and similar organizations		*Individuals*		*State-owned corporations and Pes*		*Private businesses in the production sector*		*Individual businesses*		*Other borrowers*		*All*	
	Nov.17	Dec.17	Nov.17	Dec.17	Nov.17	Dec.17	Nov.17	Dec.17	Nov.17	Dec.17	Nov.17	Dec.17	Nov.17	Dec.17
Bénin	9,80	9,80	9,07	9,07	9,29	9,29	8,44	8,44	11,62	11,62	5,16	5,16	8,76	8,76
Burkina			7,56	7,56	6,50	6,50	7,34	7,34	11,04	11,04	6,63	6,63	7,51	7,51
Côte d'Ivoire	6,02	6,02	7,59	7,59	9,00	9,00	7,42	7,42	5,14	5,14	5,19	5,19	6,68	6,68
Guinée-Bissau			9,13	9,13			11,91	11,91			5,66	5,66	9,70	9,70
Mali	8,00	8,00	9,10	9,10	10,13	10,13	7,49	7,49	10,04	10,04	5,59	5,59	7,65	7,65
Niger	11,00	10,41	10,87	10,35	8,00	5,50	10,21	8,47	10,19	8,64	8,25	8,81	10,30	8,57
Sénégal	6,10	6,10	9,16	9,16	11,00	11,00	5,27	5,27	10,40	10,40	7,10	7,10	5,90	5,90
Togo			8,64	8,64	6,58	6,58	8,57	8,57	10,14	10,14	3,22	3,22	8,68	8,68

Source : BCEAO.

Overall lending in West Africa remains difficult for most banks due to particularly challenging conditions and internal vulnerabilities. Credit conditions are reflected in high interest rates from the commercial banks. The region is characterized by inadequate pricing, inflexible grace periods and loan tenors that are not adapted to the characteristics of a solar investment. The local commercial banks are unable to extend loans with tenors of no more than 5-7 years due to the short-term maturity profile of their deposit and the absence of deep capital markets to source long-term financing. The limited borrowing capacity and the lack of available and accessible commercial finance by local financial institutions hinders the ability of businesses to invest in renewable energy, and in particular solar energy. These financial barriers are a significant barrier to the mobilization and scaling up of climate finance.

Given that the current market conditions in the target region are not favorable and that commercial banks are risk adverse, the GCF's participation will be critical to bring private investors onboard. The programme is designed to address these financial barriers by providing affordable and long-term financing to scale up solar energy in the LDC countries of the region:

- To overcome the barrier of high capital cost, external climate finance support is necessary, combined with private financing and public funding. The access to concessional financing from the GCF and BOAD will crowd in private sector capital to develop and implement solar investment. By providing concessional loan to BOAD at an attractive interest rate, the blended cost of borrowing for BOAD will be reduced compared to the cost of borrowing of BOAD on capital markets. Therefore, BOAD will be able to lend to projects at long tenors and more attractive rate than the rate applied without GCF support.
- To overcome the barrier of the length of tenor which is a key limitation encountered by project developers seeking local financing, the GCF will incentivise the participation of local commercial banks in the Programme by providing up to EUR 12 million of Standby Loans to BOAD which will be on-lent to sub-projects for extension of the commercial banks loan tenor. A standby loan facility will be provided when commercial banks cannot extend the tenor beyond the year 5-7, as a tenor extension instrument. The repayment of the outstanding commercial bank loan at the end of its tenor shall either be rescheduled by the commercial lenders/banks or repaid as scheduled by drawing down on the standby loan facility. Standby loan facility will not cover the risk of a commercial bank tranche during their initial tenor. Commercial banks will provide senior debt, backed by the standby loan facility as a tenor extension instrument provided by BOAD. The standby loans will automatically provide a credit enhancement to the underlying sub-project by extending the tenor of the outstanding commercial bank loan at maturity to match the tenor of BOAD's loan to the sub-project .

Please fill out applicable sub-sections and provide additional information if necessary, as these requirements may vary depending on the nature of the project / programme.

C.1. Strategic Context

The Paris Agreement, the Marrakech agreements (COP 22) and the SE4ALL initiative have all emphasized the urgency to restore balance in the energy mix globally and in the region by scaling-up Renewable Energy (RE) projects, in particular through Public-Private-Partnerships and private investment. The international community as a whole now pushes for private-led green growth, as public and national financial institutions cannot bear the investment costs alone.

In West Africa, there is an urgent need to increase electricity supply and access for the population as almost half of it are without access to electricity. In recent years, countries from West Africa have renewed their commitment to the promotion of clean energy as well as regional cooperation in order to meet their Nationally Determined Contributions (NDCs). In particular the governments from West Africa have demonstrated a growing interest to large-scale, grid-connected solar technology which constitutes the best alternative to fossil fuels considering the region's potential[4].

The ECOWAS region is made up fifteen member countries that are located in the Western African region: Benin, Burkina Faso, Cabo Verde, Ivory Coast, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone and Togo. These countries have both cultural and geopolitical ties and shared common economic interest. The proposed programme focuses on six LDCs of West Africa region, namely: Benin, Burkina Faso, Guinea-Bissau, Mali, Niger and Togo.

The ECOWAS region has developed its RE strategy, which complements the ECOWAS White Paper (2006) to promote "access to energy services for populations in rural and peri-urban areas" and improve "the business environment for a competitive private sector". The EREP (ECOWAS Renewable Energy Policy) strategy (2013) came following the realization that the demographic transition and climate change were significant threats to African economies and aims at overcoming the various market barriers by translating regional pledges into national initiatives and targets. EREP ambitious objective is to achieve nearly 30% of installed RE capacity in the energy mix – totally 7,606MW – by 2030[5].

Based on the EREP baseline, the ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE) has provided national governments with guidelines to develop a RE strategy encompassing legal, technical and financial aspects fitting their national needs and challenges. In addition, national governments were strongly encouraged to take steps towards the alleviation of market barriers for private investment through the simplification of the regulatory framework and additional fiscal incentives[6].

As indicated in Tables 3 and 4, the regional and national targets of the beneficiary countries are to increase significantly the share RE in the energy mix by 2020 and by 2030. Table 6 highlights the specific targets for solar energy by 2030 and 2030 and is a clear evidence of the strong commitment of the target countries to develop the market for solar energy.

Table 3: EREP Regional objectives for grid-connected renewable energies (Guiding NREPs in UEMOA/ECOWAS countries)

Type of target	Expected result
EREP RE options in % of peak load	2020: 10 % 2030: 19 %
RE share in the electricity mix (including medium and large-scale hydro)	2020: 35 % 2030: 48 %
RE share in the energy mix (excluding large hydro)	2020: 10% 2030: 19%
Added installed RE capacity from wind, solar, bioenergy and small-scale hydro	By 2020: 2,424 MW By 2030: 7,606 MW

[4] Rapport d'Étape sur les Énergies Renouvelables et l'Efficacité Énergétique de la CEDEAO, 2014, p. 12
[5] ECREEE.org
[6] ECREEE, ECOWAS Renewable Energy Policy (EREP), 2015, p. 47-49

Possible contribution of each RE technology to the targets	Wind: 13% Solar: 28% Hydro: 33% Biomass: 26%
Production using RE	2020: 8.350 GWh 2030: 29.229 GWh
RE share of energy demand	2020: 5 % 2030: 12 %
Total RE production (including medium and large-scale hydro)	2020: 23 % 2030: 31 %
Target for regional manufacture of RE equipment	2020: 7% of installed RE equipment, by value 2030: 20% of installed RE equipment, by value

Table 4: National targets for grid-connected RE in the target countries

Country	Share of RE in total installed capacity (including medium and large-scale hydro)		Share of RE in electricity mix (including medium and large-scale hydro)	
	2020	2030	2020	2030
Benin[7]	10.5%	18.8%	64.7%	35%
Burkina Faso[8]	24%	36%	17%	27%
Guinea-Bissau[9]	26%	52%	24%	75%
Mali[10]	59.5%	58.3%	49.3%	37%
Niger[11]	27%	28%	40%	57%
Togo[12]	41.9%	45.3%	17%	20%

Table 5: Expected installed RE capacity in ECOWAS region in 2020 and 2030 (in MW and related %, excluding medium and large-scale hydro)[13]

	2020	**2030**
Wind	318 (18%)	993 (13%)
Solar PV	686 (28%)	1,156 (15%)
Solar CSP	N/A	1000 (13%)
Small scale hydro	787 (33%)	2,449 (32%)
Biomass	634 (26%)	2,008 (27%)
Total	2,425	7,606 (30%)

Table 6: Current and planned installed solar capacity in 2020 and 2030 in WAEMU countries (source: 2017 data for total installed solar capacity from IRENA (2018) Renewable Energy Statistics; data for planned solar installed capacity from National Renewable Energy and Energy Efficiency Action Plans)

[7] Plan d'Action National des Énergies Renouvelables du Benin, July 2015
[8] Plan d'Action National des Energies Renouvelables du Burkina Faso, Juillet 2015
[9] Plan de Açao Nacional no Sector das Energias Renovàvies (PANER) para a Guiné-Bissau, October de 2017
[10] Plan d'Action National des Énergies Renouvelables du Mali, Novembre 2015
[11] Plan d'Action National des Énergies Renouvelables du Niger, Mars 2015
[12] Plan d'Action National des Énergies Renouvelables du Togo, Octobre 2015
[13] Grid-connected RE scenario of ECOWAS 2020/2030.

Country	Total installed solar capacity (MW)	Planned solar installed capacity 2020 (MW)	Planned solar installed capacity 2030 (MW)
Benin	8	50	227
Burkina Faso	44	107	205
Guinea-Bissau	0	15	15
Mali	6	308	528
Niger	9	75	150
Togo	3	45	67
Total MW	**70**	**600**	**1,192**

The total installed solar capacity in the six target countries was 70MW by the end of 2017 and the sum of the national targets by 2030 is 1,192MW.

Other existing sustainable energy initiatives operating in Africa

There are a wide range of sustainable energy funds covering African countries. They usually differ in terms of type of support provided, geographical areas supported, type of funding provided and funding level. Types of technical assistance provided vary greatly and can include: dialogue and networking (e.g. SE4All, AEMP); studies such as feasibility, due diligence, mapping, investment report, etc. (e.g. DBSA); policy support and reform (e.g. PPIAF, Energy Africa Campaign); institutional capacity building and training (e.g. ACCF, Rural Energy Fund, Power Africa); technical assistance for project preparation (e.g. DevCo, GEF, Powering Agriculture); or technical assistance for project implementation (e.g. EU-Africa Infrastructure Trust Fund, NEPAD IPPF). An increasing number of funds such as the Rural Energy Fund (REF), Africa Climate Change Fund (ACCF), Africa Energy Market Place (AEMP), SE4All, Energy Africa Campaign and Public-Private Infrastructure Advisory Facility (PPIAF) help governments facilitate private sector investment and achieve targets in their Nationally Determined Contributions (NDCs) by providing technical assistance in the form of policy dialogue, capacity building, networking, policy and reform support as well as knowledge sharing.

The type of funding provided is also diverse and can include grants, repayable grants, equity (direct, intermediated, quasi), senior debt, subordinated debt, mezzanine debt, guarantees, loans (debt, concessional, direct, long-term, short-term, bridging), interest rates subsidies, risk-sharing, risk capital and risk-mitigation products, or low-interest credit. For instance, the Electrification Finance Initiative (ElectriFI) funded by the European Union (EU) offers flexible support options, including technical assistance, junior debt, senior debt, and equity. In terms of size of investment, there is no clear gap in funding across the different ranges (<1 million /1 million -10 million/>10 million) while in terms of type of funding provided, within the different ranges, findings indicate that funding below 1 million USD tends to be in the form of grants, whereas larger investments above 10 million USD tend to be a mixture of equity and debt. For the middle range, a combination of grants, equity and debt is provided. Some funds like ABREC only provides TA for private sector and governments facilitate entry of private investors for renewable energy projects in Africa. The Africa Renewable Energy Fund (AREF), a Sub-Saharan Africa (excl. South Africa) is a private equity fund solely focused on small and medium sized (5-50 MW) independent power projects utilizing solar, wind, biomass, hydro, as well as geothermal and stranded gas technologies. In practice, AREF is more active in small hydro and also in geothermal and biomass. The Sustainable Energy Fund for Africa (SEFA) is another existing initiative. It is a USD 90m multi-donor trust fund administered by the African Development Bank (AfDB) to support small- and medium-scale Renewable Energy (RE) in Africa. SEFA operates under three financing windows: project preparation (grants), equity investments and enabling environment support (grants). SEFA does not invest in projects and only focuses on project development phase. It has also distinguished itself from other funds with regards to its focus on more innovative technologies in small/medium scale projects.

In terms of technology, the largest beneficiary sector is the off-grid solar sector, then come hydro, biomass and wind energy, while more innovative technologies are under covered. Several funds have chosen to focus on off-grid solutions such as the United-States African Development Foundation (USADF), the ResponsAbility Innovative Investment Fund, the Africa Enterprise Challenge Fund (AECF), the Rural Energy Fund (REF), the Energy Africa Campaign and this confirms the growth potential of decentralized energy solutions in Africa. The DfID-led Energy Africa campaign channels funding to accelerate off-grid solar power generation for households. Only a few programmes such as OFID Energy

Poverty Program will explicitly emphasize their willingness to support projects that demonstrate technology or business model innovation. The larger the funding available, the more likely the projects supported will be grid-connected (Power Africa, EU-Africa Infrastructure Trust Fund (EU-AITF), PIDG and subsidiaries, IFC Infraventures). Accordingly, the smaller the funding available, the more likely the projects supported will be off-grid.

Although there are several other similar funds, there are sufficient important differences that the field is not too crowded and the proposed GCF programme does not face strong competition. As explained above, several funds focus on solar off-grid solutions while other funds will tend to look to the more challenging route to market (such as AREF or SEFA). In terms of type of funding provided there are many funds providing TA through grants, and the proposed programme will complement the existing programmes by also providing concessional loans and standby loans to private sector actors. No other similar support has been provided to BOAD. The Bank has received financial supports from the Adaptation Fund in the agriculture sector and from the Global Environment Facility (GEF) but the projects supported were at a smaller scale and at the country level.

C.2. Project / Programme Objective against Baseline

The current status of the energy system hampers the social, economic and industrial development of the West African region. The countries from West Africa are challenged with threatening factors of energy security such as poor system reliability, limited infrastructure, fuel import dependence, and heavy reliance on fossil fuels, hydropower, and traditional biomass resources. **Fossil fuels account for 76% of the energy mix in the targeted countries, while hydropower and solar energy respectively account for 14% and 5%.** These factors have made the region have the lowest modern energy consumption rates in the world with average electricity consumption of 116[14]kWh/capita compared to the continental and global averages of 529 and 2570 kWh/capita, respectively. In the context of climate change, diversification of energy sources is necessary to transit to the clean energies.

In the RE sector, the institutional, regulatory, legal, and tariff structures and frameworks are weak or insufficiently. So far there are only a few incentives for private capital to invest in the renewable energy (RE) sector in West Africa. Investments in RE power projects have had a predominant share of Official Development Assistance (ODA) funding. The policy environment has not helped improve the situation significantly, but there has been a growing realisation over the last few years that drastic action is required to ensure adequate generating capacity in the region, and to develop renewable energy sources to make them an important share of the region's energy and electricity mix.

Although hydropower has been used throughout the region for many decades, deployment of non-hydro renewables—including wind, solar PV and to a lesser extent CSP, and biomass—is accelerating. Within WAEMU countries, electricity has traditionally been provided through conventional grid systems. As of the end of 2017, there was an estimated of 354 MW of grid-connected renewable installed capacity[15] in the target countries comprising hydropower and solar power. Although the target region is well endowed with RE resources, their share in the countries' energy mix is very little when large hydro power generation is excluded.

Table 7: Breakdown of MW capacity installed by technology and by country (in MW)

Country	Thermal[16]	Hydro	Solar	Total generation capacity
Benin	288	1	8	297
Burkina Faso	258	32	44	334
Guinea-Bissau	12.5[17]	0	-	12.5
Mali	124	184	6	314
Niger	174	-	9	183
Togo	263	67	3	333
Total target countries	**1,119.5**	**284**	**70**	**1,473.5**

[14] Source: https://www.se4all-africa.org/seforall-in-africa/country-data/mali/
[15] IRENA (2018) Renewable Energy Statistics
[16] 2017 data from ECREEE (2018) Regional Off-Grid Solar Market Assessment & Private Sector Support Facility Design, Country Reports, August.
[17] Poor network maintenance and planning result in an irregular electricity supply. Total grid capacity of around 5MW (ECREEE, 2018)

				Including 354 MW of RE

Installed solar capacity

Technologies to convert solar energy into electricity generally fall into one of two categories: photovoltaic (PV) modules that convert light directly into electricity and concentrating solar thermal power (CSP) systems that convert sunlight into heat energy that is later used to drive an engine. Although solar power can be generated at any scale, PV technology is modular and can be scaled for anything from household use to a large network of PV farms, whereas CSP is typically considered viable only as a utility-scale plant. The resource potential for solar PV is generally good and relatively homogenous throughout all of West Africa, except in Mali and northern Niger, where the resource potential is particularly strong and deemed "highly suitable"[18].

There is a huge technically and economic feasible potential for RE development in the target countries. Market trends indicate a price decrease for RE technologies on the one hand and a price increase for fossil fuel costs on the other hand. Among the RE solutions, PV system is noted to be the best option in many cases. In addition, after originally considering CSP as suitable only in the Sahel region[19], ECREEE has recently helped implement a utility-scale CSP project in Ghana[20], in line with the 1,000 MW installed CSP capacity target for the ECOWAS region as a whole by 2030. CSP technology would offer excellent results in zones endowed with high solar potential, as in Mali and northern Niger. Furthermore, CSP technologies can be operated through the day, unlike PV without battery storage, which makes it attractive for large-scale solar production. In favour of its geographical location, solar power – either PV or CSP – appears to be good for increasing access to electricity in West Africa and to improve people's living conditions.

Recently, several Member States have demonstrated a growing interest in grid-connected and large-scale solar projects. As of 2018, the region's use of solar PV technology is split between distributed, on-grid and off-grid functions, including for rural electrification and to power community centers, health clinics, and individual homes, as well as street lights. Distributed solar PV generation has often been linked to development-orientated projects implemented by governments or donor partners to supply schools, health centers, or rural communities. In the last couple of years, large-scale solar PV projects have blossomed in Senegal (through the Scaling Solar Initiative), Burkina Faso and Mali[21]. **However, these developments have been slow as the total installed solar capacity in the six target countries was only around 70MW by the end of 2017 while the national targets in these countries by 2030 is 1,192 MW for solar energy.**

Table 8: Total solar installed capacity by country (in MW)[22]

Country	Total solar installed capacity
Benin	8
Burkina Faso	44
Guinea-Bissau	0
Mali	6
Niger	9
Togo	3
Total solar installed capacity in the target LDCs	**70**

Market barriers

[18] IRENA (2016) Investment opportunities in West Africa: Suitability Maps for Grid-connected and Off-grid Solar and Wind projects
[19] ECOWAS (2014) Renewable Energy and Energy Efficiency Status Report, p. 37
[20] https://www.solarpaces.org/ghana-tap-abundant-solar-thermal-energy-potential/
[21] https://www.pv-tech.org/editors-blog/large-scale-solar-blossoms-in-africa
[22] IRENA (2018) Renewable Energy Statistics

A number of barriers continue to hold back solar investment at scale, despite the dynamism of the sector, the proven performance of solar technologies worldwide and the increased number of national policies supporting solar market development. The barriers to solar private-led development can be found throughout the region and seem to impact similar areas. These barriers impede and delay the development of solar projects and therefore increase the difficulty to achieve national targets in terms of solar generation and grid-connected capacity.

The proposed GCF programme is designed to overcome the challenges facing the target countries by providing financial support to private sector actors as well technical support to private sector actors and national institutions.

The table below describes the main market barriers and how the proposed programme will address them.

Table 9: Market barrier analysis

Type of barrier	Description of the barrier	Objectives of the proposed programme
Financial barriers	The lack of climate finance for West Africa's private sector is the main barrier and it is due to • unattractive risk-return balance because of high perceived risk of solar lending or insufficient risk-taking capacity of local financial institutions, • maturity and liquidity risk (local commercial banks are unable to extend loans with tenors of no more than 5-7 years) • inappropriate financial instruments (interest rate and tenor) to incentivize investments, • lack of financing structures and systems, • limited local capital which contributes to bankers' conservatism. Together, these translate into inadequate sources of necessary concessional long-term debt finance.	The specific objectives of the Programme will address financial barriers by scaling up long-term and affordable climate finance and by providing local financial institutions with a liquidity guarantee for extension of loan tenor that will encourage them to invest in the solar sectors.
Technical barrier	Technical barriers are related to the firm size, the ownership structure, the insufficient experience of private sector actors in originating commercially viable RE projects; the lack of technical knowhow among private sector actors to assess the financial and technical feasibility of solar investment; lack of awareness among private sector actors about the benefits of solar projects on energy costs saving opportunities and on the positive impacts that sustainable energy production and consumption have on energy security, environmental benefits, health and livelihoods in general.	The specific objectives of the Programme will address the technical barriers • by supporting private sector actors in the development phase of their project. Effective project preparation is key to attract and mobilize private sector capital. Given the risks and uncertainties of project preparation, the private sector has been hesitant to get involved during the early stages of a project. • by disseminating technical know-how and good practices and awareness raising activities among private sector actors about the benefits of solar projects.
Legal barriers	The creation of an enabling environment is of crucial importance to ensure the attractiveness of the solar energy sector to prospective private sector investors. Most UEMOA countries have implemented some form of regulatory framework	The specific objectives of the Programme will address policy and regulatory barriers by participating in institutional debates and carrying out policy dialogue activities that will be informed by the activities of the proposed programme to support the creation of simplified

	and financing mechanisms, though this does not constitute a guarantee of result. Legal barriers are related to the lack of legal structures and systems to push the market and open up the sector; the lack of legal and binding targets which is often the hindrance for progress in the RE sector; the lack of planning, policy and regulation capacity in energy planning and modelling integration of solar into energy planning; and lack of incentives mechanism.	regulatory frameworks for Feed-in-Tariff schemes for on-grid solar solutions, support on standard PPAs development, support on IPP tenders and procurement process, on tariff structure, support on the national regulatory and legal frameworks to drive investment in low emission technologies.

C.3. Project / Programme Description

The goal of the proposed programme is to create a market for investments in solar technologies in the six LDCs of West Africa, namely Benin, Burkina Faso, Guinea-Bissau, Mali, Niger and Togo. The programme aims to incentivize and leverage private sector actors based in these countries to scale up private investment in solar technologies. The programme is fully aligned with regional and national efforts to drive low-carbon development in West Africa.

While the region has a huge solar potential capacity, market development has been slow because of the unattractive business environment. Even where the policy and regulatory framework are in principle supportive of the goals of increasing RE investment, the magnitude of the barriers to doing business effectively and in a timely manner has meant that progress has been slower than expected. The proposed programme is aimed at removing or reducing the financial, technical and legal barriers faced by the private sector of LDC countries in West Africa looking to invest in the solar sector. The programme is expected to increase by 400% the existing solar capacity in the target countries and this is expected to benefit to around 2.9m people[23].

By removing the multiple barriers that are preventing the development of the solar market in West Africa, the programme will facilitate project funding in the target countries and will develop the capacity of local investors to deploy solar technologies widely. Without addressing these barriers, the market for solar investments is likely to remain limited in these countries and private sector actors will not be willing to take the risk to invest.

Structure of the proposed programme

The Programme will set up a new direct lending facility for the purpose of supporting private sector actors to make viable solar investments. The programme will enable BOAD to offer tailor-made debt financing with credit enhancement in the form of tenor extension to private sector investors alongside technical assistance for local project developers and public institutions. The total programme cost is EUR 122 million, of which EUR 61 million is GCF financing and EUR 61 million are co-financing from BOAD. The GCF finance includes EUR 4 million in grants, EUR 57 million in senior loans and standby loans to BOAD. The BOAD finance includes EUR 1 million in grants and EUR 60 million in senior loans.

BOAD will offer an integrated approach that is based on a combination of financial and technical support to facilitate access to finance to private sector actors and assist them in structuring their solar investments. It is expected that the Facility will support at least 6 projects in the six target LDCs. The programme will have two main objectives and interrelated components:

1. To scale up commercial and sustainable financing for solar investments through senior debt and standby loans
2. To develop technical capacity of private and public sector actors and raise awareness about the benefits of solar technologies

Component 1: To scale up commercial and sustainable financing for solar investments - Direct lending (loan component)

Sub-component 1.1: Senior loans facility

Financial barriers are a significant barrier to the mobilization and scaling up of climate finance i.e. inadequate pricing, inflexible grace periods and loan tenors that are not adapted to the characteristics of renewable energy investments.

[23] Assuming an electricity consumption per capita of 116 kWh/ person-year (SE4ALL)

The lack of available and accessible commercial finance by local banks hinders the ability of businesses to invest in solar projects. The Programme will address financial barriers to private sector investment specific to each country's market context and contribute to increasing market confidence, reducing risk perception and attracting private investors into the target market segment.

The programme will address financial barriers by providing affordable and long-term debt financing for medium to large-scale solar investments. BOAD will provide long term affordable debt to qualifying private sector companies for solar projects that are commercially viable but that cannot currently attract affordable financing at scale. The GCF funding will be on concessional terms and will be blended with BOAD own funding to cover barriers and risks, and thereby catalyse private sector investment in the target region at scale. The programme will provide appropriate financial resources to selected private sector companies in order to reduce the barriers and risks and thus make these investments attractive to commercial project developers. The outcome will be an increased investment portfolio of medium to large-scale solar projects leading to an increased capacity of 215MW as indicated in Table 10.

The financial arrangements between BOAD and the project developers will be structured in a way that it will not crowd out other private sector investors. In order to catalyse additional private finance, the blending of GCF financing will be tailored to make a project viable. BOAD will ensure that concessionality levels are as low as possible so as to produce the desired market effect while minimising undesirable market distortion with highly concessional loans. GCF's concessionality will be passed down to projects.

The GCF will provide senior loans to BOAD for on-lending to solar projects. BOAD will provide its own commercial financing priced at market terms based on risk factors on a case-by-case basis using clear and established evaluation criteria. The projects funded under this programme will have to comply with a set of technical and financial criteria which are described hereafter. In terms of technical criteria, eligible projects should be located in the six LDCs from West African region and target solar grid connected power generation projects with a capacity of approximately 10 MW to 70 MW. Eligible technologies include: solar photovoltaic (PV) and Concentrated Solar Power (CSP).

In terms of financial criteria:

- Sub-Projects will be required to apply cost-benefit analysis techniques that adequately evaluate all (positive and negative) externalities to ensure holistic cost-effectiveness and the highest possible climate and social return;
- Sub-Projects shall be financially structured such that the present value of cash inflows is greater than the present value of cash outflows – both discounted at the weighted average cost of capital;
- Sub-Projects shall generate an adequate risk adjusted rate of return by identifying and assessing relevant project risks to attract commercial investment;
- BOAD will appropriately size the blending of GCF funds in the financing of Sub-Projects to make them bankable with limited concessionality to minimise the risk of market distortion with highly concessional loans;
- Sub-Projects shall provide clarity on the ultimate source of revenue that would cover operating costs, in order to mitigate risks and ensure financial viability. All Sub-Projects must be backed by power purchase agreements (PPA) covering the tenor of the loans to be provided by BOAD;
- Sub-Project's developer will be required to contribute to the cost of the Sub-Project as equity participation;
- Sub-Project's developers will have to estimate the expected cost of the investment per lifetime impact potential in tonnes of CO2eq reduced.

BOAD has identified a number of projects in its pipeline which are listed below. The total expected MW to be installed is 215 MW.

Table 10: Indicative pipeline of projects to be funded under the programme

	Country	**Project**
1	Burkina Faso	Construction of a solar PV power plant of 10MW in Banfora

2	Burkina Faso	Construction of a solar PV power plant of 25MW in the North Western part of the country in Ouahigouya
3	Burkina Faso	Construction of a solar PV power plant of 50 MW in the South East of the country at Tenkedogo
4	Niger	Construction of a solar PV power plant of 20 MW
5	Mali	Construction project for a Solar PV power plant of 50MW in Koulikoro
6	Mali	Construction of a solar PV power plant of 20 MW
7	Togo	Construction of a solar PV power plant of 20 MW in Blitta
8	Togo	Construction of a solar PV power plant of 30 MW in Dapaong
9	Guinea Bissau	Construction of a solar PV power plant of 10MW in Bissau
10	Benin	Improvement of the energy in Cotonou City of Cotonou with the construction of 10 MW solar PV power plant

Note that the total capacity to be installed based on this list of projects is 245MW. However, the conservative estimate of 215MW has been considered for the calculation of the GHG emission reductions.

BOAD Solar Project Example

BOAD has recently participated in the financing of the largest private PV power plant in West Africa located in Kita, Mali. In January 2018, BOAD, the Emerging Africa Infrastructure Fund (EAIF), National Agricultural Development Bank of Mali (BNDA), Green Africa Power (GAP) and GuarantCo have secured a €77 million credit facility to finance the construction and operation of a 50MW PV power plant[24].The financing will be used to develop the project, which will be built under a Build-Own-Operate and Transfer (BOOT) contract by local company Akuo Kita Solar SA, a subsidiary of French IPP Akuo Energy[25].Funding for the project was co-arranged by both BOAD and EAIF, with the 50MW installation standing as the first PV plant owned and operated by an independent producer in Mali.

Please see five concepts of Sub-projects in the pipeline in the supporting documents for the Funding Proposal.

Sub-component 1.2: Standby loan facility (credit enhancement in the form of tenor extension)

One of the biggest challenges for commercial banks in the region is the maturity and liquidity risk. The length of tenor is a key limitation encountered by project developers seeking local financing in the RE sector. The local commercial banks are unable to extend loans with tenors of no more than 5-7 years due to the short-term maturity profile of their deposit and the absence of deep capital markets to source long-term financing. To overcome this barrier, the GCF can incentivise the participation of local commercial banks in the Programme by providing up to EUR 12 million of Standby Loans to BOAD which will be on-lent to sub-projects for extension of the commercial banks loan tenor to reasonably match the project's maturity.

For example, assuming the project developer is seeking a 14-year loan, but local banks can only provide 7-year money. The commercial bank loan can be structured as a 7-year loan partly amortized over the tenor with a bullet payment at maturity. If prior to the final maturity date of the local commercial bank loans, such lenders are unable to sufficiently extend the tenor of the outstanding bullet payment by another 5-7 years considering the cash flow of the sub-project; GCF shall guarantee the repayment of the final bullet instalment due from the sub-project to the relevant commercial

[24] https://www.boad.org/en/boad-participates-in-the-financing-of-the-largest-private-photovoltaic-power-plant-in-west-africa-located-in-kita-mali/
[25] https://www.pv-tech.org/news/akuo-solar-secures-financing-for-50mw-pv-project-in-mali

banks by providing a standby loan facility ("Standby Loans") to BOAD which shall be on-lent to the sub-borrower (sub-project) to repay the scheduled final bullet instalment only.

The standby loans will automatically provide a credit enhancement to the underlying sub-project by extending the tenor of the outstanding commercial bank loan at maturity to match the tenor of BOAD's loan to the sub-project. Note that the standby loan facility will apply only when commercial banks cannot extend the tenor at maturity.

Component 2: To develop technical capacity of private and public sector actors and raise awareness - Technical assistance (Grant Component)

Component 2 will provide capacity building to private sector companies while supporting the enabling environment through marketing and awareness raising activities and TA to national institutions in order to stimulate the demand for solar projects.

Sub-component 2.1: Technical assistance to BOAD and local project developers for investment preparation

Local project developers do not always have sufficient skills to prepare feasibility studies and offer attractive and bankable projects. Development cost is a key barrier to project developers. The programme will address the technical barriers faced by local project developers by building the capacity of mid-size project developers to structure their investments (project preparation and management).

This will include capacity building and training for project developers to build their capacities during the development phase of their projects. For this sub-component, BOAD will hire qualified long-term international and local consultants for the implementation of the TA activities, based on its procurement policies as approved by the GCF. Training will target local developers active in target countries and include support:

- to originate commercially viable solar related projects;
- to develop technical and financial feasibility studies to develop bankable solar projects;
- to develop a financial & commercial framework and risk mitigation strategy for the solar energy projects;
- to develop environmental and Social Impact Assessments (ESIA) and environmental and social action plan (ESAP); and
- to prepare to reach financial closure for the Sub-Projects

It is expected that approx. 300 people from the private sector will be trained. The transfer of knowledge will be ensured through the provision of proper operational manuals and guidelines and practical tools.

TA to local project developers will be complemented by capacity building to BOAD staff during the development and implementation of the project portfolio. BOAD experience in solar project investment and in mitigation and adaptation projects in general is relatively new. There is a significant need to strengthen BOAD staff expertise in several areas. TA will be provided to remove the technical barriers faced by BOAD staff. TA will include:

- Support for the development of eligible and bankable solar projects: This will include support to build BOAD pipeline of projects, to assess the eligibility sponsors' projects, to screen project financial and technical feasibility studies, to review and improve projects' business models carried by project developers, etc.
- support in the implementation of the solar projects: This will include support to track progress of projects implementation and in the monitoring of project performance indicators (e.g. MW installed capacity, tCO2eq avoided, etc.); in the management of environmental and social risks and in the implementation of the gender action plan; support for marketing and communication activities (defining a marketing plan and providing communication tools to promote the programme with the aim to stimulate the demand for solar projects)
- support for the integration of climate change considerations into BOAD project cycle: This will include support to enhance BOAD capacities on how to integrate mitigation and adaptation dimensions into the project activities. Training participants will learn how climate change is interlinked with development cooperation, where to find relevant climate information and how to use it, how to plan and support processes of mainstreaming mitigation and adaptation in BOAD project cycle and how climate change measures should be integrated in development planning.

The recruitment of long term local and international consultants will allow for a 'hands-on' approach to accompanying BOAD staff through project identification, development, implementation, management and monitoring. This 'hands-on' approach will help to ensure the long-term sustainability of BOAD interventions in terms of impacts achieved.

Technical trainings will be provided to around 50 operational permanent staff from BOAD (including financial analysts, environmentalists, engineers, economists, etc.). The aim will be to strengthen their operational skills in terms of formulation and development of mitigation and adaptation projects and on how to integrate the climate dimensions in BOAD operations (in the private and public sectors). The knowledge acquired through the trainings will be captured and institutionalised in proper operational manuals and practical tools such as financial model guidelines or GHG emission calculation tool.

Sub-component 2.2: Technical assistance (TA) to national institutions to address legal and regulatory barriers in the solar market

The small installed capacity of solar PV in the Region reveals important regulatory, structural, and technical constraints such as inadequate Independent Power Producer (IPP) regulatory framework, limited planning and dispatch capacity, and overall grid integration challenges. The programme will also support the enabling environment for solar investment through BOAD's policy dialogue activities with governments in the region to improve the regulatory environment for solar investments. The outcome will be an increased pipeline of fundable solar projects.

BOAD will carry out policy dialogue activities that will be informed by the activities of the proposed programme. BOAD will hire qualified long-term international and local consultants for the implementation of the policy dialogue activities, based on its procurement policies as approved by the GCF. The rationale of this sub-component is to remove the market barriers to the development of solar projects by supporting the implementation of regulatory and policy regimes that provides clear and predictable rules for solar project development in the region. The aim of this sub-component is to prepare the way for the entry of solar private investment and to create clarity and a stable reliable environment for solar investment. TA under this sub-component will be focused on aspects of the enabling environment that have an immediate impact on stimulating solar private sector investment. Support can include

- Support to the creation of a simplified regulatory framework for feed-in-tariffs for on-grid solar solutions;
- Support on the development of standard power purchase agreements (PPAs);
- Support on Independent Power Producer (IPP) tenders and procurement process;
- Support on tariff structure; and
- Support on a framework of financial and technical incentives.

Sub-component 2.3: Marketing and awareness raising activities on the benefits of solar system technologies, and broad dissemination of experiences and good practices:

BOAD will work to ensure that relevant information relating to the deployment of solar technologies is publicised to demonstrate the viability of these technologies. This will be done mainly through awareness raising campaign, BOAD website and business networks.

BOAD will develop, manage and maintain organizational brand and execute a communications and outreach effort that promotes the objectives of the programme; lead direct outreach to project developers, commercial banks, DFI's and other relevant stakeholders; build the reputation and brand of the programme with donors, foundations, corporations, the media and public officials and agencies; establish strategic partnerships with lenders, contractors, developers, government agencies, utilities, business and industry associations, and community groups.

Programme benefits

In creating favourable market environments for investment in the solar sector, the programme is expected to increase by 400% the existing total solar installed capacity which will lead to sizable greenhouse gas (GHG) emissions reductions (4.8 million tCO_{2e} over the 25-year average lifetime of the investments) and to green job creation and private sector business growth. Better access to green finance will enable private sector actors to have access to new markets related to green growth. Potential co-benefits include increased access to more sustainable energy, more affordable energy and reduced costs. The programme will also directly contribute to achievement of countries Nationally Determined Contributions (NDCs) and the Sustainable Development Goals (SDGs).

C.4. Background Information on Project / Programme Sponsor (Executing Entity)

The West African Development Bank (BOAD) is the common development finance institution of the member countries of the West African Economic and Monetary Union (WAEMU), including Benin, Burkina-Faso, Côte d'Ivoire, Guinea Bissau, Mali, Niger, Senegal and Togo. It was established by an Agreement signed on 14 November 1973, and became operational in 1976. By Treaty of the West African Economic and Monetary Union (WAEMU) signed on 10 January 1994 and entered into force on 1st August 1994, BOAD is a specialized and autonomous institution. It contributes “in full independence to the attainment of the objectives of the WAEMU without prejudice to the objectives assigned to it under the WAMU Treaty”. BOAD is an international public institution whose purpose, as provided under Article 2 of its Articles of Association, is to promote the balanced development of its member countries and foster economic integration within West Africa by financing priority development projects.

BOAD delivers on its mandate by contributing towards the mobilization of domestic resources in its member state countries, outsourcing foreign capital through loans as well as providing funding through equity investments, loans, guarantees, and interest rebates. BOAD uses the financial resources that it mobilizes to invest in public and private sector projects and programmes aimed at building basic and modern infrastructure, improving rural livelihoods, generating energy, and climate change adaptation and mitigation.

BOAD and the private sector

Convinced that the private sector is a real development vector and a key source of economic growth, wealth and job creation in the WAEMU countries, BOAD continuously adjusts, intensifies and diversifies its action towards the promotion and financing of private productive investments. BOAD has a number of strategies for the promotion and financing of the private sector. Since 2013, BOAD has organized capacity building activities and outreaches with IFI such as the World Bank, AfDB and the UNFCCC secretariat to bring more awareness to the West African NFIs and commercial bankers in the financing of energy transition projects. In June 2017 BOAD launched the creation of the West African network for climate finance. BOAD is also promoting the use of green bonds and green credit line mobilization throughout the region. Out of FCFA 4,202.1 billion of total net commitments as at 30 September 2016, BOAD devoted to the private sector about 24.3%, representing FCFA 1,022.4 billion for 319 projects.

BOAD’s private sector financing operations and the promotion of financial inclusion are carried out through the "Private Sector" window. The Private Sector Window prioritizes the fight against poverty and support for inclusive growth in the member states. The portfolio of the Bank's shareholding capital of companies and financial institutions includes 82 transactions. BOAD has set a number of initiatives as explained below:

The Regional Initiative for Sustainable Energy (IRED): In order to better overcome recurrent energy crises in many of the WAEMU member countries, the Conference of Heads of State and Government decided in January 2008 to set up a committee tasked with proposing a strategy called “Regional Initiative for Sustainable Energy (IRED)”. The initiative aims to provide, by 2030, 100% access to electricity in the WAEMU region at lower cost and as part of a large integrated and harmonized power pool market in West Africa. This regional market will be based on a dynamic public-private partnership. It also targets an increase by 82% of renewable and sustainable energies in the WAEMU’s power generation base. The financial and institutional mechanism for the implementation of the initiative includes a concessional Energy Development Fund (FDE), and an investment fund operating as a private infrastructure development facility.

The Energy Development Fund (Fonds de Développement Energie - FDE): Established on 25 September 2009, the Fund aims to contribute to improved access to energy in the WAEMU member countries and promote the development of sustainable energy under concessional conditions in order to finance projects eligible for IRED initiative. It is managed by BOAD. The Fund started its operations in the first quarter of 2010. As of the July 2018, 18 projects and 1 programme were financed through loans accounting for a total amount of XOF 239,205 billion (EUR 364 million). The status of implementation of FDE financed operations is summed up in the table below.

Table 11: List of projects financed by the FDE[26]

	Country	Name of project	Date of approval	Technology	Status	Amount committed (million Euro)
1	Benin	Construction project of 161 kV Bembèrèkè-Kandi-Malanville line	January, 2011	Network construction	Works ongoing with expected due date October/December 2018	30.5
2	Benin	Strengthening of SBEE distribution networks	N/A	Network improvement	N/A	N/A
3	Benin	Construction of 120 MW thermal plant in Mari Gléta	N/A	Diesel and HFO	N/A	N/A
4	Burkina Faso	Project to strengthen the production capacity of the Komsilga power station	September, 2010	Diesel and HFO	Works completed. Power station in operation since June 2014	30.5
5	Burkina Faso	Strengthening/reinforcement of Burkina Faso National Interconnected Network (PR-RNI) Project	May, 2017	General network improvement	Works have not started. BOAD had meeting in April 2018 to support start of project implementation phase	14.5
6	Ivory Coast	Project for implementation of the emergency phase of reinforcement program to strengthen the electricity sector	January 2011	Network improvement	Works ongoing. Completion rate 95%	38.1
7	Ivory Coast	Project for the reinforcement and rehabilitation of electric power transmission and distribution works of CI-ENERGIES	June, 2013	Network improvement	Works completed. Operational since December 2015	19.8
8	Ivory Coast	Project of extension in combined cycle of production capacity of AZITO thermal plant	N/A	Diesel and HFO	N/A	N/A
9	Ivory Coast	Project to extend the capacity of the CIPREL SA thermal plant	N/A	Diesel and HFO	N/A	N/A
10	Guinea-Bissau	Project to strengthen electricity production through the construction of a 15MW thermal power plant	June, 2011	Diesel and HFO	Works are delayed ESIA/ESAP complete	20.8
11	Mali	Construction project of the Center National Code of Conduct (CNC) of Bamako and doubling of production	January, 2011	Hydro	Works have started	30.5

[26] Etat de mise en œuvre des projets financés par le Fonds de Développement Energie, 2018

		capacity of Sotouba Hydroelectric plant				
12	Mali	Rehabilitation of hydroelectric power plants of Sélingué and Sotouba	N/A	Hydro	N/A	N/A
13	Niger	Strengthening of production capacity of Goudel plant	April, 2012	Diesel and HFO	Works are being finalised	30.5
14	Niger	Construction of 100 MW thermal plant in Gorou Banda/Niamey: first 30 MW	N/A	Diesel and HFO	Works are being finalised	19.8
15	Senegal	Construction project to build the 225 kV loop of Senelec Phase I	June, 2011	Network construction	Works completed in November 2014	15.2
16	Senegal	Construction project to build the 225 kV loop of Senelec Phase II	March, 2015	Network construction		38.1
17	Togo	Project to strengthen and construction of electric power supplies system	June, 2011	Network improvement	Works ongoing	8.8
18	Togo	Decentralized of rural electrification of 62 localities by SPV in the 5 regions in substitution for the reinforcement and construction of the power supply.	Sept 2016	Solar PV	Loan agreement not signed	21.6
19	UEMOA	Regional Program for the Development of Renewable Energies and Energy Efficiency (PRODERE) - Part 2 of Phase 1	March 2016	Renewable energy – solar PV among others	Ongoing	22.8
			Total			**341.5**

The Infrastructure Development Fund: It is dedicated to private investments. It is a profit-making fund meant for financing access to electricity in the WAEMU region according to market terms and conditions. In addition, it aims to support the restructuring of electricity companies, the emergency programme and the medium and long-term projects. It will be a lever for public-private partnerships in the energy sector in the WAEMU region. The due diligence towards its implementation is underway at the level of BOAD. The Bank participated in the implementation of major projects including:

- Mali-Côte d'Ivoire electric power interconnection of by Energie du Mali (EDM);
- Electrification of the townships of Bakel, Selibaly and Goureye in Senegal by Société de Gestion de l'Energie de Manantali (SOGEM);
- Expansion of CIPREL SA's power plant capacities in Côte d'Ivoire (CIPREL IV A);

Expansion in combined cycle of the generation capacities of AZITO power plant by SOCIETE AZITO ENERGIE SA in Côte d'Ivoire.

BOAD and climate change

Like most of other African countries, the WAEMU countries are increasingly facing the adverse effects of climate change (floods, prolonged droughts, strong winds, coastal erosion, etc.). These phenomena have, over the last years, exacerbated vulnerability of both populations and natural ecosystems useful to life. BOAD shares concerns raised by climate change. Thus, it finances climate-related projects, a true lever for economic and social development of WAEMU member countries. Thus, it mapped out an environmental and climate strategy for the 2015-2019 period, whose aim is

"making environment a new growth area for the Bank". To achieve this goal, BOAD's action is structured around three specific directions or strategic areas, namely:

- strengthening the capacities of operational units in the area of environmental assessments;
- developing effective tools and mechanisms for financing and resource mobilization in order to support environmental management and combat climate change;
- strengthening the Bank's leadership in the sub-region on environmental and climate issues.

In conformity with its statutory missions and as part of the implementation of directions included in the 2015-2019 strategic plan, BOAD has committed itself to providing support to member countries in order to make them resilient to climate shocks and help them achieve sustainable and inclusive growth. In this regard, the Bank promotes climate change mitigation and adaptation projects in various sectors: agriculture, fisheries, handicraft, energy, natural resource rehabilitation and preservation, agroforestry. At last, it promotes resource mobilization by forging ad hoc partnerships with financial institutions such as KfW, AFD, EIB, etc., as well as with the UNFCCC financing mechanisms. BOAD seeks to raise, at international level, funds dedicated to environment and climate, such as the Climate Change Adaptation Fund, the Global Environmental Facility, and the GCF.

Since 2009, the Bank sits as an observer to the UNFCCC and actively participates in discussions relating to the establishment of an international architecture for climate finance. In 2011, the Bank was accredited as the first regional implementing entity of the Adaptation Fund. In addition, since January 2013, BOAD has hosted the first Regional Collaboration Centre (RCC) on Clean Development Mechanism (CDM) and climate change with the UNFCCC. The aim of the RCC is to provide direct support to governments, NGOs and the private sector to identify and develop CDM projects and mitigation activities such as NAMA while supporting BOAD climate finance resource mobilization. This centre has already provided direct support to projects under execution in areas like energy, improved cook stoves, efficient power lighting, solar water heating, etc.

Since January 2015, BOAD has set up at internal level a new department in charge of environment and climate finance to closely look at climate finance aspect in projects that involve environment. In addition to the environmental component, this new department aims to prepare and finance adaptation and mitigation projects, as well as carbon finance.

BOAD Financial Position

BOAD is a traditional regional multilateral bank that serves the West African Economic and Monetary Union (WAEMU). It provides loans to sovereigns of the WAEMU primarily, as well as to its broader public sector and private sector.

Some key facts are given below:

Number of operations	1138
Total commitments	5 293,5 billion FCFA
Total assets	2 667 870 Million FCFA
Total loans	1 806 283 Million FCFA
Total equity	677 905 Million FCFA

Since 2015, BOAD is rated « investment grade » by Moody's (Baa1) and Fitch (BBB), reflecting the solid financial position of BOAD which has one of the highest financial institution credit ratings in the region. Moody's Investors Service has affirmed the BOAD Baa1 long-term issuer and senior unsecured ratings and maintained the stable outlook.

C.5. Market Overview (if applicable)

Electricity access in the target countries

The energy systems within the targeted countries are facing interrelated challenges of energy poverty, energy security and climate change. The region has one of the lowest access rates to modern energy services in the world. Although much progress has been achieved towards increasing electricity access in the west African countries, particularly in Senegal and Côte d'Ivoire, electricity access remains insufficient in most countries. Furthermore, electricity networks are outdated and prone to significant transmission losses and interruptions in supply. The resultant high tariffs and loss of productivity are costly to the households of the target countries and to the regional economy as a whole.

Table 12: Access to electricity rates in target countries (in % of total, rural or urban population)

Country	Access to electricity (% of population)	Access to electricity, rural (% of rural population)	Access to electricity, urban (% of urban population)
Benin	41.4	18.0	70.8
Burkina Faso	19.2	0.8	60.7
Guinea-Bissau	14.7	-	29.8
Mali	35.1	1.8	83.6
Niger	16.2	4.7	65.4
Togo	46.9	19.4	87.4

Source: World Bank, 2016

Electricity tariffs in the target countries

Electricity tariffs show important differences among the target countries. In Guinea-Bissau, where major infrastructure and capacity difficulties occur, the average tariff is around $0.40/kWh, while in Mali and Niger, prices are significantly lower with an average retail price is at $0.16/kWh. Regarding the regional average, it stands at around $0.23/kWh which is substantially higher than in most African countries.

Table 13: Electricity tariffs in WAEMU countries

Country	Electricity tariffs in 2017
Benin	$0.22/kWh for all end users Subsidy for low-income households
Burkina Faso	Average retail price $0.24/kWh
Guinea-Bissau	$0.40/kWh for on-grid consumers
Mali	Average retail price $0.16/kWh for on-grid consumers
Niger	$0.16/kWh on average for on-grid consumers Consumers below 3kWh per day $0.11/kWh $0.11/kWh for industrial consumers $0.07/kWh for agricultural facilities
Togo	$0.22/kWh for all end users $0.31/kWh for residential $0.20/kWh for commercial/industrial
Regional average retail price	$0.2333/kWh Rounded: $0.23/kWh

Source: ECREEE (2018) Regional Off-Grid Solar Market Assessment & Private Sector Support Facility Design, Country Reports

Electricity demand in the target countries

Scaling up renewable energy generation capacity is of crucial importance to enable the target countries to sustain economic growth and development, and to prepare for the upcoming population boom. Indeed, electricity demand is expected to increase fivefold by 2030 to 250 TWh in West Africa[27], and the energy sector will not be able to meet the electricity demand in its current state. The figure below shows the projected electricity demand by country in West Africa up to 2030.

[27] IRENA (2015) Africa Power Sector Synthesis

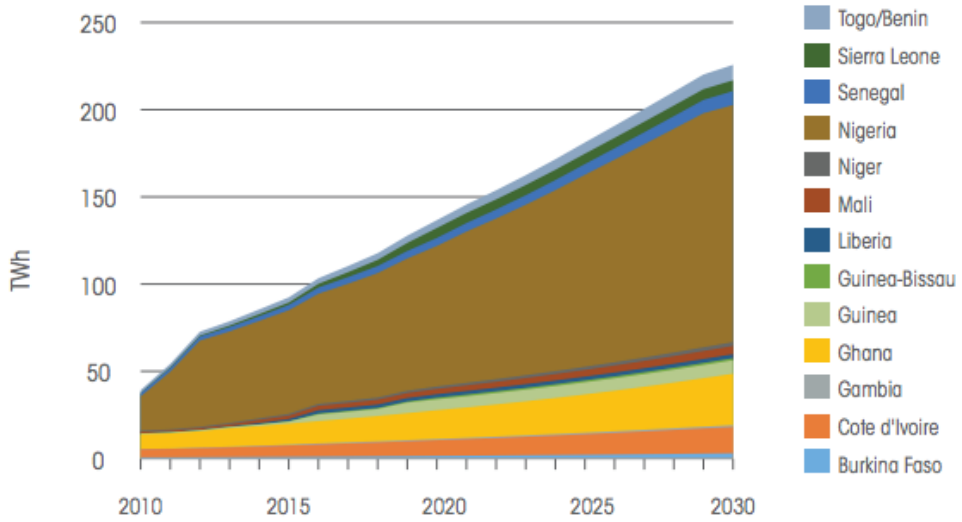


Figure 1: Projected Electricity Demand by country – West Africa
Source: IRENA (2015) Africa Power Sector: Planning and Prospects for Renewable Energy

Energy mix in the target countries

Despite the considerable potential of RE and the dynamism of WAEMU economies, RE resources remain largely untapped. Scaling up RE investment is of crucial importance considering the direct correlation between sustained economic growth, social progress and energy access. Among other challenges, which are discussed by country below, national energy sectors in WAEMU states are affected by the monopoly of one corporation over the electricity supply, issues related to the insufficient energy supply compared to the demand, and sometimes severe infrastructure deficiencies. Low electricity access rates have negatively impacted the modernization of the economy and social development. Improving electricity access rates and scaling up non-hydro renewable energy will diversify the countries' energy mix while providing clean access to electricity to the population.

Table 14: Energy mix by target country (in %) (See Table 7 for the breakdown in MW)

Country	Thermal[28]	Hydro	Solar
Benin	97	0	3
Burkina Faso	77	10	13
Guinea-Bissau	100	0	-
Mali	36	53	11
Niger	95	-	5
Togo	79	20	1

Source*:* IRENA (2018) Renewable Energy Statistics (unless otherwise specified)

[28] 2017 data from ECREEE (2018) Regional Off-Grid Solar Market Assessment & Private Sector Support Facility Design, Country Reports, August.

Many clean energy projects in West Africa are technically and commercially viable but have yet to become bankable investment opportunities. High initial development costs, lack of start-up capital, limited know-how of project financing, and inadequate enabling environments all present barriers to such progress. As a result, RE projects in West Africa tend to be financed by a combination of private and public financing, with the public sector contributing the lion's share. Traditionally, the public-private financing models being used do not necessarily guarantee timely or efficient investments. The procedures associated with these financing models are bureaucratic, complex and prolonged. The commitment from investors is not consistent and is largely influenced by global dynamics and perceptions beyond the control of project developers.

The potential private sector finance for RE projects in West Africa is significant. However, the challenge is to provide affordable and attractive financing frameworks that sustainably exploit commercial lending and investment opportunities in the private sector. RE technologies often have high upfront costs and low rates of return. The consequent high-risk profiles of investments and little access to affordable financing in West Africa make RE unattractive and challenging for investors.

Renewable energy investment scenario

In the six target countries, financial instruments are the predominant means of supporting the renewable energy sector. Tax incentives take a number of forms, including investment or production tax credits, as well as reduction or elimination of taxes such as import duties, sales, and value-added tax (VAT). In Burkina Faso and Mali, import duties on RE components have been reduced or removed and value-added tax reductions for RE projects have been established. In addition, Niger and Togo all offer some form of tax incentives for RE. In Mali additional financial support has come from public financing mechanisms such as public investment, project grants or low interest loans.

Both public and private financing have played an important role in the sector's development to date. While data on private finance flows in the region is not widely available, an analysis of regional projects such as the Cabeolica Wind Farm Project shows that private financing has played a key role in project development.

As mentioned above, millions of dollars of support have been lined up through specialised regional and Africa-wide funds and programmes such as the ECOWAS-led Renewable Energy Investment Initiative (EREI) and Renewable Energy Facility (EREF), the Sustainable Energy Fund for Africa (SEFA), the African Renewable Energy Fund (AREF), and the Power Africa Initiative. International financing through mechanisms established under the United Nations Framework Convention on Climate Change (UNFCCC) process—such as the Global Environment Facility (GEF), Climate Investment Funds (CIF), Clean Development Mechanism (CDM), and Nationally Appropriate Mitigation Actions (NAMAs)—have all supported RE development in the region and offer an opportunity to continue scaling up future investments. While public and private funding from national, regional, and international institutions has been instrumental in the funding of RE development in West Africa, it has yet to significantly penetrate the private sector market.

An overview of the energy sector in each target country is provided below, along with key indicators demonstrating the need to scale up RE investment in target countries.

Table 15: Overview of the energy sector in each target country

Country	Overview of the energy sector
Benin	Benin's electricity sector faces significant challenges in terms of regulatory arrangements, financial sustainability and technical capacity. Benin's electricity needs are not met by its 288 MW of non-renewable energy capacity and 9 MW of renewable energy capacity. The missing electricity supply is covered by the cross-country grid shared with Ghana, Nigeria and Ivory Coast. One of the country's major energy challenges is its heavy dependence on electricity imports from its neighbours, and its insufficient non-renewable generation capacity. Indeed, Benin is locked in its fossil fuel dependency unless an enabling environment is implemented to allow for the private sector to invest and scale up the country's generation capacity. When in 2014, electricity production from oil sources represented 99.5% of the total, it still accounted for over 94% a year later. Electricity production from renewable energies represented a mere 1.5% in 2015, though showing a 1-point increase from the past year, and energy imports accounted for 46.6% of the country's total energy use in 2014. Nonetheless, while in 2011, the national electrification rate was low at around

	28%, significant progress has been made as the electricity access rate now is 41.4% of the total population (2016). However, there is an important disparity between rural and urban electricity access rates, with 18% and 70.8% respectively. These results show that efforts have been made to scale up electricity access, but little has changed in terms of the diversification of Benin's energy mix. A number of outstanding issues have hampered clean energy development in Benin: • Despite objectives stated in the Electricity Code (2007) to open the energy market to private actors, the CEB (Communauté Électrique du Bénin) remains the sole actor responsible for buying and supplying the electricity produced. Recently, the CEB has implemented a feed-in tariff for renewable energy sources fixed at 73XOF/kWh, applied to all RE technologies. • Even though national authorities agree on the potential of renewable energies in Benin, no national targets for RE project development have been defined. • The CEB financial balance rests on currency exchange from USD$ for cross-country connections with Nigeria, Ghana and Ivory Coast • Overall ambitions have not been translated into actions in terms of creating an enabling environment for private-led RE project development, though a handful of small-scale solar projects are currently under consideration
Burkina Faso	Burkina Faso has one of the lowest rankings in terms of electricity access, with only 19.2% of total population with access to electricity in 2016, a figure mainly accounted by urban areas, with 60.7% of urban population having access to electricity. The rural electricity access rate is among with lowest in Africa with less than 1% (0.8%) as of 2016. The country's energy supply is heavily dependent on imported hydrocarbons from neighbouring countries, such as Ghana, Togo and Ivory Coast for use in electricity production, transport and other industries. Dependence on imports is exacerbated by high production costs, fluctuating oil prices and a steadily increasing demand for electricity. Furthermore, in recent years, Burkina Faso's power utility, SONABEL has faced system transmission and distribution losses of over 20%, much higher than the internationally accepted norm of 10%. In addition, the high tariffs barely cover the operating costs of the expensive SONABEL power. The resultant disruptions in supply and the high cost of energy for consumers constitute significant barriers to private-led energy development and negatively impact productive capacity. These hidden costs represent a significant burden for the expansion of the private sector and national growth. While recent initiatives have placed an emphasis on improving energy access through off-grid solar solutions, much remains to be done to achieve SE4All objectives by 2030[29] with regard to energy access and diversification of the energy mix.
Guinea-Bissau	The RE market has emerged rather recently in Guinea-Bissau due its difficult economic and political environment. Should the political scene remain stable, the RE market offers good potential even though the vast majority of the population lives on less than 1USD$/day and therefore cannot afford electricity. Currently, a few solar panels are installed in urban areas (for public lighting), but there is almost no electrification in rural areas, for which data is not available. The national electricity service struggles immensely to meet the electricity demand, with national capacity standing at 12.5 MW while demand for the capital alone is around 30MWh. Guinea-Bissau is one of few countries in the world which has seen its electricity access rate decline in recent years, from 17.2% in 2014 to around 14.7% in 2016. The urban electricity access rate is estimated to be around 29.8% as of 2016. The distribution network suffers from significant losses ranging from 30 to 40%. They ought to be extensively renovated before focusing on attracting private investment because the deficiencies may result in the deterioration of newly installed equipment. This constitutes an important barrier to private investment in the energy sector. Another barrier to private investment is the systemic theft of electricity and fraud. National authorities are currently developing a regulatory framework for the energy sector and have confirmed the considerable potential for the development of RE projects in the NREAP. The greatest barrier to the development of the RE sector remains the lack of finances and facilities available (credit access for RE firms, poverty of the population, insufficient resources of local banks, VAT scrapped for solar panels but fully applied to all other solar components: batteries, controllers, inverters etc.).
Mali	Mali has a strong renewable energy potential, especially for solar power thanks to its above average irradiation levels. The country has seen its national average rate of access to electricity increase steadily, from 22.3% in 2010 to 35.1% in 2016. However, rural and urban electricity access rates show a significant disparity, with 1.8% of the total rural population with access to the grid against 83.6% of the total urban

[29] 65% national electricity access, 32% national access to clean cooking.

	population. In Mali, the electricity consumption per capita is about 90 kWh, against an average of 116 kWh in ECOWAS countries and 500 kWh on average in Sub-Saharan Africa. The average consumption is also characterised by a strong disparity between rural and urban areas. Key constraints and challenges in the energy sector faced by the private sector include: • The national electricity access rate is still very low, especially in rural areas • Mali exempts solar panels, solar lamps, and other renewables from import levies and duties, however, the current regulatory framework does not adequately promote private investment in renewable energy, though the local private sector has been increasingly involved in rural electrification. • The impacts of climate variability are making the country's electricity supply – which depends on hydroelectric power for about 59% of its on-grid supply – increasingly vulnerable. • Regulatory (including tariffs) and legal frameworks do not favour RE investment by the private sector on a large scale. • The financial status of the electricity utility EDM SA is extremely weak. Private sector contributions to RE are currently not accounted for in national statistics. However, it is estimated that there are more than 20 local, private operators active in the RE sector. These include decentralised energy service companies operating a few pilot RE rural electrification schemes, and retailers and distributers involved in the sale of electrical (mainly SHS), lighting and energy efficiency equipment.
Niger	Electricity, in terms of both quality and access, is a key challenge for Niger. The existing power infrastructure is underdeveloped, and the country continues to rely heavily on imported electricity from neighbouring Nigeria. There are occasional power-supply interruptions from Nigeria due to failing electricity infrastructure, highlighting Niger's dependence and vulnerability. In 2016, the electricity access rate stands at 16.2% of the total population, with important disparities between rural and urban areas (4.7% and 65.4% of the population respectively). The country's energy mix is characterised by a carbon-intensive energy production, despite having significant RE potential, particularly for solar in the north. The Renewables Readiness Assessment, carried out by IRENA, has highlighted several technical opportunities and barriers facing Niger's private sector and the renewable energy generation and transmission infrastructure. It also brought to light some of the institutional, financial and capacity issues associated with PV and wind-based power generation to feed the grid. These are listed below. • Lack of information on solar and wind energy resources is a major obstacle to investment due to the difficulties in developing robust project proposals. • At present, there is little in the way of private sector participation and incentives to draw investors to the development and distribution of solar products in Niger. • The market is limited by Niger's small size and constrained by taxes of over 52% (import tariffs and VAT), a lack of regulation on poor quality products smuggled from neighbouring countries, and the absence of a meaningful government renewables stimulus. • Lack of institutional coordination and collaboration between financial institutions and other stakeholders • Technical, legal and administrative barriers reducing investor confidence.
Togo	As of 2016, 46.9% of Togo's total population had access to electricity, with 19.4% of the total population in rural areas and over 87.4% in urban centres. The energy sector in Togo can be characterized by the following: • A dominance of traditional sources of energy (biomass consisting of wood energy and agricultural residues). Strong energy dependence on biomass energy in a context of scarcity of wood resources; • Widespread poverty and low purchasing power of populations for access to electricity and modern fuels; • The predominance of hydroelectricity and biomass based renewable energies; • Strong dependence on imports (electricity and hydrocarbons - 100% of miscellaneous petroleum products needs and 79% of electricity needs are covered by imports). and limited control over the economic and energy policies of the countries of supply (Ghana, Côte d'Ivoire and Nigeria); • Virtually no upgrading of new and renewable sources of energy (solar, wind, conventional biomass energy applications, etc.);

	• Very low overall energy efficiency due to the predominance of biomass, with poor energy yields for traditional carbonisation (charcoal production through traditional wheels: 12 to 20% weight) and final consumption (yields energy use of wood and charcoal equipment between 7 and 15%). The development of private-led RE in Togo faces the following capacity and financial barriers: • Lack of specialised institutional and operational structures for the governance of rural electrification and the promotion of more efficient domestic fuels; • Lack of financial capacity to meet investment needs and high dependence on international financing; • Poor exploitation of domestic and international private sector financing potentials (including banking and microfinance institutions); • Low national financing capacity (public and private) and high dependence on public and private external financing (financial obstacle); • Enormous technological delays in renewable energy, energy efficiency and the exploitation of new and renewable sources of energy and a high dependence on the transfer of technology and know-how (technological obstacle); • Poverty of populations, especially rural populations and its impact on purchasing power (poverty and affordability of modern energy services).

C.6. Regulation, Taxation and Insurance (if applicable)

BOAD is an international public institution whose purpose is to "promote the balanced development of its Member States and foster economic integration within West Africa" by financing priority development projects. Created in 1973 by the member states of the West African Economic and Monetary Union (WAEMU), BOAD has a legal status of a development finance institution. With this status, BOAD is exempt from tax, therefore interest to the GCF will be free of any taxes including withholding. This it outlined in the text depicting the legal status of the Bank[30]:

- Section 2.2: privileges and immunities, Article 4, H) the assets and operations of the bank benefit from the tax exemptions specified in Article 44.
- Article 44 stipulates that “The Bank, its revenues, its property and other assets, as well as transactions and operations that it carries out under its present status, are exempt from all direct or indirect taxes”. Additionally, “it will not be levied on the bonds issued by the bank or the interests which come from them regardless the holder of these securities, nor tax by states or collectivities of the union”

With regards to taxes applicable to solar technologies, in the WAEMU member states, fiscal incentives have been unanimously chosen as a tool to create incentives to invest in the RE sector. These measures take the form of tax credits on investment or production, taxes on sales and Value Added Tax (VAT). In Burkina Faso, Benin, Ivory Coast, Niger, Togo and Mali, customs and import tax have been reduced or even scrapped for solar PV products, solar panels and/or solar system components.[31] Burkina Faso has reduced VAT on RE projects and has entirely suppressed it for solar energy projects. Niger has introduced a tax exemption on domestic solar systems and solar lamps.

The project operators will have to provide a letter of authorization for the construction of the project in the site, a preliminary permit from the electrification agency, the Environmental and Social Permit for category B project, the agreement between the regulatory authority and the operator, the authorization from the Minister in charge of energy, the specifications for the operation in the site, the tariff structuring and the PPA.

C.7. Institutional / Implementation Arrangements

BOAD as part of its AE role will among others carry out the following:

- BOAD will be responsible for the overall oversight of the framework implementation and will report to GCF as per the terms to be agreed under the Accreditation Master Agreement (AMA);
- BOAD will report to GCF as per the terms to be agreed under the AMA and the Funded Activity Agreement (FAA).
- BOAD will prepare environmental and social impact analysis reports in line with the bank’s environmental and social safeguards (including ensuring that the sub-project is within allowed environmental impact classification, i.e. only up to category B)

[30] Status de la Banque Ouest Africaine de Développement (B.O.A.D), 2016, pp.2, pp. 13
[31] Ibid.

- BOAD will ensure that a robust climate rationale is in place for all projects.
- BOAD will ensure that an MRV framework will be established to ensure activities of the facility and other relevant stakeholders are in compliance with all applicable policies, procedures and other requirements of the GCF to enhance transparency. An independent party will be procured by BOAD for Monitoring, Reporting and Verification (MRV); BOAD will be ultimately responsible for reporting to the GCF.

Component 1: To scale up commercial and sustainable financing for solar investments

The GCF will provide concessional debt financing of EUR 57 million to BOAD for on-lending to medium/large scale on-grid solar projects in the target countries. The GCF loan facility can be drawn down for two (2) purposes, respectively presented under sub-components 1.1 and 1.2. BOAD shall blend the proceeds of the GCF loan with its own funding to on-lend to the projects in a single blended tranche.

Sub-component 1.1: Senior loans facility

Of the total EUR 57 million GCF loan, a minimum of EUR 45 million shall be drawn down by BOAD to finance the construction of solar energy projects for on-lending to solar energy projects (sub-projects) in Francophone West Africa ("**Senior loan Facility**").

Sub-component 1.2: Standby loan facility (credit enhancement in the form of tenor extension)

Of the total EUR 57 million GCF loan, a maximum of EUR 12 million can be drawn down by BOAD to be used for credit enhancement in the form of tenor extension to solar projects financed under the programme ("**Standby Loan Facility**"). Such tenor extension instrument is intended to crowd-in participation from interested and credible local commercial banks. If less than the maximum cap has been committed for standby loans by the Accredited Entity at financial close, the remaining amount shall be drawdown for the purpose of sub-component 1.1.

It is expected that local commercial banks are unable to extend loans with tenors of more than 5-7 years. To overcome this barrier, the GCF will incentivise the participation of local commercial banks in the Programme by providing Standby Loans to the sub-project for extension of the commercial banks loan tenor (as described in Section C3. of the FP).

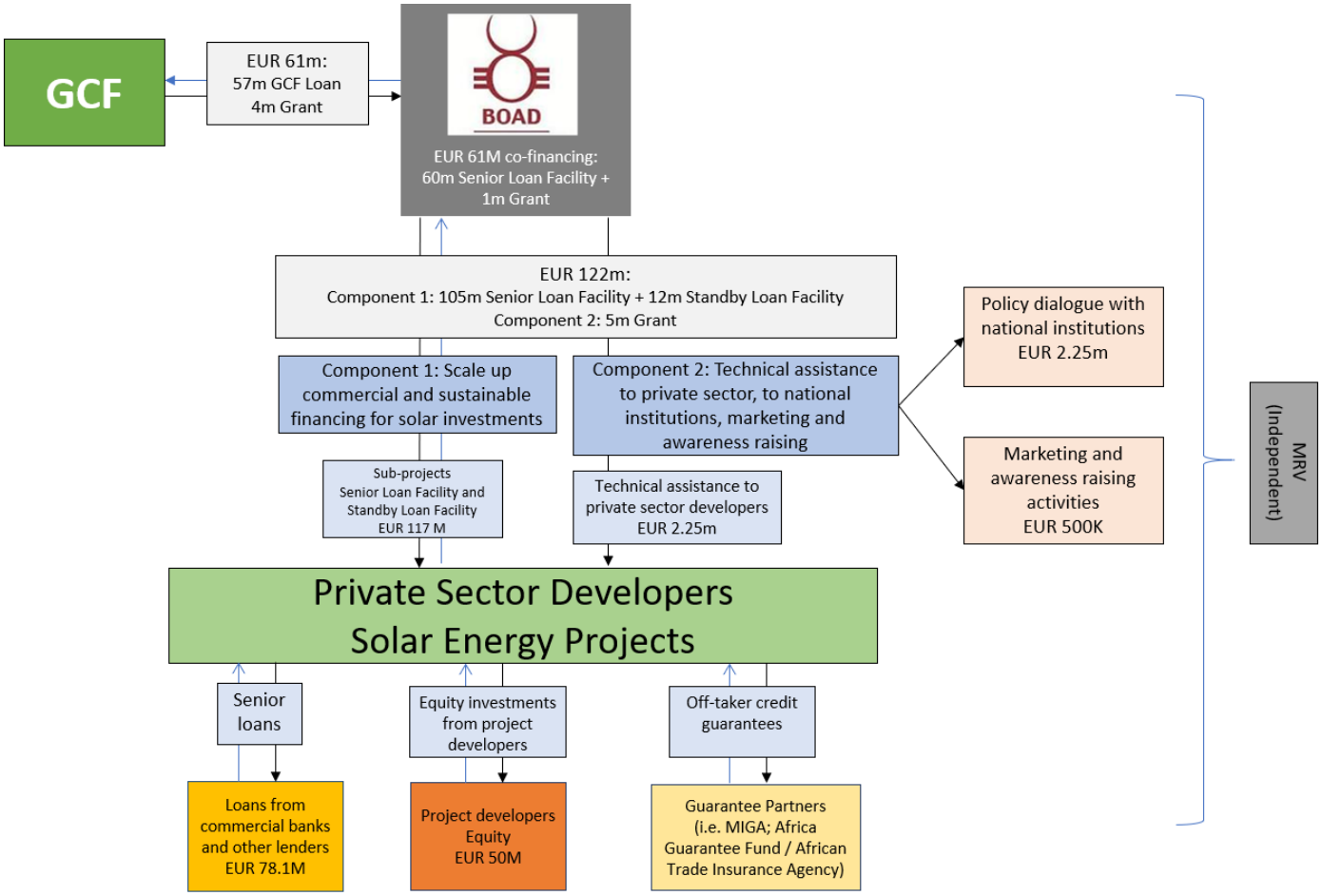
Component 2: Technical assistance (grant component)

BOAD as part of its EE role will be responsible for the implementation of the grant component. BOAD will hire qualified local and international consultants for the implementation of the technical assistance (component 2), based on its procurement policies as approved by the GCF. The consultants will work under the supervision of BOAD and will provide technical assistance:

- to local private sector actors to build their capacities during the development phase of their projects (Sub-component 2.1);
- to BOAD staff to build their capacities during the development and implementation of the project portfolio (Sub-component 2.1);
- to national institutions to support them in the implementation of regulatory and policy regimes that provides clear and predictable rules for solar project development (Sub-component 2.2).

Financial Management (Flow of Funds)

Figure 2: Flow of Funds Diagram



C.8. Timetable of Project/Programme Implementation

Please provide a project/programme implementation timetable in section I (Annexes). The table below is for illustrative purposes. If the table format below is used, please refer to the activities as numbered in Section H. In the case of outputs, please mark when all the required activities will be completed.

TASK	2019 Q2, Q3, Q4	2020 Q1, Q2, Q3, Q4	2021 Q1, Q2, Q3, Q4	2022 Q1, Q2, Q3, Q4	2023 Q1, Q2, Q3, Q4	2024 Q1, Q2, Q3, Q4	2025 Q1, Q2, Q3, Q4	2026 Q1, Q2, Q3, Q4
Component 1								
Sub-Component 1.1 Senior Loans Facility • *Origination of eligible solar projects* • *Financial appraisal and technical feasibility, due diligence* • *Approval by BOAD Executive Committee and financial close* • *Disbursement of Senior loans* • *Construction of solar power plants*	X (START Q2)	X	X	X	X	X	X	X (END Q2)
Sub-component 1.2 Standby Loans Facility • *Reach out to commercial banks to participate in originated solar projects* • *Structuring of standby loans at financial close*	X (START Q2)	X	X	X	X	X (END Q2)		
Component 2								
Sub-component 2.1: Technical assistance to BOAD and local project developers • *Recruitment of consultants to carry out the TA activities under this sub-component* • *Trainings of project developers* • *Trainings of BOAD staff*	X (START Q2)	X	X	X	X	X (END Q2)		
Sub-component 2.2: Technical assistance to national institutions • *Recruitment of consultants to carry out the TA activities under this sub-component* • *Trainings of national institutions*	X (START Q2)	X	X	X	X	X (END Q2)		

Sub-component 2.3: Marketing and awareness raising activities • *Organisation of events to raise awareness on the benefits of solar system technologies* • *Communications and outreach effort that promotes the objectives and good practices of the programme*	X (START Q2)	X	X	X	X	X (END Q2)		

The programme implementation period is 7 years including the construction of solar projects (from Q2 2019 to Q2 2026).

D.1. Value Added for GCF Involvement

The GCF involvement in the programme is critical for the following reasons:

Triggering private investment in the solar sector at scale through the appropriate risk-return profile

As explained in previous sections, the solar potential is significant in West Africa but the installed capacity remains low because of an unattractive business environment. The national governments have made substantial commitments to address climate change by investing massively in RE. The policy and regulatory frameworks are in principle supportive of the goals of increasing RE investment, however the magnitude of the barriers to doing business effectively and in a timely manner has meant that progress has been slower than expected.

In West Africa, financing for solar projects has traditionally been dominated by the Development Finance Institutions (DFIs) with little space of participation from commercial and local financial players. Technological progress and associated cost reductions have created opportunities for the private sector. However, these technology solutions are still new, currently limited in scale and operating in an unstable regulatory environment. Furthermore, solar projects usually have a long-term investment horizon of over 10 years and as such require long-term financing. Commercial banks are not able to provide long-term credit for solar projects partly because they depend largely on short-term deposits for loan transactions. This mismatch of using short-term deposits for long-term loans and the financing constraints it presents to the project developers of solar projects will persist without availability of long-term credit facility. Further, the cost of financing from local commercial banks is high. This crowds out private investment from the solar sector. Still, maintaining the status quo cannot bring a transformative change that is required for dramatically increasing access to energy in the region with stable and sustainable energy source like solar energy.

The partnership created with the support from the GCF is required to provide private sector debt financing with support and comfort to enter into financing this new asset class. The GCF's involvement in supporting the proposed Programme will directly allow BOAD to offer more attractive lending to project developers and to crowd private banks in the solar sector, therefore, mobilizing and increasing private sector leverage. Involvement of the GCF will enable a financing scheme that will offer long-term and reasonably priced loans to solar investments, which will at the same time open up the market for participation of local private financiers. The provision of adapted financial tools such as concessional loans and standby loans will give private sector actors the confidence to invest in solar technologies. Standby loan facility is proposed to enable the participation of commercial banks who are not capable of making long-term investment into solar projects. It will give confidence to commercial banks, incentivizing their participation to the projects. Without addressing the financial barriers, the market for solar investments is likely to remain limited in the West African region and private sector actors will not be willing to take the risk to invest in the target sector.

The proposed financial structure will allow BOAD to "crowd in" private sector investors and support solar interventions on a significant scale. By blending its own financing with the GCF concessional funding and the mobilized private investor funding, the risk exposure will be lower for private sector developers and the increased participation of private sector will over time lead to sustainable private sector support without GCF participation.

Project developers require training and capability building measures to prepare bankable solar related businesses

Market barriers continue to hold back solar related investment at scale, including insufficient access to finance, low internal capacity and a limited pipeline of bankable projects. Local private sector companies have insufficient experience in originating commercially viable solar related projects and lack technical knowhow to assess the financial and technical feasibility of solar investment proposals. The programme will address these technical barriers to scaling up the market for solar investments by building the capacity of project developers to structure their investments (project preparation and management). The GCF funds, through the financing of TA, will provide support to mid-size local project developers for developing and appraising projects. Trainings will include support to private sector actors to develop technical and financial feasibility studies and to prepare bankable projects (more information on the type of trainings provided can be found in section C.3).

The relevance of this type of support has been confirmed by a study from IRENA ("Unlocking Renewable Energy Investment", 2016) which highlights the lack of funds to support project preparation and development phase. The proposed TA support is therefore filling a crucial gap in the availability of funding to support early stage development projects.

No alternative source of public sector funding at scale is available

Given the large investment needs in the sector, a significant volume of investments into the solar market in West Africa is required. Currently, only the GCF is able to provide such finance within the given timeframe. BOAD's strategic objective is to increase its portfolio of investments in the solar directly to private sector actors, but so far this has been low because of the lack of alternative source of public sector funding available. The involvement of the GCF is required as it will allow a combination of concessional lending and grant for technical assistance required to achieve the objectives of the programme and the consequent paradigm shift in the target countries.

The programme will further contribute to a paradigm shift to low-emission development pathways through the mobilisation at scale of private climate finance and through the creation of a replicable model for eventual scale-up of the Programme's success into the region. Transformational impacts will be achieved through the growth in commercially viable solar investments and the scaling up of financial products and services offered to the private sector in the region.

Without GCF's contribution, it would take considerably longer for existing market barriers to be removed. In the meantime, access to finance for climate investments would remain limited to a certain number of borrowers and remain too costly for many others. GCF's contribution will unlock the considerable solar potential in LDC countries from Francophone West Africa. The total solar installed capacity in the NDC countries of West Africa will be increased twofold thanks to the GCF contribution. This will therefore help to operationalize the commitments made by these countries in the Paris Agreement.

D.2. Exit Strategy

Projects financed under the programme will benefit from long-term power purchase agreements (PPA) that guarantee income over most of the asset life and longer than the tenor of the GCF and BOAD loans. Financial viability of projects is expected to be backed by the PPA that is longer than the tenor, creating a tail of at least 5 years. Solar technology is well proven and highly durable. Overall therefore, sustainability of the projects throughout their operating lives will be assured.

At the market level, the deal flow under this programme will support mobilise private sector actors with experience at scale in the region. Furthermore, supporting the implementation of regulatory and policy regimes that provides clear and predictable rules for solar project development in the region will ensure that the programme will have a lasting transformative ("paradigm shifting") impact on the medium-large scale solar sector in the region.

For individual sub-projects, the loans (both standard loans and standby loans) will be paid back according to the repayment schedule. At the programme level, once the facility is provided, GCF does not need to be highly involved in program operations. BOAD will report on the facility disbursement to GCF periodically on the usage of the facility. The GCF will gradually exit as BOAD will be repaying the GCF loan facility. Exit risk is minimal.

In this section, the accredited entity is expected to provide a brief description of the expected performance of the proposed project/programme against each of the Fund's six investment criteria. Activity-specific sub-criteria and indicative assessment factors, which can be found in the Fund's Investment Framework, should be addressed where relevant and applicable. This section should tie into any request for concessionality made in section B.2.

E.1. Impact Potential

Potential of the project/programme to contribute to the achievement of the Fund's objectives and result areas

E.1.1. Mitigation / adaptation impact potential

Energy access are key to the development of the NDC countries from West Africa. Given that the energy mix in the target region already heavily depends on fossil-fuel based electricity, further adding fossil-fuel based emissions is not an option from a climate perspective. Low-carbon energy production can be achieved by scaling up the use of solar sources given the significant potential in the region.

The climate impact potential of the Programme will be the reduction of CO2 emissions through displacement of fossil-fueled electricity use at the user level by implementing and installing of clean and solar energy sources.

It is expected that the implementation of the programme will deliver approx. 215 MW of new generating capacity in the solar sector, generating approx. 339 GWh of clean electricity annually and thereby directly avoiding emissions of 193,398 tCO2e per year (equivalent to approx. 4.8mtCO2e over 25 years).

Based on per capita electricity consumption for the region (116 kWh/ person-year[32]), the programme will deliver clean energy services for approximately 2.9 million beneficiaries.

E.1.2. Key impact potential indicator

Provide specific numerical values for the indicators below.

GCF core indicators	*Expected tonnes of carbon dioxide equivalent (t CO_2 eq) to be reduced or avoided (Mitigation only)*	*Annual*	193,398 tCO_{2e} (once all projects will be in operation)
		Lifetime	4,834,955 tCO_{2e}
	• *Expected total number of direct and indirect beneficiaries, disaggregated by gender (reduced vulnerability or increased resilience);* • *Number of beneficiaries relative to total population, disaggregated by gender (adaptation only)*	*Total*	2.9 million
		Percentage (%)	NA
Other relevant indicators	*Examples include:* • *Expected increase in the number of households with access to low-emission energy: 700 000 households with improved access to low-emission energy sources* • *Expected increase in the number of medium and large low-emission power suppliers, and installed effective capacity: the programme expects to support at least 6 projects and to add 215MW of new solar capacity installed into the grid.*		

[32] https://www.se4all-africa.org/seforall-in-africa/country-data/mali/

BOAD developed a methodology to conservatively assess CO_2 reductions driven by the Programme. The methodology calculates the CO_2 savings based on the total estimated installed capacity of PV power plants expected to be deployed by the programme. Based on the pipeline of projects to be funded under the programme (See Table 10), the total solar capacity to be installed in the six target LDCs is 215MW.

The calculation uses the grid emission factor (EF) from the CDM methodology "Standardized baseline - Grid emission factor for West African Power Pool" (ASB0034: Grid emission factor for West African Power Pool (version 01.0) for the five countries included in the programme connected to the Power Pool: Benin, Burkina Faso, Mali, Niger and Togo. This standardized baseline provides the values for grid emission factors (i.e. the carbon dioxide (CO_2) emission factors) for the West African Power Pool (WAPP) – interconnected electricity system of nine countries: Benin, Burkina Faso, Côte d'Ivoire, Ghana, Mali, Niger, Nigeria, Senegal, and Togo. The grid emission factor used is 0.561 tCO2/MWh. More information on the assumptions used can be found on the Standardized baseline - Grid emission factor for West African Power (available at: https://cdm.unfccc.int/methodologies/standard_base/2015/sb102.html).

For Guinea-Bissau, the emission factor has been calculated using a bottom up approach to find emissions per unit of MWh produced based on certain assumptions. The grid emission factor used is 0.76 tCO2/MWh.

Table 16: Grid emission factor (EF) for West African Power Pool as defined in the CDM methodology ASB0034

Table 1. Grid emission factors for the project electricity system of the WAPP

Parameter	Unit	Description	Applicable project types	Applicable values		
				First crediting period	Second crediting period	Third crediting period
$EF_{grid,OM,y}$	tCO_2/MWh	Operating margin CO_2 emission factor for the project electricity system	All project activities	0.559		
$EF_{grid,BM,y}$	tCO_2/MWh	Build margin CO_2 emission factor for the project electricity system	All project activities	0.565		
$EF_{grid,CM,y}$	tCO_2/MWh	Combined margin CO_2 emission factor for the project electricity system	Wind and solar power generation project activities	0.561		
$EF_{grid,CM,y}$	tCO_2/MWh	Combined margin CO_2 emission factor for the project electricity system	All project activities except wind and solar power generation project activities	0.562	0.563	0.563

For the capacity factor, a conservative approach has been used for the 2 technologies (solar PV and CSP) of 18%. The operational lifetime of solar technologies is 25 years.

The annual emission avoidances of the Programme are calculated as follow:

Technolgy	Countries	Installed capacity	Capacity factor	Annual elec. Gen (MWh)	Grid EF (tCO2/MWh)	Annual emissions avoided	Lifetime (yr)	Lifetime emissions avoided
Solar	Benin, Burkina Faso, Mali, Niger, Nigeria and Togo	205	18%	323,244	0.561	181,340	25	4,533,497
Solar	Guinea-Bissau	10	18%	15,768	0.7647	12,058	25	301,458
TOTAL				**339,012**		**193,398**		**4,834,955**

E.2. Paradigm Shift Potential

Degree to which the proposed activity can catalyze impact beyond a one-off project/programme investment

E.2.1. Potential for scaling up and replication (Provide a numerical multiple and supporting rationale)

In recent years the six target countries have grown economically. Evidence shows, however, that economic growth alone does not automatically increase access to sustainable, clean and reliable energy. Availability of inexpensive clean energy solutions in urban and rural areas, is a prerequisite for inclusive development. Individual solutions are not adequate to tackle the dual issues of energy poverty. In order to achieve a paradigm shift in these economies, systemic change is necessary in the availability of, and access to, affordable RE finance and technical support. The proposed programme will initiate this systemic change and contribute to a paradigm shift towards a low-emission development pathway through the mobilisation of the private climate finance at scale for the solar market. Accelerating private sector involvement in the solar sector will enable market transformation that is required for the paradigm shift.

Medium and large solar project financing in the six LDC countries is still at an early development stage. Private sector companies have limited opportunity to invest into solar projects in the region, and the current demand for debt of businesses is not met by local financial institutions due to the market barriers listed in section C.2. Given the ambitious solar generation targets in the region as specified in the NDC and other national strategies, systematic market failure must be avoided and the GCF involvement can make a critical contribution.

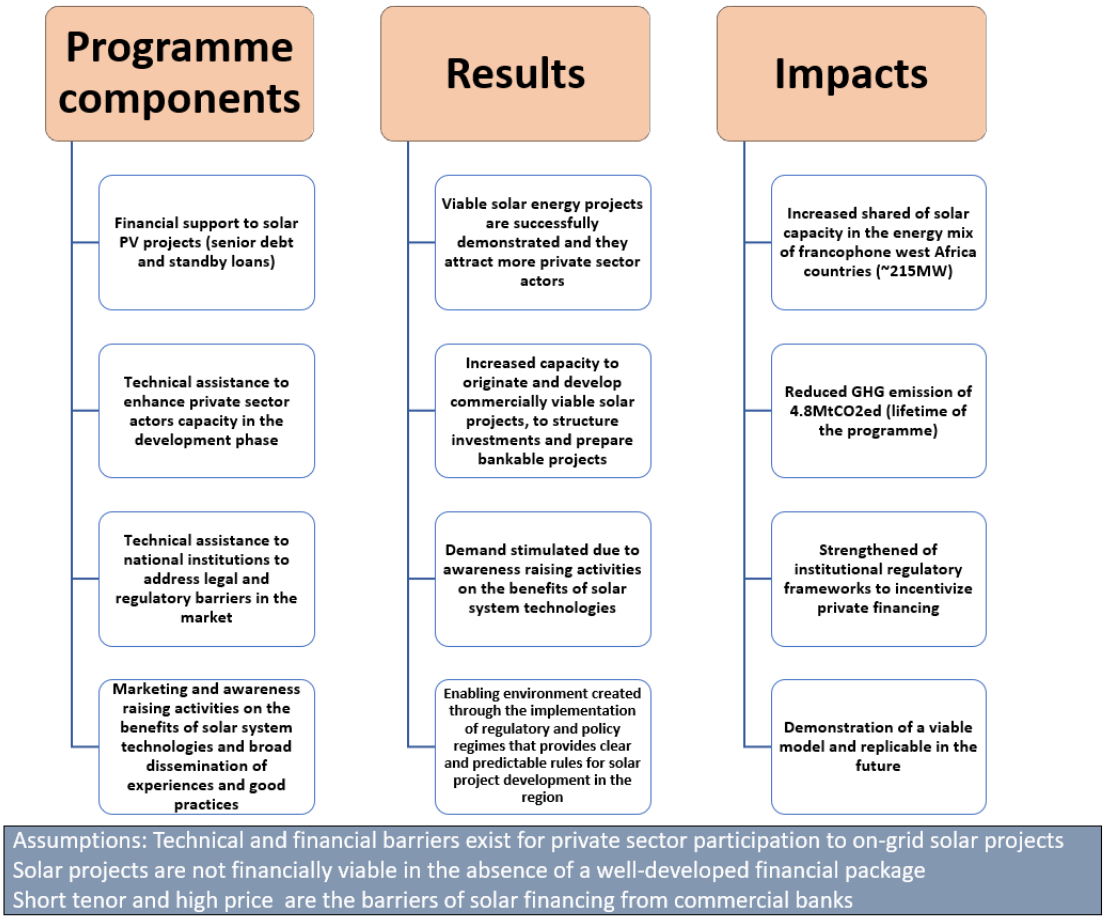
Under the programme, BOAD will address the market barriers by playing a catalytic role using a blended finance approach to provide long-term financing at affordable rates to increase the bankability of projects and attract private sector investments. The involvement of the GCF is required as it will allow a combination of senior debt, standby loans (tenor extension instrument) and TA to up to 215MW of solar projects to support their financial closures, a comprehensive and innovative financing package that can be replicated in other countries of the region.

The programme will contribute to creating a replicable model for eventual scale-up of the Programme's success into the region as it is expected to showcase a viable model for all upcoming solar projects across the continent. Following the successful track-record in lending to these projects gained through the programme, it is expected that there will be a greater demand for financing solar projects and that local financial institutions will start using their own resources for climate lending.

Furthermore, supporting the implementation of regulatory and policy regimes that provides clear and predictable rules for solar project development in the region will ensure that the programme will have a lasting transformative ("paradigm shifting") impact on the medium-large scale solar sector in the region.

Transformational impacts will be achieved through the growth in commercially viable solar investments and the scaling up of financial products and services offered to the private sector in the region. This will essentially accelerate the GHGs emission reduction thereby contribute to national low-carbon development pathways.

Figure 3: Theory of Change



E.2.2. Potential for knowledge and learning

The Programme will disseminate technical know-how and good practices and consist of a significant amount of capacity development for private sector actors and national institutions. Transfer of expertise and skills is an important objective of this programme under Component 2. In this context, the following learning and know-how transfers and benefits will be achieved: private sector companies will benefit from technical support on how to structure their business plans to make them bankable. Trainings will include support to originate commercially viable solar related projects, to develop technical and financial feasibility studies and to prepare bankable projects.

BOAD will also benefit from the technical assistance to improve its capacity to develop, manage and implement the programme portfolio. TA will include:

- Support for the development of eligible and bankable solar projects: This will include support to build BOAD pipeline of projects, to assess the eligibility sponsors' projects, to screen project financial and technical feasibility studies, to review and improve projects' business models carried by project developers, etc.
- support in the implementation of the solar projects: This will include support to track progress of projects implementation and in the monitoring of project performance indicators (e.g. MW installed capacity, teqCO2 avoided, etc.); in the management of environmental and social risks and in the implementation of the gender action plan; support for marketing and communication activities (defining a marketing plan and providing communication tools to promote the programme with the aim to stimulate the demand for solar projects)
- support for the integration of climate change considerations into BOAD project cycle: This will consist in training BOAD on how to integrate mitigation and adaptation dimensions into the project activities.

The interventions will be bolstered by marketing and awareness raising activities among private sector actors on the benefits of solar system technologies, on the positive impacts that sustainable energy production have on energy security, environmental benefits, health and livelihoods. BOAD will develop, manage, and maintain organizational brand and execute a communication and outreach effort that promotes the objectives of the programme, disseminate good practices and experiences.

E.2.3. Contribution to the creation of an enabling environment

The programme will contribute to creating an enabling environment for solar investments through targeted capacity building, awareness raising activities and connecting a diverse range of private sector stakeholders. Activities will include organizing various marketing and networking opportunities as well as consultation with local stakeholders in the solar technology supply chain (from manufacturers, suppliers and installers, to buyers, to finance providers, and to other stakeholders like the NGOs). By raising awareness among a diverse range of private sector stakeholders about the benefits of solar technologies at market levels and building the capacity of the private sector actors, the programme will stimulate demand for solar investments and directly contribute to the creation of the solar market in the target countries.

E.2.4. Contribution to regulatory framework and policies

Although the target LDCs are well endowed with renewable energy resources, their share in the countries' energy mix is almost zero when large hydro power generation is excluded. The policy environment has not helped improve the situation significantly, but there has been a growing realisation over the last few years that drastic action is required to ensure adequate generating capacity in the region, and to develop both conventional and renewable energy sources.

A stable policy and enabling regulatory framework is a prerequisite to attract and capitalize on the interest from the private sector. Investors want transparency, longevity, certainty and consistency. Such frameworks would have to be developed. The ECOWAS Renewable Energy Policy (EREP, pp.26) emphasizes that weak policy frameworks are a significant barrier to the development and proliferation of solar energy in the region. In the six target countries, the institutional, regulatory, legal, and tariff structures and frameworks are weak or insufficiently implemented. So far there are only a few incentives for private capital to invest in the RE sector in West Africa. Investments in RE projects have had a predominant share of Official Development Assistance (ODA) funding.

The six target countries of this programme are characterized with similar market and policy barriers. Constraints vary from lack of clear institutional roles between different agencies, weak planning capacity, the absence of a clear framework for PPPs and IPPs, the mismatch between tariffs in urban and rural areas (with a necessary harmonization of tariffs), and capacity to channel funds for systematic large-scale projects, lack of legal structures and systems to push the market and open up the sector, the lack of legal and binding targets which is often the hindrance for progress in the RE sector, and lack of incentive mechanisms.

To address the regulatory and legal barriers in the market, BOAD will carry out policy dialogue activities that will be informed by the activities of the proposed investments. The rationale of sub-component 2.2 is to remove the market barriers to the development of solar projects by supporting the implementation of regulatory and policy regimes that provides clear and predictable rules for solar project development in the region.

The aim of sub-component 2.2 is to prepare the way for the entry of solar private investment and to create clarity and a stable reliable environment for solar investment. TA under this sub-component will be focused on aspects of the enabling environment that have an immediate impact on stimulating solar private sector investment. Support can include the creation or revision of a simplified regulatory frameworks for Feed-in-tariffs for on-grid solar solutions, support on standard PPAs, support on IPP tenders and procurement process, on tariff structure, on a framework of financial and technical incentives and capacity building.

E.3. Sustainable Development Potential

Wider benefits and priorities

E.3.1. Environmental, social and economic co-benefits, including gender-sensitive development impact

The programme is aligned with, and will broadly contribute to achieving, a number of the Sustainable Development Goals (SDGs) in each target country including:

- Goal 1. No Poverty – end poverty, in all forms, everywhere
- Goal 5. Gender Equality – achieve gender equality and empower all women and girls
- Goal 7. Affordable and clean energy – ensure access to affordable, reliable, sustainable and modern energy for all
- Goal 8. Industry Innovation and Infrastructure - build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation;
- Goal 10: Reduced Inequalities - reduce income inequality within and among countries
- Goal 11: Sustainable Cities and Communities - make cities and human settlements inclusive, safe, resilient and sustainable
- Goal 12: Responsible Consumption and Production - ensure sustainable consumption and production patterns

- Goal 13: Climate Action - Take urgent action to combat climate change and its impacts by regulating emissions and promoting developments in renewable energy
- Goal 17: Partnerships for the Goals - Strengthen the means of implementation and revitalize the global partnership for sustainable development

The programme is expected to deliver wider environmental and socio-economic benefits on top of adding solar generation capacity to the grid and diversifying the energy mix in the target countries. Such co-benefits will contribute to achieving the SDGs as outlined below.

Economic and social co-benefits

The six target countries have abundant renewable resources that present commercial opportunities to generate clean electricity at relatively low cost. The programme will contribute to increasing the share renewables have in the respective national energy mix. This will reduce the requirement to import fossil fuel carriers and therefore reduce existing trade deficits that are caused by the import of refined oil products and secure energy supply through diversified energy sources. The increased, stable, and affordable energy access will bring about a positive impact to the sustainable growth of the region.

In addition, the programme will create new job opportunities during the construction and operations of solar power plants. Among other development impacts, this programme will contribute to the economy by creating about 500 green jobs during the construction phase ranging from highly skilled (field technicians, operators, corporate staff, etc.) to unskilled labour work (support and service), and additional ~200 jobs for operations and maintenance. This will be a starting point of building the ecosystem of technicians and skilled experts in solar technologies in the LDC countries of West Africa.

Environmental co-benefits

The programme will have the following key environmental co-benefits. The reduced reliance on fossil-fuel based generation will lead to the cleaner air quality by reducing the emission of pollutants including GHGs. Finally, the stable supply of electricity will reduce the dependency on charcoal and firewood for cooking, contributing to the reduction of deforestation and associated carbon emissions. This will have additional positive health impact to the population.

Gender co-benefits

Improved and more reliable access to electricity will have strong co-benefits for gender-sensitive development. The programme will take into account the different ways that women and men access energy, and the role that energy can play in increasing opportunities for women from the initial design of the programme and through the provision of technical support on the promotion of gender equality throughout the programme lifetime. The programme will add significant value in the target sector where gender equality is poorly addressed. By mainstreaming gender throughout the programme lifetime, the programme will be in line with the Gender Policy and the Gender Action Plan of GCF. Activities targeting women's participation and training as part of component 2 will make sure that the program is gender-sensitive and the benefits are shared among men and women. More information can be found in the Gender Assessment and Action Plan.

E.4. Needs of the Recipient

Vulnerability and financing needs of the beneficiary country and population

E.4.1. Vulnerability of country and beneficiary groups (Adaptation only)

About half of the population in the West Africa Region do not have access to electricity. All target countries are classified as Least Developed countries[33] and according to the ND-GAIN Country Index, they are all among the most vulnerable countries to climate change. The target countries face interrelated challenges of energy access, energy security and high cost of electricity. This is attributed to the high dependence on fossil fuels, the insufficient availability of public funds to invest in energy infrastructure to meet the growing electricity demand, the inability to attract private capital in power generation at scale, and the inefficiencies along the value chain. This situation hampers the social, economic, and industrial development of the region.

The target LDCs' energy mix mostly comprises diesel, heavy fuel oil and hydropower. While they are endowed with high solar irradiation especially in the Sahel region, the installed solar PV capacity in the target countries was around 70 MW at the end of 2017, representing only 5% of the total installed electricity generation capacity. Given the continuous decline in the cost of solar electricity generation, the target LDCs would benefit from investing massively in solar technologies to reduce its dependence on expensive fossil fuels for power generation, while supporting a shift towards cheaper, cleaner and reliable sources of electricity generation. With large financing needs over the sector's entire value chain, the solar sector increasingly relies on the private sector to deploy grid-connected solar power generation projects.

The proposed programme will address the needs of the beneficiary countries by improving the access to clean and reliable energy for approximately 2.9 million people. In creating favourable market environments for investment in the solar sector, the programme is expected to increase by 400% the existing total solar installed capacity which will lead to sizable GHG emissions reductions (approx. 4.8 million tCO2e over the 25-year average lifetime of the investments) and to green job creation and private sector business growth. Better access to green finance will enable private sector actors to have access to new markets related to green growth. Potential co-benefits include increased access to more sustainable energy, more affordable energy and reduced costs. The programme will also directly contribute to achievement of countries NDCs and the SDGs.

Table 17: Ranking of the beneficiary countries in terms of poverty and vulnerability to climate change

Country	LDC	ND-GAIN INDEX Ranking[34]	Score	Vulnerability		Readiness	
				Ranking	Score	Ranking	Score
Benin	Yes	155	35.5	163	0.577	147	0.288
Burkina Faso	Yes	164	34.6	166	0.582	157	0.274
Guinea-Bissau	Yes	171	32.2	176	0.625	158	0.268
Mali	Yes	166	33.6	173	0.614	149	0.286
Niger	Yes	175	30.5	181	0.680	146	0.290
Togo	Yes	143	38.2	143	0.540	137	0.303

[33] United Nations, List of Least Developed Countries (as of March 2018): https://www.un.org/development/desa/dpad/wp-content/uploads/sites/45/publication/ldc_list.pdf
[34] https://gain.nd.edu/our-work/country-index/rankings/, scores for 2016

E.4.2. Financial, economic, social and institutional needs

Economic and social development level of the country and affected population

In recent years the six target countries have grown economically. Evidence shows, however, that economic growth alone does not automatically increase access to sustainable, clean and reliable energy. Availability of inexpensive clean energy solutions in urban and rural areas, is a prerequisite for inclusive development. Individual solutions are not adequate to tackle the dual issues of energy poverty. In order to achieve a paradigm shift in these economies, systemic change is necessary in the availability of, and access to, affordable RE finance and technical support. The proposed programme will initiate this systemic change and contribute to a paradigm shift towards a low-emission development pathway through the mobilisation of the private climate finance at scale for the solar market. Accelerating private sector involvement in the solar sector will enable market transformation that is required for the paradigm shift.

Table 18: Overview of the economic and social development in the target countries

Country	Overview of the economic and social development in the target countries
Benin	In 2017 Benin had a population of 11,175,692 million, with a GDP per capita (current US$) of 829. The country performed well in terms of economic growth rates with 5,6% while the inflation stood at around 0.1%. Important economic and structural reforms financed by the IMF and World Bank have helped the country sustain this growth rate over the past decade. However, poverty remains widespread throughout the country and the economy is vulnerable, due to a lack of diversification and exogenous shocks. Politically, Benin continues to benefit from a stable and democratic regime, though terrorist acts occur in the north of the country. President Patrice Talon has pledged to tackle terrorism and to promote national unity. Over the past decade, Benin has considerably reinforced its macroeconomic stability, which resulted in a fast-increasing growth rate, though it is modest. GDP growth stood at 3,7% between 2007 and 2011, it increased to 5,4% in 2012 to then reach 5,6% in 2013. It is expected to remain steady. However, economic growth has not contributed to reduce poverty rates significantly, resulting from both the uneven distribution of resources and the rapid growth rate of the population. The share of the population living under the national poverty line has increased, from 37,5% in 2006 to 40.1% in 2015. To remedy this, the government has developed and implemented its third Stratégie de Croissance pour la Réduction de la Pauvreté (2011-2015), which aims to make Benin an emerging country by 2025. In order to achieve its objectives, the government ought to sustain economic growth on the medium-term while meeting the MDGs targets. The GoB counts on its agricultural potential as well as its central position for regional trade, but developing affordable energy is the key to achieving these targets.
Burkina Faso	In 2017 Burkina Faso had a population of 19.2 million, a GDP of USD 12.87 billion, an estimated economic growth rate of 6.7% and 40.1% of the population lived below the national poverty line in 2014. In 2016, national access to electricity was estimated at 19.2%, with an urban electricity access rate of 60.7% of total urban population and a rural electricity access rate of 0.8% of total rural population. After a period of social and political unrest, the economy was expected to bounce back strongly in 2018, driven by extractive industries and public investment. The Africa Development Bank (2017) concluded that the country needs to underpin this revival by improving its ability to absorb investment costs. Furthermore, economic reforms under the 2011-20 plan for the industry, commerce and small producers sector have created more entrepreneurs, but new industrial sector firms are in extractive industries rather than agro-food. Significant physical, technical and socioeconomic constraints have been limiting the performance of the agricultural sector.
Guinea Bissau	Guinea Bissau is one of the most fragile countries in Sub-Saharan Africa, with a population of around 1.8 million (2017). It has a long history of political and institutional instability and is highly coup-prone, which results in significant difficulties creating a favourable environment for investment and economic development. The country's economy continues to grow despite the political turmoil, with a real GDP growth rate above 5.9% in 2017. However, because of the high political and institutional instability the economic outlook remains uncertain and reducing poverty rates as well as promoting sustainable development will be challenging without political incentives.
Niger	In 2017 Niger had a population of 21.47 million, a GDP of USD 8.1 billion and an estimated economic growth rate of 4.9%. As of 2014, 44.5% of the total population lived under the national poverty line. In

	2016, national access to electricity was estimated at only 16.2%, with an urban electricity access rate of 65.4% of total urban population and a rural electricity access rate of 4.7% of total rural population. The government of Niger has long recognized that lack of energy access seriously handicaps development, and efforts to remedy this problem need to be scaled up. Indeed, in many of these successful cases elsewhere, energy intervention in the social and economic sectors namely health, water, agriculture and education were made as part of a comprehensive development strategy.
Mali	In 2017 Mali had a population of 18.5 million, a GDP of USD 15.28 billion, and an estimated economic growth rate of 5.3%. In 2016, national access to electricity was estimated at 35.1%, with an urban electricity access rate of 83.6% and a rural electricity access rate of 1.8%. The economy of Mali is based to a large extent upon agriculture, with a mostly rural population engaged in subsistence agriculture. A security crisis prior to 2015 slowed economic growth however, medium-term macroeconomic prospects are good, with overall growth forecast as 5.0% in 2017, driven partly by more public investment and foreign aid and by the agricultural and service sectors. There are considerable constraints holding back economic development in Mali, particularly factors facing the private sector. Mali's financial system is under-developed and does not allow the financing and thus the emergence and development of dynamic employment-generating private sector. Steps have been made towards creating these enabling environments in 2008 where a Financial Sector Development Strategy was developed. One aim of the FSDS was to broadening access to financial institutions and products, in particular in rural areas. The Poverty Reduction and Growth Strategic Framework (GPRSP) cover all relevant country development policies and strategies 2012-2017. The GPRSP will be updated in the coming years. Economy-wide constraints help explain the slow progress in financial deepening and financial sector outreach. These include weaknesses in the legal framework and judicial system that result in a slowdown in loan recovery, shortcomings in the financial reporting of private sector actors, and lack of collateral for bank loans due to problems with land tenure and land registry. Also, poor physical access and infrastructure, including a limited electricity supply, poor road conditions, and distance from central bank offices, which deter rural branch expansion, along with difficulty in finding skilled human resources, increase the costs of extending credit or offering financial services. Owing to these unfavorable conditions, Mali's economy remains under-diversified and the country is still over-dependent on cotton and agriculture in general as well as extractive/mining industry. It is therefore very exposed to exogenous factors such as the price of raw materials, the euro and dollar exchange rate, the price of oil and climate change.
Togo	In 2017 Togo had a population of 7.7 million, a GDP of USD 4.8 billion, and an estimated economic growth rate of 5.6%. In 2015, 55.1% of population lived below the national poverty line. In 2016, national access to electricity was estimated at 46.9%, with an urban electricity access rate of 87.4% and rural electricity access rate of 19.4%. By 2030, Togo will have about 9.5 million inhabitants, 5.9 million of whom live in urban areas, compared with 3.5 million people living in rural areas. This demographic growth and above all the change in the distribution of the population between rural and urban areas will have a very strong impact on the volume of energy needs and on the structuring of energy consumption in 2030. The rate of access to electricity in Togo is in progression (from 17% in 2000 to 46.9% in 2016) but with huge disparities between urban areas. Renewable energies (solar, wind, etc.) are present in the electricity generation capacity of the country. The productive economy is dominated by agriculture and in 2015, still 90.1% of the total population lived under $5.50 a day, making it one of the world's poorest countries. Togo's Strategy for Boosting Growth and Promoting Employment (SCAPE—Stratégie de Croissance Accélérée et de Promotion de l'Emploi) offers a medium-term development framework for implementing the Government's General Policy Statement, the Millennium Development Goals (MDGs), and the Government's vision for making Togo an emerging economy in 15 to 20 years. The Togolese financial system plays a minor role in mobilizing resources for the economy, particularly private sector actors, with total financial system assets amounting to about 30 percent of GDP. The cost of energy and communications since the 1990s, as well as market weakness and limited access to funding, are serious obstacles to the growth of towns and cities and to the country's structural transformation and poverty reduction. The Government intends to establish an Autonomous National Investment Fund (FINA—Fonds d'Investissement National Autonome) for financing private sector actors, particularly where young people are involved. Other measures taken to assist the private sector and allow it to act as an engine of growth pertain to gradually establishing banking and financial guarantee mechanisms in support of private sector actors in their search for financing at preferential rates, and capacity-building for microfinance institutions.

Absence of alternative sources of financing

The six target countries are characterized by low market share of RE technologies (excluding large hydro). Despite the substantial economic, social and environmental co-benefits of RE investment, these have not been prioritized by private sector actors due to a number of barriers described in section C.2, in particular the limited local debt funding with the required tenors and interest rates.

Given the large investment needs in the sector, a significant volume of investments into the solar market in West Africa is required. BOAD's strategic objective is to increase its portfolio of investments in the solar directly to private sector actors, but so far this has been low because of the lack of alternative source of public sector funding available. Currently, only the GCF is able to provide such finance within the given timeframe. Without GCF's contribution, it would take considerably longer for existing market barriers to be removed. In the meantime, access to finance for climate investments would remain limited to a certain number of borrowers and remain too costly for many others. GCF's contribution will unlock the considerable solar potential in LDC countries from Francophone West Africa by providing a combination of concessional lending and grant for technical assistance. The total solar installed capacity in the NDC countries from West Africa will be increased twofold thanks to the GCF contribution.

Need for strengthening institutions and implementation capacity.

In the renewable energy sector, the institutional, regulatory, legal, and tariff structures and frameworks are weak or insufficiently implemented. So far there are only a few incentives for private capital to invest in the RE sector in West Africa. Investments in RE projects have had a predominant share of ODA funding. The policy environment has not helped improve the situation significantly, but there has been a growing realisation over the last few years that drastic action is required to ensure adequate generating capacity in the region, and to develop renewable energy sources to make them an important share of the region's energy and electricity mix.

The six target countries of this programme are characterized with similar market and policy barriers. To address the regulatory and legal barriers in the market, BOAD will carry out policy dialogue activities that will be informed by the activities of the proposed investments. The rationale of component 2.2 is to remove the market barriers to the development of solar projects by supporting the implementation of regulatory and policy regimes that provides clear and predictable rules for solar project development in the region. The aim of component 2.2 is to prepare the way for the entry of solar private investment and to create clarity and a stable reliable environment in for solar investment. TA under this sub-component will be focused on aspects of the enabling environment that have an immediate impact on stimulating solar private sector investment. Support can include the creation or revision of a simplified regulatory frameworks for Feed-in-tariffs for on-grid solar solutions, support on standard PPAs, support on IPP tenders and procurement process, on tariff structure, on a framework of financial and technical incentives and capacity building.

E.5. Country Ownership

Beneficiary country (ies) ownership of, and capacity to implement, a funded project or programme

E.5.1. Existence of a national climate strategy and coherence with existing plans and policies, including NAMAs, NAPAs and NAPs

Alignment with country's national climate strategy

Each country in the target region has adopted national climate strategies which highlight the crucial role of RE deployment in mitigating climate change. The national strategies also recognize the private sector's important role in deploying RE investments to support the NDCs, and its potential to contribute to the paradigm shift to a low-carbon, climate resilient economy.

As indicated in the table below, each country has the promotion of RE sources high on their political agenda. The proposed programme aims to provide EUR 117 million of senior debt and standby loans (tenor extension instrument) to selected solar projects in LDCs from West Africa region which are expected to result in the reduction or avoidance of approximately 4.8 million tCO_{2e} during the lifetime of the programme. The proposed programme therefore is in line

with national climate policies and action plans of the target countries and it will help fill the current investment shortfall to achieve West Africa's NDCs.

Table 19: Common priorities as stated in the national climate strategies of the target countries

Country	National targets	Basis for Execution
Benin	Mitigation (all targeted sectors in BAU scenario): The measures envisaged in the sectors of Energy and Agriculture are likely to contribute to reduce the cumulative GHG emissions (without LULUCF) by approximately 49.49 Mt CO2 eq in the BAU scenario, that is a reduction of 16.17 % over the period 2021-2030, including 12.55% of conditional contribution and 3.62% of unconditional contribution. Measures relating to the energy sector: Developing electric power generation using natural gas and RE: - Construction of thermal biofuel power plants (500 MW by 2030) - Construction in Port of Cotonou of a Liquified Natural Gas regasifying floating terminal - Operating with natural gas the installed thermal generation capacity - Construction of hydroelectric power plants of Adjarala (147MW) and Dogo (128MW) - Establishing solar PV farms for 95MW - Structuring a biomass fuel investment for 15MW Increasing households' access to electric lighting in place of kerosene lighting: - Electrification of localities by connecting them to the network (600 localities between 2021 and 2030) - Promoting the access of 424,000 kerosene-lighting using households to electric lighting in the localities which will be connected to the grid - Pursuing actions for EE in all sectors Promoting low wood-energy consuming technologies Promoting partial substitution of firewood-energy consumption with butane gas Addressing current shortcomings as regards energy databases Emissions reduction for the energy sector: The implementation of these measures will contribute to reduce the cumulative GHG emissions in this sector in the BAU scenario by 23,35 Mt CO2 eq over 2021 to 2030 period, that is 11,51 % including 9,53% of conditional contribution and 1,98 % of unconditional contribution. The avoided cumulative emissions are distributed as follows:(i) power generation 7,80 % including 7,06 % of conditional contribution;(ii) promotion of electric lighting in households 3,62 % including 2,42 % of conditional contribution;(iii) saving in wood-energy by promoting cleaner cookstoves 0.084% including 0.056 % of conditional contribution;(iv) partial substitution of charcoal with butane gas 0,001%.	INDCs CCNUCC (Convention-Cadre des Nations Unies sur les Changements Climatiques) FNEC (National Fund for the Environment and Climate) MECGCCRPRNF (Ministère de l'Environnement Chargé de la Gestion des Changements Climatiques du Reboisement et de la Protection des Ressources Naturelles et Forestières) CNCC (Comité National sur les Changements Climatiques) CMEICB (Commission de Modélisation Économique des Impacts du Climat et de l'Intégration des Changements Climatiques dans le Budget Général de l'État
Burkina Faso	Mitigation: Basis year 2014 Reduction of emissions at the 2030 horizon: - 21,574.63 GgCO2 eq. - 18.2% reduction - Investment cost: 1,840,953,571 US$	INDC (2015) National Climate Change Learning Strategy (SNACC) (2017) Programme National de Développement Economique et social (PNDES) (2016)

	In line with SE4ALL objectives, Burkina Faso aims to achieve: • Universal access to modern energy services. • Double the rate of improvement of energy efficiency. • Double the share of renewable energy in the world energy mix. Burkina Faso in its INDC analyses scenarios for reductions according to contributions. In an Unconditional scenario for 2030 aims to reduce 6.6% of emissions. In a Conditional Scenario, the goal is 11.6%. In 2007, the agricultural sector contributed 88% of the national GHG emissions. In the conditional scenario, Burkina Faso expects to reduce GHG emissions in electricity production by 5% in 2020, 4% in 2025 and 4% in 2030.	
Guinea-Bissau	Guinea-Bissau is an absolute sink of GHG, given the high potential for sequestration of its forest sector. Main mitigation measure to be adopted is related to reforestation. The second sector that contributes more to GHG emissions is the energy sector. In this sector an increase in electric power capacity of at least 90MW by 2020 using petroleum products (diesel and HFO) is planned. Guinea Bissau's key aspects/key mitigation measures to meet its energy Intended Nationally Determined Contributions (INDCs) Conduct studies on the energy potential and set the energy development incorporating the largest possible potential of RE in the energy mix Attain 80 per cent renewable energy in the national energy mix by 2030; Improve energy efficiency by reducing energy losses up to 10 per cent in the 2030-time span; Reach 80 per cent of universal access to electricity by 2030 Investment required: at least 200 million USD by 2020 and 500 million USD between 2020 and 2030	INDCs National Poverty Reduction Strategy (PRSP II) National Strategic Plan – TERRA RANKA 2015-2025 National Action Plan for Climate Change Adaptation (NAPA, 2006)
Mali	Significant RE potential, but GHG emissions in progression: 83.63% between 2000 and 2012, accounted for by the residential use of wood (82.20%). Between 2007 and 2014, GHG emissions from production and consumption of energy progressed from 3,434 kTeq CO2 to 5,268 kTeq CO2, or 6.44% annually. Mitigation measures: • Reduction of GHG of 29% for agriculture, 31% for energy, and 21% for forestry and land use. Overall, the level of reduction expected for 2030 is of 27%. • Installation of at least 100 MW renewable energy sources, with a goal of having 10% of renewables in the energy matrix for 2020. For the energy sector: - Large-scale valorisation of RE for an amount of 258 million USD - Manantali II project between 2016 and 2021 will cost 150 million USD	INDC (2016) NAPA (2007), National Policy for Climate Change (2011), Strategic Framework for a Resilient and Green Mali. Mali has set in place several sectoral policies including, National Policy for the Protection of the Environment, Energy National Policy, Water National Policy. Global Summit for Climate in New York (2014)

	- Villages' electrification project using RE will cost 7.2 million USD between 2015 and 2020 - Kénié hydroelectric power plant implemented between 2015 and 2020 will cost 165 million USD GHG emissions reductions: 4,750 kTeq CO2 by 2020, 6,336 kTeq CO2 by 2030, or 31.6% by 2030.	
Niger	Reduction goals: • Unconditional reduction of 2.5% (BAU 2020) and 3.5% (2030) of GHG. • Conditional reduction 25% (BAU 2020), and 34.6% (2030) of GHG. Energy: 2000 base year: Energy sector accounts for 8.5% of GHG emissions Mitigation potential of the sector: 700 GgCO2e or 0.7% of national emissions. Note: a reduction in this emission is noted in the electricity for all scenario beginning in 2025, explained by the growth of production from gas and by the entry of nuclear power production into the system. • Electricity: Improvement of the rate of access to electricity (overall, exceed 10% in 2010, 60% in 2030, of which 47% to 100% is in the urban zone and 0.4% to 30% in 2030 is in the rural zone. • Cooking energy: reduction in the demand for wood energy per inhabitant by the mass spread of improved cook stoves, with a rate of penetration of 100% in urban areas and 30% in rural areas; promotion as domestic gas of biogas and biofuels at both the industrial and family level. Spread of multifunctional platforms. Renewable energy: • Unconditional mitigation options: rural electrification, replacement of wood energy, management of the sector concerned with the demand for and transformation and dissemination of renewable energies, promoting solar PV for pumping and electrification • Exceed a capacity of 4 MW in 2010, 250 MW in 2030, 130 MW of which comes from the Kandadji hydroelectric plant and 20°MW comes from wind energy (currently 0.035 MW). • Double the rate of energy mix to reach 30% energy mix in the primary and final energy balance.	INDC (2015) Strategic Framework for Sustainable Land Management (SF-SLM) Economic and Social Development Plan (2016-2020) Sustainable Development and Inclusive Growth Strategy Niger 2035 (SDDCI) National Policy on Climate Change (PNCC) National Strategy and Plan of Action for Climate Change and Variability (SNPA-CVC).
Togo	With a 2010 baseline, the Unconditional reduction target for 2030 is 11.14%, and the conditional target is of 31.14%. Funding needs: US$ 3.54 billion (Adaptation = 1.54; Mitigation = 1.10; Tech transfers = 0.5; Capacity building = 0.4) Targets: The conditional target for additional GHG emissions reduction, according to the most ambitious scenario, is estimated at 20% compared to the dynamic BAU. The conditional target for the total reduction would therefore be 31.14% in 2030, compared to the projections if no measures were to be applied. GHG mitigation measures and options: In the energy sector:	INDC (2015) Togo Vision 2030 Strategy for accelerated growth and employment promotion (SCAPE) 2013-2017 National Environmental Action Plan (NEAP) National Sustainable Development Strategy (NSDS) National Strategy for Reducing the Risk of Catastrophes in Togo National Programme for Reducing GHG from Deforestation and forest Degradation

	- Solar electricity: emphasis will be placed on the introduction of solar equipment in households and on capacity-building for the various actors concerned. Thanks to measures already in progress, Togo will unconditionally reduce its emissions by 11.14% compared to the baseline scenario in 2030.	

Benin

In order to meet its targets and achieve a climate-resilient economy, Benin has introduced a Commission Nationale du Développement Durable (CNDD). The country has pledged to combine climate-resilient, sustainable development and poverty reduction via the implementation of mitigation and adaptation measures. As 68% of Benin's GHG emissions are accounted by the agriculture sector and the sequestration capacity keeps on decreasing, mitigation measures aim at reducing cumulated GHG emissions by 21,4% based on the BAU scenario by 2030 (conditional contribution). The unconditional contribution involves reducing GHG emissions by 3,5% by 2030 based on the BAU scenario. Another measure envisions to increase the sequestration potential by 5,7% based on a similar scenario, through the reduction of the deforestation rate by 41,7%. This would enable Benin to reduce GHG emissions by 110 Mt E-CO2 over the 2021-2030 period.

Benin has developed a set of mitigation measures relating to the energy sector. Among others, Benin has pledged to increase the share of renewable energies in the country's energy mix, using natural gas, biofuel, hydropower and solar power; and to increase the national electricity access rate by connecting 600 localities to the grid. These measures demonstrate the country's commitment to invest in clean energy to contribute to the reduction of GHG emissions and follow a low-carbon development pathway.

Burkina Faso

Burkina Faso's National Assembly on the Environment and Sustainable Development, held in November 2011, strongly recommended the development of a National Sustainable Development Policy (NSDP) accompanied by a law. Prepared in 2013, the NSDP was an effective framework for the Strategy for Accelerated Growth and Sustainable Development (SAGSD). This economic framework document, together with "Outlook Burkina 2025" and policy framework instruments, contributes to placing the concept of sustainability at the heart of public action and the activities of other non-state actors (technological and financial partners, civil society organisations, non-governmental organisations and the private sector) (Government of Burkina Faso, 2015).

On the mitigation side, three scenarios have been considered for evaluating the emissions trends and the possible reductions on the basis of a reference situation and the potential for financing:

- A "trend" scenario (Business as Usual - BAU), which corresponds to continuation of the past under the assumption that economic development continues without interruption.
- An "unconditional" scenario, taking into account all the public policies adopted after 2007, technological developments and recent studies, with financing that has been acquired or is being acquired.
- A "conditional" scenario that takes into account all the mitigation projects that have been developed and/or are being developed, but without any acquired financing.
- On the mitigation side, the measures foreseen in the country's INDC are to double the share of renewable energies in the energy mix, and to provide universal access to electricity by 2030, in line with SE4ALL objectives.

Guinee-Bissau

Guinea-Bissau has integrated mitigation and adaptation measures as integral parts of its National Agricultural Investment Plan – Programme 4.7 – Adaptation of agriculture to climate change. A wide array of policies was developed and adopted, among which a NREAP (National Plan for Renewable Energy - 2014) and the Sustainable Financing Strategy of Adaptation to Climate Change in the short, medium and long-term (2013). The country also aims at mainstreaming climate change into strategies and policies in order to achieve the MDGs (Millennium

Development Goals). Guinea-Bissau is an absolute sink of GHG, because of the high sequestration potential of its forests, according to the GHG Inventory (2006) and the CARBOVEG-GB (2010). The successful implementation of the following measures will largely depend on IFIs and development partners' capacities to sufficiently fund them.

As deforestation accounts for the majority of GHG emissions, the main mitigation measure to be adapted is related to reforestation. This contribution includes: i) Establish and schedule a new forestry policy to enhance a socio-economic balance that meets the needs of communities, ii) conduct studies on the energy potential of the country and set energy development to make the economy increasingly resilient to climate change and iii) develop and establish a legal framework through a national strategy for long-term, low-carbon development.

Mitigation measures with regards to the energy sector are aligned with SE4ALL objectives and Guinea-Bissau's NREAP. These are to attain an 80% share of renewable energies in the national energy mix, to improve energy efficiency by reducing energy losses by 10%, and to reach universal access to electricity by 2030.

Mali

In terms of mitigation of climate change, Mali has developed an unconditional scenario (where Mali is the only country financing climate projects). The forestry sector plays a major role due to the level of sequestration. The GHG reduction ambition levels are 29% for agriculture, 31% for energy and 21% for forests, taking into account the baseline of 2015. The overall cost for mitigation goals is $34.68 billion (Republique du Mali, 2015). While the focus of mitigation measures is primarily on the agriculture and forestry sectors, Mali has developed a set of measures with regards to the energy sector. These measures place an important emphasis on the diversification of the country's energy generation mix and the increase of the share of renewable energies.

Niger

Since Niger is a non-Annex I Party to the UNFCCC, it has no quantitative obligations with respect to emission reductions. However, Niger is contributing to the reduction of worldwide climate change impacts through a double results approach. In 2000, emissions represented 2.8 tons per inhabitant and 0.07% of the worldwide emissions of CO2. Niger`s ambition is to limit its emissions to 2.1% in 2030.

The objectives of Niger`s INDC are to assure food security, combat poverty and contribute to the reduction of world greenhouse gas emissions. For Niger's INDC, the adaptation options considered top priority are those that will permit the higher co-benefits with respect to climate change mitigation, particularly good adaptation practices and techniques which, at the level of the country's six regions, will permit carbon sequestration and a reduction of GHG emissions at the same time. These adaptation options have already been clearly defined in the existing strategic frameworks, such as the Economic and Social Development Plan (PDES 2012-2015 and 2016-2020), which flows from the Sustainable Development and Inclusive Growth Strategy - Niger 2035 (SDDCI), the 3N Initiative (Nigerans Feed Nigerans), the National Policy on Climate Change (PNCC), the Strategic Framework for Sustainable Land Management (SF-SLM), and the National Strategy and Plan of Action for Climate Change and Variability.

The National Communications indicate that the AFOLU (agriculture/animal husbandry and land use) and energy sectors represent on average 89% and 9% respectively of Niger's total GHG emissions. Given the potential of the country's resources, the national concerns are focussed on issues related to adaptation, particularly in the AFOLU sector, and on issues related to mitigation, principally in the AFOLU sector and the energy sector (transportation and residential and industrial energy). The strategy is based on the vision of climatically intelligent agriculture and on access to modern energy services for everyone in 2030. However, while the AFOLU and energy sectors are the priority action areas of the INDC on climate change in Niger, the implementation of the INDC actually represents cross-sectoral support for all sectors of the economy (Government of Niger, 2015).

Regarding mitigation measures for the energy sector, Niger has emphasised the need to use renewable energies applied to the agricultural sector, for pumping and rural electrification. In addition, Niger has a target to double the overall share of renewable energy in the energy mix to reach 30% in the primary and final energy balance.

Togo

The national strategic orientations underlying sectoral programmes and policies can be found in the document Togo Vision 2030, currently under production, and in the Strategy for Accelerated Growth and Employment Promotion (SCAPE) 2013-2017. Togo's SCAPE defines a development framework for the medium term in order to fulfil its General Policy Declaration (DPG). It is based on the Millennium Development Goals (MDGs) covering the 2006-2015 period. It aims to transform Togo into an emerging country within the next 15 to 20 years.

For several years, Togo has been engaged in a proactive strategy for sustainable development and against global warming. Its efforts focus mainly on bad production practices in the economic sectors; lack of population control; and the high poverty rate. The poverty rate is exacerbated by the negative impacts of climate change, further reinforcing the vulnerability of the production sectors and the pressure on natural resources. This political will can be seen, amongst others, in the National Environmental Action Plan (NEAP), the National Environmental Management Programme (NEMP), the National Sustainable Development Strategy (December 2011), the National Environmental Management Capacity-building Strategy (October 2008), the National Programme for Reducing Greenhouse Gas Emissions from Deforestation and Forest Degradation (REDD+) 2010-2050, the National Strategy for Reducing the Risk of Catastrophes in Togo (December 2009), the National Medium Term Priority Framework (NMTPF) for Togo (2010-2015), and the National Action Plan for Marine and Coastal Environmental Resources Management. Further, Togo's membership of the Climate & Clean Air Coalition (CCAC) means it could raise funds to finance its short-term GHG and climate pollutant mitigation actions (Republic of Togo, 2015).

E.5.2. Capacity of accredited entities and executing entities to deliver

Please describe experience and track record of the accredited entity and executing entities with respect to the activities that they are expected to undertake in the proposed project/programme.

This programme is in line with BOAD's priority to intensify its activities in favour of the private sector by providing adequate support to private sector development in the LDCs of West Africa region. The sections below highlight the experience and track record of BOAD - as the accredited entity – with respect to financing private sector actors.

In order to maximise the programme impact, technical assistance to BOAD staff will be provided to improve its capacity to develop, manage and implement the programme portfolio and to integrate climate change dimensions into project activities. Further details on the type of trainings provided are described in section C.3.

BOAD ability to promoting and financing private sector actors

BOAD uses the financial resources that it mobilizes to invest in public and private sector projects and programmes aimed at building basic and modern infrastructure, improving rural livelihoods, generating energy, and climate change adaptation and mitigation.

BOAD's contribution to promoting and financing private sector actors has materialized into promoting financing vehicles and funding through commercial banks and financial institutions as well as direct loans to projects and financing of studies. To provide for the needs of private sector actors that are customarily facing difficulty in mobilizing adequate equity and guarantees to make their projects bankable, BOAD has, in conjunction with several partners like Agence Française de Dévelopment (AFD), German Development Agency (DEG), European Investment Bank (EIB) and African Development Bank (AfDB), contributed to setting up specific vehicles including GARI Fund (providing guarantee for private investments in West Africa) and CAURIS Investissement, a venture capital company.

BOAD continuously adjusts, intensifies and diversifies its action towards the promotion and financing of private productive investments. BOAD has a number of strategies for the promotion and financing of the private sector. Since 2013, BOAD has organized capacity building activities and outreaches with IFI such as the World Bank, AfDB and the UNFCCC secretariat to bring more awareness to the West African NFIs and commercial bankers in the financing of energy transition projects. In June 2017 BOAD launched the creation of the West African network for climate finance.

BOAD is also promoting the use of green bonds and green credit line mobilization throughout the region. Out of FCFA 4,202.1 billion of total net commitments as at 30 September 2016, BOAD devoted to the private sector about 24.3%, representing FCFA1,022.4 billion for 319 projects.

BOAD's private sector financing operations and the promotion of financial inclusion are carried out through the "Private Sector" window. The Private Sector Window prioritizes the fight against poverty and support for inclusive growth in the member states. The portfolio of the Bank's shareholding capital of companies and financial institutions includes 82 transactions. BOAD has set a number of initiatives as explained below:

- **The Regional Initiative for Sustainable Energy (IRED):** In order to better overcome recurrent energy crises in many of the WAEMU member countries, the Conference of Heads of State and Government decided in January 2008 to set up a committee tasked with proposing a strategy called "Regional Initiative for Sustainable Energy (IRED)". The initiative aims to provide, by 2030, 100% access to electricity in the WAEMU region at lower cost and as part of a large integrated and harmonized power pool market in West Africa. This regional market will be based on a dynamic public-private partnership. It also targets an increase by 82% of renewable and sustainable energies in the WAEMU's power generation base. The financial and institutional mechanism for the implementation of the initiative includes a concessional Energy Development Fund (FDE), and an investment fund operating as a private infrastructure development facility.

- **The Energy Development Fund (FDE):** Established on 25 September 2009, the Fund aims to contribute to improved access to energy in the WAEMU member countries and promote the development of sustainable energy under concessional conditions in order to finance projects eligible for IRED initiative. It is managed by BOAD. The Fund started its operations in the first quarter of 2010. As of the July 2018, 18 projects and 1 programme (PRODERE) have been financed in the form of loans involving a total amount of EUR 341.5 million (more details in section C.4).

- **The Infrastructure Development Fund:** It is dedicated to private investments. It is a profit-making fund meant for financing access to electricity in the WAEMU region according to market terms and conditions. In addition, it aims to support the restructuring of electricity companies, the emergency programme and the medium and long-term projects. It will be a lever for public-private partnerships in the energy sector in the WAEMU region. The due diligence towards its implementation is underway at the level of BOAD. The Bank participated in the implementation of major projects including:
  - Mali-Côte d'Ivoire electric power interconnection of by Energie du Mali (EDM);
  - Electrification of the townships of Bakel, Selibaly and Goureye in Senegal by Société de Gestion de l'Energie de Manantali (SOGEM);
  - Expansion of CIPREL SA's power plant capacities in Côte d'Ivoire (CIPREL IV A);
  - Expansion in combined cycle of the generation capacities of AZITO power plant by SOCIETE AZITO ENERGIE SA in Côte d'Ivoire.

E.5.3. Engagement with NDAs, civil society organizations and other relevant stakeholders

Consultations are on-going with many stakeholders in the region and particularly in the six targeted countries. On-going consultations continue to take place with the NDAs of the six countries, as well as potential project developers.

Stakeholder consultations have been conducted so far with a number of organizations. BOAD plans to organize stakeholder workshops in the target countries to introduce the programme to local project developers as well as local commercial financial institutions. BOADs regional presence will ensure a strong on-the-ground presence with networks that enable the programme to develop solutions adapted to local contexts and needs.

Table 20: BOAD engagement with key stakeholders

Main actors	BOAD engagements with each actor

Private sector	BOAD has reached out and engaged with several local project developers in the 6 target LDCs as well as local financial institutions who have expressed strong interest in participating in the programme. The African Guarantee Fund (AGF) and the ECOWAS Bank for Investment and Development (EBID) have confirmed their interest in participating in the programme. The Letters of Interests of AGF and EBID have been included in the annexes of the FP. Furthermore, Orabank has indicated its interest in co-financing solar projects through the proposed Facility.
NDAs	BOAD has already engaged with the NDAs of the six target countries. The NDAs have communicated that they are willing to support the programme. All letters of non-objection of the six target countries have been obtained.
National authorities	BOAD works very closely with governments and authorities to uphold the principle of country ownership via direct partnerships; via country representatives on BOAD's Board of Directors (all member countries are represented), and via the provision of country and sector strategies that are developed with the relevant country's involvement and in consultation with key stakeholders.
West African Economic and Monetary Union (WAEMU), Economic Community of West African States (ECOWAS) and ECREEE	BOAD works closely with WAEMU and ECOWAS on a number of regional initiatives. BOAD has consulted with ECOWAS and ECREEE who have both provided key inputs to the design of the programme.
Members of West Africa Network for Climate Finance (WANCF)	BOAD has been an active participant in climate finance dialogue with key stakeholders in the region since the bank inception. The WANCF was established in June 2017 as a leader in climate finance initiatives in the region and to ensure stakeholders have a platform to provide inputs to initiatives such as the proposed programme and to help identify climate finance opportunities. BOAD began consultations with WANCF in June 2017 and consultations are ongoing.

E.6. Efficiency and Effectiveness

Economic and, if appropriate, financial soundness of the project/programme

E.6.1. Cost-effectiveness and efficiency

As described in section B there is a strong need to mobilise long term debt capital to private sector to scale up cost-competitive solar technologies. Public sector funding through development institutions will not suffice to serve the capital needed to reach a transformative scale towards low-emission pathways. As already explained, the main financial barriers that continue to hold back solar private sector capital are the high-risk perception of private sector investors and the maturity and liquidity risk of local commercial banks which are unable to extend loans with tenors of no more than 5-7 years.

The programme has been designed to overcome these barriers by incentivising the participation of private sector actors and commercial banks:

- private sector actor mobilisation will be achieved through the provision of concessional loans to BOAD (component 1.1). The optimal level of concessionality will be targeted in order to avoid providing excess subsidy to the private sector or crowding out private sector investors. It is expected that the concessionality received from the GCF will enable BOAD to offer a final blended cost of capital which will be below commercial rates. GCF's contribution will allow to trigger access to private investment by providing an adequate risk-return and stable revenues to project developers. The concessional funds from the GCF will also allow for bringing the electricity tariff to attractive level that are competitive with electricity produced from fossil fuels energy.

- Private banks crowd in will be achieved through the standby loan facility (component 1.2). One of the objectives of the programme is to crowd-in the private sector investment from commercial banks into the solar sector by providing a tenor extension instrument that can remove the barrier for commercial banks' participation. The length of tenor is a key limitation encountered by project developers seeking local financing. The local commercial banks are unable to extend loans with tenors of no more than 5-7 years due to the short-term maturity profile of their deposit and the absence of deep capital markets to source long-term financing. To overcome this barrier, the GCF will incentivise the participation of local commercial banks in the Programme using a liquidity guarantee for extension of the commercial banks loan tenor.

The efficiency of the programme is measured based on two indicators:

- **The amount of private sector leveraged**: The GCF's support is critical to secure private sector investors. Projects developers are expected to contribute their own capital to the projects financed by BOAD. Local private and public banks will also contribute to the total project cost in the form of loans. The programme is expected to leverage EUR 128.1m of private investment.

- **The amount of GHG emissions being mitigated in absolute numbers**: BOAD will track the amount of tCO2e emissions being mitigated by the solar investments financed. Considering an expected lifetime of emission reductions of 25 years (most likely the impacts will continue beyond that period) the abatement cost of the programme for the GCF is of EUR 12 per tCO2e. The projects supported are expected to contribute to savings of approx. 4.8m tCO2 over their life.

E.6.2. Co-financing, leveraging and mobilized long-term investments (mitigation only)

The programme will be designed to maximize total investment, using limited public funds to leverage greater private investment. The GCF contributions will account for 50% of the total financing of EUR 122m required to deliver the Programme. BOAD will provide co-financing of EUR 61m from its own resources. The co-financing ratio is therefore 1:1

BOAD Co-financing (m EUR)	GCF (m EUR)	Co-financing ratio
61	61	1:1

In addition, this funding is expected to leverage a substantial amount of financing from project developers and private sector banks. The leverage ratio is calculated based on funding brought by the equity investments from project developers (EUR 50m) and the debt finance from local banks (EUR 78.1m).

GCF (m EUR)	BOAD (m EUR)	Equity (m EUR)	Local banks (m EUR)	Total Leverage ratio
61	61	50	78.1	1:3

E.6.3. Financial viability

BOAD depends on the participation of the GCF without which the programme would not come into realisation. The financial return without and with GCF contribution is as follow:

- Without GCF: IRR of 11% with an NPV of EUR -5.4m. At this return levels, the private sector would not be willing to invest in this sector.
- With GCF: IRR of 18% with an NPV of EUR 14.3m. This level of return is expected to secure private investment at scale.

BOAD is the borrower of GCF funds. The GCF will gradually exit as BOAD will be repaying the GCF loan facility. At maturity (within 20 years), GCF principal commitments will be fully repaid. Exit risk is minimal.

E.6.4. Application of best practices

Equipment and technology will be selected from the best options available on the market. During the appraisal process of the projects to be funded under the programme, BOAD will support the application of best available technologies by requiring projects to demonstrate that they use solar technologies that are 1) effective in addressing climate-related goals, 2) market-tested, technically performing and commercially viable; and 3) contribute to market transformation in terms of demonstrating the viability and commercial application of new technologies.

BOAD will ensure that all solar systems will be sized appropriately for anticipated loads, localized irradiation, and annual seasonality. Best practices in terms of system design, installation, and maintenance will be ensured through rigorous quality testing and trainings for employees.

Under component 2.1, TA can support project developers in selecting the technology fitting the needs identified, to ensure the viability of the technology and the soundness of the investment, and in identifying the most adapted certifications. If needed, the TA can be asked to assess the quality of equipment available in the market to help project developers to select a robust technology and avoid underperformance of the equipment. TA may also help project developers in designing a monitoring system which will be used to assess the equipment's performance and to identify any potential technical dysfunctions that may put impacts (carbon savings) and efficiency (€/tCO2eq) at risk. Project developers are also encouraged to engage maintenance contracts and may be advised by TA along this procedure. Maintenance contracts guarantee the effective reparation of the equipment and therefore are a complementary tool to ensure the overall investment effectiveness. TA team will secure continuous follow-up of the selection of technologies and equipment to avoid underperforming technologies.

E.6.5. Key efficiency and effectiveness indicators

GCF core indicators

Estimated cost per t CO_2 eq, defined as total investment cost / expected lifetime emission reductions (mitigation only)

(a) Total project financing	EUR 122 000 000
(b) Requested GCF amount	EUR 57 000 000
(c) Expected lifetime emission reductions overtime	4 834 955 tCO_2eq
(d) Estimated cost per tCO_2eq (d = a / c)	EUR 25 / **tCO_2eq**
(e) Estimated GCF cost per tCO_2eq removed (e = b / c)	EUR 12/ **tCO_2eq**

Describe the detailed methodology used for calculating the indicators (d) and (e) above.

Please describe how the indicator values compare to the appropriate benchmarks established in a comparable context.

Technolgy	Countries	Installed capacity	Capacity factor	Annual elec. Gen (MWh)	Grid EF (tCO2/MWh)	Annual emissions avoided	Lifetime (yr)	Lifetime emissions avoided
Solar	Benin, Burkina Faso, Mali, Niger, Nigeria and Togo	205	18%	323,244	0.561	181,340	25	4,533,497
Solar	Guinea-Bissau	10	18%	15,768	0.7647	12,058	25	301,458
TOTAL				**339,012**		**193,398**		**4,834,955**

Description of the assumptions

- BOAD is seeking EUR 61 m of concessional loan financing from the GCF and will raise a further EUR 61 m from its own resources, hence the total commitment is EUR 122m. In addition, this funding is expected to leverage a substantial amount of financing from project developers and private/public sector banks, namely EUR 128.1m.
- Using a figure of EUR 1,140,000 (IRENA, Solar PV in Africa: Costs and Markets, 2016) – equivalent to USD 1,300,000 CAPEX per MW using an exchange rate of 1 EUR= 1,149 USD, the total capex is EUR 245.1m given the total solar capacity to be installed of 215MW (See Table 10 Pipeline of projects to funded under the programme).
- For the capacity factor, a conservative approach has been used for the two technologies (solar PV and CSP) of 18%.
- The operational lifetime of solar technologies is 25 years.
- The grid emission factor used for Benin, Burkina Faso, Mali, Niger and Togo is 0.561 tCO2/MWh. This emission factor has been calculated using the CDM "Tool to calculate the emission factor for an electricity system (version 05.0)". It applies for Benin, Burkina Faso, Côte d'Ivoire, Ghana, Mali, Niger, Nigeria, Senegal, Togo. More information on the assumptions used can be found on the Standardized baseline - Grid emission factor for West African Power (available at: https://cdm.unfccc.int/methodologies/standard_base/2015/sb102.html).
- For Guinea-Bissau, the emission factor has been calculated using a bottom up approach to find emissions per unit of MWh produced based on certain assumptions. The grid emission factor used is 0.76 tCO2/MWh.

The climate impact potential of the Programme will be the reduction of CO2 emissions through displacement of fossil-fueled electricity use at the user level by implementing and installing of clean and solar energy sources. The programme's cost of mitigation (cost per t CO2eq) is described in table below:

Table 21: Programme's cost of mitigation

10 Year Estimated GHG Reduction, tCO2e	**1 933 982**
15 Year Estimated GHG Reduction, tCO2e	2 900 973
25 Year Estimated GHG Reduction, tCO2e	4 834 955
Total Project cost, EUR	122 000 000
GCF investment, EUR	57 000 000
25 Year average GCF cost per tonne, USD/tCO2e	12
25 Year average project cost per tonne, USD/tCO2e	25

	Expected volume of finance to be leveraged by the proposed project/programme and as a result of the Fund's financing, disaggregated by public and private sources (mitigation only)
	Describe the detailed methodology used for calculating the indicators above. *Please describe how the indicator values compare to the appropriate benchmarks established in a comparable context.* The programme will be designed to maximize total investment, using limited public funds to leverage greater private investment. The GCF contributions will account for 50% of the total financing of EUR 122m required to deliver the Programme. BOAD will provide co-financing of EUR 61m from its own resources. This total commitment is expected to leverage a substantial amount of financing from project developers and private sector banks.
Other relevant indicators (e.g. estimated cost per co-benefit generated as a result of the project/programme)	

** The information can be drawn from the project/programme appraisal document.*

F.1. Economic and Financial Analysis

An economic and financial model was produced to analyze the impact of the GCF's funding in terms of financial return to private sector actors.

Table 22: Assumptions of the financial model

Wholesale electricity tariff (EUR/MWh)	**€**	**87.72**
Inflation rate on electricity tariff		1%
Annual O&M as % of capital costs		1%
Construction and drawdown period (years)		2
Installed cost per MW (EUR)		1,140,000
Total installed capacity (MW)		215
Capacity factor		18%
Annual power generation (MWh)		339 012
Average corporate income tax rate		25%

Justification for concessionality:

Concessional and grant funding from the GCF will bring a range of benefits to private sector actors. Concessionality will consist of reduced pricing compared to BOAD pricing and market finance. The provision of such reduced pricing is a key element attracting private sector actors. The concessional funds from the GCF will allow:

- reducing the blended cost from borrowing from BOAD and from commercial banks
- increasing the tenor and the grace period of lending from BOAD and from commercial banks
- enhance the bankability of solar projects at electricity tariff that are competitive with electricity produced from fossil fuels energy.

With the GCF funding included, the financial model presents a convincing financial case for the programme. Without GCF, the electricity tariff will need to increase to achieve bankability. The blended financing structure will assist the projects in achieving financial viability with a lower average electricity tariff and at an acceptable NPV and IRR level attractive to the private sector.

All these factors will make solar projects financially attractive as indicated in table below.

Table 23: Summary of the key performance indicators

KPI	Without GCF	With GCF
20-year Internal Rate of Return - leveraged (%)	11%	18%
Discount rate (%)	12%	12%
Net Present Value (EUR)	-€ 5,400,000	€ 14,300,000
Payback period (Years)	15	7
Minimum Debt Service Coverage Ratio	0.86	1.26

Overall, through this programme, GCF and BOAD financing will demonstrate and scale up commercially viable solar projects in the region while catalysing a paradigm shift within the electricity sector in the LDCs of West Africa.

F.2. Technical Evaluation

Under this programme, eligible projects should target solar grid connected power generation projects with a capacity of approximately 10 MW to 70 MW. Eligible technologies will include: solar photovoltaic (PV) and Concentrated Solar Power (CSP).

Technologies to convert solar energy into electricity generally fall into one of two categories: photovoltaic (PV) modules that convert light directly into electricity and concentrating solar thermal power (CSP) systems that extract heat energy transferred by solar radiation. Although solar power can be generated at any scale, PV technology is modular and can be scale for anything from household use to a large network of PV farms. Due to the scarcity of transmission and distribution infrastructure in the region, ECREEE originally estimated that CSP is currently technically feasible only within a certain geographic band through the Sahel, though it has helped implement a solar thermal energy project in Ghana last year. Solar thermal technologies, unlike solar PV, can operate through the day, making it attractive for large-scale energy production. Heat can be stored during the daytime and excess daytime heat can potentially be stored and converted to electricity when required. Such thermal plants would improve storage capacities to optimise the economics and the dispatch-ability of solar electricity.

Solar PV

The solar PV sector is so dynamic that today's cost of generation may become tomorrow's benchmark. Prices have dramatically reduced over the last decade, combined with the availability of economic financing and policy pushes. IRENA estimates that by 2030, total installed costs could fall between 50% and 60%. Battery lifetimes and performance will also keep improving. Total installed costs for solar PV technology show regional cost differences because of different market maturity levels, differences in local labour, manufacturing costs and different support policy structures. Between 2010 and 2017, the global capacity weighted average total installed cost of newly-commissioned utility-scale PV projects decreased by 68%, with a 10% decrease in 2017 from 2016. Projects in newer or undeveloped markets are being developed at costs that are increasingly at par, and sometimes even cheaper than the averages in most cost mature markets.

The global weighted average capacity factor of utility-scale PV systems increased by 28% between 2010 and 2017, from an average of 13.7% to 17.6%. This has been driven by three major factors, the trend towards greater deployment in regions with higher irradiation levels, the increased use of tracking and improvements in the performance of systems as losses have been reduced.

Concentrating Solar Thermal Power (CSP)

Total installed costs for CSP plants that include thermal energy storage tend to be higher than those without, but storage also allows for higher capacity factors. For example, for parabolic trough systems (the technology with the highest share of installed projects so far), total installed plant costs can range between USD 2 550 and USD 11 265/kW for systems with no storage. Adding four to six hours of storage, however, can see this range increase to between USD 6 050 and USD 13 150/kW.

Capacity factors have increased over time as a shift towards newer technologies, with larger thermal storage capacities has coincided with a trend towards the growth of markets in higher irradiation locations. Similarly, higher levels of irradiance were likely the main factor behind lower levelized costs. During 2016 the capacity weighted average LCOE of CSP plants was estimated to be USD 0.27/kWh (a fifth lower than in 2009) although IRENA data suggests that the LCOE, although about 18% during 2017 to USD 0.22/kWh.

F.3. Environmental, Social Assessment, including Gender Considerations

In order to ensure a better consideration of environmental and social issues in the funded-operations, BOAD adopted in 2003, a document of policies and procedures for environmental and social management intervention in the financing of projects, an environmental and social procedures manual and a manual of environmental classification of projects. This allowed BOAD to participate effectively alongside its borrowers to the protection of populations, their ecosystems and their living environment.

Such policies and procedures adopted in 2003 by BOAD recommend revising periodically the content of the documents based upon international evolution. Also, in order to comply with current international standards for environmental and social management, BOAD undertook an update of its safeguards, like institutions such as the World Bank, the African Development Bank, etc. with which BOAD cooperates closely in its operations.

BOAD requires that projects that are submitted for funding are subject to environmental and social impact assessment (ESIA), which helps to ensure that the projects are environmentally sound and socially viable to facilitate decision making.

In addition to the regulation of the countries of intervention, BOAD will refer to the rules, good practices and guidelines produced by international organizations such as: (i) United Nations Conventions on Environment and Development; (Ii) United Nations Convention on the Elimination of All Forms of Discrimination against Women; (Iii) United Nations Universal Declaration on Human Rights; (Iv) International conventions of ILO on human rights and labor law; (V) Safeguard policies, guidelines and other relevant documents of the World Bank on environmental and social issues; (Vi) the safeguard policies of the IFC on environmental and social issues; (Vii) Good international sectoral practice, published by major trade associations on environmental and social issues; etc.

Under this programme, environmental and social best practices will be applied by requiring all projects funded to follow BOAD environmental and social safeguard policies, standards and guidelines which follow best international practices such as the International Finance Corporation (IFC) environmental and social performance standards.

Risks will be mitigated through technical assistance provided to project developers to undertake technical feasibility studies, Environmental Impact Assessments (EIA) and environmental and social action plan (ESAP). These measures will identify potential environmental and social impacts and provide detailed mitigation measures. The project-level ESAP will be an integral part of the required agreement with the project developers. BOAD will only finance the projects classified under the category B or below and apply its highest standards in the screening and managing of E&S related issues.

All subprojects funded will come under BOAD’s ESS policy and the agreed cooperation framework between GCF and BOAD. Individual subprojects will require site specific assessments consistent with the approach of BOAD and the GCF including E&S and Gender due diligence and the agreed disclosure requirements (where applicable), and will develop project specific Environmental and Social Management Plans (ESMP). Only category C (I3) or B (I2) projects will be funded under this facility, consistent with the GCF accreditation of BOAD.

All projects to be financed by the Programme fit in Category B or C according to both GCF and BOAD categorization of projects. A project is classified as Category B if it may negatively impact environmental areas or human populations, while not being irreversible. For Category B projects, project developers will be required to develop all relevant environmental and social management frameworks needed to prevent, minimize, mitigate, or compensate for adverse impacts and to improve environmental performance. These environmental and social management frameworks can include, but are not limited to: Land Acquisition and/or Resettlement Action Plan (LARAP or RAP), Indigenous Peoples Plan (IPP) and Indigenous Peoples Planning Framework (IPPF). A project is classified as Category C if the probability of its negative impacts on the environment and human populations is considered minimal. For Category C projects, no environmental and social management framework will be required once the environmental and social screening has been conducted and approved. Guidance and indicative templates for the development of relevant environmental and social management frameworks can be found in the Programme's ESMF.

Gender assessment

The energy markets are essential to the economies of the participating countries and women can in particular benefit from opportunities connected to the development of renewable energy sources. Women in the participating countries currently work primarily in services and agriculture, and to a much more limited extent in the power sector.

The Gender plan for the financing facility will ensure that all consultations with stakeholders will be designed in a gender responsive way and women will be equally consulted and participate in all discussions related to the subprojects. This approach will be incremental and would set a proper benchmark for other projects to follow.

The programme will be accompanied by a Gender Action Plan template for subprojects.

The ESMF for the program has been developed and submitted. All sub-projects will be assessed according to the relevant BOAD policies, and an environmental and social action plan (ESAP) will be developed during the implementation of each sub-project.

F.4. Financial Management and Procurement

Financial resources from the GCF will be managed according to the general provisions of the AMA between the GCF and BOAD.

BOAD as part of its AE role will among others carry out the following:

- BOAD will be responsible for the overall oversight of the framework implementation and will report to GCF as per the terms to be agreed under the Accreditation Master Agreement (AMA);
- BOAD will report to GCF as per the terms to be agreed under the AMA and the Funded Activity Agreement (FAA).
- BOAD will prepare environmental and social impact analysis reports in line with the bank's environmental and social safeguards (including ensuring that the sub-project is within allowed environmental impact classification, i.e. only up to category B)
- BOAD will ensure that a robust climate rationale is in place for all projects.
- BOAD will ensure that an MRV framework will be established to ensure activities of the facility and other relevant stakeholders are in compliance with all applicable policies, procedures and other requirements of the GCF to enhance transparency. An independent party will be procured by BOAD for Monitoring, Reporting and Verification (MRV); BOAD will be ultimately responsible for reporting to the GCF.

BOAD as part of its EE role will be responsible for the implementation of the grant component. Procurement under the facility will be managed according to BOAD's procurement policies as detailed in BOAD's AMA. BOAD will hire qualified local and international consultants for the implementation of the technical assistance (component 2), based on its procurement policies as approved by the GCF. The consultants will work under the supervision of BOAD and will provide technical assistance

- to local private sector actors to build their capacities during the development phase of their projects (Sub-component 2.1);
- to BOAD staff to build their capacities during the development and implementation of the project portfolio (Sub-component 2.1);
- to national institutions to support them in the implementation of regulatory and policy regimes that provides clear and predictable rules for solar project development (Sub-component 2.2).

GCF and BOAD will sign a grant agreement for the implementation of these activities under Sub-components 2.1 and 2.2. The details in terms of financial management and flow of funds has been elaborated section in C.7.

G.1. Risk Assessment Summary

It is considered that the programme might face risks in several different categories: macroeconomic, implementation, financial, environmental and social risks. The levels of these risks are considered moderate to low and expected to be mitigated by BOAD's operational tools and control mechanisms. BOAD will regularly evaluate the overall potential risks related to the implementation of the project and will provide recommendations for procedures to mitigate and address the risks.

G.2. Risk Factors and Mitigation Measures

Please describe financial, technical and operational, social and environmental and other risks that might prevent the project/programme objectives from being achieved. Also describe the proposed risk mitigation measures.

Selected Risk Factor 1

Description	Risk category	Level of impact	Probability of risk occurring
Macroeconomic, regulatory and political risks can lead to a slowdown of the economy in the region and financial sector, increase regulatory / off-taker risks, and reduced investments.	Other	Medium (5.1-20% of project value)	Medium

Mitigation Measure(s)

BOAD operations are covered at certain point against political risks given its political mandate as a regional development Bank and its close coordination with host Governments.
BOAD will closely monitor the upcoming events on the markets and the potential impacts on the financial performance of the project developers who will have an obligation to regularly report on financial performance.
BOAD will maintain a close relationship with host governments through policy dialogue activities that aim to identify policy and regulatory bottlenecks and create enabling environments.

Selected Risk Factor 2

Description	Risk category	Level of impact	Probability of risk occurring
Credit and Currency risk	Financial	Low (<5% of project value)	Low

Mitigation Measure(s)

Credit risk: The GCF will bear the credit risk of BOAD which is an investment grade financial institution rated by Moody's (Baa1) and Fitch (BBB). This reflects the solid financial position of BOAD which has one of the highest financial institution credit ratings in the region.

Foreign exchange fluctuations: The GCF's financing will be in EUR and repayments from BOAD to the GCF will also be EUR. The Franc CFA (XOF) is the common currency of the West African Economic and Monetary Union and is pegged to the EUR; therefore, currency risk is mitigated both for the GCF and the solar projects to be financed.

Selected Risk Factor 3			
Description	Risk category	Level of impact	Probability of risk occurring
Implementation risk: Construction and operation risks	Technical and operational	Medium (5.1-20% of project value)	Medium
Mitigation Measure(s)			
Project construction risk (completion and cost overrun) will be mitigated by a thorough due diligence process led by the BOAD technical and financial experts, and by ensuring robust Engineering, Procurement and Construction contracts. Project operation risk will be mitigated by a thorough due diligence process led by the BOAD technical and financial experts and by ensuring robust O&M contracts. Resource risk (e.g. insufficient irradiation for solar PV projects) will be mitigated by ensuring high-standard technological studies in place.			
Selected Risk Factor 4			
Description	Risk category	Level of impact	Probability of risk occurring
Environmental and social Risks	Social and environmental	Medium (5.1-20% of project value)	Medium
Mitigation Measure(s)			
Environmental and social best practices will be applied by requiring all projects funded by the programme to follow BOAD environmental and social safeguard policies, standards and guidelines which are in line with GCF's ESS and gender standards. Risks will be mitigated through technical assistance provided to project developers to undertake technical feasibility studies, Environmental and Social Impact Assessments (ESIA) and environmental and social action plan (ESAP). These measures will identify potential environmental and social impacts and provide detailed mitigation measures. The project-level ESAP will be an integral part of the required agreement with the project developers. BOAD will only finance the projects classified under the category B or below, and apply its highest standards in the screening and managing of E&S related issues.			
Selected Risk Factor 5			
Description	Risk category	Level of impact	Probability of risk occurring
Technological Risk: Investments are exposed to various levels of technological risk including but not limited to: equipment failure; supply chain failure such as delays or collapse of supply chain for technology or associated equipment; lack of qualified service technicians.	Technical and operational	Low (<5% of project value)	Low
Mitigation Measure(s)			
The risk will be mitigated by the project pre-selecting a list of eligible technologies.			
Other Potential Risks in the Horizon			

Please describe other potential issues which will be monitored as "emerging risks" during the life of the projects (i.e., issues that have not yet raised to the level of "risk factor" but which will need monitoring). This could include issues related to external stakeholders such as project beneficiaries or the pool of potential contractors.

** Please expand this sub-section when needed to address all potential material and relevant risks.*

H.1. Logic Framework.

Please specify the logic framework in accordance with the GCF's Performance Measurement Framework under the Results Management Framework.

H.1.1. Paradigm Shift Objectives and Impacts at the Fund level[35]

Paradigm shift objectives	
Shift to low-emission sustainable development pathways	Under the programme, BOAD will address the market barriers by playing a catalytic role using a blended finance approach to provide long-term debt at affordable rates to increase the bankability of projects and attract private sector investments. The programme will contribute to a paradigm shift to low-emission development pathways through the mobilisation at scale of private climate finance. Transformational impacts will be achieved through the growth in commercially viable solar investments and the scaling up of financial products and services offered to the private sector in the region. This will essentially accelerate the GHGs emission reduction thereby contribute to national low-carbon development pathways. The programme will contribute to creating a replicable model for eventual scale-up of the Programme's success into the region as it is expected to showcase a viable model for all upcoming solar projects across the continent. Following the successful track-record in lending to these projects gained through the programme, it is expected that there will be a greater demand for financing solar projects and that local financial institutions will start using their own resources for climate lending. Furthermore, the programme will support the implementation of regulatory and policy regimes that provides clear and predictable rules for solar project development in the region. This will ensure that the programme will have a lasting transformative ("paradigm shifting") impact on the medium-large scale solar sector in the region.

Expected Result	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term (if applicable)	Final	
Fund-level impacts						
	Tonnes of carbon dioxide equivalent (t CO2eq) reduced as a result of Fund-funded projects/ programmes	Program report (midterm and final) Regular reporting from BOAD to GCF as	0		4.8 million $tCO2_{eq}$	Successful completion of the plant construction Full disbursement of the approved financing

[35] Information on the Fund's expected results and indicators can be found in its Performance Measurement Frameworks available at the following link (Please note that some indicators are under refinement): http://www.greenclimate.fund/documents/20182/239759/5.3_-_Performance_Measurement_Frameworks__PMF_.pdf/60941cef-7c87-475f-809e-4ebf1acbb3f4

	Financing leveraged through the programme	agreed in the AMA	0		Total funding EUR 128.1M	
	Cost per tCo2eq decreased for achieved projects		0		EUR 12 tCO_2eq	
M1.0 Reduced emissions through increased low-emission energy access and power generation	*Tonnes of carbon dioxide equivalent (t CO2eq) reduced as a result of Fund-funded projects/ programmes –gender-sensitive energy access power generation (sub-indicator)*	Program report (midterm and final)	0		4.8 million $tCO2_{eq}$	Information to be further disaggregated provided by project, country and type of technology in relation to the programme performance.

H.1.2. Outcomes, Outputs, Activities and Inputs at Project/Programme level

Expected Result	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term (if applicable)	Final	
Project/programme outcomes	**Outcomes that contribute to Fund-level impacts**					
M6.0 Increased number of small, medium and large low-emission power suppliers	*6.1 Proportion of low-emission power supply in a jurisdiction or market*	Program report (midterm and final) Regular reporting from BOAD to GCF as agreed in the AMA	Solar energy is 5% of the regional energy mix (2017)		19% solar in the regional energy mix of target countries	The regulatory environment and financial profile for the solar project development is improving. Information to be further disaggregated provided by project, country and type of technology in relation to the programme performance.
	6.2 Number of households, and individuals (males and females) with improved access to low-emission energy sources		0		At least 2.9m people indirectly benefit (700 000 household)	
	6.3 MWs of low emission energy capacity installed		0		215 MW solar projects	
M5.0 Strengthened institutional and	*5.1 Institutional and regulatory systems that*	Reports from the TA recipients;	Scarce private investme		One regulatory system that	Close relationship with host

regulatory systems	*improve incentives for low emission planning and development and their effective implementation*	regular reporting from BOAD to GCF as agreed in the AMA	nt in the solar sector due to lack of enabling environm ent		incentivises solar investment designed in each target country	governments through BOAD policy dialogue activities
Project/programme outputs	**Outputs that contribute to outcomes**					
Component 1: To scale up commercial and sustainable loan financing for solar projects (senior debt and standby loans component)						
1.1 Solar projects financed and operational	Number of solar projects supported	Project monitoring and completion reports	0 (2019)	3 (2022 Q4)	6 (2026 Q2)	Commercial banks interests and capabilities for the solar financing
Component 2: To develop technical capacity and raise awareness of private sector actors - Technical assistance (Grant Component)						
2.1 Capacity built to BOAD and local project developers for investment preparation	Within the local private sector companies, number of people trained, including number of women trained on project preparation phase Within BOAD, number of people trained, including number of women, to manage and implement the project portfolio	Project monitoring and completion reports	0		300, including 75 women 50, including 10 women	No major external (economic, social, technological, etc.) issues that will have an adverse impact for solar on-grid interventions
2.2 Capacity built to national institutions to address legal and regulatory barriers in the solar market	Number of people trained provided to national institutions to improve incentives for solar development projects and their effective implementation		0		300 including 25% women.	Relevant institutions ready for the activities
2.3 Awareness raised on the benefits of solar system technologies	Number of events organised to raise awareness on the benefits of solar system technologies disseminate experiences and good		0		8	

	practices with solar technologies					
Activities	**Description**		**Inputs**		**Description**	
Component 1: To scale up commercial and sustainable financing for solar investments - Direct lending (loan component)						
1.1 Senior Loan Facility	Senior debt for medium to large scale solar projects		GCF senior debt financing and BOAD co-financing		Solar energy projects financed by the BOAD.	
1.2 Standby Loans Facility	Senior debt and standby loans (tenor extension instrument) for medium to large scale solar projects		GCF standby loans to BOAD, to be on-lent to solar projects Commercial banks: senior debt		Tenor extension credit enhancement to solar projects financed by the BOAD.	
Component 2: Technical assistance (grant component)						
2.1 Building technical capacities to BOAD staff and local project developers	Technical assistance will be provided to enhance project developers capacity in following sectors: Technical and financial feasibility studies Financial & commercial framework and risk mitigation strategy. Environmental Impact Assessments (EIA) and environmental and social action plan (ESAP).		Trainings to BOAD and local project developers		Technical assistance consultant will be contracted by BOAD based on procurement process. Procurement under the programme will be managed according to BOAD's procurement policies as detailed in BOAD's accreditation.	
2.2 Building the capacity of national institutions to address legal and regulatory barriers in the solar market	TA under this sub-component will be focused on aspects of the enabling environment that have an immediate impact on stimulating solar private sector investment. Support can include the creation or revision of a simplified regulatory frameworks for Feed-in-tariffs for on-grid solar solutions, support on standard PPAs, support on IPP tenders and procurement process, on tariff structure, on a framework of financial and technical incentives and capacity building.		Trainings to national institutions			
2.3 Marketing and Awareness Raising	In order to create demand, the activities will support awareness raising activities on the benefits of solar system technologies, and broad dissemination of experiences and good practices.		Conduct awareness campaigns and promotional activities to potential project developers, commercial banks,			

	Activities will include among other communications and outreach effort that promotes the objectives and good practices of the programme and the benefits of solar system technologies.	DFI's and other relevant stakeholders (e.g. donors, foundations, corporations, the media and public officials and agencies)	

H.2. Arrangements for Monitoring, Reporting and Evaluation

Besides the arrangements (e.g. semi-annual performance reports) laid out in AMA, please provide project/programme specific institutional setting and implementation arrangements for monitoring and reporting and evaluation. Please indicate how the interim/mid-term and final evaluations will be organized, including the timing.

Please provide methodologies for monitoring and reporting of the key outcomes of the project/programme.

Third-party monitoring, reporting, verification and evaluation of implementation of loans

An MRV framework will be established to ensure activities of the facility and other relevant stakeholders are in compliance with all applicable policies, procedures and other requirements of the GCF to enhance transparency. An independent party will be procured by BOAD for Monitoring, Reporting and Verification (MRV); BOAD will be ultimately responsible for reporting to the GCF.

BOAD is committed to the highest possible standards of monitoring, reporting and evaluation. BOAD's Monitoring and Evaluation policy was refined in 2013 in order to meet international standards. As a part of its monitoring and evaluation strategy, BOAD undertakes systematic monitoring, reporting and evaluation at all sates of the review cycle. It draws on a variety of tools - including logical framework, monitoring and evaluation matrix - to monitor and evaluate project development results. BOAD's monitoring and evaluation policy is comprised of 6 principles - (i) capitalization, (ii) accountability, (iii) partnership, (iv) credibility and independence (v) planning of monitoring and evaluation activities, (vi) dissemination.

Monitoring and Evaluation of the programme will be aligned to the BOAD Reporting Framework and the requirements of GCF as detailed GCF AMA. Under BOAD's policy, principle reports include: monitoring reports of development indicators for projects financed by the BOAD, performance reports of funded projects, and impact assessment reports of funded projects. With regards to this programme, the three main levels that quality assurance will occur: monitoring, reporting and evaluation.

Monitoring

- **Project level monitoring:** Undertaken as per the project specific log frame that will be compiled for each individual project funded by BOAD. Project implementation will be monitored on an ongoing basis by the relevant BOAD project managers.
- **Programme level monitoring:** Information from projects will be collated into the annual project report and submitted to the GCF at the end of the calendar year. BOAD will compile the annual project report based on information received on individual projects.

Reporting

- **Reporting – beneficiaries to BOAD:** Under a contract agreement, beneficiaries of the project will provide BOAD with (i) quarterly progress reports in a format consistent with BOAD's project performance reporting system; and (ii) consolidated annual reports including (a) progress achieved by output as measured through the indicator's

performance targets, (b) key implementation issues and solutions; (c) updated procurement plan and (d) updated implementation plan for next 12 months. This will also include financial information on the performance of each of project as well as impact data (capacity installed, electricity generated/saved etc.).

- **Reporting – BOAD to GCF**: GCF will receive bi-annual reports on individual projects. The programme log frame will be the backbone of this report and the report will be led by the relevant BOAD project manager and written in close collaboration with the beneficiary organization who has been provided a loan under the programme. Reporting to GCF will also include relevant information on the performance of the sub-loans and portfolio of sub-projects financed under the programme (including country and technology information and contribution to the overall expected results of the programme).

Evaluation

The midterm and terminal evaluations will be undertaken by an independent consultant appointed by BOAD. BOAD will seek to enhance independence, including assessments, through transparency, largely through the use of experienced consultants through competitive bidding. The hired consultants will be invited to conduct their services and to deliver their opinions independently.

- **Independent interim evaluation**: A mid-term evaluation will be undertaken on the performance of the programme as per the indicators identified in the log frame. The mid-term evaluation will take place within 3.5 years of the programme being effective or at any time that the BOAD consider it necessary. The interim review serves to: (i) review institutional, administrative, organizational, technical, environmental, social, economic, and financial aspects of the programme based on the assumptions and risks included in the programme design; (ii) assess the need to restructure the programme's design and the effects of this on the immediate objectives (purpose) and long-term goals of the programme; and (iv) update the programme's design and monitoring framework if restructuring or reformulation is necessary or its immediate objectives will change.
- **Independent final evaluation**: At the end of the term of the programme, a final evaluation will be undertaken on the programme performance as per the log frame indicators and other qualitative information. The consultant will be tasked with evaluating the impact of each project (economic, environmental, etc.) and writing a report that will be shared with all relevant stakeholders (central and local governments, companies, NGOs, etc.) and could also be made public. It is worth noting that the evaluation function within BOAD refers to the same evaluation principles and criteria developed by the OECD Development Assistance Committee (DAC) and its evaluation protocols are similar. BOAD adheres to its principles for evaluation, which are impartiality and independence, credibility, usefulness, participation (of local partners) and coordination (with other donors). The evaluations aim to improve future projects and programmes by deriving lessons from experience and to find ways to make aid more effective.

In order to keep all the stakeholders informed of the projects financed under this programme, BOAD will use various means to communicate and disseminate the results, experience and best practices of the Programme as part of Component 2.3.

I. Supporting Documents for Funding Proposal

- ☒ NDA No-objection Letter
- ☒ Feasibility Study
- ☒ Integrated Financial Model that provides sensitivity analysis of critical elements (xls format, if applicable)
- ☒ Confirmation letter or letter of commitment for co-financing commitment (If applicable)
- ☒ Project/Programme Confirmation/Term Sheet (including cost/budget breakdown, disbursement schedule, etc.) – *see the Accreditation Master Agreement, Annex I*
- ☒ Environmental and Social Impact Assessment (ESIA) or Environmental and Social Management Plan (If applicable)
- ☐ Appraisal Report or Due Diligence Report with recommendations (If applicable)
- ☐ Evaluation Report of the baseline project (If applicable)
- ☐ Map indicating the location of the project/programme
- ☒ Timetable of project/programme implementation
- ☒ Examples of Sub-projects in the pipeline
- ☒ Capacity Building Action Plan

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