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Examining the role of risk mitigation and transfer for renewable energy investments

Case studies in West and Central Africa

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Daniel Duma
Miquel Muñoz Cabré

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Linnégatan 87D 115 23 Stockholm, Sweden
Tel: +46 8 30 80 44
www.sei.org

Author contact

Daniel Duma
daniel.duma@sei.org

Editing

Lynsi Burton

Layout

Tyler Kemp-Benedict

Graphics

Harry Woodrow and Mia Shu

Media contact

Lynsi Burton
lynsi.burton@sei.org

Cover photo

Floating solar PV, Bui Power Station, Bono Province, Ghana. Miquel Muñoz Cabré / SEI

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Contents

Abstract

This report discusses the role of risk mitigation and transfer instruments in getting utility-scale renewable energy projects to financial close in Western and Central Africa. Development finance institutions (DFIs) and multilateral development banks (MDBs) offer a variety of risk mitigation and transfer (RMT) instruments, including political risk insurance, partial credit guarantees and currency hedging that have proven instrumental in securing financing for the wind and solar projects developed in the region. By interviewing key project stakeholders, including developers, offtakers and lenders, we outline the importance of such tools in addressing various risks, particularly offtaker obligations. We conclude that risk mitigation is relevant, but far from sufficient in overcoming the structural macroeconomic barriers that many countries in the region face. We recommend pursuing models that circumvent these barriers in the short run, such as leasing or using viable businesses as anchor loads, in parallel with addressing structural issues in the long term, especially reducing debt in the energy sector.

1. Introduction

This report explores the role of risk mitigation and transfer (RMT) instruments[1] for enabling renewable energy investments in West and Central African (W&CA) countries[2] by examining empirical evidence from several projects in the region. This is the second in a series of Finance for Sustainable Development reports that will eventually cover all sub-Saharan Africa (SSA)[3] regions and is accompanied by a conceptual review of RMT for renewable energy investments (Duma et al., 2023; Duma & Muñoz Cabré, 2023).

Renewable energy is a key goal for both climate and the 2030 Agenda, as a central means of achieving Sustainable Development Goal 7 (SDG 7). While estimates of global financial investments on climate mitigation differ, renewable energy tends to account for the biggest share, consistently around 30–40% (Buchner et al., 2023; UNFCCC, 2021). With energy accounting for roughly two-thirds of global greenhouse gas (GHG) emissions, replacing fossil fuels and meeting current and growing demand with renewables represents a global priority. For example, at COP28, 124 countries agreed to the goal of tripling renewable energy capacity by 2030 (COP28, 2023). Renewables are the most timely and cost-effective way of achieving universal energy access (SDG 7.1). Despite recent progress, about 750 million people lack access to electricity, representing around 9% of the world population, and half that of SSA (UNCTAD, 2023).

SSA is the region with the greatest need for additional energy to meet the demands of its growing economies and populations. Currently, the average power consumption per

1 RMT instruments aim to reduce or transfer some of the most relevant risks faced by investors in developing, financing and operating a renewable energy project, making investors more comfortable with committing their capital to a certain country or project (Duma & Muñoz Cabré, 2023, p. 18). Throughout this document, RMT "instruments" also refers to RMT programs, interventions and other initiatives.

2 For this research we have used the World Bank grouping, where West and Central Africa includes Benin, Burkina Faso, Cameroon, Central African Republic, Cabo Verde, Chad, Republic of Congo, Cote d'Ivoire, Equatorial Guinea, Gabon, the Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Sao Tome & Principe, Senegal, Sierra Leone and Togo.

3 We follow the International Energy Agency's (IEA) approach and exclude South Africa from the scope of the analysis. "South Africa is presented separately from sub-Saharan Africa as its energy demand trends and energy composition differs substantially from the rest of sub-Saharan Africa, and can mask trends in the region" (IEA, 2023a, p. 143).

capita in SSA is about 200 kilowatt-hours (kWh), compared to an average of 6500 kWh in Europe (UNCTAD, 2023). Under any scenario of development and economic growth in the region, electricity consumption is bound to increase dramatically in the following decades. For example, the International Energy Agency (IEA) estimates that only in solar photovoltaics (PV), Africa would need 130 gigawatts (GW) installed by 2030 to meet its Sustainable Africa Scenario (IEA, 2022). At the average project size of the last few years, this would amount to more than one project being commissioned every day from now until 2030 (Duma & Muñoz Cabré, 2023). In contrast, in 2023, reportedly only eight utility-scale solar PV projects reached financial close in all of Africa – not just SSA (Herscowitz, 2024).

Renewable energy growth tends to be concentrated in a small number of countries, primarily South Africa, which had in 2023, 68% of the total installed capacity in renewables in SSA (BMI, 2023). For reference, China installed in 2022 alone nearly 10 times the total cumulative installed PV capacity on the African continent (around 11 GW) (IEA, 2023b).

The aim of this report is to contribute to a better understanding of why investments are still inadequate and how they can be accelerated. It does so by looking at SSA's W&CA sub-regions and investigates a key barrier in any developing business, region or technology: investment risk. In the simplest terms, financial firms of all kinds who need to choose where to deploy the capital of their shareholders are wary of the possibility of not recovering their capital or not meeting their return requirements. For capital-intensive infrastructure investments like renewable energy, the possibility of not receiving payments in full and in time throughout the long lifetime of the project is a serious threat that deters debt and equity investors from making large capital commitments. The underlying causes of high risk – weak, undiversified or indebted economies, political instability, and difficult business environment – take time to improve. In the meantime, a variety of RMT instruments have been implemented throughout SSA with the purpose of nudging investors to commit capital into regions where risk remains high. These RMT instruments are the primary focus of this report.

As with the previous installment on Southern Africa (Duma et al., 2023), this report presents evidence from the perspective of practitioners and project stakeholders on several key areas, including:

- the relevance of RMT instruments in the project development process;
- the effectiveness of RMT instruments in getting projects to financial close and during the operational phase; and
- the emergence of RMT innovations and their potential for replication.

This paper contains the following sections: Section 2 briefly describes the research methodology; Section 3 presents the RMT instruments identified in the W&CA utility-scale renewable energy case studies analysed; Section 4 presents an overview of projects in W&CA countries and includes a description and brief analysis of five utility-scale solar PV and wind projects in Cameroon, Ghana, Senegal, and Togo; Section 5 consists of a Ghana deep-dive case study. Finally, this is followed by our discussion (Section 6) and conclusions and recommendations (Section 7).

2. Methodology

This report presents the findings of research conducted throughout 2023. Based on the feedback received on the Southern Africa Development Community (SADC) report (Duma et al., 2023), we continued the dialogue with major intergovernmental organizations and DFIs. This helped us refine our approach around renewable energy finance and RMT in SSA and confirmed that stakeholders are interested in learning more from the project level, particularly on overcoming major barriers such as low credit ratings of sovereigns and offtakers (buyers of power), currency convertibility and political risk. The methodological approach includes a literature review, a review of renewable energy projects in the two regions, semi-structured interviews, one workshop and on-site field studies. A conceptual literature review on risk mitigation and renewable energy finance is presented in the accompanying report (Duma & Muñoz Cabré, 2023).

From March to September, we conducted desk research looking at specific literature, recent projects, their structure, risk allocation and use of RMT. We also looked at the W&CA regional and country levels' institutional and policy setups, particularly in the energy and finance sectors. These research activities generated insights that form the basis of this report.

Using the Platts electric power market database (Platts, 2019), the Power Futures Lab annual report (Kruger & Alao, 2023), IRENA data and media reports, we identified 28 projects of potential interest in the region that met the following criteria: (1) utility scale; (2) use of solar or wind technology; and (3) larger than 10 MW.

For in-depth analysis and interviews with stakeholders, we further narrowed the list of projects, according to the criteria below. This yielded five projects in four countries (see Table 1).[4] The criteria used for the short list selection include meeting some of the following:

- a private Independent Power Producer (IPP) as the main developer;
- a private finance contribution;
- at least one financial RMT instrument applied; and
- data availability and willingness of project stakeholders to engage with the research team.

Table 1. Selected projects

Cameroon	Ghana	Senegal	Togo
Maroua (18 MW) & Guider (17.8 MW) PV	Bui Hybrid PV (55 MW)	Kahone (35 MW) & Touba (25 MW) PV Taiba N'Diaye wind (158 MW)	Blitta PV (50 MW)

Detailed information on these projects is found in Section 4.

For project-level insights beyond the public information available on the internet, we conducted 31 semi-structured interviews with developers, DFIs, consultants, regulators, governments and utilities. The interviews were conducted via video conference and in

4 Maroua and Guider in Cameroon and Kahone and Touba in Senegal are counted as a single project because they are financed as a package despite being at different sites.

person between March and December 2023. The interviews focused on gathering information from practitioners involved in the projects in various capacities – developers, DFIs or private lenders, offtakers and government officials. The interviews addressed topics including: barriers to getting the project to financial close; risk allocation; role of RMT instruments; performance of RMT during the operational phase; potential for scalability; and prospects for renewable energy development in the region and needed policy changes.

We chose Ghana as the country most suitable for a deep dive and the site of our workshop for several reasons. First, it has one of the most developed power sectors and the highest power consumption per capita in the region. Second, the country faces a seemingly paradoxical situation where the installed capacity is above peak demand, yet consumers frequently face power outages, mostly due to financial settlement issues between the various players in the system. Thirdly, the country added significant additional capacities to its grid through the IPP model, including solar PV. These reasons make Ghana a particularly interesting case study on renewable energy finance and RMT.

From 23 to 24 October 2023, we convened a two-day technical workshop in Accra, in collaboration with IRENA and co-hosted by the Ministry of Energy of Ghana. The workshop was attended by 26 representatives of various organizations with project-level experience in renewable energy in the region, including developers, DFIs, intergovernmental organizations, local banks, regulators, government, utilities and academia. The workshop was held under Chatham House rules and its discussions informed much of this report. It consisted of moderated panels that explored the perspectives of participants related to various risks – e.g. payment and liquidity risk, political risk, currency risk – and their associated RMT strategies. Field visits to solar PV projects in Ghana (existing and under construction) occurred 25–27 October 2023.

3. Existing RMT instruments for renewable energy investments in W&CA

In this section, we discuss the risks and RMT instruments used by renewable energy project sponsors to tackle them, against the backdrop of the region's challenging macroeconomic situation. We briefly describe the various risk categories, together with the main RMT instruments, including the implementation agreement with sovereign guarantees and other DFI-sponsored guarantees and insurances.

The general macroeconomic climate and business environment in W&CA and SSA in general suffer from the various shocks of recent years. The pandemic, the impact of the Russia-Ukraine war on commodity prices, the inflationary pressures and the interest rate hikes in rich economies (making emerging markets comparably less attractive as investment destinations) severely affected growth and debt levels. With disrupted economies, higher prices and depreciating currencies, several countries reached unmanageable levels of sovereign debt. For illustration, in 2022, debt service costs (payments of principal and interest) across Africa have been almost twice as large as clean energy investments (IEA, 2023a). Only two countries in SSA had investment-grade credit ratings as of late 2023: Botswana and Mauritius.

Even under these circumstances, numerous renewable energy projects have good prospects of viability, in countries or regions where there is a clear business case for additional power in the grid and the levelized cost of energy is lower than existing fossil-based capacity (as is the case with most of the projects discussed in this report). In this scenario, risk and RMT become highly relevant. Despite the economic challenges of recent years and the region's chronic difficulties attracting investment, a wide array of projects are either commissioned, in construction, or in advanced development, including large solar PV, solar-hydro hybrids, and wind projects.

A variety of DFI-led RMT instruments are being applied in the process of reaching financial close for renewable energy projects in W&CA.[5] This section will describe some of them in the context of the shortlisted projects. Many of these instruments are applied at the project level because most renewable projects throughout SSA are developed under the project finance structure[6] and the IPP model.

The first RMT instrument applied at the outset of a project is the implementation agreement between the project sponsors and the government. All project finance structures studied involve some state-owned organization and are thus based on an implementation or concession agreement[7] between the newly set-up project company and a government entity, usually the Ministry of Finance. The agreement establishes the high-level terms, rules and responsibilities of the parties for the development and operation of the project. All renewable energy projects require land use, access to infrastructure and legal protection. The agreements act as the government's commitment to provide those services and protections that are within its control. Such agreements include a termination clause that stipulates the responsibilities of the parties should the project end. The termination-triggering events and the termination proceedings for each party are described in detail within the agreement. The government typically offers a sovereign guarantee to cover the termination payment (Duma et al., 2023). However, in recent years, because of the sovereign debt crisis and the IMF interventions to tackle it, which usually preclude additional sovereign guarantees, the guarantees have become more difficult or impossible to secure, which has affected project development to some extent (Hernandez, 2024; Duma & Muñoz Cabré, 2023; Duma et al., 2023).

There are several ways to categorize relevant risks for utility-scale renewable energy projects (Duma & Muñoz Cabré, 2023; Shrimali, 2023). Shrimali classifies the risks relevant to RMT instruments into four categories: political, currency, offtaker and credit. For practical purposes, the RMT instruments define the risks in narrower terms, covering only certain events under well-prescribed circumstances. While the classification of risk categories is useful, particularly matching the RMT instruments offered by various DFIs, the risks tend to correlate with each other – political decisions can impact currency exchange rates, the health of utilities or the prioritization of their payments and, consequently, the ability of project companies to service their debt.

5 An elaborate explanation on RMT instruments is provided in the companion paper (Duma & Muñoz Cabré, 2023).
6 Structuring investments under the project finance model is typical for renewable energy, particularly in SSA. This involves setting up a new company by the equity sponsors, then attempting to attract most financing (typically between 65% and 75%) from non-recourse long-term debt. Hence, lenders become the key decision-makers on project viability and require security, including sovereign guarantees for termination.
7 In some projects the name of the agreement may be different, but the functions are similar.

Another classification divides the risks into two categories, country level and sector/technology-specific (IEA, 2023a). The first includes the macroeconomic environment, currency volatility and political risk. Sovereign debt, inflation, currency depreciation, but also violent conflict are included. The regulatory environment, reliability of offtakers, clarity of price signals and availability of bankable projects are covered under sector- and technology-specific factors. Issues like market design, cost-reflective tariffs, fossil fuel subsidies and the visibility of procurement processes are captured under this category.

While there are many other risks at play in financing and building a renewable energy plant, much of the current practice around risks involves trying out various allocations and combinations of RMT instruments that convince lenders to feel confident about repayment and move the project over the line to reach financial close.

As with our previous report, the focus is mostly on the risks and the RMT instruments used by the selected projects' sponsors. They mainly deal with offtakers' obligations and various forms of political risks. Issues around offtaker obligations are relevant because, in the vast majority of cases in SSA, the energy buyer is the state-owned utility. These entities tend to suffer from high levels of debt and low credit ratings (IEA, 2023a). Utilities tend to have regulated tariffs below their costs and also face high commercial and technical losses in their grids – an average 15% compared to the global average of 8% – making their businesses difficult to sustain, affecting their capacity to honor their contracts for fuel and their potential of expanding or even maintaining their grids (Cornieti & Nicolas, 2023; IEA, 2023b). As such, a variety of RMT instruments are used to assure the project company (and its lenders) that sufficient payments will be made. Coverage of political risks through RMT was also observed in our sample projects. These include non-commercial risks that tend to be within governments' power, such as expropriation of assets, violence and currency convertibility. These risks are covered through political risk insurance taken by equity sponsors.

Table 2. Use of selected RMT instruments in West and Central Africa

	Maroua and Guider PV	Bui PV	Kahone and Touba PV	Taiba N'Diaye wind	Blitta PV	Other W&CA
Scaling Solar (WBG)			A			
IFC guarantees or TA (WBG)	A		A			A
MIGA (WBG)			A	A	A	
RESPITE (WBG)						A
IDA PSW Risk Mitigation Facility	A					
Desert to Power (AfDB)						A
Sustainable Energy Fund for Africa (AfDB)						A
GuarantCo (PIDG)						A
InfraCo Africa (PIDG)						A
EAAIF (PIDG)						A
Power Africa		A		A		A
Export Credit Agency (Denmark)				A		
Bilateral DFIs (Proparco, KfW)			A			A
A=Active						

The section below briefly describes the RMT instruments identified in the analysed projects that form the basis of this report (see Table 2). They all involve a combination of the instruments grouped under the term "blended finance": concessional loans, guarantees, grants (technical assistance, project preparation, performance-based, viability gap) or local currency support (IEA, 2023b).

The World Bank Group (WBG) is involved in several projects and, as shown in our SADC report, their presence tends to offer confidence for investors (Duma et al., 2023). The International Finance Corporation (IFC) is one of the most active lenders in the region, for example in the Kahone and Touba projects in Senegal at the project level, and in the Maroua and Guider projects in Cameroon at the corporate level (see sections 4.1 and 4.2 for details). The Scaling Solar program has been successful in Senegal, resulting in two projects, Kahone and Touba, operational since 2021. Scaling Solar offers a package of products of the different arms of the WBG. It includes: (1) technical assistance for the government, regulator and utility, contract templates and term sheets, and competitive procurement advice offered by IFC advisory; (2) concessional finance from the IFC; (3) International Development Association (IDA) partial risk guarantees; and (4) credit enhancements offered by the Multilateral Investment Guarantee Agency (MIGA) and IDA. The host country and the bidders can choose their preferred mix of services from the ones offered, depending on the various circumstances, timing, cost and risk profile. Senegal has been the second country to implement the program after Zambia (IFC, 2019; Scaling Solar, 2021a). The Scaling Solar program was also started in Côte d'Ivoire in 2019 with a request for pre-qualification of bidders, but was subsequently delayed due to changed priorities of the government (Scaling Solar, 2021b). The program was also launched in Togo with nine bidders shortlisted in 2021 (Scaling Solar, 2022). One of the bidders, the developers' consortium of Meridiam and EDF, announced the completion of the concession agreement in December 2023 for a 64 MW solar PV project but without mentioning the Scaling Solar program (Meridiam, 2023).

Independent of the Scaling Solar program, MIGA – the political risk insurance arm of the WBG – is involved in many renewable energy projects in W&CA. MIGA sells insurance policies to equity investors for up to 15 years covering four types of non-commercial risks: (1) currency transfer and convertibility; (2) breach of contract; (3) expropriation; and (4) war and civil disturbance. Equity investors in projects including Kahone and Touba PV and Taiba N'Diaye wind in Senegal purchased MIGA political risk insurance (PRI).

Another program of the WBG is RESPITE – Regional Emergency Solar Power Intervention Project. Dedicated to West Africa, the USD 311 million program is financing the installation and operation of approximately 100 MW of solar PV and batteries, investment in transmission and distribution, as well as support of the West Africa Power Pool.

The WBG's Private Sector Window (PSW) is a program meant to catalyse private sector investment in IDA-eligible countries.[8] It includes four facilities: (1) local currency

8 In W&CA, the IDA eligible countries are Benin, Burkina Faso, Cameroon, Cape Verde, Central African Republic, Chad, Republic of Congo, Cote d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Sao Tome and Principe, Senegal, Sierra Leone, Togo.

investment through IFC; (2) blended finance with IFC investment in pioneering projects; (3) a risk mitigation facility to provide project-based guarantees without sovereign indemnity; and (4) MIGA Guarantee Facility (World Bank, 2021). The PSW risk mitigation facility has supported[9] the Maroua and Guider projects in Cameroon and an additional 7 MW project in Chad.

The Private Infrastructure Development Group (PIDG) comprises different organizations covering the full scope of infrastructure investment in developing countries. It consists of InfraCo Africa, a developer of infrastructure projects; the Emerging Africa and Asia Infrastructure Fund (EAAIF), a long-term hard currency lender; and GuarantCo, a provider of guarantees that enable local currency finance. InfraCo Africa is the developer of the Djermaya project in Chad, while EAAIF is likely to be the lender for the project which has yet to reach financial close as of the time of this report. GuarantCo offered a debt service reserve account (DSRA) guarantee for the Kita project in Mali, where the main lender has been EAAIF.

Power Africa is a US initiative launched in 2013 that aims to increase access to electricity in SSA. The work focuses mainly on removing barriers to energy access, finance, policy and regulation. Power Africa uses technical assistance, grants, loans, equity investments, and guarantees to advance transmission, distribution, and generation projects throughout the continent. Power Africa has been involved in the Kahone and Touba projects in Senegal as well as the Bui PV project in Ghana.

The African Development Bank (AfDB) offers guarantee instruments for investments, including in renewable energy. One of its programs – Desert to Power G5 Sahel – is structured as a blended finance vehicle that aims to attract private investors into renewable energy projects in Burkina Faso, Chad, Mali, Mauritania and Niger. It includes a package of grants, technical assistance, loans and guarantees and is funded by the Green Climate Fund and the AfDB itself. The Djermaya solar project in Chad is intended to be one of the beneficiaries of the program. The AfDB also manages the Sustainable Energy Fund for Africa, a multi-donor program of catalytic finance for private sector investments in renewable energy. AfDB also offers partial risk guarantees for investors in the energy sector, both within and independent of its wider programs.

Other relevant actors in the RMT space are export credit agencies. They offer loans and guarantees to projects that have a trade component. For example, the Danish Export Credit Agency (EIFO) has offered an export loan to the Taiba N'Diaye project in Senegal, which used Vestas turbines (Vestas, 2018). In addition, there are numerous other bilateral instruments offered by national development banks or financial institutions, such as Proparco, Norfund, Sida and others. An extensive list of RMT instruments is provided by the Renewable Energy Solutions for Africa Foundation (RES4Med&Africa, 2019). As shown, a great variety of RMT instruments and programs are available and active in the renewable energy space in the region. Many of these RMT instruments will be discussed in more detail in the case study section, as they play a key role in getting projects to financial close.

9 At the corporate level of Release by Scatec

4. Region overview and key projects in Cameroon, Ghana, Senegal and Togo

W&CA includes 23 countries with a total population of 490 million in 2022 (World Bank, 2024b) and a GDP of $875 billion, stretching from the Republic of Congo in the South, along the Atlantic Coast and the Gulf of Guinea, up to Mali and Mauritania in the North, and inland to the Sahel region. The countries along the coast, including Benin, Togo, Ghana and Côte d'Ivoire, are densely populated, while those inland include vast areas of desert and fewer population centers. Almost half of the region's population lives in cities (World Bank, 2023b). Most countries in the region are rich in resources including gold (Ghana, Burkina Faso), cocoa (Ghana, Côte d'Ivoire), oil (Equatorial Guinea, Republic of Congo, Gabon, Nigeria) and cotton (Benin, Burkina Faso). Economic growth slowed down in recent years and low-productivity agriculture remains the largest sector of employment, with around 40% of the workforce in 2021 (World Bank, 2023b).

BOX 1. FRANCOPHONE COUNTRIES AND THE CENTRAL AFRICAN FRANC

The francophone countries in W&CA form two monetary unions with their currencies pegged to the euro. West African Economic and Monetary Union countries (Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal and Togo) have a West African Central Bank in Dakar. Economic and Monetary Community of Central Africa countries (Cameroon, Chad, Central African Republic, Equatorial Guinea, Gabo, and the Republic of Congo) have a Central African Central Bank in Yaoundé, Cameroon. The two currencies, the West African Franc and the Central African Franc (CFA) are de facto interchangeable as their value is linked to the euro. The countries forming the two monetary unions need to keep their monetary policy closely aligned with the Eurozone (Zafar, 2021). In the aftermath of Covid and the Russia-Ukraine war, when the region suffered greatly, inflation in the countries of both monetary unions has been much lower than in neighboring countries. For example, in 2022, Côte d'Ivoire (5.27%), Cameroon (6.24%) and Togo (7.96%) fared better in terms of their inflation rates than Ghana (31.25%), Nigeria (18.84%) and Sierra Leone (27.2%) (World Bank, 2024b). The peg to the euro is highly relevant for renewable energy investments, as will be seen in some of the case studies. Where currencies are more stable, local lending is possible and the mismatch between revenues and debt service is effectively eliminated. At the same time, it is believed that in the longer term, the security and low inflation given by the peg may impose rigidity in monetary policy that can hinder growth (Zafar, 2021).

The region as a whole has a positive economic outlook, with the average growth rate expected to be around 4.5% over 2024–2028, but with great variance between countries (IMF, 2023c). While some could see average growth above 6% (Benin, Côte d'Ivoire, Liberia, Senegal), others are expected to linger around the 3% mark, including

Chad, the Republic of Congo and the region's biggest economy, Nigeria. Poverty rates have shrunk significantly since 2000, from around 60% to 35% in 2018, while population continued to increase sharply, having multiplied by four during the last 50 years. The poverty trend reversed in the aftermath of the Covid-19 pandemic, with the poverty rate growing by 3%, creating lasting impacts on the prospects for 2030 and beyond.

The region continues to be affected by political instability and economic disruption in recent years, with several countries experiencing political violence, including Niger, Gabon, Mali, Guinea, Burkina Faso and Chad. Of the 23 countries, 10, representing 73% of the region's population, are included in the World Bank list of Fragile and Conflict-affected Situations (World Bank, 2024a).

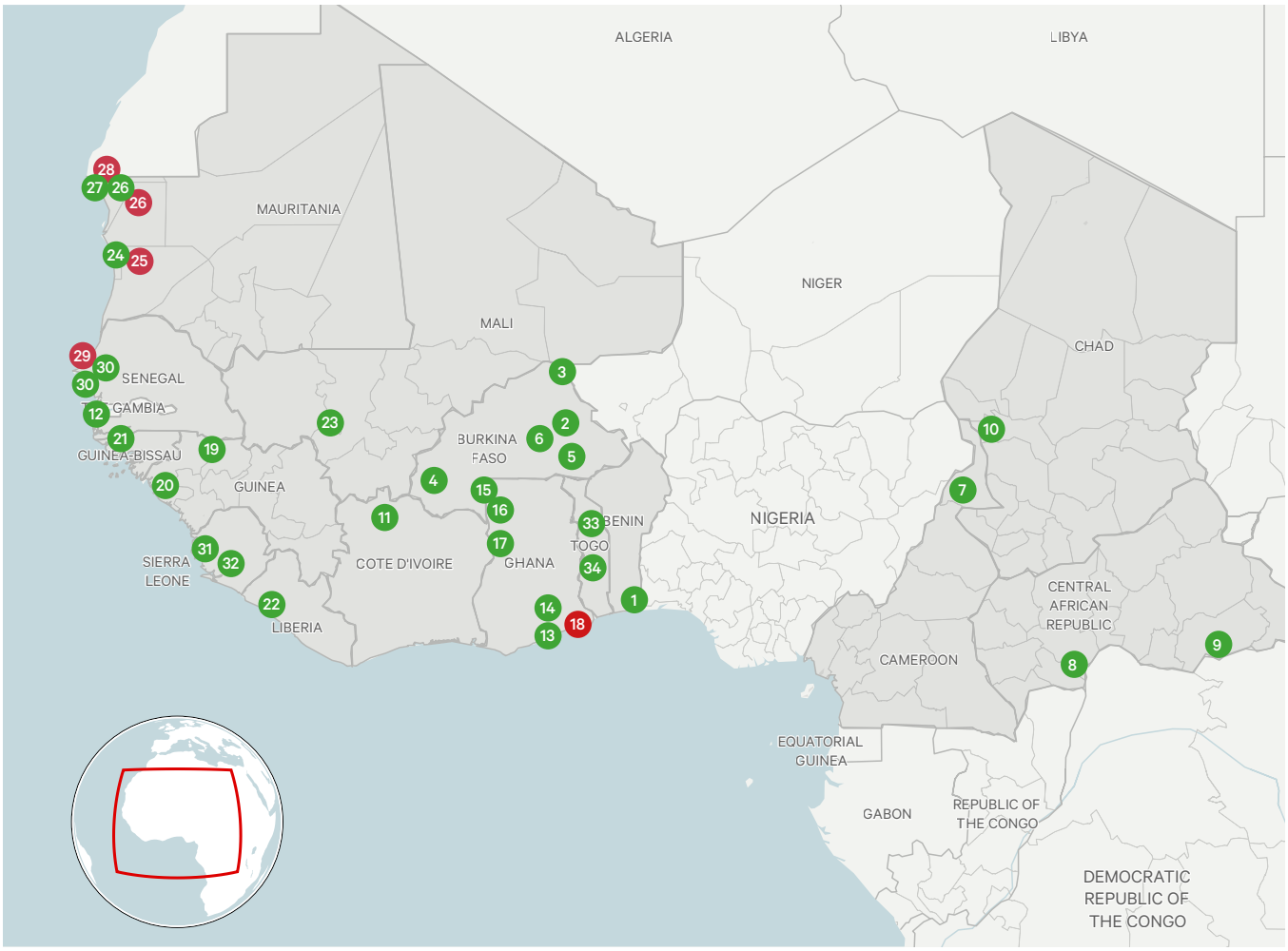
Besides political instability, the most relevant negative development for the region's infrastructure investment has been the deteriorating macroeconomic situation, particularly the issue of sovereign debt. The Covid-19 pandemic and the increased food and energy prices following the start of the Russia-Ukraine war forced governments throughout the world to borrow and spend more on emergency programs to tackle the health crisis and support livelihoods during the economic disruption (Bhattacharya et al., 2023). More than half the countries in SSA are in high risk of debt distress and, overall, the ratio of interest payments to government revenues in the region doubled from 2010 to 2022, being now twice the level of rich countries (IMF, 2023b). The countries in W&CA were no exception. In cases where the pandemic and ensuing inflation added to existing economic vulnerabilities, the debt crises resulted in sovereign defaults. Ghana, for example, entered default in December 2022 as its debt service soared (Akorlie & Inveen, 2022). Chad also entered debt restructuring in 2021 (Shalal, 2021). Many other countries have seen their levels of government debt climb in the face of stalling or declining GDP. Debt service as a percentage of GDP across SSA is now almost equal to health expenditure. It is expected that in most developing countries, debt service will balloon in 2024–2025 (Bhattacharya et al., 2023; Zucker-Marques et al., 2024). The impact was felt on exchange rates as well, with many local currencies depreciating against the USD. Notable examples include some of the large economies in of the region, Ghana and Nigeria, who have seen their currencies sharply depreciate over 2021–2022.

4.1. Renewable energy trends and key projects

W&CA has attracted investments of $5.2 billion in renewable energy between 2010 and 2020,[10] excluding large hydropower (IRENA & AfDB, 2022). Nigeria, Mauritania and Senegal are the top recipients. Zooming in on solar PV and wind, most countries in W&CA have at least one utility-scale PV plant operational or in the construction phase (with the notable exception of Nigeria). There is also one wind project operational in Senegal, two in Mauritania, and two others in development in Ghana and Mauritania, respectively. Figure 1 includes projects larger than 10 MW identified through publicly available information.

10 The numbers include wind, solar and PV, geothermal, bioenergy and small hydropower (hydro stations below 50 MW).

Figure 1. Selected utility-scale projects in W&CA



Benin:
1. Illoulofin, 25MW, D

Burkina Faso:
2. Nagreongo, 30MW, O
3. Essakane gold mine, 15 MW, O
4. Kodeni, 38 MW, O
5. Zano, 20 MW, O
6. Zagtouli, 33 MW, O

Cameroon:
7. Maroua and Guider, 30MW, O

Central African Republic:
8. Sakaï, 15 MW, O
9. Danzi, 30 MW, O

Chad:
10. Djermaya, 36MW, D

Cote d'Ivoire:
11. Boundiali, 37.5 MW, O

Gambia:
12. Jambur, 23 MW, O

Ghana:
13. BXC Solar Station, 20 MW, O
14. Gomoa Onyaadze, 20 MW, O
15. Lawra, 6.5 MW, O
16. Kaleo, 13 MW, O
17. Bui Power PV, 50MW, O
18. Ayitepa, 150 MW, D

Guinea:
19. Khoumagueli, 40 MW, D
20. Kamsar, 82MW, D

Guinea Bissau:
21. Gardete, 20MW, D

Liberia:
22. Mount Coffee, 20MW, D

Mali:
23. Kita, 50 MW, O

Mauritania:
24. Nouakchott, 15 MW, O
25. Nouakchott, 30MW, O
26. Aman, 30 GW (18 GW wind and 12 GW PV), D
27. Nour, 10 GW, D
28. Boulenouar, 100 MW, O

Senegal:
29. Taiba N'Diaye, 158MW, O
30. Kahone and Touba, 60MW, O

Sierra Leone:
31. Baoma, 5 MW (first phase of a 25 MW installation), O
32. Planet Solar, 50 MW, D

Togo:
33. Sokodé, 64 MW, D
34. Blitta, 70 MW, O

Solar
Wind

O: Operational
D: Under development

In **Benin**, the first utility-scale solar project was commissioned in 2022 (Akpahou et al., 2023). The Illoulofin project (25 MW) was developed by the Electricity Company of Benin (SBEE), which entered into an engineering, procurement, and construction (EPC) contract with Eiffage. Financing was offered by AFD and the European Union. The EU offered a EUR 30 million grant, while AFD extended a sovereign loan of EUR 95 million. SBEE also contributed to the project finance with EUR 2 million (AFD, 2020; European Commission, 2020). A second phase of the project would add 25 MW, as a public-private partnership with Toyota-Tsusho corporation (Toyota Tsusho Corporation, 2023).

Zagtouli (33 MW), in **Burkina Faso**, commissioned in 2017 was one of the largest solar projects in W&CA (ECREEE, 2017). The project was structured as an EPC contract between the country's main utility Sonabel and construction company Cegelec. The plant's estimated total costs of EUR 47.5 million were covered by a €25 million grant from the European Union and a €22.5 million loan from AFD. Power Africa also provided support (USAID, 2019). The project supplies energy under a power purchase agreement (PPA) at CFAF 45/kWh (USD $0.08/kWh), which is about one-third of the tariff of fossil generation in the country (133 CFA/kWh). Another project in the operational phase is Nagreongo (30 MW), developed by GreenYellow and funded through a $21 million loan from the Dutch Entrepreneurial Development Bank (FMO) (FMO, 2021). Burkina Faso also has a 15 MW solar PV project in operation providing power to the Essakane gold mine in the country's north. Several other projects have come online in 2024, including Kodeni (38 MW) and Zano (20 MW) (Kruger & Alao, 2023; Wärtsilä, n.d.). In recent years, Burkina Faso has been one of the most successful countries in the region in developing utility-scale solar projects, despite the difficult political situation that the country faced throughout the period (Kruger & Alao, 2024).

The **Central African Republic** inaugurated two utility-scale solar plants in 2022 and 2023, both near the capital Bangui. In 2022, the 15 MW Sakaï project, the country's first IPP solar facility was built by Chinese organizations (Xinhua, 2022). In 2023, the 30 MW Danzi project, including battery storage, was commissioned, financed through loans and grants from the IDA (World Bank, 2023c).

In **Chad**, the 36 MW Djermaya PV project was expected to reach financial close in 2024 (InfraCo Africa, n.d.a).

For **Cameroon**, the Maroua and Guider projects – included in the case studies section of this report – totaling 30 MW of installed PV capacity with 20 MW/19MWh of battery storage are the first utility-scale solar installations in the country (Scatec, 2023).

Boundiali (37 MW including 10 MW battery storage) was the first utility-scale solar plant in **Côte d'Ivoire**. Inaugurated in 2023, the project was implemented by Compagnie Ivoirienne d'Electricité and built by Eiffage (Eiffage, 2023). The total project costs are estimated at €40 million, partly financed by KfW Development Bank who provided a €37 million loan, of which €10 million comes on behalf of the European Union (Laibach et al., 2023). Côte d'Ivoire also launched the Scaling Solar procurement process and even announced the prequalified bidders for two solar sites totaling 60 MW (Scaling Solar, 2021c). The program appears to have been discontinued.

The Jambur (23 MW) solar project in **the Gambia** is in the construction phase with financing from the European Investment Bank (EIB) (Bellini, 2023).

Ghana has commissioned several solar power plants in recent years. Two Chinese-funded projects are in operation in the Gomoa region 100 km West of Accra. The 20 MW BXC project was built by Beijing Xiaocheng Company (BXC) and inaugurated in 2016, while the 20 MW Gomoa Onyaadze project was commissioned in 2018 and is operated by the Chinese company Meinergy (Bellini, 2018; Xinhua, 2016). In 2021 and 2022, two additional projects were commissioned by the Volta River Authority. The Lawra (6.5 MW) and Kaleo (13 MW) projects were partly financed through a €22.8 million loan from the KfW development bank. Ayitepa, a 150 MW wind project, is being developed by Lekela Power (a developer that was acquired by Infinity Power in 2023) (Actis, 2023). Finally, the Bui solar project, 50 MW of which 5 MW is floating, will be discussed in greater detail later in the report.

The Khoumagueli (40 MW) project, when completed, will be the first large solar plant in the **Republic of Guinea** (InfraCo Africa, n.d.b). It is currently under development by InfraCo Africa and SOLVEO Energies and benefitted from grant funding from PIDG Technical Assistance. Another large project was announced by various development partners including the EU, but its status is unknown (GET.invest, n.d.-a).

The 20 MW Gardete project in **Guinea-Bissau** was announced in 2019, with an EPC contract awarded to Sinohydro and funding available from BOAD (ALER, 2020). The status of the project is unknown.

Liberia is planning to build a 20 MW solar project adjacent to its Mount Coffee hydroelectric plant, with funding from the IDA (World Bank, 2023a).

The 50 MW Kita solar PV project in **Mali** was commissioned in 2020 (EAAIF, n.d.). Developed and owned by Akuo Energy and PASH Global, the project cost €80 million and supplies energy to EdM, the Malian utility, through a 20-year PPA. EAAIF extended a €18 million senior loan and an additional €8 million mezzanine loan for 20 years. The project also benefitted from a DSRA guarantee from GuarantCo.

Mauritania has two operational solar projects, the 15 MW Nouakchott project developed by Masdar (Masdar, n.d.) and the 50 MW Toujounine project, and two operational wind projects – Nouakchott (30 MW) and Boulenouar (100 MW). In addition, several large projects have been announced, with limited information about their progress. This includes the framework agreement with Australian-based CWP Global to develop 30 GW of generation capacity (18 GW of wind and 12 GW PV), another agreement with Total Eren for a 10 GW capacity addition and several others (Kruger & Alao, 2023).

Senegal was the second country to successfully complete the Scaling Solar program of the WBG. The two projects that resulted, Kahone and Touba, as well as the region's largest operational wind project, are discussed in greater detail in Section 4.2.

In **Sierra Leone**, the 5 MW Baoma project, located in Yamandu, the southern part of the country was commissioned in 2023. It represents the first phase of a 25 MW solar installation. The project is developed by Serengeti Energy, an IPP with DFI shareholders including KfW, Norfund, the Nordic Development Fund, Proparco, and Swedfund (Kruger & Alao, 2023). Another large project totaling 50 MW, Planet Solar, is being developed at different sites by the private equity fund Frontier Energy since 2022, with status unknown (Frontier Energy, n.d.).

In **Togo**, the 70 MW Blitta project has been operational since 2021. The project is discussed in detail in the case study section 4.4. below. The concession agreement for the 64 MW Sokodé solar project was signed in late 2023 between Meridiam and the government of Togo, with construction expected to start in 2024 (Meridiam, 2023).

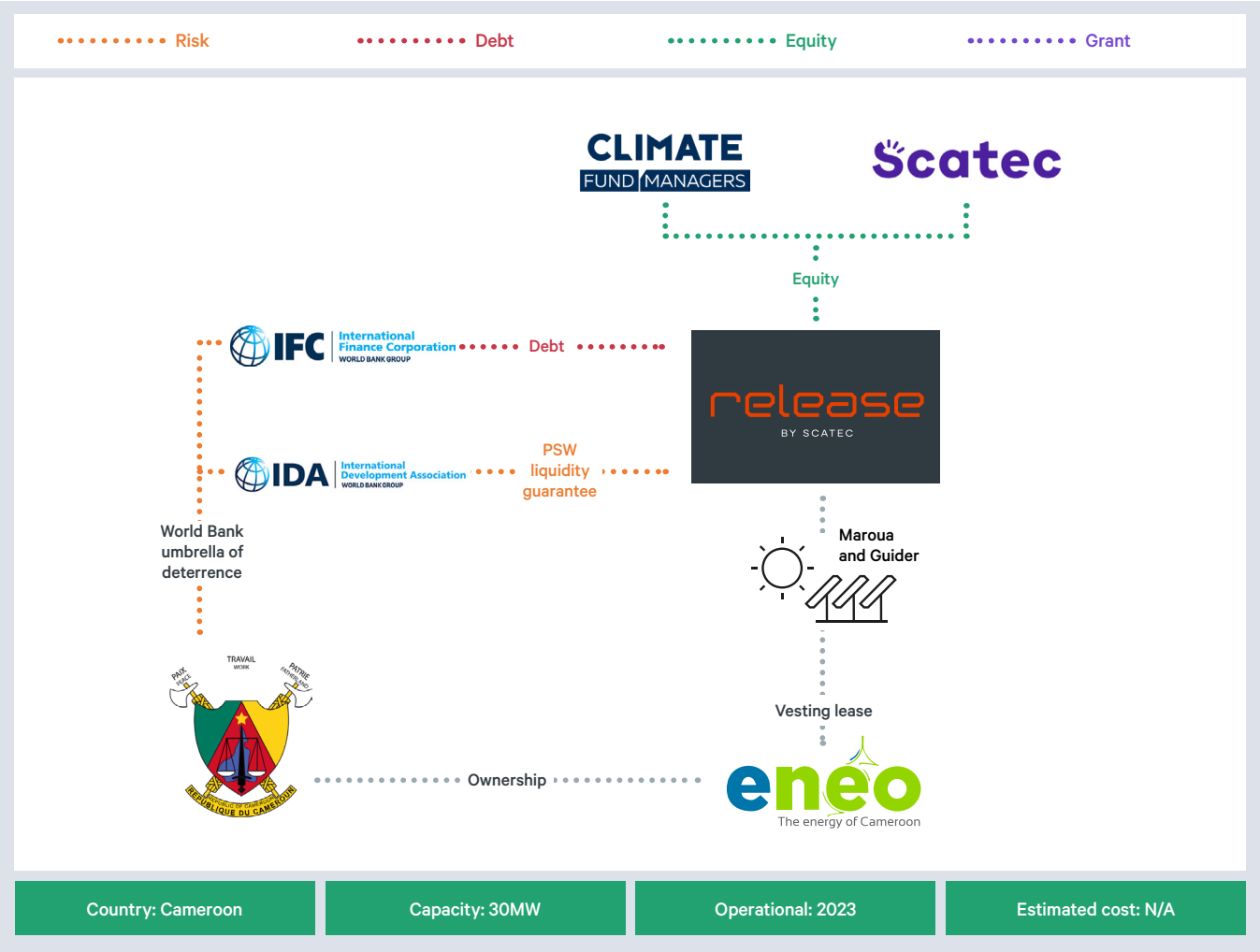
4.1.1. Maroua and Guider solar hybrid project – Cameroon

The story of the first utility-scale solar project (comprising two sites) in Cameroon is highly relevant to the topic of risk and RMT. The Maroua (18 MW) and Guider (17.8 MW) solar PV plants, including a 10 MWh battery energy storage system (BESS) at each site, were commissioned in 2022 and 2023, respectively. The project was initiated as part of the government emergency plan to provide power in the far northern region of the country in 2022. In response, Release by Scatec, a pre-financed, pre-assembled, modular, re-deployable solar PV solution structured under a simple lease agreement, was implemented to meet the urgent requirement. The lease agreement between Release and Eneo was signed in August 2021 and power was first fed into the northern grid within six months of contract execution.

The contract starts with an initial period of five years at a fixed monthly lease and can be extended by the utility to 10 or 15 years at a reduced lease. After 15 years of leasing payments, the assets are transferred to the utility, which can continue to generate power for the remaining useful life of the asset. The utility pays rent per Megawatt peak of installed capacity and has full right of use of the assets instead of actually purchasing the energy. During operations, Release provides 24/7 monitoring of the plant, annual maintenance, and contractual performance guarantees while the utility carries out daily maintenance activities.

The Release solution itself is an RMT strategy, as it reduces and shifts several risks for the developer and the utility. From inception, it was designed to incorporate innovation in both technology and commercial structure to tackle challenges typically encountered when developing energy projects in the region. For example, installation risk is reduced by having the modules pre-assembled under controlled conditions, which simplifies implementation at the site and reduces costs of security and other overheads. Another risk is related to demand and location. For a utility with a grid undergoing significant change, committing to a 25-year PPA in a specific location may expose it to changes in load demand and lock it with a solution that may not be the most competitive in the long term. With the Release model, capacity can be added in stages, but also redeployed to other places in the grid where the need may grow over time. For Release, payment risk is reduced, as the equipment can be redeployed in case of default. For the same reason, Release does not require long-term sovereign

Figure 2. The Maroua and Guider projects



guarantee from the implementing country. Release has raised financing at a corporate level and channels the funding to respective projects based on an internal due diligence process, significantly reducing the development lead time and risk of changes in the local political and business environment. Another risk-reduction strategy is leaving the utility in charge of permitting and land rights since they are typically better positioned to handle local matters. This partnership approach also allows work streams to proceed in parallel prior to financial close to ensure the most expeditious project implementation.

Building on this project, Release and Eneo are in discussions to implement Phase 2 of the project in Guider and Maroua for a total of 30 MW PV and 19 MWh BESS. Phase 2 will use the sites considered under the original Scatec IPP project first developed in 2017 with the intention to conclude a PPA with Eneo. However, the original IPP development process was repeatedly delayed, mainly because of the difficulty of addressing lenders' concerns about the risks of the project.

Eneo is one of the few utilities in the region with a majority of shares owned by a private actor, the private equity fund Actis. At the time of writing, Actis signalled its

intent to sell back its stake to the government, as Eneo continues to struggle with debt, owing $250 million to financial institutions and about $600 million to IPPs.

Under these difficult conditions for the utility, the developers and lenders tried several solutions, including RMT instruments and sovereign guarantees, but they were either not feasible or insufficient. Release, on the other hand, has proven to be an effective way of materializing solar projects despite the financial constraints that Eneo faces. Since the start of the plants' operation, estimated cumulative savings for Eneo and the government from fuel substitution are reportedly over $30 million with additional benefits, including improved stability and reduced rolling blackouts.

After completing the Maroua and Guider projects, Release by Scatec continued its growth and obtained a financing package from the IFC, including a $50 million A loan,[11] a $50 million blended finance subordinated loan and a $65 million liquidity support guarantee from the IDA PSW Risk Mitigation Facility (IFC, 2023). In 2023, Release also raised additional equity investment from Climate Fund Managers (CFM), a blended finance vehicle backed by FMO and Sanlam Infraworks, part of the Sanlam Group of South Africa. The CFM $55 million investment is equivalent to a 32% stake in Release, with Scatec retaining the other 68%. CFM also offered shareholder loans of $47 million.

4.1.2. Kahone and Touba – Senegal

Senegal has been successful in building and connecting two significant solar PV projects to its grid as well as a large wind farm. This development occurred in response to specific challenges that the country faced in recent years. The cost of power in Senegal is among the region's highest. The country was also suffering from a chronic deficit in electricity supply with regular power rationing and blackouts.

These two projects were the first renewable energy installations developed under the IPP model in the country, and the second successful implementation (after Zambia) of the Scaling Solar program. The two solar PV projects, Kahone (35 MW) and Touba (25 MW), were supported by several development partners including Power Africa, the Government of the Netherlands, the Rockefeller Foundation and the Infrastructure Development Collaboration Partnership Fund. Both projects are located in West Senegal in the Thiès and Kaolak regions, about 200 km from Dakar.

A competitive tender took place in 2018, organized by the Senegal Energy Regulatory Commission (CRSE). The Ministry of Energy monitored the projects through its Permanent Energy Secretariat until the plants' commissioning in 2021. The developers and owners are Engie (40%) and Meridiam (40%), with the remaining 20% of equity owned by the Sovereign Wealth Fund for Strategic Investments (FONSIS) of Senegal. There are two separate project companies for Kahone and Touba, but the ownership structure is identical for both. The offtaker is the Senegalese utility Senelec, which signed a 25-year PPA at a low, record-breaking tariff of 3.98 eurocents per kWh. These tariffs are expected to reduce the average cost of generation on the grid. The total

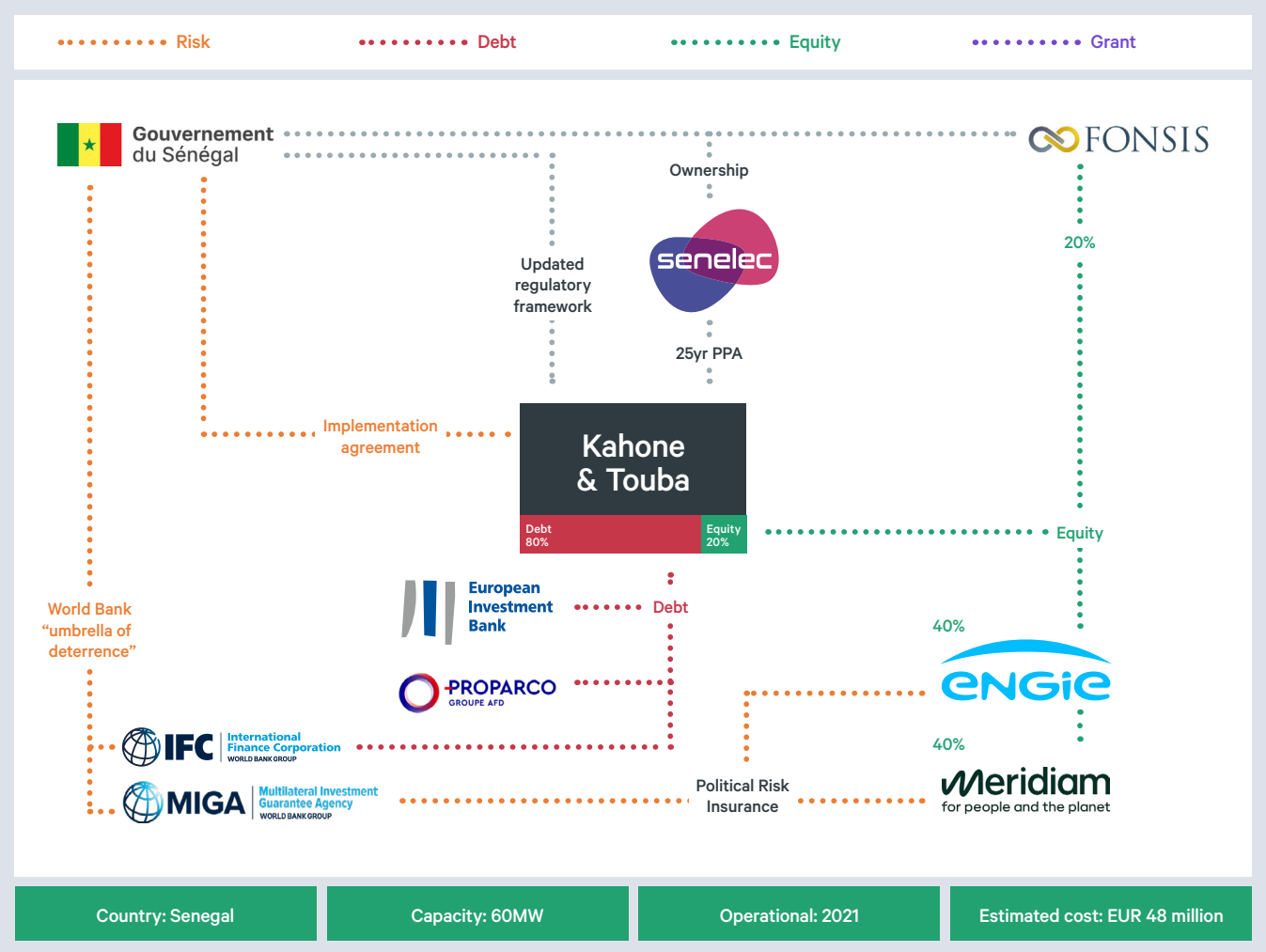
11 An "A loan" is a loan on the bank's own account, as opposed to a "B loan" that goes through a commercial bank via on-lending

cost for the two plants is estimated at €48 million. The lenders are IFC (€14 million), and EIB and Proparco (€14 million).

Risk mitigation included a €6.9 million package of guarantees from MIGA providing protection against non-commercial risks for 15 years. The policy covers the risks of war and civil disturbance, and breach of contract. The holders of the guarantees are the equity investors Meridiam and Engie.

The projects are seen as a "trailblazing success" (Kruger & Alao, 2024) in the design and implementation of renewable energy auctions, with short time to commissioning, low PPA prices, and relatively straightforward RMT structures. However, the successful model has not been replicated in other countries, despite its apparent advantages.

Figure 3. The Kahone and Touba projects

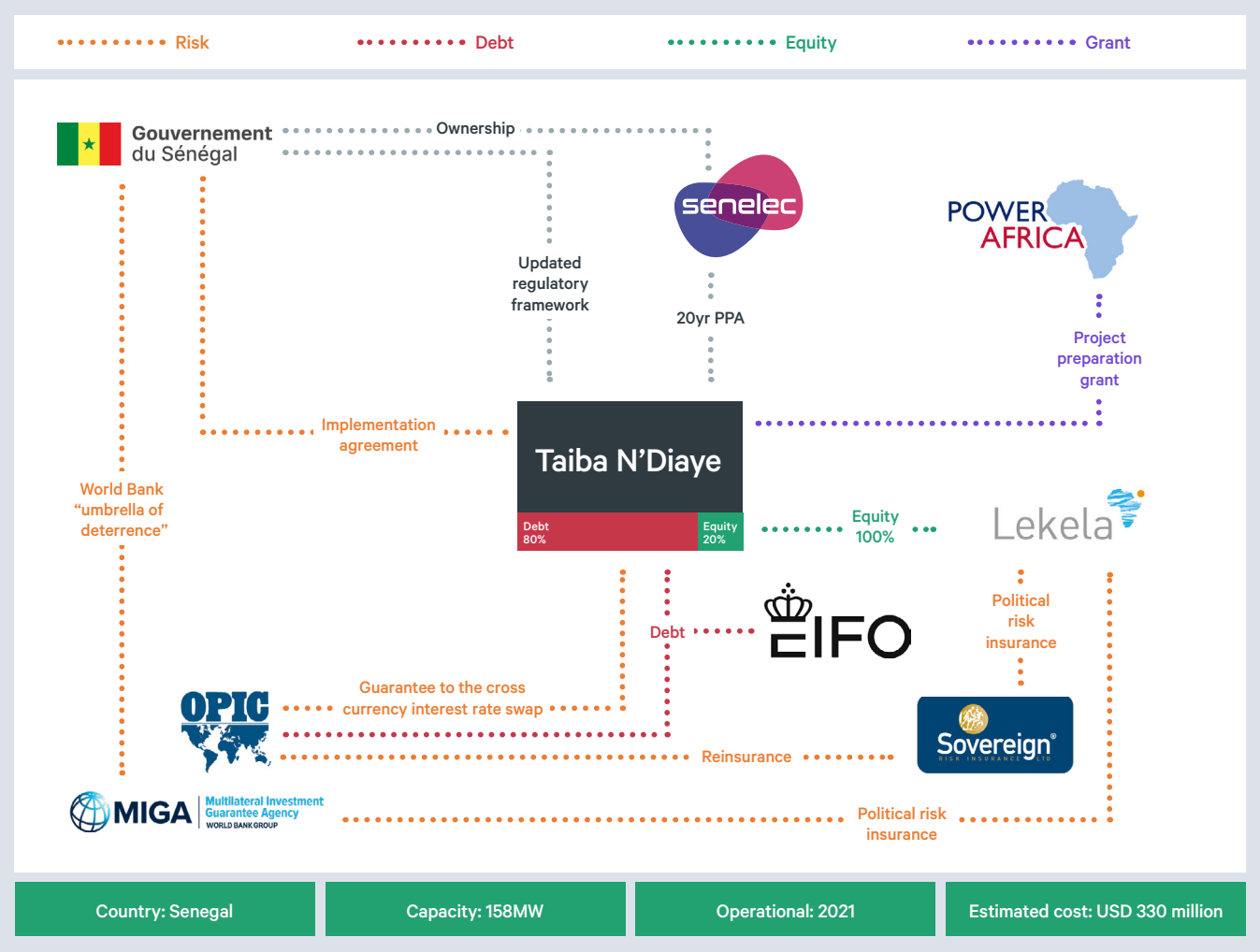


4.1.3. Taiba N'Diyae – Senegal

Senegal has also been successful in commissioning one of the largest wind projects in Africa. The 158 MW Taiba N'Diaye project, 70 km northeast of Dakar, expanded the installed capacity of Senegal by 15% (DFC, 2018). The project was developed by UK developer Lekela, a joint venture between Actis and Mainstream that was sold in 2023 to a joint venture of Egypt's Infinity Group and UAE's Masdar. The PPA signed with Senelec is for 20 years in CFA, at an equivalent to $0.11/kWh. The total estimated cost was $330 million and the debt portion was $277 million (84%). The debt portion was shared between the Overseas Private Investment Corporation (OPIC) with a $116 million direct loan and the Danish Export Credit Agency (EIFO) with an export loan of $161 million (€140 million). The project consisted of 46 Vestas turbines (model V126, 3.45 MW each) (Vestas, 2018). The possibility of expanding by 100 MW plus battery storage is being explored.

Power Africa also supported the project in its early stages (Power Africa, 2020). The US-ACEF (Africa Clean Energy Financing Facility) offered a grant covering engineering studies, environmental assessments and other technical assistance. Risk mitigation

Figure 4. The Taiba N'Diaye project



included an investment guarantee of $121 million offered to a cross-currency interest rate swap provider. The guarantee worked as credit support to enable the project to achieve Euro funding at a competitive interest rate. The OPIC interest rate was fixed through a cross-currency interest rate swap taken by the borrower and covering construction and the full term of the debt financing. OPIC also provides $12.21 million of political risk reinsurance to the project. OPIC is reinsuring Sovereign Risk Insurance Ltd, a private insurer owned by Chubb Bermuda Insurance Ltd (IISD, n.d.). The guarantee covers inconvertibility, expropriation, and political violence. In addition, MIGA extended $149.8 million in guarantees covering equity and quasi-equity investments by Lekela in the project, for up to 20 years, against the risks of transfer restriction, expropriation, war and civil disturbance, and breach of contract (MIGA, n.d.).

4.1.4. Blitta project – Togo

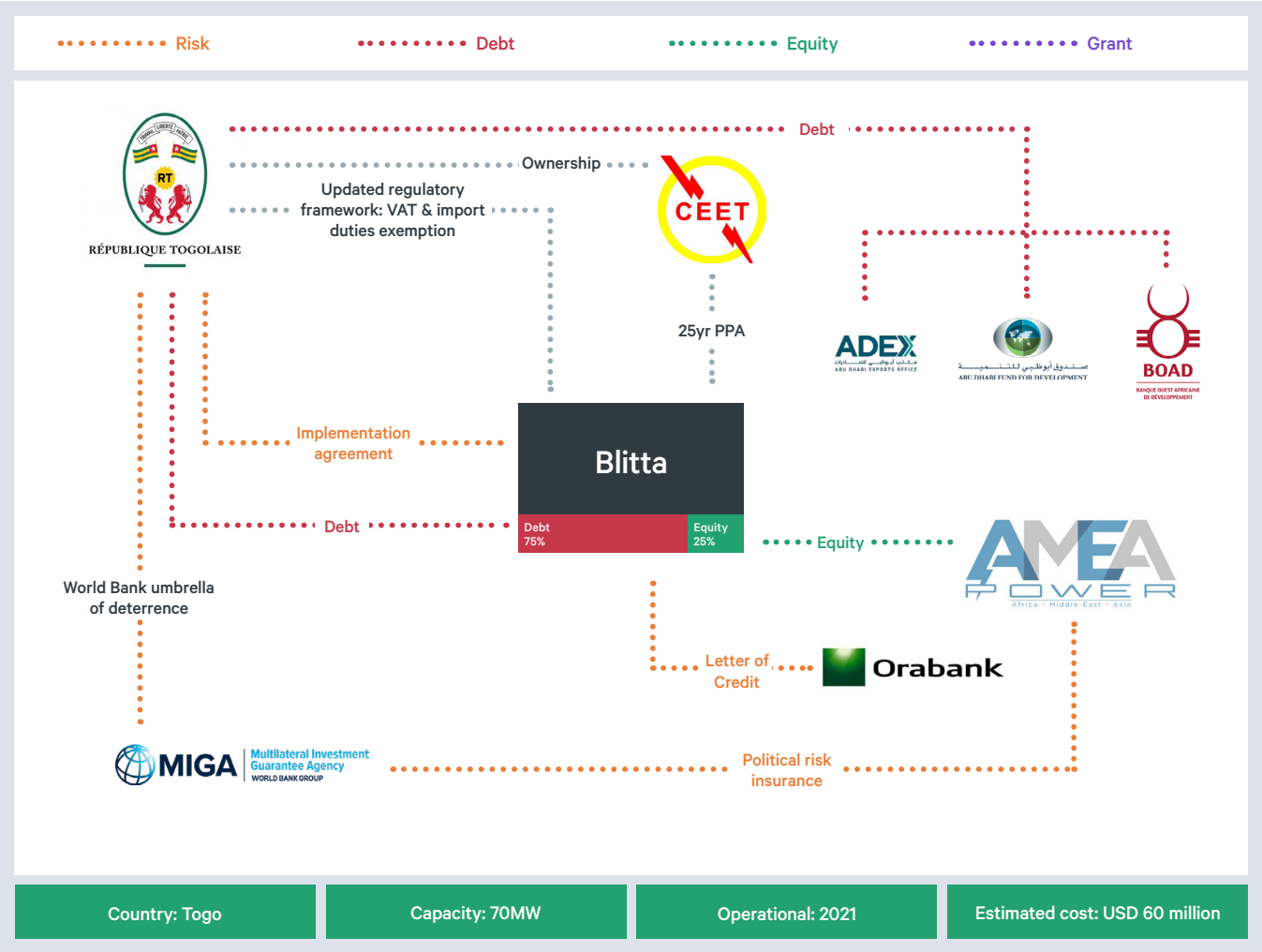
The 50 MW Blitta project, also known as the Sheikh Mohammed Bin Zayed Togo project, was the first solar IPP in Togo. Developed by the UAE-based AMEA Power, the project became operational in 2021. It is located in Blitta, 270 km north of Lomé, and connects to the grid of the Compagnie Energie Electrique du Togo, with which it signed a 25-year PPA. The total estimated cost was $60 million and the debt-to-equity ratio was 75 to 25. The lenders are the Abu Dhabi Fund for Development (ADFD), the West African Development Bank (BOAD) and the Abu Dhabi Export Office (ADEX). The ADFD and ADEX loans were in USD while the BOAD was in local currency (the West African franc – CFA), matching part of the liabilities. This was possible due to Togo being part of the West African Monetary Union and thus having the common currency pegged to the Euro.

The government offered support, including exemption from import duties and VAT, which was a decisive incentive for the equity investor. In Q1 2024, the third phase of the project was commissioned, which expanded the capacity from 50 MW to 70 MW plus 4 MWh of battery storage. Before this, an MoU was signed with the Togo government to expand the project to 100 MW plus 14 MWh battery storage. The additional energy helps Togo reduce its reliance on electricity imports from Ghana and Nigeria, which stand currently at approximately 70% of power consumption (Saty Lohi et al., 2023). The utility in Togo is affected by debt and non-cost-reflective tariffs.[12] However, according to some actors from the sector, it is in better financial shape compared to regional peers, which makes it a relatively viable counterparty for projects. The PPA price for the Blitta project is not public, but it is believed to be in the range of the record-low tariffs in solar auctions in the region.

Risk mitigation for the project included a letter of credit (LC) with Orabank with the following terms: 12 months of payments for years 1 to 6, reduced by half every four years, if no breaches are recorded. This reduces the cash burden for the utility compared to a fixed 12 months LC for the full duration of the PPA. There is also a DSRA requested by the lender.

12 Electricity tariffs are at $0.20/kWh while the cost of service is estimated at $0.26.

Figure 5. The Blitta project



The structure of the project had the government as the borrower, which then retroceded the proceeds to the project company, making other guarantees unnecessary and reducing the interest rate. The equity sponsors also purchased MIGA PRI, covering risks including transfer restriction, expropriation, war and civil disturbance, and breach of contract.

5. Deep dive Ghana

5.1. Economic overview

Ghana's economy is one of the most developed in the region and also benefits from rich resource endowments in cocoa, gold and oil (Ministry of Finance, 2022, p. 10). The country has seen significant economic growth over the last two decades. According to the IMF: "GDP per capita increased from $400 to $2300 during 1990–2020 and the share of population living in poverty was reduced from 52.7% in 1991 to 26% in 2016" (IMF, 2023a, p. 12).

At the same time, the country has struggled in the aftermath of the Covid-19 pandemic and the food and energy price shocks resulting from the Russia-Ukraine war. Over the course of 2022, the Cedi (local currency) depreciated against the USD by 30% (Republic of Ghana, 2023, p. 33). Fuelled by higher energy and food prices, the inflation rate reached a peak of 54% in December 2022 and continued to stay above 40% in 2023 (Republic of Ghana, 2023). The external shocks exacerbated internal vulnerabilities, including low foreign exchange (FX) reserves, relatively low domestic mobilization rates (tax collection) and state-owned enterprise (SOE) arrears, pushing Ghana into debt distress.

BOX 2. GHANA KEY ENERGY AND ECONOMIC INDICATORS

- Installed capacity: 4132 MW
- Installed capacity by source (%): natural gas and oil (61%); hydro (38%); solar (~1%)
- Electricity demand: 22.5 TWh
- Access to electricity: 83.24%
- Population: 33.4 million (2022)
- GDP / capita (current USD, 2022): 2203.5
- Credit Rating LCY: (2023): Caa1

Sources: Ministry of Energy (2023), Republic of Ghana (2023), Ritchie & Roser (2024)

The structure of Ghana's public debt was split almost equally between local (45.7% of GDP) and external (42.4% of GDP). However, the domestic component represented 80% of total debt service, because of its higher interest rates and lower maturities. Overall interest payments reached 7.4% of GDP in 2022, amounting to almost half of total government revenue. In December 2022, Ghana stopped external debt payments to bilateral and external commercial creditors and immediately requested IMF support (Republic of Ghana, 2023). At the time, according to the IMF, Ghana owed about $54 billion to external creditors, of which $15 billion was owed to commercial creditors, including $13 billion to holders of its Eurobonds. On the official side, Ghana owed $2.8 billion to Paris Club countries and $1.9 billion to China. It also had about $34.5 billion of domestic debts, mainly to local banks and pension funds. In May 2023, the IMF board approved a $3 billion extended credit facility covering three years, including immediate policy objectives on public finance, particularly domestic resource

mobilization, containing inflation and rebuilding FX reserves, and structural reforms in the energy and cocoa sectors (IMF, 2023d). It also featured a conditionality of reaching an agreement with creditors, including domestic ones, before disbursements can be made. In January 2024, after negotiations with Paris Club members, China and commercial creditors, Ghana reached an agreement in principle with its official external creditors under the G20 Common Framework for Debt Treatment (Ministry of Finance, 2024). Immediately after that, the IMF Article IV consultation concluded successfully, confirming that all short-term objectives of the program were met and allowing the disbursement of $600 million (IMF, 2024). As the public finance, SOEs governance and external imbalance adjustments bear fruit, the country's economy is expected to bounce back and reach growth levels closer to its potential of 5% starting in 2026, sustained by new gold mine openings and expansion of oil and gas (IMF, 2024).

5.2. The evolution of Ghana's power sector

Ghana has had mixed fortunes in the energy sector in recent years. On one hand, Ghana has been highly successful in increasing energy access rates to around 85%, much higher than the SSA average of 48.4%. The country was able to bring significant capacity additions online both from thermal and renewable sources. Ghana also invested in the transmission and distribution sector, including through the $316 million Ghana Power Compact program developed in cooperation with the Millenium Challenge Corporation. The country's installed capacity increased from 2450 MW (of which 2000 MW was functional) in 2014 to 5400 MW or 4132, depending on the source, in 2022 (IRENA, 2023; Ministry of Energy, 2023; Power Africa, 2015). Most capacity additions have been fossil fuel-based (1700 MW) with the commissioning of new gas-fired, light cycle oil and heavy fuel oil power plants. The two public entities – the Volta River Authority (VRA) and the Bui Power Authority (BPA) – own and operate the country's largest power generation facilities. Ever since its commissioning in 1972, to develop the region and serve the Valco aluminum smelter, the Akosombo hydroelectric facility (912 MW) has been the biggest power generator in the country. Operated by VRA, Akosombo served as the backbone of the electricity sector in Ghana (Kumi, 2017b). Following recurring droughts on the Volta River, the VRA added thermal power plants to its mix starting in the late 1980s. Today, the VRA operates 1500 MW of thermal power plants (gas, gas/diesel) in addition to its 1180 MW in hydro and 22 MW in solar PV. In 2013, reflecting the country's growth ambitions, the Bui hydroelectric plant was commissioned, adding 400 MW of capacity to Ghana's grid.

Several other IPP projects have been commissioned in Ghana in recent years. The first and largest was the Sunon Asogli gas-fired power plant in Tema (540 MW, completed in two stages). The project is owned by the Shenzen Energy Group and the China-Africa Development Fund. The Cenpower combined cycle gas turbine (340 MW), developed by Africa Finance Corporation with support from FMO and other DFIs, was commissioned in 2019 (FMO, n.d.). Another significant IPP project is the floating heavy fuel oil Karpowership (450 MW) of the Turkish Karadeniz Energy Group, which connects to the grid at two ports in Ghana. The country saw an increase of almost 50% in peak load from 1393 MW in 2006 to 2087 MW in 2016. Over the same period, capacity has increased from 1730 MW to 3759 MW. Total electricity generation almost doubled from 14 TWh in 2011 to 22 TWh in 2021 (GCB, 2023).

5.3. The challenges in the electricity sector in Ghana

At the same time, the country also represents a cautionary tale of how insufficient long-term planning and excessive direct contracting of emergency capacity (Energy for Growth Hub, 2023), coupled with external shocks, including climate shocks, can transform the energy sector into a major vulnerability for the economy. The stock of arrears in the sector amounted to 3.1% of GDP at the end of 2022 (IMF, 2023a). This is the result of a combination of droughts affecting hydro generation, inadequate pricing, losses in the distribution sector, excess contracted generation capacity and unreliable gas supply contracts (Kwakye et al., 2022). Arrears were already at $2.3 billion (3.2% of GDP) at the end of 2020 and are expected to reach $10 billion by the end of 2024 (Kwakye et al., 2022). The arrears consist of payables for energy from the public utility Electricity Company of Ghana (ECG) to IPPs. In addition, and relevant to risk mitigation, since 2020, the Sankofa gas project company had to trigger the IDA guarantee (letter of credit) three times because the offtaker was not paying.

The problems started in the early 2000s, but continued throughout the 2010s, as the water levels at the largest power facility – the Akosombo hydroelectric plant – fell chronically below requirements for operating the plant at the installed capacity. The World Bank "ranked electricity as the second most important constraint to business activities in the country and estimated that Ghana lost about 1.8 percent of GDP during the 2007 power crisis" (Kumi, 2017a). The Renewable Energy Act of 2011 provided the legal framework for feed-in tariffs, but did not result in significant solar or wind capacity additions. Even after the commissioning of the Bui hydroelectric plant in 2013, the problems continued. In 2015, for example, consumers had reliable power supply for an average of fewer than 12 hours per day (UNEP and FS-UNEP, 2023). This prompted the government to enter discussions, negotiations and subsequently contracts with several IPPs for emergency capacity additions, mostly expensive gas or heavy fuel oil-based power plants. Between 2011 and 2016, Ghana experienced extended blackouts, known as "dumsor".

In the acute phase of the Ghana electricity crisis, ECG signed 43 PPAs, with an additional three PPAs signed by the Ministry of Energy, for an aggregate capacity of more than 2000 MW, which was more than needed at the time (Ackah et al., 2021). In an attempt to ease the electricity deficit, some were hastily signed in the run-up to the 2016 election, but the newly-elected government had to deal with the financial fallout. The government was forced to pay for the excess capacity that resulted from these parallel agreements. The government reviewed the current PPAs due to the financial burden of these costs, and the Energy Sector Recovery Programme (ESRP), established in 2019, discovered that no more power generation would be required until 2027 based on demand predictions. After this evaluation, the government renegotiated or restructured PPAs for numerous power projects that were either operational or almost operational in an attempt to alleviate the financial crisis facing the sector. The take-or-pay contract type was occasionally modified to take-and-pay, relieving offtakers of the duty to pay for capacity that was not utilized, adjusting rates, and rescheduling some commercial operation dates. Eleven PPAs signed by ECG under the previous administration were terminated by the subsequent government (Ackah et al., 2021).

Other chronic issues in the power sector add to the country's difficult financial position. For example, grid losses, including technical and commercial, both at transmission and distribution levels, are around 20% of total yearly power consumption (GET.invest, n.d.b). The level of technical grid losses is caused by the prevalence of obsolete equipment, while commercial losses include accounting errors, interventions in the meter or meter bypassing (UNEP and FS-UNEP, 2023).

The country's main utility, ECG, is constantly struggling to recover its costs, due to high grid losses, weak collection rates – including from public institutions (Tornyi, 2024) – and tariffs that have historically been set below the levels required for cost recovery. On the cost side, ECG has been burdened with significant payment obligations under the take-or-pay contracts with IPPs mentioned earlier (Kruger & Alao, 2023).

Today, Ghana's total installed electricity generation remains far above the country's peak power demand. Despite that, supply reliability is weak and the country suffers regular blackouts, most recently in October 2023 (Nunoo & Muia, 2023). This is partly explained by the unreliability caused by problems around the sourcing of fuel to run the thermal power plants. For most of their operational life, gas-based IPPs depended on a pipeline from Nigeria suffering from large technical and commercial issues. In recent years, new local gas fields have been developed in Ghana, but supply is not enough for the needs of thermal IPPs. New liquefied natural gas terminals currently under construction may eventually help with meeting demand. While volumes have decreased in recent years, Ghana still imports natural gas from Nigeria through the West African Gas Pipeline (Atuahene & Sheng, 2023). Ghana SOEs have accumulated large debts to gas companies who have threatened to cut or reduce gas supply. For example, in 2018, Nigeria announced it would reduce the flow of gas through the West African Gas Pipeline to incentivize Ghana to pay its debts (Ackah et al., 2021). This illustrates the imbalances between the major players in the sector, which are at the heart of the country's energy woes. For example, the Ghana National Petroleum Corporation suffers from large losses, as they buy oil at higher prices than what they can sell for by law. At times, the VRA stopped paying its gas supply contract obligations, as ECG was not paying the VRA for electricity. ECG in turn suffers from large losses in its grids and from tariffs that do not cover their costs. This is despite Ghana having one of the highest average end-user tariffs among comparable countries – commercial and industrial customers pay more than $0.18 per kilowatt hour (kWh). Due to the high prices and debt in the system during the power crisis, many industrial users built or contracted captive generation (capacity that only serves their facilities), solar or fossil-based, which further weakened the revenue base of the utilities (UNEP and FS-UNEP, 2023).

Faced with these mounting challenges, the government has been trying to tackle the energy sector problems in various ways. One way was through securitization. In 2017, the government created Energy Sector Levy Act PLC, a special purpose vehicle that would be used for the issuance of up to GHS 10 billion (about USD 1.6 billion) in bonds securitized by a new gasoline tax to refinance SOEs' debts to commercial banks (Schellhase & Mohsin, 2021). The first stage under the ESLA project was to establish a consumer tax on petroleum products to be paid at the pump. Then, the cash flows anticipated were securitized to refinance debts to banks, limiting the impact on public

debt (Schellhase & Mohsin, 2021). The government added credit enhancements by guaranteeing a DSRA of 1.25x. By 2021, almost GHS 10 billion of ESLA bonds had been issued. However, while the approach was seen as an innovative way of tackling the accumulation of debt in the energy sector, it was ultimately insufficient.

In 2019, the government launched the ESRP to restore the financial sustainability of the sector (Ministry of Energy, 2019). The three main objectives were: restoring commercial viability in the sector, preventing further accumulation of arrears, and paying existing arrears. The government committed 1% of GDP (about $700 million) annually to achieve these goals. In addition, $1 billion from bond proceeds in 2020 were dedicated to settling existing PPAs and reducing capacity charges. This involved the renegotiation of PPAs, reduction of losses in the grid, improved bill collection and tariff reforms (Kwakye et al., 2022).

To tackle the revenue side, Ghana raised electricity tariffs by a cumulative 56% from mid-2022 until mid-2023 (IMF, 2023a). Tariffs are already high by regional standards yet they only cover 70% of the costs of utilities, making them financially unviable (Kwakye et al., 2022). While some progress was recorded in addressing the challenges described above, problems persisted and the power sector featured prominently in the 2022 IMF deal, with several policy initiatives included in the package to restore debt sustainability for the country. Greater transparency in tariff-setting is also one of the conditions of the IMF deal. In 2023, Ghana launched an Energy Transition and Investment Plan worth $550 billion, with investments focusing on renewable energy, hydrogen, and electric vehicles (SEforALL, 2023).

5.4. Renewable energy investments in Ghana

Since 2016, Ghana started adding solar capacity to the grid. Two Chinese-funded solar projects are in operation in the Gomoa region, 100 km west of Accra. The 20 MW Beijing Xiaocheng Company (BXC) project was inaugurated in 2016, while the 20 MW Gomoa Onyaadze project, built and operated by Meinergy Ghana, was commissioned in 2018 (Bellini, 2018; Xinhua, 2016). In 2021 and 2022, two additional solar projects were commissioned by the VRA. The Lawra (6.5 MW) and Kaleo (13 MW) projects were partly financed through a €22.8 million loan from the KfW development bank. Ayitepa, a 150 MW wind project, is being developed by Lekela Power (Actis, 2023).

Even in the recent context of overcapacity, strenuous relationships with IPPs (including renegotiations of PPAs) and high arrears in the sector, Ghana has still been able to add to renewable energy capacity. This happened despite the moratorium on any financial guarantees for new power plants established by the government in 2020 (Kwakye et al., 2022). The most relevant recent development has been the Bui solar project, consisting of 50 MW of which 5 MW floating, which will be discussed in greater detail in the report.

5.5. The Bui Power PV project

The 404 MW Bui Hydropower Station, located on the Black Volta River, which is the boundary between the Savannah and Bono regions, was commissioned on December 19, 2013. The government created BPA to own and operate the hydroelectric plant. The dam was financed by the Export-Import Bank of China (Exim Bank) (AidData, 2023). According to AidData, in 2007, China Exim Bank and the Government of Ghana signed a loan agreement worth $292 million with a 17-year maturity, five-year grace period, and an interest rate of 6.13%. In 2008, the same parties agreed on a concessional loan for CNY 2.1 billion for 20 years with a seven-year grace period and a 2% interest rate.

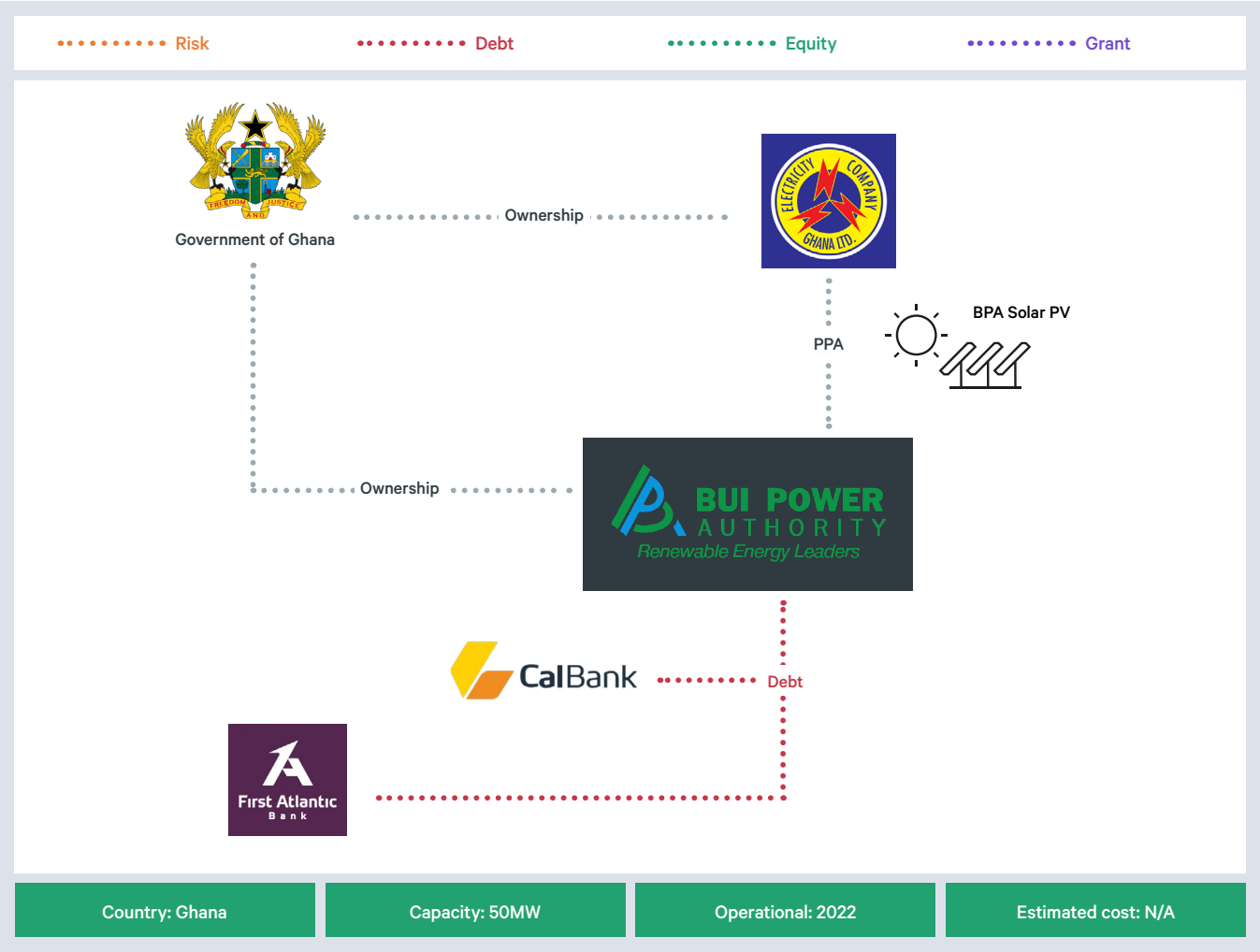
Risk mitigation for the first loan included an original collateral arrangement. This included the net revenues of the BPA from a PPA with ECG and receivables from Ghana's sales of cocoa beans to Chinese company China General Technology Group. For the loan repayment, the proceeds from exporting 30 000 metric tonnes of cocoa per year to China by the government-controlled Ghana Cocoa Board were placed in an escrow account at the Exim Bank, as an added security. The cocoa agreement was in place until the commissioning date, after which it was replaced by an energy agreement. This stipulated that 85% of the proceeds from energy sales generated by the Bui hydroelectric power plant were placed in an escrow account at Exim Bank (AidData, 2023).

Two additional loans were agreed upon in 2022 with China Exim Bank to cover cost overruns: a $75 million loan for 20 years and a 2% interest rate and a $76 million concessional loan for 14 years with a 0% interest rate, respectively. According to the same sources, the PPA price was negotiated in the range of $0.035 to 0.055/kWh.

The energy project was designed with an integrated economic development approach. The dam's construction created a large reservoir with a surface area of 440 km^2 at maximum level, flooding parts of the Bui National Park. As a result, eight communities comprising 219 households and 1216 people were relocated into two resettlement villages. The reservoir also allows the future irrigation of up to 30 000 hectares of land, and an economic free zone was created, encouraging economic activity with low taxation. Incipient agribusiness, including cashew nut processing and sugarcane, is already taking place. The project may generate significant development value for the region, particularly from agriculture and fisheries, but also potentially from supplying power to gold mines in the Bolgatanga region.

However, financially, the BPA is suffering from the same problems of debt as the rest of Ghana's energy sector. According to statements by the BPA CEO Samuel Kofi Dzamesi, ECG owed BPA more than $612 million and was never able to pay more than 30% of the energy produced by BPA (GNA, 2023). The Bui facilities also include an installed 55 MW of solar PV (including 5 MW of floating solar PV) and a 100 MW of solar PV under construction. The solar PV component was meant to compensate for periods of low water levels at the dam and to make water use more efficient. The financing arrangements for the PV part, including tenure, are not fully understood, but they have been built via EPC contracts on the balance sheet of the BPA. The EPC contract and

Figure 6. The Bui Power PV Project



the operations and maintenance have been awarded to Meinergy. Two local banks were involved – First Atlantic and CalBank. First Atlantic offered a term loan in USD for 4 years with land and property as collateral. A PPA between the BPA and a gold mining operator in the Bolgatanga region is part of the package that secured financing of the solar PV projects.

6. Discussion

This section presents evidence from the perspective of practitioners and project stakeholders on several key areas, including:

- the relevance of RMT instruments in the project development process;
- the effectiveness of RMT instruments in getting projects to financial close and during the operational phase; and
- the emergence of innovations in RMT and their potential for replication.

6.1. Relevance of RMT instruments in the project development process

Stakeholders confirmed that RMT instruments are critical for new renewable energy projects in the region. Even when the extra capacity is projected to generate electricity at lower costs than existing tariffs, the various risks prevalent in most countries in the region are seen as too high for investors to commit capital long-term. Most projects require some form of credit enhancement to secure financing.

According to consulted stakeholders, RMT instruments are decisive, and projects would not even be considered without them. The various risks affecting renewable energy projects need to be well-allocated or partially transferred to the government or DFIs. These include construction, securing land use under traditional customary titles, breach of contract, change in laws, transmission connection and system operation. Above all, currency availability, transferability, convertibility and payment security need strong RMT for investors to feel comfortable with projects in the region. The range of RMT instruments developed over the years to facilitate infrastructure projects are, according to stakeholders, more relevant than ever for clean energy investments.

6.2. Effectiveness of RMT instruments in getting projects to financial close and during the operational phase

As described earlier in the report, many countries in the region are facing numerous macroeconomic challenges. These include large levels of sovereign debt, insolvent utilities, inflation and depreciating currencies. The problem of sovereign debt is particularly relevant for renewable energy, as it impedes the issuance of sovereign guarantees. These instruments have traditionally been part of the concession agreement, covering the termination arrangements. Conventional RMT instruments have been effective in some projects, but insufficient in others. In countries with comparatively better debt situations both at the sovereign or utility levels, conventional RMT appears to be sufficient. In Senegal and Togo, large solar or wind projects have been commissioned at record low PPA prices, well below prevalent electricity tariffs in the two countries, using the standard packages of RMT including the Scaling Solar program, MIGA PRI for the equity side and payment guarantees.

Another key aspect of the current macroeconomic difficulties is represented by depreciating currencies. Ghana and Nigeria have seen significant recent depreciation,

affecting the utility (which pays IPPs in local currency, but linked to USD or directly in USD), and the prospects of concluding new projects. RMT for currencies is needed but sometimes is not sufficient in turbulent times. Countries in the West African Economic and Monetary Union or Economic and Monetary Community of Central Africa have a comparative advantage, as their currency is pegged to the euro. In their case, depreciation is not as relevant, but keeping the peg requires the two central banks to be strict in the management of reserves which, according to some interviewed stakeholders, can add another layer of complexity in reaching financial close.

Consulted stakeholders argued that RMT instruments like guarantees and PRI are indeed effective during the operational phase, adding a layer of protection for the project. This confirms the view that these credit enhancements are in place as a last resort and parties avoid triggering them at all.[13] According to some stakeholders, payments are sometimes made with as much delay as possible, but within the default terms of the various RMT instruments. At the same time, RMT instruments represent extra costs to the project, some stakeholders argued that such costs can be significant. It was also confirmed by IPPs that the presence of WBG organizations or other DFIs is seen as a risk mitigant for investors in the project.

6.3. The emergence of innovations in RMT and their potential for replication

In some cases, RMT instruments have not been feasible or sufficient. This required innovation and experimentation with new models that deal with risk. Under severe debt conditions or market contexts where construction risk, including security or payment risks are too high, governments, private entities, and development partners are trying various workarounds to finance renewable energy projects.

This is illustrated by the projects in Cameroon, where after years of struggling to get an IPP project financed with sovereign guarantee backing, an innovative model of pre-assembled re-deployable modular panels was implemented. A similar situation is in Chad, a country also undergoing a debt restructuring process. InfraCo Africa and other organizations are working to structure the country's first IPP solar project under difficult conditions.

Ghana is also experimenting with models that can continue the deployment of renewable energy even during the current debt crisis. The ELSA securitization program was seen as helpful, albeit insufficient, in reducing debt. In addition, Ghana's use of future cocoa revenues to secure part of the loan used to finance the Bui Dam and the PPA with a mining company used to finance additional PV capacity may also serve as a replicable model. The RMT is clearly an evolving field adapting to new circumstances and challenges.

13 A rare case of a drawdown to the LC backstopped by an IDA guarantee occurred in 2020, in the case of the Sankofa gas project in Ghana.

7. Conclusions and recommendations

Accelerating renewable energy deployment in W&CA is a development and environmental imperative, both to achieve the Sustainable Development Goals (SDGs) and to help address climate change. A quantum leap in investment is required in the region to expand renewable energy capacity and related infrastructure, such as grid interconnection.

Renewable energy is capital-intensive, requiring large investments, domestic and foreign, as well as access to hard currency. Yet, most countries in W&CA are experiencing a high debt burden. This is particularly acute in the electricity sector, where the financial health of indebted public utilities is more often than not in a critical state. Such levels of indebtedness make traditional project financing very difficult, even for projects that could otherwise be viable. Nearly all existing renewable energy projects in the region have required creative finance and risk mitigation approaches and some level of international support.

Yet, despite all the obstacles, governments, the private sector, and development partners continue to try new approaches to deploy renewable energy. From those approaches, some models can be used to expand renewable energy despite debt-distress conditions. The paper described several such models. One example of innovation to work around the difficult debt situations is the Release project in Cameroon. The re-deployable pre-assembled panels model can reduce risks for investors and make more projects feasible under current circumstances.

Another example is leveraging viable businesses as anchors for additional renewable energy deployment. Benefitting from access to hard currency and, in some cases, a dependable electricity load, these businesses can serve as an anchor to leverage finance for additional renewable energy capacity. The cocoa agreement for financing the Bui Dam and the PPA with a gold mining operator for financing the additional PV capacity represent promising examples.

For countries and utilities faring comparatively better financially, existing packages of RMT such as Scaling Solar or other MDB- or DFI-led initiatives are sufficient to finance projects. The large solar PV and wind projects in Senegal and the solar PV project in Togo illustrate this point.

Based on the conversations and case studies, finance is not a critical issue *per se*. DFIs are competing to lend at concessional rates for the few projects that have good prospects of viability. While some potentially viable projects struggle to get financed, this is due to structural economic constraints at the macroeconomic level. However, it appears that lack of access to finance is not as frequent as commonly believed. Hence, the importance of investment risk should not be overstated. Risk becomes relevant for a prospective investor in renewable energy only after basic conditions are met: secure revenues from power sales to cover the cost and generate a return. This amounts to looking at the financial health of the power buyer – the national utility – which, in turn, sends bills to their customers. In the case of many countries in W&CA and the wider SSA, utilities are in difficult situations, with tariff and collection levels insufficient to cover their operational costs. While there are many causes behind this, the most fundamental challenge is that many of their customers, both institutional and individuals, struggle to pay their bills and many others cannot afford to even become

customers. Most of the 400 million people without access to modern energy in SSA live in poverty (IEA, 2023a). This means that the total renewable energy investment that is likely to be economically viable is considerably lower than the calculated need. This is a much bigger problem than investment risk. For finance to scale, the fundamental preconditions need to be in place, including institutional capacity, integrated and inclusive economic development securing energy demand, and a conducive business environment. These should become the priorities for development partners; only when significant progress is made on these fronts will finance start to flow. Following the findings of this project, the authors offer some recommendations to DFIs and other development partners backing RMTs.

7.1. Understand and develop models that show promise even in high-debt contexts

Many countries in W&CA experience severe macroeconomic challenges manifested through unmanageable levels of sovereign debt. Such levels of indebtedness make traditional project financing extremely challenging, even for projects that could otherwise be viable. Nearly all existing RE projects in the region have required creative solutions for finance, risk mitigation and international support. Despite the obstacles, governments, the private sector and development partners continue to try new approaches to deploy clean energy. From those approaches, some models appear viable enough to expand RE in the region despite debt-distress conditions.

The Maroua and Guider project in Cameroon provides an example of technological innovation (pre-assembled mobile panels) enabling business model innovation (a leasing model) that makes large projects possible when sovereign guarantees are off-limits. Scaling up similar initiatives would provide the best chance for indebted countries to advance their RE agenda in a relatively short timeframe. With minimal prospects for debt-distress conditions improving in any meaningful timeframe, it is imperative to find ways to continue the deployment of RE in W&CA.

7.2. Use viable business as anchors for RE deployment

Many countries in W&CA and throughout SSA are significant exporters of natural resources, which gives them access to foreign currency. Some countries are important producers of raw materials that will be critical for the energy transitions away from fossil fuels. Examples include Côte d'Ivoire and Gabon for manganese, Guinea for bauxite and Mali for lithium. Other countries are major producers of gold (Ghana, Burkina Faso), oil (Nigeria, Republic of Congo, Gabon and Chad) and cocoa (Côte d'Ivoire, Ghana). Leveraging viable businesses as anchors, both as large consumers of power, but also as sources of FX, could enable additional renewable energy deployment, either adding capacity or potentially displacing expensive fossil-based capacity. With support from DFIs, cases like the cocoa deal that provided increased security in financing the Bui Dam, or the PPA with a gold mine that enabled additions of PV capacity, could be scaled and replicated in the region. Benefitting from access to hard currency and, in some cases, a dependable electricity load, these businesses can serve as an anchor to leverage finance for additional renewable energy capacity.

7.3. Focus more on enabling conditions

The conversation on renewable energy finance tends to focus on the need to allocate more funding to fill the investment gap in W&CA and SSA in general. Yet the realities on the ground show that funding, including from private sources, does flow when enabling conditions are in place: credible demand growth, access to land and permitting, transmission and system operation, and willingness and ability to pay from the utility and its customers. These conditions are challenging to meet in most W&CA countries and, in their absence, the finance discussion is premature. Beyond the energy sector, crucial conditions include general business environment matters such as administrative and project management capacity in the organizations that govern the energy and finance sectors, safeguards for contract enforcement and dispute settlement, and many others. While obvious and often repeated, enabling conditions continue to be crucial. Programs like Get.Transform, Power Africa and ESMAP focus on creating the right environment for projects to materialize. They should be scaled up first, and only afterward the finance-focused initiatives will become more relevant.

7.4. Integrate economic and social development in energy projects for positive feedback loops

The approach at the Bui Generating Station is an example of integrating economic development with RE capacity deployment and finance. While too early to tell if it will be successful, the Bui case may show whether local development can create self-sustaining energy demand for further renewable energy investment and positive self-reinforcing feedback for the long-term financial sustainability of RE projects. The story of the BPA's dual mandate of managing the energy facility and developing the local community is telling. There is already direct and indirect economic activity generated around the solar PV and hydro project, including agribusiness, and planned fisheries and ecotourism. With support from DFIs and long-term capital, such projects can be viable models for RE deployment partly through the economic development they stimulate.

Acronyms

AFD	French Development Agency
AfDB	African Development Bank
AGF	Africa Guarantee Fund
ATI	African Trade Insurance Agency
DFI	Development finance institution
DSRA	Debt service reserve account
EAAIF	Emerging Africa and Asia Infrastructure Fund
FMO	Dutch Entrepreneurial Development Bank
IDA	International Development Association
IFC	International Finance Corporation
IPP	Independent power producer
KfW	Germany's KfW Development Bank
MIGA	Multilateral Investment Guarantee Agency
Norfund	Norwegian Investment Fund for Developing Countries
OPIC	US Overseas Private Investment Corporation
PIDG	Private Infrastructure Development Group
PPA	Power purchase agreement
PRI	Political risk insurance
PSW	IDA Private Sector Window
PV	Solar photovoltaic
RMT	Risk mitigation and transfer
SADC	Southern Africa Development Community
SOE	State owned enterprise
SSA	Sub-Saharan Africa
WBG	World Bank Group
W&CA	West and Central Africa

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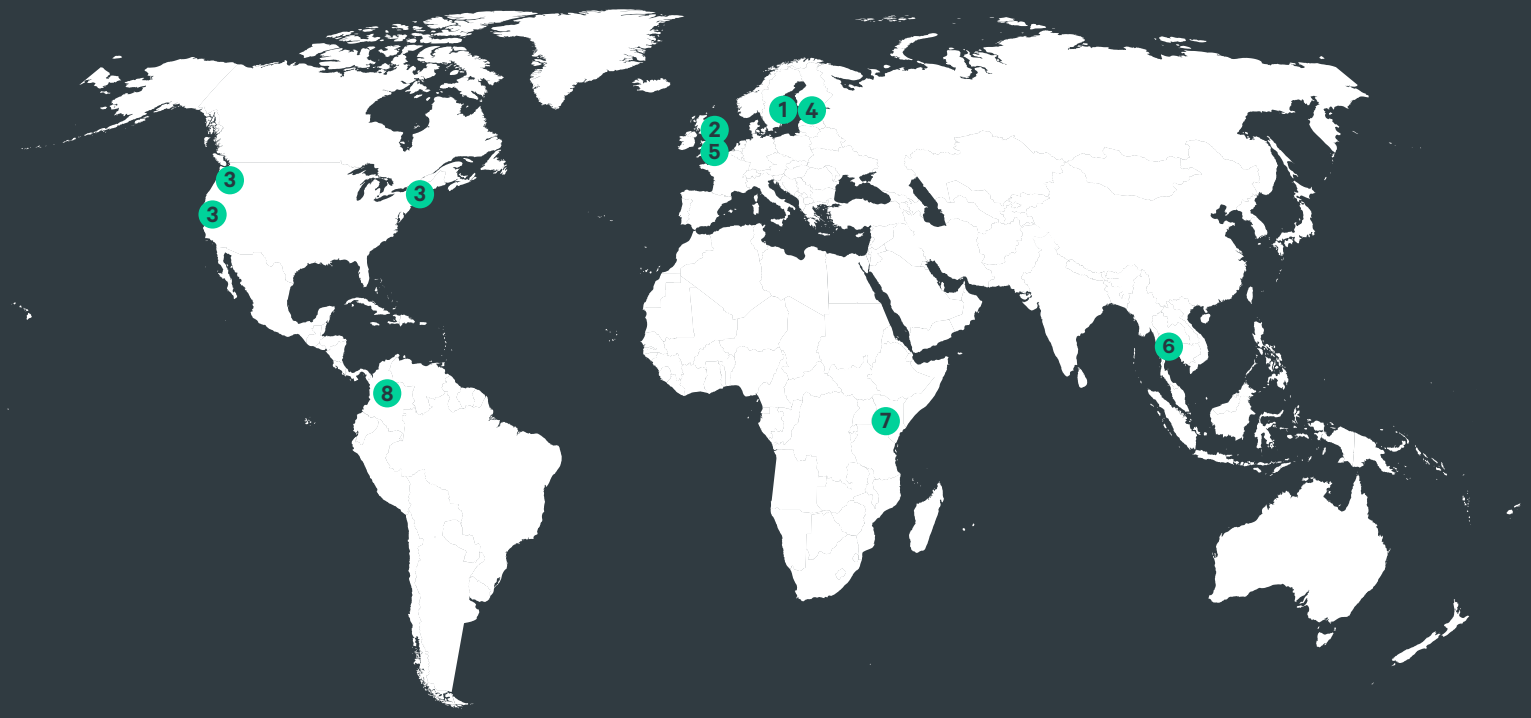

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