

Climate mitigation finance strategy to promote energy-efficient and climate-friendly domestic refrigerators in Zambia

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TABLE OF CONTENT

1	Rational behind the development of a climate mitigation finance strategy	2
1.1	Executive Summary	2
1.2	Objective	4
1.3	Context	5
1.4	Barriers	8
1.5	Support mechanisms and enablers	12
1.6	Types of financing.....	14
1.7	Unlocking investments through financing mechanisms.....	17
2	Experiences and framework.....	17
2.1	Overview of experiences on the African continent.....	18
2.2	National framework	38
3	Financing Mechanism Options	41
3.1	On-bill financing	44
3.2	Green on-wage financing	55
4	Initial assessment and next steps.....	63
4.1	Selection criteria and assessment	63
4.2	Consultations of Policy Working Group (PWG) and national stakeholders.....	64
4.3	Development of detailed implementation plan for selected option.....	65
5	Annex 1 – Full overview of experiences on the African continent.....	68

Figures

Figure 1. Financial and non-financial components of on-bill financing mechanism	46
Figure 2. Roles and responsibilities in the green on-wage financing mechanism.....	56
Figure 3. Financial and non-financial components of green on-wage financing.....	58

Table

Table 1. Comparative assessment of financing mechanism options based on key selection criteria	64
Table 2 Summary of financing mechanisms by sector and status of local GCF accreditation by country, 2021	106

Acronyms

BASE	Basel Agency for Sustainable Energy
COP21	Conference of the Parties 2021
CTCN	Climate Technology Centre & Network
DBZ	Development Bank of Zambia
DSM	Demand Side Management
DT	Distribution Transformers
EE	Energy Efficiency
ERB	Energy Regulation Board
FNB	First National Bank
GCF	Green Climate Fund
GHG	Greenhouse Gas
GWP	Global Warming Potential
HH	Households
ICA	International Copper Association
IEA	International Energy Agency
IPPs	Independent Power Producers
kWh	Kilowatt-hours
MDB	Multilateral Development Banks
MOE	Ministry of Energy
MEPS	Minimum Energy Performance Standards
NDB	National Development Banks
NDC	Nationally Determined Contribution
OECD	Organisation for Economic Co-operation and Development
PWG	Policy Working Group
SACREE	SADC Centre for Renewable Energy & Energy Efficiency (SACREEE)
U4E	United for Efficiency
UNEP	United Nations Environment Program
UNFCCC	United Nations Framework Convention on Climate Change
ZANACO	Zambia National Commercial Bank
ZESCO	Electrical Supply Cooperation Zambia

1 Rational behind the development of a climate mitigation finance strategy

1.1 Executive Summary

BASE - Basel Agency for Sustainable Energy (BASE) in partnership with the SADC Centre for Renewable Energy & Energy Efficiency (SACREEE) and the International Copper Association (ICA) is providing technical services for the implementation of Green Climate Fund (GCF) Readiness projects with CTCN through UNEP on national frameworks for leapfrogging to energy-efficient appliances and equipment in Zambia, Namibia, Zambia, and Zimbabwe through regulatory and financing mechanisms. The objectives of the technical assistance projects are to improve the country programming process regarding refrigerators and distribution transformers and strengthen climate finance strategies. This report was prepared as part of Activity 5 of the projects which aim to identify and develop financing mechanism options for the promotion of higher efficiency domestic refrigerators and distribution transformers (DTs).

This report focuses on the climate mitigation finance strategy for residential refrigerators in Zambia. Chapter 1 explains the rationale behind the development of a climate mitigation finance strategy. The report highlights that energy efficiency (EE) is a highly-effective and economic way to reduce global greenhouse gas (GHG) emissions and can make a significant contribution to combating climate change. EE is key to achieving Nationally Determined Contribution (NDC) goals and tackling the energy trilemma of environmental sustainability, energy security and energy access. However, investments in EE are not currently happening at the rate needed. Achieving energy efficiency improvements will require a significant increase in global investments in energy efficiency. Much of the financing will need to be mobilised locally, and from private sources. In order to scale up the adoption of energy-efficient solutions such as energy-efficient and climate-friendly domestic refrigerators, investments must be suitably enhanced with an effective targeted climate mitigation finance strategy. This shall address several key barriers that hinder investments such as the lack of affordable and clean electricity for a large segment of the population, the high upfront cost of energy-efficient equipment, the lack of access to appropriate or affordable financing mechanisms, the lack of knowledge or awareness of energy efficiency and its benefits for end-users, the price competition from lower-quality appliances with EE technologies, lack of policy, and low familiarity and high-risk perception from local financial institutions regarding small EE investment in the residential sector. The pathway to overcome these barriers largely depends on facilitating access to the households, and providing financial strategies that are feasible for implementation, cost-efficient, financially self-sufficient, aligned with the national policy framework and engaging all key stakeholders. Potential support mechanisms and enablers, as well as sources of financing were also introduced. It was emphasized that financing mechanisms for EE can and should be supported by other complementary mechanisms, such as policies (e.g., MEPS), regulations, awareness raising activities and behaviour change initiatives, as enablers of market-based financing mechanisms. Unlocking investments in energy efficiency requires a wide range of financial sources and solutions.

Chapter 2 highlights experiences on the African continent and national framework on relevant EE and off-grid solar financing mechanisms and programmes in the residential sector, clean energy market, and climate mitigation finance initiatives. The report shows there are only a few countries on the African continent (e.g., Algeria, Benin, Cameroon, Côte d'Ivoire, Egypt, Ethiopia, Ghana, Kenya, Madagascar, Mali, Morocco, Namibia, Niger, Nigeria, Rwanda, Senegal, Seychelles, South Africa, Tunisia, and Zambia) that are leading when it comes to developing and implementing financing mechanisms to promote investment in energy efficiency in the residential sector. Most common types of financing are loans, grants, revolving funds, green credit lines, or guarantees. Financing mostly comes from Multilateral Development Banks (MDBs), National Development Banks (NDBs) or banking institutions. When it comes to effective market-based financing mechanisms to promote investment in energy-efficient domestic refrigerators, a few experiences stand out such as the ECOFRIDGES initiative through green on-wage financing mechanism in Ghana and on-bill financing mechanism in Senegal.

Chapter 3 describes a selection of two financing mechanism options – on-bill financing and green on-wage financing which are both designed specifically to promote small investment in residential refrigerators and align with the country context, targeting on-grid end-users with the possibility to extend it to off-grid end-users too. On the one hand, the on-bill financing mechanism option enables energy utility customers to acquire energy-efficient appliances, and to pay for the equipment over time through their monthly utility bills. In many cases, on-bill programmes are designed to deliver immediate overall cost savings from the very first day without the need for the customer to invest (bill neutrality). This means that the energy cost savings equal or exceed debt service, resulting in a lower total bill (debt repayment and electricity) after retrofit. On the other hand, the green on-wage financing mechanism option is a consumer finance product designed to meet the short- and medium-term financing needs of salaried employees of public and private institutions that are profiled or have a business relationship with local financial institutions. Green on-wage financing mechanisms option offers flexible and simple repayment terms for EE products through salary deductions. Both options intend to set up green credit facilities to ease access to concessional finance and help overcome the higher upfront cost barrier for end-users. Both options intend to structure low-risk repayment mechanisms between key local stakeholders such as partner banking institutions or the Development Bank of Zambia (DBZ), the power utilities (the Electrical Supply Cooperation Zambia (ZESCO)) or the employer institutions, as well as EE technology providers. Both options intend to address market barriers, align with the specific country context, and leverage local opportunities to maximise the technical and commercial feasibility of both options (e.g., targeting salaried employees or prepaid metering customers, building on experience with consumer finance products, etc.)

Chapter 4 presents an initial assessment of the financing mechanisms options through a set of criteria, introduces the next steps for the endorsement of the best option by key national stakeholders and partners, as well as aligns expectations for the development of detailed implementation plans for the selected option. An initial comparative assessment of the financing mechanism options based on key selection criteria shows that both options are feasible with some pros and cons. The selected option for Zambia must be endorsed and supported by key stakeholders through expressions of support during the consultations of

Policy Working Group (PWG) members and national stakeholders. A detailed implementation plan shall then be developed for the selected option based on feedback and inputs from PWG members and national stakeholders following consultations in Q4 2021.

1.2 Objective

Climate change is a pressing global challenge that is affecting every part of the planet. To strengthen the global response to climate change, countries adopted the Paris Agreement at the 21st Conference of the Parties (COP21) to the United Nations Framework Convention on Climate Change (UNFCCC) in Paris in 2015. In this agreement, all countries agreed to limit global temperature rise to well below 2 degrees Celsius, and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius. Addressing the challenge of climate change, and achieving the goals set out in the Paris Agreement, will require a significant global effort.

Energy efficiency, which should be seen as complementary to a wider climate change strategy, is a highly-effective and economic way to reduce global greenhouse gas emissions and can make a significant contribution to combating climate change. According to the International Energy Agency (IEA), energy efficiency measures could result in 40% of the GHG emissions abatement required to achieve the goals set out in the Paris Agreement.¹ EE also reduces air pollution, lowers spending on energy, enhances energy security, improves competitiveness and provides many other benefits. EE is key to achieving Nationally Determined Contribution goals and tackling the energy trilemma of environmental sustainability, energy security and energy access. Effective EE has the potential to drive numerous benefits, such as macroeconomic development, increased public budget, consumer savings, enhanced health and well-being, industrial productivity and energy delivery improvements.

An overview of EE potential by sector in 2014, across the countries of the IEA showed the residential sector accounted for the third highest share of final energy consumption (19 %), only preceded by the transport sector (34 %) and the manufacturing sector (27 %), then followed by the services sector (14 %) and finally the other industries sector (6 %). Moreover, technologies covered by the United Nations Environment Programme's United for Efficiency initiative (UNEP U4E) such as refrigeration, air conditioners, lighting, electric motor systems, and power distribution transformers are expected to consume over half of the world's electricity.² In the residential sector, domestic refrigeration technology is the focus of this report. In particular, as households improve the EE of their homes and adopt energy-efficient and climate-friendly electrical appliances, they need less electricity and thus rely less on carbon-intensive power plants. This reduces their homes' demand from the plant, which in turn indirectly benefits the environment by reducing their carbon dioxide emissions. The

¹ IEA (2017) has numerous [reports and publications](#) on energy efficiency which are released each year. This includes a market report series, global status reports, energy efficiency indicator reports, energy technology research and development reports and others.

² UNEP U4E (2021), [website](#)

adoption of energy-efficient and climate-friendly domestic refrigerators that use lower Global Warming Potential (GWP) refrigeration gases contributes directly to lower GHG emissions too and aligns with the Montreal Protocol's Kigali Amendment. The potential for energy efficiency gains is thus growing with significant increases in global energy demand, particularly in developing economies.

However, investments in EE are not currently happening at the rate needed. Population growth and economic growth have outpaced energy efficiency gains over recent years, and this growth trend is set to continue. With this growth, global energy demand is expected to increase, and with it comes a huge need and opportunity for energy efficiency gains.

Achieving these energy efficiency improvements will require a significant increase in global investments in energy efficiency, passing from USD 236 billion annual investments in 2017, to an average annual investment of USD 584 billion from 2018 to 2025, and USD 1,284 billion annually from 2026 to 2040, according to IEA (2017). International development assistance alone will not be enough to meet these targets. Much of this finance will need to be mobilised locally, and from private sources.

In order to scale up the adoption of energy-efficient solutions such as energy-efficient and climate-friendly domestic refrigerators, investments must be suitably enhanced with an effective targeted climate mitigation finance strategy. This generally includes demand-side management (DSM) interventions that focus on process optimization, which achieve reductions in energy use, as well as equipment and technology interventions to ensure that the infrastructure in place is energy-efficient (e.g., purchasing energy-efficient appliances and equipment, replacing/retrofitting existing infrastructure with energy-efficient alternatives and upgrading from old infrastructure to energy-efficient systems). In particular, an effective targeted climate mitigation finance strategy will require the review, development, and implementation of financial mechanism options that overcome the key barriers, facilitate the flow of financing for relevant technology solutions and address the untapped market potential. When developing such a strategy, it is essential to understand the technical, financial, institutional, legal, and social barriers that are constraining investments in new energy-efficient solutions, such as energy-efficient and climate-friendly domestic refrigerators which are the focus of this report.

The aim of the strategy is to build on regional experiences and national frameworks in order to enable the conditions required to mobilize investments in new energy-efficient and climate-friendly technologies in the residential sector and motivate households to replace and upgrade their inefficient domestic appliances, in particular to energy-efficient and climate-friendly domestic refrigeration technologies.

1.3 Context

The Republic of Zambia is a landlocked country in Southern Africa a population of 18,8 million as of 2020.³

After 15 years of significant socio-economic progress and achieving middle-income status in 2011, Zambia's economic performance has stalled in recent years. Between 2000 and 2014, the annual real gross domestic product (GDP) growth rate averaged 6.8%. The gross domestic product (GDP) growth rate slowed to 3.1% per annum between 2015 and 2019, mainly attributed to falling copper prices and declines in agricultural output and hydro-electric power generation due to insufficient rains, and insufficient policy adjustment to these exogenous shocks.⁴

The COVID-19 (coronavirus) pandemic pushed into contraction an economy that was already weakened by recent persistent droughts, falling copper prices and unsustainable fiscal policies. Economic activity through Q3 of 2020 contracted by 1.7%, as declines in industry and services outweighed growth in agriculture. Mining and services suffered from lower global demand and social distancing measures earlier in the year, respectively. However, relaxation of the lockdown measures in the second half and a global pickup of copper prices helped activity to recover. Overall, the economy is estimated to have contracted by 1.2% in 2020. Inflation remained in double digits throughout 2020, averaging 15.7%, and reached a high of 22.2% in February 2021.⁵

A gradual recovery is expected, with GDP growth projected at 1.8% in 2021, and will average 2.8% over 2021-23. Higher copper prices, the commissioning of a new hydropower station, and a return to normal rainfall patterns are expected to support growth in agriculture and electricity production, key contributors to Zambia's industry and service sectors.⁶

Zambia's electricity sub-sector comprises of the Public Utility Company, ZESCO Limited, Independent Power Producers (IPPs) and Power Distribution Entities. These are responsible for the generation, transmission, distribution, and supply of electricity. Access to electricity in Zambia, especially in rural areas, is quite low. The overall national electricity access rate, defined as connection rate to the grid, is around 38.9% representing 67 % in urban areas, and only close to 4% in rural areas. Increasing access to energy is a key priority of the national development strategy and the government has set electrification targets at 90 % for urban areas and 51 % for rural zones by 2030. However, at the current pace, these targets are not expected to be achieved due to limited investment and macroeconomic growth⁷.

³ Market Assessment (2021)

⁴ WBG (2021), [Zambia Economic Outlook](#)

⁵ WBG (2021), [Zambia Economic Outlook](#)

⁶ WBG (2021), [Zambia Economic Outlook](#)

⁷ Market Assessment (2021)

According to the market assessment conducted for this project, the households (HH) in Zambia are quite price sensitive. Affordability of equipment was one of the main barriers among the surveyed HH, where 7% were not willing at all to pay more for an EE refrigerators and almost 64% were willing to pay only 10% more of the original price for an EE refrigerator. This situation facilitates the proliferation of a second-hand appliances market (20% of the surveyed HH purchased old refrigerators) and the market penetration of new but cheaper and inefficient appliances.

Adding to this, in February 2019 the Energy Regulation Board (ERB) received an application from ZESCO Limited proposing upward adjustments of electricity tariffs and connection charges for domestic consumers (i.e., excluding mining, exports and Power Purchase Agreement (PPA)) by weighted average increases of 113 % and 213 % respectively. According to public notice issued by ERB, ZESCO Limited specifically, proposed to increase electricity tariff per customer category, which was granted by the Energy Regulation Board in June 2020. All residential customers (metered residential) use prepaid meters while all customers in the maximum demand category (with demand above 16kVA) are on post-paid metering system. Until 2014 Zambia had the lowest tariffs in sub-Saharan Africa, but with the last decade increases (including the one of 2020), electricity is not as affordable for the Zambian HH.⁸

Investments in energy-efficient residential refrigerators may thus represent an opportunity for reducing the energy costs and improving the economic welfare of both rising middle-income and high-income households living in urban and peri-urban areas, therefore, increasing their purchasing power. As for the rural segment of the population facing limited energy access, solar home systems including community off-grid solar refrigerator technologies and decentralised energy services may represent the only accessible, clean, and affordable opportunity for using energy-efficient refrigeration. Indeed, the provision of off-grid energy technologies and productive energy-efficient appliances to rural and peri-urban areas of Zambia might benefit households through local microentrepreneur or community level investments in these new technologies.

Investments in both new efficient residential refrigerators and climate-friendly off-grid solar refrigeration technologies generate thus important cost savings for urban and peri-urban households and micro entrepreneurs that allow them to recover their investment in a reasonable period of time, while also easing the strain on the electricity grid and reducing emissions. For instance, community level investments in new climate-friendly off-grid solar refrigeration technologies might improve access to clean and affordable refrigeration technologies for rural and peri-urban households allowing communities to improve the living conditions of households and mitigate impacts of the COVID-19 virus or other diseases within households and increase access to quality healthcare, immunizations, and vaccines⁹. Improving access to financing empowers communities to meet payback expectations within a

⁸ Market Assessment (2021)

⁹ CLASP (2021), [Solar-Powered Refrigerators on the Frontlines of Off-Grid COVID-19 Response](#)

reasonable period of time¹⁰. Meanwhile, this also benefits the end-beneficiaries, i.e., the households, since community investments in off-grid refrigeration services make the cooling technologies more affordable and accessible. Adding new energy-efficient climate-friendly off-grid solar refrigeration technologies would have a minimum impact on the electricity grid and GHG emissions.

However, despite the economic benefits of energy-efficient residential refrigerators, these investments are not happening at the expected scale in Zambia due to real and perceived risks that new EE technologies bring. Money saved on energy could be used to cover other household needs, reduce energy demand, and thereby support more sustainable growth in economy.

The three key stakeholders directly involved in energy efficiency investments are households (i.e., urban and peri-urban households, rural microentrepreneurs or communities), financial institutions, and technology providers. Local authorities and development agencies are also very important stakeholders to unlock such investments, and support regulatory mechanisms to promote the demand for energy-efficient refrigeration appliances and climate-friendly off-grid solar refrigeration products.

In addition, technology providers and e-waste management companies are essential in the disposal and recycling phase of used systems.

1.4 Barriers

There are several barriers that hinder investments in climate-friendly and energy-efficient residential refrigerators. These barriers can be categorized into three groups – end-users, technology providers and financial institutions.

End-users. Key barriers from the perspective of end-users, including households and microentrepreneurs in the residential sector include:

- **The lack of affordable and clean electricity for a large segment of the population.** Acquiring electrical appliances is not an option for a significant segment of the population that does not have access to reliable electricity. 38.9 % of the overall population has access to electricity, where in rural areas, the access is only 4%¹¹. Though among those end-users, some have the chance to enter the Solar Home System market and get access to off-grid solar refrigerators for personal or productive use. However, there is a general lack of awareness and trust in these new appliances.
- **High upfront cost of energy-efficient equipment.** High quality energy-efficient and climate-friendly equipment (both on-grid and off-grid products) typically has a higher upfront capital cost. For instance, according to the desk research from the market

¹⁰ The dominant financing mechanism option for the off-grid solar market is the pay-as-you-go (PAYGO) model. See Energypedia (2021), [PAYGO approaches](#)

¹¹ Market assessment (2021)

assessment, the price of an EE refrigerator in Zambia can be at least 30% higher than non-EE efficient refrigerators. The cost savings that result from energy-efficient and climate-friendly equipment are generally realised over a number of years. This means that customers do not typically see the financial benefits of energy-efficient equipment immediately, which can discourage investment. This is particularly important in countries which have a high cost of capital and low disposable income by consumers. In Zambia, over 69% of the surveyed HH stated that price is a deciding factor on the purchase of a residential refrigerator. The upfront cost issue is even more accentuated for off-grid refrigerators which tend to be much more costly than on-grid domestic refrigerators with similar volumes. Households are price sensitive. On the willingness to pay more for an energy efficient appliance, according to the household survey of the market assessment, 67% of respondents are not willing to pay anything or are willing to pay up to 10% more, 29% are prepared to pay 20% to 40% more, and only 4% show interest to pay more than 40% over the price of the conventional appliances.

- **Lack of access to appropriate or affordable financing mechanisms.** For many end users, lack of access to appropriate or affordable financing mechanisms is a key barrier. Over 46%¹² of the end users have a bank account at a financial institution or with a mobile money provider. Despite this, a large portion of the population still cannot be serviced with financing mechanisms that are common in economies with high rates of financial inclusion. End users who do have access to these financial services may still lack the collateral needed to access credit, or may be dissuaded from investing by unfavourable loan terms, such as high interest rates and or short-term tenors, due to limited credit capacity. Indeed, according to the household survey, 91% of the surveyed HH stated that the terms of the bank loans are unattractive with interest rates varying from 24% to 37% per year in the main commercial banks in the country. Even though 94% of the surveyed HH had a bank account, because of non-attractive loan terms, only 11% of them obtained bank loans.
- **Highly-perceived risks or lack of trust in new technologies and promised energy savings.** Customers can be risk averse towards new or unknown energy-efficient and climate-friendly technologies, and often perceive that there are hidden costs or that the equipment will not achieve the savings that were promised. Investment decisions are typically based on the client's risk and return perception. Energy efficiency is often perceived as relatively high risk. Even though the cost savings are promising, they are not seen as commensurate with the perceived level of risk. Same applies to off-grid refrigerator technologies that are still nascent in the market and thus not trusted yet.
- **Competing investment priorities.** Most end-users have limited access to electricity, capital and many competing investment priorities. Investments in energy-efficient and climate-friendly refrigeration equipment have to compete with other investment opportunities. Households may choose to invest in "second-hand" appliances that are cheaper or prioritize a new TV or other appliance that the family does not have over

¹² Global Financial Inclusion Database (WBG, 2017) - respectively 34% in Zambia, 55% in Zimbabwe, and 46% in Zambia

the replacement of a refrigerator they already have, or simply just on meeting short-term daily needs and not on future cost savings.

- **Lack of knowledge or awareness of energy efficiency and its benefits.** Many end-users are not aware of the energy efficiency improvements they could make, the scale of the recurring savings to be made, or of the multiple benefits of energy efficient technologies, such as better equipment performance, as well as energy bill savings potential. 97% of the surveyed HH stated that they were not aware of EE in residential refrigerators and of labelling policies. Savings are more tangible for end-users who replace their end-of-life appliances with energy-efficient and climate-friendly equipment as they would notice savings on their electricity bills or prepaid metering charges. For those who are acquiring new energy-efficient domestic refrigerators or off-grid solar refrigerators for the first time, awareness of benefits is not straightforward as they would be increasing their electricity bill or prepaid metering charges and/or reducing their disposable income due to repayment obligations on the investment.
- **Split incentives.** Split incentives can occur in rented buildings, when the entity responsible for paying electricity bills is not the same entity that is making the capital investment decisions. Building tenants, or building owners who do not pay the utility bills directly have less incentive to invest in equipment that saves energy, and a greater incentive to invest in equipment with a lower upfront cost.

Technology providers. Technology providers face significant challenges in selling energy-efficient equipment:

- **Price competition from lower-quality appliances:** the upfront cost of energy-efficient equipment is higher than conventional appliances. It is difficult to gain trust from end-users in respect to promised future benefits (energy savings). There is no local manufacturing of residential refrigerators in Zambia. All the refrigerators are imported. There is competition with providers in the formal or informal market offering less efficient and lower quality products that have a lower upfront cost. Companies in the informal market rarely pay taxes and have thus lower operational cost. They bring cheaper and low-efficiency cooling systems into the market. These are poor quality products (sometimes counterfeit products), which have a lower upfront cost and can also cause reputational damage.
- **Lack of policy,** or policy enforcement is also a barrier. Zambia Bureau of Standards (ZABS) indicated that they have some technical standards for refrigerators, but these standards are not mandatory and the scope of these standards do not include aspects of product energy efficiency¹³. Due to the lack of enforcement of energy efficiency regulations such as Minimum Energy Performance Standards (MEPS) for domestic refrigerators, high quality technology providers typically have to compete with cheaper products on the market, and often struggle to convince clients to invest more upfront capital in higher quality equipment and future cost savings. Though there is a

¹³ Market Assessment (2021)

lack of effective financial mechanisms to help technology providers of high-efficiency equipment sell their more premium products.

- **The price of energy** can also be a barrier for energy efficiency technology providers. In Zambia, only in June 2020 the ERB approved the increase of the electricity prices for domestic customers with rates from 113% to 213%¹⁴. Furthermore, electricity or fuel prices, if not indexed to import prices in foreign currency, are implicitly subsidised due to high inflation. Therefore, they do not include the cost of import in foreign currency, and the cost of carbon or other externalities. This means that energy efficiency investments and energy savings are undervalued. Conversely, energy efficiency can however also offer a hedge against energy price increases.
- **Electricity access rates:** Finally, the electricity access rates in Zambia which were estimated at respectively 4% for the rural households and 67% for urban households in 2021¹⁵ are limiting factors for technology providers to sell energy-efficient on-grid residential refrigerator technologies. Though, this also represents market opportunities for climate-friendly off-grid solar residential refrigerator technologies, which are still nascent and would require policy and financing mechanism support to incentivize ramping up supply from technology providers and increasing uptake from end-users.

Financial institutions. From the perspective of financial institutions, the key barriers include their limited familiarity with, or technical capacity to assess energy efficiency investments in the residential sector. Many local financial institutions, in particular banking institutions and microfinance institutions (MFIs), have little experience with energy efficiency investments in the residential sector. In markets where capital is scarce like in Zambia, more traditional investments such as power plants and industrial expansion often receive investment priority. Moreover, limited familiarity with energy efficiency also means that financial institutions perceive high risk of non-performance of energy efficiency projects.

Cash is still the prominent payment method for households in Zambia. There is a limited visibility of climate investment opportunities targeting residential end-users. Moreover, the default rate which represents the failure of some retail customers applying for credit to follow due process has increased especially during the last years due to COVID 19. Country wise, non-performing loans (NPL) were at 11.6 % in Zambia for 2020Q4, up from 8.9 % in 2019Q4¹⁶. According to the household survey which randomly targeted urban households who owned a domestic refrigerator, 38 % of interviewees were formally employed in the public sector, about 36% of them were employed in the private sector and 26% were self-employed. The minimum annual salary of the surveyed HH was USD 1'000 and the maximum annual salary was USD 28'000. It is therefore complicated to finance low-income self-employed retail clients who face high collateral requirements, which in return lower the demand for retail financial services.

¹⁴ Market Assessment (2021)

¹⁵ Market Assessment (2021)

¹⁶ WBG (2021), [NPL Zambia](#)

What is more, energy efficiency investments are also often small, with relatively high due diligence costs. They therefore do not attract the interest of local financial institutions, which are more often interested in larger investments, unless such small investments are packaged into a larger business opportunity (demand aggregation and cost savings) through a dedicated financing mechanism. In the residential sector, financial institutions do not consider energy savings as a revenue stream, since the value of energy efficiency is in the energy that is not used, rather than in physical assets. Expected savings thus cannot be quantified and considered in the credit capacity assessment of end-users who tend to be perceived as riskier than what they are. As a result, local financial institutions either reject the investment, or request proofs of domiciliation, proofs of employment, and physical collaterals from the end user applicants to serve as security before approving the investment while offering unattractive lending conditions.

In recent years however, familiarity of financial institutions with energy efficiency projects in the commercial and public sectors, and growing awareness of the market opportunity and availability of climate finance through national, bilateral, and multilateral development banks, means that there has been growing interest from local financial institutions in the untapped energy efficiency market in the residential sector. By leveraging their existing expertise and competencies in structuring retail consumer loans and hiring purchase facilities, local financial institutions can adapt credit products to green finance standards ahead of new regulations. Though there are many barriers inhibiting investments in energy efficiency in the residential sector at the regional and national level. Many of these barriers can be overcome, at least in part, with well-designed financing mechanisms, together with complementary measures such as policies, regulations, awareness raising activities and behaviour change initiatives.

1.5 Support mechanisms and enablers

Financing mechanisms for energy efficiency can and should be supported by other complementary mechanisms, such as policies, regulations, awareness raising activities and behaviour change initiatives. These mechanisms work alongside each other in a complementary manner. The key supporting mechanisms and enablers are described briefly below.¹⁷

- **Standards, regulations, and procurement specifications.** Standards and regulations, such as MEPS, or energy conservation laws, or procurement specifications for government, public housing and apartment buildings, can successfully deter investments in less efficient technologies, and encourage investments in more efficient technologies. These mechanisms can help define which products can be sold or procured, and those that should be blocked from the market. Standards and regulations are an important part of energy efficiency programmes.

¹⁷ BASE (2019), Manual of Financing Mechanisms and Business Models for Energy Efficiency

- **Supporting Policies.** Supporting policies such as labelling are necessary to ensure the smooth implementation of standards and regulations, and to increase public awareness and acceptance of energy efficiency and energy efficiency programmes. Reliable under easily understandable labelling systems are becoming common practice in many parts of the world. They impact the energy efficiency market directly by giving customers accurate and reliable information on the products' energy efficiency.
- **Awareness raising, information, education and communications.** Raising awareness about the benefits and opportunities provided by energy efficiency is important to ensure buy in from all parties. Information, education and communications campaigns can inform end users, and provide them with the information needed to make changes in equipment or practices.
- **Behaviour changes programmes.** Behaviour changes programmes, such as those that make use of energy efficiency ambassadors, or benchmark households or energy users against their peers, have also proven an effective way of changing energy consumption behaviours and product choices.
- **Monitoring, verification and enforcement.** Effective implementation of energy efficiency standards and regulations also requires monitoring, verification and enforcement systems to ensure compliance. This incorporates testing of products in the market, checking products in stores/ports of entry and enforcing through fines/removal from market.
- **Disposal and waste management.** Replaced inefficient energy systems should not find a way back into the market as second-hand equipment. Effective systems should also be in place for the proper disposal, and recycling of equipment as well as the management of hazardous waste and of ozone depleting substances.

Supportive policies and programmes can also be a key driver of energy efficiency investments, and an enabler of market-based mechanisms. However, policies and regulations alone are often not enough to stimulate industry investment in sustainable energy. Financing mechanisms can support markets to move in the right direction, towards more efficient products, making ambitious policies easier to achieve.

Regional and national policy frameworks that support energy efficiency, or set efficiency or emissions reduction targets, can also encourage markets to move in a complementary direction, and encourage public and private investments in energy efficiency. Integrating energy efficiency into national or regional energy and climate change strategies can help make energy efficiency a long-term investment priority. Since energy efficiency measures involve goods that are traded across borders, implementing standards, labels and testing requires regional coordination to avoid technical barriers to trade. Regional coordination can also increase the cost-effectiveness of capacity building and awareness raising and other measures. To this extent, SACREEE has been mandated by the SADC Member States to play a key role in the implementation of the recently adopted Southern Africa Renewable Energy and Energy Efficiency Strategy and Action plan (REEESAP). SACREEE's focuses on programmes and projects that can best be implemented at the regional level. These actions include

harmonisation of policy approaches, regulation and standards, investment coordination, and regional capacity building and knowledge building measures.¹⁸

A multi-faceted approach that includes policies, regulations, awareness raising activities and market-based financing mechanisms guided by a national strategy can help ensure sustainable growth in energy efficiency investments over the longer-term in the residential sector.

1.6 Types of financing

Unlocking investments in energy efficiency requires a wide range of financial sources and solutions. There are different types and sources of financing that can be used for supporting energy end-users in the residential sector; some of these are described below (non-exhaustive).¹⁹

- **Loan.** Loans involve a customer accessing a sum of money from a local financial institution to finance energy efficiency equipment. The loan is then repaid to the local financial institution with interest within an agreed period of time (loan tenor). The financial institution typically assesses the client's accounts or assets to determine their creditworthiness and takes an agreed asset pledge from the client as collateral until the loan is repaid. In some cases, the financial institution may take the equipment as collateral. In practice however, many households have limited access to finance, or prioritise other things such as education or other household improvements before energy efficiency.
- **Microcredit.** Microcredit is an extremely small loan to support people of low socioeconomic status who typically lack collateral, stable employment, or a verifiable credit history. Microfinance is also used to support and launch entrepreneurs who are unable to obtain the financial backing needed to start a small business or capitalize on an idea. Microcredit is most common in underdeveloped countries.
- **Grants.** Grants are non-repayable fund contributions (in cash or kind) bestowed by a grantor (often government, corporation, foundation or trust) for specified purposes to a recipient. Grants are usually conditional upon specific objectives on use or benefit, and might require a proportional contribution by the recipient or other grantors.
- **Revolving funds.** In some cases, special purpose revolving loans funds have been established where fit for purpose commercial mechanisms are not available or not considered appropriate. Revolving loans funds operate in principle in a similar manner to commercial loans, but are typically managed by a government-backed entity, a community group or an NGO, rather than by a financial institution such as a bank. Revolving loan funds start with a fixed pool of capital, which is lent to clients for

¹⁸ SACREEE (2021), [website](#)

¹⁹ BASE (2019), Manual of Financing Mechanisms and Business Models for Energy Efficiency

specific projects, and then repaid to the fund. The replenished money can be re-lent to new clients. There are several examples of successful energy efficiency revolving loan funds. When the funds are well managed, they can encourage investments, as they are often offered at very low interest rates, with more flexible collateral requirements than commercial loans, hence allowing access to a broader range of customers. A drawback of revolving loan funds is that with limited capital, once the initial pool has been lent out, more lending cannot occur until the repayments are made, which takes place over many years. They also often have high administrative costs. Revolving loan funds can be administered by many different organisations including community groups, governments at the national, sub-national or municipal level, utilities, universities, financial institutions, or by not-for-profit organisations. As mentioned above, revolving loan funds should be managed by a credible and fit for purpose organisation to avoid misuse of funds.

- **Green credit lines.** Many local financial institutions have put in place specific green credit lines with national, bilateral, or multilateral development banks to attract investments in energy efficiency. Some local financial institutions have been able to access concessional financing from multilateral funds, and then offer loans to clients with concessional conditions such as below market interest rates or long-term tenors. Loans and soft loans with credit enhancements can help householders overcome the upfront cost barrier associated with residential energy efficiency investments, and have proven successful at scaling up residential energy efficiency. In some cases, however, green credit lines are not enough to encourage investment, and complementary mechanisms are needed to support the disbursement of the funds. Some green credit lines have high collateral and eligibility requirements, making access for lower income households difficult. Green credit lines are only useful in cases where residential clients have an active account with the partner financial institutions.
- **Risk mitigation instruments.** Financial instruments that are available in the market to mitigate the risks of investing in energy efficiency. The beneficiaries of risk mitigation instruments can be end-users, lenders, project developers, or the government. Insurance and credit guarantee instruments are the most common financial risk mitigation instruments.
- **Aggregation.** Aggregation refers to aggregating demand, such as communities joining up in cooperatives or pooling energy demand in a region and bulk-procuring services to deliver household energy efficiency systems. Some of the benefits of aggregation include transaction cost reductions and limited risk exposure because aggregation distributes costs and diminishes the associated risks of a portfolio's execution; that is, risks are distributed if a project underperforms.
- **Vendor financing.** It is a type of financing where the vendor lends money to a customer who uses that capital to purchase that specific vendor's product or service offerings. Sometimes referred as "trade credit", vendor financing often takes the form of deferred loans from the vendor.
- **Credit card.** It is a type of consumer finance mechanism where a payment card is issued by a financial institution (usually a banking institution) to end-users

(cardholders). The card issuer creates a revolving account and grants a line of credit to the cardholder, from which the cardholder can borrow money for payment to a merchant or as a cash advance. The cardholders promise to the financial institution to pay them for the amounts plus interest rates and other fees.

There are many variations of these types of financing types applicable to energy efficiency; some of these are described below (non-exhaustive).

- **Blended loans.** Blended loans mix grants or subsidised loans with additional funds raised from other sources (e.g., capital markets). Blended loans might reduce borrower costs and increase the capacity of funds to take higher risks. Blended mechanisms are increasingly used by multilateral development banks and bilateral financial institutions.
- **Green bonds.** Bonds are loans made to large organisations from one or many investors for a specific period of time and at a particular interest rate. A green bond is a bond specifically earmarked to be used for climate and environmental projects. A bank may sell a green bond to raise money to finance energy efficiency projects
- **On-bill / On-wage financing.** Financing options that use utility bills or salary deductions to collect periodic payments of the beneficiary customer to repay loans.
- **Mobile payment.** Mobile payment is a service provided by mobile money providers that allows its customers to conduct micro financial transactions remotely using a mobile device such as a smartphone or a dumbphone. It is also referred as mobile money, mobile money transfer, and mobile wallet. Mobile payment has been deployed as a means of extending financial services to end-users that lack access to banking services traditionally offered by banking institutions.

The above-mentioned financial mechanisms can be used individually or complementary to each other. For example, credit can be used with a credit guarantee, or a combination of grants with an on-bill financing.

The above types of funding are provided by different financial sources, which can be international or national entities and include (non-exhaustive):

- **Banking institutions.** These include commercial banks, credit unions or cooperative banks. These institutions accept deposits from the public and provide credit, and are highly regulated. Typical energy efficiency funding provided for the residential sector are credit, leasing, loans, on-bill financing, or on-wage financing.
- **Microfinance Institutions (MFIs).** Financial institutions that provide small loans or financial services to low-income businesses or individuals. Typical energy efficiency funding provided for the residential sector is credit or loans.
- **Utility.** An entity offering utility services (e.g., electricity, gas, water) to customers. Typical energy efficiency funding provided is on-bill financing.
- **National Development Banks.** National Development Banks are financial entities established by a country's government that provide different types of financing for

the purposes of economic development. Typical energy efficiency funding provided for the residential sector are credit, leasing, grants, credit guarantees, or loans or green credit lines (indirectly through local financial institutions such as banking institutions, microfinance institutions or utilities).

- **Multilateral Development Banks.** International financing institutions created by one (Bilateral) or more (Multilateral) countries for the purpose of encouraging economic development using loans, grants and technical assistance. Traditionally, most of the funding provided by Bilateral and Multilateral Development Banks is focused on sovereign-guaranteed loans (public debt backed by the government) and a small portion is directed to private lending. Multilateral Development Banks typically use national-based financial institutions to channel their funding. Typical energy efficiency funding provided for the residential sector are credit, leasing, grants, credit guarantees, or loans or green credit lines (indirectly through local financial institutions such as banking institutions, microfinance institutions or utilities).
- **Guarantee Institutions.** A financial specialist that provides credit risk mitigation instruments to lenders such as credit guarantees (indirectly through local financial institutions such as banking institutions, microfinance institutions)

1.7 Unlocking investments through financing mechanisms

The pathway to overcome these barriers largely depends on facilitating access to the households, and providing financial strategies that are feasible for implementation, cost-efficient, financially self-sufficient, aligned with the national policy framework and engaging all key stakeholders. Some examples of these models include on-wage financing and on-bill financing (see Chapter 3.). Each of these models has different advantages and can use a different financing source and path to overcome specific barriers. Among others, these include the reduction of the burden of the initial investment and the reduction of the client's risk perception. These models need to be tailored to local conditions informed by national and regional experiences (see Chapter 2), and combined with financial and non-financial risk mitigation mechanisms. Their success heavily depends on a thorough understanding of the market, a strong engagement of the key stakeholders, the successful creation of an environment of trust and a well-designed model offering a sustainable solution by creating value for all involved players.

2 Experiences and framework

A comprehensive market assessment was performed both on the supply and on the demand side of residential refrigerators, with the aim to understand the market opportunities, barriers, key stakeholders, financial instruments and the policy framework in Zambia. While the results of the market assessment are described in a separate document, a summary of regional and national experiences (non-exhaustive) and framework on relevant energy

efficiency and off-grid solar financing mechanisms and programmes in the residential sector, clean energy market, and climate mitigation finance initiatives is listed below. For a full overview of the experience on the African continent, see Annex 1.

2.1 Overview of experiences on the African continent

Only a few countries on the African continent (e.g., Algeria, Benin, Cameroon, Côte d’Ivoire, Egypt, Ethiopia, Ghana, Kenya, Madagascar, Mali, Morocco, Niger, Nigeria, Rwanda, Senegal, Seychelles, South Africa, Tunisia, and Zambia) are paving the way when it comes to developing and implementing financing mechanisms to promote investment in energy efficiency in the residential sector.

Among them, a handful of countries (e.g., Algeria, Benin, Cameroon, Côte d’Ivoire, Egypt, Ethiopia, Morocco, Niger, Rwanda, Seychelles, and Tunisia) extend **credit lines** and/or offer **revolving funds** with local financial institutions for energy efficiency activities. These are the most popular financing mechanisms to promote energy efficiency in the residential sector on the African continent. In some instances, there exist dedicated energy efficiency funds targeting end-users in the residential sector such as the following:

- The National Fund for Energy Management (FNME) in Algeria provides **soft loans, grants and investment guarantees** for energy efficiency and small-scale renewable energy investments. Its funding is provided from either **energy consumption taxation** or other sources such as **special state subsidies and grants**.
- The Off Grid Clean Energy Facility (OCEF) in Benin is providing US\$32 million matching grant challenge fund over five-years (2017-2022) looking to co-finance profitable off-grid renewable energy and energy efficiency projects in Benin, such as household energy systems and products (e.g., solar home kits).²⁰²¹
- The “Fond National pour l’Environnement” or **National Fund for Environment and Climate (FNEC)** is a public institution with a legal personality and financial autonomy that comes under the remit of the Ministry of Living Environment and Sustainable Development in Benin. FNEC is a **funding mechanism** for programmes and projects within the scope of protecting and rationally managing the environment, combating the harmful effects of climate change and promoting sustainable development in Benin. FNEC was granted basic fiduciary standards and was accredited by GCF both for project management and grant award. FNEC is not accredited for loans, equity, nor guarantees from GCF.²²
- The Egypt Sustainable Energy Financing Facility Framework (EgyptSEFF) which was established in 2016 in the amount of up to EUR 140 million (including co-financing by the European Investment Bank (EIB) and the Agence Française de Développement (AFD)). The funds were made available to Participating Financial Institutions (PFIs) in Egypt for on-lending to eligible private sector sub-borrowers for sustainable energy investments. EgyptSEFF aimed at promoting the penetration of **energy efficient** and

²⁰ GOGLA (2019), [Off Grid Clean Energy Facility](#)

²¹ OCEF (2021), [website](#)

²² GCF (2021), [Benin direct national AE](#)

renewable energy technologies, **appliances and equipment in the private sector** in Egypt by stimulating demand and raising awareness of the **benefits of investments** in such technologies.²³

- The **Energy Efficiency and Conservation Fund** established by the Energy Efficiency Program from the Ethiopian Energy Authority (2014)²⁴ is providing **loans** and financial support to energy efficiency activities. This fund intended to include **budget allocation** from the government, **loans and grants** from financial institutions, grants from non-governmental organizations, **charges** on inefficient buildings, industry and appliances, or other sources. There was a range of financial instruments which were expected to be used to deliver efficiency through the fund such as **dedicated energy efficiency credit lines**, **partial risk guarantees for energy efficiency**, Energy Service Company (ESCO) financing, and **consumer financing for energy efficiency** and renewable energy products.
- The “Fonds de Garantie des Efficacités et Énergies Renouvelables” or Guarantee Fund for Renewable Energy and Energy Efficiency (FOGEER) which was launched in 2007 at the initiative of the “Agence Nationale pour le Développement des Énergies Renouvelables, et de l’Efficacité Énergétique” (ADEREE) in Morocco is a **credit guarantee fund** intended to de-risk sustainable energy loans (covering up to 70%) granted by banking institutions to Moroccan technology providers wishing to invest in renewable energy and energy efficiency initiatives (e.g. solar water heater, etc.)²⁵
- The Morocco Sustainable Energy Financing Facility (MorSEFF) launched in 2015 extending a **credit line facility** of up to €110 million to participating financing institutions in Morocco to on-lend to businesses and **Energy Service Companies (ESCOs)** investing in energy efficiency and renewable energy projects by the European Bank for Reconstruction and Development (EBRD), in cooperation with the European Investment Bank (EIB), the Agence Française de Développement (AFD), and the Kreditanstalt für Wiederaufbau (KfW). It also includes grants and technical assistance with support from the European Union (EU).²⁶
- Green credit facility for retail customers wishing to invest in energy-efficient appliances, sustainable energy technologies, or building retrofits are also offered by Banking institutions such as BMCI - Group BNP Paribas in Morocco. Holding a bank account with BMCI is not a requirement for beneficiaries, customer application fees are waived, and lending conditions are concessional (e.g., tenor period up to 72-month, etc.)²⁷
- An **energy efficiency fund** to compensate for the higher cost of energy efficient buildings and appliances was in preparation in Morocco in 2021 by NAMA support projects (NSP). It intends to provide both funding and advisory support to improve energy performance of Moroccan households. NAMA Facility funds will be channeled

²³ EBRD (2016), [EgyptSEFF](#)

²⁴ Ethiopian Energy Authority (2014), [The Energy Efficiency Program](#)

²⁵ Fellah-Trade, [Fonds de développement durable](#)

²⁶ [Morocco Sustainable Energy Financing Facility \(MorSEFF\)](#)

²⁷ BMCI - Group BNP Paribas, [Crédit Conso Vert](#)

through the public housing developer Al Omrane (for buildings) and through retailers (for equipment).²⁸

- The launch of a US\$ 7 million **credit line** in 2018 by the government of Niger, aiming to stimulate the development of a **Solar Home System market** as well as for quality solar pumping systems.²⁹ The credit line is part of the Solar Electricity Project (NESAP) led by the WBG, and was intended to be implemented by the Government of Niger through eligible national financing institutions and with the support from Lighting Africa, the National Centre for Solar Energy (CNES) and the Nigerien Rural Electrification Agency (ANPER). Commercial banks and micro financing institutions were supposed to be identified in order to access these funds and provide financing to SHS importers and distributors.
- The **Rwanda Green Fund (FONERWA)** established in 2012 to invest in public and private projects that drive transformative change. It was one of the first national environment and climate change investment funds in Africa. FONERWA facilitates direct access to international climate finance and streamlines and rationalizes external aid and domestic finance. Financing from the Fund can be accessed by Rwanda's government ministries and agencies, districts, and civil society organizations, including academic institutions and the private sector. The Fund has several investment products, including **grants, innovation investments, and credit lines**. Innovation investments are **performance-based investments** for research and development, proof-of-concept and demonstration. Private sector companies can apply for up to US\$ 300,000 and must provide 25% match funding. The Fund provides Rwanda's cheapest money with a **credit line** that provides financing at 11.45%, well below market rates of approximately 18%. Private sector companies must provide 30% match funding. The minimum loan amount is USD 70,000. FONERWA has mobilized investment USD 216 million and supported 44 projects for strategic climate resilience investments in Rwanda.^{30,31}
- The Credit Risk Fund (CRF) - a **financial de-risking instrument or concessional loan fund for residential energy efficient appliances** in the Seychelles created through the project 'Promotion and Up-scaling of Climate-resilient, Resource Efficient Technologies in a Tropical Island Context' in 2014. The project was implemented by UNEP and executed by the Ministry of Environment and Energy of Seychelles, Development Bank of Seychelles, Public Utilities Commission, Seychelles Institute of Technology. By the end of the project, 11,000 households accessed loans via the loan facility or CRF mechanism for purchase of EE appliances.³²
- The "Fonds de Transition Energétique" (FTE) - a dedicated **energy efficiency fund in Tunisia** through an **on-bill financing mechanism** to support investment programmes in energy-efficient technologies in the residential sector such as Solar Water Heater

²⁸ NAMA Facility (2021), [Improving Energy Performance of Moroccan Households](#)

²⁹ Lighting Africa (2018), [\\$7 million Credit Line for Solar Off - Grid Electricity in Niger](#)

³⁰ UNFCCC (2021), [FONERWA](#)

³¹ FONERWA (2021), [website](#)

³² GEF (2014), [Promotion and Up-scaling of Climate-resilient, Resource Efficient Technologies in a Tropical Island Context](#)

(PROSOL)³³ in 2015, building retrofits (PROMO-ISOL) in 2017, LED lighting (PROMO LED) in 2020, and **energy-efficient residential refrigerators** (PROMOFRIGO)³⁴ in 2021. These initiatives are being implemented by the Tunisian National Agency for Energy Conservation (ANME) with support from local partners such as the utility - Société Tunisienne de l'Electricité et de Gaz (STEG), and donors such as UNEP, the Government of Italy, and EDELEC (National French Organisation of Enterprises). The programmes usually offer **concessional loan facilities and grants** to end-users.

On the African continent, the experience shows that energy efficiency funds usually do not lend directly to residential end-beneficiaries but would channel concessional financing through local financial institutions which would then offer green loans or credit facilities at concessional rates to end-users such as households and microentrepreneurs to promote investment in energy-efficient equipment and appliances like residential refrigerators.

Moreover, a limited number of countries have experience with more innovative market-based financing mechanisms such as **on-bill financing** (e.g., Madagascar, Senegal, and Tunisia), **green on-wage financing** (e.g., Ghana, Rwanda), **discounted green mortgages** (e.g., Kenya), **vendor credit and/or leasing** (e.g., Morocco, South Africa), **energy services agreements such as pay-for-performance contracts** (e.g., South Africa), and **green or energy efficiency bonds** (e.g., Nigeria Morocco) for energy efficiency activities.

Among the energy efficiency projects and programmes in the residential sector, a few initiatives promote specifically investment in energy-efficient domestic refrigerators or off-grid solar refrigerators on the African continent (see below):

- Ghana: The **ECOWAS Refrigerators and Air Conditioners Initiative (ECOFRIDGES)** is a joint project by BASE, the Government of Ghana and Senegal, and the United Nations Environment Programme's United for Efficiency (UNEP U4E) initiative, with the support of the Clean Cooling Collaborative (formerly Kigali Cooling Efficiency Programme). ECOFRIDGES is collaborating with CalBank Plc, Ecobank Ghana Limited, Letshego Ghana Savings and Loans Plc to provide low-interest loans to eligible salaried employees, and with the following vendors Ederick Limited (Whirlpool), Hisense, Nesstra Ghana Limited (Carrier) and Services Merchandize Limited (SML) (Lloyd). A cornerstone of ECOFRIDGES is the **green on-wage financing mechanism** and its online shop to help make these cooling products more accessible and more affordable. The ECOFRIDGES GO online shop³⁵ is a one-stop shop for users to access information about the initiative, select their preferred cooling appliance, apply for an ECOFRIDGES GO loan via their selected partner bank and pay later via instalments with a 0% interest rate for at least 12-months. Through ECOFRIDGES GO, by 2024, local financial institutions aim to unlock at least USD 11 million in financing in Ghana to support the purchase of over 15,000 more sustainable cooling appliances and entice the replacement of old existing equipment.

³³ SDG (2005), [PROSOL Sustainable Development Knowledge Platform](#)

³⁴ ANME (2017), [PROMO-FRIGO](#)

³⁵ ECOFRIDGES GO online shop (2021), <https://www.ecofridgesgo.com>

- Senegal: The **ECOWAS Refrigerators and Air Conditioners Initiative (ECOFRIDGES) Sénégal**, is a BASE and United Nations Environment Programme United for Efficiency (UNEP U4E) project in partnership with the Agency for the Economy and the Control of Energy (AEME), the Directorate of the Environment and Classified Establishments (DEEC), la Société Nationale d'Électricité et du Gaz (Senelec), La Banque Agricole (LBA) and participating technology providers such as Electronic Corp. The initiative is financially supported by Clean Cooling Collaborative (formerly Kigali Cooling Efficiency Programme). Through an **on-bill financing mechanism**, utility customers with prepaid meters subscribing to Senelec have access to **concessional consumer credit** at an interest rate of 0% for a term of at least 24 months, provided the refund will be deducted from their prepaid reloads each month during the repayment period. The credit finances the purchase of a refrigerator or an air conditioner approved as eligible appliances. La Banque Agricole offers these **green loans** to eligible households. By 2024, ECOFRIDGES Sénégal aims to unlock USD 6 million in financing to support the purchase of more thousands of energy-efficient and environmentally friendly cooling units.
- Rwanda: The **Rwanda Cooling Finance Initiative**, prepared as part of the second phase of the Rwanda Cooling initiative (R-COOL) project, is a partnership between BASE - Basel Agency for Sustainable Energy, UN Environment's United for Efficiency (U4E) initiative, the Rwanda Environment Management Authority (REMA), and the East African Centre of Excellence for Renewable Energy and Efficiency (EACREEE) to develop financing mechanisms to promote energy-efficient and climate-friendly cooling appliances in the residential sector. With support from Clean Cooling Coalition (formerly K-CEP), the technical assistance team developed dedicated concepts of on-bill financing and **green on-wage financing** mechanisms with local partners. A green on-wage financing mechanism is being implemented by REMA with local partner financial institutions and participating vendors.
- Cape Verde: The 'Cape Verde Appliances & Building Energy-Efficiency Project (CABEEP)', which aimed at **reducing energy consumption** and related GHG emissions in buildings and **household appliances** in Cabo Verde through introducing a range of legislative and regulatory measures over the 10-year project lifetime. UNEP approved the implementation of the project in 2015. The appliances where the project focuses, were air-conditioners, **domestic refrigerators**, lighting products, electric storage water heaters, and washing machines. The National Labelling and Standard Program for Electrical Equipment (PNEREE) was approved by the Government of Cabo Verde January 1, 2020, and includes the national certification procedure and the **financing and incentive schemes** to ensure the sustainability of the programme.³⁶
- Cameroon, Burkina Faso, Mali, and Senegal: The Refroidissement respectueux de l'Ozone et du Climat en Afrique de l'Ouest et Centrale (ROCA) project promotes ozone- and **climate-friendly cooling technologies** in Cameroon, Burkina Faso, Mali and Senegal,³⁷. The project will run from 2021 to 2024. The ROCA project aims at

³⁶ GEF (2021), [Cape Verde Appliances & Building Energy-Efficiency Project \(CABEEP\)](#)

³⁷ Green Cooling Initiative (2021), [Refroidissement respectueux de l'Ozone et du Climat en Afrique de l'Ouest et Centrale \(ROCA\)](#)

analyzing the cooling demand and current RAC sector in these countries, giving advisory services to the government, training RAC technicians on the safe handling of natural refrigerants, as well as trainings on **climate finance** and **business models** to promote the accelerated adoption of ozone- and climate-friendly as well as **energy-efficient appliances** using **natural refrigerants**. Pilot projects on these **Green Cooling technologies** will be added as well

- Seychelles: The ‘Promotion and Up-scaling of Climate-resilient, Resource Efficient Technologies in a Tropical Island Context’ in the Seychelles was implemented by UNEP and executed by the Ministry of Environment and Energy of Seychelles, Development Bank of Seychelles, Public Utilities Commission, Seychelles Institute of Technology in 2014. One of its main components was to create the Credit Risk Fund (CRF) - a **financial de-risking instrument or concessional loan fund for residential energy efficient appliances**. By the end of project 11,000 households accessed loans via the loan facility or CRF mechanism for purchase of EE appliances.³⁸ In 2017, **Seychelles Energy Efficiency and Renewable Energy Programme** was assisting families and small businesses to gain access to **low-interest loans** to invest in **energy efficient electrical appliances** and renewable energy.³⁹

What is more, in some cases, financial and/or non-financial institutions offer financial products for energy efficiency investments (e.g., Algeria, Benin, Cameroon, Côte d’Ivoire, Ethiopia, Kenya, Mali, Morocco, Niger, Rwanda, South Africa, Tunisia, and Zambia) with or without support from Multilateral Development Banks (MDBs) or National Development Banks (NDBs). Examples of active local financial institutions on the African continent promoting climate mitigation finance initiatives include the following:

- Attijariwafa Bankdirect (AWB) is a regional private sector entity working as a financial group. It is headquartered in Morocco, with regional operations in many countries throughout Africa, and has a large project portfolio related to sustainable development. AWB is a GCF direct access accredited entity (in Cameroon, Côte d’Ivoire, Egypt, Gabon, Morocco, Tunisia). AWB was granted basic fiduciary standards by GCF and was accredited for loan, equity and guarantee from GCF.⁴⁰
- Ecobank Ghana Limited (EGH) which is also a **GCF AE** since 2021. EGH is a national private sector entity based in Ghana. It is a subsidiary of parent company Ecobank Transnational Incorporated (ETI) and provides a broad range of products and services to governments, financial institutions, multinationals, international organizations, small- and medium-sized enterprises, micro-businesses and individuals. The applicant undertakes various activities related to climate change in the energy access and generation, renewable energy, transport, infrastructure, and food and water security sectors. EGH was granted basic fiduciary standards and is accredited for loan and guarantee from GCF.⁴¹

³⁸ GEF (2014), [Promotion and Up-scaling of Climate-resilient, Resource Efficient Technologies in a Tropical Island Context](#)

³⁹ ESI Africa (2017), [Seychelles Energy Efficiency and Renewable Energy Programme](#)

⁴⁰ GCF (2021), [Cameroon direct national AE](#)

⁴¹ GCF (2021), [Ghana direct national AE](#)

- La Banque Agricole of Senegal which is a GCF AE since 2020. LBA was granted basic fiduciary standards. LBA was only accredited by GCF for loans.⁴² As part of its green climate mitigation initiatives, LBA became a partner local financial institution of ECOFRIDGES Senegal supporting a market-based on-bill financing mechanism. Through on-bill financing, LBA set up green credit facilities with participating vendors and started offering concessional financing to promote energy-efficient cooling appliances to households and micro entrepreneurs. Repayments are made on prepaid metering systems in agreement with Senelec – the utility.
- CFC Stanbic and Cooperative Bank are part of nascent programmes to provide financial incentives for building energy efficiency. They provide \$33 million in **green credit lines** for energy-efficiency projects in Kenya. Major residential lender HF Group has also commenced providing a **green mortgage credit facility** with support from IFC.⁴³
- As of 2021, Kenya counts also the Acumen Fund, Inc. (Acumen) and KCB Bank Kenya Limited (KCB) as **GCF AEs**. Acumen was granted basic fiduciary standards and was accredited by GCF for project management, and grant award. KCB – a banking institution was granted basic fiduciary standards and was accredited by GCF for project management. KCB was also accredited for loan and guarantee from GCF.⁴⁴
- In 2014, AfDB and the Clean Technology Fund (CTF) developed a **credit line** to Nigerian Bank for RE and EE projects. AfDB intended to extend a 7-year line of credit to Nigerian Bank to facilitate the provision of financing to projects on terms and conditions relevant for RE/EE. More specifically, the credit line was supposed to allow Nigerian Bank to offer **loans** with maturities of up to 7 years, which was far beyond what was currently offered in the market and more affordable interest rates, compared to the 20 - 40% interest rates charged by Nigerian banks.⁴⁵
- In 2018, Sunref Nigeria was launched seeking to improve access to energy through improved access to **affordable finance** for renewable energy and energy efficiency technologies in the commercial sector. Hosted by the Manufacturers Association of Nigeria (MAN) and in partnership with local banks, United Bank for Africa (UBA) and Access Bank, Sunref Nigeria offers the private sector **competitive loans** and technical assistance for structuring their green investments so they can seize the opportunities of green finance. **A credit line** of USD\$ 70 million has been provided to Sunref partner banks that offer attractive terms (**concessional rate loans, long tenors, grace period**). A €9.5-million investment grant is available to make green investments even more attractive. Project sponsors can benefit from a **grant of 10% of the loan amount** upon completion of their project.⁴⁶
- In 2016, the Development Bank of Rwanda (BRD) created the Department of Energy Financing which intended to be in charge to implement the bank's intervention in the energy sector⁴⁷. That year, the bank committed to invest for 5 years US\$ 185 million

⁴² GCF (2021), [Senegal AEs](#)

⁴³ Copenhagen Centre on Energy Efficiency (2018), [Energy Efficiency in Buildings in Kenya](#)

⁴⁴ GCF (2021), [Kenya AEs](#)

⁴⁵ CIF (2021), [Line of Credit for Renewable Energy and Energy Efficiency Projects](#)

⁴⁶ Sunref Nigeria (2021), [website](#)

⁴⁷ BRD (2016), [Department of Energy Investments](#)

in the energy sector with the aim to address key constraints of intervention in the sector such as **high start-up costs** and other risks involved. The interventions were grouped in three main programmes: Energy Generation, Technical Assistance and **Energy Efficiency**. The latter one was expected to intervene by **financing energy reduction capital projects, financing alternative energy products**, etc.

- In 2017, another initiative of BRD in Rwanda was the **Renewable Energy Fund (REF)**, which aimed at informing the people on the availability of **dedicated loans** for buying **affordable solar equipment with fair repayment terms**.⁴⁸ Through this project, the bank aimed at **increasing the off-grid electrification** by facilitating private sector participation in renewable off-grid electrification.
- In 2015, the French Development Agency (AFD) provided a €120 million **discounted credit facility** to two banks - Absa and Nedbank - and also to the South African government's industrial support agency, the Industrial Development Corporation (IDC). This is for the financing of renewable energy and energy efficiency projects. The loans provided by the banks to their clients can either offer: An **investment grant** to improve the return of the project and/or to finance studies (feasibility, approval, measurement and verification), or a **lower interest rate** to support the project's development. The AFD has also set up a technical assistance facility within the South African National Energy Development Institute (SANEDI) to support the banks in their renewable energy and energy efficiency strategy and operations.⁴⁹
- In 2020, IFC invested \$200 million in the Standard Bank of South Africa Limited's **green bond**. This is Africa's largest green bond which is aiming to increase **access to climate finance**. The 10 years green bond will enable the bank to **on-lend and finance climate smart projects** in the country such as renewable energy, **energy efficiency**, water efficiency and **green buildings**.⁵⁰ According to IFC, commercial banks currently provide only 45% of South Africa's financing for RE and EE projects. IFC estimates that the country's climate smart investment potential between now and 2030 is around \$588 billion. The projects funded by this green bond have the potential to reduce greenhouse gas emissions by **742,000 tons per year**.
- In 2021, IFC announced providing Absa Bank Ltd. with a **green loan** of up to US\$150 million to support the bank's strategy to expand its climate finance business and help South Africa meet its greenhouse gas reduction targets. The green loan is the first certified loan in Africa that complies with the **Green Loan Principles**. This means that lending by Absa for green projects will be disclosed, improving transparency, and encouraging other banks to follow the principles. In addition to the loan, IFC will provide technical advice and knowledge sharing to help the bank develop a green, social, and sustainable bonds and loans framework.⁵¹
- As of 2021, South Africa counts the Development Bank of Southern Africa (DBSA) as GCF AE. DBSA is an NDB, with a mandate to finance both private and public sector activities at national and regional levels in Africa. DBSA provides sustainable

⁴⁸ WBG (2017), [Rwanda – Renewable Energy Fund](#)

⁴⁹ PSEE (2015), [Guide to energy efficiency finance in South Africa](#)

⁵⁰ IFC (2020), <https://pressroom.ifc.org/all/pages/PressDetail.aspx?ID=16888>

⁵¹ IFC (2021), [Absa green loan](#)

infrastructure project preparation, finance and implementation support. Its environment and climate change portfolio for the financial year 2014/2015 was worth approximately US\$ 530 million and included renewable energy, **energy efficiency**, biodiversity and sustainable land management projects. DBSA in partnership with the national environmental affairs department has established and manages a **special fund as a national mechanism** that aims to provide catalytic finance to facilitate investment in high-impact and **sustainable green initiatives** in the country. DBSA was granted basic fiduciary standards and was accredited by GCF for project management and grant award. Only DBSA was accredited for loan, equity, and guarantee from GCF.⁵²

- In 2017, AFD provided its support to Bank of Africa in Tanzania (BOA-T) in the context of its Sunref regional programme. This support was in two forms a **loan** to BOA-T to allow it to allocate loans to finance renewable energy projects or energy efficiency projects in the commercial sector and technical assistance financed by the EU and provided upstream to project promoters, for the preparation of their proposals, and downstream, to bank branches likely to allocate a loan which will make it possible to move on to the implementation stage. This EUR 11 million **green credit line** was AFD's first **concessional credit line** for renewable energy and energy efficiency development in Tanzania.⁵³
- As of 2021, Tanzania counts CRDB Bank PLC (CRDB) as GCF AE. CRDB is a national, private sector financial institution based in Tanzania. Its mission is to provide competitive and innovative financial solutions while delivering a sustainable contribution to society. It has been undertaking various climate change-related projects and programmes within the context of the United Nations Framework Convention on Climate Change. By becoming accredited to GCF, CRDB aims to catalyze low emissions and climate resilient development by implementing various projects with **grants, loans and other fit-for-purpose bank products**. CRDB was granted basic fiduciary standards and accredited by GCF for project management. CRDB was accredited for loan, equity, guarantee, and blending from GCF.⁵⁴

Moreover, many countries on the African continent (e.g., Algeria, Benin, Burundi, Côte d'Ivoire, Eswatini, Ethiopia, Ghana, Kenya, Madagascar, Namibia, Nigeria, Tanzania, Uganda, and Zambia) have adopted **fiscal tools** or **tax incentives** such as the **reduction or exemption of custom/import duties and Value Added Taxes (VAT)** on some imported energy efficient appliances, equipment and material or clean technologies (e.g., household electric appliances, compact fluorescent lamps, solar water heaters, building insulations, solar panels, batteries, wind turbines, etc.)

Also, beyond on-grid energy efficiency initiatives, residential end-users in a majority of countries on the African continent (e.g., Benin, Botswana, Burundi, Côte d'Ivoire, Eswatini, Ethiopia, Ghana, Kenya, Lesotho, Madagascar, Zambia, Mali, Mozambique, Namibia, Nigeria, Rwanda, have benefited from innovative financing mechanisms such the **Pay-as-you-go**

⁵² GCF (2021), [South Africa national AEs](#)

⁵³ Sunref (2017), [Sunref Tanzania](#)

⁵⁴ GCF (2021), [Tanzania GCF AE](#)

(PAYGO)⁵⁵ model, supported by concessional financing or de-risking instruments, to access off-grid appliances in a booming standalone solar market or solar home system (SHS) and pico-solar market. There is also a large number of initiatives that promote larger off-grid renewable energy, energy efficiency, and energy access projects. Some examples include:

- Benin: In 2019, the Off Grid Clean Energy Facility (OCEF) intended to provide US\$32 million matching **grant** challenge fund over five-years (2017-2022) looking to co-finance profitable off-grid renewable energy and energy efficiency projects in Benin, such as household energy systems and products (e.g., solar home kits).^{56,57}
- Côte d'Ivoire: In 2018, AfDB supported ZOLA EDF Côte d'Ivoire (ZECI), to mobilize a loan in local currency of CFAF 15.75 billion (approximately € 24 million) **to finance pay-as-you-go SHS**. AfDB provided a **partial credit guarantee** covering part of the guaranteed loan facility. The business model which consists of **selling solar kits** that meet international quality standards, under **lease-purchase agreements** for a three-year period (creation of predictable receivables payable with mobile money), makes it easier for low-income customers to access clean energy.⁵⁸
- Ethiopia: The World Bank Group provided a **loan** of US\$65 million to a local financial institution leveraging US\$10 million of co-financing to set up an **energy efficiency credit line**. The Ethiopia **credit line** provides loans to technology providers and MFIs to promote efficient off-grid energy solutions for residential users. The first 10% of the credit line must be committed within 24 months.
- Ethiopia: In 2020, in cooperation with the Commercial Bank of Ethiopia (CBE), the African Development Bank (AfDB) with support from Climate Investment Fund (CIF) was designing an **energy credit blending facility**⁵⁹ which was aimed at financing renewable energy off-grid solutions through a market development approach by providing credit to technology providers, microfinance institutions (MFIs) for the provision of off-grid energy technologies and **productive appliances to customers** in peri-urban and rural areas of Ethiopia. The facility includes: (i) a hard-currency USD 100 million envelope aimed at enhancing imports of renewable energy off-grid technologies and equipment into the country, and (ii) a **revolving credit facility** in local currency that will provide, through partner MFIs, local currency working capital and inventory financing loans to importers, suppliers and distributors of off-grid energy products (i.e., various intermediaries in the supply chain) as well as loans to end-consumers.
- Mali: In 2019, WBG provided US\$ 22.7 million financing to support Mali's efforts to improve access to modern services and promote the deployment of renewable energy in rural areas. The financing package was composed of a US\$20 million equivalent **credit** and a US\$ 2.7 million **grant** from the Japan Policy and Human Resources Development Fund. The grant also supports the installation of solar home

⁵⁵ Energypedia (2021), [PAYGO approaches](#)

⁵⁶ GOGLA (2019), [Off Grid Clean Energy Facility](#)

⁵⁷ OCEF (2021), [website](#)

⁵⁸ AfDB (2018), [Côte d'Ivoire](#)

⁵⁹ African Development Bank (2020), [Clean Technology Fund - Enabling Access to Off-Grid Energy to the People of Ethiopia Thematic - Line of Credit to the Commercial Bank of Ethiopia](#)

systems in households not living within the vicinity of a mini-grid, and the deployment of solar lanterns.⁶⁰

- Rwanda: Moreover in 2016, BRD launched the Clean Cooking and the Subsidy Windows **results-based financing scheme**⁶¹. Both subsidies are designed to address the affordability of these investments among the **lowest income population** in Rwanda and aim at respectively increasing usage of **clean cooking equipment** in the houses and the **Solar Home System (SHS)** installations in rural parts of the country. Both subsidies are co-financed by the World Bank where the subsidy window funding reaches US\$ 30 million.
- Rwanda: In 2021, Get.invest with the support of the German Development Cooperation through GIZ is starting to collaborate with financiers in Rwanda to increase investments in decentralised renewable energy projects.⁶² This recently launched programme aims at supporting local financial institutions in developing and offering **finance products** to increase the financing of renewables in the country.⁶³
- Uganda: In 2020, **Uganda Energy Credit Capitalization Company (UECCC)** had partnered with 14 local financial Institutions to provide financing mechanisms (i.e., **concessional credit lines**) for acquisition of renewable energy technologies including solar, biogas and grid electricity through on-lending and de-risking instruments. Among others, through partner local financial institutions, UECCC provides **loans** to households through a solar end-user financing programme and an on-grid connection loan programme, as well as **working capital and partial risk guarantees** to solar home system technology providers.⁶⁴
- Uganda: In 2020, EnerGrow intended to pilot an innovative **productive use asset financing model** for 150 women-owned micro, small and medium enterprises (MSMEs). EnerGrow will provide financing up to USD 1,000 for **energy efficient equipment** through a platform that develops a **comprehensive credit profile** tailored for energy access needs. During the project, the company will expand its **credit scoring platform** by testing a range of energy efficient productive use equipment in various rural and peri-urban settings in Uganda. **EEP Africa financing** will enable acquisition of the productive use assets and training of new personnel.⁶⁵

Finally, a summary of the national experiences (non-exhaustive) and framework on relevant energy efficiency and off-grid solar financing mechanisms and programmes in the residential sector, clean energy market, and climate mitigation finance initiatives for the project target countries (i.e., Botswana, Eswatini, Lesotho, Zambia, Namibia, Tanzania, Zambia, and Zimbabwe) and South Africa is listed below:

⁶⁰ WBG (2019), [World Bank Supports Mali's Efforts to Improve Access to Renewable Energy](#)

⁶¹ BRD (2016), [Energy Investments](#)

⁶² Get.Invest (2021), [Rwandan Banks collaborate with European programmes to increase renewable energy investments](#)

⁶³ BASE (2021), [Rwanda Cooling Finance Initiative project](#)

⁶⁴ UNFCCC (2020), [UECCC in Uganda](#)

⁶⁵ EEP Africa (2021), [EnerGrow](#)

Botswana.

According to UNEP (2015)⁶⁶, rural communities in Botswana can purchase solar PV systems on a **loan purchase agreement** to be paid back over 4 years. Nevertheless, the main barrier to this scheme is cited to be the lack of a legal and regulatory framework.

In 2016, the Government of Botswana opened a **Renewable Energy Fund Account** with a US\$0.7 million grant from the Global Environment Fund⁶⁷. The Fund is aimed at subsidizing renewable energy technologies for off-grid solutions with priority in installing Solar Water Heaters, Solar Home Systems and Water Pumping Systems.

Botswana is also part of regional financing initiatives (see “Regional” below for more details on the regional mechanisms).

As of 2021, the country doesn't count any direct national GCF AEs.

Eswatini. The country is not included in the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021 which looks into financing mechanisms for energy efficiency activities as part of its indicators.

There is no data available on the total volume of clean energy investment in the country. Solar panels, wind turbines and batteries are **exempt from import duties**, however some wind turbine components are charged at specific rates. The standard country VAT of 15% also applies to all these technologies.⁶⁸

The potential of small-scale off-grid solar in Eswatini remains untapped, with no GOGLA or Lighting Global affiliated sales recorded in 2018 or 2019. The National Energy Policy of Eswatini intends to prioritise the use of **solar home systems** and other off-grid generation, particularly for rural areas where grid extension is too expensive. To this end, the Government of Eswatini is evaluating the participation of the private sector to implement many off-grid electrification interventions.

UNDP is financing up to US\$ 7.7 million in the country for promoting Renewable Energy Systems such as micro grids, SHS, PICO and PV. The aim of the project is to facilitate access to electricity from renewable sources to approximately 30% by 2024. Currently the project is at the inception phase. For financing mechanisms to purchase larger items, banked and non-bank channels are the formal options for **clean energy credit financing**.

In 2020, four commercial banks had operations in Eswatini. In addition to these banks, the Swaziland Building Society offered long-term mortgage loans. Commercial banks had historically had an operating model focused on traditional banking products without activity in microfinance but had recently started moving into the **payroll lending market**. The provision of credit was primarily limited to salaried employees, so the provision of credit to low-income people and non-salaried entrepreneurs was reliant on credit institutions funded by donors or government grants. Other than commercial banks, several large institutions in

⁶⁶ UNEP (2015), [Accelerating Energy Efficiency: Initiatives and Opportunities](#)

⁶⁷ IEA (2016), [Renewable Energy Fund for off-grid solutions – Policies](#)

⁶⁸ GET.Invest (2021), [Eswatini Market Information](#)

Eswatini operated in the formal microfinance market. These institutions operated with a similar business model: they provided **unsecured loans to formally employed government staff and the private sector**. Loan repayments were usually automatically deducted from an individual's salary.⁶⁹

Eswatini was part of regional financing initiatives (see "Regional" below for more details on the regional mechanisms).

As of 2021, the country doesn't count any direct national GCF AEs.

Lesotho. The country is not included in the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021 which looks into financing mechanisms for energy efficiency activities as part of its indicators.

Lesotho has developed a Scaling Up Renewable Energy Program in Low Income Countries (SREP) investment plan to enable increased adoption of the priority technologies—wind, solar, small hydro power—through the development of commercial on-grid and off-grid renewable energy markets. From this plan, US\$5 million of SREP funding, in the form of a **concessional loan**, would be used to leverage US\$11.5 million in **grants and private concessional loans** (or a **partial risk guarantee**) from AfDB, US\$7.5 million in **equity** contributed from the developers of a 20 MW solar PV project, and US\$6.9 million in additional financing from either a private lender or other development finance institutions.⁷⁰

In 2020, one of the most important dimensions of the enabling environment for off-grid cleaner energy solutions was the extent to which people can access finance to purchase these products. Given relatively large upfront costs of the products relative to income in developing countries, few consumers could buy the solutions on a cash-basis and therefore rely on access to **credit from microfinance providers** or **instalment payment mechanisms such as PAYGO**. However, there were few MFIs who lent to poor, unemployed rural households, and access to formal credit, and especially bank credit, which offered lower interest rates, was relatively low in Lesotho. The banking sector in Lesotho was dominated by four banks, whose combined assets were equivalent to more than 40% of GDP. There was a relative lack of formal non-bank credit, savings or payments providers, with only eight MFIs in the country. Given the remoteness of many rural communities in Lesotho, accessing formal financial services was both difficult and expensive, increasing the importance of informal providers including mobile payment providers to supply credit, a safe place to save and earn a return and to pool risk.⁷¹

Lesotho was part of regional financing initiatives (see "Regional" below for more details on the regional mechanisms). As of 2021, the country doesn't count any direct national GCF AEs.

Namibia. The country is not included in the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021 which looks into financing mechanisms for energy efficiency activities as part of its indicators.

⁶⁹ UNDP (2021), [UNDP-UNCDF-eSwatini-Energy-and-the-Poor.pdf](#)

⁷⁰ Climate Investment Fund, [SREP](#)

⁷¹ UNDP (2020), [Lesotho Energy and the Poor](#)

In 2018, clean energy investment grew from around €8 million in 2015 to €70 million. Namibia offers favourable **import incentives** on renewable energy technologies, **exempting** solar panels, wind turbines and batteries from **import duties**. The country's standard VAT rate of 15% remains applicable to all these technologies.⁷²

Namibia has a successful track record of enabling and implementing standalone solar systems in the country. In 2015, nearly a third of the 47 registered renewable energy suppliers were registered to supply solar home systems. While no sales were recorded in 2019 from GOGLA and Lighting Global affiliate companies, 2018 saw 6,785 sales. Companies offering **solar home or pico-solar solutions** include Dezman Investments, Taati Solar (distributing SunKing lights) and Waka Waka Solar.

The government's 2017 Renewable Energy Policy strongly supports building on work done to date to further develop local expertise for technicians working on solar home systems, solar water heaters and PV pumps. Proactive support is offered to these industries, including for project preparation, due diligence and lending support through **preferential lending rates**. To this end, the Government of Namibia continues to support the industry via the **Solar Revolving Fund (SRF)**, a **dedicated credit facility** established to stimulate the demand and use of renewable energy technologies, with a focus on off-grid areas. In the period between 2011 and 2017, the SRF financed more than 3,000 SHSs.⁷³

In 2020, Nedbank's Namibian subsidiary partnered with Sunref, the green finance label of the French Development Agency (AFD), to set up a facility to finance sustainable energy projects aimed at reducing the carbon footprint of businesses in Namibia. Nedbank and Sunref's new mechanism intends to make available a **green credit line** to local SMEs. It will provide multipurpose **investment cost financing** and tailor support to project developers throughout the entire project life cycle. The Nedbank and Sunref facility will enable the financing of renewable energy projects for businesses including **energy efficiency** in Namibia.⁷⁴

In 2021, the Taati Solar project is a women-led Dutch-Namibian joint venture that is importing and distributing solar home systems (SHS) and DC solar-powered appliances such as **solar refrigeration appliances** to off-grid markets in Namibia. The project aims at facilitating scale-up of sales in rural and peri-urban communities through **micro-lending** and **hire-purchase** options. The project aims at selling 250 solar-powered refrigeration units and also plans to pilot refrigeration solutions for vaccines and medicines at 25 rural health clinics. The project received a grant from the Energy and Environment Partnership Trust Fund in Africa (EEP Africa).⁷⁵

As of 2021, the country counts the **Environmental Investment Fund of Namibia (EIF)** as GCF AE. EIF is a national entity and an environmental fund located in Namibia. It was established with a mandate of being a sustainable source of funding for the development and implementation of environmentally sustainable development projects and programmes in partnership with both public and private sector organizations. EIF was officially established in

⁷² GET.Invest (2021), [Namibia Market Information](#)

⁷³ GET.Invest (2021), [Namibia Energy Market Segments](#)

⁷⁴ Afrik21, [Namibia: Nedbank and Sunref finance green projects for local businesses](#)

⁷⁵ EEP Africa (2021), [Accelerating the Adoption of Solar-Powered Refrigeration in Namibia](#)

2001, and began operations in 2011. The results of its activities overlap with the results of the GCF in the areas of natural resource management, green technology and low carbon development, nature-based tourism, and capacity-building. EIF was granted basic fiduciary standards and was accredited by GCF for both project management and grant award. EIF wasn't accredited for on-lending/blending from GCF.⁷⁶

Zambia. According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, financing mechanisms for energy efficiency activities are not available in the residential, commercial services, and industrial sectors.

The only energy efficiency project in Zambia was the Energy Efficient Lighting Program which distributed 2 million free compact fluorescent lamps to residential customers, small enterprises and public buildings over two years in 2011.⁷⁷

As of 2020, the only existing sustainable energy projects (e.g., off-grid energy, mini grids, access to clean and affordable decentralised energy services, productive use of energy, SHS, energy access, etc.) in Zambia have been donor-funded (UNDP, WBG, USAID, DFID, etc.) as a result of regulatory restrictions affecting the return on investment extending **concessional loans and grants**, using **results-based financing (RBF)**, and **revolving working capital loans**.⁷⁸

In 2020, overall **access to financial services** was still relatively low in Zambia and also mostly driven by **payments and remittance products**, as formal access to savings, credit and insurance products were very low, with formal savings the highest of the three. Zambia had two credit reference bureaus – Credit Data CRB and CRB Africa. According to the World Bank development indicator database they cover 23% of Zambian adults. Two mobile network operators (MNOs) dominated the market: Airtel and TNM, and, according to GSMA, there were 5.38 million unique mobile phone subscribers in the country (or 30% of the population). Zambia was a relatively advanced market in terms of 3G subscriptions, having seen a strong increase in these subscriptions in recent years. Though, in 2014, only 2% of Zambiaans used mobile money. This access rate may have increased substantially since 2014. A study published in 2015 reports that mobile money was being provided by two MNOs: Airtel and TNM. Airtel launched Airtel Money (or 'Khusa M'manja'). Around 10% of total mobile phone users in Zambia use or have mobile money accounts.⁷⁹

As of 2020, the market in Zambia for off-grid cleaner energy products is small but emerging. Until recently, it consisted mostly of lanterns and other small products sold on a **cash basis** or **through donor initiatives**. Since 2018, three companies including Yellow (**PAYGO**) have entered the market – the other two are Solarworks, who are primarily based in Mozambique and Vitalite who started in Zambia. Other energy service companies that appear to be involved in the distribution of SHS in Zambia include Zuwa and M-PAYG. According to UNDP, there is a market for larger SHS (Tier 2) for household use that, for example, could power a television, which is estimated at roughly 200,000 households. Energy service companies in Zambia

⁷⁶ GCF (2021), [Namibia local GCF AE](#)

⁷⁷ IIEC (2021), [Energy Efficient Lighting Project in Zambia](#)

⁷⁸ UNDP (2020), [Energy and the Poor in Zambia](#)

⁷⁹ UNDP (2020), [Access to financial services in Zambia](#)

primarily sell Tier 1 solar solutions to households on an instalment or PAYGO basis. There are currently **limited alternative financing mechanisms to PAYGO for SHS**, and Zambiaans have **limited access to credit from formal providers**. Indeed, banking institutions target high-net-worth individuals and do not provide loans for SHS. They also require forms of **collateral** that most of the unelectrified population are unlikely to have (e.g., land). Savings and Credit Cooperative Organizations (SACCOs) on the other hand, of which there are 37 (Reserve Bank, 2018), typically **target the salaried employee market**. It is only MFIs that tend to serve lower-income customers. The Reserve Bank of Zambia reported 65 MFIs at the end of 2018. However, these MFIs also tend to target a narrow band of **salaried employees, government employees**, from whom they have a **salary deduction**.⁸⁰

As of 2021, the country doesn't count any direct national GCF AEs.

South Africa. According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, **energy services agreements (pay-for-performance contracts), green or energy efficiency bonds, and vendor credit and/or leasing** for energy efficiency activities are available in the residential, commercial services and industrial sector. Also, **financial and/or non-financial institutions offer financial products for energy efficiency investments** in all the three sectors. Moreover, credit lines and/or revolving funds with banks are available in the commercial services and industrial sector for energy efficiency activities.

In 2015, the French Development Agency (AFD) provided a €120 million **discounted credit facility** to two banks - Absa and Nedbank - and also to the SA government's industrial support agency, the Industrial Development Corporation (IDC). This is for the financing of renewable energy and energy efficiency projects. The loans provided by the banks to their clients can either offer: An **investment grant** to improve the return of the project and/or to finance studies (feasibility, approval, measurement and verification), or a **lower interest rate** to support the project's development. The AFD has also set up a technical assistance facility within the South African National Energy Development Institute (SANEDI) to support the banks in their renewable energy and energy efficiency strategy and operations.⁸¹

In 2018, following the implementation of Minimum Energy Performance Standards (MEPS), the Ministry of Energy of South Africa released the "**Appliance Energy Calculator**" mobile app to allow consumers to make in-store comparisons of different appliance models. The app allows for consumers to enter the relevant information, easily sourced from the mandatory energy label on the appliance, into the app, which calculates the **estimated running cost** of the appliances of their choice over a 1- and 10-year period – showing which appliance uses the least electricity, as well as CO2 emission reductions.⁸²

In 2020, IFC invested \$200 million in the Standard Bank of South Africa Limited's **green bond**. This is Africa's largest green bond which is aiming to increase **access to climate finance**. The 10 years green bond will enable the bank to **on-lend and finance climate smart projects** in

⁸⁰ UNDP (2021), [Market for off-grid solutions for households in Zambia](#)

⁸¹ PSEE (2015), [Guide to energy efficiency finance in South Africa](#)

⁸² ESI Africa (2018), [Appliance Energy Calculator](#)

the country such as renewable energy, **energy efficiency**, water efficiency and **green buildings**.⁸³ According to IFC, commercial banks currently provide only 45% of South Africa's financing for RE and EE projects. IFC estimates that the country's climate smart investment potential between now and 2030 is around \$588 billion. The projects funded by this green bond have the potential to reduce greenhouse gas emissions by **742,000 tons per year**.

In 2021, IFC announced providing Absa Bank Ltd. with a **green loan** of up to US\$150 million to support the bank's strategy to expand its climate finance business and help South Africa meet its greenhouse gas reduction targets. The green loan is the first certified loan in Africa that complies with the **Green Loan Principles**. This means that lending by Absa for green projects will be disclosed, improving transparency, and encouraging other banks to follow the principles. In addition to the loan, IFC will provide technical advice and knowledge sharing to help the bank develop a green, social, and sustainable bonds and loans framework.⁸⁴

As of 2021, South Africa counts the Development Bank of Southern Africa (DBSA) and the South African National Biodiversity Institute (SANBI) as GCF AEs. DBSA is an NDB, with a mandate to finance both private and public sector activities at national and regional levels in Africa. DBSA provides sustainable infrastructure project preparation, finance and implementation support. Its environment and climate change portfolio for the financial year 2014/2015 was worth approximately US\$ 530 million and included renewable energy, **energy efficiency**, biodiversity and sustainable land management projects. DBSA in partnership with the national environmental affairs department has established and manages a **special fund as a national mechanism** that aims to provide catalytic finance to facilitate investment in high-impact and **sustainable green initiatives** in the country. SANBI is a national entity and a research institute that coordinates research, monitors and reports on the state of biodiversity in South Africa. SANBI also provides planning and policy advice and it pilots management models. SANBI intends to mobilize financial resources from various sources, including MDBs. Both DBSA and SANBI were granted basic fiduciary standards and were accredited by GCF for project management and grant award. Only DBSA was accredited for loan, equity, and guarantee from GCF.⁸⁵

Tanzania. According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, financing mechanisms for energy efficiency activities are not available in the residential, commercial services and industrial sectors.

In 2017, AFD provided its support to Bank of Africa in Tanzania (BOA-T) in the context of its Sunref regional programme. This support was in two forms a **loan** to BOA-T to allow it to allocate loans to finance renewable energy projects or energy efficiency projects in the commercial sector and technical assistance financed by the EU and provided upstream to project promoters, for the preparation of their proposals, and downstream, to bank branches likely to allocate a loan which will make it possible to move on to the implementation stage.

⁸³ IFC (2020), <https://pressroom.ifc.org/all/pages/PressDetail.aspx?ID=16888>

⁸⁴ IFC (2021), [Absa green loan](#)

⁸⁵ GCF (2021), [South Africa national AEs](#)

This EUR 11 million **green credit line** was AFD's first **concessional credit line** for renewable energy and energy efficiency development in Tanzania.⁸⁶

In 2017, foreign investment into clean energy constituted only 32% of the €6.2 million total investment in the sector. In 2018, total investment increased to €8.4 million while foreign contribution represented 51%. Annual investment in the sector remains low in comparison to the €23.5 and €64.5 million received in 2014 and 2015 respectively. Incentives for renewable energy technologies are favourable. Solar panels and wind turbines are **exempt from VAT** and are **not charged any import duty**. Batteries, while also exempt from VAT, do incur a 25% import duty on standard batteries and 35% on less common batteries, like some other East African countries.⁸⁷

The off-grid solar market in Tanzania has been growing steadily over until 2019, following volatile sales in previous years. GOGLA and Lighting Global affiliated sales in 2016 amounted to 372,767 products, followed by a decline to 172,442 in 2017. In 2018, sales increased again, to 205,733 units. 2019 saw another increase, to 263,927 units. In 2019, 32% of these products were sold on a **PAYGO** basis, down from 52% in 2018. The remaining share of products were sold as cash transfers. Operating companies include American Engineering Group, Azuri Technologies, d.light, Enda Solar, Greenlight Planet, Jaza Energy, Little Sun, M-Kopa, Mobisol, Sikubora Solar, Simusolar, Solaris Tanzania, Solar Sisters, Trend Solar, Rex Energy and ZOLA Electric. Companies need only to inform the regulator of their activities, and solar home systems and pico-solar products are required by the Tanzania Bureau of Standards to meet the Lighting Global standards for small renewable energy and hybrid systems for rural electrification.⁸⁸

In 2018, **small-scale energy efficiency projects** had been conducted in the country, for example **aggregated purchasing schemes** for energy-efficient electrical equipment, however, there were no governmental projects under-way in the sector.⁸⁹

In 2019, there were 39 commercial banks, seven community banks, five microfinance banks, three financial leasing companies, two development finance institutions, two financial institutions, two representative offices of foreign banks, and one mortgage refinancing company. The banking sector includes a few local financing institutions that have **renewable energy credit lines**. These include the Tanzania Investment Bank, a financing partner to the (Rural Energy Agency [REA]) and the Bank of Africa (through Sunref.) Other banks have a direct relationship with off-grid companies (e.g., Mobisol's partnership with the Cooperative and Rural Bank [CRDB]).⁹⁰

In 2019, more than 50 % of the mainland population relies on farming or livestock for income in Tanzania. Most of this income comes from selling food crops. There are at least five off-grid

⁸⁶ Sunref (2017), [Sunref Tanzania](#)

⁸⁷ GET.Invest (2021), [Tanzania Market Information](#)

⁸⁸ GET.Invest (2021), [Tanzania Energy Market Segments](#)

⁸⁹ Netherlands Enterprise Agency (2018), [Final energy report Tanzania](#)

⁹⁰ Usaid (2018), [Off-grid solar market assessment Tanzania](#)

companies in Tanzania that sell **productive-use solutions** powered by off-grid energy (e.g., refrigeration for food and medicine, etc.)⁹¹

In 2019, there were over 20 **funding facilities** available in Tanzania for various types of off-grid energy through debt financing offering a **range of capital type and funding instruments** such as grants, debt, equity, guarantees, short- and long-term debt, short-term working capital, US\$ and local currency debt, interest free loans, green credit lines, receivables financing, etc.⁹²

In 2020, the EU intended to provide support to energy efficiency in Tanzania including the formulation of a roadmap for the realisation of an energy performance in buildings regulatory framework, the development of a 20-year Tanzania energy efficiency strategy, and the implementation of the first **energy efficiency action plan (EUR 8 million)**.⁹³

As of 2021, the country counts CRDB Bank PLC (CRDB) as GCF AE. CRDB is a national, private sector financial institution based in Tanzania. Its mission is to provide competitive and innovative financial solutions while delivering a sustainable contribution to society. It has been undertaking various climate change-related projects and programmes within the context of the United Nations Framework Convention on Climate Change. By becoming accredited to GCF, CRDB aims to catalyse low emissions and climate resilient development by implementing various projects with **grants, loans and other fit-for-purpose bank products**. CRDB was granted basic fiduciary standards and accredited by GCF for project management. CRDB was accredited for loan, equity, guarantee, and blending from GCF.⁹⁴

Zimbabwe. In 2012, the launch of the **National Energy Policy (NEP)** refocused the **Rural Electrification Fund (REF)** to have an expanded mandate to promote the provision of electricity and **other modern energy services** to rural areas using **renewable energy service technologies** to the maximum extent possible. In 2016, REF developed the **Rural Energy Master Plan (REMP)** which is meant to provide a systematic and realistic approach to how Zimbabwe's rural areas can be provided with modern energy services. The energy services include electrical energy services (lighting, refrigeration, entertainment, etc). The government has implemented innovation mechanisms such as **net metering** and **feed-in tariff** for clean energy to enable **Independent Power Producers (IPP)** to add their excess electricity to the national grid.

In 2018, the **National Climate Policy (NCP)**⁹⁵ was passed. NCP seeks to create a pathway towards a climate resilient and low carbon development economy. NCP aims to establish a **National Climate Fund (NCT)** that is supported by a 10% budgetary allocation from the

⁹¹ Usaid (2018), [Off-grid solar market assessment Tanzania](#)

⁹² Usaid (2018), [Off-grid solar market assessment Tanzania](#)

⁹³ DEVCO (2020), [Energy Efficiency in Tanzania](#)

⁹⁴ GCF (2021), [Tanzania GCF AE](#)

⁹⁵ Ministry of Environment, Climate, Tourism and Hospitality Industry (2018), [National Climate Policy](#)

national budget which will finance the climate strategies and the implementation of this Policy. Among other things, it aims to channel funds to support projects in climate change mitigation, enhance the country's capacity to engage in carbon market activities, strengthen the viability of domestic carbon asset production and increase access to international carbon markets and green bonds; build capacity to access international climate funds, and establish 0.005% levy of net profit for industries towards national green growth.

In 2019, Zimbabwe put forward the **National Renewable Energy Policy (NREP)**⁹⁶. Through the policy, Zimbabwe planned to set up the **Green Energy Fund of Zimbabwe (GEFZ)** to extend financial assistance for setting up projects relating to new and renewable sources of energy and other sustainable energy projects such as **Demand Side Management (DSM)** initiatives, exploring both domestic and foreign financing resources. Among others, the Fund will give **concessional loans** and encourage projects to tap funding from pension funds, insurance funds and bond markets. Also, it was proposed that the Fund should be managed by the **Infrastructure Development Bank of Zimbabwe (IDBZ)**.

In 2019, IDBZ was in the process of establishing a **Climate Finance Facility (CFF)**⁹⁷ which is essentially a ring-fenced Fund dedicated to financing green projects in Zimbabwe in the priority areas of renewable energy, **energy efficiency**, irrigation schemes, waste management systems, etc. The CFF adopts a **blended finance** approach where concessional finance is provided along with incubation to renewable energy project sponsors and entrepreneurs. The project proposal was supported by UNDP among others. Meanwhile, the **National Climate Fund (NCF)** which will act as a financing mechanism for priority climate change actions and interventions was still at the consultation stage.

In July 2019, Zimbabwe removed **import duties** on all solar-related products ranging from batteries to cables. The government also introduced a new policy that requires all newly constructed infrastructure to install solar systems. This policy is aligned with the government's plan to promote local production as well as importation of solar equipment.

In 2020, the **Ministry of Energy and Power Development (MOEPD)** started developing the **National Energy Efficiency Policy (NEEP)**. The draft NEEP says that Zimbabwe shall establish and develop mechanisms and regulations targeted at MEPS for selected buildings, vehicles, technologies and appliances in the country. These shall include residential refrigerators among others.

In 2021, the **Infrastructure Development Bank of Zimbabwe (IDBZ)** was accredited by the **Green Climate Fund** as **Direct access Accredited Entity (AE)**⁹⁸. IDBZ was granted basic fiduciary standards and accredited by GCF for project management. IDBZ can access **loan, equity, and guarantee** from GCF.⁹⁹ The loans the IDBZ offers are project finance and equity, and mortgage

⁹⁶ Ministry of Energy and Power Development (2019), [National Renewable Energy Policy](#)

⁹⁷ [Catalysing Investments in Climate and Sustainable Energy for Productive Use and The Achievement of the SDGs in Zimbabwe \(2019\)](#)

⁹⁸ <https://www.greenclimate.fund/countries/zimbabwe>

⁹⁹ GCF (2021), [Zimbabwe local GCF AE](#)

finance on housing projects. The Bank has a **green credit line** and expressed interest to finance clients' investments in energy-efficient appliances such as refrigerators. IDBZ has been involved in a number of energy-saving projects already. IDBZ also provided finance for the roll out of the **Zimbabwe Electricity Distribution Company (ZETDC) prepaid meter project**¹⁰⁰.

As of 2021, according to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, financing mechanisms for energy efficiency activities are not available in the residential, commercial services and industrial sectors in Zimbabwe.¹⁰¹

2.2 National framework

Climate mitigation finance initiatives (i.e., energy efficiency, renewable energy, energy access, etc.)

According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, **financial and/or non-financial institutions offer financial products for energy efficiency investments** in the residential, commercial services and industrial sectors.

In 2015, energy efficiency initiatives at national level included the intention from the Government of Zambia to phase out the use of incandescent bulbs in the country, the introduction of **tax waivers** on importation of **energy efficient equipment** (i.e. SI 32 & 33 of 2008), the introduction of **prepaid metering system** for public and private buildings, free distribution of Compact Fluorescent Lamps by the utility (i.e. ZESCO Limited), free energy audits by ZESCO limited, the introduction of low power factor surcharge for large power users (industry, mining, agriculture), and energy saving awareness campaigns (e.g. commemoration of annual energy Week.). **No specific financing mechanisms** existed to promote energy efficiency programmes. Energy efficiency activities were **funded from the national budget and the utility**.¹⁰²

In 2016, the Increased **Access to Electricity and Renewable Energy Production (IAEREP)** project aimed at increasing access to clean energy, promoting renewable energy production and energy efficiency. In the first phase, the Zambian government provided support to public institutions to develop and/or revise the legal and regulatory framework for the deployment of renewable energy and energy efficiency. The second phase of the initiative, launched in August 2019, provided capacity building for public and private organisations involved in renewable energy deployment and energy efficiency solutions in Zambia. In 2021, the European Development Fund (EDFF) provided a EUR23 million **grant** to support the third phase of the IAEREP programme which intends to stimulate the emergence of **sustainable business models for energy services** to promote the use of renewable energy and energy

¹⁰⁰ IDBZ (2021), <https://www.idbz.co.zw/project-operations/idbz-projects/zetdc-prepaid-metering-project>

¹⁰¹ WBG (2021), [RISE Zimbabwe](#)

¹⁰² Status of Energy Efficiency Implementation in Zambia (2015), [presentation](#)

efficiency at the national level and encourage the private sector to participate in the rural electrification programme.¹⁰³

In 2016, **payroll lending** accounted for a third of all loans in the Zambian banking system and had emerged as the largest contributor to commercial bank loan portfolio growth every year since 2011. For several banks, **payroll loans** also known as **salary backed loans** or **payday loans** or **salary-based loans** accounted for well over half of their total loan book. Government employees were responsible for nearly three quarters of outstanding loan schemes in mid-2014 and had the highest incidence of multiple borrowing. Though, the Banking and Financial Services Act limited the total amount of debt repayments and other deductions to 60% of gross income, leaving a minimum of 40% of gross pay as take-home or disposable pay.¹⁰⁴

In 2017, the **Beyond the Grid Fund for Zambia (BGFZ)** started supporting private companies to offer a range of innovative products and approaches to promote clean, modern and reliable energy affordable energy solutions. The core of the BGFZ was a EUR20 million **results-based “social impact procurement” fund**. Unlike traditional concessional financing, the BGFZ operates rather like a **traditional public procurement**. Rather than a distinct physical asset or service, the BGFZ is procuring energy services for Zambian consumers. The programme is not buying the energy services on behalf of customers; rather the fund closes the “viability gap”, on a per-connection basis, incentivising rollout and scaling up in areas that would – in the absence of the BGFZ – not represent viable markets for companies. Among others based on energy data and intelligence geospatial systems, the programme developed a **PAYGO** energy system in partnership with MTN, a mobile telecommunications company, providing solar home systems to off-grid rural Zambian households.¹⁰⁵

In 2017, Zambia started banning importation of incandescent bulbs, while at the same time distributing 5 million energy efficiency bulbs. **Tax incentives** for LED lights were introduced in 2018. To complete the switchover, ZESCO planned to spend a total of US\$ 20 million to distribute the free LED bulbs in exchange for conventional ones.¹⁰⁶

In 2018, there was a growing presence of financial service providers like **savings and credit cooperative society (SACCO)** and several **informal rotating savings and credit groups** that benefited the rural population and provided relatively **cheaper credit, e.g., for procuring energy products**.

In 2018, the utility (i.e., ZESCO) was carrying out awareness and information campaigns and providing energy tips to manage the consumption and the demand for electricity in Zambia. Among the appliances targeted residential refrigerators. **Time-of-use tariffs (TOU)** were introduced for electricity consumption defined as peak, off peak and standard time.¹⁰⁷

In 2018, GCF approved the US\$52 million **Zambia Renewable Energy Financing Framework** which aims at supporting the Government of Zambia catalysing private investment in the renewable energy sector to boost electricity generation and diversify the country's energy mix. This initiative will support the Government of Zambia's **Renewable Energy Feed-in Tariff**

¹⁰³ AEP (2021), [IAEREP programme](#)

¹⁰⁴ FSD Africa (2015), [Review of current payroll lending market in Zambia](#)

¹⁰⁵ BGFZ (2021), [website](#)

¹⁰⁶ LED Inside (2017), [Zambia to Make Complete Switch Over to LED Lighting](#)

¹⁰⁷ Ministry of Energy (2018), [Zambia SE4ALL Action Agenda](#)

(REFIT) policy to develop 100 MW of renewable projects, mostly solar power, through **long-tenor project loans**. It will provide technical assistance to build capacity for rural electrification, and help local financial institutions carry out renewables and project finance. The project has an estimated lifespan of 23 years. GCF injected US\$52.5 million financing in **loan and grant**, while the AE (i.e., AfDB) injected US\$101.5 million co-financing in **loan, equity, and grant**.¹⁰⁸

Clean energy investment volumes grew between 2017 and 2018, from €52.8 million to €62.8 million. In the same period, foreign capital accounted for 79% and 83% of total clean energy investment, respectively. The country's taxation regime is generally favourable to renewable energy technologies, with **no import duties** charged on solar panels, wind turbines or batteries for renewable energy storage. A **VAT rate** of 16% is applicable to wind turbines while solar panels and batteries are charged a zero rate.¹⁰⁹

In 2019, Zambia had a vibrant market for **standalone solar systems** with at least eight prominent companies offering a range of products and services through various business models. These include Captain Electrical, Fenix, Greenlight Planet, Kakula Solar, Solar Village, Sunray, SunnyMoney and Vitalite Group. Demand and uptake is growing steadily. In 2019, 188,718 solar home systems and pico-solar products were sold by companies affiliated with GOGLA and Lighting Global, representing a significant increase from 125,978 in 2018. **PAYGO** based sales decreased from 81% to 67% of total sales between 2019 and 2018, with the difference representing cash sales. Regulatory requirements are generally favourable to standalone solar companies. Licensing for the retail of solar home or pico-solar systems is relatively straight-forward and covers manufacture, supply, installation, and maintenance. Companies involved in imports need a specific licence issued by the regulator. This is required for all shipments of solar technologies into the country and helps the country ensure the quality of imports. Also, the government has proposed a **zero-rate duty** on gas stoves, cookers and boilers in 2019 to mitigate the effects of climate change and promote the use of alternative energy sources.¹¹⁰

In 2019, the EU launched the Zambia Energy Efficiency and Sustainable Transformation programme (ZE2ST) which aimed at mobilising energy savings, energy services and demand side management to make energy efficiency count in Zambia. On the power demand side, **seed money** for early-stage energy efficiency market development intended to help the Government of Zambia enact policy measures and non-market instruments to promote, among others, energy efficient lighting and solar water heaters in the residential sector.¹¹¹

As of 2021, the country counts the **Development Bank of Zambia (DBZ)** as GCF AE. DBZ was granted basic fiduciary standards by GCF. DBZ was accredited for **loan, equity, and guarantee** from GCF.¹¹²

¹⁰⁸ GCF (2021), [Zambia Renewable Energy Financing Framework](#)

¹⁰⁹ GET.Invest (2021), [Zambia Energy Market Information](#)

¹¹⁰ GET.Invest (2021), [Zambia Energy Market Segments](#)

¹¹¹ EU (2019), [Zambia Energy Efficiency and Sustainable Transformation programme \(ZE2ST\)](#)

¹¹² GCF (2021), [Zambia local GCF AE](#)

Retail finance initiatives (i.e., key local financial institutions, consumer loan features, climate initiatives, etc.)

Local financial institutions that offer consumer loans for funding small investment in the residential sector (including energy-efficient technologies) include all the largest banking institutions in the country: Zambia National Commercial Bank (**Zanaco Bank**), **First National Bank (FNB)**, **ABSA**, **STANBIC**.

- **ZANACO Bank** is one of the largest commercial banks in the country. They offer a range of consumer loans products such as¹¹³:
 - **Scheme Loan:** Targeting salaried employees where the maximum allowable loan amount can be up to K 150'000. The maximum loan period is 5 years and the deduction is made directly from the employer. No collateral is required from the client and this loan can be used for any small - middle investment (including appliances) that the client needs.
 - **Xpress Micro Loans:** This is the fastest micro loan that a client can get where the only conditions are that the client is over 18 years old and is a subscriber of the bank for at least 3 months with the Micro Savings and Loans product. Once you have an account in the Micro Savings and Loans, the client can apply for a micro loan that shall be repayable upon 60 days of receiving the funding. Other terms and conditions are evaluated on an individual basis.
 - **Consumer loans:** Targeting salaried clients, where terms and conditions are evaluated on an individual bases.

- **FNB, ABBSA and STANBIC bank offer all a variety of consumer loans such as:**
 - **Personal Loans:** A consumer loan with terms and conditions applicable on individual cases.
 - **Scheme Loans** A loan that targets salaried employees and offers in general better loans conditions due to the guarantee offered by the employer. The repayments of these loans are directly deducted from the payroll and the loan amount can go up to K 400'000.
 - **Revolving term loan:** a loan where the client can redraw the amount they have already paid off or top up after 3-6 months. The loan is flexible, and the client can top up as they go.
 - **Overdrafts:** A credit facility with free interest rate for up to 30 days
 - **Asset Finance:** A loan that is used for vehicles or appliances. Terms and conditions are evaluated on a client basis.

3 Financing Mechanism Options

It is imperative to consider financial mechanism options that facilitate end-users in the residential sector to have access to energy-efficient and climate-friendly residential

¹¹³ Zanaco Bank (2021), [Zanaco](#)

refrigerators (including to some extent off-grid solar refrigerators) and that provide some form of incentives along the demand and supply chain to overcome financial and technology barriers. On the demand side, simple-to-access financial mechanism options with competitive conditions would help to motivate households to acquire high-efficient appliances that can generate important energy savings and micro entrepreneurs who seek off-grid appliances for productive use. Credit is important to facilitate that end-user disburse an amount equivalent or lower to what implies to purchase a second-hand system. On the supply side, the mechanism options aim to engage and motivate providers to sell energy-efficient and climate-friendly appliances (including off-grid solar refrigeration systems) by increasing their sales volume through the provision of credit facilities to their clients.

This chapter provides an overview of financing mechanisms designed to encourage investments in energy efficiency in the residential sector. The chapter describes a selection of two models, which are designed specifically to promote investment in residential refrigerators and align with the country context, targeting on-grid end-users with the possibility to extend it to off-grid end-users too. The list of financing mechanisms is not exhaustive, but provides a selection of the two most promising and widely used models to promote a market transformation towards energy-efficient and climate-friendly residential refrigerators in the region.

After conducting a review of potential financing sources, financing mechanisms, and an evaluation of the market conditions in Zambia through desk-research and in discussions with local stakeholders, it can be highlighted that the following key characteristics need to be considered for financing mechanism options. The following observations shall be considered in the assessment and development of financing mechanism options:

Barriers:

- **Low energy access rate:** There is a large portion of the population in Zambia that can neither access nor afford electrical appliances such as energy-efficient domestic refrigerators due to low electricity access rate overall in the country (38.9% of population), and especially in rural areas (4% of the population). However, it is expected that a small portion of rural end-users without on-grid access might be able to afford off-grid solar refrigerators for productive or personal use if climate-friendly off-grid domestic refrigeration technologies are also eligible for promotion and sales through the financing mechanism. These off-grid technologies are also interesting for on-grid end-users in case of future load shedding or high residential electricity tariffs.
- **Active formal and informal market of inefficient appliances:** There is quite an active formal and informal market of inefficient refrigeration appliances, which is hindering the competition of formal providers to sell new energy-efficient and climate-friendly appliances.
- **Lower demand for EE appliances:** Both the informal market of second-hand appliances and the formal market provide inefficient systems to the market that are cheaper to purchase but more expensive to operate due to lower demand for energy-efficient appliances.
- **Price sensitivity of end-users:** End-users in the residential sector are very sensitive to price. Households mainly prioritize a low-price domestic appliance over energy-efficiency

and operational costs due to limited awareness on electricity savings (97% of the surveyed HH in Zambia were not aware of Energy Efficiency standards in appliances).

- **Prioritisation of cash payments:** Households use mostly cash for their purchase of appliances. The use of loans is still marginal (only 11% of surveyed HH used loans in general)
- **Lower credit access for self-employed end-users:** Households whose income is mainly generated from self-employment (i.e., about 26% of surveyed households in Zambia) might face difficulties to guarantee a stable income; hence, hindering their ability to access credit through standard consumer loan products.

Opportunities:

- **Salaried employees as lower-risk market segment:** A considerable number of households work for the Government (38% of the surveyed respondents) or the private sector (36% of the surveyed respondents) and withdraw their income from salaries and benefits. Local financial institutions prioritise lending to this lower-risk segment of the population whose loans are directly or indirectly backed by their salaries.
- **Important energy cost-saving potential:** There is an important energy cost-saving potential when comparing a second-hand domestic refrigerator versus a market-available energy-efficient system. The energy cost-saving potential is even larger with solar refrigerators which are not consuming any electricity compared to any on-grid domestic refrigerator model.
- **Large percentage of prepaid metering customers:** In Zambia end-customers are billed either through pre-paid or post-paid meters. All residential customers use pre-paid meters in Zambia, apart from customers in the maximum demand category (with demand above 16 kVA) who are on the post-paid metering system¹¹⁴. Distribution companies prefer pre-paid electricity meters.
- **Large electricity bills:** Due to the increased tariffs of electricity in June 2020 by the ERB, electricity bills are higher for the average HH in Zambia.
- **Competitive appliance market:** The market in Zambia is dominated by refrigeration appliances manufactured and imported from South Africa, according to the market assessment. There is no local manufacture of residential refrigerators in Zambia. The main importers of domestic refrigerators active in the Zambian market include Southgate Investment Limited, Hazida Group, Radian Stores Limited, Kohinoor, Home Pimp Limited, Dergham Enterprise, etc. As for the upfront cost of an off-grid solar refrigerator, it is expected to be significantly more expensive than an energy-efficient domestic refrigerator of similar volume. There isn't local manufacturing of domestic refrigerators nor off-grid solar refrigerator technologies in Zambia. Upfront cost is almost 3-4 times higher for an off-grid solar refrigeration product than average retail price for a domestic refrigeration appliance of similar volume.
- **Unmatched investment opportunities:** There is a lack of visibility and incentives from lenders to provide green consumer financing to households to promote investment in

¹¹⁴ Market Assessment (2021)

energy-efficient appliances specifically. Banking institutions and MFIs offer a large selection of consumer loans that are not for specific assets and subject to strict eligibility requirements.

- **Strong and competitive salary loan market:** There is a strong and competitive market on loans to employees through wage deductions (e.g., ZANACO, FNB, ABBSA, STANBIC, etc.). Most banks in Zambia offer this service to provide credits to employees of profiled public and private institutions. These are either backed or repaid by the employer deducting the repayment from the periodic salary of the employee. Loans are usually used to buy cars and other assets or to provide cash to the employee to cover family needs.

Therefore, discussions shall lead to the exploration of financing mechanism options including a combination of financial and non-financial components that are tailor-made to the context in Zambia to facilitate the access to finance to end-users for high-efficiency and climate-friendly domestic refrigerators including some off-grid solar products too.

3.1 On-bill financing

The model. On-bill financing is an innovative approach to financing energy efficiency that has proven to be effective for smaller investments and in increasing uptake of energy-efficient equipment. The model enables energy utility customers to acquire energy-efficient equipment, such as residential refrigerators, and to pay for the equipment over time through their monthly utility bills. In many cases, on-bill programmes are designed to deliver immediate overall cost savings from the very first day without the need for the customer to invest (bill neutrality). This means that the energy cost savings equal or exceed debt service, resulting in a lower total bill (debt repayment and electricity) after retrofit.

Through on-bill financing, utility customers can purchase efficient equipment with their regular technology provider, who facilitates the credit request. There are several ways to structure on-bill financing models:

- In one approach, the utility incurs the capital cost of the energy efficiency upgrade, which is repaid through the utility. The utility thereby effectively takes on the role of a financing entity in addition to selling electricity.
- Another approach, sometimes referred to as “on-bill repayment”, the upfront capital is provided by a third party, typically public or private financial institutions, rather than the utility. The utility acts as a repayment conduit, collecting the payments through the electricity bills for the original lenders.
- It is also possible to tie the cost recovery for an efficiency investment to the property’s meter rather than the property owner, which means that tariffs remain in force regardless of a change in occupancy. These tariff-based on-bill models allow customers to make investments that may outlive their residency at the property, in which case the next owner can either repay the equipment in full or continue with monthly on-bill payments

Benefits. The biggest customer benefits of this model are the avoided upfront capital expenditure, and the ease of repayment. This can help motivate investments that may not otherwise happen. The model can also enable access to finance for customers who are not able to qualify for traditional financing options by broadening customer eligibility. Indeed, on-bill financing models tend to have low default rates. This is because the loan has bill neutrality, as well as due to people's tendency to prioritise the payment of their utility bills and, where allowed, the utility's ability to shut off service in the event of non-payment.

The increased energy efficiency on the demand side benefits utilities from the avoided cost and risks of additional building of power plants, new power lines, substations, and transformers. Energy efficiency can also reduce a utility's cost of complying with major national or international environmental rules. In some cases, the on-bill mechanism is a good opportunity for utilities to make inroads into financial services benefiting from their secured clients-base who are already making frequent payments for their utility services.

Risks and challenges. The main risks and challenges to establish an on-bill financing mechanism are:

- Engaging the utility to support the transition towards energy efficiency and/ or to serve as a financier.
- Evaluating credit risk of customers through their historical electricity consumption and payments.
- Changing the utilities data and information management system to allow for on-bill repayment.
- Customer risk of power shut-off. This can be mitigated by enabling customers to obtain assistance with complaints, raise legitimate issues related to the loan and the project funded by the loan, and access to a dispute-resolution process.
- Managing the contractor network who might misinform the clients.
- Repayment allocation (i.e., whether utility or lender is paid first) can be an issue when customers partially pay their bills.

Supporting mechanisms. On-bill financing can be supported by capitalising new on-bill loan funds, through credit enhancement for existing on-bill funds, such as loan guarantees, and by positive lists. The success of the model depends mostly on the interest and engagement of the utility, which in many cases is in part or in whole, government owned. The government can support the model by capitalising new on-bill loan funds, providing credit enhancement for existing on-bill funds, such as loan guarantees. Governments and development agencies can play important roles by providing technical support in setting up the model or providing green credit lines.

Proposed structuring of on-bill financing for Zambia. The following on-bill financing mechanism option including key components is proposed for further consideration in Zambia:



Figure 1. Financial and non-financial components of on-bill financing mechanism

1. Green loans and on-bill financing as a low-risk repayment mechanism. Zambia’s banking system is competitive. Most of the banking institutions, as well as few microfinance institutions, offer consumer loans or credit facility, which are sought after by households to acquire movable equipment and appliances. In particular, consumer loans are intended more for employees who have a guarantee through the domiciliation of their remuneration, while the other applicants must present a guarantee acceptable to the banking institutions (collaterals). The terms and conditions differ from one institution to another. Consumer loans and credit facilities mainly target employed individuals or homeowners, who can more easily provide sufficient credit capacity or some collaterals, reducing the perception of risk for local financial institutions (LFIs), but limiting the attractiveness of such a product for self-employed or non-salaried households.

Therefore, the recommendation is to seek partnerships with one or two key local financial institutions (i.e., banking institutions such as Zanaco Bank, FNB, ABBSA, STANBIC Bank, or MFIs) in terms of number of retail customers, and if possible, existing partnerships with technology providers (i.e., distributors, retailers), and climate initiatives. Then build on the existing offer of consumer loans, credit facilities (e.g., scheme loan) in place and adapt the existing agreements and processes in place to comply with robust monitoring, reporting, and verification (MRV) measures to collect data on emissions, mitigation actions and support. Green loans and credits will be specifically dedicated to finance certified energy-efficient and climate-friendly residential refrigerators (including some off-grid refrigerator products) for households through the mechanism.

Through these green loans or credit facilities, the burden of up-front cost is reduced for households wishing to acquire a new appliance. Coupled with a positive list of certified

appliances and partner technology providers, and a simple repayment recovery mechanism such as through household electricity consumption, the perceived default risk is much lower for partner local financial institutions wishing to favour green investment in the residential sector, while households face a simplified credit application procedure, providing them with more liquidity and reducing their borrowing costs.

Through the operationalisation and pilot of the financing mechanism, partner local financial institutions will be able to quickly build a green loan portfolio with support from external donors such as MDBs. Indeed, local financial institutions might benefit from de-risking instruments (i.e., credit guarantees) and green credit lines, access to revolving loans funds, grants, or technical assistance, which will enable partners to offer concessional on-lending to end-users (i.e., longer tenor periods, lower interest rates) who invest in eligible energy-efficient assets in the residential sector. This will boost the visibility and uptake of the mechanism in the market. In return, the financing mechanisms will fast-track the disbursement of existing green credit lines provided by MDBs or other donors. In a first phase, the operationalisation and initial piloting of the mechanism will target on-lending to specific low-risk high-return market segments of the population (e.g., on-grid urban households and micro entrepreneurs). Once partner local financial institutions are comfortable with the risk level of their green loan portfolio, the mechanism will then be eventually expanded to other eligible climate technologies (e.g., off-grid solar refrigerators, SHS, etc.) and target market segments (e.g., rural communities, off-grid rural households, and micro entrepreneurs) who are generally perceived as having a higher risk profile and lower credit capacity.

2. Eligibility assessment and bulk rebate negotiations with technology providers. Through the project, Zambia is embarking onto an ambitious programme to develop, among other things, MEPS, and a labelling scheme for residential refrigerators.

Through the mechanism, technology providers first apply for participation in the mechanism and their appliances must comply with the policy framework and beyond to be promoted and sold through the mechanism. The Government of Zambia (e.g., Ministry of Energy, etc.) or any non-commercial institutions (Energy Regulation Board) certify the residential refrigerator technologies (i.e., brand models) submitted for review by the technology providers that are willing to supply new energy-efficient and climate-friendly residential refrigerators in the market through the mechanism. Technology provider applicants and their products must comply with a list of commercial and technical eligibility criteria set by the entity playing the compliance role in the mechanism. Eligibility criteria may include type of products, age of products, product size, refrigerants, GWP and ODP limits of foam blowing agents, minimum warranty, safety certification, energy efficiency (higher than MEPS), eligible brands, production duration, price, etc. The scope of the criteria can be broadened to include energy-efficient and climate-friendly off-grid solar refrigerator technologies too.

Once the brand models of residential refrigerators are deemed eligible, bulk rebates are negotiated with the eligible retailers or distributors of complying technologies. After successful negotiations are concluded, they have to agree and sign terms and conditions for participation in the mechanism, as well as finance agreements with each partner local financial institution to themselves become partners of the programme enabling the sales and

promotion of certified energy-efficient residential refrigeration through on-bill financing. This might come with financing or de-risking support (i.e., green credit lines, revolving loans funds, credit guarantees) from MDBs and credit recovery from the relevant partner electricity distributors or utilities (e.g., Local Authorities and Regional Councils, ZESCO). The aim of the partnership with the technology providers is not to procure the products but to negotiate with distributors and retailers a minimum percentage rebate on the sale of each certified brand model through the mechanism. Part of the rebate is used to lower interest rates and increase tenor periods offered by partner banking institutions to consumers through credit facilities and another to incentivise consumers and offer vouchers or cash-back in exchange for the collection and disposal of end-of-life appliances through the programme. The benefit for the partner distributors and retailers is that the programme will aggregate demand for premium brand models and offer support to increase significantly the sales in energy-efficient and climate-friendly refrigeration technologies (which are difficult to sell due to upfront cost and competition with inefficient equipment) through facilitating access to credit to the certified products. If sufficient, the rebate is also used to cover the costs related to collection and disposal of the end-of-life equipment that is turned-in by households in alignment with e-waste management regulations in the country. Bulk rebate negotiations with providers are a practice that was proved successful in Ghana, Rwanda, and Senegal to facilitate access to energy efficient cooling appliances to households through ECOFRIDGES and the Rwanda Cooling Finance Initiative.

3. Marketing and Promotion of qualifying residential refrigerators. There is the need to implement a marketing and promotion strategy to showcase the energy-efficient and environmentally-friendly residential refrigerators that are deemed eligible for the programme, explain the financing options and economic benefits to households, and connect partner stakeholders with customers. It is recommended that the promotion strategy is coordinated by partners (local financial institutions, technology providers, utility), with some advisory support and guidance from institutions which are playing the main compliance role and providing key support in the mechanism to provide credibility and international visibility. It is important to show in the market that partners that are part of the programme have a distinction from the compliance entities and they belong to a group of trusted partners financing and offering energy-efficient and environmentally-friendly domestic refrigerators. This will help build trust in the mechanism and products.

4. Positive list. It is necessary to build partnerships with at least one banking or microfinance institution to provide consumer loans or credit facilities to acquire new energy-efficient and climate-friendly refrigeration systems. However, at the moment, consumer loan products and credit facilities that are offered by banking institutions are used by households to finance any kind of products (including inefficient equipment) without much restriction. Therefore, it is important that the programme generates a list of certified brand models of domestic refrigerators that are certified and sold by partner distributors and retailers. Only these certified brand models registered on a positive list are eligible for financing through the mechanism. The list should be aligned with criteria that increases ambition in terms of energy-efficiency and lower global warming potential refrigerants, such as through the [United for Efficiency Model Regulations](#). Also known as a qualified product list or positive list, it is

informed by eligibility criteria for products to qualify to participate in the programme that is prepared by the main compliance entity (e.g., Ministry of Energy, GCF, else), refined based on inputs from local experts in Zambia, and endorsed by partners. The positive list can be easily updated with new certified brand models and technologies (e.g., off-grid solar refrigerators, solar water heater, lighting, rooftop solar PV, air conditioning, etc.) as the programme goes.

5. Monitoring, Reporting, and Verification (MRV). Partners have to comply with the terms and conditions (T&C) for participation in the mechanism including robust MRV guidelines and monitoring and evaluation of customer applications for participation. MRV guidelines are used to estimate the Greenhouse Gas (GHG) emissions impacts attributable to the sales of certified models in lieu of a typical unit in the market, and a set of result indicators. MRV activities focus for instance on tracking GHG emission reductions, funding mobilization, and target co-benefits, which are directly related to the intended impact of the project. The general methodologies, key indicators that will be tracked, as well as the data collection methodologies and responsibilities will be detailed in the guidelines. The findings will be used in reporting to financiers and donors, for communications and outreach, and to help evaluate progress on an ongoing basis.

Also, providers of certified products would have to submit a conformity assessment report that would be checked by the main compliance entity (e.g., MOE etc.). A subset of these products would undergo random sample testing to verify claims in the conformity assessment report.

It is recommended that partner banking institutions and technology providers adapt and eventually integrate their information management systems to monitor and report on the financing and sales of certified brand models through the mechanism closely with the utility, which manages the credit recovery mechanism.

6. Collection and disposal. A requirement for sales of the energy-efficient and environmentally-friendly domestic refrigerators and access to green loans and credit facilities should be conditioned on the turn-in, collection, and disposal of end-of-life refrigerating appliances. This includes agreements with partner providers and local financial institutions may include a clause that the household can only access the rebate if an end-of-life equipment is turned in, collected and disposed properly. Two approaches are proposed for efficient collection and disposal; a) the procedure in place that is used by partner providers to deliver and install the new equipment can also be used to collect and dispose of the old equipment. The partner provider in charge of delivering the new equipment would then pay a small payment (coming from the agreed rebate) to cover the costs associated with the disposal to eligible e-waste management companies. In the absence of delivery and installation services from partner providers, eligible e-waste management companies are used to collect and dispose of end-of-life equipment against a commercial transaction. The e-waste management company benefits from a payment coming from the rebate. In both cases, the end-of-life equipment is sent to any existing e-waste management facility where potentially harmful gases can be disposed of in a safe and environmentally friendly manner.

On-bill financing is a low-risk high-feasibility repayment mechanism. It aims to create a win-win situation for the Government of Zambia, households, the utility, partner local financial institutions, and partner technology providers with potential support from GCF, CTCN, MDBs, or others.

On the demand side:

- Households wishing to take advantage of the attractive conditions of the programme announce themselves with a partner provider or a partner financial institution submitting an application to acquire an eligible equipment on credit to a partner banking or microfinance institution, in exchange of an agreement to reimburse credit through their electricity bill with the utility.
- Households, customers of the utility then refund their credits on their electricity bill for post-paid customers or pre-paid meters for prepaid customers. All the domestic clients are in a prepaid metering system in Zambia (apart of the high demand clients that consume more than 16 kVA which are on the post-paid metering system). On-bill financing through prepayment metering systems is easier to implement than through post payment metering systems, due to the greater effectiveness and flexibility of prepayment information management systems, lower reputational risk and regulatory costs for the utility. Indeed, the utility does not have to interrupt electricity service when facing non-repayments from prepaid customers if credit repayments are prioritised over electricity consumption in the prepayment metering systems of eligible customers.
- While the utility reimburses on a regular basis partner local financial institutions with whom it has entered into an agreement for its customers.
- The utility thus guarantees the repayment of household loans by enabling the linkage between electricity consumption and loan repayments, which make it easier for households to obtain a green loan at preferential conditions and reduce the need to provide additional collaterals or loan guarantees for households.

On the supply side:

- The proposed financial strategy will address the risks associated with the lack of trust in reliability of different technologies and contracts, by encouraging partner providers of certified brand models to provide and install energy-efficient at lower costs through cost effective support mechanisms
- On the one hand, the use of a positive list directs households to the formal market and thus ensures that the technologies acquired will provide consistent and high-quality results in terms of energy savings, in line with the programme.
- Moreover, following bulk rebate negotiations with distributors and retailers of certified brand models, partners will commit to indirectly reducing the sale price of certified energy-efficient and climate-friendly appliances eligible for the programme through vouchers or cash-back and concessional green credit conditions enabling payment in instalments with partner banking or microfinance institutions.

- Distributors or retailers of eligible domestic refrigerator technologies based on the set of product eligibility criteria voluntarily apply to enter into the list of partners and gain access to the demand generated by the financing mechanism.
- Partner distributors and retailers benefit from the sale, installation and maintenance of certified energy-efficient and environmentally-friendly equipment.

The on-bill financing mechanism option is a unique solution that can be used by partner technology providers to promote and sell certified highly-efficient and climate-friendly appliances as well as by partner financial institutions seeking to provide green loans to households for the purchase of products generating significant energy savings and climate benefits. The power utility (ZESCO) and MOE act as facilitators and intermediaries of choice, through coordination and market surveillance, implementing and strengthening their positions as key actors in energy efficiency in Zambia. They promote certified systems and partners and are also able to refer potential household customers to partners. On-bill financing will increase the supply of green credit to support energy efficiency in the residential sector, greatly facilitate access to efficient and climate-friendly domestic refrigerating appliances, open access to new markets for technology providers and will promote the modernization of the utility as the electricity provider company of the future through this national energy efficiency programme. The following financial structure is recommended based on the market assessment.

On-bill financing is a low-risk mechanism supported by modern technology. Adapting the existing consumer loans or credit facilities to make it accessible to a larger number of households requires adapting and simplifying the conditions for allocating loan or granting credit, by unlinking them from the condition of domiciliation of household income. Indeed, a simple and effective solution is to rethink the recovery mechanism for the loan repayments and link repayments to household prepayment metering systems instead, in order to broaden the outreach of the programme. This offers a similar or improved management of risks for the partner local financial institutions. The mechanism combines various complementary financial and non-financial components and offers a simple credit recovery mechanism.

On-bill financing is an innovative mechanism that proves very effective for smaller investments and is therefore ideal for households who are customers of the partner utility and wish to replace their domestic refrigerating appliances for new energy-efficient and climate-friendly ones. The mechanism allows these households to repay green loans or credits obtained from partner financial institutions and vendors through their prepaid metering systems with the utility.

Targeting prepaid metering increases the feasibility, management, and efficiency of operationalising the mechanism for the utility and adapting the repayment interface for households, increasing the incentives for households to make repayments on due date. Indeed, households tend to always prioritize their electricity consumption payments because they do not want their access to electricity to be ceased. The linkage between electricity consumption and credit repayments thus lowers default as the credit repayment is prioritised over the electricity consumption payments in the prepaid metering systems.

Operationalisation of the on-bill financing mechanism requires significant support from the partner power utility (ZESCO). Among other things, the utility adapts its information management system and prepaid metering system. In return, ZESCO switches from being a simple electricity provider to a provider of electricity and financial services and also has the opportunity to control the electricity consumption of its customers through this energy efficiency initiative, reducing country peak demand and savings on very expensive investments in avoided additional generation capacity. In the preferred approach, ZESCO does not provide financing itself, but is supported by partner local financial institutions, which provide green consumer loans or credit facilities with partner technology providers to households through on-bill financing. The loan is not registered on ZESCO and it does not bear the default risk. ZESCO is not directly responsible to assess the creditworthiness of beneficiaries but help partner banks by leveraging data on electricity consumption and payments from customer applicants. Partner technology providers and banking or microfinance institutions are the main interface with the beneficiaries. Indeed, the partner local financial institutions provide the financing and assess credit risks for beneficiaries and on-lend to them according to set terms. ZESCO in return collects the payments through the purchase of electricity, where a portion is sent back to the partner local financial institution to pay back the credit. Customer applicants are in agreement to share customer data with partner local financial institutions and reimburse credit through their prepaid metering system with the utility. Approved customers then pay for electricity consumption including contractually agreed deductions from the prepaid metering system. ZESCO collects credit repayments of loans on behalf of the partner local financial institutions and returns these payments to the partner financial institutions monthly.

Simplified customer application and credit risk evaluation. An utility customer wishing to benefit from the mechanism simply gets a pro forma invoice from a partner providers selling certified brand models and submits an application to a partner local financial institution, which verifies the eligibility of the household by directly or indirectly consulting ZESCO applicant customer data (e.g. customer names, contract number, metering number, phone number, email address, electricity consumption history, payment transaction history, etc.) combined with the partner's standard credit data from the applicant. Due to the confidentiality and data privacy policies in Zambia, it might be recommended that ZESCO leverages directly the applicant's customer data in its management information system to evaluate the applicant's credit risk using a simple algorithm combining history of customer data. Doing so, the utility does not have to share the detailed customer data, but instead shares an aggregated credit rating for each applicant customer with the partner local financial institutions.

Semi-integrated systems between ZESCO and partner local financial institutions. ZESCO customers refund their electricity credits through their prepaid metering systems while the utility, on a regular basis, reimburses partner local financial institutions with which it has entered into repayment agreement for its customers. In order to achieve this, there needs to be either systems integration for an online process or a paper-based approach. It is recommended that the lead compliance or implementing entities develop and manage the interface between the customers and the programme with support from ZESCO, partner

technology providers, and local financial institutions for increased system integration. This takes the form of an online shop for customers wishing to apply for the programme.

Semi-automated credit recovery processes between ZESCO and partner banks. With semi-integrated systems, it is recommended that partner local financial institutions and the utility follow semi-automated processes rather than fully automated processes to avoid further development related costs. When the utility's customers are approved for a credit from a partner banking institution, a list of names is shared by email with specific information on allocated credit that ZESCO needs to recover on an agreed frequency. This can also potentially be done by logging into ZESCO system and uploading the file with the list on the utility server. After getting approved credit customers into the utility system, the credit recovery is then automatic. Precisely, once contacted by a partner banking institution, ZESCO fetches for approved customers in its database one by one or adds a file of approved customer names by the partner banking institution and the system connects it automatically. Partner banking institutions can gain limited access to the utility's system in which they input all the required credit information allocated for each approved customer. Then, the utility's system carries the information into the prepaid metering payment system.

Bill repayments and credit recovery. When it comes to the customer's bill repayments and credit recovery on behalf of the partner bank, ZESCO shall confirm bill repayment transactions and credit recovery to partner banks are feasible and can be accommodated. ZESCO shall also confirm that customers are attached to a single metering system. The tracking of customer credit would be feasible because credit repayments are linked with a single customer account identification in the utility's system. The utility's systems might allow various types of customer payments for electricity bills including credit recovery. For instance, customers can either pay by a number of instalments or by a percentage amount charged to a specific meter, in accordance with the type of meter in place. Customers can easily identify the number of instalments or percentage amount charged that is needed to pay back the credit. Nevertheless, to add an extra layer of control, it is recommended that the draft loan agreement with the partner local financial institutions for approved customers stipulates clearly terms, conditions, and obligations, when it comes to loan repayments. To mitigate the risks where landlords might not notify new tenants that an ongoing credit is linked to the new meter or tenants who might not notify a change of address, it is recommended that ZESCO provides a notification to metering customers warning tenants that there is a « credit outstanding of a certain value of money » on the meter. The utility shall confirm whether it is technically possible to flag this directly on the prepaid meter or to send SMS/email notifications to new tenants.

Digitisation of customer application process and MRV into an online shop. The development of an online shop including smart customer interface and customer application embedding credit risk evaluation tool is recommended to lower the entry barriers for interested households and administrative costs for partners. In this case, the application process is done through an online shop where the household selects the desired certified brand model and submits the application directly online. Partners' information management systems are fully integrated, while processes are fully automated. Such a centralised digital solution also facilitates the monitoring, reporting and evaluation as well as MRV of the programme.

Key national stakeholders. To develop the on-bill financing mechanism option in Zambia, the following public and private stakeholders are important and are recommended to be closely involved.

- **Ministry of Energy (MOE).** The support from the Government of Zambia is essential for the success of the on-bill financing mechanism option in Zambia. MOE can play a key compliance role in the development and implementation of the mechanism, coordination with public stakeholders, facilitating access to the programme to new partners and technologies, promoting certified domestic refrigeration equipment and partners, and directing households towards the programme. MOE can be central in coordinating and regulating the market and thus offers quality control to households and different stakeholders involved in the proposed financial mechanism when it comes to monitoring, reporting and verification as well.
- **ZESCO.** The partner power utility plays a central role in on-bill financing by collecting credit repayments from customers in their respective regions. ZESCO must adapt, set up, manage and maintain the credit recovery mechanism. By supporting the programme, ZESCO helps reducing the peak electricity consumption of its customers and thus avoiding the costs associated with running costly additional generation capacity during peak load and the construction of future additional power plants which would require expensive investments.
- **Partner financial institutions.** The partner local banking or microfinance institutions play a key role in developing, implementing, financing and promoting the mechanism. Partner local financial institutions adapt their offering of consumer credits to propose green credits, while MDBs or GCF might eventually support them with green credit lines, revolving loans funds, or credit guarantees to help mitigate any credit risk and improve concessional lending terms to households. Other key donors such as CTCN could provide technical assistance to promote and develop key components of the mechanism, as well as streamline and digitalise the system integration and processes. MDBs and GCF can advise partner local financial institutions and structure products to reduce their risks and improve their credit terms by eventually offering concessional green credit lines or credit guarantees to finance or de-risk energy efficiency investments starting with energy-efficient and climate-friendly domestic refrigerators and providing technical assistance to support the promotion and marketing, as well as the operationalisation and digitisation of the mechanism.
- **Partner technology providers of energy-efficient domestic refrigerators.** In order to implement the on-bill financing mechanism option to accelerate the adoption of energy-efficient domestic refrigeration equipment, providers must be involved from the beginning as they will play an important role in supplying the market and serve as technical experts. In the proposed on-bill financing mechanism, they are the main interface of the programme, allowing the interested household to consult a catalogue of certified and eligible equipment and get a pro forma invoice and credit application material to be then submitted to partner banking institutions and co-verified by ZESCO and the lead compliance entities such as MOE. Once a customer is declared

approved, a partner provider of certified brand model will dispatch and install the household equipment on credit and eventually collect the turned-in end-of-life equipment into any eligible e-waste management facilities for disposal. As the mechanism is being scaled-up to other market segments, technology providers of off-grid solar refrigerator technologies might be invited to join the programme.

- **Households and micro entrepreneurs.** The principal beneficiaries of the proposed mechanism, on the demand side, are households including micro entrepreneurs that must be customers of ZESCO and thus connected to the grid. Households have been involved from the beginning and engaged through surveys to ensure that the programme corresponds to their preferences and expectations. Credit and participation conditions to the proposed financial mechanism must be easily accessible, concessional, and transparent, while the application process must be as simple and efficient as possible. Advantages of the programme should be explained through target communications and awareness campaigns. Although the market assessment has already shown findings about households' preferences and expectations, households should be informed continuously on the financial mechanism progress and be invited to provide feedback directly when possible.

3.2 Green on-wage financing

The model. Green on-wage financing is an innovative mechanism offering flexible and simple repayment terms for sustainable energy products through salary deductions. Green on-wage financing is a consumer finance product designed to meet the short- and medium-term financing needs of salaried employees of public and private institutions that are profiled or have a business relationship with local financial institutions.

First, local financial institutions enter into consumer finance agreements with technology providers and set up credit facilities. Parties agree on a rebate scheme of the amount of a minimum set percentage of the selling price of the selected products sold by the technology providers to qualified customers. Local financial institutions use the rebate received from technology providers to cover the financier's cost of funding to offer short- and medium-term unsecured consumer loans with 0 % interest rate, usually with tenor periods up to 12 months, to qualified salaried employees. This typically supports small investments of up to US\$ 1500 corresponding to the sales of energy-efficient and climate-friendly systems.

Once a qualified salaried employee has successfully lodged a customer application with the selected technology provider and received in return a pro forma invoice, the customer can proceed with the credit application directly with the selected local financial institution. Once approved, the financier is able to credit the account of the technology provider with the amount corresponding to the sales price of the selected product minus the rebate almost immediately from the receipt of the proof of delivery of the selected product.

In some instances, a take-back scheme can be integrated into the green on-wage financing scheme where technology providers agree to cover both the amount of minimum percentage

of the selling price of the product to be accorded to the customers in the form of a voucher or cash-back for future purchases and to contracted compliant e-waste management companies to cover the costs of collection, transport, treatment, and disposal of returned end-of-life eligible appliances. In this case, local financial institutions shall also receive a collection certificate from technology providers to proceed with the disbursement of credit.

Finally, consumer loan repayments are directly made from the customers to the local financial institutions and are either guaranteed by their profiled employers or deducted directly from the employees' after-tax salaries. There are different ways to structure the repayments:

- Employees of profiled employers who hold accounts with local financial institutions make repayments through their checking accounts at the end of each month. In the case of default, employers guarantee the repayments. In this case, the balance of due repayments is directly deducted from the salaries. Same conditions apply if the salaried employees leave the employers earlier than expected.
- Employees who hold accounts with local financial institutions agree to make direct reimbursements through salary deductions at the end of each month.
- Employers make the salary deductions for each employee and make a bulk reimbursement for all their employees to the local financial institutions at the end of each month.

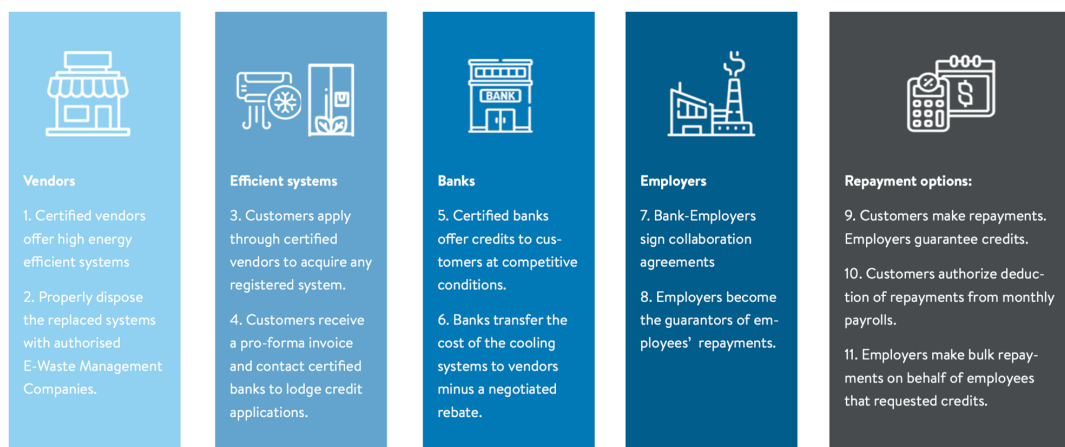


Figure 2. Roles and responsibilities in the green on-wage financing mechanism

The success of the model depends mostly on the interest and engagement of the local financial institutions and their number of existing profiled employer institutions.

Governments and development agencies can play important roles by providing technical support in setting up the model and ensuring compliance once operationalized.

Benefits. The biggest customer benefits of this model are the avoided upfront capital costs, and the ease of repayment. This can help motivate investments that may not otherwise happen. Access to credit is facilitated and the loan terms offered by local financial institutions

are more attractive for end-customers due to rebate negotiations with participating technology providers who wish to promote and sell certified premium appliances through the mechanism. In addition, the establishment of both robust and certified monitoring and reporting of customer applications, as well as measurement, reporting and verification (MRV) processes allows local financial institutions to align with the principles of green finance through the mechanism. Additionally, take-back schemes for proper collection, transport, treatment and disposal of discarded appliances can also be included, increasing both the incentives and co-benefits of this scheme.

Green on-wage financing facilitates the creation of a pipeline for sustainable energy investment, improves the monitoring and reporting of green loans and sales of energy products, significantly eases access to sustainable energy solutions, tackles the issues of collection and disposal of used products, and opens access to new green markets for partners.

Risks and challenges. The main risks and challenges to establish a green on-wage financing mechanism are:

- Engaging a committed and neutral institutional entity that is willing to support the transition towards sustainable energy and play a lead compliance role in green on-wage in order to ensure quality and durability of the scheme in the market. This includes the on-boarding of additional participating local financial institutions and vendors, the certification and registration of sustainable energy products sold through the scheme on a positive list, as well as the tracking and measurement of robust co-benefits of the mechanism.
- Aligning market expectations with the environmental goals of the scheme by negotiating an ambitious but fair percentage of rebates from participating vendors to support key components of green on-wage such as enabling preferential financing from local financial institutions, providing incentives to end-users to return discarded appliances, and supporting the costs of collection and disposal of these, while letting market forces play the main role.
- Building on existing business relationships and agreements between local financial institutions and profiled employer institutions limiting the highest potential market share of the scheme and requesting as many participating local financial institutions as possible in the scheme to maximize its outreach.

Supporting mechanisms. Green on-wage financing can be supported by bulk rebates negotiations, or green credit lines from international financiers to local financial institutions, to help offer the best loan features to end-consumers (e.g., low interest financing for longer tenor periods) and a viable green lending strategy. Green on-wage financing can be complementary with on-bill financing which would target both salaried and unsalaried customers from the energy utilities allowing loan repayments through electricity bills instead.

Proposed structuring of green on-wage financing for Zambia. An option is to use bank loans to employees to finance the new energy-efficient and climate-friendly domestic refrigeration systems. The mechanism is well-known in the country and there are existing partnerships between banking and microfinance institutions and employers in Zambia as well, including

with Government institutions and private companies, to finance employees through salary deductions. The employee loan will both target customers who are government's employee (38% of survey respondents) and private sector employees (36% of survey respondents). The former target group being perceived as almost credit risk-free by financial institutions due to their employer's strong backing. Both, the burden of upfront investment and the need for collateral are hence removed or reduced, providing more liquidity and reducing borrowing costs for customers, while drastically reducing perceived risk for financial institutions. Local financial institutions in Zambia offer employee loans with repayment periods extending over a few years. Banking or microfinance institutions might be able to charge below market rates monthly to employees due to lower default risk. Employees' debt burden ratio must be between a certain maximum percentage ratio of net monthly income. Loans are normally between a minimal and a maximum amount in local currency.



Figure 3. Financial and non-financial components of green on-wage financing

2. Bulk rebate negotiation with technology providers. Bulk rebates are negotiated for specific products with the providers in exchange for including their energy-efficient domestic refrigeration products in the programme. With green on-wage financing, both on-grid and off-grid solar refrigerator technologies can be targeted. The aim is not to procure products but to facilitate the entry and sales of energy-efficient products into the market. The benefit for the provider is that the green on-wage financing option will offer them support to increase significantly their sales in energy-efficient systems which are difficult to sell due to competition with inefficient equipment, through facilitating access to credit to their products.

Bulk rebates are expected to be negotiated with providers (distributors, retailers, and eventually brand manufacturers). These rebates are expected to cover the following expenses:

- A reduction in the interest rate charged by partner local financial institutions;
- A voucher gift or cash-back to end-users in exchange of turned-in end-of-life appliances (optional) and;
- To cover costs related to the collection, disposal, and treatment of turned-in end-of-life systems (optional).

A reduction in interest rate offered by partner local financial institutions is of great interest to end users as it reduces costs related to the purchase of highly-efficient and environmentally-friendly but relatively expensive refrigerating appliances. For instance, an interest rate of 0% serves as a powerful motivational tool to convince end-users to replace their old inefficient equipment. Purchasing a new appliance with a credit facility of 0% gives end-users the feeling of acquiring a new product without bearing upfront fee costs and without any extra charges such as interest rate.

In the process of selecting partner retailers and distributors and arriving at a finance agreement, it is important to understand the estimated margin of the retailer, the likely rebates which the brands may extend. Trade margin are estimated as follows:

- Averagely, a retailer's margin can be estimated at 35% if appliances are purchased directly from a local distributor
- Averagely, a distributor's margin can be estimated at 15%
- If the distributor is also the retailer, it can be estimated that the retail margin is around 45%

Different scenarios are available based on the relationship between the distributor and retailer (e.g., the retailer is the distributor, the retailer is supported by a minimum percentage margin by the distributor, retailers are not supported). Technology providers acting as both distributors and retailers or retailers that are supported by their distributors are identified as the highest potential target partner technology providers in the market in Zambia.

It is worth noting that some local financial institutions might have experience in negotiating with partner technology providers for rebates to enable them to provide consumer loans through wage deductions at concessional rates. Rebates obtained are thus usually used to cover for interest rate income loss.

3. Promotion of qualifying products. There is a need to implement a marketing and promotion strategy to showcase the energy-efficient and climate-friendly products (and eventually off-grid solar PV refrigerators) that are deemed eligible for the mechanism, to explain the financing options and economic benefits to households, and to connect partner technology providers and banking and microfinance institutions with customers. It is recommended that the marketing and promotion strategy is coordinated by the lead compliance entity or implementing agency (e.g., MOE) supported by MDBs, GCF, CTCN to provide credibility and resources, and closely aligned with partner retailers, distributors and local financial institutions. It is important to show in the market that the partners that are part of the programme have a distinction from the Government of Zambia and supporting partners and that they belong to a special group of partners offering and financing highly efficient and environmentally-friendly products.

4. Positive List. It would be required to build partnerships with the banking and microfinance institutions to provide credit to customers for new energy-efficient systems. Employee loan through wage deduction or consumer finance products that might be currently offered by local financial institutions are used by households to finance any kind of products (including inefficient equipment), so it is important to generate a list of certified products and partner providers that are certified by lead compliance entity (e.g., MOE) for the programme. Also known as a qualified product list or positive list, it is informed by eligibility criteria for products to qualify to participate in the programme that would be prepared by the lead compliance entity, refined based on input from local experts in Zambia, and endorsed by the Government. Eligibility criteria can include off-grid refrigerator technologies and distributors.

5. Monitoring, Reporting, and Verification (MRV). Partners have to comply with the terms and conditions (T&C) for participation in the mechanism including robust MRV guidelines and monitoring and evaluation of customer applications for participation. MRV guidelines are used to estimate the Greenhouse Gas (GHG) emissions impacts attributable to the sales of certified models in lieu of a typical unit in the market, and a set of result indicators. MRV activities focus for instance on tracking GHG emission reductions, funding mobilization, and target co-benefits, which are directly related to the intended impact of the project. The general methodologies, key indicators that will be tracked, as well as the data collection methodologies and responsibilities are detailed in the guidelines. The findings will be used in reporting to financiers and donors, for communications and outreach, and to help evaluate progress on an ongoing basis. Also, providers of certified products would have to submit a conformity assessment report that would be checked by the main compliance entity (e.g., MOE) or implementation agency and institutional partners or donors (e.g., MDB, GCF, CTCN, etc). A subset of these products would undergo random sample testing to verify claims in the conformity assessment report. It is recommended that partner banking institutions and technology providers adapt and eventually integrate their information management systems into a programme managed online MRV platform to better monitor and report on the financing and sales of certified brand models through the mechanism closely with the compliance entity.

6. Collection and disposal of old systems. It is estimated that for less than US\$ 25, an e-waste management company could be engaged to collect used appliances and to dispose of refrigerant gases in an environmentally and safe manner based on past experiences on the African continent. Those US\$ 25 represents roughly 2-6% of the total cost of a new energy-efficient appliances ranging from US\$ 400 to US\$ 1500. End-users are to bear costs related to the collection and disposal of old systems; however, and in order to reduce financial burdens on households and to make the programme even more attractive to households, it is envisaged to shift this burden on partner retailers and distributors. Thus, costs related to collection and disposal of end-of-life systems are negotiated within the bulk rebate (i.e., 2-6%).

In addition, gift vouchers or cash-back might serve two different purposes. From one side, it provides a further incentive to end-users to replace their old inefficient domestic refrigerating appliance with an energy-efficient and environmentally-friendly product. Voucher or cash back are tangible tools that end-users can receive upon the collection of their end-of-life appliance which they can exchange in the future against any other product at their discretion.

On the other hand, gift vouchers will serve as a tool to incentivize technology providers to engage in the programme as it gives them the opportunity to build up stronger relationships with customers, to increase their sales and thus their revenues through selling other equipment and appliances to targeted users. It is not clear whether gift vouchers or cash-back are a common practice used in Zambia, whether it is used by many providers; and whether it is widely accepted and appreciated by households though.

The green on-wage financing mechanism option including all these financial and non-financial components would solve a major hurdle for targeted low-risk segments of the urban household population in Zambia since access to finance was identified as a barrier in the market assessment. As a consequence, green on-wage financing can help lower household energy consumption, boost household welfare, increase household disposable income, while reducing the informal market and formal market for inefficient appliances and transforming the primary market for energy-efficient and climate-friendly residential refrigerators and off-grid solar refrigerators. This option shows high scalability potential as it can be easily extended to more partners and more energy-efficient and climate-friendly systems such as off-grid products or other type of energy-efficient appliances throughout its development, its implementation, and beyond, to enable further upgrading of equipment and decreasing of energy consumption in the residential sector in Zambia. Once the mechanism is robust and visible in the market and that partner local financial institutions are comfortable with managing the risk, higher-risk segments of the population (e.g., rural, off-grid, self-employed, etc.) can be then targeted with updated financing products.

On the demand side, partner local financial institutions can provide loans to end-users as long as they are salaried and can provide the necessary implicit guarantee from their employer that their salaries can cover loan payments and that the employer will transfer part of or full salary to the financial institution throughout the loan period of time. An additional interesting option for Zambia is to have the financing provided by a partner financial institution indirectly to eligible clients through their employer entity. In that case, the financial institution enters into an employee green loan finance agreement with the profiled client's employer entity. The salaried customer makes loan repayments through wage deductions while his/her employer entity makes bulk repayments for all their employees to the financial institution at the end of every month. The employer entity is thus guarantor of the client's loan, reducing the need for stringent credit assessment and collaterals. The client thus receives a green loan from the partner financial institution and buys the equipment upfront from the partner technology supplier based on a positive list of certified cooling technologies and partner technology providers pre-approved for lending. The certified cooling systems are owned by the clients and do not need to be used as collaterals. The use of both scenarios simultaneously is expected.

On the supply side, green on-wage financing addresses the technology and contract risks and motivates partner distributors and retailers to supply highly efficient and climate-friendly systems at concessional terms through support mechanisms. The use of a positive list of certified technologies and partner providers will direct the client towards the primary market

which ensures that the acquired equipment delivers high quality output in compliance with the programme. Bulk negotiations with technology providers supplying certified energy-efficient and climate-friendly domestic refrigerators provide further incentives to end-users to choose energy efficient technologies acquired at the primary market rather than equipment available at the second-hand market. After successful rebate negotiation, technology providers agree to the terms and conditions for participation in the mechanism on a voluntary basis to be listed by the compliance entity as special partners in order to access the aggregated demand generated by the programme.

Digitisation of customer application process and online shop. With funds and technical assistance support from MDBs, GCF, or CTCN, the development of an online shop including smart customer interface and customer application embedding credit risk evaluation and MRV tools is recommended to lower the entry barriers for interested households and administrative costs for partners. In this case, the application process is done through an online shop where the household selects the desired certified brand model and submits the application directly online. Partners' information management systems are fully integrated, while processes are fully automated. Such a centralised digital solution also facilitates the monitoring, reporting and evaluation including MRV of the mechanism.

Key national stakeholders. To develop the green on-wage financing mechanism option in Zambia, the following public and private stakeholders are important and must be closely involved.

- **Ministry of Energy (MOE).** The support from the Government of Zambia is essential for the success of the green on-wage financing mechanism option in Zambia. MOE can play a key compliance role in the development and implementation of the mechanism, coordination with public stakeholders, facilitating access to the programme to new partners and technologies, promoting certified domestic refrigeration equipment and partners, enforcing the mechanism, and directing households towards the programme. MOE can be central in coordinating and regulating the market and thus offers quality control to households and different stakeholders involved in the proposed financial mechanism when it comes to M&E and MRV as well.
- **Partner financial institutions.** The partner banking or microfinance institutions play a key role in developing, implementing, financing and promoting the mechanism with support from MDBs, GCF, or CTCN. Partner local financial institutions adapt their offering of salary loans or consumer credits to propose green credits, while MDB and GCF might eventually support partner local financial institutions with green credit lines, revolving loans funds, or credit guarantees to help mitigate further any credit risk and improve concessional lending terms to households, as well as provide technical assistance (from MDBs, GCF, CTCN) to promote and develop key components of the mechanism, as well as streamline and digitalise the system integration and processes. MDB or GCF advise partner local financial institutions and structure products to reduce their risks and improve their credit terms by eventually offering concessional green credit lines or de-risking instruments to finance energy

efficiency investments starting with energy-efficient and climate-friendly domestic refrigerators and providing technical assistance to support the promotion and marketing, as well as the operationalisation and digitisation of the mechanism. Partner local banking or microfinance institutions sign agreements with private and public institutions to extend financing to their employees through green on-wage financing.

- **Partner technology providers of energy-efficient residential refrigerators.** In order to implement the green on-wage financing mechanism option to accelerate the adoption of energy-efficient domestic refrigeration equipment, providers must be involved from the beginning as they will play an important role in supplying the market and serve as technical experts. In the proposed green on-wage financing mechanism, they are the main interface of the programme, allowing the interested household to consult a catalogue of certified and eligible equipment and get a pro forma invoice and credit application material to be then submitted to partner banking institutions and co-verified by the lead compliance entity (e.g., MOE) Once a customer is declared approved, a partner provider of certified brand model will dispatch and install the household equipment on credit and eventually collect the turned-in end-of-life equipment into any eligible e-waste management facilities for disposal.
- **Households.** The principal beneficiaries of the proposed mechanism, on the demand side, are households that must be salaried from private or public institutions that are profiled by or in business with partner local financial institutions. Households have been involved from the beginning and engaged through surveys to ensure that the programme corresponds to their preferences and expectations. Credit and participation conditions to the proposed financial mechanism must be easily accessible, concessional, and transparent, while the application process must be as simple and efficient as possible. Advantages of the programme should be explained through target communications and awareness campaigns. Although the market assessment has already shown findings about households' preferences and expectations, households should be informed continuously on the financial mechanism progress and be invited to provide feedback when possible.

4 Initial assessment and next steps

The proposed financial mechanism options shall be assessed through robust selection criteria, and discussed with the key stakeholders and adapted properly to ensure buy-in and commitment of the stakeholders. Once an option is selected, economic analysis of the selected option will be conducted to analyse the suitable cost, rebates, economic benefits and credit conditions. Detailed implementation plan for the selected option shall then be refined accordingly.

4.1 Selection criteria and assessment

The proposed pathway to overcome barriers largely depends on facilitating access to finance and covering the high up-front cost for households who wish to invest in energy-efficient and climate-friendly refrigeration technologies, simplifying the credit allocation and recovery mechanisms to lower the risk perception for local financial institutions, and promote and incentivize the introduction of eligible energy-efficient and environmental-friendly technologies into the market to fight unfair competition from the informal sector. Key selection criteria are considered to evaluate the financial mechanism options (see below Table 3). Each mechanism is being assessed as low, middle, or high for each criterion.

Table 1. Comparative assessment of financing mechanism options based on key selection criteria

Selection criteria	On-bill financing	On-wage financing
Ease of development and implementation	Middle	Middle
Cost-efficiency of development and implementation	Middle	High
Sustainability in the market beyond implementation	High	High
Familiarity from the market	Low	Middle
Potential to leverage financing from private sector	High	High
Alignment with country strategy and government priorities	High	High
Alignment with target technology market	High	Middle
Inclusiveness	Middle	Low
Scalability	High	Middle
Endorsement from key stakeholders (strong engagement and expression of support)	Feedback from stakeholder consultations needed	Feedback from stakeholder consultation needed

4.2 Consultations of Policy Working Group (PWG) and national stakeholders

Each of these mechanisms have different advantages and uses a different path to overcome specific barriers. Among others, these include the reduction of the burden of the initial investment and the reduction of the client’s risk perception. But the selected option needs to be tailored to local conditions and combined with the right source of financing and eventually risk mitigation instruments, such as credit guarantees. Its success heavily depends on a thorough understanding of the market, a large consultation and strong engagement of the

key stakeholders, the successful creation of an environment of trust and a well-designed model offering a sustainable solution by creating value for all involved players. Therefore, the selected financing mechanism option combining a set of high potential financial and non-financial components that was proposed, informed by the key findings of the project market assessment in Zambia, will be further detailed based on consultation of the Policy Working Group (PWG) members and national stakeholders. Selected option must be endorsed and supported by key stakeholders through expressions of support during the consultations.

4.3 Development of detailed implementation plan for selected option

A detailed implementation plan will be developed for the selected option based on feedback and inputs from PWG members and national stakeholders following consultations in Q4 2021. This section describes the expected involvement of key stakeholders, as well as the engagement and coordination with partners for the development and implementation of both options. The responsibilities and activities related with the development and operationalisation of the selected option with partners may include, but are not necessarily limited to:

Lead compliance entity (e.g., MOE)

- Source and engage interested local financial institutions and ZESCO to participate in the selected mechanism
- Source, identify, and analyse vendors of certified energy-efficient and climate-friendly domestic refrigerating appliance brand models
- Source, identify, and analyse e-waste management companies for the collection and disposal of used systems through the mechanism (optional)
- Review the details of banking and microfinance institutions' relevant current financing product schemes (consumer loans, salary loans, credit facilities, hire purchase schemes, etc.)
- Review the details of interested retailers and distributors supplying relevant eligible model brands
- Sign Memorandum of Understandings (MOUs) to officialise partnership with interested local financial institutions and ZESCO (partner utility)
- Support the assessment of full integration of financing support, payments, and flow of funding (including rebate)
- Support the assessment of potential costs for the collection and disposal of used equipment (optional)
- Support the preparation and implement of product eligibility criteria and the positive list of certified systems eligible for financing through the financial mechanism option
- Certify brand models (in alignment with the U4E Model Regulations) offered by interested retailers and distributors based on the product eligibility criteria and agree on the monitoring, testing requirements, and verification protocols for certified products sold

through the mechanism (i.e., conformity assessment report, random sample testing, etc.)

- Verify conformity assessment report sent by partner technology providers to approve certified energy-efficient and climate-friendly systems
- Supervise random quality testing of a sample of a subset of these products being certified to verify compliance
- Negotiate bulk rebates with interested providers; partners commit to indirectly bring down financing and prices of certified brand models sold through the mechanism for clients (i.e., vouchers, cash-back, and credit facility agreements with partner local financial institutions)
- Sign Memorandum of Understandings (MOUs) to officialise partnership with partner vendors
- Develop a marketing and promotion strategy that aims to raise awareness of the selected mechanism option during the development and implementation including a “communication toolkit” which includes programme branding, possible press release and social media posts to announce partnership on partner communication channels, as well as support on marketing and promotion to integrate the financing product into partner communication channels
- Refine cost-benefit analysis of certified eligible technologies and internal financial structure, which can help partner local financial institutions to define appropriate financial conditions based on available de-risking or concessional financing support from MDBs or GCF to structure financing products to potential customers
- Prepare and implement guidelines to support partner local financial institutions adapt relevant current financing product scheme to deliver of the new financing products to target customers including financing product details, lending terms, conditions, eligibility, and simplified requirements, procedures for reviewing applications, end-user credit assessment template through the on-bill mechanism
- Prepare and implement guidelines and provide framework for monitoring and evaluation (M&E) and monitoring, reporting and evaluation (MRV) for a data management system as part of the mechanism to track financing of approved products to customers and climate benefits attributed to the financial mechanism option (specify the features it should include, recommended protocol for integration into the financial mechanism processes, advising on existing software that may be a good fit for the digitisation of the M&E and MRV, agreement, processes, pricing, etc).
- Certify and oversee the programme and guide households wishing to apply for the programme through partners
- Help structure the flow of information between the different key actors including partner providers of certified brand models, enabling the tracking of project status and develop interface platform and systems for connecting salaried customer or ZESCO (partner utility) customer applications with partner local financial institutions and technology providers
- Capacity building, training, and implementation meetings with partner local financial institutions to support the development and operationalisation of the mechanism option

- Promote certified domestic refrigerating appliances, technology providers, financial institutions, and partners
- Provide an advisory role to partners for the operationalisation of the mechanism option
- Define, review, and enforce product application and customer application processes and draft standardized agreements and contracts to clarify terms and conditions of participation and responsibilities of different actors (e.g., partner technology providers, partner local financial institutions, ZESCO, etc.)
- Review draft standardized agreement between partner providers and partner local financial institutions and ZESCO including credit terms and conditions for customers in the financial mechanism option as well as rebate on credit
- Support the full financial integration of the collection and disposal of used but operable products into the mechanism option in a financially sustainable manner (covered by the rebate), including the proper disposal of the refrigerant gasses.
- Help partner vendors Identify and negotiate with e-waste management companies which will support on the collection and disposal of gases in an environmental and safe manner
- Capacity building, training, development and implementation meetings with partner distributors, retailers, banking or microfinance institutions, ZESCO, MDBs, GCF, CTCN to support the operationalisation of the mechanism option in 2022
- Structure financing, support mechanisms, or de-risking mechanisms based on feedback from partner local financial institutions in order to improve on-lending conditions offered to end-users through the financing mechanism

Partner local financial institutions (e.g., banking institutions, microfinance institutions, etc.) and key institutional partners (e.g., ZESCO, etc.)

- Set up green credits facilities with partner technology providers, structure and provide green loans through salary or prepaid metering system deductions with profiled institutions to low-risk salaried customers or with ZESCO to eligible customers on concessional terms (e.g., 0% financing and long tenor periods)
- Implement the positive list of certified brand models, partner distributors and retailers based on product eligibility criteria set by the lead compliance entity
- Develop a quick and simplified credit application procedure for salaried customers or ZESCO's customers (i.e., credit scoring) wishing to access green loans in exchange of credit repayment on their salary or prepaid metering system with support from profiled employer entities or from ZESCO
- Define standard credit process and sign standardized contract to clarify terms and conditions of participation and responsibilities of different actors (e.g., partner providers to set up the credit facilities, ZESCO aggregating repayments through prepaid metering system, profiled employer institutions guaranteeing the repayment of the green loans of its salaried employees in the event of default, timing of repayments, transaction costs, etc.)
- Draft standardized agreements with profiled employer entities or ZESCO – the entities

responsible of the loan repayment collection. This agreement aims to include the application process, requirements, eligibility criteria for salaried employees or ZESCO's customers, the commitment of the entities to act as guarantor of the loans to customers and define the conditions of such guarantees including the timing of repayments and the transaction cost flow, as well as system integration and credit recovery processes

- Exchange information to help monitor the programme
- Monitor, verify and evaluate the results of programme and exchange information on the extent of green employee loans granted to participating salaried individuals and M&E and MRV
- Analysis of the possibility of extending green consumer loans and credit facilities with partners for other certified climate technologies

Partner technology providers (e.g., domestic refrigerators, off-grid solar refrigerators, etc.)

- Express interest, go through application and certification to participate in the selected financing mechanism and supplying certified energy-efficient and climate-friendly domestic refrigerators in return for negotiated bulk rebates on systems introduced into the market and sold through the programme
- Provide supporting documents to register certified appliances on the positive list based on product eligibility criteria defined by the lead compliance entity (submission of conformity assessment report, random sampling test, etc.)
- Proceed with signing of terms and conditions, and agreement with partner local financial institutions wishing to become partners detailing the rebate, in accordance with policies and regulations
- Implement the monitoring and evaluation (M&E) and the monitoring, reporting, and verification (MRV) guidelines to track the climate benefits of the programme
- Exchange information with partners to track the progress of the programme
- Consider extending the mechanism to supply other types of climate solutions into the market

5 Annex 1 – Full overview of experiences on the African continent

Algeria. According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, **credit lines** and/or **revolving funds** with banks for energy efficiency activities are available in the residential, commercial services and industrial sectors. In the industrial sector, other non - specified activities are as well included as available mechanisms for energy efficiency activities. Moreover, financial and/or non-financial institutions offer financial products for energy efficiency investments in the residential and commercial services sectors.

A dedicated energy efficiency fund exists in Algeria - the National Fund for Energy Management (FNME) providing **soft loans, grants and investment guarantees** for energy efficiency and small-scale renewable energy investments. Its funding is provided from either **energy consumption taxation** or other sources such as **special state subsidies and grants**.

Also, Algeria has adopted **fiscal tools** such as the **reduction of custom duties and Value Added Taxes (VAT)** on imported energy efficient appliances, equipment and material (e.g., household electric appliances, compact fluorescent lamps, solar water heaters, building insulation, etc.)

In 2011, Algeria introduced an energy-efficient lighting programme called “Eco-Lumière” and a solar water heater (SWH) programme called “ALSOL” administered by the National Agency for Promotion and Rationalization of Energy (APRUE). The ALSOL programme was modelled based on the Tunisian solar water heating programme called “PROSOL” that has been successfully implemented since 2005. ALSOL offers a **45% subsidy** for the acquisition of eligible residential systems. The installation license for the systems was distributed to 15 local technology providers in the initial phase. As of 2021, the programme is still ongoing and there has been a call for expressions of interest to set up local SWH manufacturing in the country.¹¹⁵

As of 2021, the country doesn’t count any direct national GCF accredited entities (AEs).

Angola. According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, financing mechanisms for energy efficiency activities are not available in the residential, commercial services, and industrial sectors.

As of 2021, the country doesn’t count any GCF direct (national) access accredited entities (AEs). Accredited Entities partner with GCF to implement projects.

Benin. According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, **credit lines** and/or **revolving funds** with banks for energy efficiency activities are available in the residential sector and commercial services sector. Moreover, **financial and/or non-financial institutions offer financial products for energy efficiency investments**, in the residential, commercial services and industrial sectors.

In 2019, the Off Grid Clean Energy Facility (OCEF) intended to provide US\$32 million matching **grant** challenge fund over five-years (2017-2022) looking to co-finance profitable off-grid renewable energy and energy efficiency projects in Benin, such as household energy systems and products (e.g., solar home kits).¹¹⁶¹¹⁷

The **solar home system (SHS)** and pico-solar market in Benin is experiencing strong growth. In 2019, 53,265 SHS and pico-solar products were sold by companies affiliated with GOGLA and Lighting Global, up from 14,488 in 2018 - nearly a four-fold increase. Approximately 75%

¹¹⁵ APRUE (2011), [ALSOL](#)

¹¹⁶ GOGLA (2019), [Off Grid Clean Energy Facility](#)

¹¹⁷ OCEF (2021), [website](#)

of these sales were made by Fenix International. Other companies active in the sector include Canopy Energies, Greenlight Planet, Rural Spark and Shinbone Labs. ARESS, Axcon Energy, BBOX and Lagazel are also active and are being supported by the Benin Off-Grid Clean Energy Facility. In 2019, approximately 98% of SHS and pico-solar products were sold on a **Pay-as-you-go (PAYGO)**¹¹⁸ basis, up from 96% in 2018. The remaining products were bought with cash. The significant PAYGO market share correlates with a high penetration rate of mobile money accounts (135%) in Benin.¹¹⁹

To help stimulate investment in sustainable energy, several **tax incentives** were introduced in 2020. Solar panels and batteries are **exempt from both VAT and import duties**. Importantly, however, a 5% import duty applies to pre-assembled solar generating sets and wind turbines, which also incur VAT of 18%.¹²⁰

In 2021, the Universal Energy Facility, a **results-based financing facility** managed by Sustainable Energy for All (SEforALL), opened a new window of financing for mini-grid projects in Benin. Companies seeking results-based finance for mini-grid projects in Benin can apply for pre-qualification to the facility. The facility will disburse **grant** payments to deliver over 7,000 electricity connections based on a results-based incentive of USD 433 per connection. The facility will expand in its next waves to include solar home systems and clean cooking solutions, with a goal of catalysing 2.3 million energy connections by 2023.¹²¹

As of 2021, Benin counts the “Fond National pour l’Environnement” or **National Fund for Environment and Climate (FNEC)** as **GCF direct (national) access accredited entity (AE)**. FNEC of Benin is a public institution with a legal personality and financial autonomy that comes under the remit of the Ministry of Living Environment and Sustainable Development. FNEC is a **funding mechanism** for programmes and projects within the scope of protecting and rationally managing the environment, combating the harmful effects of climate change and promoting sustainable development in Benin. FNEC was granted basic fiduciary standards and was accredited by GCF both for project management and grant award. FNEC is not accredited for loans, equity, nor guarantees from GCF.¹²²

Botswana. The country is not included in the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021 which looks into financing mechanisms for energy efficiency activities as part of its indicators.

According to UNEP (2015)¹²³, rural communities in Botswana can purchase solar PV systems on a **loan purchase agreement** to be paid back over 4 years. Nevertheless, the main barrier to this scheme is cited to be the lack of a legal and regulatory framework.

¹¹⁸ Energypedia (2021), [PAYGO approaches](#)

¹¹⁹ GET-Invest (2021), [Energy Market Segments](#)

¹²⁰ GET-Invest (2021), [Benin Market Information](#)

¹²¹ SE4ALL (2021), [Universal Energy Facility](#)

¹²² GCF (2021), [Benin direct national AE](#)

¹²³ UNEP (2015), [Accelerating Energy Efficiency: Initiatives and Opportunities](#)

In 2016, the Government of Botswana opened a **Renewable Energy Fund Account** with a US\$0.7 million grant from the Global Environment Fund¹²⁴. The Fund is aimed at subsidizing renewable energy technologies for off-grid solutions with priority in installing Solar Water Heaters, Solar Home Systems and Water Pumping Systems.

Botswana is also part of regional financing initiatives (see “Regional” below for more details on the regional mechanisms).

As of 2021, the country doesn’t count any direct national GCF AEs.

Burkina Faso. According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, financing mechanisms for energy efficiency activities are not available in the residential, commercial services, and industrial sectors.

The ROCA (“Refroidissement respectueux de l’Ozone et du Climat en Afrique de l’Ouest et Centrale”) project promotes ozone- and **climate-friendly cooling technologies** in the four African countries including Burkina Faso (Cameroon, Mali and Senegal, being the rest of the countries)¹²⁵. The project will run from 2021 to 2024. The ROCA project aims at analysing the cooling demand and current RAC sector in these countries, giving advisory services to the government, training RAC technicians on the safe handling of natural refrigerants, as well as trainings on **climate finance** and **business models** to promote the accelerated adoption of ozone- and climate-friendly as well as **energy-efficient appliances** using **natural refrigerants**. Pilot projects these **Green Cooling technologies** will be added as well

As of 2021, the country doesn’t count any direct national GCF AEs.

Burundi. According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, financing mechanisms for energy efficiency activities are not available in the residential, commercial services, and industrial sectors.

In 2018, clean energy investment was down from US\$ 15 million to none. Solar panels and wind turbines are exempt from import duties. Burundi charges the standard VAT rate of 18% on all solar panels, wind turbines and batteries for energy storage. Solar panels and wind turbines are **exempt from import duties**. Batteries, however, incur a duty of 25% for conventional technology types and 35% for less common battery technologies (like lithium ion).¹²⁶

In 2020, the standalone solar market in Burundi was in its infancy. Bizisol, Greenbox Solar, ITCO, Little Sun, Nambiar, Solar Links and Virago are among the key actors involved in distributing and selling standalone solar products in Burundi. Yet, no GOGLA and Lighting Global affiliated sales were recorded in 2018 or 2019. The government, in partnership with

¹²⁴ IEA (2016), [Renewable Energy Fund for off-grid solutions – Policies](#)

¹²⁵ Green Cooling Initiative (2021), [Refroidissement respectueux de l’Ozone et du Climat en Afrique de l’Ouest et Centrale \(ROCA\)](#)

¹²⁶ GET-Invest (2021), [Burundi Market Information](#)

development institutions, has been planning to distribute standalone solar products to approximately 65,000 households.¹²⁷

As of 2021, the country doesn't count any direct national GCF AEs.

Cabo Verde. The country is not included in the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021 which looks into financing mechanisms for energy efficiency activities as part of its indicators.

In 2015, UNEP approved the implementation of the project 'Cape Verde Appliances & Building Energy-Efficiency Project (CABEEP)', which aims at **reducing energy consumption** and related GHG emissions in buildings and **household appliances** in Cabo Verde through introducing a range of legislative and regulatory measures over the 10-year project lifetime. The appliances where the project focuses are air-conditioners, **domestic refrigerators**, lighting products, electric storage water heaters, and washing machines. The National Labelling and Standard Program for Electrical Equipment (PNEREE) was approved by the Government of Cabo Verde January 1, 2020, and includes the national certification procedure and the **financing and incentive schemes** to ensure the sustainability of the programme.¹²⁸

As of 2021, the country doesn't count any direct national GCF AEs.

Cameroon. According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, **credit lines** and/or **revolving funds** with banks and **other unspecified financing mechanisms** for energy efficiency activities are available in the residential sector. For the commercial services and industry sector, apart from the credit lines and /or revolving funds with banks, there are available energy **services agreements (pay-for-performance contracts)**, **vendor credit** and/or **leasing**, and **partial risk guarantees** for energy efficient activities. In all three sectors, **financial and/or non-financial institutions offer financial products for energy efficiency investments.**

The ROCA project promotes ozone- and **climate-friendly cooling technologies** in the four African countries including Cameroon (Burkina Faso, Mali and Senegal, being the rest of the countries)¹²⁹. The project will run from 2021 to 2024. The ROCA project aims at analysing the cooling demand and current RAC sector in these countries, giving advisory services to the government, training RAC technicians on the safe handling of natural refrigerants, as well as trainings on **climate finance** and **business models** to promote the accelerated adoption of ozone- and climate-friendly as well as **energy-efficient appliances** using **natural refrigerants**. Pilot projects on these **Green Cooling technologies** will be added as well

As of 2021, Cameroon counts the Attijariwafa Bankdirect (AWB) as **GCF AE**. AWB is a regional private sector entity working as a financial group. It is headquartered in Morocco, with regional operations in many countries throughout Africa, and has a large project portfolio

¹²⁷ GET-Invest (2021), [Burundi Energy Market Segments](#)

¹²⁸ GEF (2021), [Cape Verde Appliances & Building Energy-Efficiency Project \(CABEEP\)](#)

¹²⁹ Green Cooling Initiative (2021), [Refroidissement respectueux de l'Ozone et du Climat en Afrique de l'Ouest et Centrale \(ROCA\)](#)

related to sustainable development. AWB was granted basic fiduciary standards by GCF and was accredited for loan, equity and guarantee from GCF.¹³⁰

Central African Republic. According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, financing mechanisms for energy efficiency activities are not available in the residential sector, commercial services sector, and industrial sector.

As of 2021, the country doesn't count any direct national GCF AEs.

Chad. According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, financing mechanisms for energy efficiency activities are not available in the residential sector, commercial services sector, and industrial sector.

As of 2021, the country doesn't count any direct national GCF AEs.

Comoros. The country is not included in the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021 which looks into financing mechanisms for energy efficiency activities as part of its indicators.

As of 2021, the country doesn't count any direct national GCF AEs.

Congo, Dem. Rep. According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, financing mechanisms for energy efficiency activities are not available in the residential sector, commercial services sector, and industrial sector.

As of 2021, the country doesn't count any direct national GCF AEs.

Congo, Rep. According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, financing mechanisms for energy efficiency activities are not available in the residential sector, commercial services sector, and industrial sector.

As of 2021, the country doesn't count any direct national GCF AEs.

Côte d'Ivoire. According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, **credit lines** and/or **revolving funds** with banks for energy efficiency activities are available in the residential sector, commercial services sector and industrial sector. Moreover, **financial and/or non-financial institutions offer financial products for energy efficiency investments** in all three sectors.

¹³⁰ GCF (2021), [Cameroon direct national AE](#)

In 2018, AfDB supported ZOLA EDF Côte d'Ivoire (ZECI), to mobilize a loan in local currency of CFAF 15.75 billion (approximately € 24 million) **to finance pay-as-you-go SHS**. AfDB provided a **partial credit guarantee** covering part of the guaranteed loan facility. The business model which consists of **selling solar kits** that meet international quality standards, under **lease-purchase agreements** for a three-year period (creation of predictable receivables payable with mobile money), makes it easier for low-income customers to access clean energy.¹³¹

In 2018, the total amount of **investment in clean energy** decreased by more than half to €35 million from the previous year. **Financial incentives** exist for renewable energy technologies, yet these mostly favour solar. Solar panels incur **no import duty** and are subject to **reduced VAT** rate of 9%. The full VAT rate of 18% applies to both wind turbines and battery storage, while import duties of 5% and 20% are charged respectively.¹³²

The Ivorian **standalone solar market** is experiencing noticeable growth. In 2019, 63,204 solar home systems and pico-solar products were sold by companies affiliated with GOGLA and Lighting Global, up from 40,367 in 2018. In 2019, 93% of these products were sold on a **PAYGO** basis, down from 96% in 2018. The remainder represents cash sales. This correlates with the high penetration rate of mobile money accounts (162%), which is the highest in West Africa. As of 2020, operational companies include AD Solar, Aphelion Energy, Baobab+, BBOX, Entreprise Ivoirienne d'Intégration Energétique (E2iE), Fenix, LIFI-LED, Lumos, Orange Energie, PEG Africa, Phaesun, Schneider Electric, S-Tel, Yandalux CIV and ZECI (ZOLA Electric & EDF).¹³³

As of 2021, Côte d'Ivoire counts the Attijariwafa Bank d(AWB) as **GCF AE**. AWB was granted basic fiduciary standards by GCF and was accredited for loan, equity, and guarantee from GCF.¹³⁴

Djibouti. The country is not included in the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021 which looks into financing mechanisms for energy efficiency activities as part of its indicators.

As of 2021, the country doesn't count any direct national GCF AEs.

Egypt. According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, financing mechanisms for energy efficiency activities are not available in the residential sector. Nevertheless, financing mechanisms for energy efficiency activities for the commercial services sector and industry sector are available in the form of **energy services agreements (pay-for-performance contracts)**. Moreover, in these two sectors **financial and/or non-financial institutions offer financial products for energy efficiency investments**.

In 2016, the EBRD established the Egypt Sustainable Energy Financing Facility (EgyptSEFF) Framework in the amount of up to EUR 140 million (including co-financing by the European Investment Bank (EIB) and the Agence Française de Développement (AFD)). The funds were

¹³¹ AfDB (2018), [Côte d'Ivoire](#)

¹³² GET.Invest (2021), [Côte d'Ivoire Market Information](#)

¹³³ GET.Invest (2021), [Côte d'Ivoire Energy Market Segments](#)

¹³⁴ GCF (2021), [Côte d'Ivoire direct national AE](#)

made available to Participating Financial Institutions (PFIs) in Egypt for on-lending to eligible private sector sub-borrowers for sustainable energy investments. EgyptSEFF aims at promoting the penetration of **energy efficient** and renewable energy technologies, **appliances and equipment in the private sector** in Egypt by stimulating demand and raising awareness of the **benefits of investments** in such technologies.¹³⁵

As of 2021, Egypt counts the Attijariwafa Bankdirect (AWB) as **direct national GCF AE**. AWB was granted basic fiduciary standards by GCF and was accredited for loan, equity, and guarantee from GCF.¹³⁶

Equatorial Guinea. The country is not included in the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021 which looks into financing mechanisms for energy efficiency activities as part of its indicators.

As of 2021, the country doesn't count any direct national GCF AEs.

Eritrea. According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, financing mechanisms for energy efficiency activities are not available in the residential, commercial services and industrial sectors.

As of 2021, the country doesn't count any direct national GCF AEs.

Eswatini. The country is not included in the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021 which looks into financing mechanisms for energy efficiency activities as part of its indicators.

There is no data available on the total volume of clean energy investment in the country. Solar panels, wind turbines and batteries are **exempt from import duties**, however some wind turbine components are charged at specific rates. The standard country VAT of 15% also applies to all these technologies.¹³⁷

The potential of small-scale off-grid solar in Eswatini remains untapped, with no GOGLA or Lighting Global affiliated sales recorded in 2018 or 2019. The National Energy Policy of Eswatini intends to prioritise the use of **solar home systems** and other off-grid generation, particularly for rural areas where grid extension is too expensive. To this end, the Government of Eswatini is evaluating the participation of the private sector to implement many off-grid electrification interventions.

UNDP is financing up to US\$ 7.7 million in the country for promoting Renewable Energy Systems such as micro grids, SHS, PICO and PV. The aim of the project is to facilitate access to electricity from renewable sources to approximately 30% by 2024. Currently the project is at

¹³⁵ EBRD (2016), [EgyptSEFF](#)

¹³⁶ GCF (2021), [Egypt direct national AE](#)

¹³⁷ GET.Invest (2021), [Eswatini Market Information](#)

the inception phase. For financing mechanisms to purchase larger items, banked and non-bank channels are the formal options for **clean energy credit financing**.

In 2020, four commercial banks had operations in Eswatini. In addition to these banks, the Swaziland Building Society offered long-term mortgage loans. Commercial banks had historically had an operating model focused on traditional banking products without activity in microfinance but had recently started moving into the **payroll lending market**. The provision of credit was primarily limited to salaried employees, so the provision of credit to low-income people and non-salaried entrepreneurs was reliant on credit institutions funded by donors or government grants. Other than commercial banks, several large institutions in Eswatini operated in the formal microfinance market. These institutions operated with a similar business model: they provided **unsecured loans to formally employed government staff and the private sector**. Loan repayments were usually automatically deducted from an individual's salary.¹³⁸

Eswatini was part of regional financing initiatives (see "Regional" below for more details on the regional mechanisms).

As of 2021, the country doesn't count any direct national GCF AEs.

Ethiopia. According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, **credit lines** and/or **revolving funds** with banks for energy efficiency activities are available in the residential sector, commercial services sector, and industrial sector in Ethiopia. **Financial and/or non-financial institutions offer financial products for energy efficiency investments** in all three sectors.

The Energy Efficiency Program from the Ethiopian Energy Authority (2014)¹³⁹ provided for the establishment of an **Energy Efficiency and Conservation Fund** to provide **loans** and financial support to energy efficiency activities. This fund intended to include **budget allocation** from the government, **loans and grants** from financial institutions, grants from non-governmental organizations, **charges** on inefficient buildings, industry and appliances, or other sources. There was a range of financial instruments which were expected to be used to deliver efficiency through the fund such as **dedicated energy efficiency credit lines, partial risk guarantees for energy efficiency**, Energy Service Company (ESCO) financing, and **consumer financing for energy efficiency** and renewable energy products.

The World Bank Group provided a **loan** of US\$65 million to a local financial institution leveraging US\$10 million of co-financing to set up an **energy efficiency credit line**. The Ethiopia **credit line** provides loans to technology providers and MFIs to promote efficient off-grid energy solutions for residential users. The first 10% of the credit line must be committed within 24 months.

Clean energy investment volumes decreased by €58 million in 2018 to just below €170 million with 59% of the investment coming from foreign sources. By comparison, 98% of the €227

¹³⁸ UNDP (2021), [UNDP-UNCDF-eSwatini-Energy-and-the-Poor.pdf](#)

¹³⁹ Ethiopian Energy Authority (2014), [The Energy Efficiency Program](#)

million invested in clean energy in 2017 was the result of foreign investment. Ethiopia provides **no sales tax incentive** for renewable energy products, charging the standard VAT rate of 15% on solar panels, wind turbines and batteries for storage. While there is some uncertainty as to exactly what solar panel products are exempt from import duty, renewable energy-powered lanterns and wind turbines incur no such duty. Similarly, batteries are **exempt from import duty** if they are used for storing renewable energy.¹⁴⁰

Ethiopia boasts one of the largest **off-grid solar** markets in sub-Saharan Africa. In 2019, 1,011,537 solar **home systems and pico-solar products** were sold by companies affiliated with GOGLA and Lighting Global in Ethiopia, up from only 485,824 in 2018. In 2019, only 11% of these products were sold on a **PAYGO** basis, down from 16% in 2018. The remaining share of products was bought with cash. A large number of companies have set up operations in Ethiopia. These include ACME Engineering & Trading, Azuri Technologies, d.light, Fosera, Greenlight Planet, Green Scene Energy, HelloSolar, Little Sun, Lydetco (distributes SunKing/Greenlight Planet), Mobisol, Niwa Solar, Solar Development (distributes Fosera, Little Sun & Omnivoltaic), Solar Tech Renewable Energy, Sun Transfer Tech and Vera International Business (distributes d.light and Mobisol).¹⁴¹

In 2020, in cooperation with the Commercial Bank of Ethiopia (CBE), the African Development Bank (AfDB) with support from Climate Investment Fund (CIF) was designing an **energy credit blending facility**¹⁴² which was aimed at financing renewable energy off-grid solutions through a market development approach by providing credit to technology providers, microfinance institutions (MFIs) for the provision of off-grid energy technologies and **productive appliances to customers** in peri-urban and rural areas of Ethiopia. The facility includes: (i) a hard-currency USD 100 million envelope aimed at enhancing imports of renewable energy off-grid technologies and equipment into the country, and (ii) a **revolving credit facility** in local currency that will provide, through partner MFIs, local currency working capital and inventory financing loans to importers, suppliers and distributors of off-grid energy products (i.e., various intermediaries in the supply chain) as well as loans to end-consumers.

As of 2021, Ethiopia counts the Ministry of Finance and Economic Cooperation of Ethiopia (MOFEC) as **GCF AE**. Its mandate is to oversee the planning and implementation of development programmes, including those that address climate change. MOFEC houses and has created, jointly with another public sector entity focused on the environment, a **designated special purpose facility** that will channel its climate investments into the country. MOFEC was granted basic fiduciary standards and was accredited by GCF for project management. MOFEC is not accredited for on-lending/blending from GCF.¹⁴³

¹⁴⁰ GET.Invest (2021), [Ethiopia Market Information](#)

¹⁴¹ GET.Invest (2021), [Ethiopia Energy Market Segments](#)

¹⁴² African Development Bank (2020), [Clean Technology Fund - Enabling Access to Off-Grid Energy to the People of Ethiopia Thematic - Line of Credit to the Commercial Bank of Ethiopia](#)

¹⁴³ GCF (2021), [Ethiopia direct national AE](#)

Gabon. The country is not included in the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021 which looks into financing mechanisms for energy efficiency activities as part of its indicators.

As of 2021, Gabon counts AWB as **GCF AE**. AWB was granted basic fiduciary standards by GCF and is accredited for loan, equity and guarantee from GCF.¹⁴⁴

Gambia. The country is not included in the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021 which looks into financing mechanisms for energy efficiency activities as part of its indicators.

As of 2021, the country doesn't count any direct national GCF AEs.

Ghana. Investment into clean energy has been sporadic over the last few years. Investment spiked from €19 million in 2015 to €91 million in 2017 and contracted to around €25 million in 2018. Foreign investment accounted for 87% and 84% in 2017 and 2018, respectively, despite the substantial difference in investment volumes. Solar panels incur **no import duty**, unless pre-assembled into a generating set (like SHS), in which case a 5% duty applies. Wind turbines and batteries are charged 5% and 20% import duty, respectively. The standard VAT rate of 15% applies to solar panels, wind turbines and batteries.¹⁴⁵ In 2019, 31,039 **solar home systems and pico-solar products** were sold by companies affiliated with GOGLA and Lighting Global in Ghana, down from 39,256 in 2018. In 2019, approximately 44% of these products were sold on a **PAYGO** basis, down from 52% in 2018, and the rest in cash transactions. By 2019, the Association of Ghana Solar Industries, along with development partners, had distributed 15,000 solar home systems around Lake Volta.

Companies operating in Ghana include Atlas Business Energy System, Burro Brands, Hatoum Trading, GTEC, Lumos Global, Northlite Solar, PEG Ghana, Shinbone Labs, Suka Wind, Sunhut Enterprise, Solar Energy Ghana, Wilkins Engineering and ZOLA Electric. In addition to these companies, Mobisol, Jabo, Biolite and EcoZoom have expressed interest to enter the market through local partnerships. The Renewable Energy Master Plan (REMP) targets the installation of 1 million lanterns, 46,150 solar pumps and 700 solar crop dryers by 2030. In total, REMP aims for 20 MW of standalone PV.¹⁴⁶

The ECOWAS Refrigerators and Air Conditioners Initiative (ECOFRIDGES) is a joint project by BASE, the Government of Ghana and Senegal, and the United Nations Environment Programme's United for Efficiency (UNEP U4E) initiative, with the support of the Clean Cooling Collaborative (formerly Kigali Cooling Efficiency Programme). ECOFRIDGES is collaborating with CalBank Plc, Ecobank Ghana Limited, Letshego Ghana Savings and Loans Plc to provide low-interest loans to eligible salaried employees, and with the following vendors Ederick Limited (Whirlpool), Hisense, Nesstra Ghana Limited (Carrier) and Services Merchandize Limited (SML) (Lloyd). A cornerstone of ECOFRIDGES is the **green on-wage financing**

¹⁴⁴ GCF (2021), [Gabon direct national AE](#)

¹⁴⁵ GET.Invest (2021), [Ghana Market Information](#)

¹⁴⁶ GET.Invest (2021), [Ghana Energy Market Segments](#)

mechanism and its online shop to help make these cooling products more accessible and more affordable. The ECOFRIDGES GO online shop¹⁴⁷ is a one-stop shop for users to access information about the initiative, select their preferred cooling appliance, apply for an ECOFRIDGES GO loan via their selected partner bank and pay later via instalments with a 0% interest rate for at least 12-months. Through ECOFRIDGES GO, by 2024, local financial institutions aim to unlock at least USD 11 million in financing in Ghana to support the purchase of over 15,000 more sustainable cooling appliances and entice the replacement of old existing equipment.

As of 2021, Ghana counts Ecobank Ghana Limited (EGH) as **GCF AE**. EGH is a national private sector entity based in Ghana. It is a subsidiary of parent company Ecobank Transnational Incorporated (ETI) and provides a broad range of products and services to governments, financial institutions, multinationals, international organisations, small- and medium-sized enterprises, micro-businesses and individuals. The applicant undertakes various activities related to climate change in the energy access and generation, renewable energy, transport, infrastructure, and food and water security sectors. EGH was granted basic fiduciary standards and is accredited for loan and guarantee from GCF.¹⁴⁸

Guinea. According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, financing mechanisms for energy efficiency activities are not available in the residential sector.

As of 2021, the country doesn't count any direct national GCF AEs.

Guinea-Bissau. The country is not included in the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021 which looks into financing mechanisms for energy efficiency activities as part of its indicators.

As of 2021, the country doesn't count any direct national GCF AEs.

Kenya. According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, **discounted green mortgages** for energy efficiency activities are available in the residential sector. Whereas in the commercial services sector and industrial sector, apart from the discounted "green" mortgages, there are **credit lines** and/or **revolving funds** with banks, and **vendor credit** and/or **leasing** for energy efficiency activities. **Financial and/or non-financial institutions offer financial products for energy efficiency investments** in all the three sectors.

In 2018, promoting Energy Efficiency in Buildings in East Africa (EEBEA)¹⁴⁹ was a project implemented by UN-Habitat in collaboration with the United Nations Environment

¹⁴⁷ ECOFRIDGES GO online shop (2021), <https://www.ecofridgesgo.com>

¹⁴⁸ GCF (2021), [Ghana direct national AE](#)

¹⁴⁹ UN-Habitat (2018), Sustainable Building Finance: A Practical Guide to Project Financing in East Africa [EEBEA](#)

Programme (UNEP) and five East African countries (Kenya, Uganda, Rwanda, Burundi, and Tanzania). Among project components, it included appropriate financial framework for the implementation of energy efficiency and green design measures in buildings such as green mortgages.

There are nascent programmes to provide **financial incentives** for building energy efficiency, such as CFC Stanbic and Cooperative Bank providing \$33 million in **green credit lines** for energy- and resource-efficiency projects. Major residential lender HF Group has also commenced providing a **green mortgage credit facility** with support from IFC.¹⁵⁰

Investment in clean energy in 2018 exceeded €1 billion. The proportion of foreign investment in clean energy contracted from 96% in 2017 to 77% in 2018, potentially indicating increasing local investment in the sector. Kenya had favourable tariffs, taxes and duties on renewable energy technologies, but this was reversed in June 2020 with the release of the 2020 Finance Bill. The bill places a standard VAT rate of 14% on solar panels, wind turbines and batteries. In line with the East Africa Community Common External Tariff, solar panels and wind turbines still incur **zero import duties**, while a duty of 35% is charged on batteries.¹⁵¹

Kenya has one of the largest **off-grid solar** markets in the world. In 2019, 1,969,483 solar home systems and pico-solar products were sold by companies affiliated with GOGLA and Lighting Global in Kenya, up from 1,269,063 in 2018. In 2019, 47% of these products were sold on a **PAYGO** basis, up from 41% in 2018. The remaining share of products was sold in cash. Major operating companies include but are not limited to Azuri Technologies, BBOX, Chloride Exide, d.light, Davis and Shirliff, FuturePump, EcoZoom, Jua Energy, Kensen Ltd, Little Sun, M-Kopa, Mobisol, Orb Energy, Rafode Ltd, SolarNow and SunCulture.¹⁵²

As of 2021, Kenya counts the Acumen Fund, Inc. (Acumen), KCB Bank Kenya Limited (KCB), and the National Environment Management Authority of Kenya (NEMA) as **GCF AEs**. Acumen was granted basic fiduciary standards and was accredited by GCF for project management, and grant award. FNEC was also accredited for loan and equity. KCB was granted basic fiduciary standards and was accredited by GCF for project management. KCB was also accredited for loan and guarantee from GCF. NEMA was granted basic fiduciary standards and was accredited by GCF for project management too. NEMA wasn't accredited for on-lending/blending from GCF.¹⁵³

Lesotho. The country is not included in the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021 which looks into financing mechanisms for energy efficiency activities as part of its indicators.

Lesotho has developed a Scaling Up Renewable Energy Program in Low Income Countries (SREP) investment plan to enable increased adoption of the priority technologies—wind,

¹⁵⁰ Copenhagen Centre on Energy Efficiency (2018), [Energy Efficiency in Buildings in Kenya](#)

¹⁵¹ GET.Invest (2021), [Kenya Market Information](#)

¹⁵² GET.Invest (2021), [Kenya Energy Market Segments](#)

¹⁵³ GCF (2021), [Kenya AEs](#)

solar, small hydro power—through the development of commercial on-grid and off-grid renewable energy markets. From this plan, US\$5 million of SREP funding, in the form of a **concessional loan**, would be used to leverage US\$11.5 million in **grants and private concessional loans** (or a **partial risk guarantee**) from AfDB, US\$7.5 million in **equity** contributed from the developers of a 20 MW solar PV project, and US\$6.9 million in additional financing from either a private lender or other development finance institutions.¹⁵⁴

In 2020, one of the most important dimensions of the enabling environment for off-grid cleaner energy solutions was the extent to which people can access finance to purchase these products. Given relatively large upfront costs of the products relative to income in developing countries, few consumers could buy the solutions on a cash-basis and therefore rely on access to **credit from microfinance providers** or **instalment payment mechanisms such as PAYGO**. However, there were few MFIs who lent to poor, unemployed rural households, and access to formal credit, and especially bank credit, which offered lower interest rates, was relatively low in Lesotho. The banking sector in Lesotho was dominated by four banks, whose combined assets were equivalent to more than 40% of GDP. There was a relative lack of formal non-bank credit, savings or payments providers, with only eight MFIs in the country. Given the remoteness of many rural communities in Lesotho, accessing formal financial services was both difficult and expensive, increasing the importance of informal providers including mobile payment providers to supply credit, a safe place to save and earn a return and to pool risk.¹⁵⁵

Lesotho was part of regional financing initiatives (see “Regional” below for more details on the regional mechanisms). As of 2021, the country doesn’t count any direct national GCF AEs.

Liberia. According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, financing mechanisms for energy efficiency activities are not available in the residential, commercial services and industrial sector.

As of 2021, the country doesn’t count any direct national GCF AEs.

Libya. The country is not included in the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021 which looks into financing mechanisms for energy efficiency activities as part of its indicators.

The MENA Region Concentrated Solar Power (CSP) initiative is motivated by objectives of energy security, climate change mitigation, and regional integration in the Mediterranean. A total of \$750 million in CTF concessional financing is supporting the development of 960 MW of new CSP capacity across Egypt, Tunisia, Morocco, Jordan, and Libya.¹⁵⁶

As of 2021, the country doesn’t count any direct national GCF AEs.

¹⁵⁴ Climate Investment Fund, [SREP](#)

¹⁵⁵ UNDP (2020), [Lesotho Energy and the Poor](#)

¹⁵⁶ Climate Investment Fund (2021), [Libya](#)

Madagascar. According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, **On-bill financing/repayment** for energy efficiency activities are available in the residential sector. Whereas in the commercial services sector and industrial sector, financial mechanisms are not available.

The project Energy Saving Lamps for Households in Madagascar¹⁵⁷¹⁵⁸ initiated in 2013 by WWF, JIRAMA (the utility), with support from the World Bank Group (WBG) and myclimate, and implemented in partnership with the Ministry of Energy of Madagascar, the national energy and water provider (JIRAMA), and the TELMA Foundation, led to the distribution at affordable price of more than 518,000 energy savings lamps to households in Antananarivo. The project used grants from WWF and the World Bank Group (WBG), as well as **carbon revenues** from myclimate. The crediting period started in January 2015.

Clean energy investments reached €34.6 million in 2017, all of which were from foreign sources. No investment in clean energy was reported in 2018. The Malagasy tax code provides generous incentives to investment in the renewable energy sector, exempting solar panels, wind turbines and batteries from both **VAT and import duties**.¹⁵⁹

In 2019, 41,699 solar **home systems and pico-solar products** were sold by companies affiliated with GOGLA and Lighting Global in Madagascar, down from 51,353 in 2018. Companies supplying products in Madagascar include Baobab+, Greenlight Planet, HERi Madagascar, Jiro-Ve, Mada Green Power, Majinco, Orange, Power Technology Madagascar, SQVision and WeConnex/Madagascar Nexus Company. The Electricity Code of 2017 (Law 2017-020) establishes the new **National Sustainable Energy Fund**, which finances mini-grids, amongst other rural electrification technologies. It requires any operator of energy infrastructure to carry a licence.

As of 2021, the country doesn't count any direct national GCF AEs.

Zambia. According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, financing mechanisms for energy efficiency activities are not available in the residential, commercial services, and industrial sectors.

The only energy efficiency project in Zambia was the Energy Efficient Lighting Program which distributed 2 million free compact fluorescent lamps to residential customers, small enterprises and public buildings over two years in 2011.¹⁶⁰

As of 2020, the only existing sustainable energy projects (e.g., off-grid energy, mini grids, access to clean and affordable decentralised energy services, productive use of energy, SHS, energy access, etc.) in Zambia have been donor-funded (UNDP, WBG, USAID, DFID, etc.) as a

¹⁵⁷ WWF (2018), [The Success Of Madagascar's Energy Efficiency](#)

¹⁵⁸ myclimate (2020), [Energy Saving Lamps for Households in Madagascar](#)

¹⁵⁹ GET.Invest (2021), [Madagascar Market Information](#)

¹⁶⁰ IIEC (2021), [Energy Efficient Lighting Project in Zambia](#)

result of regulatory restrictions affecting the return on investment extending **concessional loans and grants**, using **results-based financing (RBF)**, and **revolving working capital loans**.¹⁶¹

In 2020, overall **access to financial services** was still relatively low in Zambia and also mostly driven by **payments and remittance products**, as formal access to savings, credit and insurance products were very low, with formal savings the highest of the three. Zambia had two credit reference bureaus – Credit Data CRB and CRB Africa. According to the World Bank development indicator database they cover 23% of Zambian adults. Two mobile network operators (MNOs) dominated the market: Airtel and TNM, and, according to GSMA, there were 5.38 million unique mobile phone subscribers in the country (or 30% of the population). Zambia was a relatively advanced market in terms of 3G subscriptions, having seen a strong increase in these subscriptions in recent years. Though, in 2014, only 2% of Zambians used mobile money. This access rate may have increased substantially since 2014. A study published in 2015 reports that mobile money was being provided by two MNOs: Airtel and TNM. Airtel launched Airtel Money (or 'Khusa M'manja'). Around 10% of total mobile phone users in Zambia use or have mobile money accounts.¹⁶²

As of 2020, the market in Zambia for off-grid cleaner energy products is small but emerging. Until recently, it consisted mostly of lanterns and other small products sold on a **cash basis or through donor initiatives**. Since 2018, three companies including Yellow (**PAYGO**) have entered the market – the other two are Solarworks, who are primarily based in Mozambique and Vitalite who started in Zambia. Other energy service companies that appear to be involved in the distribution of SHS in Zambia include Zuwa and M-PAYG. According to UNDP, there is a market for larger SHS (Tier 2) for household use that, for example, could power a television, which is estimated at roughly 200,000 households. Energy service companies in Zambia primarily sell Tier 1 solar solutions to households on an instalment or PAYGO basis. There are currently **limited alternative financing mechanisms to PAYGO for SHS**, and Zambians have **limited access to credit from formal providers**. Indeed, banking institutions target high-net-worth individuals and do not provide loans for SHS. They also require forms of **collateral** that most of the unelectrified population are unlikely to have (e.g., land). Savings and Credit Cooperative Organizations (SACCOs) on the other hand, of which there are 37 (Reserve Bank, 2018), typically **target the salaried employee market**. It is only MFIs that tend to serve lower-income customers. The Reserve Bank of Zambia reported 65 MFIs at the end of 2018. However, these MFIs also tend to target a narrow band of **salaried employees, government employees**, from whom they have a **salary deduction**.¹⁶³

As of 2021, the country doesn't count any direct national GCF AEs.

Mali. According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, **financial and/or non-financial institutions offer financial products for energy efficiency investments** in the residential, commercial services and industrial sectors.

¹⁶¹ UNDP (2020), [Energy and the Poor in Zambia](#)

¹⁶² UNDP (2020), [Access to financial services in Zambia](#)

¹⁶³ UNDP (2021), [Market for off-grid solutions for households in Zambia](#)

Moreover, credit lines and/or revolving funds with banks for energy efficiency activities are available in both the commercial services sector and industrial sector.

In 2019, WBG provided US\$ 22.7 million financing to support Mali's efforts to improve access to modern services and promote the deployment of renewable energy in rural areas. The financing package was composed of a US\$20 million equivalent **credit** and a US\$ 2.7 million **grant** from the Japan Policy and Human Resources Development Fund. The grant also supports the installation of solar home systems in households not living within the vicinity of a mini-grid, and the deployment of solar lanterns.¹⁶⁴

The ROCA project promotes **climate-friendly cooling technologies** in the four African countries including Mali (Burkina Faso, Cameroon, and Senegal being the rest of the countries).¹⁶⁵ The project will run from 2021 to 2024. The ROCA project aims at analysing the cooling demand and current RAC sector in these countries, giving advisory services to the government, training RAC technicians on the safe handling of natural refrigerants, as well as trainings on **climate finance** and **business models** to promote the accelerated adoption of climate-friendly as well as **energy-efficient appliances** using **natural refrigerants**. Pilot projects of these **Green Cooling technologies** will be added as well.

As of 2021, the country doesn't count any direct national GCF AEs.

Mauritania. According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, financing mechanisms for energy efficiency activities are not available in the residential sector and commercial services sector. Whereas in the industrial sector financial products for energy efficiency investments are available.

As of 2021, the country doesn't count any direct national GCF AEs.

Mauritius. The country is not included in the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021 which looks into financing mechanisms for energy efficiency activities as part of its indicators.

In 2018, Abu Dhabi Fund for Development (ADFD) and the International Renewable Energy Agency (IRENA) have announced US\$25 million in **concessional loans** for **solar PV projects** in Mauritius and Rwanda, financed through the IRENA/ADFD Project Facility. Of the total US\$25 million, US\$10 million will go towards enabling the Central Electricity Board in Mauritius to **equip 10,000 households with rooftop PV solar systems**. The project, which is estimated to save the country over US\$35 million in avoided fossil fuel imports over its lifetime, will improve energy security and contribute to the Mauritius's national target of reaching 35%

¹⁶⁴ WBG (2019), [World Bank Supports Mali's Efforts to Improve Access to Renewable Energy](#)

¹⁶⁵ Green Cooling Initiative (2021), [Refroidissement respectueux de l'Ozone et du Climat en Afrique de l'Ouest et Centrale \(ROCA\)](#)

renewable energy in its energy mix by 2025 through bringing 10 megawatts (MW) of renewable energy capacity online.¹⁶⁶

As of 2021, the country doesn't count any direct national GCF AEs.

Morocco. According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, **credit lines and/or revolving funds** with banks, **green or energy efficiency bonds**, and **vendor credit and/or leasing** for energy efficiency activities are available in the residential sector. In the commercial and industrial sectors **credit lines and/or revolving funds** with banks, **energy services agreements (pay-for-performance contract)**, **vendor credit** and/or **leasing** for energy efficiency activities are available. Also, **financial and/or non-financial institutions offer financial products for energy efficiency investments** in the residential, commercial services, and industrial sectors.

In recent years Morocco has developed regulations to encourage the proliferation of **green bonds**. As of early 2020 Morocco had issued five green bonds valued at Dh4bn (\$416.7m). In addition to Masen and Casablanca Finance City, green bonds were issued by two banks for financing and refinancing sustainable energy and energy efficiency projects (e.g., green building projects, etc.).¹⁶⁷

Launched in 2015, Morocco Sustainable Energy Financing Facility (MorSEFF) is a **credit line facility** of up to €110 million to participating financing institutions in Morocco to on-lend to businesses and **Energy Service Companies (ESCOs)** investing in energy efficiency and renewable energy projects by the European Bank for Reconstruction and Development (EBRD), in cooperation with the European Investment Bank (EIB), the Agence Française de Développement (AFD), and the Kreditanstalt für Wiederaufbau (KfW). It also includes grants and technical assistance with support from the UE.¹⁶⁸

In preparation in 2021, NAMA support projects (NSP) are expected to provide both funding and advisory support to improve energy performance of Moroccan Households, establishing an **energy efficiency fund** to compensate for the higher cost of energy efficient buildings and appliances. NAMA Facility funds will be channelled through the public housing developer Al Omrane (for buildings) and through retailers (for equipment).¹⁶⁹

Banking institutions such as BMCI - Group BNP Paribas set up a green credit facility for retail customers wishing to invest in energy-efficient appliances, sustainable energy technologies, or building retrofits. Holding a bank account with BMCI is not a requirement for beneficiaries, customer application fees are waived, and lending conditions are concessional (e.g., tenor period up to 72-month, etc.)¹⁷⁰

¹⁶⁶ IISD (2018), [Climate Mitigation Finance Update: Renewable and Energy Efficiency Financing and Guidance for Paris-compatible Investments | News | SDG Knowledge Hub | IISD](#)

¹⁶⁷ Oxford Business Group (2020), [Green financing attracts investors to Morocco's banking sector](#)

¹⁶⁸ [Morocco Sustainable Energy Financing Facility \(MorSEFF\)](#)

¹⁶⁹ NAMA Facility (2021), [Improving Energy Performance of Moroccan Households](#)

¹⁷⁰ BMCI - Group BNP Paribas, [Crédit Conso Vert](#)

Launched in 2007 at the initiative of the “Agence Nationale pour le Développement des Énergies Renouvelables, et de l’Efficacité Énergétique” (ADEREE), the “Fonds de Garantie des Efficacités et Énergies Renouvelables” or Guarantee Fund for Renewable Energy and Energy Efficiency (FOGEER) is a **credit guarantee fund** intended to de-risk sustainable energy loans (covering up to 70%) granted by banking institutions to Moroccan technology providers wishing to invest in renewable energy and energy efficiency initiatives (e.g. solar water heater, etc.)¹⁷¹

As of 2021, Morocco counts the Agency for Agricultural Development of Morocco (ADA), Attijariwafa Bank (AWB), CDG Capital S.A. (CDG Capital), and the Moroccan Agency for Sustainable Energy S.A. (MASEN) as GCF AEs. ADA was granted basic fiduciary standards and was accredited by GCF for project management. Both AWB and CDG Capital were granted basic fiduciary standards and were accredited for loan, equity, and guarantee from GCF.¹⁷²

Mozambique. According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, financing mechanisms for energy efficiency activities are not available in the residential, commercial services and industrial sectors.

Clean energy investments reached close to €67 million in 2017, all of which were from foreign sources. No investment in clean energy was reported in 2018. Mozambique does not provide tax relief in the form of VAT exemptions on renewable energy technology, charging the standard 17% on sales of solar panels, wind turbines and batteries. Import duty of 7.5% applies to solar panels and batteries, and 5% on wind turbines.¹⁷³

It is estimated that by the end of 2018, approximately 10% of the Mozambican population had access to solar home systems (SHS) and pico-solar products. In 2019, only 6,573 solar home systems and pico-solar products were sold by companies affiliated with GOGILA and Lighting Global in Mozambique, while no sales were recorded in 2018. Companies supplying products in Mozambique include Dynamiss, Epsilon Energia, Fenix, Fosera, Greenlight Planet, Green Watts, Ignite Power, Loja de Energias, Martifer Solar, Phaesun, SolarWorks, Sunbox and Total (selling NIWA solar systems). SolarWorks aims to open a chain of stores nationwide and to reach 100,000 households by 2021.¹⁷⁴

Get.Invest, with the collaboration of GIZ is supporting the local financial institutions in Mozambique in developing and offering finance products to increase the share of financing for renewables in the country¹⁷⁵. The Project started in March 2021 and is running throughout the year 2021. Local currency financing is one of the missing links to scale up investments flow into renewables in Mozambique and the project is aiming at tackling this challenge and strengthening the renewable energy market in the country.

As of 2021, the country doesn’t count any direct national GCF AEs.

¹⁷¹ Fellah-Trade, [Fonds de développement durable](#)

¹⁷² GCF (2021), [Morocco AEs](#)

¹⁷³ GET.Invest (2021), [Mozambique Market Information](#)

¹⁷⁴ GET.Invest (2021), [Mozambique Energy Market Segments](#)

¹⁷⁵ GET.Invest (2021), [Collaborating with domestic financial institutions to increase renewable energy investments](#)

Namibia. The country is not included in the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021 which looks into financing mechanisms for energy efficiency activities as part of its indicators.

In 2018, clean energy investment grew from around €8 million in 2015 to €70 million. Namibia offers favourable **import incentives** on renewable energy technologies, **exempting** solar panels, wind turbines and batteries from **import duties**. The country's standard VAT rate of 15% remains applicable to all these technologies.¹⁷⁶

Namibia has a successful track record of enabling and implementing standalone solar systems in the country. In 2015, nearly a third of the 47 registered renewable energy suppliers were registered to supply solar home systems. While no sales were recorded in 2019 from GOGLA and Lighting Global affiliate companies, 2018 saw 6,785 sales. Companies offering **solar home or pico-solar solutions** include Dezman Investments, Taati Solar (distributing SunKing lights) and Waka Waka Solar.

The government's 2017 Renewable Energy Policy strongly supports building on work done to date to further develop local expertise for technicians working on solar home systems, solar water heaters and PV pumps. Proactive support is offered to these industries, including for project preparation, due diligence and lending support through **preferential lending rates**. To this end, the Government of Namibia continues to support the industry via the **Solar Revolving Fund (SRF)**, a **dedicated credit facility** established to stimulate the demand and use of renewable energy technologies, with a focus on off-grid areas. In the period between 2011 and 2017, the SRF financed more than 3,000 SHSs.¹⁷⁷

In 2020, Nedbank's Namibian subsidiary partnered with Sunref, the green finance label of the French Development Agency (AFD), to set up a facility to finance sustainable energy projects aimed at reducing the carbon footprint of businesses in Namibia. Nedbank and Sunref's new mechanism intends to make available a **green credit line** to local SMEs. It will provide multipurpose **investment cost financing** and tailor support to project developers throughout the entire project life cycle, The Nedbank and Sunref facility will enable the financing of renewable energy projects for businesses including **energy efficiency** in Namibia.¹⁷⁸

In 2021, the Taati Solar project is a women-led Dutch-Namibian joint venture that is importing and distributing solar home systems (SHS) and DC solar-powered appliances such as **solar refrigeration appliances** to off-grid markets in Namibia. The project aims at facilitating scale-up of sales in rural and peri-urban communities through **micro-lending** and **hire-purchase** options. The project aims at selling 250 solar-powered refrigeration units and also plans to pilot refrigeration solutions for vaccines and medicines at 25 rural health clinics. The project received a grant from the Energy and Environment Partnership Trust Fund in Africa (EEP Africa).¹⁷⁹

¹⁷⁶ GET.Invest (2021), [Namibia Market Information](#)

¹⁷⁷ GET.Invest (2021), [Namibia Energy Market Segments](#)

¹⁷⁸ Afrik21, [Namibia: Nedbank and Sunref finance green projects for local businesses](#)

¹⁷⁹ EEP Africa (2021), [Accelerating the Adoption of Solar-Powered Refrigeration in Namibia](#)

As of 2021, the country counts the **Environmental Investment Fund of Namibia (EIF)** as GCF AE. EIF is a national entity and an environmental fund located in Namibia. It was established with a mandate of being a sustainable source of funding for the development and implementation of environmentally sustainable development projects and programmes in partnership with both public and private sector organizations. EIF was officially established in 2001, and began operations in 2011. The results of its activities overlap with the results of the GCF in the areas of natural resource management, green technology and low carbon development, nature-based tourism, and capacity-building. EIF was granted basic fiduciary standards and was accredited by GCF for both project management and grant award. EIF wasn't accredited for on-lending/blending from GCF.¹⁸⁰

Niger. According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, **credit lines and/or revolving funds** with banks for energy efficiency activities are available in the residential, commercial services and industrial sector. Also, **financial and/or non-financial institutions offer financial products for energy efficiency investments** in all three sectors. In the commercial services and industrial sector, there are also available partial risk guarantees for energy efficiency activities.

In 2018 the government of Niger announced the official launch of a US\$ 7 million **credit line**, aiming to stimulate the development of a **Solar Home System market** as well as for quality solar pumping systems.¹⁸¹ The credit line is part of the Solar Electricity Project (NESAP) led by the WBG, and will be implemented by the Government of Niger through eligible national financing institutions and with the support from Lighting Africa, the National Centre for Solar Energy (CNES) and the Nigerien Rural Electrification Agency (ANPER). Commercial banks and micro financing institutions will be identified in order to access these funds and provide financing to SHS importers and distributors.

As of 2021, the country doesn't count any direct national GCF AEs.

Nigeria. According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, **green or energy efficiency bonds** for energy efficiency activities are available in the residential sector. Whereas in the commercial services sector and industrial sector there are available **credit lines and/or revolving funds** with banks, **energy services agreements (pay-for-performance contract), green energy efficiency bonds, partial risk guarantees** for energy efficiency activities. In both sectors, **Financial and/or non-financial institutions offer financial products for energy efficiency investments** in the country.

In 2014, AfDB and the Clean Technology Fund (CTF) developed a **credit line** to Nigerian Bank for RE and EE projects. AfDB intended to extend a 7-year line of credit to Nigerian Bank to facilitate the provision of financing to projects on terms and conditions relevant for RE/EE. More specifically, the credit line was supposed to allow Nigerian Bank to offer **loans** with maturities of up to 7 years, which was far beyond what was currently offered in the market

¹⁸⁰ GCF (2021), [Namibia local GCF AE](#)

¹⁸¹ Lighting Africa (2018), [\\$7 million Credit Line for Solar Off - Grid Electricity in Niger](#)

and more affordable interest rates, compared to the 20 - 40% interest rates charged by Nigerian banks.¹⁸²

In 2017, the Nigerian Green Bond Market Development Programme was launched to provide technical support for the issuance of **green bonds** financing among other EE projects. The latest green bond issuance to date in Nigeria was US\$ 121 million to fund the development of a solar utility scale project in 2021.¹⁸³ In 2021, the value of Nigeria's green bonds market hit US\$ 136 million within three years with four issuances recorded since the debut issuance by the Federal Government.¹⁸⁴

In 2018, Sunref Nigeria was launched seeking to improve access to energy through improved access to **affordable finance** for renewable energy and energy efficiency technologies in the commercial sector. Hosted by the Manufacturers Association of Nigeria (MAN) and in partnership with local banks, United Bank for Africa (UBA) and Access Bank, Sunref Nigeria offers the private sector **competitive loans** and technical assistance for structuring their green investments so they can seize the opportunities of green finance. **A credit line** of USD\$ 70 million has been provided to Sunref partner banks that offer attractive terms (**concessional rate loans, long tenors, grace period**). A €9.5-million investment grant is available to make green investments even more attractive. Project sponsors can benefit from a **grant of 10% of the loan amount** upon completion of their project.¹⁸⁵

In 2018, clean energy investment was €19 million down from €234 million in 2017. The majority of this investment comes from foreign sources, accounting for 79% and 86% of investment into the sector in 2017 and 2018 respectively. Incentives for solar PV panels are favourable as they are **exempt from VAT** and incur **no import duty**. Wind turbines are also **VAT exempt**, yet are charged 5% import duty. Batteries offer much less attractive incentives and are charged the standard national VAT rate of 7.5% and 20% for import duties.¹⁸⁶

In 2019, 301,694 solar home systems and pico-solar products were sold by companies affiliated with GOGLA and Lighting Global in Nigeria, up from 286,913 in 2018. In 2019, 33% of these products were sold on a **PAYGO** basis, up from 29% in 2018. The remaining share of products were bought with cash. The market has attracted a number of players to date, with approximately 18+ companies operating. These include Asolar (distributor of Azuri systems), Azuri Technologies, BBOXX, d.light, Fenix, Greenlight Planet, Jua Energy, Leks Environmental, Little Sun, Lumos / Txtlight Power Solutions, Oolu Solar, PEG Africa, Rural Spark, Smarter Grid International, SolarCreeds, SolarMate Engineering, Solar Sisters, Solatrify, and ZOLA Electric.¹⁸⁷

In 2019, Proparco which is a subsidiary of Agence Française de Développement (AFD) focusing on private sector development was supporting the growth of SMEs and promoting the

¹⁸² CIF (2021), [Line of Credit for Renewable Energy and Energy Efficiency Projects](#)

¹⁸³ ESI Africa (2021), [Green bond Nigeria](#)

¹⁸⁴ The Guardian Nigeria (2021), [Green bond market in Nigeria](#)

¹⁸⁵ Sunref Nigeria (2021), [website](#)

¹⁸⁶ GET.Invest (2021), [Nigeria Market Information](#)

¹⁸⁷ GET.Invest (2021), [Nigeria Energy Market Segments](#)

financing of energy efficiency and renewable energy projects in Nigeria via a US\$ 85 million loan to UBA.¹⁸⁸

As of 2021, the country doesn't count any direct national GCF AEs.

Rwanda. According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, **financial and/or non-financial institutions offer financial products for energy efficiency investments** in the residential, commercial services and industrial sector.

In 2012, the **Rwanda Green Fund (FONERWA)** was established to invest in public and private projects that drive transformative change. It was one of the first national environment and climate change investment funds in Africa. FONERWA facilitates direct access to international climate finance and streamlines and rationalizes external aid and domestic finance. Financing from the Fund can be accessed by Rwanda's government ministries and agencies, districts, and civil society organizations, including academic institutions and the private sector. The Fund has several investment products, including **grants, innovation investments, and credit lines**. Innovation investments are **performance-based investments** for research and development, proof-of-concept and demonstration. Private sector companies can apply for up to US\$ 300,000 and must provide 25% match funding. The Fund provides Rwanda's cheapest money with a **credit line** that provides financing at 11.45%, well below market rates of approximately 18%. Private sector companies must provide 30% match funding. The minimum loan amount is USD 70,000. FONERWA has mobilised investment USD 216 million and supported 44 projects for strategic climate resilience investments in Rwanda.¹⁸⁹¹⁹⁰

In 2016, the Development Bank of Rwanda (BRD) created the Department of Energy Financing which intended to be in charge to implement the bank's intervention in the energy sector¹⁹¹. That year, the bank committed to invest for 5 years US\$ 185 million in the energy sector with the aim to address key constraints of intervention in the sector such as **high start-up costs** and other risks involved. The interventions were grouped in three main programmes: Energy Generation, Technical Assistance and **Energy Efficiency**. The latter one was expected to intervene by **financing energy reduction capital projects, financing alternative energy products**, etc.

Moreover in 2016, BRD launched the Clean Cooking and the Subsidy Windows **results-based financing scheme**¹⁹². Both subsidies are designed to address the affordability of these investments among the **lowest income population** in Rwanda and aim at respectively increasing usage of **clean cooking equipment** in the houses and the **Solar Home System (SHS)** installations in rural parts of the country. Both subsidies are co-financed by the World Bank where the subsidy window funding reaches US\$ 30 million.

¹⁸⁸ PROPARCO (2019), [website](#)

¹⁸⁹ UNFCCC (2021), [FONERWA](#)

¹⁹⁰ FONERWA (2021), [website](#)

¹⁹¹ BRD (2016), [Department of Energy Investments](#)

¹⁹² BRD (2016), [Energy Investments](#)

In 2017, another initiative of BRD was the **Renewable Energy Fund (REF)**, which aimed at informing the people on the availability of **dedicated loans** for buying **affordable solar equipment** with **fair repayment terms**.¹⁹³ Through this project, the bank aimed at **increasing the off-grid electrification** by facilitating private sector participation in renewable off-grid electrification.

In 2019, BASE - Basel Agency for Sustainable Energy started working alongside UN Environment's United for Efficiency (U4E) initiative and partnering with the Rwanda Environment Management Authority (REMA) and the East African Centre of Excellence for Renewable Energy and Efficiency (EACREEE) to develop financing mechanisms to promote energy-efficient and climate-friendly cooling appliances in the residential sector through the **Rwanda Cooling Finance Initiative** project, prepared as part of the second phase of the Rwanda Cooling initiative (R-COOL) project. With support from Clean Cooling Coalition (formerly K-CEP), the technical assistance team developed dedicated concepts of on-bill financing and **green on-wage financing** mechanisms with local partners.

In 2021, Get.invest with the support of the German Development Cooperation through GIZ is starting to collaborate with financiers in Rwanda to increase investments in decentralised renewable energy projects.¹⁹⁴ This recently launched programme aims at supporting local financial institutions in developing and offering **finance products** to increase the financing of renewables in the country.¹⁹⁵

As of 2021, the country counts the Ministry of National Resources of Rwanda (MINIRENA) as GCF AE. MINIRENA is a national entity, specifically a public sector ministry, which is responsible for environment, climate change and natural resources management at the local and national levels. MINIRENA was granted basic fiduciary standards and was accredited by GCF for project management. MINIRENA wasn't accredited for on-lending/blending from GCF.¹⁹⁶

Sao Tome and Principe. The country is not included in the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021 which looks into financing mechanisms for energy efficiency activities as part of its indicators.

In 2018, the Global Environment Facility (GEF), funded a US\$ 25 million project with the main objective to promote investments in renewable energy and energy efficiency solutions. Apart from strengthening the policy, legal and regulatory framework for sustainable energy solutions, the project aimed at promoting investments in sustainable energy through among others, financing innovative renewable energy projects in solar PV. Moreover, a national

¹⁹³ WBG (2017), [Rwanda – Renewable Energy Fund](#)

¹⁹⁴ Get.Invest (2021), [Rwandan Banks collaborate with European programmes to increase renewable energy investments](#)

¹⁹⁵ BASE (2021), [Rwanda Cooling Finance Initiative project](#)

¹⁹⁶ GCF (2021), [Rwanda local AE](#)

renewable energy and energy efficiency investment plan is to be developed and endorsed by investors and financiers.¹⁹⁷

As of 2021, the country doesn't count any GCF AEs.

Senegal. ECOWAS Refrigerators and Air Conditioners Initiative (ECOFRIDGES) Sénégal, is a BASE and United Nations Environment Programme United for Efficiency (UNEP U4E) project in partnership with the Agency for the Economy and the Control of Energy (AEME), the Directorate of the Environment and Classified Establishments (DEEC), la Société Nationale d'Électricité et du Gaz (Senelec), La Banque Agricole (LBA) and participating technology providers such as Electronic Corp. The initiative is financially supported by Clean Cooling Collaborative (formerly Kigali Cooling Efficiency Programme).

Through an **on-bill financing mechanism**, utility customers with prepaid meters subscribing to Senelec have access to **concessional consumer credit** at an interest rate of 0% for a term of at least 24 months, provided the refund will be deducted from their prepaid reloads each month during the repayment period. The credit finances the purchase of a refrigerator or an air conditioner approved as eligible appliances. La Banque Agricole offers these green loans to eligible households. By 2024, ECOFRIDGES Sénégal aims to unlock USD 6 million in financing to support the purchase of more thousands of energy-efficient and environmentally friendly cooling units.

Clean energy investment to date has been erratic, fluctuating from €2.4 million in 2014 to €135 million in 2016 and dropping to €11 million in 2018. More than 80% of investment in this sector after 2017 is from foreign sources, despite limited incentives for the purchase of renewable energy technologies. Senegal offers no VAT exemption on solar panels, wind turbines or batteries. Solar panels attract **no import duties**, however if they are pre-assembled into a generating system a 5% charge is applicable. Wind turbines and batteries are charged 5% and 20% import duties respectively.¹⁹⁸

More than 55,000 solar home systems (SHS) and pico-solar products were sold by GOGLA and Lighting Global affiliated companies in 2019, increasing by more than 10% from the previous year. Cash sales models continue to dominate, although **PAYGO** has successfully penetrated the market. PAYGO sales as a portion of total sales declined by 8% in 2019 from 50% in 2018, with the remainder accounted for by cash transactions. Senegal is home to more than 15 companies operating in the sector, including Asantys Systems, Baobab+, BBOXX, Bonergie, Energie R, Elle Solaire, Ilemel, Lagazel, Little Sun, Oolu Solar, PEG Africa, Sunna Design, Suntaeg, Vitalite, and several others. The government implemented a support programme in the form of the ERIL (Electrification Rurale d'Initiative Locale / Local Rural Electrification Initiative) framework. Private SHS companies participating in ERIL stand to benefit from subsidies under the initiative's policy of harmonising tariffs.¹⁹⁹

¹⁹⁷ GEF (2018), [Strategic Program to Promote Renewable Energy and Energy Efficiency Investments in the Electricity Sector of Sao Tome and Principe](#)

¹⁹⁸ GET.Invest (2021), [Senegal Market Information](#)

¹⁹⁹ GET.Invest (2021), [Senegal Energy Market Segments](#)

The ROCA project promotes ozone- and **climate-friendly cooling technologies** in the four African countries including Senegal (Burkina Faso, Cameroon, and Mali being the rest of the countries)²⁰⁰. The project will run from 2021 to 2024. The ROCA project aims at analysing the cooling demand and current RAC sector in these countries, giving advisory services to the government, training RAC technicians on the safe handling of natural refrigerants, as well as trainings on **climate finance** and **business models** to promote the accelerated adoption of ozone- and climate-friendly as well as **energy-efficient appliances** using **natural refrigerants**. Pilot projects these **Green Cooling technologies** will be added as well

As of 2021, the country counts AWB, Centre de Suivi Ecologique (CSE), and La Banque Agricole (LBA) as GCF AEs. CSE is a national entity whose core activities include environmental monitoring, natural resources management and conducting environmental impact assessments. All three AEs were granted basic fiduciary standards. Only CSE was accredited by GCF for project management. AWB was accredited for loan, equity, and guarantee from GCF, while LBA was only accredited for loans.²⁰¹

Seychelles. The country is not included in the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021 which looks into financing mechanisms for energy efficiency activities as part of its indicators.

In 2014, the project ‘Promotion and Up-scaling of Climate-resilient, Resource Efficient Technologies in a Tropical Island Context’ was implemented by UNEP and executed by the Ministry of Environment and Energy of Seychelles, Development Bank of Seychelles, Public Utilities Commission, Seychelles Institute of Technology. One of its main components was to create the Credit Risk Fund (CRF) - a **financial de-risking instrument or concessional loan fund for residential energy efficient appliances**. By the end of project 11,000 households accessed loans via the loan facility or CRF mechanism for purchase of EE appliances.²⁰²

In 2017, **Seychelles Energy Efficiency and Renewable Energy Programme** was assisting families and small businesses to gain access to **low-interest loans** to invest in **energy efficient electrical appliances** and renewable energy.²⁰³

As of 2021, the country doesn’t count any GCF AEs.

Sierra Leone. According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, financing mechanisms for energy efficiency activities are not available in the residential, commercial services and industrial sectors.

As of 2021, the country doesn’t count any GCF AEs.

²⁰⁰ Green Cooling Initiative (2021), [Refroidissement respectueux de l’Ozone et du Climat en Afrique de l’Ouest et Centrale \(ROCA\)](#)

²⁰¹ GCF (2021), [Senegal AEs](#)

²⁰² GEF (2014), [Promotion and Up-scaling of Climate-resilient, Resource Efficient Technologies in a Tropical Island Context](#)

²⁰³ ESI Africa (2017), [Seychelles Energy Efficiency and Renewable Energy Programme](#)

Somalia. According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, financing mechanisms for energy efficiency activities are not available in the residential sector. Nevertheless, financial and / or non-financial institutions offer financial products for energy efficiency investments in the commercial services and industry sector.

As of 2021, the country doesn't count any GCF AEs.

South Africa. According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, **energy services agreements (pay-for-performance contracts), green or energy efficiency bonds, and vendor credit and/or leasing** for energy efficiency activities are available in the residential, commercial services and industrial sector. Also, **financial and/or non-financial institutions offer financial products for energy efficiency investments** in all the three sectors. Moreover, credit lines and/or revolving funds with banks are available in the commercial services and industrial sector for energy efficiency activities.

In 2015, the French Development Agency (AFD) provided a €120 million **discounted credit facility** to two banks - Absa and Nedbank - and also to the SA government's industrial support agency, the Industrial Development Corporation (IDC). This is for the financing of renewable energy and energy efficiency projects. The loans provided by the banks to their clients can either offer: An **investment grant** to improve the return of the project and/or to finance studies (feasibility, approval, measurement and verification), or a **lower interest rate** to support the project's development. The AFD has also set up a technical assistance facility within the South African National Energy Development Institute (SANEDI) to support the banks in their renewable energy and energy efficiency strategy and operations.²⁰⁴

In 2018, following the implementation of Minimum Energy Performance Standards (MEPS), the Ministry of Energy of South Africa released the "**Appliance Energy Calculator**" mobile app to allow consumers to make in-store comparisons of different appliance models. The app allows for consumers to enter the relevant information, easily sourced from the mandatory energy label on the appliance, into the app, which calculates the **estimated running cost** of the appliances of their choice over a 1- and 10-year period – showing which appliance uses the least electricity, as well as CO2 emission reductions.²⁰⁵

In 2020, IFC invested \$200 million in the Standard Bank of South Africa Limited's **green bond**. This is Africa's largest green bond which is aiming to increase **access to climate finance**. The 10 years green bond will enable the bank to **on-lend and finance climate smart projects** in the country such as renewable energy, **energy efficiency**, water efficiency and **green buildings**.²⁰⁶ According to IFC, commercial banks currently provide only 45% of South Africa's financing for RE and EE projects. IFC estimates that the country's climate smart investment

²⁰⁴PSEE (2015), [Guide to energy efficiency finance in South Africa](#)

²⁰⁵ ESI Africa (2018), [Appliance Energy Calculator](#)

²⁰⁶ IFC (2020), <https://pressroom.ifc.org/all/pages/PressDetail.aspx?ID=16888>

potential between now and 2030 is around \$588 billion. The projects funded by this green bond have the potential to reduce greenhouse gas emissions by **742,000 tons per year**.

In 2021, IFC announced providing Absa Bank Ltd. with a **green loan** of up to US\$150 million to support the bank's strategy to expand its climate finance business and help South Africa meet its greenhouse gas reduction targets. The green loan is the first certified loan in Africa that complies with the **Green Loan Principles**. This means that lending by Absa for green projects will be disclosed, improving transparency, and encouraging other banks to follow the principles. In addition to the loan, IFC will provide technical advice and knowledge sharing to help the bank develop a green, social, and sustainable bonds and loans framework.²⁰⁷

As of 2021, South Africa counts the Development Bank of Southern Africa (DBSA) and the South African National Biodiversity Institute (SANBI) as GCF AEs. DBSA is an NDB, with a mandate to finance both private and public sector activities at national and regional levels in Africa. DBSA provides sustainable infrastructure project preparation, finance and implementation support. Its environment and climate change portfolio for the financial year 2014/2015 was worth approximately US\$ 530 million and included renewable energy, **energy efficiency**, biodiversity and sustainable land management projects. DBSA in partnership with the national environmental affairs department has established and manages a **special fund as a national mechanism** that aims to provide catalytic finance to facilitate investment in high-impact and **sustainable green initiatives** in the country. SANBI is a national entity and a research institute that coordinates research, monitors and reports on the state of biodiversity in South Africa. SANBI also provides planning and policy advice and it pilots management models. SANBI intends to mobilize financial resources from various sources, including MDBs. Both DBSA and SANBI were granted basic fiduciary standards and were accredited by GCF for project management and grant award. Only DBSA was accredited for loan, equity, and guarantee from GCF.²⁰⁸

South Sudan. According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, financing mechanisms for energy efficiency activities are not available in the residential, commercial services and industrial sectors.

As of 2021, the country doesn't count any GCF AEs.

Sudan. According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, financing mechanisms for energy efficiency activities are not available in the residential, commercial services and industrial sectors.

As of 2021, the country doesn't count any GCF AEs.

²⁰⁷ IFC (2021), [Absa green loan](#)

²⁰⁸ GCF (2021), [South Africa national AEs](#)

Tanzania. According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, financing mechanisms for energy efficiency activities are not available in the residential, commercial services and industrial sectors.

In 2017, AFD provided its support to Bank of Africa in Tanzania (BOA-T) in the context of its Sunref regional programme. This support was in two forms a **loan** to BOA-T to allow it to allocate loans to finance renewable energy projects or energy efficiency projects in the commercial sector and technical assistance financed by the EU and provided upstream to project promoters, for the preparation of their proposals, and downstream, to bank branches likely to allocate a loan which will make it possible to move on to the implementation stage. This EUR 11 million **green credit line** was AFD's first **concessional credit line** for renewable energy and energy efficiency development in Tanzania.²⁰⁹

In 2017, foreign investment into clean energy constituted only 32% of the €6.2 million total investment in the sector. In 2018, total investment increased to €8.4 million while foreign contribution represented 51%. Annual investment in the sector remains low in comparison to the €23.5 and €64.5 million received in 2014 and 2015 respectively. Incentives for renewable energy technologies are favourable. Solar panels and wind turbines are **exempt from VAT** and are **not charged any import duty**. Batteries, while also exempt from VAT, do incur a 25% import duty on standard batteries and 35% on less common batteries, like some other East African countries.²¹⁰

The off-grid solar market in Tanzania has been growing steadily over until 2019, following volatile sales in previous years. GOGLA and Lighting Global affiliated sales in 2016 amounted to 372,767 products, followed by a decline to 172,442 in 2017. In 2018, sales increased again, to 205,733 units. 2019 saw another increase, to 263,927 units. In 2019, 32% of these products were sold on a **PAYGO** basis, down from 52% in 2018. The remaining share of products were sold as cash transfers. Operating companies include American Engineering Group, Azuri Technologies, d.light, Enda Solar, Greenlight Planet, Jaza Energy, Little Sun, M-Kopa, Mobisol, Sikubora Solar, Simusolar, Solaris Tanzania, Solar Sisters, Trend Solar, Rex Energy and ZOLA Electric. Companies need only to inform the regulator of their activities, and solar home systems and pico-solar products are required by the Tanzania Bureau of Standards to meet the Lighting Global standards for small renewable energy and hybrid systems for rural electrification.²¹¹

In 2018, **small-scale energy efficiency projects** had been conducted in the country, for example **aggregated purchasing schemes** for energy-efficient electrical equipment, however, there were no governmental projects under-way in the sector.²¹²

In 2019, there were 39 commercial banks, seven community banks, five microfinance banks, three financial leasing companies, two development finance institutions, two financial institutions, two representative offices of foreign banks, and one mortgage refinancing

²⁰⁹ Sunref (2017), [Sunref Tanzania](#)

²¹⁰ GET.Invest (2021), [Tanzania Market Information](#)

²¹¹ GET.Invest (2021), [Tanzania Energy Market Segments](#)

²¹² Netherlands Enterprise Agency (2018), [Final energy report Tanzania](#)

company. The banking sector includes a few local financing institutions that have **renewable energy credit lines**. These include the Tanzania Investment Bank, a financing partner to the (Rural Energy Agency [REA]) and the Bank of Africa (through Sunref.) Other banks have a direct relationship with off-grid companies (e.g., Mobisol’s partnership with the Cooperative and Rural Bank [CRDB]).²¹³

In 2019, more than 50 % of the mainland population relies on farming or livestock for income in Tanzania. Most of this income comes from selling food crops. There are at least five off-grid companies in Tanzania that sell **productive-use solutions** powered by off-grid energy (e.g., refrigeration for food and medicine, etc.)²¹⁴

In 2019, there were over 20 **funding facilities** available in Tanzania for various types of off-grid energy through debt financing offering a **range of capital type and funding instruments** such as grants, debt, equity, guarantees, short- and long-term debt, short-term working capital, US\$ and local currency debt, interest free loans, green credit lines, receivables financing, etc.²¹⁵

In 2020, the EU intended to provide support to energy efficiency in Tanzania including the formulation of a roadmap for the realisation of an energy performance in buildings regulatory framework, the development of a 20-year Tanzania energy efficiency strategy, and the implementation of the first **energy efficiency action plan (EUR 8 million)**.²¹⁶

As of 2021, the country counts CRDB Bank PLC (CRDB) as GCF AE. CRDB is a national, private sector financial institution based in Tanzania. Its mission is to provide competitive and innovative financial solutions while delivering a sustainable contribution to society. It has been undertaking various climate change-related projects and programmes within the context of the United Nations Framework Convention on Climate Change. By becoming accredited to GCF, CRDB aims to catalyse low emissions and climate resilient development by implementing various projects with **grants, loans and other fit-for-purpose bank products**. CRDB was granted basic fiduciary standards and accredited by GCF for project management. CRDB was accredited for loan, equity, guarantee, and blending from GCF.²¹⁷

Togo. According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, financing mechanisms for energy efficiency activities are not available in the residential, commercial services and industrial sectors.

As of 2021, the country doesn’t count any GCF AEs.

²¹³ Usaid (2018), [Off-grid solar market assessment Tanzania](#)

²¹⁴ Usaid (2018), [Off-grid solar market assessment Tanzania](#)

²¹⁵ Usaid (2018), [Off-grid solar market assessment Tanzania](#)

²¹⁶ DEVCO (2020), [Energy Efficiency in Tanzania](#)

²¹⁷ GCF (2021), [Tanzania GCF AE](#)

Tunisia. According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, **on-bill financing/repayment** for energy efficiency activities are available in the residential sector. For the commercial services and industrial sectors, **credit lines** and/or **revolving funds** with banks for energy efficiency activities. Also, **financial and/or non-financial institutions offer financial products for energy efficiency investments** in the residential, commercial services and industrial sector.

Tunisia channels concessional financing from a dedicated **energy efficiency fund** (“Fonds de Transition Énergétique” (FTE)) through an **on-bill financing mechanism** to support investment programmes in energy-efficient technologies in the residential sector such as Solar Water Heater (PROSOL)²¹⁸ in 2015, building retrofits (PROMO-ISOL) in 2017, LED lighting (PROMO LED) in 2020, and **energy-efficient residential refrigerators** (PROMOFRIGO)²¹⁹ in 2021. These initiatives are being implemented by the Tunisian National Agency for Energy Conservation (ANME) with support from local partners such as the utility - Société Tunisienne de l'Electricité et de Gaz (STEG), and donors such as UNEP, the Government of Italy, and EDELEC (National French Organisation of Enterprises). The programmes usually offer **concessional loan facilities and grants** to end-users.

As of 2021, the country counts AWB and the Sahara and Sahel Observatory (OSS) as GCF AEs. OSS is a regional entity in Africa that aims to serve as an international framework for partnership and dialogue in the fight against desertification and in the attenuation of the effects of drought, the adaptation to climate change and the protection of biodiversity. Both AWB and OSS were granted basic fiduciary standards. OSS was accredited by GCF for both project management and grant award, but OSS wasn't accredited for loan, equity, guarantee, nor blending from GCF. AWB was accredited for loan, equity and guarantee from GCF.²²⁰

Uganda. According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, financing mechanisms for energy efficiency activities are not available in the residential sector. In the commercial services and industrial sectors, we have **credit lines** and/or **revolving funds** with banks as an available mechanism for energy efficiency activities. Moreover, in both sectors **financial and/or non-financial institutions offer financial products for energy efficiency investments**.

In 2020, Uganda Energy Credit Capitalization Company (UECCC) had partnered with 14 local financial Institutions to provide financing mechanisms (i.e., **concessional credit lines**) for acquisition of renewable energy technologies including solar, biogas and grid electricity through on-lending and de-risking instruments. Among others, through partner local financial institutions, UECCC provides **loans** to households through a solar end-user financing programme and an on-grid connection loan programme, as well as **working capital and partial risk guarantees** to solar home system technology providers.²²¹

²¹⁸ SDG (2005), [PROSOL Sustainable Development Knowledge Platform](#)

²¹⁹ ANME (2017), [PROMO-FRIGO](#)

²²⁰ GCF (2021), [Tunisia local GCF AEs](#)

²²¹ UNFCCC (2020), [UECCC in Uganda](#)

Clean energy investment declined almost five-fold between 2017 and 2018. From a high of €239 million in 2015, annual volumes dropped significantly to €161 million in 2016 and to around €29 million in 2018. Despite the decline in volumes, proportional foreign investment remained stable, accounting for 78% and 79% of total investment in the sector in 2017 and 2018 respectively. The country offers incentives for renewable energy but some technologies are afforded more incentives than others. Solar panels are most favourable as they are **exempt from VAT** and incur **no import duties**. Sales of wind turbines are charged the standard VAT rate of 18%, yet are not charged import duties. Batteries incur an 18% VAT charge. In accordance with East African tariff policies, standard batteries incur a 25% import duty and less common batteries incur a 35% duty.²²²

Uganda has a thriving market for solar home systems (SHS) and pico-solar solutions. By 2017, about 300,000 households were connected to at least a Tier 1 SHS and uptake seems to be growing. In 2019 alone, almost 399,285 SHS and pico-solar products were sold by GOGLA and Lighting Global affiliated companies, marking an 8% increase from the previous year. **PAYGO** accounted for 65% of sales in 2019, a 5% increase from 2018. The country has more than 25 companies importing and distributing a multitude of products and offering a range of related services, many of which are members of the Uganda Solar Energy Association (USEA). Examples include d.light, Fenix, Greenlight Planet (SunKing), Little Sun, M-Kopa, Rural Spark, SolarNow, Solar Links, Solar Sisters, Total, VAC Solar UK and Village Energy.²²³

In 2020, EnerGrow intended to pilot an innovative **productive use asset financing model** for 150 women-owned micro, small and medium enterprises (MSMEs). EnerGrow will provide financing up to USD 1,000 for **energy efficient equipment** through a platform that develops a **comprehensive credit profile** tailored for energy access needs. During the project, the company will expand its **credit scoring platform** by testing a range of energy efficient productive use equipment in various rural and peri-urban settings in Uganda. **EEP Africa financing** will enable acquisition of the productive use assets and training of new personnel.²²⁴

As of 2021, Uganda counts the Ministry of Water and Environment of Uganda (MWE) as **GCF AE**. MWE is a national entity responsible for promoting and ensuring rational and sustainable utilisation, development and effective management of water and environmental resources for the socioeconomic development of Uganda. MWE was granted basic fiduciary standards and accredited for both project management and grant award by GCF. MWE wasn't accredited for on-lending/blending from GCF.²²⁵

Zambia. According to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, **financial and/or non-financial institutions offer financial products for energy efficiency investments** in the residential, commercial services and industrial sectors.

²²² GET.Invest (2021), [Uganda Market Information](#)

²²³ GET.Invest (2021), [Uganda Energy Market Segments](#)

²²⁴ EEP Africa (2021), [EnerGrow](#)

²²⁵ GCF (2021), [Uganda local GCF AE](#)

In 2015, energy efficiency initiatives at national level included the intention from the Government of Zambia to phase out the use of incandescent bulbs in the country, the introduction of **tax waivers** on importation of **energy efficient equipment** (i.e. SI 32 & 33 of 2008), the Introduction of **prepaid metering system** for public and private buildings, free distribution of Compact Fluorescent Lamps by the utility (i.e. ZESCO Limited), free energy audits by ZESCO limited, the introduction of low power factor surcharge for large power users (industry, mining, agriculture), and energy saving awareness campaigns (e.g. commemoration of annual energy Week.). **No specific financing mechanisms** existed to promote energy efficiency programmes. Energy efficiency activities were **funded from the national budget and the utility.**²²⁶

In 2016, the Increased **Access to Electricity and Renewable Energy Production (IAEREP)** project aimed at increasing access to clean energy, promoting renewable energy production and energy efficiency. In the first phase, the Zambian government provided support to public institutions to develop and/or revise the legal and regulatory framework for the deployment of renewable energy and energy efficiency. The second phase of the initiative, launched in August 2019, provided capacity building for public and private organisations involved in renewable energy deployment and energy efficiency solutions in Zambia. In 2021, the European Development Fund (EDFF) provided a EUR23 million **grant** to support the third phase of the IAEREP programme which intends to stimulate the emergence of **sustainable business models for energy services** to promote the use of renewable energy and energy efficiency at the national level and encourage the private sector to participate in the rural electrification programme.²²⁷

In 2016, **payroll lending** accounted for a third of all loans in the Zambian banking system and had emerged as the largest contributor to commercial bank loan portfolio growth every year since 2011. For several banks, **payroll loans** also known as **salary backed loans** or **payday loans** or **salary-based loans** accounted for well over half of their total loan book. Government employees were responsible for nearly three quarters of outstanding loan schemes in mid-2014 and had the highest incidence of multiple borrowing. Though, the Banking and Financial Services Act limited the total amount of debt repayments and other deductions to 60% of gross income, leaving a minimum of 40% of gross pay as take-home or disposable pay.²²⁸

In 2017, the **Beyond the Grid Fund for Zambia (BGFZ)** started supporting private companies to offer a range of innovative products and approaches to promote clean, modern and reliable energy affordable energy solutions. The core of the BGFZ was a EUR20 million **results-based “social impact procurement” fund**. Unlike traditional concessional financing, the BGFZ operates rather like a **traditional public procurement**. Rather than a distinct physical asset or service, the BGFZ is procuring energy services for Zambian consumers. The programme is not buying the energy services on behalf of customers; rather the fund closes the “viability gap”, on a per-connection basis, incentivising rollout and scaling up in areas that would – in the absence of the BGFZ – not represent viable markets for companies. Among others based on energy data and intelligence geospatial systems, the programme developed a **PAYGO** energy

²²⁶ Status of Energy Efficiency Implementation in Zambia (2015), [presentation](#)

²²⁷ AEP (2021), [IAEREP programme](#)

²²⁸ FSD Africa (2015), [Review of current payroll lending market in Zambia](#)

system in partnership with MTN, a mobile telecommunications company, providing solar home systems to off-grid rural Zambian households.²²⁹

In 2017, Zambia started banning importation of incandescent bulbs, while at the same time distributing 5 million energy efficiency bulbs. **Tax incentives** for LED lights were introduced in 2018. To complete the switchover, ZESCO planned to spend a total of US\$ 20 million to distribute the free LED bulbs in exchange for conventional ones.²³⁰

In 2018, there was a growing presence of financial service providers like **savings and credit cooperative society (SACCO)** and several **informal rotating savings and credit groups** that benefited the rural population and provided relatively **cheaper credit, e.g., for procuring energy products.**

In 2018, the utility (i.e., ZESCO) was carrying out awareness and information campaigns and providing energy tips to manage the consumption and the demand for electricity in Zambia. Among the appliances targeted residential refrigerators. **Time-of-use tariffs (TOU)** were introduced for electricity consumption defined as peak, off peak and standard time.²³¹

In 2018, GCF approved the US\$52 million **Zambia Renewable Energy Financing Framework** which aims at supporting the Government of Zambia catalysing private investment in the renewable energy sector to boost electricity generation and diversify the country's energy mix. This initiative will support the Government of Zambia's **Renewable Energy Feed-in Tariff (REFIT)** policy to develop 100 MW of renewable projects, mostly solar power, through **long-tenor project loans**. It will provide technical assistance to build capacity for rural electrification, and help local financial institutions carry out renewables and project finance. The project has an estimated lifespan of 23 years. GCF injected US\$52.5 million financing in **loan and grant**, while the AE (i.e., AfDB) injected US\$101.5 million co-financing in **loan, equity, and grant.**²³²

Clean energy investment volumes grew between 2017 and 2018, from €52.8 million to €62.8 million. In the same period, foreign capital accounted for 79% and 83% of total clean energy investment, respectively. The country's taxation regime is generally favourable to renewable energy technologies, with **no import duties** charged on solar panels, wind turbines or batteries for renewable energy storage. A **VAT rate** of 16% is applicable to wind turbines while solar panels and batteries are charged a zero rate.²³³

In 2019, Zambia had a vibrant market for **standalone solar systems** with at least eight prominent companies offering a range of products and services through various business models. These include Captain Electrical, Fenix, Greenlight Planet, Kakula Solar, Solar Village, Sunray, SunnyMoney and Vitalite Group. Demand and uptake is growing steadily. In 2019, 188,718 solar home systems and pico-solar products were sold by companies affiliated with GOGLA and Lighting Global, representing a significant increase from 125,978 in 2018. **PAYGO** based sales decreased from 81% to 67% of total sales between 2019 and 2018, with the difference representing cash sales. Regulatory requirements are generally favourable to

²²⁹ BGFZ (2021), [website](#)

²³⁰ LED Inside (2017), [Zambia to Make Complete Switch Over to LED Lighting](#)

²³¹ Ministry of Energy (2018), [Zambia SE4ALL Action Agenda](#)

²³² GCF (2021), [Zambia Renewable Energy Financing Framework](#)

²³³ GET.Invest (2021), [Zambia Energy Market Information](#)

standalone solar companies. Licensing for the retail of solar home or pico-solar systems is relatively straight-forward and covers manufacture, supply, installation, and maintenance. Companies involved in imports need a specific licence issued by the regulator. This is required for all shipments of solar technologies into the country and helps the country ensure the quality of imports. Also, the government has proposed a **zero-rate duty** on gas stoves, cookers and boilers in 2019 to mitigate the effects of climate change and promote the use of alternative energy sources.²³⁴

In 2019, the EU launched the Zambia Energy Efficiency and Sustainable Transformation programme (ZE2ST) which aimed at mobilising energy savings, energy services and demand side management to make energy efficiency count in Zambia. On the power demand side, **seed money** for early-stage energy efficiency market development intended to help the Government of Zambia enact policy measures and non-market instruments to promote, among others, energy efficient lighting and solar water heaters in the residential sector.²³⁵

As of 2021, the country counts the **Development Bank of Zambia (DBZ)** as GCF AE. DBZ was granted basic fiduciary standards by GCF. DBZ was accredited for **loan, equity, and guarantee** from GCF.²³⁶

Zimbabwe. In 2002, the rural electrification programme was initiated following the enactment of the **Rural Electrification Fund Act**²³⁷. It created a **Rural Electrification Fund (REF)** that has the mandate for the total electrification of all rural areas, funded by electrification levies and government stipends. REF is the implementing arm of the **Rural Electrification Fund Board (REFB)**. REF's mission is to empower rural communities in Zimbabwe through harnessing energy resources to ensure that all the people have access to adequate, reliable, least-cost and environmentally sustainable energy services. To achieve its mission, REF embarks on two broad programmes, on Electricity Grid Extension to rural areas, and Research and Development of alternative energy and cost-effective grid technologies. REF offers 100% capital subsidy to the public institutions. Later, in 2009, the Electricity Act opened up the power sector to Independent Power Producers (IPP).

In 2012, the launch of the **National Energy Policy (NEP)** refocused **Rural Electrification Fund (REF)** to have an expanded mandate to promote the provision of electricity and **other modern energy services** to rural areas using **renewable energy service technologies** to the maximum extent possible.

In 2013, the **Zimbabwean Agenda for Sustainable Socio-Economic Transformation** reinforced the Government of Zimbabwe's preference for **distributed energy solutions**.²³⁸

²³⁴ GET.Invest (2021), [Zambia Energy Market Segments](#)

²³⁵ EU (2019), [Zambia Energy Efficiency and Sustainable Transformation programme \(ZE2ST\)](#)

²³⁶ GCF (2021), [Zambia local GCF AE](#)

²³⁷ [Rural Electrification Fund Act](#) (2002)

²³⁸ Government of Zimbabwe (2013), [ZimAsset](#)

In 2015, Zimbabwe committed itself in its first intended **Nationally Determined Contribution (NDC)** submission to achieve a 33% reduction of its energy-related greenhouse gas emissions per capita below business-as-usual by 2030 (INDC, 2015). Updating of the initial NDC is underway.

In 2016, in an effort to increase uptake of renewable energy in the country, the Zimbabwe Energy Regulatory Authority (ZERA) reviewed the **Renewable Energy Feed in Tariff (REFIT)**, which was developed in 2013. Generation projects were procured through unsolicited bids. This has clogged the licensing system with many projects that had not proceeded through to financial closure and have remained unimplemented. A competitive bidding framework for new generation projects was desirable as it would assist ZERA to license the best operators with relevant capacity and potential at competitive cost. The REFIT is being used for **Power Purchase Agreements (PPAs)** of small hydro and wind projects for a period of five years after which a competitive bidding process will be used for all projects.

In 2016, REF developed the **Rural Energy Master Plan (REMP)** which is meant to provide a systematic and realistic approach to how Zimbabwe's rural areas can be provided with modern energy services. The energy services include electrical energy services (lighting, refrigeration, entertainment, etc). The government has implemented innovation mechanisms such as **net metering** and **feed-in tariff** for clean energy to enable **Independent Power Producers (IPP)** to add their excess electricity to the national grid.

In 2018, the **National Climate Policy (NCP)**²³⁹ was passed. NCP seeks to create a pathway towards a climate resilient and low carbon development economy in which the people have enough adaptive capacity and continue to develop in harmony with the environment. To achieve this, NCP expects to be supported by the National Climate Change Response Strategy, National Adaptation Plan, Low Carbon Development Strategy, National Environmental Policy, **National Renewable Energy Policy (NREP)**, and Forest Policy among other related policies and strategies that are aimed at achieving sustainable development. What is more, NCP aims to establish a **National Climate Fund (NCT)** that is supported by a 10% budgetary allocation from the national budget which will finance the climate strategies and the implementation of this Policy. It aims to:

- Channel funds to support projects in climate change mitigation, adaptation, disaster risk reduction and gender-sensitive and children-sensitive grassroots projects in every district of the country;
- Develop, review and implement policies to enhance the country's capacity to engage in carbon market activities, strengthen the viability of domestic carbon asset production and increase access to international carbon markets and green bonds;
- Build capacity to access international climate funds through upscaling REDD+, **Clean Development Mechanism (CDM)**²⁴⁰, **Green Climate Fund (GCF)**²⁴¹ and **Global**

²³⁹ Ministry of Environment, Climate, Tourism and Hospitality Industry (2018), [National Climate Policy](#)

²⁴⁰ UNFCCC, Kyoto Protocol (2005), Article 12, [Clean Development Mechanism \(CDM\)](#)

²⁴¹ UNFCCC, [Green Climate Fund \(GCF\)](#)

Environment Facility (GEF)²⁴² financed projects, etc under mitigation and adaptation programs;

- Ensure the accreditation of national institutions as national implementing entities for direct access to GCF and adaptation funds;
- Provide an analysis of the annual budget expenditure on climate-related interventions to determine its impacts on the vulnerable groups; and
- Establish 0.005% levy of net profit for industries towards national green growth.

In 2019, Zimbabwe put forward the **National Renewable Energy Policy (NREP)**²⁴³. The policy aims to have 16.5% of the total generation capacity (excluding large hydro) from renewable sources by 2025. This increases to 26.5% by 2030. Through the policy, Zimbabwe planned to set up the **Green Energy Fund of Zimbabwe (GEFZ)** to extend financial assistance for setting up projects relating to new and renewable sources of energy and other sustainable energy projects such as **Demand Side Management (DSM)** initiatives, exploring both domestic and foreign financing resources. Among others, the Fund will give concessional loans and encourage projects to tap funding from pension funds, insurance funds and bond markets through the **Prescribed Asset Status mechanism**²⁴⁴. Also, it was proposed that for a period of one year from its inception, the Fund should be administered by the **Rural Electrification Fund (REF)**, while the **Ministry of Finance and Economic Development (MoFED)** should also oversee the management of the Fund. Thereafter, it shall be managed by the **Infrastructure Development Bank of Zimbabwe (IDBZ)**.

In 2019, IDBZ was in the process of establishing a **Climate Finance Facility (CFF)**²⁴⁵ which is essentially a ring-fenced Fund dedicated to financing green projects in Zimbabwe in the priority areas of renewable energy, **energy efficiency**, irrigation schemes, waste management systems, etc. The CFF adopts a **blended finance** approach where concessional finance is provided along with incubation to renewable energy project sponsors and entrepreneurs. The project proposal was supported by UNDP among others. Meanwhile, the **National Climate Fund (NCF)** which will act as a financing mechanism for priority climate change actions and interventions was still at the consultation stage.

In 2019, work for implementing competitive procurement of electricity projects in Zimbabwe commenced. **The African Development Bank (AfDB)** offered the Government of Zimbabwe technical assistance in the development of the **competitive bidding framework** for IPP. The project, which is anchored on the completion of the **National Integrated Energy Resource Plan (NIERP)**, will tender out projects from the least cost energy mix.

²⁴² [Green Environment Facility \(GEF\)](#)

²⁴³ Ministry of Energy and Power Development (2019), [National Renewable Energy Policy](#)

²⁴⁴ The Prescribed Asset Status mechanism means institutions such as insurance companies and pension funds can choose to invest in one or more of these assets to meet their statutory obligations. These entities are normally required by law to hold a portion of their investments in prescribed assets such as bonds and other Government paper.

²⁴⁵ [Catalysing Investments in Climate and Sustainable Energy for Productive Use and The Achievement of the SDGs in Zimbabwe \(2019\)](#)

In July 2019, Zimbabwe removed **import duties** on all solar-related products ranging from batteries to cables. The government also introduced a new policy that requires all newly constructed infrastructure to install solar systems. This policy is aligned with the government's plan to promote local production as well as importation of solar equipment.

In 2020, the **Ministry of Energy and Power Development (MOEPD)** started developing the **National Energy Efficiency Policy (NEEP)**. The draft NEEP says that Zimbabwe shall establish and develop mechanisms and regulations targeted at MEPS for selected buildings, vehicles, technologies and appliances in the country. These shall include residential refrigerators among others.

In 2021, the **Infrastructure Development Bank of Zimbabwe (IDBZ)** was accredited by the **Green Climate Fund** as **Direct access Accredited Entity**²⁴⁶, which means that IDBZ will access climate finance and technical expertise and be able to carry out a range of activities that include the development of funding proposals and the management and monitoring of projects and programmes. The loans the IDBZ offers are project finance and equity, and mortgage finance on housing projects. The Bank has a green credit line and expressed interest to finance clients' investments in energy-efficient appliances such as refrigerators. IDBZ has been involved in a number of energy-saving projects already. IDBZ also provided finance for the roll out of the **Zimbabwe Electricity Distribution Company (ZETDC) prepaid meter project**²⁴⁷. IDBZ is also involved in a number of solar projects.

As of 2021, according to the Regulatory Indicators for Sustainable Energy (RISE) from the World Bank Group in 2021, financing mechanisms for energy efficiency activities are not available in the residential, commercial services and industrial sectors in Zimbabwe.²⁴⁸

As of 2021, the country counts the Infrastructure Development Bank of Zimbabwe (IDBZ) as GCF AE. IDBZ was granted basic fiduciary standards and accredited by GCF for project management. IDBZ can access **loan, equity, and guarantee** from GCF.²⁴⁹

According to the **Reserve Bank of Zimbabwe** (2020), as of 31st of December 2020, there are 20 banking institutions, 217 microfinance institutions (MFI) and 2 national development banks²⁵⁰ listed in the country.

Buyers can afford goods through hire purchase agreements (a sort of leasing agreement with payment in instalments) through the flexibility of spreading the payments over a period of time, instead of paying the full price upfront the purchase. This is done on the condition that the ownership of the goods remains to the seller until the last payment is made by the buyer. Nevertheless, the buyer can use the good since the start of the agreement and avoid the up-

²⁴⁶ <https://www.greenclimate.fund/countries/zimbabwe>

²⁴⁷ <https://www.idbz.co.zw/project-operations/idbz-projects/zetdc-prepaid-metering-project>

²⁴⁸ WBG (2021), [RISE Zimbabwe](#)

²⁴⁹ GCF (2021), [Zimbabwe local GCF AE](#)

²⁵⁰ https://www.rbz.co.zw/documents/BLSS/2020/2020_Annual-Report--Bank-supervision.pdf

front costs of it. In Zimbabwe, hire purchase agreements are regulated by law through the Hire - Purchase Act, chapter 14:09²⁵¹

According to the Reserve Bank of Zimbabwe (RBZ), around 80% of the country’s transactions were conducted electronically as of 2021. RBZ goal is that Zimbabwe becomes a society where 90% of the purchases of goods or services are made by credit card or electronic funds transfer rather than with cash or cheques (i.e., a cash-lite society).²⁵²

The largest mobile money provider in Zimbabwe is Econet Wireless Zimbabwe and its EcoCash²⁵³ service which was launched in 2011. EcoCash had 99.8% of the mobile money market share with over 6.7 million registered users in 2017, which was 4.7 million more than banking institutions had, representing 80% of the adult population in Zimbabwe.²⁵⁴ According to Econet Wireless Zimbabwe, smart phone penetration which was at low 52%, compared to about 90% for South Africa, remained a limitation for the adoption of digital services in Zimbabwe in 2020. Also, Zimbabwe’s internet penetration rate remained low as approximately 22% of the devices on Econet’s network trying to access data services were “feature” phones with low data handling capacity.²⁵⁵

Table 2 Summary of financing mechanisms by sector and status of local GCF accreditation by country, 2021

Country	Financing Mechanisms		National direct GCF Accredited Entity
	Residential Sector	Commercial/ Industrial Sector	
Algeria	Yes - Credit lines and/or revolving funds with banks for energy efficiency activities. Financial and/or non-financial institutions offer financial products for energy efficiency investments	Yes - Credit lines and/or revolving funds with banks, other mechanisms, for energy efficiency activities in the commercial sector. Financial and/or non-financial institutions offer financial products for energy efficiency investments	No
Angola	No	No	No
Benin	Yes - Credit lines and/or revolving funds with banks for energy efficiency activities. Financial and/or non-financial institutions offer financial products for energy efficiency investments	Yes - Credit lines and/or revolving funds with banks for energy efficiency activities. Financial and/or non-financial institutions offer financial products for energy efficiency investments	Yes – National Fund for Environment and Climate (FNEC)
Botswana*	NA	NA	No
Burkina Faso	No	No	No

²⁵¹ Zimbabwe Legal Resources (2021), [Hire-purchase Act](#)

²⁵² Voice of America (2021), [article](#)

²⁵³ EcoCash (2021), [website](#)

²⁵⁴ TechZim (2017), article <https://www.techzim.co.zw/2017/11/ecocash-processed-21-billion-since-launch/>

²⁵⁵ African Financials (2020), [article](#)

Burundi	No	No	No
Cabo Verde*	NA	NA	No
Cameroon	Yes - Credit lines and/or revolving funds with banks and other unspecified financing mechanisms for energy efficiency activities. Financial and/or non-financial institutions offer financial products for energy efficiency investments.	Yes - Credit lines and/or revolving funds with banks for energy efficiency activities, Energy services agreements (pay-for-performance contracts), vendor credit and/or leasing, partial risk guarantees, for energy efficiency activities. Financial and/or non-financial institutions offer financial products for energy efficiency investments.	Yes - Attijariwafa Bankdirect (AWB)
Central African Republic	No	No	No
Chad	No	No	No
Comoros*	NA	NA	No
Congo, Dem.Rep.	No	No	No
Congo, Rep.	No	No	No
Côte d'Ivoire	Yes - Credit lines and/or revolving funds with banks for energy efficiency activities. Financial and/or non-financial institutions offer financial products for energy efficiency investments.	Yes - Credit lines and/or revolving funds with banks for energy efficiency activities. Financial and/or non-financial institutions offer financial products for energy efficiency investments.	Yes - Attijariwafa Bankdirect (AWB)
Djibouti*	NA	NA	No
Egypt	Yes - Credit lines and/or revolving funds with banks for energy efficiency activities.	Yes- Energy services agreements (pay-for-performance contracts). Financial and/or non-financial institutions offer financial products for energy efficiency investments.	Yes - Attijariwafa Bankdirect (AWB)
Equatorial Guinea *	NA	NA	No
Eritrea	No	No	No
Eswatini*	NA	NA	No
Ethiopia	Yes - Credit lines and/or revolving funds with banks for energy efficiency activities. Financial and/or non-financial institutions offer financial products for energy efficiency investments.	Yes - Credit lines and/or revolving funds with banks for energy efficiency activities. Financial and/or non-financial institutions offer financial products for energy efficiency investments.	Yes-Ministry of Finance and Economic Cooperation (MOFEC)
Gabon*	NA	NA	Yes - Attijariwafa Bankdirect (AWB)
Gambia*	NA	NA	No
Ghana**	Yes – Green on Wage and low interest loans to salaried employees	No	Yes-Ecobank Ghana Limited
Guinea	No	No	No

Guinea Bissau*	– NA	NA	No
Kenya	Yes – Discounted “green” mortgages. Financial and/or non-financial institutions offer financial products for energy efficiency investments.	Yes – Discounted “green” mortgages, Credit lines and/or revolving funds with banks, vendor credit and/or leasing for energy efficiency activities. Financial and/or non-financial institutions offer financial products for energy efficiency investments.	Yes- Acumen Fund, Inc. (Acumen), KCB Bank Kenya Limited (KCB), National Environment Management Authority of Kenya (NEMA)
Lesotho*	NA	NA	No
Liberia	No	No	No
Libya*	NA	NA	No
Madagascar	Yes – On-Bill Financing /repayment for energy efficiency activities	No	No
Zambia	No	No	No
Mali	Yes - Financial and/or non-financial institutions offer financial products for energy efficiency investments	Yes – Credit lines and/or revolving funds with banks for energy efficiency activities. Financial and/or non-financial institutions offer financial products for energy efficiency investments	No
Mauritania	No	Yes - Financial and/or non-financial institutions offer financial products for energy efficiency investments in the industrial sector. Moreover, credit lines and/or revolving funds with banks for energy efficiency activities are available in both, the commercial services sector and industrial sector.	No
Mauritius*	NA	NA	No
Morocco	Yes - Credit lines and/or revolving funds with banks, green or energy efficiency bonds, vendor credit and/or leasing for energy efficiency activities. Financial and/or non-financial institutions offer financial products for energy efficiency investments	Yes - Credit lines and/or revolving funds with banks, energy services agreements (pay-for-performance contract), vendor credit and/or leasing for energy efficiency activities. Financial and/or non-financial institutions offer financial products for energy efficiency investments	Yes – Agency for Agricultural Development for Morocco (ADA), Attijariwafa Bank (AWB), CDG Capital S.A. (CDG Capital), Moroccan Agency for Sustainable Energy S.A (MASEN)
Mozambique	No	No	No
Namibia*	NA	NA	Yes – Environmental Investment Fund of Namibia (EIF)
Niger	Yes - Credit lines and/or revolving funds with banks. Financial and/or non-financial	Yes - Credit lines and/or revolving funds with banks, partial risk guarantees. Financial and/or	No

	institutions offer financial products for energy efficiency investments	non-financial institutions offer financial products for energy efficiency investments	
Nigeria	Yes – green or energy efficiency bonds for energy efficiency activities	Yes - Credit lines and/or revolving funds with banks, energy services agreements (pay-for-performance contract), green energy efficiency bonds, partial risk guarantees for energy efficiency activities. Financial and/or non-financial institutions offer financial products for energy efficiency investments	No
Rwanda	Yes – Green on-wage financing, credit lines and/or revolving funds with banks for energy efficiency activities. Financial and/or non-financial institutions offer financial products for energy efficiency investments	Yes - Financial and/or non-financial institutions offer financial products for energy efficiency investments	Yes – Ministry of National Resources of Rwanda (MINIRENA)
Sao Tome and Principe*	NA	NA	No
Senegal**	Yes – On-bill financing and low interest loans to salaried employees	No	No
Seychelles*	Yes - Credit lines and/or revolving funds with banks for energy efficiency activities.	NA	No
Sierra Leone	No	No	No
Somalia	No	Yes - Financial and/or non-financial institutions offer financial products for energy efficiency investments	No
South Africa	Yes- Energy services agreements (pay-for-performance contracts), green or energy efficiency bonds, and vendor credit and/or leasing for energy efficiency activities. Financial and/or non-financial institutions offer financial products for energy efficiency investments.	Yes- Credit lines and/or revolving funds with banks, energy services agreements (pay-for-performance contracts), green or energy efficiency bonds, and vendor credit and/or leasing for energy efficiency activities. Financial and/or non-financial institutions offer financial products for energy efficiency investments.	Yes - Development Bank of Southern Africa (DBSA), South African National Biodiversity Institute (SANBI)
South Sudan	No	No	No
Sudan	No	No	No
Tanzania	No	No	Yes - CRDB Bank PLC (CRDB)
Togo	No	No	No
Tunisia	Yes – on-bill financing/repayment for energy efficiency activities. Credit lines and/or revolving funds with banks for energy efficiency activities. Financial and/or non-financial institutions offer financial products for energy efficiency investments.	Yes - Credit lines and/or revolving funds with banks for energy efficiency activities. Financial and/or non-financial institutions offer financial products for energy efficiency investments.	Yes - AWB and the Sahara and Sahel Observatory (OSS)
Uganda	No	Yes - Credit lines and/or revolving funds with banks for energy efficiency activities. Financial	Yes - Ministry of Water and

		and/or non-financial institutions offer financial products for energy efficiency investments.	Environment of Uganda (MWE)
Zambia	Yes - financial and/or non-financial institutions offer financial products for energy efficiency investments	Yes - financial and/or non-financial institutions offer financial products for energy efficiency investments	Yes - Development Bank of Zambia (DBZ)
Zimbabwe	No	No	Yes - Infrastructure Development Bank of Zimbabwe (IDBZ)

*These countries are not included in the Regulatory indicators for Sustainable Energy (RISE) from the WBG as of 2021 which looks into financing mechanisms for Energy Efficiency activities. Therefore, the relevant information is stated as NA – Non-Applicable.

** Even though according to RISE from the WBG these countries should not list any available Financing Mechanisms for the residential sector for Energy Efficient activities, the ECOFRIDGES initiative led by BASE already set in place the green on – wage as a financing mechanism for shifting to energy efficient refrigerators and air conditioners in these countries.

Other regional programmes.

Sustainable Energy Fund for Africa (SEFA)²⁵⁶ which was launched in 2012 is a US\$95 million **multi-donor facility** managed by the African Development Bank (AfDB) and funded by the governments of Denmark, the United Kingdom, the United States and Italy. It provides catalytic finance (**grants, equity investments, loans, results-based financing.**) to unlock private sector investments in medium-scale renewable energy²⁵⁷ and energy efficiency projects. SEFA provides technical assistance and concessional finance instruments to remove market barriers, build a more robust pipeline of projects and improve the risk-return profile of individual investments, and support the public sector to improve the enabling environment for private investments in sustainable energy. The Fund, founded in 2011, transformed into a Special Fund on 31 October 2019. SEFA focuses on green baseload, green mini-grid, and energy efficiency investments. SEFA approved seven high-impact projects worth \$54 million in 2020.²⁵⁸

In addition, AfDB approved a **multinational financing programme for Distributed Energy Service Companies (DESCOs)**²⁵⁹ in 2019, in which 900,000 households in Sub-Saharan Africa, or around 4.5 million people, would gain access to solar power by 2025. The DESCOS Financing Program seeks to address barriers to accessing finance for DESCOS, while supporting their growth and expansion into existing and new markets. It will facilitate **local currency financing** for DESCOS, and provide local lenders with **risk mitigation instruments**. The programme will also help build capacity within DESCOS and local financial intermediaries to establish

²⁵⁶ AfDB (2012), [Sustainable Energy Fund Africa \(SEFA\)](#)

²⁵⁷ In 2017, SEFA approved a US\$ 965,000 grant to Oxygen Energy Private Limited to support the preparation of a bankable business case for the development of a 20MW off-grid solar PV rooftop project on buildings owned and managed by Old Mutual Property Group Zimbabwe countrywide.

²⁵⁸ AfDB (2021), [SEFA](#)

²⁵⁹ AfDB (2019), [DESCOS Financing Programme](#)

securitization structures and other innovative frameworks for accessing finance, and make financing available to customers in rural areas by **building credit history** and encouraging **mobile payment solutions**.

Sunref²⁶⁰ is an integrative approach of the AfDB to develop **green credit lines** with the local partner banks of the global south for **Energy Efficiency**, Renewable Energy and Environment. The initiative provides solutions for the new energy and environmental transition by helping private actors in the South to seize its opportunities and encouraging local financial institutions to finance it. So far, they have partnered with 70 banks in over 30 countries of the South. The total project volume is over EUR 2.5 bn of loans, out of which EUR 1.2 bn is already disbursed.

Power for All is a global network of 250 organizations campaigning to end energy poverty faster by accelerating the deployment of **decentralized renewable energy (DRE)** solutions such as solar for home and business, mini-grids and **income-generating appliances**. Working with the public and private sector, Power for All and its partners enable market transformation to deliver universal energy access faster, cleaner and more cost-effectively, while laying the foundation for economic and social impact for rural communities. Power for All is committed to delivering access to energy for the 85% of the 1.1 billion people without reliable power that live in rural areas within 10 years. Power for All's mission is to accelerate this market transformation by working with public and private sectors to include Decentralized Renewables in Energy Policy (e.g. such as reducing **tariff barriers, duties and value-added taxes**), mobilize capital for the entire value chain and accelerating the market by earmarking funds specifically for decentralized renewables, including financing for **pay-as-you-go** and distribution, and expanding the range of efficient devices and making energy access more affordable.

Africa Energy Efficiency Program²⁶¹ aims at transforming Africa towards a harmonised regional market for **energy efficient lighting, refrigerators, room air conditioners, motors and power distribution transformers**. It is implemented by AFREC (The African Energy Commission) and supported by UNEP and U4E. The project lasts for 5.5 years (ending in 2026) and has a budget of \$ 1.1 million per year. The project aims to develop on a regional level for 55 African states the saving assessments by quantifying electricity, climate and financial benefits from the switch towards energy efficient lighting, appliances and equipment. Moreover, its objectives include development of strategic policies and frameworks, supporting testing laboratories for the enforcement of MEPS and Labelling, developing Capacity Building and **developing specific tools/resources for its implementation**.

The Energy and Environment Partnership Trust Fund (EEP Africa) is a clean energy financing facility hosted and managed by the Nordic Development Fund (NDF) with funding from Austria, Finland and NDF. EEP Africa provides **early-stage grants and catalytic financing** to innovative clean energy projects, technologies and business models in 15 countries across Southern and East Africa (e.g., solar refrigeration project in Namibia, etc.) Since 2010, EEP Africa has invested close to EUR 50 million in 250 pioneering projects. During an open call, EEP

²⁶⁰ Sunref (2021), [Energy Efficiency](#)

²⁶¹ U4E (2019), [AFRICAN ENERGY EFFICIENCY PROGRAM](#)

Africa invites applications from early stage **off-grid and on-grid clean energy projects** in active development phases in one or more of the target countries (e.g., Botswana, Eswatini, Lesotho, Zambia, Namibia, Tanzania, Zambia, Zimbabwe, etc.) Projects are evaluated in terms of concept innovation, development impact, and business model & financial sustainability. Additional evaluation criteria are applied in themed calls. In recent calls, **grants and repayable grants** between EUR 200,000 and EUR 1 million have been awarded, with a **minimum co-financing requirement** of 30%.²⁶²

Energy Efficiency Lighting and Appliances (EELA): Approved in 2019, the regional project intends to implement a broad range of activities on energy efficient lighting across the 21 Member countries of the Southern African Development Community (SADC) and the East African Community (EAC) including putting in place **market incentives** to stimulate the uptake of energy-efficient appliances. The project will offer supply chain actors technical assistance and financial incentives to deliver efficient and high-quality energy services.²⁶³

EACREEE, SACREEE and U4E cooperation on energy efficient cooling: The project is a regional effort of 21 countries (same countries as the EELA project) which aims to advance energy efficient policies on residential refrigerators and air conditioners. The countries of the Eastern African and South African regions are working together with the project partners SACREEE, EACREEE and UNEP-U4E to develop harmonized MEPS and labelling.

Regional GCF funding projects.

There are also quite a number of relevant multi-country approved **GCF funding projects** on mitigation or cross-cutting. Below is a list (non-exhaustive) of GCF funded programmes:

GCF-EBRD Sustainable Energy Financing Facilities (SEFF) Co-financing Programme: Approved in 2016, this programme intends to deliver climate finance at scale via partner financial Institutions in developing countries (including Egypt, Morocco, and Tunisia in the region), which will fund over 20,000 scalable and replicable projects across industrial, commercial, residential, transport and agricultural sectors. SEFF is an **on-lending programme** that will provide **credit lines** to partner financial institutions with the aim to create self-sustaining markets in the areas of **energy efficiency**, renewable energy and climate resilience. Partner financial institutions in the programme will on-lend the funds to the borrowers such as MSMEs, special purpose companies and **households for energy efficiency**, renewable energy and climate resilience projects. Financing activities will be complemented by the provision of technical assistance (TA), both to the local partner financial institutions and to the borrowers. The project has an estimated lifespan of 15 years. GCF injected US\$378 million financing in **loan and grant**, while the AE (i.e., European Bank for Reconstruction and Development (EBRD)) injected US\$1007 million co-financing in loan and grant.²⁶⁴

²⁶² EEP (2021), [website](#)

²⁶³ EACREEE (2021), [EELA project](#)

²⁶⁴ GCF (2021), [FP025](#)

Universal Green Energy Access Programme (UGEAP): Approved in 2016, this programme is an **investment fund** that will reduce GHG emissions by increasing access to **clean electrical energy** for mainly rural populations in Sub-Saharan Africa (i.e., Benin, Ethiopia, Kenya, Namibia, Nigeria, Tanzania, and Uganda.) It aims to provide **financing for decentralized energy service companies** for off-grid and mini-grid systems for rural households and communities and renewable energy for industrial players. Project investments include off-grid renewable electricity energy in the form of **solar home systems** that will be provided via an **affordable payment plan**, etc. At a later stage, the programme intends to work with local financial institutions to enable banks to provide **long-term loans** to businesses that provide clean electricity solutions. GCF injected US\$80 million financing in equity and grant, while the AE (i.e., Deutsche Bank) injected US\$222 million co-financing in equity.²⁶⁵

DBSA Climate Finance Facility: Approved in 2018, the Development Bank of Southern Africa (DBSA) programme intended to be the **first private sector climate finance facility in Africa** using a pioneering **green bank model**. It will **de-risk and increase the bankability of climate projects** in order to **crowd in private sector investment**. Its successful implementation intended to prove that similar financial models can be replicated in other developing countries. The programme has an estimated lifespan of 20 years. GCF injected US\$55.5 million financing in **loan and grant**, while the AE (i.e., DBSA) injected US\$115 million co-financing in loan and grant.²⁶⁶

Climate Investor One (CIO): Approved in 2018, CIO is a **blended finance facility**. The first component of this programme is a **development fund**, which provides **loans** in the early stage of a project life cycle. The second component, a **construction equity fund**, will meet up to 75 % of total construction costs in tandem with the project sponsor. Compared with conventional project financing, CIO removes the need for complex multi-party financing structures, with the potential to thereby reduce the time and cost associated with delivering renewable energy projects in the target countries (e.g., Burundi, Djibouti, Cameroon, Ethiopia, Kenya, Madagascar, Zambia, Mauritius, Morocco, Nigeria, Senegal, Tunisia, Uganda, and **Zambia**.) The programme has an estimated lifespan of 20 years. GCF injected US\$100 million financing in **grant**, while the AE (i.e., Nederlandse Financierings-Maatschappij voor Ontwikkelingslanden (FMO)) injected US\$721.5 million co-financing in grant and equity.²⁶⁷

Green Cities Facility: Approved in 2018, the Facility will help address the cities' climate change challenges while building the market case for private sector investments in sustainable infrastructure. Under this project, 10 cities (including in Tunisia) which have higher than average energy and carbon density, and are facing a range of environmental and social issues, will have access to the Facility which intends to provide **concessional financial instruments** that will allow ambitious investments in climate-resilient urban infrastructure such as district heating/cooling, low-carbon buildings, and solid waste management. The project has an estimated lifespan of 23 years. GCF injected US\$102.5 million financing in **loan and grant**, while the AE (i.e., EBRD) injected US\$202 million co-financing in loan and grant.²⁶⁸

²⁶⁵ GCF (2021), [FP027](#)

²⁶⁶ GCF (2021), [FP098](#)

²⁶⁷ GCF (2021), [FP099](#)

²⁶⁸ GCF (2021), [FP086](#)

BOAD Climate Finance Facility to Scale Up Solar Energy Investments in Francophone West Africa LDCs: Approved in 2019, the programme intends to use a **blended finance approach** to provide **affordable long-term funding** to solar projects and by providing **tenor extension loans** that will help **de-risk projects**, and **crowd-in commercial and public banks** in scaling up solar investments in the region (i.e., Benin, Burkina Faso, Guinea-Bissau, Mali, Niger, and Togo). The programme will also provide **grant funding** to build the capacity of local project developers to structure investments, particularly in terms of project preparation and management. In addition, technical assistance will be provided to build the capacity of BOAD in integrating climate change considerations into project cycles. Finally, the programme will enhance the regulatory framework by building capacity of public institutions in the energy sector. The programme has an estimated lifespan of 20 years. GCF injected US\$72 million financing in **loan and grant**, while the AE (i.e., “Banque Ouest Africaine de Développement” or West African Development Bank (BOAD)) injected US\$72 million co-financing in loan and grant too.²⁶⁹

Transforming Financial Systems for Climate, Global Subnational Climate Fund (SnCF Global) – Equity: Approved in 2020, the Fund is designed to overcome project-level barriers and limitations in attracting private investment that leads to chronic underfunding of **bankable mitigation** and adaptation projects at the sub-national level, specifically at the deal size of USD 5 million to 75 million. Thousands of high merit sub-national projects are bypassed by **commercial financing** because investors prefer perceived safer and larger investments. The Fund firmly believes that GCF **anchor funding** and **first-loss coverage** will unlock both public investors and more importantly, private institutional investors. With GCF support, these investors have expressed willingness to co-invest. This is the first time an **impact equity fund** mobilizes public (20 %) and private sector (80%) funding at scale to **de-risk sub-national middle scale infrastructure projects**. The Fund covers globally 42 countries including Burkina Faso, Cameroon, Congo Dem. Rep., Côte d’Ivoire, Gabon, Guinea, Kenya, Mali, Mauritania, Morocco, Mozambique, Nigeria, Rwanda, Senegal, South Africa, Togo, Tunisia, and Uganda. GCF injected US\$150 million **financing in equity**, while the AE (i.e., Pegasus Capital Advisors (PCA)) injected US\$600 million co-financing in equity.²⁷⁰

Global Subnational Climate Fund (SnCF Global) – Technical Assistance (TA) Facility: Approved in 2020, the SnCF Global TA Facility complements the SnCF Global with US\$18.5 million financing in grant from GCF and US\$9.5 million co-financing in both grant and in-kind from the AE (i.e., International Union for Conservation of Nature (IUCN)).²⁷¹

High Impact Programme for the Corporate Sector: Approved in 2020, this programme is GCF’s first at-scale investment to promote the **uptake of low-carbon technologies** in the industrial sector. It has been designed to facilitate a transformational shift within energy-intensive industries, agribusinesses, and the mining sector. The programme covers only two African countries that are Morocco and Tunisia. GCF injected US\$258 million financing in **loan and grant**, while the AE (i.e., EBRD) injected US\$759 million co-financing in loan and grant.²⁷²

²⁶⁹ GCF (2021), [FP105](#)

²⁷⁰ GCF (2021), [FP152](#)

²⁷¹ GCF (2021), [FP151](#)

²⁷² GCF (2021), [FP140](#)

Participation in Energy Access Relief Facility ("EARF"): Approved in 2020, EARF is a **concessional debt fund** that is intended to provide energy access companies with vital liquidity during this crisis, in the form of **low-interest, unsecured junior loans**. GCF will channel its investment into Climate CV, which, in turn, will participate in EARF loans to eligible companies operating in the region (i.e., Congo Dem Rep, Kenya, Mozambique, Nigeria, Rwanda, Senegal, Sierra Leone, Uganda, and Zambia). The aim of these loans is to help companies remain solvent, maintain staff and supply lines, be positioned to drive the post-COVID-19 recovery, and reduce 1.3 million tonnes of carbon dioxide equivalent (MtCO₂eq) in emissions. GCF injected US\$30 million financing in **equity**, while the AE (i.e., Acumen) injected US\$30 million co-financing in loan and grant.²⁷³

Leveraging Energy Access Finance (LEAF) Framework: Approved in 2021, the LEAF framework intends to address financial and investment barriers by deploying **credit enhancement instruments** and **new financial products to crowd in local currency debt and commercial capital in decentralised renewable energy solutions in the region (i.e., Ethiopia, Ghana, Guinea, Kenya, Nigeria, and Tunisia)**. GCF injected US\$171 million financing in **loan, grant, and guarantee**, while the AE (i.e., AfDB) injected US\$789 million co-financing in loan, grant, guarantee, and equity.²⁷⁴

Sustainable Renewables Risk Mitigation Initiative (SRMI): Approved in 2021, this programme is designed to help **unlock the large amounts of private finance** needed to complement the limited public funding available. It will help six target countries in the region (i.e., Botswana, Central African Republic, Congo Dem Rep, Kenya, Mali, Namibia) shift to low-emission sustainable development pathways and increase **access to affordable, reliable, sustainable and modern energy**. To do this, the programme will support the use of technical assistance, public investments and **risk mitigation instruments**. GCF injected US\$280 million financing in **loan, grant, and guarantee**, while the AE (i.e., WBG) injected US\$1283.5 million co-financing in loan and grant.²⁷⁵

Other international cases.

Mexico. The refrigerator replacement programme “Cambia tu Viejo por uno Nuevo” (Translated: “Replace your old one (appliance) for a new one”) in Mexico, coordinated by the Ministry of Energy, was implemented by the Trust for Saving Electricity (FIDE) in partnership with the National Development Bank (Nacional Financiera (NAFIN)) as part of the Programme for Substitution of Electro domestic Equipment (PSEE). **Concessional funding** was received from the World Bank and the Inter-American Development Bank to finance energy efficient refrigerators and air conditioning systems to residential clients through electricity bills. Through this programme 1,700,000 residential refrigerators and 200,000 air conditioners were replaced over 5 years.^{43,44} By the end of 2011, the programme resulted in greenhouse gas emissions reductions of 550,000 tCO₂e/year and annual electricity savings of 823 GWh.²⁷⁶

²⁷³ GCF (2021), [FP148](#)

²⁷⁴ GCF (2021), [FP168](#)

²⁷⁵ GCF (2021), [FP163](#)

²⁷⁶ MABE (2012), [presentation](#)

