Public Disclosure Authorized

Project Information Document (PID)

Concept Stage | Date Prepared/Updated: 22-Feb-2021 | Report No: PIDC30591

BASIC INFORMATION

A. Basic Project Data

Country	Project ID	Parent Project ID (if any)	Project Name
Chad	P174495		Chad Energy Access Scale Up Project (P174495)
Region	**Estimated Appraisal Date**	**Estimated Board Date**	**Practice Area (Lead)**
AFRICA WEST	Aug 02, 2021	Dec 17, 2021	Energy & Extractives
Financing Instrument	**Borrower(s)**	**Implementing Agency**	
Investment Project Financing	Republic of Chad	The Ministry of Economy, Planning, Development and International Cooperation, Societe Nationale de l'Electricite (SNE)	

Proposed Development Objective(s)

The Project Development Objective (PDO) is to increase access to modern energy services, including solar based electricity and clean cooking, by leveraging private sector participation.

PROJECT FINANCING DATA (US$, Millions)

SUMMARY

Total Project Cost	280.00
Total Financing	280.00
of which IBRD/IDA	280.00
Financing Gap	0.00

DETAILS

World Bank Group Financing

International Development Association (IDA)	280.00
IDA Grant	280.00

Environmental and Social Risk Classification	Concept Review Decision
High	Track II-The review did authorize the preparation to continue

Other Decision (as needed)

B. Introduction and Context

1. **Chad is a low-income fragile country with substantial and multifaceted development challenges**. Chad is one of the poorest and least developed countries in the world, ranking 187th out of 189 countries and territories with respect to human development[1]. Chad GNI per capita in 2018 was US$670 (177th place per Atlas methodology) and US$1,930 (178th rank in terms of PPP)[2]. It faces a difficult geographical and geopolitical environment; it is the 5th largest country in Africa, landlocked, crossed by the Sahara, has a very low population density (about 13 people per km2), and prone to climate risks. The population of Chad exceeded 16 million people in 2020, and it is expected to reach 21.5 million by 2030. Nearly three-fourths of the population live in rural areas and two-thirds are under the age of 25. Most of the population lives in the central and southern parts of the country, with the northern part occupied by the Sahara Desert. The security and humanitarian situations are challenging given the security tensions along the border areas and serious terrorist threats particularly in the Lake Chad region.

2. **The effects of recession and austerity aggravated Chad's humanitarian challenge while constraining poverty reduction**. During the oil boom, poverty rates[3] declined from 52 percent in 2003 to 39 percent in 2011. However, the absolute number of poor people increased from 4.9 million to 5.6 million due to population growth. Despite efforts to protect priority social and productive spending, dwindling fiscal resources and poor social spending execution have disrupted vital public services. Furthermore, insecurity in the sub-region resulted in an inflow of over 450,000 refugees, putting further pressure on tight fiscal balances and strained public service delivery. In the absence of a well-targeted and effective social safety net system, the poor and vulnerable have been deeply affected by the crisis, as well as by climate change impacts. Poverty was estimated at 41 percent in 2019 affecting 6.4 million people that predominantly live in rural areas. Women continue to be disproportionally affected by poverty and systematically disadvantaged.

3. **By end 2019, Chad was gradually recovering from a severe economic and fiscal crisis caused by the 2014-2015 oil prices shock**. Growth stood at 2.6 percent in 2018 and is estimated at 3.2 percent (0.2 percent per capita) in 2019, mainly due to higher oil production and agricultural output (especially cotton). Although the negative output gap is closing, inflation declined from 4.0 percent in 2018 to -1.0 percent in 2019, reflecting subdued transportation and food prices. The primary sectors (mainly agriculture and the oil sector) remains the main driving force contributing about two-third of the 2019 growth rate. Contributions of the secondary and tertiary sectors (mainly oil-related services) stood at 0.1 and 0.7 percentage points, respectively. The slight improvement in industry indicates a slow rise in capital investment while services benefit from strong primary sector activity (including related transport services) and the clearance of some domestic arrears.

[1] http://hdr.undp.org/sites/default/files/hdr2019.pdf

[2] https://data.worldbank.org/indicator/NY.GNP.PCAP.CD?locations=TD

[3] US$ 1.9 international line (estimated)

4. **The COVID19 outbreak, drop in global economic activity, and oil price shock, however, are likely to negatively impact the recovery and lead to a recession in 2020**. The COVID-19 outbreak and oil price shock are likely to lead to a recession in 2020. Growth is expected to fall to -0.8 percent in 2020, a sharp decline compared to pre COVID-19 projections of 4.8 percent. The contraction is mainly due to a significant decline in the non-oil sector and to lower than expected oil production. The slowdown in China's growth will affect FDI-related imports needed to support new oil fields. The services sector – hoteling, transport, aviation, and restaurant – will be severely hit due to confinement measures and border closures. Industrial production will also fall due to the restriction of movement and lower input-related imports. Inflation is expected to reach 2.8 percent (from -1.0 percent in 2019), which remains below the CEMAC convergence criteria. The current account deficit and the fiscal deficit are expected to widen in 2020 by -11.2 percent and -1.7 percent of GDP respectively as a result of the slowdown of exports, lower non-oil revenues, and border closures. However, growth is expected to recover in the medium term as new oil fields accelerate production, oil prices increase again. The government will need additional financial support to close the budget deficit. Structural reforms are needed to improve the business environment, diversify the economy, and build resilience to external shocks. Access to reliable and affordable electricity will also be key to support the reform agenda and poverty reduction.

5. **Security risks originating in neighboring countries have persistently destabilized the regional economy and created a situation of acute humanitarian needs and large refugee inflows into Chad**. Over the past 25 years, Chad has welcomed a significant number of refugees in eastern, southern and Lake Chad regions. By October 2020, Chad was hosting more than 488,000 refugees, including 374,000 Sudanese refugees having fled violence in Darfur, many for more than a decade. Around 55 percent of refugees are female and more than half are children, who live in impoverished conditions together with members of host communities. Most refugees are situated along the country's borders, in remote areas characterized by high poverty and structural underinvestment. Refugees account for more than three percent of the country population. Chad meets the eligibility criteria for the IDA19-WHR and hosts more refugees per capita than any of the other 13 eligible countries under the IDA WHR.

6. **Chad is a global outlier in terms of energy services, with among the lowest access rates in the world, limited power supply, and very high costs for those households that rely on liquid fuels for energy services.** Despite the endowment of fossil fuels and solar resources, Chad has among the lowest rates of access to electricity in the world at 6.4 percent (against an Sub-Saharan Africa (SSA) average of 48 percent), with significant disparities between urban and rural areas (20 percent urban, 0.6 percent rural)[4]. Energy deprivation is particularly acute in remote and border areas where most of camps of refugees are located. In addition, the cost of electricity service is extraordinarily high in Chad (US$0.43/kWh billed), significantly exceeding the average tariff of US$0.25/kWh. Even for customers with grid connections, unreliable services negatively impact livelihoods, firm productivity and growth potential. For consumers that are not connected to the grid, some rely on expensive standalone diesel generators, while most of the population, in particular in rural areas, rely on biomass for cooking, or kerosene for lighting. Despite the significant levels of solar irradiation in Chad, the off grid solar market remains at its nascent stage, with significant entry barriers. Actual budget transfers to the sector have roughly doubled over four years to reach US$76 million in 2018, with no tangible improvement in the access rate or quality of service.

7. **Low access to electricity entrenches fragility and represents a key challenge considering insecurity levels in some parts of the country**. Impacts are multiple: (i) at the economic level, communities encounter difficulties in operating businesses and generating an income, which impedes efforts towards poverty reduction; (ii) at the security level, it renders the local population more vulnerable to security threats in times of increasing criminality and violence, notably in border

[4] As per the National Electricity Emergency Plan approved by the Government in July 2020.

areas, including refugee camps, subjected to the circulation of armed groups, and constitutes a pull factor for communities and youth to engage in illegal trade as a way to compensate for the lack of revenues and access to energy sources; (iii) 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, and it increases their vulnerability to climate change[5], natural disasters and pandemics, as energy is an important input for water, sanitation, broadband, as well as economic activity; and (iv) at the institutional level, operating administrative services and service delivery become more difficult, deepening further the existing gaps of socio-economic development between regions, which constitute a driver of conflict. In addition, women and girls, especially in rural areas, bear a significant burden as a result of the lack of energy access. Time spent on household chores, such as collecting firewood and water for drinking and burning high-polluting charcoal and kerosene for cooking and lighting, prevents their full and active participation in educational and economic activities.

8. **In terms of gender equality Chad ranks 147 out of 153 countries for the Global Gender Gap Index and 187 out of 189 for the Gender Inequality Index with significantly worsening trends in the past few years**. Women are disadvantaged for productive activities due to high fertility rates, limited agency and access to resources and employment opportunities. In addition, female-headed households are on average more likely to be poorer than male-headed ones with 39.2 percent of female headed households in the bottom wealth quintile, compared to 21.2 percent of those headed by males which also affects their opportunities to access electricity with an apparent gap favoring male-headed households nationwide.

9. **The proposed MPA/Project complements the ongoing activities of the Bank in the sector and is closely aligned with Chad's long-term development strategy "Vision 2030: le Tchad que nous voulons", which seeks to develop a diversified and competitive economy, and to improve the quality of life for the Chadian people.** Increased electricity access is fundamental to support poverty reduction efforts, resilience and job growth, and economic diversification, while improving the resilience of communities to shocks arising from climate change and pandemics. Access to electricity is critical to enable the delivery of basic social services, such as health and education, and support the economic rebound of Chad in the economic and health aftermath of the pandemic. In addition, increased access to electricity is deemed to be an effective strategy to enhance the resilience of host communities to climate change.

B. Sectoral and Institutional Context

10. The Chad power sector institutional, legal and regulatory framework is being developed. The Ministry of Energy (MoE) oversees the energy sector, including planning, policy formulation and implementation, and sector monitoring and evaluation. MPE supervises the national power utility SNE and the Rural Electrification, Energy Efficiency and Renewable Energy Agency (ADERM). ADERM was created under the Electricity Law of August 2019, that also reestablished the Electricity Sector Regulatory Entity (ARSE). In addition, the Law liberalized the power sector, with notional unbundling of generation, transmission and distribution, with the objective to promote private sector participation in both generation and distribution segments. At the same time, SNE retains its position as the vertically integrated national power utility combining generation, transmission, distribution and electricity retails.

11. **Access to electricity in Chad shows a great disparity between the urban and local population.** Access is concentrated in the capital city of Ndjamena, which accounts for 80 percent of electricity sales by the national power utility Société Nationale de l'Electricité (SNE). Yet, only a third of the population there is served, which is essentially the population with the highest incomes, and service quality remains poor. The bulk of SNE's customer base is served by a

[5] World Bank, 2018. Lifelines, the Resilient Infrastructure Opportunity, Global Facility for Disaster Reduction and Recovery (GFDRR)

regional grid of 117 MW of installed capacity of diesel generation located in Ndjamena, consisting of SNE's plant of 71 MW and IPP plants of 46 MW. Besides Ndjamena, a dozen of cities/urban settlements have electricity networks, but these are not interconnected, as there is no national power grid in Chad. Installed available generation capacity outside of Ndjamena is below 10 MW, also consisting of diesel generation. Due to the inadequate electricity supply by SNE, many enterprises and some households use self-generation equipment. That said, there are several entrepreneurs which have shown interest in investing in Chad, and about 25 unsolicited IPP proposals, mostly solar PV, have been proposed to the Government. However, in the absence of a least cost generation plan, these far exceed the current capacity of the network, and may not be the most optimal projects for the country, which poses significant financial and technical risks to the sector.

12. **Energy shortages are particularly acute in refugee camps and host communities and posing serious security and health risks, especially for women and children.** Most refugees have flocked to areas of Chad that were already characterized by high poverty prevalence and scarce access to basic services. Influx of refugees increased pressure on the limited natural resources. In many areas around the refugee camps, the availability of wood, the main source of energy, has been reduced by deforestation, obliging women and children to face increased security risks as they travel further from camps in search of firewood. In poorly ventilated dwellings, pollution from inefficient polluting cook stoves can be tens times higher than levels deemed acceptable by the World Health Organization. Exposure is particularly high amongst women and children, who spend the most time near cooking fires. Underlying health conditions common in settlements such as malnutrition, psychosocial stress, and infectious diseases that already render refugees more vulnerable to diseases like COVID-19, cooking may further reduce the chances of recovery from the virus. Households in refugee camps and host communities still have little to no access to electricity and therefore often have to use polluting energy sources for lighting and incur extra costs associated with charging mobile phones. Access to water, especially in Sahelian regions that host about 70 percent of refugees, is also becoming more difficult due to desertification, the naturally arid climate in the East, lack of development and community responsibility in water management, and increased demand.

13. **At the strategic level, the importance of electricity access for equitable economic development across the country has been recognized**. In July 2020, the Government approved a National Electricity Emergency Plan (NEEP) that calls inter alia for electrification of 102 secondary cities via mini-grids and development of utility scale solar PV plants for the Ndjamena grid. It sets ambitious objectives of achieving a 38 percent access rate in 2023 and 53 percent by 2030. However, several systemic issues will need to be addressed to implement the Plan, including improvements in SNE performance and deploying at scale off-grid electrification technologies.

14. **SNE has been facing serious financial and operational challenges and is not a credible off-taker to attract private sector investments for grid-connected power generation.** Because of the reliance on diesel-based generation and SNE operational and commercial inefficiencies, the cost of electricity service is extraordinarily high in Chad (240 CFA/ kWh or US$0.43/kWh billed), largely exceeding the average tariff of US$0.25/kWh (140 CFA/kWh). SNE infrastructure is ageing and in disrepair due to the chronic loss-making operation of the company. Total losses and collection rate are at 35 and 43 percent respectively; as a result, SNE collects revenues for less than a third of the electricity injected into the network despite the high end-user tariffs. Client receivables and suppliers' debt increase at an unsustainable pace. SNE relies entirely on Government's support to operate, in the form of fuel supply, which impose a huge fiscal toll. In past three years subsidies exceeded electricity sales and represented between 0.7-0.8 percent of GDP. Still, SNE is facing chronic cash shortages and is not in the position to properly maintain its assets let alone investing access expansion.

15. Compared to other countries in the Sub-Saharan Africa (SSA) region, the mini-grid market in Chad is at the nascent stage. There are about 15 mini-grids in operation, all constructed with public funds years ago. Most of them are operated by the national power utility SNE; a few mini-grids – by a local private company. Several mini-grids have been

out of service for few years. There are no international operators on the Chad mini-grid market. A legal regulatory framework for mini-grids comprises elements is sufficient for local companies to operate public mini-grids. However, the framework will need to be substantially developed in all key areas including tariffs, subsidies, service level, technical and performance standards, licensing requirements and procedures, relationship with the national grid, and entry conditions, if private sector-led construction and operation of mini-grids to be scaled up.

16. **The country has excellent but largely untapped solar energy potential**. Solar energy is by far the most abundant renewable energy resource across the entire territory of Chad. Global Horizontal Irradiation varies between 5.8kWh/m²/day in the South and 6.8kWh/m²/day in the North of the country[6]. However, these excellent energy resources are barely utilized at any level from the national electricity utility to mini-grids, and to standalone solar systems (SSS). The main issues facing the deployment of solar energy at the utility level are the small size of the national power system, which is made of a 90kV grid with a connected nameplate generation capacity about 150MW in Ndjamena, and lack of a least cost power generation plan. In the SSS space, except for a few international companies with a very limited market presence, most of the companies are local and small in size. Off-grid solar suppliers have a narrow geographical coverage and relatively poor supply chains and distribution networks, preventing them from making business at scale, let alone reaching customers in remote areas. The solar market is flooded with counterfeit and low-quality products that spoil the market and consumer sentiment. When available, high quality solar products are expensive and unaffordable to the majority of end-users. The formal market faces a tough competition from informal market players that cut prices by avoiding taxes and offering a substandard equipment. Over-the-counter cash sales account for the bulk of the total sales. PAYGO is still an emerging business model offered mostly by international companies and their distributors mostly for productive uses and better-off HH.

17. **At the same time, off-grid solar energy solutions will need to play a key role if electricity access in Chad is to materially increase in the decade**. Several high-level studies looked at Chad electrification options in the past years. All of them indicate that in view of the serious affordability constraints, low density of the population, and the significant time and resources required to develop a national power grid, off-grid energy technologies, including mini-grids and SSS, will be least cost solutions for electrifying a large part of the country in the next 5-10 years.

18. **The World Bank support to the Chad energy sector has significantly grown since 2018.** The Bank reengaged in the sector in 2018 after nearly a decade of no involvement. A Power Sector Note prepared in 2018 looked at the main issues facing the sector, identified options and developed recommendations. The note laid out the foundations for a Bank energy sector program having one of the main objectives to increase electricity access to support economic development and improve living standards of the population. The main pillars to achieve the access objective include i) improvements in SNE financial and operational performance; ii) reduction in power generation cost through shifting from diesel to HFO at the existing thermal power plants serving the Ndjamena power system, as well as utility scale solar PV plants and electricity imports, iii) deployment of off-grid electrification technologies – mini-grids for secondary cities and SSS for rural areas. The Bank program is built around these pillars and implemented through a combination of investment and policy development operations, as well as technical assistance and capacity building. The development of a legal and regulatory framework to enable private sector investments in on and off grid solar energy is an integral part of the program. The ongoing program comprises an investment project under implementation two operations in pipeline/preparation that are summarized below.

[6] https://solargis.com/maps-and-gis-data/download/chad

19. **The ongoing Cameroon-Chad Power Interconnection Project (P168185) of US$385 million, including an IDA grant of US$90 million to Chad,** will i) enable affordable electricity imports from Southern Cameroon to lower costs of electricity and green energy mix in Chad, (ii) eventually enable electricity trade from Chad to Northern Cameroon, iii) strengthen and expand the power distribution grid in Ndjamena to substantially increase the number of connections, improve reliability of supply and increase the customer base at SNE, iv) improve operational and commercial performance of SNE, and v) provide power access to locations along the HV power transmission line from Cameroon-Chad border to Ndjamena. Furthermore, the HV line will interconnect several urban power grids and thus will serve as a backbone of the national power system in the future. The project was approved by the Board in June 2020 and will be implemented during 2020-2027.

20. **The Regional Off-Grid Electrification Project (P160708**), approved by the Bank in 2018, and which will be submitted to the Board for an additional financing in Q3 FY21, will provide support to 19 countries including Chad. It aims to develop an ecosystem to enable the private sector to increase electricity access of households, businesses and public institutions.

21. **In close cooperation with MIGA and IFC, the Bank is preparing the Chad Energy Access and Fiscal Management DPF series (P173755)** that is expected to deliver its first operation of US$60 million in Q1 FY22 and second operation of the same size in FY23. It will support critical reforms in the power sector with the objective of reducing the cost of power generation, enhance financial viability of the national power utility SNE, and increases electricity access.

22. In addition, the Bank is financing a national electrification analysis that will be implemented by Tractebel during November 2020 – December 2021 and provide analytical inputs for the Chad national electrification strategy.

23. **To proposed Chad Energy Access Scale Up Project will complement the ongoing activities and accelerate access in secondary cities via mini-grids and in rural areas** – via SSS. These off-grid solutions can be deployed during the next years to produce relatively quick results and serve as pre-electrification of the areas that will be connected to the national grid in the future. Off-grid electrification solutions are particularly deemed suitable for remotely locate and lacking basic infrastructure areas hosting refugee camps. Also, the project will contribute to reduction in generation cost and greening of the energy mix in the Ndjamena grid by supporting private investments in solar PV plants around Ndjamena.

24. **However, the Bank support program alone will not be able achieve high levels of electrification that will require a long-term sustained commitment and a coordinated action of the Government and all development partners, while maximizing private sector participation**. Support from various development partners in the access agenda has so far been rather fragmented without a clear and coherent strategic direction. With the World Bank positioned as a long-term partner of the Government, it is imperative that a long-term strategic view is taken in the design of this project to facilitate coordination and ensure effectiveness in implementation of the National Electrification Strategy that will be produced by the Government in 2021 based on the ongoing national electrification analysis. Longer-term engagement by the World Bank will provide the right signal to the other development partners and the private sector for garnering their support needed in achieving the access goals and thus improving living conditions of households, including refugees. In view of the above, it is proposed to implement to sustain the engagement under the multi-phase programmatic approach (MPA). The first phase of the MPA - the Chad Energy Access Scale Up Project of US$280 million - is detailed in this PCN.

25. **The theory of change to accelerate access to electricity is inspired by global lessons learned but adapted to the Chadian context.** No country has been able to reach universal access without subsidies, in particular in rural areas. However, in order to reduce the fiscal burden of the energy sector, facing increased pressure during a period of slower economic growth, the strategy is to reduce the subsidy for Chadian consumers that are currently connected to the grid,

which are located in the capital city and likely to be the wealthier households, and shift that subsidy towards peri-urban and rural households as well as the poor. This will be the focus of the proposed DPF series on energy (as well as improving governance, oversight, planning and addressing bottlenecks for private sector investments). In order to improve the viability of the utility, the Chad-Cameroon Interconnector Project, approved by the board in June, will seek to increase the customer base of SNE through grid densification, and reduce operating costs through the import of affordable hydropower. In this MPA/ project, the intent is to promote access to electricity through mini-grids, using technical standards that will enable them to operate within the national grid once it is extended, and through deploying standalone solar systems. As the costs to achieve universal access in Chad are significant, the intent is to use market based approaches whereby consumers will contribute based on their willingness-to-pay, and subsidies will be used to ensure financial viability and to attract private sector capital. Finally, Chad can benefit from the disruption of solar technology, efficient appliances to promote productive uses of energy, and pay-as-you-go (PAYGO) systems to improve efficiency. The proposed MPA/project will also assist the Government of Chad to prepare a well-structured auction for a solar IPP to be connected to the grid, as experience has shown that the proliferation of negotiated deals, and resulting higher prices, is a significant risk to the viability of the off-taker, and efforts to reduce subsidies.

26. **The MPA/Project will contribute to the Sahel Alliance's efforts to accelerate development outcomes and reduce drivers of fragility.** As a response to security and development challenges, an initiative called "Alliance for the Sahel" was launched in 2017 by France, Germany and the European Union (EU), with the United Nations Development Program (UNDP), AfDB and the World Bank Group (WBG) as founding partners[7]. The initiative was announced in Paris on June 13, 2017, by France's President Macron, Germany's Chancellor Merkel, and the EU's High Representative Mogherini. The Alliance has been put together in consultation with the G5 countries (namely Mali, Chad, Niger, Burkina Faso, and Mauritania), which have endorsed the concept, priority areas and flagship projects. The aim of the Alliance is to accelerate results and crowd-in development resources to the Sahel to help countries address the multi-faceted challenges and drivers of fragility that affect them and promote increased resilience and economic opportunities, with a focus on the most vulnerable. One of the key objectives of the Sahel Alliance is to double access to electricity within five years (between 2018 and 2023) in the G5 countries (in Chad, the Bank seeks to triple access within five years).

C. Relationship to CPF and Relevance to Higher-Level Objectives

27. **The proposed MPA is aligned with the ongoing World Bank Group's Country Partnership Frameworks (CPF) for the Republic of Chad for the period FY16-20**[8]. CPF recognizes the importance of the energy sector as part of Engagement Theme 1 focused on strengthening the management of public resources, which includes the energy sector. In addition, the project is expected to support Chad to align with the Next Generation Africa Climate Business Plan which provides a blueprint to help Sub-Saharan African economies achieve low carbon and climate-resilient outcomes.

28. **The MPA will support the implementation of the Chad's long-term development strategy "Vision 2030: "Le Tchad que nous voulons"**. Given the important role of electricity access in improving people's quality of life, the project will support the implementation of the strategy that is implemented through consecutive five-year development plans. The strategy aims to improve the quality of life of Chadians by developing human and social capital, social protection and economic empowerment. In addition, by increasing access solely through renewable solar energy, the project will help Chad meet its Initial Nationally Determined Commitments (INDCs), which sets Chad's unconditional mitigation goal of reducing GHG emissions by 18.2 percent by 2030 (41,700 GgCO2e based on a reference year of 2010) and a conditional mitigation goal of reducing GHG reductions by 71 percent by 2030 (162,000 GgCO2e).

[7] https://www.alliance-sahel.org/en/
[8] Report No. 95277-TD; December 22, 2015.

29. **The MPA will support the implementation of the government policy aiming to help refugees and host communities.** Chad made great strides in establishing the institutional and legal framework in support of the refugee agenda. Recent developments include: i) approving of the Asylum Law end-December 2020; ii) establishing in 2019 a ministerial-level High Committee integrating representatives of all sectors contributing to the refugee agenda to provide policy, strategic, and technical guidance "for better protection and treatment of refugees and host communities; iii) ensuring the presence of the National Commission for Refugees (CNARR) in all provinces hosting refugees. Furthermore, the Government of Chad made pledges at the Global Refugee Forum, held in December 2019, to promote the use of solar energy for refugees and host communities and use solar for all existing and new infrastructure in areas hosting refugees and other displaced persons. The project will reinforce the implementation of the policy by alleviating energy deprivation of refugees and host communities.

30. **The MPA is well aligned with the goal of the World Bank Group Strategy for Fragility, Conflict, and Violence, 2020-25**. Activities will address the unique needs of the refugees and their host communities particularly by (a) strengthening the focus on the socioeconomic dimension for both the refugees and their hosts, (b) focusing on key areas for medium-term success, especially jobs and education; and, (c) closing gender gaps by empowering women and girls. The strategy recognizes that the private sector lies at the center of a sustainable development model in the context of fragility, and the project purposefully supports private sector development for commercially viable private sector service delivery in the fragile contexts of displacement. In addition, the project responds to the strategy's requirements to systematize partnerships with humanitarian, development, security, and peacebuilding actors at the country level by drawing on the World Bank Group's comparative advantage as a development actor, enhancing the impact of operations on the ground, and ensuring effective implementation arrangements with third parties as needed.

31. **The MPA is responsive to the World Bank Group Gender Strategy.** The project will include targeted interventions to improve access to electricity for female-headed households, including in refugee camps, and female-led enterprises, promote women entrepreneurship, build awareness relevant to women and girls around energy services.

MULTI PHASE APPROACH

A. Higher-Level Objective

32. **The MPA over-arching objective is to increase access to modern energy in Chad.** The Bank estimates that total costs of reaching universal electricity access in Chad is US$3.75 billion. Achieving the ambitious electrification objectives will require sustained and sizable public and private resources over a longer period of time and requiring the use of various instruments. The MPA will complement the Bank current energy portfolio in the country made of the ongoing Cameroon-Chad Power Interconnection Project (P168185) and the proposed Chad Energy Access and Fiscal Management DPF series (P173755) through phased electrification interventions. The MPA will include three phases that will be tailored to the status of market development. The focus of phases will range from off-grid electrification to on-grid electrification and to regional power markets, with each subsequent phase building on the outputs of preceding ones. Besides supporting the energy access agenda, the three-phase MPA will also contribute to achieving several other higher-level objectives, as elaborated in the previous section "Relevance to CPF and Higher-Level Objectives".

C. Rationale for Using an MPA

33. **The MPA is the appropriate instrument given the need for long-term engagement required to help Chad implement its ambitious and challenging electricity access agenda.** Compared to a standalone investment project or a series of projects, the MPA provides a more flexible and adaptive environment to achieve the program goals with consistency and

focus over the long term. This approach is preferred for the following reasons: (i) experience in successful access programs globally reveals the importance of a long-term commitment of the Government with substantial resource mobilization within a well-defined program of policy reform, institution building, and investment support is needed to facilitate private investments and donor coordination as needed to help countries achieve the goal of universal access to electricity; (ii) MPA allows for a series of investments with flexibility and space for innovation to allow for mid-course corrections based on lessons learned that is critical for achieving the ambitious access targets by 2030. Given the current low level of access and the slow pace of electrification in Chad, achieving the high access targets by 2030 will require different implementation arrangements to be tested in both grid and off-grid space and scale-up of successful pilots; and iii) longer-term engagement by the World Bank will provide the right signal to the other development partners and the private sector for garnering their support needed in achieving the universal access goals of the Government.

34. **The proposed MPA will provide the Government with significant flexibility and adaptability to incorporate lessons learned from pilots and different approaches and apply tailored electrification technologies and business models to meet implementation pace, cost, affordability and sustainability objectives.** The ongoing national electrification analysis will inform the government national electrification strategy with respect to location-specific electrification technologies, institutional arrangements and financing options. The MPA will support the implementation of the strategy through its three phases, each focusing on time-bound and location-specific priorities.

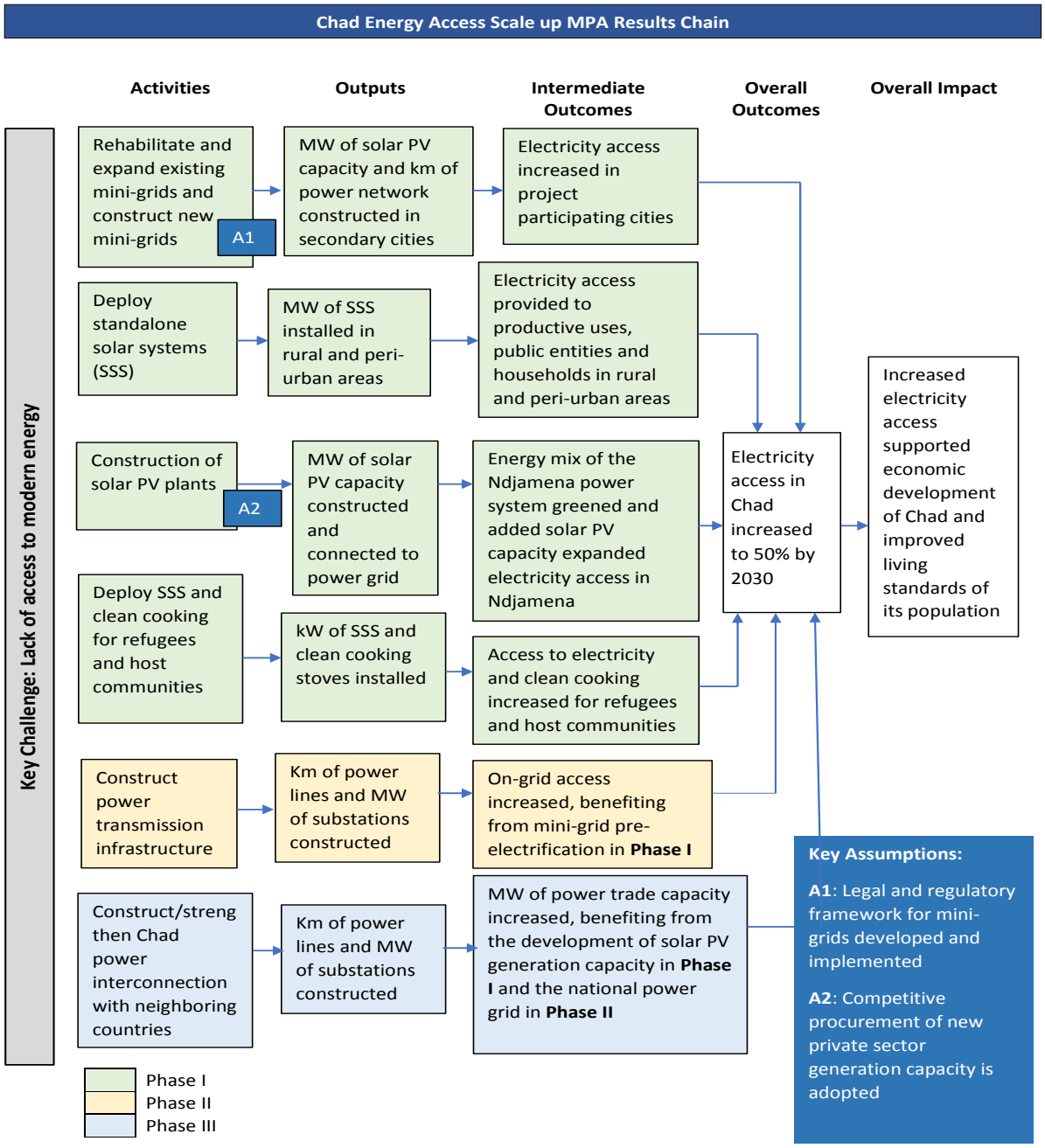
35. **The MPA provides flexibility in the types of instruments that can be used in different phases, thus allowing for using appropriate performance-based financing instruments in subsequent phases to sharpen the focus on results.** Based on the progress in implementation in the first phase through a regular investment project financing, the subsequent phases under the MPA may include performance based financing like Investment Project Financing with Performance Based Conditions (IPF-PBC) to help push the reform agenda required for achieving the access goals. The appropriate financing instrument for the second and third phases will be determined at the time their preparation.

D. Key Results of the Program

Program Results Chain

36. Figure 1 provides a snapshot of the MPA results chain for all three phases. The activities and outputs of Phase I are already well defined even if subject to fine-tuning during project preparation. The activities and outputs of Phases II and III are provided based on the current understanding of the market and its expected development supported under Phase I. These may be adjusted as needed during implementation of Phase I.

Figure 1: MPA Results Chain



Program Development Objective

37. The proposed Program Development Objective (PrDO) of the MPA is to increase access to modern energy in Chad. The proposed PDO level indicator is: Access to electricity in Chad increased from 6.4 percent in 2020 to 50 percent by year 2030.

E. Program Framework

38. **Each phase of the MPA will have its own Project Development Objective (PDO), which will help support and achieve the overall PrDO.** The first phase – the Chad Energy Access Scale Up Project of US$280 million -- will focus on off-grid electrification and alleviating energy deprivation of refugees. The second phase of US$120 million will be proposed for IDA20 and would prioritize on-grid electrification, benefiting from solar PV electricity generation, supported under the first phase of the MPA, as well as the construction of the power transmission infrastructure under the ongoing Cameroon-Chad Power Interconnection Project. The third phase of US$100 million, to be financed under the IDA21, would support the development of the Central Africa Power Pool (CAPP) by expanding Chad power interconnections with neighboring countries and pursuing the on and off-grid electrification agenda in the country. The third phase will build on the outcomes of the first two phases, namely with respect to the development of the national power grid and solar PV generation. The MPA framework is summarized in the table below:

Table 1: MPA Framework

Phase #	Project ID	Sequential or Simultaneous	Phase's Proposed DO*	IPF or PforR	Estimated IBRD Amount ($ million)	Estimated IDA Amount ($ million)	Estimated Other Amount ($ million)	Estimated Approval Date	Estimated E&S Risk
1	P174495		Increase access to modern energy and promote renewable energy through private sector participation	IPF	0.00	280.00	0.00	Q2 FY22	Moderate
2		Sequential with an overlap with Phase I	Increase access to electricity through on-gird electrification	IPF-PBC	0.00	120.00	0.00	FY 24	Moderate
3		Sequential with an overlap with Phase II	Increase assess to electricity by developing the Central African Poor Pool	IPF	0.00	100.00		FY27	Moderate
Total					0.00	500.00	0.00		
				Revised Financing Envelope			$ 500.00		
				Board Approved Financing Envelope			$ 0.00		

PROPOSED PDO/RESULTS

A. Proposed Project Development Objective(s)

39. The Project Development Objective (PDO) is to increase access to modern energy services and promote renewable energy through private sector participation.

B. Key Results

40. Progress towards achieving the PDO will be measured by the following indicator:
- People provided with new or improved electricity services (number), of which refugees (number) and of which female (number);
- People provided with improved cooking solutions (number);
- Renewable energy generation capacity enabled by the project (megawatt);
- Carbon emission reduction (tons of CO2e).

41. Intermediate indicators include:
- Number of households electrified via SHS;
- Number of households electrified via mini-grids;
- Number of Micro Small and Medium Enterprises (MSMEs) provided with electricity, out of which female headed MSMEs;
- Number of electrified medical and health facilities;
- Number of electrified schools.

PROJECT CONTEXT

A. Concept

1. Description

42. The project aims to expand access to electricity services in urban and rural areas through off-grid solutions, including mini-grids and SSS, and in the Ndjamena grid through solar PV plants and storage. In addition, the project will help alleviate energy deprivation facing refugees and nearby host communities. The proposed project is fully aligned with the National Electricity Emergency Plan (NEEP), Sahel Alliance, SDG7 and MFD agenda. The deployment at scale of off-grid and mini-grid technologies would serve as catalyst for improved access to basic services (health, education), economic development and electricity services of the population in areas affected by energy poverty, which entrenches fragility.

43. In the absence of the existing interconnected power system in Chad, off-grid technologies will offer short to medium term cost-effective solutions for rapid electrification. Off-grid solutions will serve as pre-electrification and thus construct building blocks for the future national power system that will receive a development boost through the Cameroon-Chad Power Interconnection Project and other priority investments. The utility scale solar park planned around Ndjamena would displace costly thermal generation while enabling solar potential to be valorized first at the national level and later, once the interconnector is commissioned, at the regional scale. The project preparation with be carried out jointly with IFC and MIGA with the objective of offering comprehensive solutions to attract private

sector investments and operational expertise. The proposed project would also contribute to mitigate vulnerability to climate change, natural disasters and pandemics.

44. Because of the novelty of off-grid electrification solutions, their continued rapid development that brings costs down and offers new opportunities, and the nascent stage of the Chad off grid electrification market, it is proposed to integrate flexibility into the project design and apply learning by doing followed by the necessary adjustments during project implementation.

45. The project is expected to be supported by an IDA grant of US$280 million and would comprise five components as described below.

46. Component 1. Mini-grid electrification: Rehabilitation and construction of power distribution infrastructure. Construction of solar + storage plants up to a few MW in capacity. It will be focused on urban areas. Most of the cities will be identified during preparation.

47. Component 2. Standalone solar systems (SSS): Deployment of SSS for three markets: productive uses, public institutions (schools and health centers) and households. It will be focused on rural areas.

48. Component 3. Development of utility scale solar IPP: Construction of utility scale solar PV plants and storage in the Ndjamena region, construction of transmission power lines to connect solar PV plants with the Ndjamena power grid.

49. Component 4. Alleviating energy deprivation of refugees: Deployment of clean cooking and decentralized electricity solutions in refugees camps and nearby host communities.

50. Component 5. Technical assistance and project management: Studies, capacity building, project management.

Legal Operational Policies	Triggered?
Projects on International Waterways OP 7.50	No
Projects in Disputed Areas OP 7.60	No

Summary of Screening of Environmental and Social Risks and Impacts

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APPROVAL

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