Funding Proposal

FP178: Desert to Power G5 Sahel Facility

Multiple Countries | African Development Bank (AfDB) | Decision B.30/03

23 November 2021

GREEN CLIMATE FUND

Contents

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

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

Please submit the completed proposal to:

fundingproposal@gcfund.org

Please use the following name convention for the file name:

"FP-[AfDB]-[Africa]-[2020/12/21]"

A. PROJECT/PROGRAMME SUMMARY			
A.1. Project or programme	Programme	**A.2. Public or private sector**	Public and Private
A.3. Request for Proposals (RFP)	Not applicable		
A.4. Result area(s)	*Check the applicable GCF result area(s) that the overall proposed project/programme targets. For each checked result area(s), indicate the estimated percentage of GCF budget devoted to it. The total of the percentages when summed should be 100%.* Mitigation: Reduced emissions from: ☒ Energy access and power generation: ☐ Low-emission transport: ☐ Buildings, cities, industries and appliances: ☐ Forestry and land use: Adaptation: Increased resilience of: ☐ Most vulnerable people, communities, and regions: ☐ Health and well-being, and food and water security: ☐ Infrastructure and built environment: ☐ Ecosystem and ecosystem services:		GCF contribution: 100%
A.5. Expected mitigation impact	***14.4 million $tCO_2equ.$***	**A.6. Expected adaptation impact**	***N/A*** ***N/A***
A.7. Total financing (GCF + co-finance)	966, 716,400 USD	**A.9. Project size**	Large (Over USD 250 million)
A.8. Total GCF funding requested	150,000,000 USD *For multi-country proposals, please fill out annex 17.*		
A.10. Financial instrument(s) requested for the GCF funding	*Mark all that apply and provide total amounts. The sum of all total amounts should be consistent with A.8.* ☒ Grant 8,000,000 ☒ Loan 82,000,000 ☒ Guarantee 20,000,000 ☒ Reimbursable Grant 40,000,000		
A.11. Implementation period	*7 years*	**A.12. Total lifespan**	*25 years*

A.13. Expected date of AE internal approval	*12/10/2021*	**A.14. ESS category**	*Refer to the AE's safeguard policy and GCF ESS Standards to assess your FP category.* A
A.15. Has this FP been submitted as a CN before?	Yes ☒ No ☐	**A.16. Has Readiness or PPF support been used to prepare this FP?**	Yes ☐ No ☒
A.17. Is this FP included in the entity work programme?	Yes ☒ No ☐	**A.18. Is this FP included in the country programme?**	Yes ☒ No ☐
A.19. Complementarity and coherence	*Does the project/programme complement other climate finance funding (e.g. GEF, AF, CIF, etc.)? If yes, please elaborate in section B.1.* Yes ☒ No ☐		
A.20. Executing Entity information	The Executing Entities of the Desert to Power G5 Sahel Facility are: 1 - African Development Bank. 2- G5 Sahel countries: Government of Burkina Faso, Government of Chad, Government of Mali, Government of Mauritania, Government of Niger. 3-Storage Companies[1]		

A.21. Executive summary (max. 750 words, approximately 1.5 pages)

In line with the mandate obtained by the African Development Bank (AfDB) from the Heads of State of the G5 Sahel countries to drive the implementation of the DtP initiative, the role of the AfDB is to assist the G5 Sahel countries in mobilizing resources from various sources including the GCF to address the barriers that hinder these countries from adopting a low emission power generation path by seizing the abundant solar potential of the region.

The Desert to Power G5 Sahel Facility (DtP) consists of US$ 150 million GCF financing that leverages US$ 816.7 million co-financing including US$ 379.6 million from the AfDB and US$ 437 million of private sector co-financing.

The Sahel is a vast semi-arid region that lies south of the Sahara Desert and stretches from Africa's Atlantic Coast to the Red Sea. It covers 11 countries including Burkina Faso, Chad, Djibouti, Eritrea, Ethiopia, Mali, Mauritania, Niger, Nigeria, Senegal, and Sudan. These countries are among the poorest in Africa with an average GDP 2.5 times lower than the rest of the continent. The Sahel countries are also largely underserved with electricity, exacerbated by growing electricity demands driven among other factors by cooling needs. A temperature increase of 0.3 °C per decade has been recorded between 1979-2015.

G5 Sahel Countries: Low Human Development, Vulnerability and Security Challenges

The G5 Sahel includes a group of five countries: Burkina Faso, Chad, Mali, Mauritania, and Niger. The G5 Sahel countries have a total population of 86 million as of 2020, 75% of whom live in rural areas. In all five countries, agriculture and cattle-raising remain a central pillar of the economy and the occupation of a large majority of the population, despite the presence of high-value resources such as gold, hydrocarbons, uranium, and manganese. All the G5 Sahel countries rank at the bottom of the Human Development Index (HDI) and are among the 10 poorest countries in the world. The G5 Sahel Strategy for Development and Security identifies its members as ecologically vulnerable states, and recognizes that this vulnerability, combined with insecurity and a history of low state capacity as key contributors to the region's development challenges. These issues are further

[1] Storage Companies, when selected, will be the Executing Entities of the storage sub-projects.

compounded by infrastructure challenges, which restricts the movement of people, goods and energy into these desert countries, four of which are land locked.

Impact of COVID on G5- Sahel Countries

According to the African Economic Outlook (AEO) 2021, African economies contracted by 2.1% in 2020 due to the impact of COVID-19 with an estimated US$ 4.5 billion required to lift the newly extreme poor out of poverty. The COVID-19 impact in the G-5 Sahel countries is especially manifested by subdued economic growth rates and widening budget deficits. Furthermore, COVID-19 resulted in border closures and lockdowns that impacted revenue collections (taxes) and led to a re-prioritization of public spending to social sectors of health and social-safety nets.

The electricity sub-sector in the G5 countries, as in most African countries, has suffered from disruptions to global supply chains, as well as from lower demand in global markets for a wide range of African commodities. Low electricity access rates have also exposed the vulnerability of the public health systems in these countries as reliable electricity is required to offer the much-needed medical care, support the healthcare infrastructure including cold-storage facilities for vaccines. On the electricity project financing front, the COVID situation has seen a freezing of new investments as most financiers have opted to postpone their engagements, with potential negative impact on expected new generation and grid investment projects.

The livelihoods of rural households in fragile environments of G5 Sahel countries have been severely affected by the unprecedented circumstances associated with the COVID-19 pandemic. Chronic food insecurity threatens the most vulnerable in the Sahel, including women, as women constitute the majority of the Sahelian population, due to high rates of male migration from the region. Women of this region are subjected to additional stress in this period of pandemic because they find themselves alone and separated from their usual social institutions such as schools and savings groups. Children remain at home and require care and food, which women must generally provide alone. Thus, by enabling the environment for private capital flows in the renewable energy sector, the DtP Facility will create economic and social opportunities for women and men. In the medium term, the program will also foster social cohesion in the targeted areas by reducing migratory pressures.

SDGs and Global Agenda

Desert to Power is a flagship program and an important climate project in the quest towards the achievement of the Sustainable Development Goal (SDG) 7 on energy for the beneficiary Sahel countries, all of which are LDCs. The Desert to Power G5-Sahel Facility (DtP) is part of the AfDB's agreed entity work program with the Green Climate Fund and in line with the declaration of intent on cooperation on DtP signed between the two institutions in 2018 during the Bank's Annual Meetings in Busan.

Lack of Direct Access Entities in a Fragile Environment

The G5 Sahel countries do not have any direct access entities coupled with fragility, which makes this proposal critically important and catalytic in terms of attracting investors to the Sahel region and supporting the ambition of the governments in the region to fight poverty, create employment for the youth, address migration and desertification challenges as well as to ensure the development of low-carbon and climate resilient economies.

Strong political and partner support

In September 2019, the Heads of State of the G5 Sahel countries endorsed the Desert to Power Initiative and its holistic implementation approach focused on five key priorities: (1) increase on-grid solar generation; (2) strengthen transmission and distribution networks; (3) deploy decentralized energy access solutions at scale: (4) improve the viability of the utilities and (5) improve the enabling environment to facilitate more private sector investments. An implementation structure composed of a dedicated DtP Taskforce housed by the AfDB, a steering committee and country focal points was set up and operationalized. This strong support to Desert to Power was reiterated in the communique of the Extraordinary Sahel G5 Heads of State Summit in July 2021. The initiative also enjoys strong support from relevant regional organizations as evidenced by formal letters of support received from the ECOWAS Commission, the G5 Sahel Executive Secretariat, the Pan-African Great Green Wall Agency and support expressed by others, such as the Alliance Sahel[2]. Various technical and financial partners

[2] https://www.alliance-sahel.org/actualites/le-6eme-comite-de-pilotage-de-lalliance-valide-des-avancees-significatives/

support the initiative and are represented in the Steering Committee, and several have also expressed their co-financing interest (e.g. AFD, Power Africa) under this Facility.

Desert to Power G5 Sahel Facility (DtP or the Facility)
The Desert to Power G5 Sahel Facility seeks to enable the G5 Sahel countries to adopt a low-emission pathway by making use of their abundant solar potential.

The Facility has the potential to deliver a substantial climate mitigation dividend which is estimated at over 14.4 million $tCO_2equ.$ for the G5 Sahel countries over the programme lifetime. This dividend will be reaped by adding over 500 MW of solar energy generation capacity, which will significantly increase the share of clean energy in the generation mix across the five countries. The proposed approach will address the identified barriers through the execution of three components that are part of the overarching priorities of the Desert to Power initiative as endorsed by the G5 Sahel Heads of State:

- The **first component** will focus on grid investments to de-risk solar IPPs and pave the way for the uptake of a regional solar market. This component will include financial support to grid ancillary infrastructure for solar integration, and storage for grid stability.
- A **second component** will provide concessional finance to solar IPPs as well as partial risk guarantees (PRGs) to cover investors against the risk of the government (or the government-owned utility) failing to perform under the Power Purchase Agreement (PPA) obligations with respect to the underlying project.
- A **third component** focuses on technical assistance (TA) which includes: the development of capacity of local stakeholders to manage larger shares of variable renewable energy and improve the enabling environment for IPPs to attract private sector investments in solar energy across the G5 Sahel region.

Expected Outcomes and Impact of the Facility

The Facility intends to generate the following outcomes: (i) A backbone grid with utility scale storage for solar power integration and basic technical conditions in place for a regional solar market; (ii) 500 MW of additional solar generation capacity through IPPs. The IPPs are expected to mobilize US$ 141.7 million in equity and US$ 566.9 million in debt financing (AfDB, other DFIs, and commercial loans). A partial risk guarantee of US$ 40 million is introduced as a feature to facilitate the bankability of the IPP projects, designed to improve the credit and risk profile of the off takers. The outcomes of the proposed technical assistance activities under the Desert to Power Financing Facility are the creation of a clear and reliable environment for private sector solar project financing and the development of adequate capacity at national institutions in the G5 Sahel countries to ensure the long-term sustainability of their national renewable energy sectors. Through these outcomes, the Facility will create attractive and viable opportunities for solar PV in the G5 countries, improve energy access and security, reduce 14.4 million $tCO_2equ.$, and directly benefit 3.5 million people (out of which 1.75 million are women). The expected indirect beneficiaries are estimated at 700,000 people[3]. It is also estimated that 1250 jobs will be created during construction and 450 permanent jobs[4].

[3] This is as result of an estimated additional 20% of installed generation capacity installed as a result of the project activities but not funded by the project.
[4] This is based on the assumption of 2.5 jobs per MW during construction, and 0.9 jobs per MW for O&M.

B. PROJECT/PROGRAMME INFORMATION

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

The overall climate context

The Sahel region is characterized by some of the lowest rates of electrification and ownership of cooling devices (e.g., fans, refrigerators) in the world, despite the fact that almost 700 million people in Africa are living in areas where the average daily temperature exceeds 25 degrees. By 2040, this number will approach 1.2 billion as average temperatures are projected to rise as a result of climate change. Hence, Africa and the G5 Sahel countries in particular have so far been minor contributors to global GHG emissions. The continent's energy-related CO_2 emissions account for less than 4% of global emissions although the Sahel region is in the frontline when it comes to bearing the brunt of a changing climate.

Increasing electricity demand is driven by population growth, cooling demands amid growing temperatures, and commercial/industrial demand for the production of commodities and services. The energy sector plays a pivotal role in contributing to the region´s climate mitigation and adaptation goals, a role it can only assume if it is fundamentally transformed into a low carbon energy supply system.

Energy systems are vulnerable to climate change, from changes in resource endowments to impacts on energy supply, transmission and distribution. Cross-sector impacts on energy from climate change can be seen across socio-economic sectors and include competition for water resources (in electricity generation, oil refining and irrigation) and land competition (e.g., food stock for biofuels production). However, the countries' high dependence on fossil fuels and exponential demand growth (average 10% annual increase) may make it harder for them to embrace a low-emission future.

The G5 Sahel countries are heavily dependent on biomass for cooking energy and the AFOLU sector currently represents the largest source of GHG emissions. All G5 Sahel countries have set unconditional and conditional targets to reduce emissions from the energy and AFOLU sectors by investing in renewable energy technologies. Common priority sectors identified in both the countries' economic development plans and Nationally Determined Contributions (NDCs) include climate-smart agriculture, sustainable land management, and increasing access to energy with a strong focus on developing their renewable energy potentials.

Regional context

The G5 Sahel countries share common socio-economic and infrastructural characteristics, providing the opportunity to tackle their climate challenges in a concerted fashion.

Burkina Faso: Burkina Faso's high dependence on climate-sensitive economic activities both at national and household levels makes it vulnerable to climate change, with the rural poor being the most vulnerable group. CO_2 emissions per capita are 0.18[5] $tCO_2equ.$ (2019)[6]. In the business-as-usual scenario, emissions will increase from 92 million $tCO_2equ.$ in 2020 to 118 million $tCO_2equ.$ in 2030. Unconditional objectives aim at reducing GHG emissions by 7,808 million $tCO_2equ.$ per year in 2030, i.e., 6.6% when compared to BAU scenario. Under the conditional scenario, Burkina Faso will reduce its emissions by 11%, which corresponds to 13,766 million $tCO_2equ.$ per year in 2030. The energy sector has been identified as a priority sector for emission reduction strategies, together with the objectives or reaching sustainable energy access for all.

Chad: Chad's development vision is to become an emerging economy by 2030, driven by diversified and sustainable sources of economic growth. GHG emissions per capita are around 0.732 $tCO_2equ.$, placing them amongst the lowest in the world. The GHG emissions of Chad are expected to rise from 18 million $tCO_2equ.$ to 28 million $tCO_2equ.$ between 2020 and 2030 in the business-as-usual scenario. The country's mitigation objective is a cumulative 18.2% (unconditional) to 71% (conditional) reduction in GHG emissions by 2030 compared to the reference scenario, corresponding to 41,700 million $tCO_2equ.$ for the unconditional objective and 162,000 million $tCO_2equ.$ for the conditional objective. In line with the unconditional objective,

[5] The World Bank, available at https://data.worldbank.org/country/burkina-faso

[6] Sources, knoema.com

emissions per inhabitant in 2030 will be 1.028 $tCO_2equ.$, whereas they would be just 0.364 $tCO_2equ.$ if means are acquired to enable the country to reach the conditional objective of a 71% reduction. The energy sector, dominated by oil production, is responsible for 2,165 million $tCO_2equ.$ in the reference scenario and it has been identified as priority sector for emission reduction interventions. According to the NDC, adopting a low emissions path will be achieved by various means, including increasing renewable electricity supply from 0 to 750 GWh/year in 15 years from the 2015 baseline.

Mali: Mali's economy relies on the use of natural resources. Projected climate scenarios state an average temperature increase of 3°C with a reduction of 22% rainfall by 2100. Yet 78% of energy supply in Mali currently comes from biomass mainly in the form of wood and charcoal for domestic use. In 2020-2030 climate mitigation scenarios, the energy sector is the largest contributor to the country's climate mitigation, with a mitigation potential estimated at 31% of total emissions abatement potential. CO_2 emissions per capita for Mali are 0.05 $tCO_2equ.$[7]

Mauritania: In its first NDC, Mauritania identified the energy sector as its first climate mitigation priority area and the second largest contributor to emissions after AFOLU sector. Mauritania is expected to see an average decrease of 10 to 15% in water resources by 2030, driven by significant temperature increases and reduction in rainfall. A lack of access to modern sources of energy has significant negative impacts on the Mauritanian population for whom 87% of energy is from biomass. In the business-as-usual scenario emissions would increase from 6.6 million $tCO_2equ.$ in 2010 to 18.84 million $tCO_2equ.$ in 2030. Mauritania intends to reduce its greenhouse gas emissions by 22.3% in 2030 or by 4.2 million tons of CO_2e compared to projected emissions for the same year in the BAU scenario. Thus, for the period from 2020 to 2030, avoided accumulated emissions by the proposed mitigation measures are about 33.56 million tCO_2e. Rural electrification and the increase of renewable energy in the energy mix are mentioned as priority actions for achieving mitigation goals and poverty reduction objectives in the country.

Niger: The energy sector represents a priority sector for mitigation activities in the country. The national energy consumption is expected to double by 2030. Emissions from the energy and AFOLU sector are estimated to increase from 66.8 million $tCO_2equ.$ in 2020 to 96.4 million $tCO_2equ.$ in 2030 in the business-as-usual scenario. Conditional objectives will reduce emissions by 34.7%, or 33.4 million tCO_2e, compared to the BAU 2030, while unconditional objectives will achieve a 3.5% reduction compared to the reference scenario. To reduce GHG emissions by 2030, Niger will, among other actions, increase the renewable energy generation to reach around 57% of the electricity mix in 2030, partly achieved through the installation of a 130 MW hydroelectric plant at Kandadji, the increase of solar generation capacity from 4MW in 2010 to 250 MW in 2030 and a 20 MW Wind power plant. Niger also plans to double the share of renewables in the energy mix to 30% by 2030. Niger reorganized its energy sector with the aim of improving operational performance to achieve national electricity coverage by 2035 which will include 85% through grid, 5% through mini-grids and 10% through SHS with a target of household access to electricity of at least 80%.

Table 2: Key HDI Metrics for G5 Sahel Countries. Sources: Human Development Report (2020); UNDP

	Chad	Burkina Faso	Mali	Mauritania	Niger
GDI/Capita (US$)	1,555	2,133	2,269	5,197	1,219
Life expectancy at birth in 2020 (Years)	54.2	61.6	59.3	64.9	62.4
Total expenditure on health as % GDP	4.1%	5.6%	3.8%	4.5%	7.3%
Energy access rate (%)	11.7	14.4	50.9	44.5	17.6

[7] Sources, knoema.com

Electricity Sector Context
The power sector in the G5 Sahel is characterized by low energy access rates which are as low as 2% in the rural areas of Chad, high reliance on fossil fuel and biomass to cover the growing energy needs and ageing electricity transmission and distribution infrastructure. G5 Sahel countries share common features in terms of low energy access in the rural areas, insufficient share of renewables in their generation mix and a steady growing energy demand that is being served in ways not always friendly to the environment. Electricity demand is expected to increase fivefold by 2030 to 250 TWh in West Africa[8] and the G5 Sahel countries are expected to follow a similar path.

The total installed capacity of the region (about 2,203 MW out of which 72 % is from non-renewable sources) is insufficient to meet the current electricity demands, resulting in frequent load shedding by utilities. Domestic generation is based mainly on costly heavy fuel oil. Peak demand is also met by utilities using emergency supply through diesel generators, which are easier to deploy for capacity ramp up at peak hours, an approach which is unsustainable with regards to the emissions path the region could take given the expected energy demand growth. The G5 Sahel countries will need to invest in cleaner technologies, in particular solar energy, to reduce its dependency on fossil fuels for power generation, to decrease the region's GHG emissions profile, to reduce exposure to oil price shocks, and to take advantage of global advances in reducing the cost of emerging technologies aimed at decarbonizing the power sector. Table 3 shows the power sector profile of the G5 Sahel countries.

Table 3: Energy statistics of G5 Sahel Countries. Sources: World Bank Data Bank, Africa Energy Portal.

	Burkina Faso	Mali	Mauritania	Chad	Niger
Population with access to electricity – national (% of population)	14.4	50.9	44.5	11.7	17.6
- Urban (% of population)	62.3	85.6	80.3	41.8	47.6
- Rural (% of population)	4.7	25.4	0.6	2.7	11.6
Installed capacity, total (MW)	386.9	871.5	580.8	87.1	277.0
- In renewable energy (MW)	97.8	374.9	121.9	1.3	27.0
- In non-renewable energy (MW)	289.2	496.6	458.9	85.8	250.0
Electricity generation total (GWh)	2606	2881.0	881.5	308.4	604.1
- Electricity generated from fossil fuels (GWh)	1642.7	1859.1	586.9	308.4	598.9
- Electricity generated from renewable sources (GWh)	963.4	1021.9	294.6	0	5.2
Electricity demand growth (yearly)	9% in 2017 14% in 2018	10%	10%	9%	16%

[8] This figure does not include Chad and Mauritania

Electricity Grids Context

Existing electricity networks across the G5 Sahel countries were not designed to integrate non-dispatchable renewable energy. With power distribution infrastructures that are operating at the edge of acceptable voltage ranges, connecting additional variable renewables such as solar or wind to these distribution grids requires careful consideration. These considerations include several technical factors such as voltage variations, power plants reactions under faulted systems, interactions with protection systems, and the overall operational flexibility for dispatch centres including potential economic consequences of ad-hoc integration. In addition, the lack of interconnection between national grids makes it impossible to dispatch renewable energy generation surplus across the countries, thus widely limiting the uptake of a regional solar market and private sector investments. A modernization and extension of electricity grids and the integration of utility-scale storage options is required to establish the backbone for a regional renewable energy market, which is the entry point for private sector investment. In the current situation utility scale energy projects within the G5 Sahel countries require an off-take agreement which generally is with the national utility of the concerned country. This further slows down the uptake of solar investments, given the poor financial situation of national utilities. Beyond the technical barriers, governance and management challenges within the national electricity utilities result in power grids being operated with frequent and persistent load-shedding, thus lacking a uniform base-frequency which enables injection of solar power in a distributed manner. A second consequence of load-shedding is customer's dissatisfaction resulting in large portions of the population and businesses relying on small-scale diesel generators across the G5 Sahel to cover their electricity needs, further creating a gap vis-à-vis the needs to decarbonize energy access in the region.

Energy Access context

Low access to electricity entrenches fragility and represents a key challenge considering political insecurity in the region. Impacts at the economic level mean that communities encounter difficulties in operating businesses and generating incomes, which impedes efforts towards poverty reduction. At the social level, energy poverty and inequality in access make it more difficult for countries to achieve socio-economic targets in health and education, and to realize the full potential of human capital. It also increases their vulnerability to climate change, natural disasters, and pandemics, as energy is an important input for water, sanitation, broadband, as well as economic activity.

Power generation context

Overall, the total installed capacity of the region is insufficient to meet the electricity demand, especially considering the expected demand growth. Mauritania is the only country in the region that is able to export electricity. A large portion of non-electricity energy needs is still covered by biomass, which has led to the depletion of forests over the years, and all 5 countries aim to tap into their solar potential to increase their power generation capacity. The Sahel has a tremendous renewable energy potential, and the G5 Sahel countries benefit from some of the highest solar energy irradiation and PV potential in the world.[9]

[9] ESMAP. 2020. Global Photovoltaic Power Potential by Country. Washington, DC: World Bank

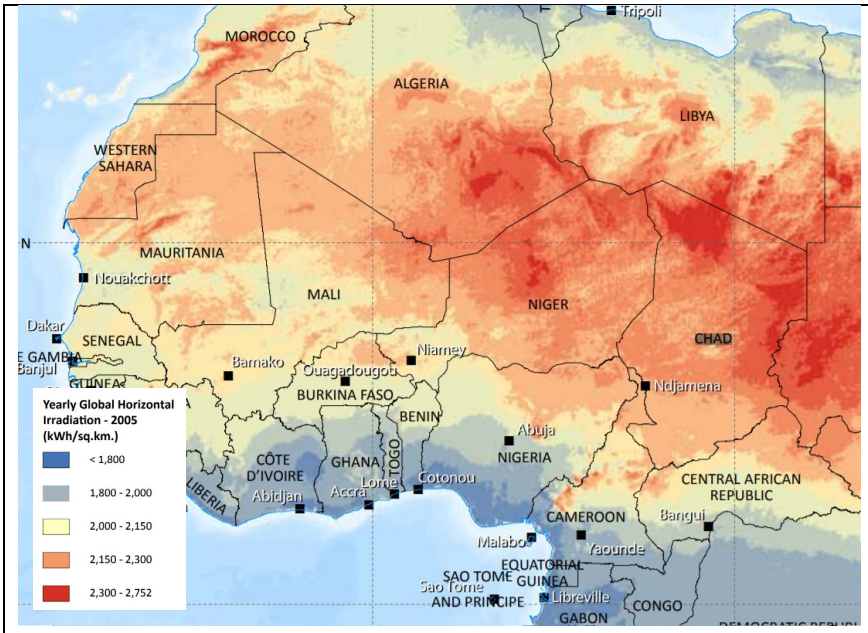


Table 4: Overview of the solar energy irradiation in the region. Sources: ESMAP. 2020. Global Photovoltaic Power Potential by Country. Washington, DC: World Bank and DtP Roadmaps

Country	Solar potential
Burkina Faso	Solar irradiation average estimated at 5.5 kWh/m2/ day, for a duration of 8.2 to 9.5 hours a day.
Chad	Solar irradiation average varies from 4.5 to 6.5 kWh/ m2/day depending on the areas of the country and seasons, with a daily duration of 7 to 8 hours.
Mali	Solar irradiation average varies from 4 to 7.6 kWh/m2/ day depending on the areas of the country and seasons, with a daily duration of 7 to 8 hours.
Mauritania	Solar irradiation average 5.5 to 6.5 kWh/m2/day with daily irradiation of 7-8 hours
Niger	Solar irradiation is one of the highest in the world, with average 7 kWh/m2/day

Least Cost Generation Analysis (see details in Annex 2)

Burkina Faso

The current generation fleet will be able to meet demand until 2030, but an additional energy source will be needed. For 2023, the extension of one of the thermal power plants could be envisaged (so the decommissioning is planned for 2022). Thus, PV + batteries (150 MW, 3h), will be needed from 2025. To optimize the generation fleet, an additional source of energy will be needed from 2023 onwards, which could be provided by extending the life of existing power plants. Also, there will be a need to increase the solar and battery park (100 MW, 3h) to avoid load shedding from 2025. In case of lack of investment in solar capacity and grid development, the government would import LNG through a trucking distribution network and/or will continue to use HFO.

Chad

To reduce the cost of supply and cover the on-grid demand, Chad will have to heavily rely on imports from Cameroon and solar power plants. The combination of solar PV plus imports will be able to cover the peak demand, on average, during the year. Thanks to the investments in solar PV and the interconnection, the

average cost-reflective tariff would decrease from the current $cent 16/kWh to <11, when imports would start to phase out HFO.

Should the country fail to build additional solar capacity, it would mostly rely on import capacity from Cameroon. This would generate a significant risk of security of supply and an increased overall cost of US$145 million in 10 years. This figure would increase further if import were replaced by domestic HFO for example due to delays in the construction of the Chad-Cameroun interconnection.

Mali
If the necessary funding is secured, Mali could turn into a regional player, able to export excess solar generation and import power from Guinea, CIV and Nigeria (through the Burkina/North Core extension) and significantly reduce its cost of production. Mali could be very well integrated in the WAPP market thanks to the different interconnections, but it's important that supply contracts are signed to fully utilize the import capacity (especially from Guinea). Regional solar parks and the participation in the OMVS projects (hydro) will complete a balanced (and green) installed capacity mix. Without the necessary investments into solar and additional interconnection capacity, the country would still need to utilize domestic HFO. This scenario would cost the country ~US$ 700 million and add 3.6 mln t CO_2 equ.

Mauritania
Mauritania has a significant natural gas potential that, if exploited, could reduce the cost of kWh. Solar PV could be developed to vary the generation mix and make the country a net exporter. Despite the important gas potential, the country could cover the daily demand peak with just renewable energy sources (on average). The main driver for the cost reduction is the development of gas and solar capacity. An upside could be generated if more solar could be installed, so to free up gas generation for export. Without the necessary investments into solar, the country would mostly utilise thermal generation and the hydro power from the OMVS. It would lose US$117 mln and emit an additional 1 mln t CO_2 equ.

Niger
Niger will be able to phase out HFO thanks to the development of the Kandadji dam and the import from Nigeria through the North Core. However, also solar PV could play a role if a stronger political buy-in from the Government can be secured. There is potential to develop solar PV, especially after the operationalization of the North Core. Investment in solar PV would achieve financial sustainability of the sector. Investment into the consolidation and extension of the grid remains an enabler for additional solar MW. Without the necessary investments into solar, the country would be even more dependent on the North Core and might decide to use domestic HFO (or even develop a coal power plant).

Policy and Regulatory Context
The G5 Sahel countries have expressed a common desire to utilize their untapped solar potential under a common Desert to Power Framework to transform their growing desert area into a solar energy generation zone that changes their entire power generation mix while delivering climate adaptation co-benefits. Amid these objectives, the G5 Sahel countries have articulated their policies around a green and climate resilient vision expressed in their updated NDCs, where they have also recognized the energy sector to be a priority contributor to their climate action efforts. Various policies and regulatory reforms have started or have been put in place with the aim to create an enabling environment to support their NDC goals.

With these premises, the DtP Initiative aims to harness the solar potential of 11 countries across the Sahel (Burkina Faso, Chad, Djibouti, Eritrea, Ethiopia, Mali, Mauritania, Niger, Nigeria, Senegal, and Sudan) to deploy 10 GW of solar PV by 2030 and provide access to electricity to around 250 million people currently without electricity access through a combination of on-grid and off-grid solutions. Pursuant to the political mandate from the G5 Sahel Heads of State during the G5 Sahel Summit held in Ouagadougou, Burkina Faso on 13th September 2019, the DtP Taskforce worked in close collaboration with the G5 Sahel countries on the development and validation of the DtP National Roadmaps which identified some 85 priority projects; 22% in solar generation, 26% in transmission and distribution, 23% in decentralized solutions; 7% in utility reforms and 22 % in enhancing the enabling environment.. On generation alone, over 2 GW of solar generation projects were identified. In addition to the National Roadmaps a Regional DtP Roadmap

is under finalization by the countries. This strategy aims at promoting and supporting regional interventions based on a cooperative approach. The rationale behind the regional cooperation assumes that the development of the energy sector is the primary responsibility of national governments but that the success in one country can spur benefits to others. Thus, a regional approach to policy, planning, investor outreach, and procurement could see the creation of more attractive markets and bring costs down thanks to economies of scale and standardization of procedures.

Complementarity and coherence

The facility will work in a coordinated way with existing and planned activities in the region. Individual investments will be guided by selection criteria that include procedures to avoid overlaps as described in section B.4 of the funding proposal. A key criterion, in addition to country priorities, is coordination with existing GCF and other donor funded activities in the region. Moreover, underlying investments by the Facility will have to be in line with national sector development plans of the 5 countries and the Desert to Power Roadmaps, which were validated by all 5 countries at the end of 2020 while noting.

The Facility will also build on and complement existing and planned initiatives, including:

- The Great Green Wall initiative which is part of Africa´s environmental defense system, a shield against desertification and degradation. DtP has been identified as a flagship initiative under the Great Green Wall (GGW), and it will complement the GGW by improving energy security along the GGW corridor, putting in place conditions which will protect the new forests with a new paradigm on energy access, shifting users from the depletion of forests as the ultimate way to cover basic energy needs to modern use of electricity that promotes better land management.
- The Sahel Alliance which specifically aims to increase the coordination between partners and accelerate the implementation of projects, and notably the energy working group of the Sahel Alliance in which the AfDB actively participates.
- The West African Power Pool (WAPP) and the ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE). The WAPP aims to establish regional power integration and a common electricity market in West Africa, with the mission to coordinate power exchange among ECOWAS Member States and is notably in charge of the development of regional solar parks in Burkina Faso, Mali and Niger. ECREEE aims to support ECOWAS countries in accelerating the deployment of renewable energy and energy efficiency solutions.
- The UN Sahel Renewable Energy Initiative that aims to promote peace, stability and inclusive, sustainable development in the entire Sahel region. DtP is coherent with the UN Development Assistance Framework (UNDAF) for 10 countries of the Sahel, especially with the priorities it has of promoting cross-border and regional cooperation in the region, building resilience to climate and improving management of natural resource, promoting access to renewable energy and empowering women and youth for peace and development in the Sahel.
- The Africa50 Infrastructure Fund chaired by the AfDB and currently co-owned by 28 African countries. AfDB and Africa50 collaborate on the design of a programmatic approach in developing and launching competitive procurement programs in the G5-Sahel countries which seeks to implement additional generation capacity at scale while facilitating government participation and local content. The combination of upstream work, stapled financing and government commitment will ensure an effective delivery of additional solar MWs on competitive terms.
- The BOAD Climate Finance Facility to Scale up Solar Energy Investments in Francophone West Africa LDCs which will provide additional solar capacity in Mali and Burkina Faso, thus will benefit from grid stabilization investments on storage by Desert to Power G5 Sahel Facility.
- The World Bank's Solar Risk Mitigation Initiative supported by the GCF covering specifically Mali. The Bank is part of a multi-stakeholder group led by the World Bank and comprising in addition KfW, EIB, AFD, ISA and IRENA. The multi-stakeholder group is an informal high-level platform where stakeholders will discuss their vision to support the development of renewables in developing countries, thus avoiding overlaps and seizing synergies.

Further details on these initiatives are provided in the Feasibility Study (Annex 2).

Co-Financing with Technical and Financing Partners

The Bank is cooperating closely with various Technical and Financing Partners (TFPs) on the implementation of DtP. For instance, the Agence Française de Développement (AFD) has committed to financing solar projects for the G5-Sahel countries. Other potential TFPs include Power Africa, Rockefeller Foundation (RF), Abu Dhabi Fund (ADFD); European Investment Bank (EIB), the Arab Bank for Economic Development in Africa (BADEA); the United Nations Development Programme (UNDP), the Islamic Development Bank (IsDB), the International Renewable Energy Agency (IRENA), the International Solar Alliance (ISA) amongst others. The AfDB 2020 Africa Energy Market Place (AEMP) focused on the G5 Sahel countries and mobilized over 30 TFPs and the Governments in country roundtables focused on the implementation and resource mobilization for the DtP Roadmaps.

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

The power sector in the G5 Sahel countries is characterised by low energy access rates, especially for the poorest such as female-headed households, by a generation system that relies predominantly on fossil fuels and that is unable to meet growing demand for electricity, and by power networks and infrastructure that are inadequate to integrate larger shares of variable renewable energy sources. While some progress has been made over the last few years and the countries' governments are committed to transform the energy sector towards a low-carbon pathway, the potential for widespread renewable energy adoption remains largely untapped. The proposed programme will address barriers that prevent the Sahel countries from adopting an inclusive low emission power generation path and achieving universal access to electricity by harnessing their largely untapped solar potential. The key barriers are listed below:

Technical barriers: Existing electricity networks in the region were not designed to integrate large shares of variable renewable energy generation and the electricity grids will need to be upgraded, also from a perspective of de-risking IPPs and distributed generation. The transmission and distribution networks are limited, fragmented and not sufficiently interconnected, presenting a strong constraint for additional generation projects.

The total installed capacity of the region is insufficient to meet electricity demand from women and men, especially considering the expected demand growth. Domestic generation is based mainly on costly heavy fuel oil. The average price of electricity is extremely high in most of the countries (average of 0.20 US$ per kWh) preventing poor households like female-headed households and households with men who migrated for economic reasons to access to energy. This is attributed to the high dependence on fossil fuels, the inability to attract investments in power generation at scale, and inefficiencies along the value chain—such as high distribution losses, relatively low billing collection rates, non-inclusive value chain, and small isolated grid systems.

Financial Barriers: To date, most investments in the sector have come at concessional rates from actors such as the AfDB, the EU, the World Bank, AFD, the Islamic Development Bank and other development finance institutions. The high cost of electricity generation is subsidized by Governments. The utilities struggle to cope with the challenges of increased cost of generation, sustained growth in energy demand, and the need to significantly increase energy access for the population. Moreover, the utilities in the Sahel region are financially unviable, and, in most cases, depend on state subsidies for survival. This has been exacerbated by the COVID-19 pandemic which further undermines the ability of countries to attract private sector participation in the renewable energy space in the region. As generation costs are likely to continue to increase, utilities will need to sustain their performance through new investments and via innovative restructuring that efficiently mainstream gender throughout the value chain. Off-takers require to be accompanied with credit enhancement instruments such as PRGs or specific incentives for supporting gender integration based on best economic return on investments, as they set themselves on a path of recovery and develop a dependable track record of dealing with IPPs.

Legal and regulatory barriers: The target countries are characterized by similar legal and regulatory barriers. Constraints vary from lack of clear institutional roles between different agencies, low planning capacity, the absence of a clear framework for IPPs, the absence of incentives for enhancing gender mainstreaming at the legal and regulatory levels, and the mismatch between tariffs in urban and rural areas, necessitating harmonization. Even when appropriate institutional frameworks are in place, these may not yet be operational and/or enforced, and the capacity of the sector's actors is too limited for effectively planning and implementing electrification strategies. Private sector participation has so far been limited for various reasons including lack of conducive legal frameworks, fiscal and customs barriers, customary habits limiting gender integration at the institutional level, lack of authority of the regulators, high tariffs and transparency challenges. The country-by-country regulatory challenges are as follows:

- **Burkina Faso – policy and regulatory barriers**

The state-owned utility, Société Nationale d'Eléctricité du Burkina (SONABEL), has a monopoly on the transmission and distribution segments for urban areas. The utility also oversees electricity production, sales, and imports. Since liberalization of the production segment in 2007, two private sector players entered the market: APR Energy, operating the Kossodo thermal plant (30 MW) and GPS, operating the Ouaga 2000 thermal plant (31 MW). The Burkinabè Rural Electrification Agency (ABER) is currently responsible for promoting rural electrification in Burkina Faso, which has replaced the former Electrification Development Fund (FED). Since 2013, the Government of Burkina Faso (GoBF) has initiated various projects to support electrification within rural communities through ABER. The agency presently works with rural cooperatives (COOPELS) to coordinate development efforts towards rural and off-grid electrification in the country. To properly structure the renewable energy sector, the National Agency for Renewable Energy and Energy Efficiency (ANEREE) was created in 2017 to organize policy, promote private sector participation through Independent Power Producers (IPPs) and mobilize funding. For details on the key policies and law relating to renewable energy in Burkina Faso, see Table 1 of the FS.

- **Chad – policy and regulatory barriers**

Chad's 2020 finance law, stipulates any equipment relevant to the generation and promotion of renewable energy is exempt from import duties and value-added tax.

The Ministry of Petroleum and Energy (MPE) is in charge of the energy sector, including planning, policy formulation and implementation, sector monitoring and evaluation, as well as supervision of the State-owned companies in the sector. The MPE has undertaken the preparation of an energy sector development policy. In that capacity, the MPE supervises the SNE (Societé Nationale d'Electricité) and the Renewable Energy Development Agency (ADER). SNE is in charge of electricity generation, transmission and distribution. SNE was established in June 2010 as a result of the dissolution of the Société Tchadienne d'Eau et d'Electricité (STEE) to unbundle water and electricity operations between two separate companies (SNE and STE), which are fully owned by the State.

Chad relies heavily on diesel-based generation. Together with SNE's operational and commercial inefficiencies, the cost of electricity service is extremely high in Chad. SNE suffers from chronic loss-making and is unable to maintain its aging infrastructure. Additionally, SNE has no consistent payment track record for electricity supply, nor import, and its poor commercial performance seriously hinders the cash position of the utility. SNE is completely dependent on government support to operate.[10]

ADER is in charge of the promotion of renewable energies, including for electricity access increase through decentralized systems. ADER was created by law on 19th August 2013 by Ordinance with the mandate of supporting the preparation of a strategy and action plans for renewable energy development, mobilizing financing, implementing and training and proposing norms and standards for renewable energy equipment. The promotion of decentralized rural electrification is de facto ensured by ADER. The organization and functioning of ADER were defined by decree in 2014. Since its creation, ADER has focused on the promotion and development of decentralized photovoltaic systems and support to the development and

[10] The World Bank Cameroon - Chad Power Interconnection Project (P168185)

negotiation of on-grid photovoltaic IPPs and particularly Djermaya Solar, which has benefitted from AfDB support.

- **Mali – policy and regulatory barriers**

The Direction Nationale de l'Énergie (DNE), within the Ministry of Energy and Water (MEE), is responsible for national energy policy formulation, promotion, coordination, monitoring and evaluation. Électricité du Mali (EDM-SA) is a vertically integrated private sector electricity utility, operating under a public service concession agreement for electricity supply in urban areas. Formerly a fully state-owned enterprise, the Government of Mali (GoM) retains 40% ownership. The institution operates as a monopoly over transmission and distribution, while generation is open to private IPPs such as SOPAM-SA and Albatros Energie. EDM-SA is currently the single off-taker for power produced by these IPPs. Recent information tends to indicate the GoM's willingness to split production and distribution activities into two different companies. The Domestic Energy and Rural Electrification Development Agency (AMADER) was created in 2003 to manage and oversee the country's rural electrification initiatives. The Regulatory Commission on Water and Electricity sectors (CREE) is the regulatory authority and operates directly under the supervision of the Prime Minister's Office. This institution is responsible for granting concessions, promoting competition between private operators and supervising public procurement and tenders. As stated in the National Energy Policy (PEN), "there is a multiplicity of players in the energy sector in Mali, leading to an institutional dispersion of public energy management." Thus, the country is aiming at consolidating these efforts to ensure more coherent and efficient management of the sector. The EDM-SA had a total loss amounting to US$ 100 million in 2016, due to high generation costs, lack of tariff adjustments and high technical and commercial losses. As a result, EDM-SA has not invested adequately in network extensions and maintenance of grid infrastructure. The corresponding off-taker credit risk that arises from this situation has deterred private investment and IPPs from entering the country's electricity market. Grid network expansion is very expensive due to the vastness of the country's territory, its low population density and scattered population centres. Connection to semi-urban and urban areas is estimated to cost US$ 1,000 per connection. Connection to rural areas is estimated to be even more expensive. Therefore, grid expansion will likely be limited to urban areas in the short and medium term. For the key policies and law relating to renewable energy in Mali, please see Table 2 in the FS.

- **Mauritania – policy and regulatory barriers**

The electricity sector is under the care of the Ministry of Economic Affairs and Development, Ministry of Petroleum, Energy and Mines and Ministry of Finance, and is regulated by the Regulatory Authority. Due to the failure of the privatization process, there is a unique operator, the government-owned electricity utility in Mauritania, the Mauritanian Electricity Society. Implementation of rural electrification government policies is led by the Rural Development and Electrification Agency and the Agency for the Promotion of Universal Access to Services.

Mauritania has made the following strategic choices related to power generation:

- Continue the policy of promoting energy projects on sovereign financing so as to be able to massively introduce new technologies contributing to considerably modifying the energy mix of the country.
- Connect localities of more than 200 people to the network and improve access to the national network.
- Connect to the network diesel and hybrid power plants in the East of the country; and
- Keep those in the Northern part of the country isolated by hybridizing them.[11]

The electricity sector is governed by the Electricity Code, which was adopted in 2001. The Code provides a framework for liberalizing the electricity sector and ensuring its financial viability. The code envisages:

[11] https://africa-energy-portal.org/country/mauritania

- The liberalization of the electricity sector is subject to the award of a license. Licenses are granted on the basis of a public call for applications accompanied by specifications. The licensing procedure is performed by the Regulatory Authority.
- Specifies the attributions of the Regulatory Authority which is associated by the MPEM in the development of the sectoral policy and the regulations in force; and
- States that electricity rates must "provide sufficient revenue levels to enable licensees in the sector to achieve a normal rate of return on their investments. They will nevertheless have to be cost-oriented.

The legal framework continues to work on accelerating the liberalisation of the sector.

- **Niger – policy and regulatory barriers**

The Ministry of Energy is responsible for development and implementation of energy policy. The Société Nigérienne d'Electricité (NIGELEC) is Niger's utility and only monopoly over transmission and distribution; NIGELEC is majority-owned by the Government. The Nigerien Rural Electrification Promotion Agency was established to manage the country's rural electrification programs and initiatives. Niger has an independent regulatory authority – Regulation Agency of the Energy Sector (ARSE), which advises the Ministry on energy policies, laws and regulations. NIGELEC's tariffs are not cost-reflective. The government subsidizes tariffs to ensure their affordability and the commercial viability of the utility. It is therefore unable to invest sufficiently in improvements in installed capacity, network extensions or in the maintenance of grid infrastructure. Key policies and laws are highlighted in Table 64 of the FS.

Section D.5 provides an assessment of the main country organizations involved in the implementation of the project and its activities mentioned above.

Business as usual scenario: Electricity demand growth in the region averages 10% per year mainly driven by population growth, growing cooling demand because of GDP growth and increasing temperatures, and increasing commercial and industrial demand for the production of commodities and services. The G5 Sahel countries have identified that grid-based electricity demand is projected to increase rapidly over the next decade, attaining a peak demand of approximately 3 GW of new capacity and annual consumption of 18.5 TWh by 2030 - a 230% increase in both peak demand and annual consumption.[12] This additional demand could be met by additional grid supply based on Heavy Fuel Oil / diesel thermal power plants. Power production based on coal and gas are not considered to be significant in the region, except for Niger where the construction of a 625 MW coal power plant is being considered. Hydropower forms part of the business-as-usual scenario with investments in grid-connected hydropower planned for Burkina Faso, Mali and Niger. For off-grid areas and to address power shortages in grid connected locations diesel gensets are the primary source of power.

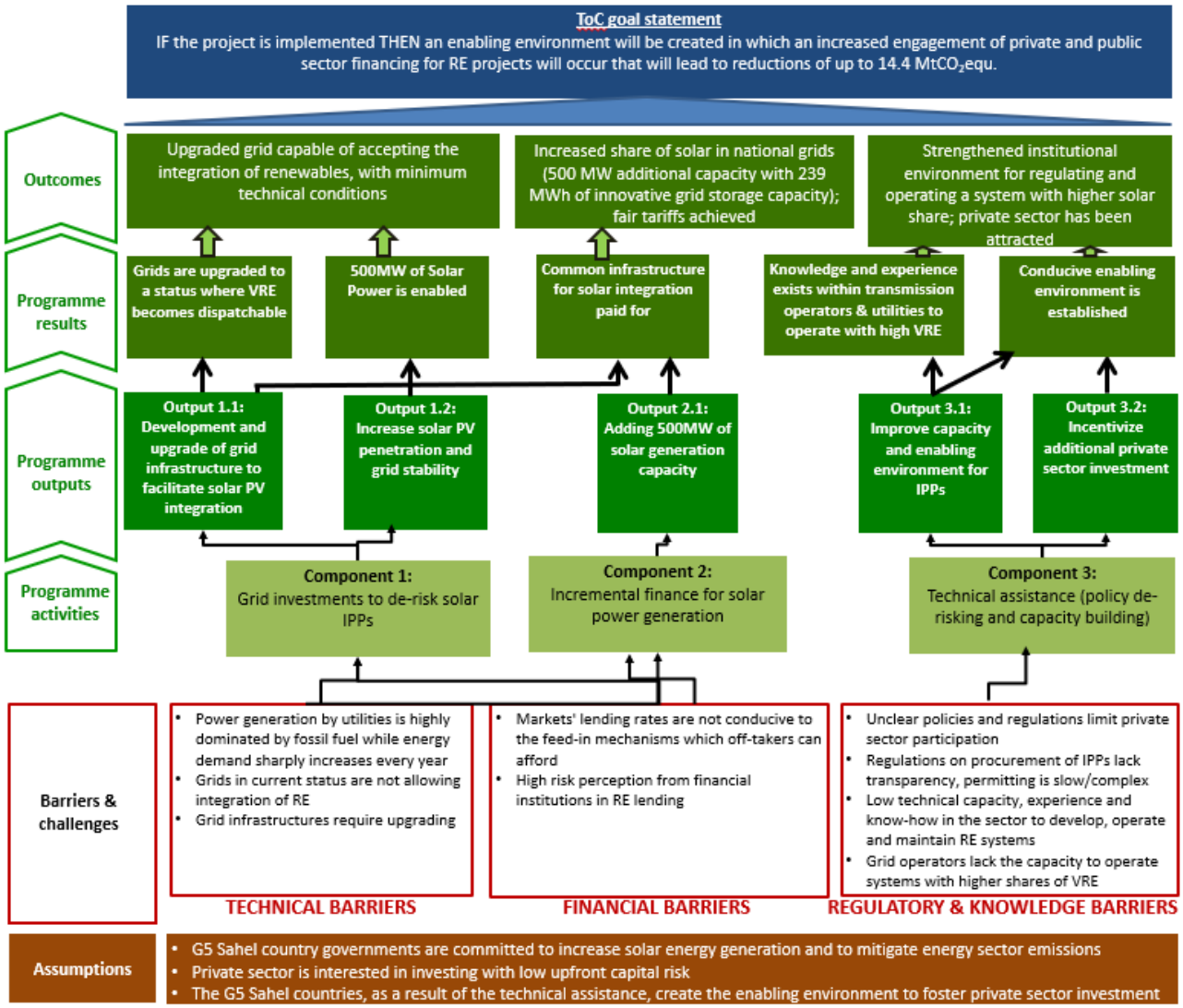
By removing the multiple barriers that are preventing the G5 Sahel countries from harnessing their solar potential, achieving energy security, expanding energy access and achieving their mitigation ambitions, the programme will facilitate project funding in the target countries and will develop the capacity of local stakeholders 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. Table 5 below outlines how each barrier will be addressed by the proposed programme activities. For further details on barriers related to women, and how dedicated budget and activities have been assigned to gender-related outcomes, please refer to Annex 8 - Gender Assessment and Action Plan.

[12] Desert to Power Regional Roadmap. Draft November 2020

Table 5: Addressing the expected barriers through the proposed programme activities

Type of barrier	Barrier	Area of intervention	Programme activities that address the identified barriers
Technical	Grids in current status are not allowing the integration of high shares of variable RE	Electricity grids	Activity 1.1.1: Development and upgrade of grid infrastructure to facilitate solar PV integration Activity 1.1.2: Grid upgrades into smart grids on solar development areas with RE penetration higher than 30% Activity 1.1.3: Construction of grid infrastructure from new solar plants Activity 1.2.1: Storage for base loads and grid stability
Financial	High risk perception from financial institution in RE lending	Power generation	Activity 2.1.1 Installation of new solar generation capacity and 2.1.2 –Partial Risk Guarantee
	Off-takers' weak balance sheet and lack of track record	Power generation/IPP engagement	Activity 2.1.2 – Partial Risk Guarantee
Regulatory	Unclear policies and regulations limit private sector participation, including the absence of a clear framework for IPPs	Electricity grids, power generation	Activity 3.1.2: Revision of regulatory texts based on recommendation of the Electricity Regulatory Index to attract private sector investment in the electricity sector in the Sahel countries, gender-responsiveness, operationalization of renewable energy auctions.

Figure 1: Desert to Power G5 Sahel Facility's Theory of Change



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

Overall objective

The **Desert to Power G5 Sahel Facility** seeks to enable the African countries of the Sahel region to adopt a low-emission path by transforming their desert area into an opportunity to address their energy security needs using clean technologies, while delivering various adaptation co-benefits. The Sahel has unmatched renewable energy availability, and the G5 Sahel countries benefit from some of the highest solar energy irradiation and PV potential in the world. However, this potential for increasing electricity access, reducing GHG emissions and proving long-term sustainable growth in the Sahel countries remains largely untapped.

The proposed approach will address the barriers presented in section B.2 through the execution of three components that are part of the overarching priorities of the Desert to Power initiative endorsed by the G5 Sahel Heads of State. By removing the financial, technical and regulatory barriers that are preventing Sahel countries to embark on a low-emission and sustainable pathway, the Desert to Power G5 Sahel Facility will facilitate project funding in grid infrastructure, solar PV integration, and

additional solar generation capacity of 500 MW in the target countries to meet growing demand, increase the share of renewables in the countries' energy mix and benefit around 3.5 million people.

Structure of the Desert to Power G5 Sahel Facility:

Component 1: Grid investments to de-risk solar IPPs.
This component will focus on grid investments to de-risk solar IPPs and pave the way for the uptake of a regional solar market. In the Sahel countries some pre-identified sites for solar generation plants can benefit from grid refurbishment works at transmission level and upgrades at distribution level to de-risk IPPs and distributed generation by making the power in-take possible upon commissioning of the solar power generation assets.

Output 1.1: Development and upgrade of grid infrastructure to facilitate solar PV integration.
Activities will include:
1.1.1. Investments in grid ancillary equipment to enable the integration of larger variable renewable energy notably solar. Such ancillary equipment will include grid equipment for frequency and voltage regulation, spinning reserve management systems and load protection systems. Grid investment activities will be financed through sovereign loans from the GCF to the Host Countries via the AE (AfDB) for investing in the ancillary equipment that enables solar generated energy to be fed into the grid in a way that provides stability and security for grid operation, irrespective of solar generation variability.

1.1.2 Grid upgrades into smart grids on solar development areas with RE penetration higher than 30%. Smart grid investments can help facilitate the integration of higher shares of solar PV into grids. Smart grid investments can help facilitate the integration of higher shares of solar PV into grids. In such cases the financing from GCF and AfDB will be deployed through sovereign loans to the G5 countries to upgrade grids into smart grids. The grid upgrades will only be made where they are required to integrate larger shares of variable renewable energy into the grid, thus mitigating against the risk that they will lead to an increase in the distribution of existing non-RE sourced power. Smart grid investments to ensure RE penetration of more than 30% could include, solar forecasting system, transmission and distribution automation, Flexible AC Transmission Systems (FACTS)**.**

Output 1.2: Increase solar PV Penetration and grid stability

This sub-component involves the following activity:

1.2.1 Construction of innovative storage systems. Storage provides a solution for grid stabilization and flexibility as it copes with the challenges of maintaining system reliability despite the variable and intermittent nature of solar power generation. The Programme aims to install a total of 239 MWh of utility scale storage by investing in selected storage sub-projects in the Host Countries which to be selected in accordance with the Eligibility Criteria and the terms of the FAA ("**Storage Sub-Project**"). Two options are foreseen for the implementation of the Storage Sub-projects.

Option A: The storage projects may be implemented by the national utilities (**Option A**) in which case, the AfDB will channel GCF financing, and its co-financing (sovereign loans) to the Host Country.

Option B: A second option provides for the storage projects to be implemented by private sector entities (**Option B**) in which case, the AfDB will channel the GCF Reimbursable Grant and its co-financing (private sector loans) to the storage companies. The project sponsors will provide equity contribution. The financing will be utilized towards the construction of innovative storage systems for base loads and grid stability that will contribute to de-risking solar IPPs.

Component 2: Incremental Finance for Solar Power Generation.

Under this Component, the Programme will seek to achieve uptake in private sector investments across the G5 Sahel countries with the provision of finance for new solar IPPs. The lack of appropriate commercial finance, i.e. inadequate pricing, inflexible grace periods and loan tenors that are not adapted to the characteristics of renewable energy investments, represents one of the main barriers hindering private sector investments in the region. By incentivizing private sector investments into solar power generation, this component will result in additional 500 MWp installed capacity during the project lifetime and an increased share of solar in the region's generation mix.

Output 2.1: Adding 500MW of solar generation capacity.

2.1.1 Provision of Private Sector Loans Installation of new solar capacity. This activity will involve the provision of affordable and long-term debt financing (loans from the GCF and AfDB private sector loans) to private sector stakeholders to install new solar capacity. With high solar potential in the region, on-grid PV technology has a high potential for emission reduction for countries relying to a large extent on fossil fuels, which is the case of the G5 Sahel countries.

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Component 3: Technical Assistance

The outcomes of the proposed technical assistance activities the Desert to Power Financing Facility are the creation of a clear and predictable environment for private sector solar investments and the development of adequate capacity of national institutions in the G5 Sahel countries to ensure the long-term sustainability of the renewable energy sector. The program will use grant funding from the GCF, AfDB Grants, and/or grants administered by the Bank, and other technical and financial partners to build the capacity of institutional stakeholders in the operation of integrated energy systems with higher shares of variable renewables (utilities, transmission system operators, the ministries in charge of energy, and energy regulators, female-headed households and low-income households who are likely to benefit from this program[13]) ("**TA Beneficiaries**") on procurement of IPP projects and the operation of transmission grids with higher shares of variable renewables, notably solar. It will further operationalize existing policies and regulatory frameworks in order to mobilize more private sector investments in IPPs in the G5 Sahel countries. The Component 3 will also achieve completion of technical studies for identified transmission lines and solar PV projects to enhance solar integration into the grids across the region.

Finally, this component addresses some of the gender-related barriers identified in the target countries, by ensuring gender-inclusive capacity building, developing gender-responsive regulatory frameworks, tending towards gender-responsive standardization for solar integration, and by providing awareness for the inclusion of women into solar energy value chains. The gender activities of the Desert to Power Financing Facility ensure to capture sex-disaggregated data through sex-disaggregated indicators and targets. It also includes female-headed households and low-income households who are likely to benefit from this Programme. Overall, the gender aspects of this Component aim to reduce gender inequality and contribute to achieving SDG.

Output 3.1: Improve capacity and enabling environment for IPPs.

This technical assistance programme addresses regulatory and gender barriers. For this programme to be successful, institutional stakeholders' capacity will need to be built to transfer international best practice in procurement of competitive IPP projects, PPA negotiation, operation and maintenance of renewable energy systems into the Sahel context.

[13] Gender-related barriers identified in the target countries; by ensuring gender-inclusive capacity building, developing gender-responsive regulatory frameworks, tending towards gender-responsive standardization for solar integration, and by providing awareness for the inclusion of women into solar energy value chains. capture sex-disaggregated data through sex-disaggregated indicators and targets.

Activity 3.1.1 Build capacity of institutional stakeholders in the operation of integrated energy systems with higher shares of variable renewables. This activity is targeted at national utilities, Transmission System Operators (TSOs) and regulators. It will include (i) training, capacity building, knowledge exchange for competitive procurement of IPPs projects and PPA negotiation; (ii) capacity building on demand side management and operation of grids with higher shares of RE; and (iii) recruitment of transaction advisors to assist G5 Sahel countries in negotiations of project documents, depending on jurisdiction. This activity will have a strong gender focus to ensure women's inclusion in the renewable energy workforce and address women's barriers to participation in renewable energy value chains. The gender-responsive technical assistance will enable utilities to mainstream gender considerations across their activities and particularly with a focus on workforce development and employment. Finally, awareness raising activities aim to implement gender-responsive energy policies in solar energy companies and outreach actions that target the vulnerable population in localities on social energy tariffs.

Activity 3.1.2 Revision of regulatory texts based on recommendations of the Electricity Regulatory Index[14] *to attract private sector investment in the electricity sector in the Sahel countries, gender-responsiveness, operationalization of renewable energy auctions***.** This activity will achieve the operationalization of policy and regulatory frameworks necessary to support private sector participation in the solar energy sector. Technical assistance support will (i) establish a transparent and sound regulatory framework for competitive tenders to attract private sector investment for on-grid solar generation; (ii) review and/or develop tariff methodology, structures and its associated financial models; (iii) support the establishment of a common tax regimes and credit enhancement solutions for solar projects in the G5 Sahel. This activity will also involve a gender-responsive review of the regulatory frameworks of the target countries and the development of sectoral strategies for women's inclusion in the solar energy sector. Gender activities plan the establishing of a national gender-responsive energy policy and of a national gender action plan within the Ministry of Energy to be used within the national electricity companies.

<u>Output 3.2: Incentivize additional private sector investment</u>

The expected result of this output is to build a conducive enabling environment in the G5 Sahel countries to attract private sector investment into the energy sector. The national gender-responsive energy policy and its national gender action plan mentioned above will include special incentives to the private energy companies meeting gender criteria and these incentives could also be indexed to their level of commitment, in the national energy policy.

Activity 3.2.1: Standardization and development of standards for solar integration. The purpose of this activity is to develop the best-in-class tools, and guidelines usable by the utilities and the regulators to manage and regulate the integration of variable renewable energy into the grid as well as the design and management of the battery energy storage technology (BEST). In terms of gender impacts, this activity aims to support IPPs to establish and use gender-responsive tenders and procurement process as well as solar energy companies to develop affordable tariffs especially targeting vulnerable population as poor households, women and female-led households.

[14] The ERI was developed by AfDB and is made up of three pillars or sub- indices: the Regulatory Governance Index (RGI); the Regulatory Substance Index (RSI); and the Regulatory Outcome Index (ROI). his report presents the results of the third edition of the Electricity Regulatory Index (ERI) for Africa, covering thirty-six countries. The first edition was published in 2018 and covered fifteen countries. Thirty-four countries participated and were assessed in ERI 2019. The full document can be accessed here: https://www.afdb.org/en/documents/electricity-regulatory-index-africa-2020

Activity 3.2.2: Match-making events to leverage private investments. The purpose of this activity is to organize an investment meeting including a match-making event whereby prospective investors will be pitched according to the desert to power projects pipeline in order to close their financial need gaps. The main goal of this activity is to mobilize private sector investment into the G5 Sahel countries. Marketing activities are planned for women with degrees in energy or working in the energy sector to disseminate good practices and approaches for women's inclusion in the sector among the private solar energy companies. Reciprocally, marketing activities targeting private sector stakeholders will take place to inform them about the financial benefits to implement a gender-responsive Corporate Social Responsibility (CSR)/Environment Social and Governance (ESG)policy and about the government incentives included in the gender-responsive energy policy and action plan (see output 3.2).

Table 6: Summary of the Technical Assistance component

Output / Activities	**Amount (US$)**
Output 3.1	
Activity 3.1.1 - Training, capacity building, knowledge exchange for competitive procurement of IPPs - Capacity building on demand side management and operation of grids with higher shares of RE; - Recruitment of transaction advisors to assist G5 Sahel countries in negotiations of PPA and Concession Agreements - Gender technical assistance - Utility financial modelling and turnaround plan with the establishment of cash management system - Technical assistance related to transmission/distribution network studies	250,000 250,000 2,000,000 250,000 250,000 1,000,000
Activity 3.1.2: - Revision of the regulatory framework to attract private sector and establish gender responsive energy policy	500,000
Output 3.2	
Activity 3.2.1: - Standardization and development of standards for solar integration	300,000
Activity 3.2.2: - Match-making events to leverage private investments.	800,000
Total	**5,600,000**

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

AfDB is well placed as an Accredited Entity to coordinate the implementation of the planned activities and has already started engagement with a broad range of financial and technical partners in close coordination with other relevant initiatives. The Executing Entities of Desert to Power will coordinate with other related GCF projects in the region, notably the BOAD Mali Solar Rural Electrification Project (FP102), the BOAD Climate Finance Facility to Scale up Solar Energy Investments in Francophone West Africa LDCs (FP105) and the World Bank Solar Risk Mitigation Initiative (FP163) to ensure no overlap of funding in the activities.

In September 2019 Heads of States of the G5 Sahel countries met in Ouagadougou and endorsed the Desert to Power Initiative with the creation of a Task Force hosted by AfDB. National Focal Points were appointed to work closely with the Task Force. The Task Force currently leads resource mobilization efforts and is engaging with potential partners to help syndicate projects.

The task force is guided by a high-level Steering Committee chaired by the CEO of the Moroccan Agency for Sustainable Energy (MASEN, which is undergoing accreditation approval by the GCF) and comprising Ministers of Energy of the Sahel G5 countries and key partners.[15]

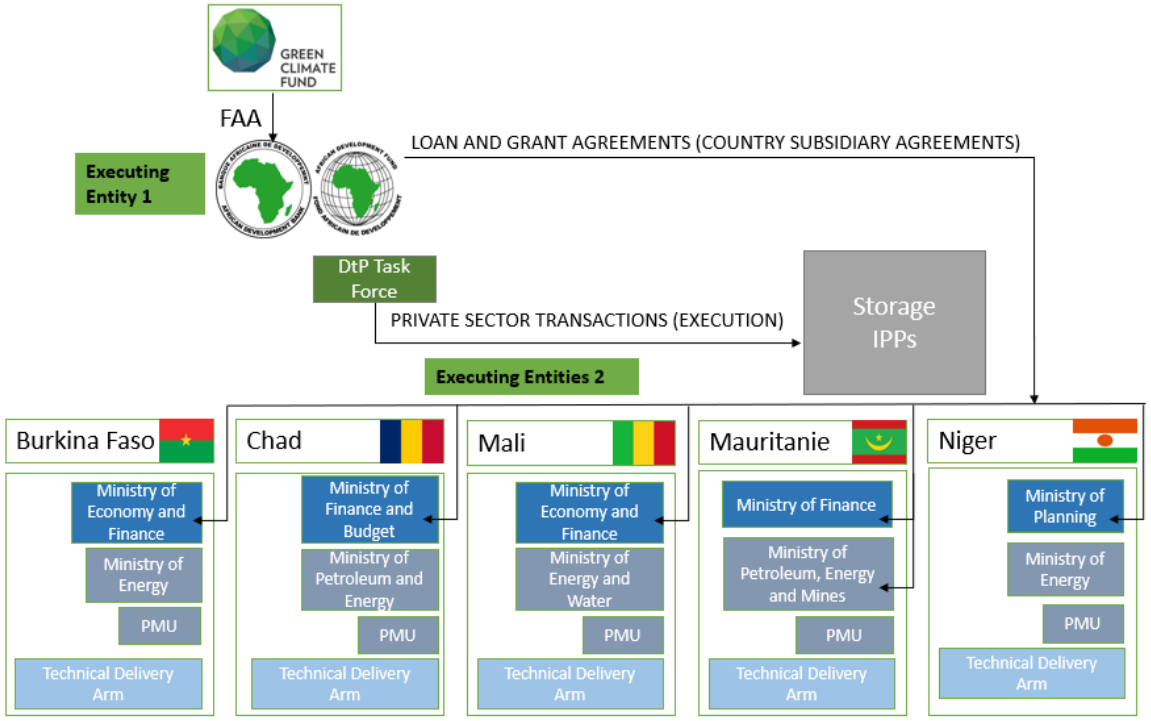
The Programme will be implemented through **three key executing entities**, each responsible for the execution of different financial mechanisms

1. AfDB will be executing entity for Component 2, and part of Component 3 (3.2.2).
2. The Storage Company will be executing entity for Component 1.2.1.
3. The Sahel G5 Host Countries are executing entities for all public sector activities under Component 1 and relevant activities under Component 3.

Country	Executing Entity
Burkina Faso	Government of Burkina Faso
Republic of Chad	Government of Chad
Republic of Mali	Government of Mali
Islamic Republic of Mauritania	Government of Mauritania
Republic of Niger	Government of Niger

[15] Key partner organizations have joined the Steering Committee at senior level alongside the Ministers of Energy of the G5 Sahel countries. Africa50, ACWA Power, the French Development Agency (AFD), the International Renewable Energy Agency (IRENA), the Sustainable Energy for All (SEforALL) Initiative and the USAID Power Africa Program. The European Commission is participating in an observer capacity, and there is considerable interest from other stakeholders to become members of the Steering Committee.

Figure 2 outlines the implementation arrangements for the 2 Executing Entities.



The activities which will be implemented by each Executing Entity and the related financial instruments are presented in the following table:

Table 7: Executing Entities

Executing Entity	Component	Financial instruments	Activities
African Development Bank (Accredited Entity)	Component 2	Private Sector Loans	2.1.1: Provision of Private Sector Loans
		Guarantee	2.1.2: Provision of Partial Risk Guarantee
	Component 3	Grant	3.2.2: Match-making events to leverage private investments
G5 Sahel Countries	Component 1	Senior loan to public sector	1.1.1: Investments in grid ancillary equipment for enabling solar generated energy feed-in 1.1.2: Grid upgrades into smart grids on solar development
		Reimbursable Grants and Loans to national utilities	1.2.1: Construction of innovative storage systems[16]

[16] If Option A is selected.

G5 Sahel Countries	Component 3	Grant	3.1.1: Build capacity of institutional stakeholders in the operation of integrated energy systems with higher shares of variable renewable 3.1.2: Revision of regulatory texts based o recommendation of the Electricity Regulati Index 3.2.1: Standardization and development of standards for solar integration
Storage Company	Component 1	Reimbursable Grants and Loans to private sector	1.2.1: Construction of innovative storage systems[17]

a) Implementation arrangement for Component 1

Implementation arrangements for Storage Systems under Output 1.2

The implementation of the storage activity 1.2.1 will build on the initial feasibility study done by World Bank for all WAPP countries. Suitable opportunities for storage investments will be identified in coordination with the Host Countries, upon which a competitive process to identify storage operators on Engineering, Procurement and Construction (EPC) basis. Some of the G5 Sahel countries have already indicated a preference that their national utilities are best suited to operate grid storage systems, given the effects which large scale storage systems might have on the overall grid stability and limited appetite for "store or pay" contracts. Whether Build – Own - Operate (BOT) contracts will be awarded to private sector EPC companies or EPC contracts will be awarded separately while the national utilities carry out the storage operations, the option which each country will take will be finalized during final negotiations of the relevant agreements also taking in consideration the ability of the national utilities to mobilize the required equity contribution.
Subject to the preference of the relevant Host Country, Activity 1.2.1 may be implemented through public sector (Option A) or through private sector (Option B) in which case the Executing Entity arrangement will be as follows:

a. ***Option A*****:** If the relevant Host Country chooses to implement Activity 1.2.1 through its national utilities, the Host Country acting through its relevant Ministry(ies) will be the Executing Entity. The Host Countries will be responsible for procuring the storage equipment based on AfDB procurement rules and operating the Storage Sub-project.

b. ***Option B*****:** The Host Country may choose to implement Activity 1.2.1 through private sector players. The Host Country will procure the Storage Company through a competitive process or otherwise in accordance with relevant national laws, international best practice, AfDB procurement requirements, and the eligibility criteria. Following due diligence, AfDB will finance the Storage Sub-projects in accordance with the Eligibility Criteria. The Storage Company will be the EE in case Option B is selected for Activity 1.2.1.

Whether Option A or Option B is selected will be determined after the FP approval, but no later than AfDB Board approval of the relevant Sub-project.

[17] If Option B is selected

The storage activities will be supported through a US$ 40 million reimbursable grant from the GCF, which will be blended with US$ 50 million loan proceeds from AfDB and US$ 20 million equity participation by the sponsors. The GCF reimbursable grant is critical to enable these investments and will accordingly act as a de-risking instrument. At the current cost of technology, storage systems by the private sector require subsidies. Various financial instruments for availing these subsidies have been considered and assessed, for instance an equity contribution by GCF. However, the legal and contractual arrangements required by the AE to deploy equity instruments present a mismatch with regards to the foreseen implementation timelines. Also, the approach to large scale storage for grid stability taken by most of the G5 Sahel countries is to treat these assets as part of their overall grid infrastructure. Loans have been assessed as well and they present several limitations. At current market cost for storage, increasing the repayment contingency will result in a negative Net Present Value for storage projects. Thus, a reimbursable grant with triggering conditions as presented below, to mirror an equity investment is the most suitable market-based instrument.

Implementation arrangements for grid investments (Activity 1.1.1 and 1.1.2)

In each Host Country, the Programme's DtP focal point will ensure coordination of the Programme's activities. In each Host Country, the implementation arrangements include a Project Management Unit (PMU) structure comprised of technical experts. The PMU will oversee the validation of technical and feasibility studies and the implementation of the financing plan until project commissioning and beyond.

In Host Countries, subsidiary agreements will be signed by the responsible ministries. The national utilities (which coordinates the implementation of country activities) may host Project Management Unit (PMUs) and would be supported by technical experts. The PMU would oversee the validation of technical and feasibility studies and the implementation of the financing plan. Each country will determine the exact composition of its PMU, which will be finalized in the inception phase of the Facility and before the first disbursement.

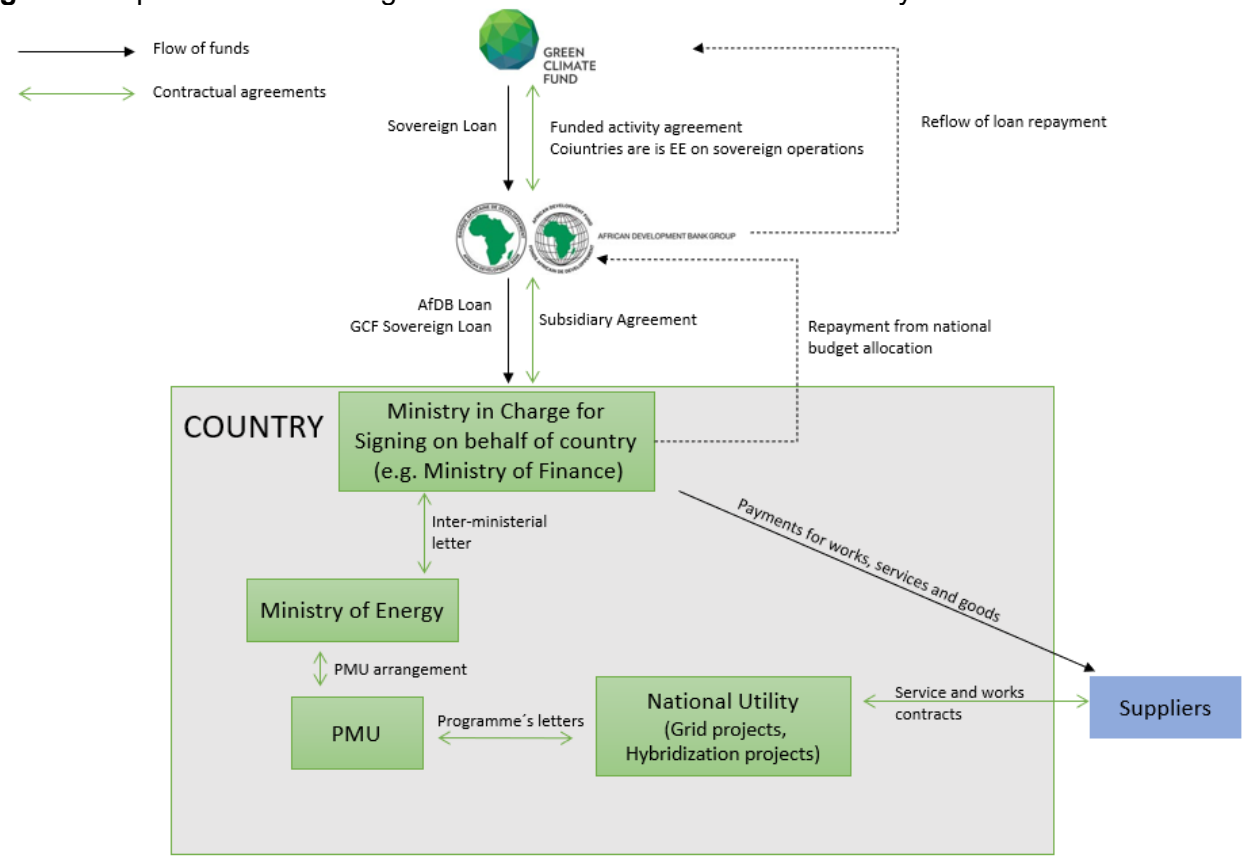
With the exception of Niger, the Ministries of Finance of the Host Countries would sign relevant agreements.[18] The Host Countries will also act through their relevant agencies with the mandate to oversee or implement activities under the Facility. The relevant Ministries of Energy, as the Technical Delivery Arm, provides overall coordination of the activities of the facility in the country. They also have the mandate to carry Government activities. The Project Management Unit (PMU) will be established within the National Utilities (State-Owned Utilities) for each country:

- In Niger: Société Nigérienne d'Electricité (NIGELEC)
- In Mali: Électricité du Mali (EDM-SA)
- In Mauritania: Société Mauritanienne d'Électricité (SOMELEC)
- In Chad: National Electricity Company (SNE)
- In Burkina Faso: Société Nationale d'Eléctricité du Burkina (SONABEL)

The flow of funds at the country level is provided in Figure 6 below.

[18] The Ministry of Planning of Niger signs all sovereign agreements.

Figure 6: Implementation arrangements with flow of funds at the country level:



Implementation Arrangements for Component 2

Guided by each country´s energy master plan and the DtP National Roadmaps, solar integration studies are being carried out through a grant of $5.05 million from the Sustainable Energy Fund for Africa (SEFA) approved by the Board of the AfDB in December 2020 which will identify suitable geographical areas and optimum injection places for solar IPPs in each of the G5 Sahel countries. The projects to be supported will notably include those identified in the G-5 DtP national roadmaps (see project pipeline) and projects identified through new competitive procurement processes. As far as the latter are concerned, for each country, suitable pieces of land will be identified close to transmission lines for the power plants and the right of way, after considering social and environmental impacts and the outcome of solar integration studies.

In addition, the AfDB and Africa 50 are considering development of an IPP procurement programme whereby Africa 50 will act as a surrogate sponsor to develop the projects and make them ready for competitive for private sector participation. The proposed collaboration with Africa 50 targets the addition of generation capacity at scale while facilitating governments participation.

The Executing Entity for Output 2.1 will be AfDB.[19] A transaction advisor, where applicable, will be procured to support the Host Countries and the Accredited Entity in the implementation of this Output. AfDB shall provide debt financing and partial risk guarantees for IPP Sub-projects, that comprise of (i) IPP Sub-projects that are already in the DtP road maps and (ii) those projected to be selected by AfDB in accordance with the Eligibility Criteria.

[19] AfDB is the EE with the focus here as the provision of financial instruments, and not the execution of the underlying activities

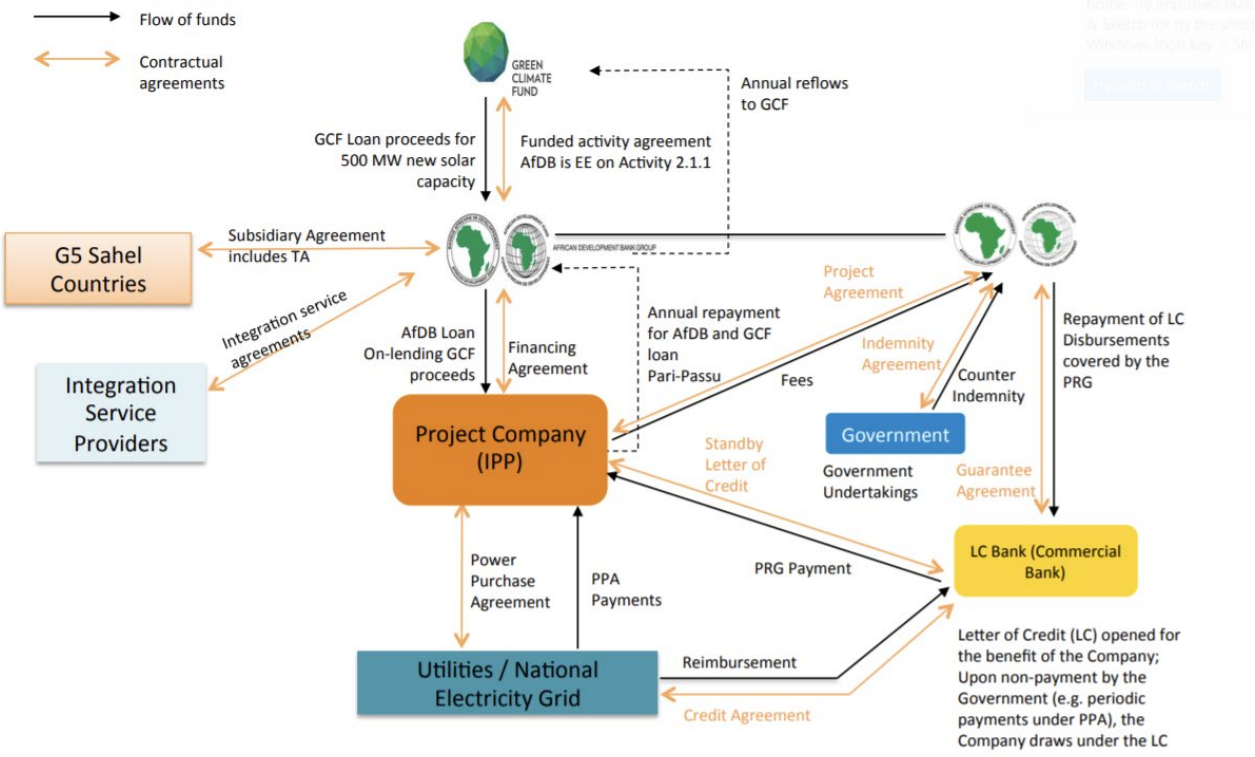
The AfDB will avail a full suite of its instruments including senior debt, Partial Risk Guarantee and may perform the role of a Mandated Lead Arranger role to mobilize additional financing where necessary. Negotiation and signing of an implementation agreement PRG (Partial Risk Guarantee) between the winning IPPs will also take place. AfDB will follow its standard project processing cycle. These elements will facilitate the bankability of the projects leading to successful implementation of the solar PV IPP investments and developers deliver the solar PV farms on the grounds of this financial close.

Table 8: Solar PV targets in the G5 Sahel countries

Country	2030 PV target in MW	Existing PV plants in MW	Identified projects in MW	Uncommitted capacity in MW
Burkina Faso	820	34	421	365
Chad	702	0	383	319
Mali	977	50	1,426	-
Mauritania	420	85	5	330
Niger	442	7	248	187
TOTAL	**3,361**	**176**	**2,483**	**1,201**

The implementation arrangements for these activities are graphically described in figure 4 below:

Figure 4: Implementation arrangements for IPPs



b) <u>Partial Risk Guarantee supporting IPPs under output 2.1</u>

The proposed AfDB PRG under co-guarantee arrangement with the GCF is intended to address the payment risks to the IPPs specifically, component 2 of the DtP initiative which seeks to add 500 MW of new grid-connected solar PV capacity. The need for the AfDB guarantee instrument stems from the fact that while the DtP initiative is transformative and will set the utilities on a path to recovery through low cost of generation, the utilities are currently not creditworthy off-takers. Furthermore,

most of the utilities in the region have no track-record of dealing with multiple IPPs; therefore, increasing the need for various forms of credit enhancement instruments as a condition for most lenders and sponsors to reach financial close.

The need for the PRG also stems from the financial situation of most of the off-takers across many African countries and in the G-5 Sahel countries. As a result, IPPs and lenders do require credit enhancement instruments to support the liquidity situation of the off takers.

The proposed executing entity is the AfDB, as Accredited Entity, for the purpose of providing financing.

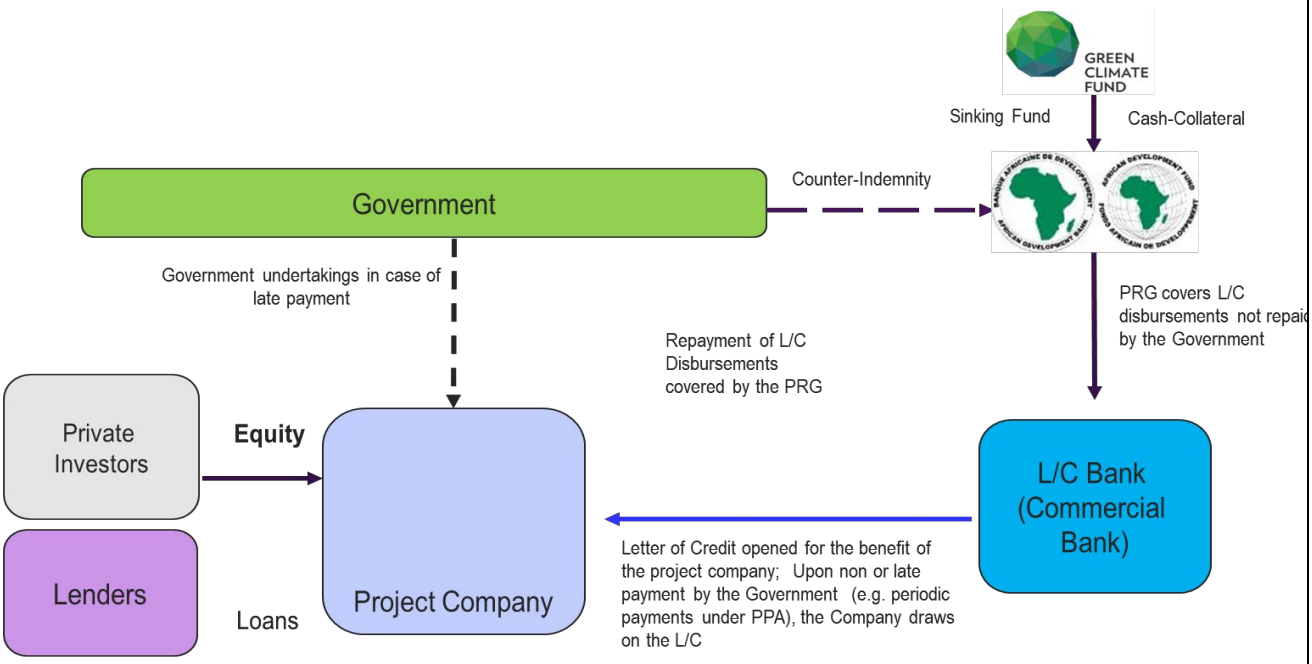


Figure 5: Implementation arrangements for PRG

Monitoring and evaluation of the PRG will be carried out by AfDB from effectiveness of the Guarantee Agreement, covering construction and commissioning phase and project operations phase, and will include monitoring of environmental and social performance and other project indicators as required under the Project agreement between the Project company and AfDB.

During the project construction and commissioning phase, monitoring, evaluation and supervision will be conducted in accordance with the supervision procedures applicable to the senior lenders to the project. The monitoring will be done through construction progress reports, quarterly supervision reports, environmental and social management reports and technical advisors reports. A supervision of the project will be undertaken at regular intervals to be agreed with the Bank's portfolio team.

Implementation Arrangements for Component 3

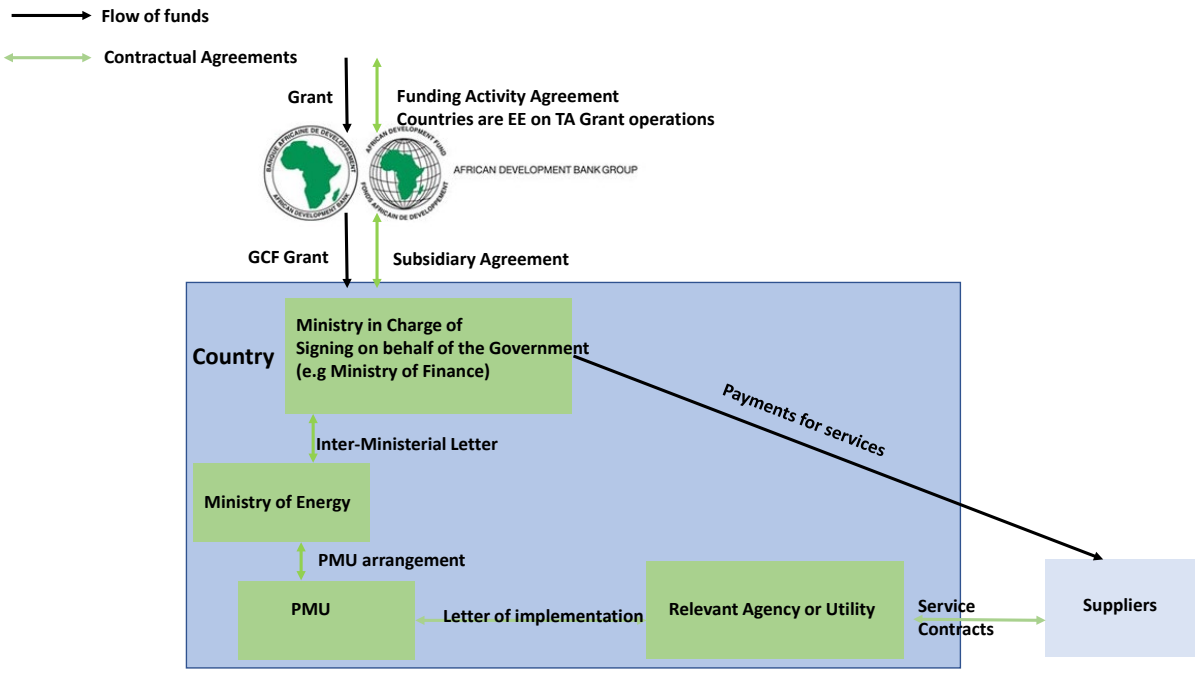
Implementation of technical assistance program under activities 3.1.1, 3.1.2 and 3.2.1:

The Host Countries through their relevant agencies are responsible for ensuring the implementation of these technical assistance activities to build the capacity of stakeholders (TA beneficiaries)[20] and for the fulfilment of the stated development objective. The PMU in each country will play the role of

[20] Technical Assistance Beneficiaries may include relevant Ministries, the Utilities, renewable energy agencies, sector regulators, cooperatives, and other stakeholders (including women groups and other relevant non-state actors)

overall coordination. The selection and engagement of consultants and the procurement of services shall be carried out in accordance with the Accredited Entity's applicable policies, rules and procedures. The contracts may be signed between the Utility and the services providers whereas the fund will be released from the Ministry in Charge for signing behalf of the country upon each payment request.

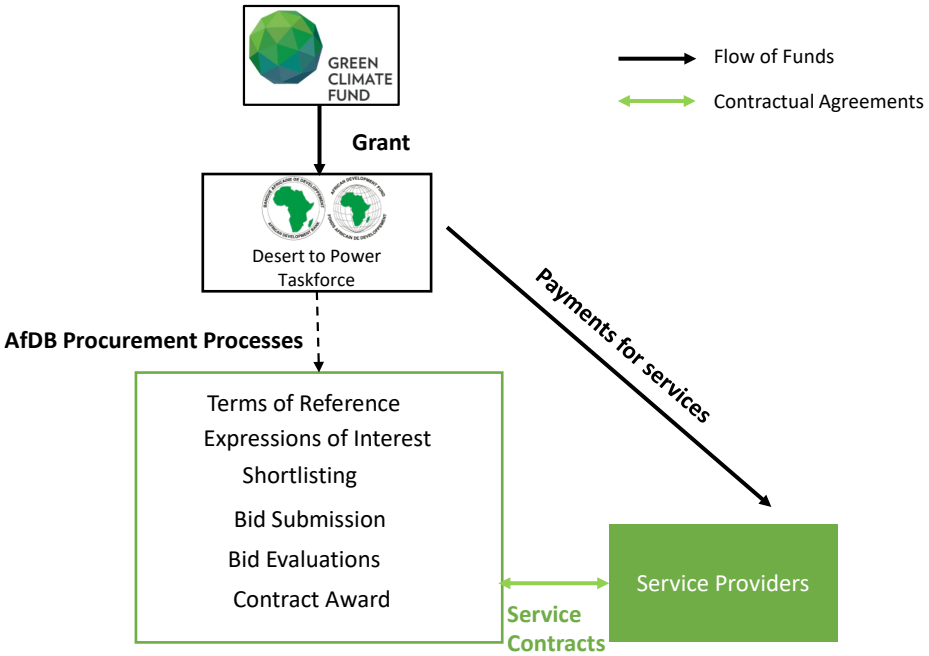
Figure 7: Implementation arrangements with flow of funds at country´s level for TA activities:



Implementation Arrangements for Activity 3.2.2 - Match-making events to leverage private investments:

The African Development Bank through the Bank-hosted DtP Taskforce will lead the implementation of this component with support from (i) G5 Sahel focal points (representing interests of all countries), (ii) AfDB country offices; and (iii) PMU lead from each country. The DtP Taskforce will also closely cooperate with the Africa Investment Forum team and with other investment platforms, such as the Climate Investment Platform to amplify the impact of the match-making events and seize synergies where possible with other events.

Figure 8: Flow of funds for Activity 3.2.2.

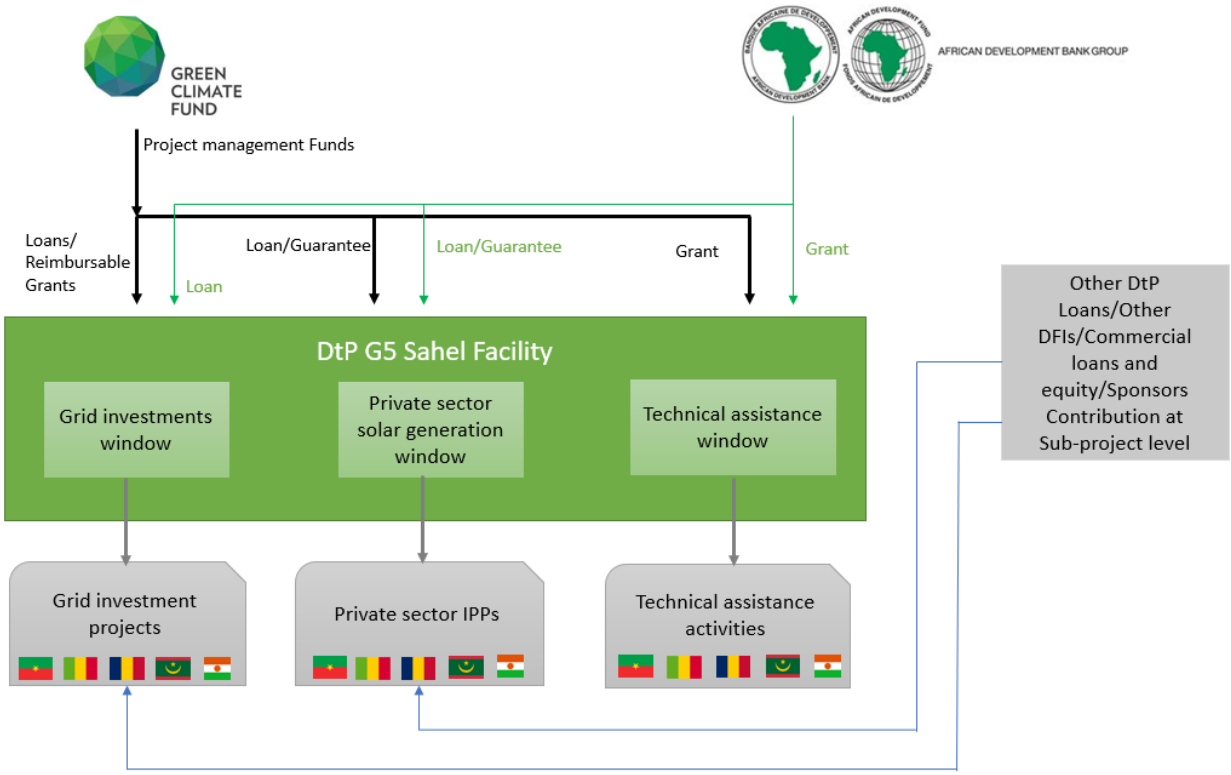


Flow of funds

Different financial instruments are sought for the Facility with proceeds being allocated based on their fit with the activities of the Theory of Change. The instruments have been selected to appropriately address financial and regulatory barriers identified in the G5 Sahel countries. For instance, highly concessional loans to the public sector are proposed to finance public infrastructure such as the upgrade of grids. Storage could be publicly owned. The storage infrastructure that could interest the private sector investments does not show sufficient financial viability and will require much higher concessionality, thus the request for a reimbursable grant instrument on component 1 that will enable the viability of these activities. Loans will be blended where appropriate with other mobilized resources by the accredited entity to provide long-term finance at viable interest rates to the private sector on IPPs, enabling the projects' financial sustainability and overall bankability.

The proceeds are allocated to the 3 windows of the Facility according to the following flow of funds diagram (Figure 9), distinguishing between the different types of financial instruments provided by GCF funding and co-finance from AfDB.

Figure 9: Diagram of Flow of Funds



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

Alignment with climate targets:

The countries in the Sahel region are committed to tackling adaptation and mitigation needs and have embarked on a low emission growth pathway by identifying strategies and priority actions that achieve emission reductions while contributing to the socio-economic development of the region. The governments of the G5 Sahel countries are also interested in pursuing low-carbon economic growth strategies, which can dovetail with their climate change adaptation and mitigation plans. Common priority sectors identified in both the countries' economic development plans and NDCs include climate-smart agriculture, sustainable land management, and increasing access to energy with a strong focus on developing their renewable energy potentials. The Facility is fully aligned with the climate targets of the beneficiary countries as evidenced in their submitted NDCs. Supporting these countries to transform their desert area into an opportunity to adopt a low emission path while addressing issues of energy security and achieving adaptation co-benefits at the same time is at the core of GCF mandate.

Concessionality:

According to the Climate Change vulnerability index 2017, projections estimate that climate change threat will lead to an equivalent of 2-4% annual loss in GDP in the Sahel region by 2040. While there is an established co-relation between energy security and countries' GDP, the overall economic situation of the G5 Sahel countries does not allow them to efficiently address the growing energy

demands with a national integrated utility model as a vehicle to invest in generation, transmission and distribution assets. The cost of electricity generation is high due to the countries' dependence on fossil fuels, faltering grid systems and high technical and commercial losses. The balance sheet of the utilities is not strong, as these national utilities are themselves recurrently subsidized by the States given the gap between their revenues and costs. The five countries are among the Least Developed Countries (LDCs) and their current debt levels make them eligible to seeking highly concessional terms to finance key public infrastructure. The private sector is also shy to engage in utility scale solar plants in the context of single utility off-takers, given the balance sheets of national utilities. Power wheeling arrangements would be much better for the private sector, but these require having in place common infrastructure for power transmission which the countries cannot currently finance on their own. Based on the aforementioned barriers and opportunities, GCF concessionality is required to achieve the following objectives:

- To incentivize private sector involvement in the solar sector.
- To finance public infrastructure projects that will enable further low-emission investments in the sector.

Energy tariffs are high in most of the countries. This is attributed to the high dependence on fossil fuels, the inability to attract investments in power generation at scale, and inefficiencies along the value chain—such as high distribution losses, relatively low billing collection rates, and small isolated grid systems. Without GCF contribution, the electricity tariffs will need to increase to achieve bankability, leaving the poorest of the population unable to be connected and the public utilities unable to invest in decarbonizing the energy sector. The blended financing structure will assist the Facility's projects in achieving financial viability with a lower average electricity tariff and attractive conditions for private sector investments, ultimately enhancing the bankability of solar projects that are competitive with electricity produced from fossil fuels energy.

Unlocking the private sector on grid-connected solar:
The use of GCF funding will facilitate private sector investments at a catalytic scale. Amongst other constraints to be addressed are the low levels of private sector returns on any solar investment, given that power grids are only capable of absorbing injected power a few hours per day and power purchase agreements would mostly be based on injected power in the grids. Therefore, the GCF funding will be an enabler for IPP projects in the Sahel region, catalyzing private sector investment that is not readily available.
The DtP National Roadmaps validated by the countries indicate that the G5 Sahel countries have already identified the potential for grid connected PV and the need for the private sector to play a pivotal role in meeting those targets (see Table 9 below). For the private sector to be able to invest in grid connected solar, the GCF contribution is needed to ensure that IPPs can access quality contractual frameworks, that the country's legal and institutional framework are in place to support private sector operations, and that appropriate finance is available.

To partially offset the financial situation of state utilities, a PRG co-guaranteed by GCF amounting to US$ 20 million has been proposed. PRGs are effective tools to insure investors against political risks emanating from government undertakings that the market is not able to bear or adequately measure and can therefore attract or provide access to new sources of financing and reduce effective financing costs.

Ancillary services for grid integration:
In markets where solar energy dealings have taken off, the portion of power grids which is required to connect new solar plants to existing networks is usually paid for by the public sector. In the G5 Sahel countries, asking private sector as it´s done today to cover these additional costs, makes investments simply more capital intensive while slowing paybacks under the current tariff regimes.

Market transformation:

By building the capacities of institutional stakeholders such as grid operators and regulators this Facility will improve considerably the enabling conditions for decarbonizing the power supply systems of the G5 Sahel countries. The power sector in the G5 Sahel countries is characterized by low energy access rates, by a generation system that relies on fossil fuels and that is unable to meet growing demand for electricity, and by power networks and infrastructure that are inadequate to integrate larger shares of variable renewable energy sources. While some progress has been made over the last few years and the countries' governments are committed to transform the energy sector towards a low-carbon pathway, the potential for more widespread deployment of renewable energy solutions remains largely untapped.

The Facility will create a conducive environment and market opportunities for solar energy through a well-structured TA program. In this regard, it is also expected that the technical assistance activities under the Desert to Power will create a clear and reliable environment for private sector solar investments and the development of adequate capacity of national institutions in the G5 Sahel countries to attract private sector investment and ensure the long-term sustainability of the renewable energy sector. Technical assistance support will also help to (i) establish transparent and sound regulatory frameworks for competitive tenders to attract private sector investment for on-grid solar generation; (ii) review and/or develop tariff methodology, structures and its associated financial models; (iii) support the establishment of a common tax regimes and credit enhancement solutions for solar projects in the G5 Sahel.

Technology and Innovation:

Innovation is a key characteristic of the Desert to Power Facility, within which innovation will take place in the areas of a) deployment of private solar PV at scale in the G5 Sahel countries, b) technology innovation in grid-scale storage.

a) Deployment of private solar PV at scale in the G5 Sahel countries

Currently there is only 176 MWp of installed PV capacity in the region, ranging from 0 MW in Chad to 85 MW in Mauritania. As a result of this programme, the PV capacity will increase by over 350%. This deployment of private sector solar PV at scale in the participating countries constitutes a step-change supply of renewable energy and will result in significant business and sector innovation in grid-connected solar in the region. While these technologies have been deployed at scale in other countries the innovation represented by Desert to Power relates directly to the scale and location of these systems.

b) Technology innovation in grid-scale storage

While there is significant worldwide experience with pumped storage systems, other grid-scale storage solutions are highly innovative and have not, to date, been deployed in the region. By way of example, large-scale Battery Energy Storage Systems based on Li-ion systems are currently deployed in isolated commercial settings, almost exclusively in developed countries. In contrast other battery technologies, more suited to stationary and developing country settings, such as Sodium-ion, Lithium-sulphur, Redox Flow, and Zinc-air batteries are at experimental staged. Outside of battery technologies, options such as Compressed Air Energy Storage and High-Power Flywheels have been deployed in a limited number of cases in developed countries. Another potential storage technology is Liquid Air Energy Storage where pilots have been carried out and the first 50MW storage facility is currently under construction in the United Kingdom.

The programme will bring about a transformation of the market for solar PV in the participating countries. Key elements of the transformation include:

- **Scaling up and replication:** The Facility will provide a high potential opportunity for scaling-up the uptake of variable renewable energy in the Sahel region, through grid and ancillary investments that will contribute to further absorption of solar capacity.
- **Knowledge sharing and learning:** The Facility creates potential for knowledge and learning for institutional players such as transmission system operators and regulators on efficient dispatch of variable renewable energy but also will create lessons learnt for efficient replication across the other Sahel countries. Additionally, lessons learned, and knowledge generated in the G5 Sahel countries will inform replication in the remaining DtP countries.

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

The Facility will reinforce key institutions (ministries of energy, regulators, utilities etc.) with increased abilities to manage electricity systems with higher shares of variable renewable energy. By making direct investments in the grid and key infrastructure that enable solar integration during implementation and beyond, the proposed activities will increase the system flexibility and stability. The strengthened system will ensure the sector transition to green grids with high share of solar generation.

The development of regional solar parks with battery storage near the regional interconnectors, is expected to provide more ancillary services into the system and help G5 Sahel countries to meet the regional requirements in terms of primary and secondary frequency and voltage control. The system can then efficiently participate in the regional power market under development with green electricity.

The PRG will ensure sustained and consistent payments to the IPPs and indirectly, the project lenders. It is expected that with the PRG, and the improvement of their financial situation, the off-takers will have a track-record that will attract IPPs to invest in renewable energy sector with reduced needs for credit enhancements going forward.

The technical assistance provided under Component 3 will allow existing policies and regulatory frameworks to be operationalized to encourage more private sector investments. By building the capacities of institutional stakeholders such as grid operators and regulators the program will support the decarbonization of the power supply systems of the I G5 Sahel countries. Hence, the implementation partners will benefit from strengthened PIUs which will ensure the successful achievement of program objectives and long-term delivery. The program is designed to build technical and operational institutional capacity alongside the facilitation of new solar energy investments and energy planning. This enhanced capacity – built at both regional and national levels – will ensure the long-term public ownership of the program.

By contributing to the energy security of these countries the DtP program will also achieve significant socioeconomic and gender benefits through capacity-building, job creation during and beyond the program, and through economic value-added with the use of clean electricity for industrial use to transform the energy landscape in the 5 countries.

Finally, the program will further provide potential for knowledge and learning on battery energy storage systems (associated assets of the regional solar parks) for institutional players such as transmission system operators and regulators on efficient dispatch of variable renewable energy.

A. FINANCING INFORMATION

C.1. Total financing

(a) Requested GCF funding (i + ii + iii + iv + v + vi + vii)	Total amount	Currency
	150	million USD ($)

GCF financial instrument		Amount	Tenor	Grace period	Pricing
(i)	Public sector loans	40	Up to 40 years	Up to 10 years	As agreed in Term Sheet
(ii)	Private sector loans	42	Up to 20 years	Up to5 years	
(iv)	Guarantees	20	same as senior loans	N/A	
(v)	Reimbursable grants	40	20	N/A	
(vi)	Grants	8	N/A	N/A	

(b) Co-financing information	Total amount	Currency
	816.7	million USD ($)

Name of institution	Financial instrument	Amount	Currency	Tenor & grace		Seniority
AfDB	Senior Loans	299.6[21]	million USD ($)	Up to 20	As agreed in Term Sheet	senior
AfDB	Grant	10	million USD ($)	N/A Enter		N/A
AfDB	Sovereign loans	50	million USD ($)	TBD		senior
AfDB	Guarantee	20	million USD ($)	20 years		Pari passu
Other co-financiers	Senior Loans	275.4	million USD ($)	TBD		senior
Sponsor/shareholder	Equity	161.7	million USD ($)	N/A		junior

(c) Total financing (c) = (a)+(b)	Amount	Currency
	966.7	million USD ($)

(d) Other financing arrangements and contributions (max. 250 words, approximately 0.5 page)	GCF investment will leverage an estimated US$ 816.7 million from the AfDB, private sector equity, and other co-financing. The Program size is estimated at US$ 966.7 million, including AfDB, GCF and other investors' participation.

C.2. Financing by component

Component	Financing source	Indicative Amount (USD million)
Component 1: Grid investment to de-risk Solar IPPS	GCF	80
	AfDB	100

[21] Up to USD 50 million of this amount may be provided as sovereign loans depending on the implementation option for the storage system.

	Private Sector	20
	Total Component	**200**
Component 2: Incremental finance for solar power generation	GCF	62
	AfDB	269.6
	Other co-financing	417.1
	Total Component	**748.7**
Component 3: Technical Assistance	GCF	5.6
	AfDB	9.4
	Component Total	**15**
Project Management		3
Grand Total		**966.7**

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

C.3.1 Does GCF funding finance capacity building activities?	Yes ☒ No ☐
C.3.2. Does GCF funding finance technology development/transfer?	Yes ☒ No ☐

The DtP Facility has a strong focus on building the capacity of target countries' stakeholders in operating, maintaining a modern energy system with high shares of solar capacity, and in designing a conducive enabling environment that is able to attract private sector investments for long-term sustainable development. In particular, Component 3 focuses on building the capacity of energy sector stakeholders (utilities, transmission system operators, and regulators) on demand management and operation of grids with higher shares of solar. This will have a strong gender focus to ensure women's inclusion in the renewable energy workforce and by addressing women's barriers to participation in solar value chains. Additionally, capacity building will emphasize integrating gender into sector strategies and policies.

B. EXPECTED PERFORMANCE AGAINST INVESTMENT CRITERIA

This section refers to the performance of the project/programme against the investment criteria as set out in the GCF's Initial Investment Framework.

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

Access to clean energy is key to the implementation of NDCs and mitigation goals of the G5 Sahel countries. Given that the energy mix in the target region heavily depends on fossil-fuel based electricity, low-carbon energy generation can be achieved by tapping into the vast solar potential in the region.

The impact potential of the Programme aligns with the Green Climate Fund' objectives and result areas, i.e. the reduction of CO2 emissions through displacement of fossil-fueled electricity use by implementing and installing of clean and solar energy generation capacity.

The Facility has the potential to deliver substantial climate mitigation impacts which are estimated at over 14 MtCO2eq for the 5 countries over the programme lifetime. This impact will be achieved *inter alia* by adding 500 MW of solar energy generation capacity, which will significantly increase the share of clean energy in the generation mix across the five countries.

- Expected tons of carbon dioxide equivalent (t CO_2 eq) to be reduced or avoided:
  Annual: 635,100 t CO_2 eq

  Lifetime: 14,448,525 t CO_2 eq

- Expected total number of direct and indirect beneficiaries:
  Direct beneficiaries: 3.5 million people, of which 50% female

  Indirect beneficiaries: 0.7 million, of which 50% female

Greenhouse gas emission impacts of the DtP Facility have been estimated by developing a model for each of the main types of eligible investment that the facility will fund, namely:

1. Solar grid connected PV via an Independent Power Producer (IPP) – DtP programme subcomponent 2.1, incorporating subcomponent 1.1
2. Storage for grid stabilisation – subcomponent 1.2

The results of the analysis are given below. The total emission reduction over the lifetime of the investments is 14.4 Mt CO2eq. The methodology used to calculate emission reductions and detailed analysis are provided in Annex 22.

GHG emission reduction summary

Project types						
1. Solar PV IPP	**Burkina Faso**	**Chad**	**Mali**	**Mauritania**	**Niger**	**TOTAL**
Annual emission reductions	113,165	116,386	106,387	120,362	133,327	**589,628**
Lifetime emission reductions	2,539,787	2,617,560	2,382,939	2,738,245	3,033,194	**13,311,724**
2. Storage for grid stabilisation	**Burkina Faso**	**Chad**	**Mali**	**Mauritania**	**Niger**	**TOTAL**
Annual emission reductions	15,432	13,437	16,604	-	-	**45,472**
Lifetime emission reductions	385,790	335,918	415,093	-	-	**1,136,801**
TOTAL	**Burkina Faso**	**Chad**	**Mali**	**Mauritania**	**Niger**	**TOTAL**
Annual emission reductions	**128,597**	**129,823**	**122,990**	**120,362**	**133,327**	**635,100**
Lifetime emission reductions	**2,925,577**	**2,953,478**	**2,798,032**	**2,738,245**	**3,033,194**	**14,448,525**

The 3.5 million direct beneficiaries and 0.7 million indirect are calculated on the basis of an average monthly grid connection consumption of 105 kWh/month in the region, and 5.08 people per household. The calculations are given on rows 56 to 76 on the "Overall economic analysis" tab in annex 3B.

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

Scaling up and replication

The Facility will provide a high potential opportunity for scaling-up the uptake of variable renewable energy in the Sahel region, through grid and ancillary investments that will contribute to further absorption of solar capacity. Component 1 will focus on grid investments to de-risk solar IPPs and pave the way for the uptake of a regional solar market. Power Purchase Agreements (PPAs) in Component 2 will be commercially viable under current CAPEX benchmarks in the region as indicated in the financial model. With favorable loan

conditions coupled with partial risk guarantees, the financial risk perceived by developers will be moderate and the prices of PPAs will be more competitive than the cost of service of utilities which energy mix depends mainly on thermal generation. The lower cost of the energy mix due to solar generation will improve the financial viability of power companies and allow the development of new solar projects.

Knowledge sharing and learning
The Facility provides an opportunity for institutional players such as transmission system operators and regulators to familiarize themselves with technical aspects related to integration of variable renewable energy. The lessons learnt from the Facility will allow for efficient replication across the other DtP Sahel countries.

Creation of an enabling environment
Harnessing the solar potential of the G5 Sahel countries in an economically viable manner requires an enabling environment that allows for private sector participation, on a commercial basis, on power wheeling arrangements and a regional solar market which is being supported by various ongoing and planned investments from the AfDB and other development partners. By putting in place grid infrastructure in connection with IPPs and enabling energy policy frameworks, the Desert to Power Facility is establishing conditions for transforming the energy sector of the G5 Sahel countries and shifting them towards a low emission path. While enabling more private sector investments in power generation, the Facility helps establish a clear paradigm shift in the energy sector of these countries from the current situation where national integrated utilities are largely operating as vertically integrated utilities. Component 2 will address the lack of appropriate commercial finance (i.e., inadequate pricing, inflexible grace periods and loan tenors that are not adapted to the characteristics of renewable energy investments in the G5 Sahel countries) to achieve uptake in private sector investments across the 5 countries with the provision of finance for new solar IPPs.

Contribution to the regulatory framework and policies
The Facility will enable stakeholders to operationalize regulatory frameworks and policies that encourage private sector participation. Through component 3, the Facility will work with institutional stakeholders to revise regulatory texts to make provisions for private sector participation taking into account gender considerations. Specifically, the TA support will (i) establish transparent and sound regulatory frameworks for competitive tenders to attract private sector investment for on-grid solar generation; (ii) review and/or develop tariff methodology, structures and its associated financial models; (iii) support the establishment of common tax regimes and credit enhancement solutions for solar projects in the G5 Sahel.

Contribution to climate-resilient development pathways consistent with relevant national climate change adaptation strategies and plans
The outcomes and impact of the Facility is consistent with and contributes to the G5 Sahel countries' national climate change strategies and plans. The G5 Sahel countries have committed to use their largely untapped solar potential under the Desert to Power framework to transform their growing desert area into a solar energy generation source that transforms their entire power generation mix. Amid these objectives, the G5 Sahel countries have articulated their policies around a green and climate resilient vision expressed in their updated NDCs, where they have also recognized the energy sector to be a priority contributor to their climate action efforts.

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

The Facility is aligned with, and will broadly contribute to achieving several 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 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.

In addition to climate mitigation impacts and to contributing to the energy security of the target countries, the Desert to Power Facility will contribute to several environmental, socio-economic and adaptation co-benefits.

Economic co-benefits: The Facility activities will generate various economic benefits during and after its implementation. The programme will achieve significant socioeconomic benefits through employment creation during and beyond the project and through economic value-add with the use of clean electricity for industrial transformation. By removing barriers for investments, the programme will enable investments in the energy sector thus supporting the economic growth of the beneficiary countries. It is expected that the G5 Sahel countries will improve their investment environment and that the Facility will create a sustainable market for solar IPPs. The solar projects will reduce reliance on high diesel generation resulting in significant annual savings for the cash-strapped utilities thereby supporting their long-term sustainability. The Facility will also contribute to reduced subsidies to cushion the electricity consumers, with such savings channeled to the much-needed social sectors of health, education, water and sanitation.

Social co-benefits: Covering the cost for grid ancillary equipment for power plants integration will help achieve fairer tariffs which will result in lower electricity prices for end users. The investments are expected to generate jobs during construction and operation phases with positive impact on vulnerable segments of the population targeting the female and youth. Furthermore, the IPP projects will facilitate knowledge and technology transfer and create opportunities for linkages with SMEs in the value-chain.

Environmental co-benefits: The Facility will help displace a large amount of fossil fuel generation helping the five countries increase the average proportion of solar generation from the current average of 10%. This translates into significant environmental benefits especially considering the heavy usage of diesel generators to cover electricity needs. Further, rural populations in the target countries are dependent on biomass and non-renewable sources for their household energy consumption. Considering future climate scenarios and a business as usual approach, the Sahel population is expected to continue cutting trees as fuelwood, which has direct effects on deforestation and soil fertility and ultimately on agricultural yields. The Facility is expected to drive environmental co-benefits and to combat deforestation by increasing access to electricity, which in turn is expected to reduce the need for firewood. It is to be noted in this regard that DtP is a flagship program under the Great Green Wall initiative.

Adaptation co-benefits: The Desert to Power G5 Sahel Facility seeks to enable the African countries of the Sahel region to adopt a low-emission path by transforming their desert area into an opportunity to address their energy security needs using clean technologies, while delivering multiple adaptation co-benefits. Renewable energy provides a reliable source of clean energy which by virtue of geographic distribution enhance both the instantaneous availability of energy and the long-term resilience of the grid. Removing the reliance on fossil fuel processing and supply chains significantly reduces risks associated with direct climate-induced issues such as transport and indirect issues associated with broader geopolitical issues linked to climate change. Reduced running costs makes renewable energy resilient to economic shocks induced by events such as droughts, floods, pandemics and political unrest. Renewable energy assets are no longer at risk from domestic or international policy transition and economies driven by renewable energy will in future have a strong advantage in accessing international trade. The Facility is a massive opportunity to address the structural challenges which have held many citizens of the G5 Sahel countries in poverty, and to do so in a manner which is aligned with the objective of the Paris Agreement.

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

The Sahel region is home to the 40% of the African population that does not have access to electricity. The G5 Sahel countries are according to the Gain Index in the top five countries in the world that are the most exposed to climate change. According to the IMF more than 85 million sub-Saharan African are expected to be forced to migrate by 2050 due to climate change threats[5], and 4.2 million people in the G5 Sahel region are already displaced[22].

The climate-sensitive agriculture sector represents the largest sector of G5 Sahel economies and provides livelihoods to the majority of the population. Climatic variability and extremes experienced in the region (e.g. droughts and reduced rainfall) and increasing temperatures present the main climatic challenges to agriculture in the target countries. The impacts of climate change are likely to include increased water and irrigation requirements under higher temperatures and reduced rainfall, and thus increased competition for water resources, as well as the increased incidence of pest and disease outbreaks.

Women and girls are more vulnerable to climate change due to strong gender-based inequalities in the G5 Sahel countries. Access to energy, salaried employment or entrepreneurship in the energy sector are gendered issues, with women entrepreneurs, salaried, and end-users experiencing different challenges when accessing electricity or applying in the energy sector than men.

Access to finance is one of the main barriers for investments in clean energy in the G5 Sahel countries. Additionally, the utilities in the 5 countries have struggled to manage the challenges of increased cost of generation, sustained growth in energy demand, and need to significantly increase energy access. Generation costs are likely to increase and therefore the utilities will need to sustain their performance through new investments. Creditworthiness of utilities is also mentioned as a barrier for investments[23]. At the same time, public investments need to continue taking place, but have been happening at the cost of an unsustainable indebtedness trend further exacerbated by Covid-19, which needs to be shifted towards more concessional terms.

G5 Sahel countries are among the Least Developed Countries (LDCs) and have limited institutional capacity to tackle their own energy security using renewable resources such as solar and are prone to internal security challenges, where capital investments that are subject to long term returns are often deemed too risky for traditional investors. Additionally, inadequate legal frameworks hinder private sector participation in the absence of clear incentives. Fiscal and customs barriers, the lack of authority of the regulators, high tariffs finance and lack of transparency which further limit the countries' attractiveness to investors.

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

Existing national climate strategies and alignment with existing policies

G5 Sahel countries have committed to use their untapped solar potential under the DtP Framework and to transform their growing desert area into a solar energy generation source that changes their entire power generation mix while delivering climate adaptation co-benefits. Amid these objectives, the G5 Sahel countries have articulated their policies around a green and climate resilient vision expressed in their updated NDCs, where they have also recognized the energy sector to be a priority contributor to their climate action efforts. Various policies and regulatory reforms have started or have been put in place with different progress statuses with the aim to create an enabling environment to support their NDC goals.

The overarching strategy for DtP with the five priority areas was endorsed by the Heads of State in a dedicated Desert to Power Summit in September 2019. In addition, detailed national DtP Roadmaps have been finalized and validated by the countries complemented by a regional Sahel G5 Roadmap. These outline the specific targets, priority actions to achieve along the five areas and an assessment of an initial list of

[6] IMF Working Paper, 'Africa Rising, Harnessing the Demographic Dividend', 2014. Accessible here: https://www.imf.org/external/pubs/ft/wp/2014/wp14143.pdf

[23] Climatescope 2020

identified priority projects. The action plan identifies 5 priority areas for intervention, 3 of which are the components of this Facility. Additionally, all G5 Sahel countries mention the energy sector in their NDCs as part of the national priorities for climate change mitigation. Key priority areas include integrating renewables in the energy mix, promotion of wind and solar PV and increased commitment to climate change mitigation targets.

Under the Desert to Power Framework, the G5 Sahel countries have outlined their 2030 priority action areas and targets for the electricity sector, which are summarised in the table below.

Table 10: G5 Sahel countries 2030 priority action areas and targets for the electricity sector

Country Identified priority action areas for the electricity sector	**Burkina Faso**	**Chad**	**Mali**	**Mauritania**	**Niger**
Pillar 1. Expansion of utility scale solar	Install 820 MW of additional solar capacity	Deliver 702 MW on-grid solar capacity	Install 977 MW of additional solar capacity	Install 420 MW of additional solar capacity	Install 442 MW additional solar capacity
Pillar 2. Strengthening of national grids and expansion of regional network	Develop 1 GW of interconnection capacity	Strengthen T&D grid with > US$ 300 million of investment, to allow new on-grid connections and public lighting	Expand the network to support 658 MW of import requirements	Develop the network to increase exports	Develop 350 MW of interconnection capacity
Pillar 5. Setting up a favorable environment and training	Ensure a strong mobilization of private sector investment	Ensure a strong mobilization of private sector investment	Ensure a strong mobilization of private sector investment	Ensure a strong mobilisation of private sector investment	Ensure a strong mobilization of private sector investment

Capacity of AfDB to Deliver the Programme's Outcomes

AfDB is well placed as an Accredited Entity (AE) to undertake the planned activities building on a close engagement with the relevant national authorities and a broad range of financial and technical partners. The Bank has been and is still active in the G5-Sahel countries, despite the political situation. Currently, the Bank has approved the West Africa Regional Economic Program (WAREP), an ADF 15 RPG Project preparation and TA facility (US$6M) to be implemented by ECREEE and WAPP. This project was approved by the ADF Board in July 2021. In the electricity sector, for instance in Burkina Faso, the Bank is also engaged in the PEPU II – PEDECEL Project for the extension of distribution network and connection of 235 000 households, with a financing of UA 35 million (ADB Public - UA 25 million, ADF – UA 10 million). Also advancing is the earlier approved IPP projects e.g., the Segou 33 MW solar IPP in Mali. Moreover, the Djermaya Solar project (28 MWe) will be the first large photovoltaic solar power plant in Chad supported by AfDB. The project site is located 30 km north of N'Djamena is structured as a PPP with an independent electricity producer (IPP) and will be financed mainly by private investments. The project received significant support from the AfDB

of which, (i) the support for the structuring of the transaction and network studies, (ii)a loan grant to the Project Company, (iii) a partial risk guarantee (PRG) and (iv)- a technical assistance to SNE for solar integration (intermittency management). The project is expected to reach financial close in Q4 2021, and power generation will start after twelve months construction period.

The Desert-to-Power Technical Assistance Programme (TA) for expanding solar energy generation in the Sahel G5 for US$ 5.05 million was approved by the Bank's Board in Q4 2020 financed from the Sustainable Energy Fund for Africa (SEFA). The programme seeks (i) to pave the way for the development of solar projects through variable renewable energy (VRE) grid integration studies and (ii) support the deployment of a regional hybridization programme for reducing the use of high emitting fossil fuel generation (notably diesel) across the G5 Sahel and (iii) provide capacity building and training to staff of public utilities**.** This TA will also incorporate activities under an additional US$ 0.95 million SREP Mali grant to cover detailed feasibility studies for the hybridization of selected thermal power plants. Several other ongoing and upcoming Green Mini-Grids/decentralized energy access (GMG) activities are aligned to DtP under SEFA, including TA support for GMG Country Programs in Burkina Faso and Niger and Transmission Support Facility (TSF) grants.

Capacity Assessments of the Executing Entities

The capacity assessment of the countries indicate that the G5 Sahel governments are well positioned to implement the activities described in the Desert to Power Facility. However, the institutional capacity to manage diversified delivery models and investment mechanisms needs to be further developed through AfDB's continuous collaboration and oversight of the Programme. Significant capacity has been created during the programme preparation process to enable the implementation of the Facility. Over the past two years, AfDB and the countries have established coordination mechanisms and country focal points were nominated. The processes of setting up the right implementation arrangements are well underway. For example, a technical coordination mechanism in Mali has been already established, and the set-up of PMUs in the Host Countries is under consideration. Further, the G5 Sahel countries have a long track record of regional collaboration and of implementation of Official Development Assistance (ODA) programmes, in partnership with various donors and development partners (e.g., EU, The World Bank). The project implementation process will be managed by some of the best qualified personnel in the countries with the help of international advisory committees and subject area experts.

In addition, the AfDB uses the Country Policy and Institutional Assessment (CPIA) to determine countries' performances with regards to economic management, governance, structural policies, equity and infrastructures. Within the CPIA, the Economic Management cluster measures the performance of the Fiscal, Monetary and Debt policy of a country. For instance, it covers the extent to which the primary balance is managed to ensure sustainability of the public finances and the capacity of public expenditure and revenue to be adjusted to absorb external shocks. The criteria used to assess the economic management of the countries include financial sector development, trade policy, and business regulatory environment. Table 11 below summarizes the CPIA score for the G5-Sahel countries:

Table 11: CPIA Ratings for the G5 Sahel Countries

CPIA Cluster	Burkina Faso	Chad	Mali	Mauritania	Niger
Economic Management	3.7	3.0	4.0	3.5	3.8
Structural Policies	3.5	2.7	3.3	3.2	3.3
Policies for Social Inclusion and Equity	3.6	3.0	3.2	3.5	3.3

Public sector Management and Institutions	3.2	2.5	3.4	3.4	3.4
Overall CPIA Score	3.5	2.5	3.4	3.4	3.4

Sources: World Bank IDA CPIA Africa (www.worldbank.org/CPIA Africa)

Burkina Faso

The responsibility for the administrative, financial and accounting management of the programme will rely on the Government of Burkina Faso, through the Ministry of Finance. The Ministry of Finance in its current configuration is the result of a regrouping of former ministerial departments in charge of financial resources, planning and cooperation and the budget, and operates a more functional organisation of services around three main economic functions:

- the mobilisation of internal and external financial resources to support development activities.
- the pursuit of sustainable economic development, through the conduct of economic strategies and programmes
- the optimal allocation of the State's financial resources and the control of their use through the execution of the various finance laws.

The Government of Burkina Faso has a long track record of working with bilateral and multilateral development partners and on managing multi-million dollars projects and programmes on behalf of their donors. Apart from the Bank Group, other development partners financed activities in the energy sector, including AFD, World Bank, EIB, IsDB, BOAD, the EU and India.

AfDB has a long history of interventions in Burkina Faso including in the financing of road infrastructure, agriculture/environment and lines of credit to support SMEs. As at end-March 2021, the total Bank portfolio was UA 592 million for 22 active projects. The sector distribution of the active portfolio is: transport (41%), energy (22%), agriculture & environment (15%), governance (12%), water and sanitation (8%), and social (2%).

According to the CPIA assessment (see table 12 above), Burkina Faso scores an overall 3.5, above Africa's average (3.4). Burkina Faso scores 3.7 for economic management cluster.

Chad

The responsibility for the administrative, financial and accounting management of the programme will rely on the Government of Chad, through the Ministry of Finance and Budget.The government of Chad is currently benefiting from intense technical assistance from development partners in the implementation of energy projects, mainly the AfDB, the World Bank, the IsDB, the EU, AFD, UNIDO and China. Through the International Development Association (IDA), the World Bank's current portfolio in Chad consists of 10 national active operations totaling US$461.2 million. This is complemented by 6 regional operations totaling US$406.7 million, resulting in a total commitment of US$ 867.9 million.

The AfDB has been working in Chad since 1974. As of June 2021, the portfolio in Chad is composed of 29 projects with a total amount of UA 301.07 million.

Given the current COVID-19 pandemic context, the portfolio improvement plan (CPIP 2020) has been shared with the stakeholders and will also take into account all the recommendations made in the Bank's internal audit report on project portfolio management in Chad.

Mali

The responsibility for the administrative, financial and accounting management of the programme will rely on the Government of Mali, through the Ministry of Finance. The Ministry of Economy and Finance, according

to Decree No. 2020-0095/P-RM, is responsible for preparing and implementing the State's economic, financial and monetary policy.

The Government of Mali has a long track record of implementing energy sector projects in collaboration with development partners. Funders include AfDB, BOAD, BID, World Bank, IFC among others. The International Development Association (IDA), the World Bank Group's institution that provides assistance to the poorest nations in the world, is currently financing 22 national projects and 8 regional projects in Mali totalling $1.5 billion (grants and loans included). As of December 31, 2019, IFC, the private sector arm of the World Bank Group, had aggregated commitments of $33.8 million, including investments in the financial, infrastructure, and agro-industrial sectors. IFC's activities in Mali also include technical assistance projects that help boost financing for small and medium enterprises (SMEs) and improve the business climate, in collaboration with the World Bank.

AfDB has been closely collaborating with the Government of Mali for several decades. As of March 31, 2021, the Bank's overall portfolio in Mali has 22 operations for a total amount of UA 523.48 million, corresponding to US$ 624.18 million. The public sector comprises 20 projects. The transport sector, with 2 operations, accounts for 34% of the Bank's financing in Mali, followed by agriculture with 23% for 6 projects, energy with 11% for 3 projects, governance with 11% for 3 projects and the water and sanitation sector with 10% for 1 project. The private sector stands for 6% of the financing and the other sectors, namely climate change and social development, account together for 5%.

Mauritania

The responsibility for the administrative, financial and accounting management of the programme rely on the Government of Mauritania, through the Ministry of Finance and the Ministry of Petroleum, Energy and Mines. The Government of Mauritania has a long track record of implementing energy sector projects in collaboration with development partners. Partners include AfDB, The World Bank, IFC, EU, AFD, UNDP among others. The energy sector has benefitted from 1.08 billion US$ (as of 2017) in investments.

The AfDB has been engaged with the Government of Mauritania over several decades. The Bank's active portfolio in Mauritania has 9 projects for a global value of UA 139.07 million. The sector distribution of the portfolio indicates a predominance of the industries and mines sector (80.79%), followed by the agriculture (8.73%), water and sanitation (7.07%), governance (1.97%) and social (1.44%) sectors. This demonstrates the long collaboration between AfDB and the country of Mauritania, and their ongoing efforts to implement investments aimed at sustainable economic growth.

Niger

The responsibility for the administrative, financial and accounting management of the programme will rely on the Government of Niger, through the Ministry of Planning. The Ministry of Planning and Development is organised according to the provisions of Decree No. 2016-562 of 27 July 2016.

The Government of Niger has a long track record of implementing energy sector projects in collaboration with development partners. Funders include AfDB, World Bank, IFC among others. Cooperation between Niger and the AfDB is dynamic, and the Bank remains a leading strategic partner.

As of 31 December 2020, the Bank Group's active portfolio in Niger comprises twenty (20) projects with commitments of UA 621.14 million (CFF 491.68 billion). The national public portfolio totals 14 operations for an amount of UA 380.98 million (CFAF 301.57 billion). The 5 public multinational operations amount to UA 226.58 million (CFAF 179.36 billion). The only private sector operation is worth 13.58 million U.A. (CFAF 10.75 billion). The financing of the portfolio is from: ADF (73.44%), FAT (13.20%), FSC (3.95%), GAFSP (2.21%), EUAIF (2.21%), AfDB (1.77%), FSN (1.17).

Stakeholder consultations

The Bank has engaged closely with the G5 Sahel countries notably via the Desert to Power national focal points, consultations in the context of the development of the national Desert to Power Roadmaps as well as the Regional Roadmap. The Bank also engaged with technical and financial partners including briefings on DtP in the context of the energy working group of Alliance Sahel. Furthermore, the AfDB organized the Africa Energy Market Place (AEMP) focused on the G5 Sahel countries in the context of DtP from 8-10 December 2020, which successfully mobilized a broad coalition of technical and financial partners to support the initiative and respond to the priorities identified in the Country Roadmaps.

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

Cost effectiveness and mitigation impact

In terms of cost effectiveness of the proposed intervention, the impact is estimated as follows:

- Total project financing US$ 966.7 million
- Requested GCF contribution of US$ 150 million
- Estimated emission reduction potential generated over the project lifetime is a cumulative 14.4 million tonnes of CO_2equ.
- Calculated cost t CO_2equ. for the whole programme by GCF and AE is 66 US$/t$CO_2$equ.
- Calculated cost t CO_2equ. for GCF is 10.4 US$/t$CO_2$equ.

These figures compare favourably with other renewable energy projects in Africa within the GCF portfolio.

Use of best practice

The programme makes use of numerous best practices, including:

- Country ownership fostered with executing entities in each country with Project Management Units within experienced technical delivery arms for all the public sector activities.
- Public competitive bidding processes with transparent selection criteria Financing structures focused on the needs of private sector investors: limited concessionality loans to crowd in private sector financing for large-scale grid connected PV.

C. LOGICAL FRAMEWORK

This section refers to the project/programme's logical framework in accordance with the GCF's Performance Measurement Frameworks under the Results Management Framework to which the project/programme contributes as a whole, including in respect of any co-financing.

E.1. Paradigm shift objectives

Please select the appropriated expected result. For cross-cutting proposals, tick both.

☒ Shift to low-emission sustainable development pathways

☐ Increased climate resilient sustainable development

E.2. Core indicator targets

Provide specific numerical values for the GCF core indicators to be achieved by the project/programme. Methodologies for the calculations should be provided. This should be consistent with the information provided in section A.

E.2.1. Expected tons of carbon dioxide equivalent (t CO_2 equ.) to be reduced or avoided (mitigation and cross-cutting only)	Annual	635,100 t CO_2 equ.
	Lifetime	14,448,525 t CO_2 equ.
E.2.2. Estimated cost per t CO_2 eq, defined as total investment cost / expected lifetime emission reductions (mitigation and cross-cutting only)	(a) Total project financing	966,716,400 USD
	(b) Requested GCF amount	150,000,000 USD
	(c) Expected lifetime emission reductions	14,448,525 t CO_2equ.
	(d) Estimated cost per t CO_2equ. (d = a / c)	66.91 USDUSD76 USD / t CO_2equ.
	(e) Estimated GCF cost per t CO_2equ. removed (e = b / c)	10.38 USD / t CO_2equ.
E.2.3. Expected volume of finance to be leveraged by the proposed project/programme as a result of the Fund's financing, disaggregated by public and private sources (mitigation and cross-cutting only)	(f) Total finance leveraged	816,716,400 USD
	(g) Public source co-financed	379,572,133 USD
	(h) Private source finance leveraged	437,144,267USD
	(i) Total Leverage ratio (i = f / b)	5.44
	(j) Public source co-financing ratio (j = g / b)	2.53
	(k) Private source leverage ratio (k = h / b)	2.91
E.2.4. Expected total number of direct and indirect beneficiaries, (disaggregated by sex)	Direct	
	Indirect	
	For a multi-country proposal, indicate the aggregate amount here and provide the data per country in annex 17.	
E.2.5. Number of beneficiaries relative to total population (disaggregated by sex)	Direct	Click here to enter text. (Expressed as %) of country(ies)
	Indirect	Click here to enter text. (Expressed as %) of country(ies)
	For a multi-country proposal, leave blank and provide the data per country in annex 17.	

E.3. Fund-level impacts

Select the appropriate impact(s) to be reported for the project/programme. Select key result areas and corresponding indicators from GCF RMF and PMFs as appropriate. Note that more than one indicator may be selected per expected impact result. The result areas indicated in this section should match those selected in section A.4 above. Add rows as needed.

Expected Results	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term	Final	
M1.0 Reduced emissions through increased low-emission energy access and power generation	M1.1 Tonnes of carbon dioxide equivalent (t CO2eq) reduced or avoided - gender-sensitive energy access power generation	Annual CO_2 performance Monitoring, Reporting and Verification by independent CDM-DOE auditor or independent local carbon verifier	0 kt CO_2equ.	317 kt CO_2equ.	Cumulative reductions: 2.8 Mt CO_2equ.	Methodologies ACM0002, AM0103, used Project lifetime 25 years (standard practice for PV systems) Annual emission reductions 0.63MtCO_2equ. Lifetime reductions 14.4 MtCO_2equ.

E.4. Fund-level outcomes

Select the appropriate outcome(s) to be reported for the project/programme. Select key expected outcomes and corresponding indicators from GCF RMF and PMFs as appropriate. Note that more than one indicator may be selected per expected outcome. Add rows as needed.

Expected Outcomes	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term)	Final	
M6.0 Increased number of small, medium and large low-emission power suppliers	*M6.1 Proportion of low-emission power supply in a jurisdiction market*	Monitoring, Reporting and Verification by independent carbon auditor or independent local carbon verifier. National reports	31%	32%	40% of current annual electricity supply in the G5 Sahel countries come from low emissio	Calculated using to current figures for electricity mix in participating countries, 875 GWh direct contribution from DtP and 175 GWh indirect. Regulatory environment enables solar integration and

					n sources	incentivize investments. Information to be further disaggregated provided by project, country and type of technology in relation to the programme performance.
	M6.2 Number of households and individuals (males and females) with improved access to low-emission energy sources	Monitoring, Reporting and Verification by independent carbon auditor or independent local carbon verifier. National reports, verified by NDAs.	0	69,000 households 350,000 people, 50% female	695,000 3.5m people, 50% female	
	M6.3 MWs of low-emission energy capacity installed, generated and/or rehabilitated as a result of GCF support		0 MWp	50 MWp Solar PV (10% of final target)	500MWp Solar PV	
M5.0 Strengthened institutional and regulatory systems	*M5.1 Institutional and regulatory systems that improve incentives for low-emission planning and development and their effective implementation*	National reports verified by NDAs Baseline, mid-term and end term assessment in each country using RISE sub-indicators for legal framework and incentives and regulatory support for RE	0 regulatory systems	1 regulatory system that incentivizes solar investments designed in each target country	1 regulatory system that incentivizes solar investments designed and enacted in each target country	Engagement among G5 Sahel countries continues, and country's governments are committed to the programme's objectives. Regulations to represent best practice as reflected in RISE indicator framework

	Number of technologies *and innovative solutions* *transferred or licensed to support low-emission development as a result of GCF support*	National reports verified by NDAs	0 technologies	0 technologies	3 new utility scale storage systems in operation	Suitable storage opportunity is created and exploited. Public or private investors make the required investments

E.5. Project/programme performance indicators

The performance indicators for progress reporting during implementation should seek to measure pre-existing conditions, progress and results at the most relevant level for ease of GCF monitoring and AE reporting. Add rows as needed.

Expected Results	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term	Final	
Component 1: Grids investments to de-risk solar IPPs						
Output 1.1: Development and upgrade of grids infrastructure to facilitate solar PV integration	Grids are upgraded to a status where VRE becomes dispatchable Number of grid-connected solar PV farms	Commissioning and project completion certificates	0 MWp 0 solar PV farms	Grids supporting 50 MWp of solar PV At least 1 solar PV farm	Grids supporting 500MWp of solar PV At least 6 grid connected solar PV farms	Utilities are interested and able to implement grid investments. Continuous governments' commitments to the Programme.
Output 1.2: Increase solar PV penetration and grid stability	Utility scale storage installed		0		239MWh of utility storage	
Component 2: Incremental Finance for Solar Power Generation						
Output 2.1: Adding 500MW of solar generation capacity	Additional solar capacity installed Improved reliability of supply – reduction in blackouts and brownouts – SAIDI & SAIFI measures for selected cities	Programme monitoring and completion reports	0MWp 0% reduction	50 MWp 2% reduction	500MWp installed capacity 20% reduction	Private sector is interested and able to invest in solar generation Regulatory and legal frameworks in place for incremental

						solar power generation
Component 3: Technical Assistance						
Output 3.1: Improve capacity and enabling environment for IPPs.	Knowledge and experience exists within transmission operators and utilities to operate with high VRE Conducive enabling environment for IPPs established Number of people trained (including regulators, utilities), sex disaggregated Improved capacity / skills of trainees (sex disaggregated data)	Project monitoring and completion reports Training feedback forms	0 people	1000, of which 50% are women Minimum 80% of the target audience should be satisfied - Minimum 80% of the target audience should be able to articulate the message delivered	2500, of which 50% are women Minimum 80% of the target audience should be satisfied - Minimum 80% of the target audience should be able to articulate the message delivered	Institutions and stakeholders willing to participate in the activities
Output 3.2: Incentivize additional private sector investment	Standard developed and competitive tender using gender responsive procurement process designed Matchmaking events organized to mobilize private investments	Programme monitoring and completion reports	0 standard for solar integration	02 standards for solar integration	05 standards for solar integration	Regulatory and legal frameworks in place for incremental solar power generation Private sector is interested and able to invest in solar generation
E.6. Activities						

All project activities should be listed here with a description and sub-activities. Significant deliverables should be reflected in the implementation timetable. Add rows as needed.

Activity	Description	Sub-activities	Deliverables
Component 1: Grids investments to de-risk solar IPPs			
Activity 1.1.1: Investments in grid ancillary equipment for enabling solar generated energy feed-in	Investments include storage for grid stability, contingency and flexibility reserves as well as tools for synchronized regulation.	Preparation of priority investment programmes matching selection criteria Project concept note, Project Appraisal, Approval implementation Evaluation	At least 5 projects financed by the Facility
Activity 1.1.2: Grids upgrades into smart grids on solar development areas with RE penetration higher than 30%	Investment through loans and sovereign loans to upgrade grids into smart grids.	Preparation of priority investment programmes matching selection criteria Project concept note, Project Appraisal Approval implementation Evaluation	At least 5 projects financed by the Facility
Activity 1.2.1: Construction of innovative storage systems	Financing for the construction of innovative storage systems for base loads and grid stability that will contribute to de-risking solar IPPs.	Preparation of priority investment programmes matching selection criteria Project concept note, Project Appraisal, Approval implementation Evaluation	For the storage system, it is expected that 239 MWh of storage will be deployed, and the indicative distribution per country is as follows: 90 MWh for Mali, 80 MWh for Burkina Faso and 69 MW for Chad. .
Component 2: Incremental Finance for Solar Power Generation			
Activity 2.1.1: Provision of Private Sector Loans	Provision of debt financing to private sector stakeholders to install new solar capacity.	Preparation of priority investment programmes matching selection criteria Project concept note, Project Appraisal Approval implementation Evaluation	At least 6 projects financed by the Facility
Activity 2.1.2 Partial Risk Guarantee	Provision of partial risk guarantees to back-stop off-taker payment obligations to the IPPs.	Preparation of priority investment programmes matching selection criteria	At least 6 projects financed by the Facility

		Project concept note, Project Appraisal Approval implementation Evaluation	
Component 3: Technical Assistance			
Activity 3.1.1: Build capacity of institutional stakeholders in the operation of integrated energy systems with higher shares of variable renewables.	This activity will include the procurement of transaction advisors to assist G5 Sahel countries to launch, manage, negotiate PPA and conclude IPP procurement for the second phase of WAPP regional solar parks. The resources allocated to this procurement process is expected to be US$ 1 000 000.	Conduct gender-responsive training / workshop / conference assessment needs for key stakeholders Procure training services as required Prepare gender-responsive workshop / conference / training material Conduct gender-responsive training, hold workshops and conferences Evaluate events and embed learning in future events applying a gender lens Prepare, publish and distribute gender-responsive information materials	Capacity building activities, including workshops, conferences and trainings for at least 2500 people targeting at least 30% women.
Activity 3.1.2: Revision of regulatory texts based on recommendation of the Electricity Regulation Index to attract private sector investment in the electricity sector in the Sahel countries, gender-responsiveness, operationalization of renewable energy auctions.	This activity will achieve the operationalization of policy and regulatory frameworks necessary to support private sector participation in the solar energy sector. Technical assistance support will (i) establish a transparent and sound regulatory frameworks for competitive tenders to attract private sector investment for on-grid solar generation; (ii) review and/or develop tariff methodology, structures and its associated financial models; (iii) support the establishment of a common tax regimes and credit enhancement	Conduct barrier and gap analysis on PV deployment related to IPPs and storage. Determine needs, opportunities and best practices ensuring local ownership Procure expert services Improve, and where necessary, establish new targets, policies, regulations, and frameworks Support enactment and implementation	At least 1 revised regulatory text, including national gender-responsive energy policies in each country

	solutions for solar projects in the G5 Sahel.		
Activity 3.2.1: Standardization and development of standards for solar integration.	This activity will develop the best-in-class tools, and guidelines usable by the utilities and the regulators to manage and regulate the integration of variable renewable energy into the grid as well as the design and management of the battery energy storage technology (BEST). support IPPs to establish and use gender-responsive tenders	Review of existing standards and best practices in the world and the subregion in Solar systems standards. Preparation and adoption of adequate standards for the G5 Sahel countries. Establishment and use of gender-responsive procurement process and development of affordable tariffs for vulnerable population	At least 1 standard developed and 1 tender using gender responsive procurement process
Activity 3.2.2: Match-making events to leverage private investments.	This activity will help organize an investment meeting including a match-making event	Mobilization of private sector investment into the G5 Sahel countries Marketing activities are planned for women with degrees in energy or working in the energy sector to disseminate good practices and approaches for women's inclusion in the sector among the private solar energy companies. Marketing activities targeting private sector stakeholders	At least three matchmaking event organized

E.7. Monitoring, reporting and evaluation arrangements (max. 500 words, approximately 1 page)

Monitoring of the programme

All projects financed under the Facility will be monitored by the AfDB's Portfolio Management team as per the relevant internal policies and procedures. The AfDB – as the accredited executing agency – will be responsible for direct monitoring of implementation conditions and reporting periodically to the GCF under the terms to be agreed between the AfDB and GCF. All projects financed under the Facility will comply with the AfDB appraisal, approval, monitoring and supervision standards and procedures involving representatives or all relevant teams (engineers, lawyers, project finance specialists, procurement experts, E&S specialists, gender specialist, climate finance officers, financial management officers, supervision and monitoring specialists). The implementation and monitoring of each stage of the project will be guided and managed by the AfDB project lifecycle management framework. The key task managers, who will perform due diligence, implementation monitoring, risk monitoring and mitigation, will be located in the relevant teams in the headquarters, West, Central and North Africa regional hubs and the country offices.

Reporting

1) Reporting of project companies to AfDB will be in line with the standard loan agreement, and the AfDB will conduct a bi-annual supervision.

2) Reporting of AfDB to GCF: The AfDB will comply with the relevant GCF policies (as specified under the AMA) in reporting and evaluation arrangements for this framework. The AfDB will provide the annual performance report (APR) to the GCF during the seven-year implementation period. In addition, during the sub-loan lifetime, semiannual activity report on the status of the GCF-financed individual sub-projects will be provided. For the TA component, reports from the beneficiaries will be consolidated by the AfDB for reporting to the GCF. In addition, following the arrangement under the AMA and the FAA, inception report, mid-term and final evaluation reports, and financial information reports (semi-annually throughout the life of the programme) will be submitted.

Evaluation

The evaluation arrangements for this framework will comply with the related AfDB and GCF policies. Both the independent mid-term and final evaluation will be carried out by the AfDB ‘s independent evaluation unit (IDEV). The work of the AfDB’s independent evaluation work is guided by internationally accepted principles for the evaluation of development assistance, in particular, the Organization for Economic Co-operation, and Development Assistance Committee (OECD DAC) evaluation guiding principles, and the good-practice standards issued by the Multilateral Development Banks’ Evaluation Cooperation Group (ECG).

D. RISK ASSESSMENT AND MANAGEMENT

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

The main programme risks are related to technical and operational factors, institutional capacity, and macro-economic factors including exchange rate fluctuations, political instability and other factors that impact programme performance. The risks present low to medium probability, and they can be mitigated through the implementation of planned programme's activities.

Further, AfDB has over 50 years of experience in project financing in the target region and it has established relationships with the countries' governments, private sector and other financing institutions that enable AfDB to assess and mitigate identified risks. Each investment under the Facility will be subjected to AfDB's project-specific risk screening. The AfDB will put in place an implementation team for the Facility, to be in charge of due diligence and execution of the programme.

Below are described the main risks that might prevent the programme's objectives from being achieved,

For probability: High has significant probability, Medium has moderate probability, Low has negligible probability
For impact: High has significant impact, Medium has moderate impact, Low has negligible impact
Prohibited practices include abuse, conflict of interest, corruption, retaliation against whistleblowers or witnesses, as well as fraudulent, coercive, collusive, and obstructive practices

Selected Risk Factor 1

Category	Probability	Impact
Technical and operational	Low	Low

Description

Technical and operational capacity to implement the strategic plans and programs in relation to implementation of strategic plans, effective monitoring and evaluation, and delays in having a PIU in place.

Mitigation Measure(s)

The mitigation measure will be to ensure effective co-ordination and streamlining of the programs and the Bank's High-5 priorities to maximize advantages and optimize resources, including the establishment of a well-coordinated multidisciplinary Taskforce and implementation units at partner institutions, as well as the engagement of regional coordination entities.

Efforts will be made to establish a robust institutional structure to effectively co-ordinate implementation and undertake capacity needs assessments as to design targeted interventions to boost implementation capacity.

An additional mitigation measure will be to establish a well-articulated and functional monitoring and evaluation process/mechanism. Delay in having the coordination unit implemented and regional coordination entities engaged will consequently impact early implementation of the program. Dialogue would be accelerated to mobilize the involved parties as expeditiously as possible.

Selected Risk Factor 2

Category	Probability	Impact
Governance	High	Medium

Description

Deployment risks linked to simultaneous planning and implementation of multiple projects.
Mitigation Measure(s)
Capacity building as a cross-cutting component of the initiative, aims at improving institutional capacity to implement projects, but also to develop local workforce and value chains. Policy reforms are part of the program, political commitment is required to ensure that there is a willingness to implement reforms.

Selected Risk Factor 3		
Category	Probability	Impact
Forex	Medium	Medium
Description		
Foreign exchange risks related to potential Power Purchase Agreements.		
Mitigation Measure(s)		

PPAs are usually denominated in local currency. The practice however in the region is to introduce 3 important commercial features in the PPA that mitigate the FX risks. Those are:

- A take or pay feature in the price. The price has an element of measured injected energy and an element of available energy.
- The possibility to revise the tariff in the event of major FX fluctuations.
- A bank guarantee provided by the off taker which can cover up to 3 months of payments. This bank guarantee is often put in place by the off-taker and will be extended to 6 months with the support of a PRG.

These measures will be addressed at a transaction level.

Selected Risk Factor 4		
Category	Probability	Impact
Other	Medium	Medium
Description		
Risks related to political and social unrest and insecurity.		
Mitigation Measure(s)		

ECOWAS and the G5 Sahel Alliance are working with partners to stabilize the region through military and development actions. The Bank also has a security monitoring system to determine its engagement with countries in transition.

In addition, the DtP Team will continue to work with the Host Countries to monitor the security situations in the region as well as other partners and stakeholders on the ground to ensure that project implementation in not affected by tensions and conflicts. All sites selected for the programme will be secured sites in the countries concerned. Each country will propose a plan of action for the safety of the intervention sites that will be taken into account during planning, construction, operation and evaluation.

Selected Risk Factor 6: Counterparty risk		
Category	Probability	Impact
Credit	Medium	High
Description		
Risks related to inability of Off-takers to maintain their financing payments.		

The Programme will be primarily providing financial support to the IPP projects in Least Developed Countries prone to political and economic instability. The off-takers are also characterised with weak balance sheets and limited track-record of dealing with IPPs. These financing instruments may be difficult to restructure or workout, particularly in stressed conditions, and as such the risk of loss may be greater than the risk of similar loans for IPP projects in other countries.

Mitigation Measure(s)

The AE will conduct extensive due diligence on IPP project financing parameters and contractual arrangements, including the creditworthiness of counterparties, such as countries utilities, the impact and performance of the financial structure under various stress scenarios. The Programme will seek to target contracts with credible counterparties with long term visibility on cashflows and appropriate credit enhancements, where possible.
The Programme will apply its robust monitoring process to manage the risk of default and any work out situation required to aim to deliver the best outcome for the Programme and ultimately the GCF and commercial investors.

As part of the sector due-diligence, the AE will identify and discuss possible reforms that the governments will need to put in place to ensure long-term sustainability of the sector backed by a monitoring plan. The Programme has also a Partial Risk Guarantee (PRG) in the in the financing structure to be funded by AfDB and the GCF. The PRG will support the payment obligations of the off-takers to the IPPs for approximate duration of 6 months, providing the off-takers with the temporary liquidity as they sort-out their cash-flow situation. The PRG is also intended to support the IPPs in developing a dependable track-record in dealing with the private sector in the long-run.

E. GCF POLICIES AND STANDARDS

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

Project's environmental and social impacts assessment: The project is expected to have positive environmental and social impacts as it includes the generation of solar energy which will reduce the use of fossil fuels. This positive shift due to the project is to be compared to the baseline situation in the G5 Sahel region where the majority of the population lacks access to electricity and relies on expensive, polluting, and dangerous sources to meet their energy needs. Negative impacts are inherent in the following risk factors:

- ***Cumulative impact issues of the multiple sub-projects across the 5 countries*** *(Construction of grid infrastructure for new solar plants, Construction of solar IPPs and similar activities): The nature and scope of the physical works presents risks of cumulative impacts to groundwater and soil pollution, vegetation removal, waste management, noise emissions, and impacts related to the influx of workers to the surrounding areas.*
- ***Inefficient use of resources and pollution risks:*** *The production of liquid, solid and hazardous waste as well as air pollution, noise and vibration can result from the operation during construction. This also includes risk related to management of end-of-life batteries.*
- ***Gender-Based Violence (GBV) risks:*** *Temporary workers' camps may present risks of gender-based violence (GBV), sex trafficking, and child abuse.*
- ***Community Health, Safety, and Security issues associated with temporary influx of labor:*** *The influx of workers may present risks of increased volume in traffic and higher risk of accidents, social conflicts within and between communities, increased risk of spread of communicable diseases, and increased rates of illicit behavior.*
- ***Occupational Health and Safety (OHS) risks:*** *These include exposure to physical hazards from use of heavy equipment and cranes; trip and fall hazards; exposure to dust and noise; falling objects; exposure to hazardous materials; and exposure to electrical hazards from the use of tools and machinery.*
- ***Land acquisition and involuntary resettlement risks:*** *The site/land acquisition for construction of grid infrastructure for new solar plants and grid infrastructures for regional interconnections can be associated with risks of physical and/or economic displacement (i.e. loss of assets or access to assets that lead to a loss of income or means of livelihoods).*

Environmental and social risk classification: Despite the positive impacts, the overall environmental and social risk rating for this project is high both according to the African Development Bank (AfDB)'s environmental and social assessment procedures (Category 1) and the GCF Environmental and Social Standards (category A). This classification is mainly due to the fact that the project entails potentially significant and cumulative negative environmental and social risks and/or impacts that can derive from the component 1 (Grids investments to de-risk solar IPPs.).

GCF relevant standards: The project will manage these impacts in a manner consistent with the following GCF/IFC Performance Standards deemed relevant: (i) PS1: Assessment and Management of Environmental and Social Risks and Impacts, (ii) PS2: Labor and Working Conditions, (iii) PS3: Resource Efficiency and Pollution Prevention under the counter-indemnity agreement, (iv) PS4: Community Health, Safety and Security and (v) PS5: Land Acquisition and Involuntary Resettlement

Bank's Operational safeguard (OS) triggered by the Project includes: (i) OS1 – Environmental and social assessment, (ii) OS 2 – Involuntary resettlement: land acquisition, population displacement and compensation, (iii) OS 4 – Pollution prevention and control, hazardous materials and resource efficiency and (iv) OS 5 – Labor conditions, health and safety.

In relation to (iv), the project will also address the risk of forced labor in the solar value chain. The AfDB does not finance any operation involving forced labor as per AfDB's policies for Non-Sovereign Operations. The Bank's exclusion list specifically states that "Production and activities involving harmful or exploitative forms of forced labor and/or child labor are excluded from Bank financing". Any project transaction documentation includes a restriction on the Bank's financing being used for any of the activities on the exclusion list (See Annex 2 AfDB NSO policies under

https://www.afdb.org/fileadmin/uploads/afdb/Documents/Policy-Documents/NSO_Policy-En.pdf).
AfDB applies specific requirements and safeguards on forced labor informed by applicable ILO and UN conventions. The Bank's Integrated Safeguards System and relevant Operational Safeguards apply a systematic approach in assessing and improving the management of risks and impacts related to labor and working conditions in projects, including conducting effective due diligence, inclusion of appropriate provisions in legal documents, operationalization of grievance management mechanisms, conducting capacity building and awareness raising, and ensuring periodic monitoring, reporting and auditing (See https://esa.afdb.org/sites/default/files/IESIA%20Guidance%20Materials%20Vol%202%20ENGLISH.pdf).
As part of the environmental and social assessment, client responsibilities include the necessity to undertake a risk assessment to identify where there are high risks of forced labor in the primary supply chain, to manage such risks and cases where identified, and to monitor the primary supply chain to assess changes in risk.

Framework approach for risk mitigation: The details and exact physical location of all activities are not known in advance, which prevents an Environmental and Social Impact Assessment (ESIA) and an associated Environmental and Social Management Plan (ESMP) which are site specific risk management instruments are not applicable at this stage. Instead, a framework approach has been adopted. An ESMF was prepared by the G5 Sahel countries with AFDB support. The ESMF seeks to (i) enhance positive and sustainable environmental and social outcomes associated with project preparation and implementation; integration of environmental and social aspects associated with the numerous projects into the decision-making process; (ii) minimize environmental degradation as a result of either proposed individual projects or their cumulative effects and (iii) minimize impacts on ecosystems.

Institutional arrangements for the implementation of the ESMF: The peculiarity of the ESMF is that it has to adapt to the context of 5 beneficiary countries of the G5 Sahel that have some specific characteristics concerning the procedures for the elaboration and implementation of environmental and social assessments. All participating countries shall formulate their own ESMF that are complaint with the AfDB's Integrated Safeguards System (ISS) and the GCF environmental and Social standards. Country ESMFs shall be reviewed and approved by the AfDB to ensure that they are materially consistent with the applicable requirements. At the regional level, it is planned to recruit a full environmental safeguard specialist and a full social and GBV specialist within the Regional Coordinating Unit, who will be responsible for coordinating

and monitoring the implementation of the ESMF at the regional level. At national level, the management of country activities will be entrusted to coordinating units attached to the different Ministries in charge of Electricity/Solar.

Borrower's Institutional Capacity for ESS: The preliminary borrower's institutional capacity for safeguards policies/standards found that, at national level, the G5 Sahel countries have a legislative and regulatory framework which is conducive to good environmental and social management. They have signed a number of international treaties and conventions and have experience with the Donor's Safeguard Policies/ESS Standards (such as AfDB, World Bank) across different sectors. However, implementation capacity especially concerning GCF ESS remains limited. The Government's E&S management system for each of the 5 countries needs to be enhanced to comply both with the GCF and AfDB ESSs. The ESMF will include a capacity assessment and propose capacity-building activities and trainings and recommendations to ensure adequate M&E of the E&S aspects of the project and resources needed. The E&S specialists appointed in the PCU as well as some government agencies and private entities involved in the G5 Sahel Power project implementation will comply with the ESS's instruments to properly address environmental and social risks that may occur during project execution. Capacity building activities relevant to the implementation of the environmental measures will be reflected both in the ESMF at regional level and the country's specific ESMFs.

Information disclosure requirement: The Environmental and Social Management Framework (ESMF) prepared both at regional level and country levels was disclosed on the AfDB and G5 Sahel websites (**February 25, 2021**) and at each country's level through the primary ministry in charge of the project.

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

Women and girls in the G5 Sahel countries are particularly more vulnerable to climate change and effects of energy poverty due to strong gender-based inequalities. They lack access to livelihood assets, division of labor and are absent from the climate change related decision-making processes at all levels. Access to energy, salaried employment or entrepreneurship in the energy sector are gendered issues, with women entrepreneurs, salaried, and end-users experiencing different challenges when accessing electricity or applying in the energy sector than men. Recognizing the role of the private sector in reducing gender inequalities and to allow a greater clean energy access for households and businesses as well as to create income-generating activities in the energy sector for women and men, the Desert to Power G5 Sahel Facility program phase I will start by creating an enabling environment for attracting private sector investments. This attraction of capital will then be used for addressing the barriers for female entrepreneurs to launch businesses in the energy sector.

According to the gender assessment in Annex 8, the G5 Sahel countries have made progress in integrating the gender dimension at the political, strategic and legal levels. However, despite progress, large deficits still persist in the energy sector, especially in terms of gender disaggregated statistics and their consideration in development actions. Also, socio-cultural reluctance continues to view women as an inferior being who cannot become the equal of man. To this must be added the slow balance between the demands of modern life in favour of respect for human rights and the strong oppressive patriarchal traditions towards women.

To remove these burdens in the energy sector within the Desert to Power Facility program phase I, specific recommendations drawn from this assessment converge on starting by the creation of an enabling environment for the integration of women in the energy sector. Therefore, the following main actions are proposed:

- Strengthening gender-responsive capacity of institutional stakeholders (utilities, transmission system operators, the ministries in charge of energy, and energy regulators) on gender-responsive procurement of IPP projects;
- Elaborating and operationalizing gender-responsive national energy policies and energy regulatory frameworks to mobilize more private sector investments in IPPs in the G5 Sahel countries;

- Completing gender-responsive technical studies for identifying solar PV projects to enhance gender-responsive solar integration into the grids across the G5 Sahel countries.

Increasing women's engagement in the energy sector requires an environment that facilitates entrepreneurship: one with gender-responsive institutional stakeholders and gender-responsive regulatory texts in the energy sector. The Desert to Power G5 Sahel Facility considers pivotal to align gender-responsive private sector incentives with gender-responsive national priorities by operationalizing existing policies and regulatory frameworks. The Program will also achieve completion of gender-responsive technical studies for identifying solar PV projects to enhance solar integration into the grids across the region.

The gender action plan incorporates gender activities drawn from the activities of the overall log frame of the program. The gender action plan ensures to capture sex-disaggregated data through sex-disaggregated indicators and targets. It also includes female-headed households and poor-headed households who are likely to benefit from this program.

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

Details on the various financial instruments as well as Flow of Funds arrangements are outlined in section B.4.

Due Diligence

The African Development Bank, as the GCF-accredited entity, will oversee implementation of the programme in line with the African Development Bank procedures, standards and requirements as indicated in the AMA.. The AfDB's fiduciary and financial management measures for the Desert to Power G5 Sahel Facility started at the upstream engagement with the G5 programme countries during the preparation of the Country Strategy Papers (CSPs) where fiduciary risks and capacity of the countries were assessed in the Country Fiduciary Risk Assessment (CFRA). This is a key document for dialogue with the country for the risk rating and agreed mitigating measures to address noted fiduciary risks including corruption and AML/CFT issues. The AfDB has also carried out review of sanctions involving United Nations Security Council, security and exchange commissions, financial oversight authorities as well as review of Politically Exposed Persons (PEPs) and Other High-Risk Relationships of the Technical Responsible Parties (TRPs).

The AfDB team responsible for project origination will carried out first level due diligence and assessments of financing proposals including Know-Your-Customer (KYC) for each of the indicative pipelines that are ready and will be done accordingly for the rest of the pipeline before the final internal approval of the Facility by the AfDB Board. The origination team's findings and recommendations went through a rigorous internal review process before they were cleared by Senior Management to be presented to the AfDB's's Board of Directors for approval. This includes various interdepartmental committee reviews.

The AfDB will, through its Anti-Corruption and Integrity department, provide Integrity Due Diligence (IDD) for the project operations through a structured, systematic analysis to identify, assess, mitigate, manage and monitor potential loss from integrity risks and riskier exposure. This is to ensure that funds are used for their intended purposes and with due attention to considerations of economy, efficiency and competitive trade. The AfDB will use the following assessment criteria to safeguards its investment. (See also the Bank's IDD Policy for further information.)

- Identification of beneficial ownership
- Assessment of civil and regulatory backgrounds
- Identification of sanctioned persons and entities
- Identification of Politically Exposed Persons (PEPs) and other high-risk relationship

Corporate financial transactions are closely monitored through the MDB harmonized treatments of corporate groups and also through the AfDB's established guidelines on anti-fraud, anti-corruption and anti-money laundering policies (AMLCFT). Harmonization of relevant policies includes the MDBs Agreement for Mutual Enforcement of Debarment Decisions; General Principles and Guidelines for Sanctions; MDB Harmonised Principles on Treatment of Corporate Group and Uniform Framework for Combatting Fraud and Corruption. The AfDB continues to ensure that its financing operations and investments are not used for illegal or tax-evasion purposes. In addition, measures are currently in place to address the issue of tax havens and the accompanying risks. The AfDB through the Integrity and Anti-Corruption will lead standard Know Your Customer due diligence process including anti-money laundering and other evaluations of sponsors for all the pipeline projects before the final approval by the AfDB Board. The AE has Due Diligence Guidelines and Screening Procedures for AML, CFT and CIFFs and provides guidance on mainstreaming AML/CFT/CIFFs measures in its internal operations and activities. The Department will apply the same procedures for assessing AML/CFT/CIFFs risks for all AfDB's financing operations to the Desert to Power G5 Sahel Facility too. The screening tools usually includes the ITR, PEP Check Tool, Accuity, Lexis Nexis, Google Advance and other open-source search tools. The Due Diligence Report is part of the documents submitted to the Board for the approval of projects/programmes.

The AfDB conducts administrative investigations into staff misconduct, corruption, fraud, coercion, collision and obstructive practices and refers to national competent authorities for criminal investigations in relevant cases. The AfDB mainstreams counter Illicit Financial Flows, Anti-Money Laundering and Combating Terrorist Financing measures in internal operations of the Bank Group.

Whistle-blowing mechanism

The AfDB is committed to maintaining the highest possible standards of ethical and legal conduct within its corporate decisions and operations and in all its internal-funded projects, programmes and business. In line with this commitment and in order to enhance good governance and transparency, the main aims of the Bank's Whistle Blowing and Complaints Handling Policy (2016) are to provide an avenue for raising concerns related to Fraud, Corruption or any other Misconduct and to assure that persons who disclose information relating to fraud, corruption or any other misconduct will be protected from Retaliation. The policy is a comprehensive mechanism that applies in all Bank-funded projects and programmes and includes a detailed scope and coverage, protection of and remedies for Whistle-blowers and Complainants, and Hotline facilities.

Financial Management

Prior to project commissioning and subsequent handover to the implementing agency as described in Figure 2, the Project Management Unit (PMU) in each country will be responsible for the overall coordination and financial management. Its financial management staff will comprise the project coordinator, the administrative and financial officer, the accountant and cashier, all of whom will be recruited (or seconded) in accordance with the project procurement arrangements. At present, the financial management systems at the countries level are deemed as moderate (Burkina Faso, Chad and Mali) and low (Mauritania and Niger) because of the absence of: (i) designated programme financial coordinators and personnel; (ii) administrative, financial and accounting procedures manuals; (iii) operational accounting and financial management softwares; and (iv) financial management tools and reference frameworks since it is a new facility. As a result, each PMU would take the following measures: (i) as soon as the project is launched, prepare budget plans coupled with the indicative activities schedule; (ii) when the project is launched, recruit consultants to prepare the administrative, financial and accounting procedures manuals (AFAPMs); (iii) assign financial tasks as soon as the financial staff are recruited; (iv) establish the financial management frameworks and instruments in accordance with the AfDB's financial management guidelines.

Procurement and Disbursement Arrangements

Procurement Arrangements

The procurement of goods (including services other than consulting services), works and the acquisition of consulting services financed under the G5 Facility, will be carried out in accordance with the Procurement Framework for AfDB-financed ooperations, 2015 edition, and in compliance with the provisions of the GCF FAA. More specifically, procurements will be made in accordance with AfDB's Procurement Methods and Procedures (BPP) as applicable on the time of implementation, on the basis of the relevant standard bidding documents (SBDs) for goods and works contracts as well as consulting services for which the BPP are considered to be the most appropriate.

Disbursement: The disbursement methods to be used under the G5 Sahel Facility are: (i) the direct payment method; (ii) the special fund/revolving fund method; and, (iii) the reimbursement method. Direct payments will be made in respect of contracts for works, goods and services signed between the Borrowers and suppliers, in accordance with AfDB's procurement rules and procedures and national procurement legislations. The special account method will be used to settle operating expenditure, training costs, field mission costs etc. Grants, Loans and Guarantee resources will be kept in separate accounts. Special Accounts will be opened by the Ministries of Finance, who also represent the countries for such agreements, with the exception of Mauritania, where both Ministry of Finance and Ministry of Petroleum, Energy and Mines jointly represent the country, and Niger where Ministry of Planning represents the country. These designated Ministries will, in turn, pay all the funds received from the AfDB into the PMU bank account opened in a bank acceptable to AfDB. The opening of the Bank account will be a condition precedent to the first disbursement. The reimbursement method will be used when eligible expenditure on all programme resources is pre-financed with the Bank's prior approval. These disbursements will be made in accordance with the list of goods and services and AfDB's rules and procedures as described in AfDB's Disbursement Handbook, 2020 edition.

Accounting Management: Legal Agreements require all G5 Sahel countries participating in the programme to - (i) maintain accounts and books, as well as prepare financial statements for projects financed from AfDB's resources and AfDB's administered resources; and (ii) implement accounting, administrative and financial procedures documents in manuals. These accounts and records should provide justification for the use of funds disbursed to the programme and prepared in accordance with applicable accounting standards.

Accounting Standards and Practices: Although accounting standards and practices may differ from country to country, the accounts of projects under the programme shall, irrespective of the system adopted, comply with the principles of transparent management and provide exhaustive information on the following: 1) Accountability of funds provided to the project; such funds may comprise proceeds from the AfDB's loan or grant, or other resources from co-financiers and counterpart funds; 2) Disclosure of expenditure and specific information on components financed under each project.

Project Financial Statements: Project financial statements prepared under the Desert to Power G5 Sahel Facility shall include:

- For each project: i) Statement of Receipts (funds received from AfDB, counterpart funding and where applicable, co-financiers' funding) and expenditureseexpenditures (expenditures incurred for both the current year and accumulated to-date) showing separately AfDB's funding, those of counter-party and co-financiers as well as cash balances; 2) Statement of Special Account/s; 3). Notes to the Financial Statements describing the applicable accounting principles used and a detailed analysis of the main accounts.

- For revenue-earning projects (in addition to the requirements stated above); i) Balance Sheet showing accumulated funds of the project, bank balances and other assets and liabilities of the project as at the close of each fiscal year; ii) Income Statement (or Operating, or Income and Expenditure, or Profit and Loss); and iii) Cash Flow Statement disclosing cash flows during each fiscal year.

- The following should be included as an annex to the financial statements of all projects under the Facility: i) a reconciliation between the amount shown as "received from the Bank" and that shown as having been disbursed by AfDB or co-financiers. The reconciliation should indicate the methods used for disbursement, i.e., Special Account, direct payment or reimbursement guarantee, reimbursement methods with those recommended in the subsidiary agreements and the disbursement letter; and ii) a comprehensive list of all fixed assets purchased with given dates, value and condition of the assets.

Financial Reporting: The countries are required to regularly and exhaustively communicate accounting and financial information on the projects. The information should detail out the various uses of the loan and grant proceeds, including other financial instruments. Financial systems and financial communication reports may vary according to the nature of the project, the lending instrument used, and the country. AfDB may not require a standard format but will ensure that the reports submitted for verification and consideration are adequately informed.

Keeping and Filing of Documents: Each participating country in the Desert to Power G5 Sahel Facility is required to keep up-to-date and preserve project documents and supporting documents, and to make them available to AfDB's representatives as needed.

Retention of Documentation: AfDB's General Conditions require that each participating country in the programme retain all documentation related to the loan proceeds to enable external auditors or AfDB's representative to examine the same. The documents should be retained in a manner where they are readily accessible.

Audit: The General Conditions applicable to loan and grant agreements require that all project accounts are audited each year in accordance with the relevant generally accepted standards. The auditor, in accordance with the standard Terms of Reference for external audits of AfDB financed programmes or projects, is required, among other things, to examine pertinent documents, review internal financial control mechanisms to identify deficiencies and weaknesses that could affect the efficiency of the programme, form an opinion on the quality of the financial statements and confirm that the funds granted to the programme or project have been used for their intended purpose. Each country must have the accounts of the project audited by qualified and independent accountants that meet the AfDB's requirements. In countries, where auditing is entrusted to the Auditor General's Office (AGO) under the supervisory authority of the State, AfDB may approve the designation of this Office provided that the matter is discussed during the loan negotiations and the audit conducted in accordance with AfDB's standard terms of reference for the audit for AfDB financed projects/programmes. The audited financial statements, the auditor's report and management letter must be received by AfDB no later than six months after the end of the financial year to which they relate. Non-compliance with this requirement will result in the immediate suspension of further replenishments to the Special Account.

Programme Monitoring and Evaluation (M&E)
AfDB's primary monitoring tools are post-procurement reviews (PPRs), procurement audits (PAs), independent procurement reviews (IPRs) and other miscellaneous reviews associated with AfDB programme or project-related oversight and monitoring. In all the G5 Sahel countries, the PMU will be responsible for programme monitoring and evaluation, using a Project Result Monitoring Framework (PRMF) to be developed. A consolidated inception report (IR), quarterly and annual performance activity reports (APR) will also be prepared and submitted to the AfDB by each PMU, followed by frequent interim evaluation reports (IERs). AfDB will carry out a rigorous monitoring and supervision mission at least twice a year, to the extent possible with other partners collaborating on this programme. A programme completion evaluation will be conducted to evaluate progress against outputs and outcomes and draw lessons for possible follow-up operation.

PRG Procurement arrangements, monitoring and Audit arrangements

Procurement

The PRG structure will involve the participation of a commercial bank to issue a Letter of Credit to the IPPs. The commercial bank will be procured through an international competitive bidding process using the countries' procurement rules and supported by AfDB.

Monitoring and Evaluation

Monitoring and evaluation of the PRG will be carried out by AfDB from the signature of the Guarantee Agreement covering (i) construction and commissioning phase and project operations phase and will include monitoring of environmental and social performance and other project indicators as required under the Project agreement between the Project company and AfDB.

During the project construction and commissioning phase, monitoring, evaluation and supervision will be conducted in accordance with the supervision procedures applicable to the senior lenders to the project. The monitoring will be done through construction progress reports, quarterly supervision reports, environmental and social management reports and technical advisors reports. A regular physical supervision of the project will be undertaken at regular intervals to be agreed with the Bank's portfolio team.

Within six months of the completion of the project, the Fund together with the implementing agencies will prepare and submit a Project Completion Report (PCR).

G.4. Disclosure of funding proposal

Note: The Information Disclosure Policy (IDP) provides that the GCF will apply a presumption in favor of disclosure for all information and documents relating to the GCF and its funding activities. Under the IDP, project and programme funding proposals will be disclosed on the GCF website, simultaneous with the submission to the Board, subject to the redaction of any information that may not be disclosed pursuant to the IDP. Information provided in confidence is one of the exceptions, but this exception should not be applied broadly to an entire document if the document contains specific, segregable portions that can be disclosed without prejudice or harm.

Indicate below whether or not the funding proposal includes confidential information.

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

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

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

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

F. ANNEXES

H.1. Mandatory annexes

☒	Annex 1	NDA no-objection letter(s) **(template provided)**
☒	Annex 2	Feasibility study - and a market study, if applicable
☒	Annex 3	Economic and/or financial analyses in spreadsheet format
☒	Annex 4	Detailed budget plan **(template provided)**
☒	Annex 5	Implementation timetable including key project/programme milestones **(template provided)**
☒	Annex 6	E&S document corresponding to the E&S category (A, B or C; or I1, I2 or I3): **(ESS disclosure form provided)** ☐ Environmental and Social Impact Assessment (ESIA) or ☐ Environmental and Social Management Plan (ESMP) or ☐ Environmental and Social Management System (ESMS) ☐ Others (please specify – e.g. Resettlement Action Plan, Resettlement Policy Framework, Indigenous People's Plan, Land Acquisition Plan, etc.)
☒	Annex 7	Summary of consultations and stakeholder engagement plan
☒	Annex 8	Gender assessment and project/programme-level action plan **(template provided)**
☒	Annex 9	Legal due diligence (regulation, taxation and insurance)
☒	Annex 10	Procurement plan **(template provided)**
☒	Annex 11	Monitoring and evaluation plan **(template provided)**
☒	Annex 12	AE fee request **(template provided)**
☒	Annex 13	Co-financing commitment letter, if applicable **(template provided)**
☒	Annex 14	Term sheet including a detailed disbursement schedule and, if applicable, repayment schedule

H.2. Other annexes as applicable

☐	Annex 15	Evidence of internal approval **(template provided)**
☒	Annex 16	Map(s) indicating the location of proposed interventions
☒	Annex 17	Multi-country project/programme information **(template provided)**
☐	Annex 18	Appraisal, due diligence or evaluation report for proposals based on up-scaling or replicating a pilot project

☐	Annex 19	Procedures for controlling procurement by third parties or executing entities undertaking projects financed by the entity
☒	Annex 20	First level AML/CFT (KYC) assessment
☒	Annex 21	Operations manual (Operations and maintenance)
☒	Annex 22	GHG Emissions reduction calculations with methodological note