

## **Catalyzing International Climate Finance: Tackling Energy Poverty in Nigeria**

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### **Abstract**

Despite the abundance of energy sources that Nigeria has, the population is still experiencing energy poverty. Access to clean and reliable energy is critical for sustainable economic development and the wellbeing of Nigerians. With the global low-carbon energy transition currently underway, the issue of energy poverty must be tackled by the international community. The community must make a concerted effort to mobilize international capital flows towards sustainable energy development projects. The purpose of this paper is to analyze key climate finance instruments and how they can improve access to energy and contribute to sustainable development in Nigeria.

**Keywords:** Climate finance, low-carbon energy transition, energy poverty, Nigeria, Sustainable Development Goal 7

### **Résumé**

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Carmella Munyuzangabo est étudiante du deuxième cycle en Sustainable Energy à la School of Public Policy and Administration de l'Université Carleton à Ottawa, en Ontario. Elle est titulaire d'un baccalauréat ès arts en sciences politiques et développement international de l'Université McGill. Le travail et la recherche de Carmella sont centrés sur l'équité pour analyser les politiques climatiques et énergétiques.

Malgré l'abondance des sources d'énergie dont dispose le Nigeria, la population souffre toujours de pauvreté énergétique. L'accès à une énergie propre et fiable est essentiel au développement économique durable et au bien-être des Nigériens. Avec l'actuelle transition énergétique mondiale à faible émission de carbone, la question de la précarité énergétique doit être abordée par la communauté internationale. La communauté doit fournir un effort concerté pour mobiliser les flux de capitaux internationaux vers des projets de développement énergétique durable. L'objectif de cet article est d'analyser les principaux instruments de financement climatique et la manière dont ils peuvent améliorer l'accès à l'énergie et contribuer ainsi au développement durable au Nigeria.

Mots-clés : Financement climatique, transition énergétique bas carbone, précarité énergétique, Nigéria, Objectif de développement durable 7

## **Introduction**

In today's industrialized world, human and economic activity requires energy. Energy, and more specifically modern energy, is a crucial driver of economic and human development. Access to it is essential for the provision of reliable and efficient cooking, heating, lighting, food production, and transportation. The International Energy Agency defines energy access for households as, "having reliable and affordable access to both clean cooking facilities and to electricity" (International Energy Agency [IEA], 2020A) - enough to supply basic energy needs. In 2014, while the average person consumed less than the equivalent of 1,920 kg of oil, in sub-Saharan Africa the number was 687 kg per person (Aklin et al., 2018, p. 4). It is commonplace to remark on how stark the inequalities of energy consumption are across countries; some people have access to abundant energy, while others endure poverty and deprivation. Energy poverty occurs when a household lacks access to modern energy sources. It is the absence of choice to access affordable, reliable, quality, and clean energy services to meet basic needs (Adusah-Poku & Takeuchi, 2019). Thus, access to energy is fundamental to fulfilling basic needs and fueling human development.

Energy poverty is particularly high in Nigeria, which is paradoxical. Nigeria is the largest economy in sub-Saharan Africa with an abundance of renewable and non-renewable energy resources that could be harnessed to meet its energy needs. As one of Africa's most prolific oil-producing countries, Nigeria possesses the world's sixth largest reserve of crude oil (Oyedepo, 2012, p. 3). The country requires 98,000 MW to achieve electricity security and provide adequate services to Nigerian households. Its thermal and hydropower stations have an installed capacity to generate 12,522 MW of electric power, and yet they only manage to generate between 3,000 MW and 4,000 MW daily (U.S. Agency for International Development [USAID], 2020). Consequently, 47% of Nigerian households do not have access to grid electricity, with rural households having the least access (IEA, 2020E). Additionally, only 28.2% of Nigerian households have access to modern energy sources

for cooking. The remaining 71.8% use traditional cooking fuels, such as firewood, thus polluting their homes. Although the country has an abundance of energy resources, its energy profile suggests that it continues to be energy poor. The lack of physical and economic access to reliable and clean energy hinders economic growth and reduces the wellbeing of Nigerians. In order to remedy this issue, Nigeria set mitigation targets through its intended Nationally Determined Contribution (INDC) policy document for the 15-year period between 2015 and 2030 (NDC Support Programme, 2019). Key targets include installing 13 GW of off-grid solar PV, providing energy access to all Nigerians, and reducing GHG emissions (NDC Support Programme, 2019). Evidently, Nigeria is taking steps to tackle climate change by transforming its energy profile and adopting alternative energy sources.

Eradicating energy poverty by providing access to clean and reliable energy sources will ensure Nigeria's economic growth and development and improve its citizens' wellbeing. An effective way to tackle this issue is by mobilizing international climate finance to expand access to clean and renewable modern energy services through sustainable development projects. A recent global energy progress report asserts the urgency to increase international financial flows from developed countries to expand the implementation of clean and reliable energy services and technologies in developing countries (IEA et al., 2020D). Reducing energy poverty will occur when various global actors, including governments and multilateral organizations, cooperate and scale up efforts to facilitate the eradication of energy poverty in Nigeria.

This paper first explores the context of energy poverty in Nigeria through two development frameworks to establish climate finance as a substantial tool for redressing energy poverty. The frameworks are the multidimensional energy poverty index (MEPI) and the United Nations Sustainable Development Goals (UNSDG 7). Next, an analysis is conducted on two types of climate finance instruments, *grants* and *debt*, and how they can improve access to energy and contribute to sustainable development. Finally, the numerous barriers to successfully implementing international climate finance in Nigeria

will be discussed. Overall, this paper argues for a concerted effort from global states and institutions to mobilize finance into sustainable development projects to reduce energy poverty in Nigeria.

## **Frameworks for Low-Carbon Energy Development**

### ***Multidimensional Energy Poverty Index***

Current studies posit energy poverty as a concept that lies at the intersection of energy (in)access and (un)affordability, where a lack of energy negatively impacts human and economic development. Thus, one must consider energy poverty as multidimensional. Most recently, scholars measure energy poverty by using development indicators such as health, poverty, education, and the environment. Their studies assert that access to energy sources is central to addressing numerous contemporary development challenges such as food security, public health, education, poverty, and climate change (Ashagidigbi et al., 2020; Ogwumike & Ozughalu, 2015). Scholars use the MEPI to examine the determinants and implications of energy poverty in a country. The scope of measurement hinges on the notion that the basic energy needs are cooking, heating, and lighting. When these needs are met and communities gain access to necessary energy resources, their wellbeing ameliorates (Sadath & Acharya, 2017). A recent study on the "Estimation and Determinants of Multidimensional Energy Poverty among Households in Nigeria" (Ashagidigbi et al., 2020) analyzed four indicators to determine the levels of energy poverty in Nigerian households. The indicators were: the use of traditional energy sources (e.g., firewood), the lack of a kitchen, the lack of electricity, and the lack of a radio or satellite dish. The study found that 4 out of 10 households utilized electricity, 6 out of 10 Nigerians were energy poor, and three-fourths of the entire population used firewood as an energy source for cooking (Ashagidigbi et al., 2020, p. 4). The latter statistic is proof of how critical the issue of energy poverty is in Nigeria. It further portrays the consequences of the continuous use of traditional sources of energy as a multidimensional issue due to its impact on various aspects of human wellbeing. Using firewood for cooking contributes to both indoor and outdoor pollution, threatening the health of household

residents and emitting greenhouse gases. The World Health Organization estimates that around four million people, many of them women and children, die every year from indoor air pollution caused by dirty energy (World Health Organization [WHO], 2018). Thus, energy poverty has serious implications for sustainable development and public health. Not only is access to clean and modern energy services vital for Nigerians' health, but it will also provide great benefits to development through the provision of reliable, safe, and clean lighting, cooling, heating, and cooking (Bello, 2021; IEA, 2020A). Continuous energy poverty will harm the environment and contribute to poor health, thus decreasing Nigerians' wellbeing. Energy resources have a key multidimensional role in improving the overall socio-economic wellbeing of Nigerian society. According to the MEPI, when there is a sufficient supply of and access to clean energy from modern energy sources, that is when poverty can be reduced (Ashagidigbi et al., 2020). This point further asserts the inextricable link between energy poverty eradication and sustainable development.

### **Sustainable Development Goal 7**

Energy poverty eradication and sustainable development are two defining challenges of our time. This is confirmed by the recognition of these issues in the 2030 Agenda represented by the Sustainable Development Goals and the Paris Agreement (Wykes, 2018). The United Nations Sustainable Development Goal 7 (SDG7) asserts the need for universal, "access to affordable, reliable, sustainable, and modern energy for all," (IEA et al., 2020D, p. 1). Despite the progress made globally, the efforts to achieve SDG7 targets fall short of the scale required to reach the goal by 2030 (Africa-EU Energy Partnership, 2021, p.18). For example, the global population that lacks access to electricity dropped from 1.2 billion in 2010 to 789 million in 2018 (IEA et al., 2020D, p. 15). However, the global population without access to clean cooking solutions remained consistent during the same period, remaining close to 3 billion (IEA et al., 2020D, p. 1). Increased efforts are needed to ensure access to both electricity and clean cooking services are consistent with SDG target 7.1. The same slow trajectory can be noted for SDG target 7.2,

which aims to increase the share of renewable energy in the global energy mix. Globally, the share of energy consumption from renewables in the heating and transportation sectors needs to increase to achieve 2030 goals.

International climate finance is recognized as a mechanism that can be used to solve these inequalities in energy access and achieve the set global targets. Promoting access to and investing in clean technologies are key aspects of SDG7. Goal 7.A.1 asserts the need to implement investment solutions in developing countries, as they are furthest from achieving SDG7 targets (IEA et al., 2020D, p. 3). For instance, in 2018, Nigeria was in the top 20 countries with the largest loss in energy access, with 85 million people lacking access to electricity due to population growth (IEA et al., 2020D, p. 4). Nigeria could benefit from international climate finance to tackle this issue and improve energy access.

In terms of global investments, total flows have increased but are still inadequate and unequally distributed. Although flows reached USD \$21.4 billion in 2017 - double what they were in 2010 - only 12% of them reached developing countries (IEA et al., 2020D, p. 3). However, there is opportunity for growth and urgent action must be taken. The consistent voiced commitment to taking urgent action regarding climate change from various states and institutions will help lead a more inclusive and fair distribution of international climate finance to support energy poor countries, such as Nigeria. In 2015, 193 states adopted the SDGs and pledged to aid developing countries in achieving their mission to provide energy access for all by 2030 (Bettelli, 2021). In addition, 195 countries committed to the Paris Climate Agreement within the United Nations Framework Convention on Climate Change (UNFCCC) - effectively pledging to reduce greenhouse gas emissions, strengthen the ability for countries to build resilience, and ensure adequate support for developing countries (UNFCCC, 2018). Collectively, the Paris Agreement and the 2030 Agenda for Sustainable Development provide a roadmap for the global community to pursue and invest in low-carbon sustainable development projects that can reduce energy poverty (Bettelli, 2021). Given these established agendas and the commitment from global

actors to act urgently, a comprehensive analysis of climate finance instruments that could reduce energy poverty and lead to energy access for all is of much value.

## **Analysis**

Reducing energy poverty requires mobilizing massive flows of capital towards sustainable and impactful low-carbon investments and projects. While estimates of the capital that the international community is required to mobilize vary, the Sustainable Energy for All (SEforALL) organization has estimated that an annual investment of USD \$51 billion per year is needed to reduce inequality and achieve universal access to energy (SEforALL & Climate Policy Initiative [CPI], 2019). This massive undertaking is possible through a concerted effort from various actors such as international governments and public and private institutions worldwide. The following analysis will explore and discuss how these actors can use two key international climate instruments, grants and debt, to reduce energy poverty in Nigeria and improve energy access. The instruments were selected based on several factors, including their level of popularity within the global climate finance landscape and their effectiveness. The analysis will begin with a discussion of the key instruments and their potential impact to reduce energy poverty in Nigeria. Then, the potential for the instruments to be utilized and implemented in an inclusive and equitable manner will be examined.

### ***Financial Instrument #1: Grants***

Grants are a programmatic funding instrument that are provided with no expectation of repayment. Grant funding usually supports workshops, capacity building initiatives, partnership building resources, and education and public awareness initiatives (United Nations Development Programme, 2021). In the public sector, various stakeholders often work to administer and implement grants in projects aiming to advance sustainable development goals. Stakeholders can include government bodies, non-governmental organizations, private sector institutions, civil society organizations, national development



banks, and multilateral development banks. Oftentimes, grant funding is mobilized and utilized through a collaboration amongst all these actors. For instance, a non-governmental agency can receive funding from the private and public sectors and then distribute it to civil society organizations in the form of grants. The Green Climate Fund (GCF) and the Global Environment Facility (GEF) are two entities that rely on the World Bank to help mobilize financial resources from various global actors and disburse them through grants (Watson & Schalatek, 2019, p. 2).

The Green Climate Fund distributes grant funding to developing countries to assist them with adopting and implementing low-carbon and climate-resilient development projects. The GCF was established at COP16 in 2010 within the framework of the UNFCCC and is run by a fully independent Secretariat. Since its inception, the GCF has managed to mobilize USD \$8.3 billion from the governments of 40 developed countries (Hirsch 2018, p. 10). Consequently, the entity has managed to administer 177 projects and programs in developing countries (Green Climate Fund [GCF], 2021). In March 2020, the GCF began to implement mitigation projects in Kenya and Senegal to promote climate-friendly cooking (GCF, 2019). The aim is to accelerate the growth of improved cookstoves (ICS) markets. Improved cookstoves are efficient and safer than traditional cookstoves, which usually burn firewood or charcoal. They also emit less greenhouse gas emissions. The projects are expected to run for 5 years and cost USD \$28.3 million; 69.7% of this cost is being financed through grants (GCF, 2019). The intended benefits of the project will affect 11.23 million people and lead to GHG emissions reductions of 24.77 MT CO<sub>2</sub>eq by 2030 (GCF, 2019). This kind of project could be implemented in Nigeria to finance low carbon rural development and support access to residential clean cooking. The GCF has 8 main impact areas including: low-emission energy access, increased health and well-being, and ensured food security (Hirsch, 2018, p. 10). A mitigation project to promote cheap and efficient low-carbon energy cooking technologies in Nigeria's rural households would enable the reduction of energy poverty. Sadly, the utilization of traditional cooking sources causes 64,000 deaths every year

in Nigeria - the highest number of household air pollution related deaths in Africa (Clean Cooking Alliance, 2020). Grant funds would finance projects that would permit rural Nigerian households to access low emissions cooking technologies, effectively reducing indoor pollution and improving public health. This kind of financing could also accelerate rural development by providing off-grid solutions. One of the contributing factors to energy poverty in Nigeria is the fact that rural households have minimal access to the main electrical grid (USAID, 2020). Rural households that do have access to the main grid remain energy poor because they cannot afford to consume more energy. A decentralized energy option that is low-carbon and reliable would greatly benefit rural households. In short, off-grid cooking solutions such as improved cookstoves are technically and financially viable through grant funding and programming.

Established at the 1992 Rio Earth Summit, The Global Environment Facility (GEF) is another entity that allocates climate financing through grants. Today, along with international institutions, civil society organizations, private sector partners, and 183 partner countries, the GEF tackles global climate and energy challenges (Hirsch, 2018, p. 15). The GEF's Small Grants Programme (SGP) provides financial and technical support to communities to achieve sustainable development (Global Environment Facility [GEF], 2021). By 2018, the SGP had invested USD \$450 million in providing financial and technical support to projects that enhance the well-being of communities (GEF, 2021). The projects in their climate change portfolio include initiatives that help develop the capacity of local communities and improve their livelihoods. Such capacity building projects are crucial to the mission to reduce energy poverty. Nigerian rural households would especially benefit from awareness campaigns and capacity building programs that are financially supported by grants. One of the main enhancing factors of energy poverty is a lack of knowledge about alternative energy sources that are clean and reliable (Halkos & Gkampoura, 2021, p. 12). Ashagidigbi et al., posit that awareness campaigns on the use of safe and low-carbon energy sources would incentivize male and older Nigerians - the most energy poor among the population - to divest from using harmful energy

services (2020, p. 11). Although the GEF and the SGP allocate funding that is significantly lower than that of the GCF's, their approach to implementing the grants is extremely inclusive. This is a crucial aspect of international climate finance because the quantity of funding does not matter unless the quality and breadth of its allocation and implementation is impactful. The SGP prides itself on using a community-driven, bottom-up approach for project implementation (GEF, 2021). This approach promotes participation within communities and follows an ethos of *with, not for*. The process of participation within project and program management allows key stakeholders, especially beneficiaries, to be involved in the planning, implementation, management, and subsequent evaluation of projects and programs. People living in rural communities where an energy poverty reduction project is taking place would be included in its planning and management (GEF, 2021). The emphasis would be placed on sharing knowledge, resources, and building a resilient community. Funded activities could encourage stakeholders to communicate their ideas regarding the project and help each other learn and unlearn. Thus, the road to reducing energy poverty by allocating grant funding to clean and low carbon energy projects can be an inclusive and participatory one.

### ***Financial Instrument #2: Debt***

Debt instruments are primarily used by institutional public or private entities for the purpose of obtaining future capital or results. The entities, which can be governments or businesses, provide capital or funding to another actor that must eventually repay them in accordance with the terms of a contract. The debt instruments that will be analyzed in this section are green bonds and concessional loans. These instruments could help deliver and allocate the substantial amount of financial capital required to reduce energy poverty and provide energy access to all Nigerians by 2030 (NDC Support Programme, 2019). Additionally, although they are both debt instruments, they have distinctive implications for the borrowing country.

Green bonds are a debt instrument that have garnered increasing attention as a niche aspect of financial market innovation (Deschryver & de Mariz, 2020, p. 1). These bonds are compelling to investors in developed and developing countries alike (Deschryver & de Mariz, 2020, p. 3). They are proof of how innovation in financing SDG7 and Paris Agreement commitments has been moving forward. Green bonds are fixed interest loans with a long-dated maturity of more than 20 years (World Bank, 2017, p. 2). They are designed to raise debt finance to help fund renewable energy and energy efficiency projects (Deschryver & de Mariz, 2020, p. 3). First introduced by the European Investment Bank in 2007, issuing green bonds was a way for investors to provide financing with reduced risks, while also making a positive impact (Deschryver & de Mariz, 2020, p. 3). Since then, the size of the green bond market has grown. It is currently valued at USD \$1 trillion, but compared to financial markets as a whole, it is only 1% of the size of the global bonds market (International Renewable Energy Agency [IRENA], 2020, p. 6). Green bonds are mainly issued by governments or corporations to fund sustainable climate and energy projects. With annual issuances approaching USD \$190 billion in 2019, renewable energy is the leading recipient of proceeds from green bonds (IRENA, 2020A, p. 8). Bonds have been issued to fund low-carbon energy investments in developing countries, such as offshore wind turbines and solar farms. Green bonds are attractive for many reasons, including the fact that investments often provide access to long-term capital for long-term sustainable projects (Deschryver & de Mariz, 2020, p. 8). They also help bridge the gap between investors and low-carbon energy innovation, catalyzing international climate finance to meet energy targets and objectives (Deschryver & de Mariz, 2020, p. 16). However, there are also various limitations to this instrument. There is a risk of greenwashing. Greenwashing occurs when a business raises money because they want to portray themselves as being committed to low-carbon sustainability initiatives (Pronina & Freke, 2019). Unfortunately, those businesses end up using those investments to serve their own selfish interests. Additionally, the lack of awareness of the benefits of green bonds presents a significant market barrier, thus resulting in a lack of investments (Deschryver & de Mariz, 2020, p. 9).

In December 2017, The Federal Ministry of Environment of Nigeria in partnership with the Federal Ministry of Finance issued its first green bond of USD \$29.7 million (Department of Climate Change [DOCC], 2020). Nigeria was the first African nation to issue a sovereign green bond (DOCC, 2020). As one of the largest economies in sub-Saharan Africa, this move showed Nigeria's commitment to developing the green bond market in the region and using investments to achieve its objective of providing energy access to all Nigerians. The issuance was targeted mostly towards solar energy projects, in accordance with their NDC target to install off-grid solar PV of 13 GW by 2030 (DOCC, 2020). The project to install off-grid solar systems could potentially lead to solving the grid exclusion challenge that rural Nigerian households experience, as discussed in the above section. Off-grid PV solar powered systems are an appropriate and applicable solution to implementing rural electrification and reducing energy poverty. The issuance of the green bond provides the opportunity for Nigeria to boost investor confidence, and for both the ministries of Environment and Finance to access long-term capital to finance sustainable energy projects. Since 2017, Nigeria has issued two more green bonds (DOCC, 2020). It is clear that Nigeria wants to penetrate the green bonds market, as it is a viable way to unlock and utilize international investments and capital flows to tackle energy poverty.

Concessional loans are the second debt instrument that could be utilized to reduce energy poverty and expand energy access in Nigeria. Concessional loans, also known as soft loans, are usually issued by development finance institutions (DFIs) and non-governmental finance organizations, such as the African Development Bank or FinDev Canada (OECD, 2003; Global Affairs Canada, 2019). Compared to banks, these lenders accept a higher risk of investment in return for positive social and environmental impacts (Brest & Born, 2013). The terms on which lenders provide funding are more generous than market loans, meaning that they may provide additional technical assistance, lower collateral requirements, or longer grace periods to the borrower. The availability of capital in the form of concessional loans can support low-carbon development projects such as the installation of mini-grids (USAID, 2018). In the context of reducing

energy poverty in Nigeria, financing these kinds of projects through concessional loans could support the distribution of electricity to rural households that are not connected to the main electric grid.

When granting concessional loans for investment in clean and reliable energy projects, lenders can also invest in increasing inclusivity in the energy sector. For instance, Canada co-finances loans on concessional terms for climate mitigation and adaptation projects in rural communities in Latin America and the Caribbean (Government of Canada, 2021). Since 2014, the Canadian Climate Fund has invested CAD \$25 million in concessional loans directly linked to gender outcomes in agriculture projects and renewable energy programs (Inter-American Development Bank). The loans were given to tackle climate and energy challenges, while also prioritizing the empowerment and inclusion of women in the interventions and activities. In Nicaragua, women farmers were included in supply chain finance and in Panama, women were trained and hired in the solar energy sector (Inter-American Development Bank; Climate Change Canada, 2021). If global actors were to grant concessional loans to finance renewable energy projects in Nigeria on the basis that women are to be provided with economic opportunities, this would result in an equitable and inclusive transition to utilizing clean and modern energy sources. Nigerian women and youth could receive training in maintaining a decentralized solar mini-grid in their communities, as has been done with renewable energy projects implemented in rural Uruguay (Inter-American Development Bank). From an investors point of view, the rewards for directing financing towards women are compelling. Based on learnings from the microfinance sector, women as a group are responsible borrowers as they demonstrate solid repayment records (Zainuddin & Yasin, 2020). Mobilizing concessional loans towards women can be a practical way to facilitate their participation in the financial system, as well as the clean energy transition.

Moreover, one thing to consider is the harsh limitation of concessional loans. This finance intervention is limited because loans are capped. This makes concessional loans highly competitive amongst developing countries who are seeking financing to implement

low-carbon and sustainable development projects at a low cost (USAID, 2018). This limitation poses a challenge for the international community to provide enough finance to achieve energy access for all. The implications of this challenge will be further discussed in the section below.

### **The Challenges of Mobilizing Trillions**

According to the IEA, the cost of providing universal access to electricity by 2030 requires an annual investment of USD \$35 billion, much less than the amount provided annually in subsidies to fossil fuels (2020B). Additionally, the overall financing requirement to meet SDG 7 is estimated at USD \$1.4 trillion per year until 2030 (IEA, 2020C p. 133). While progress is being made to scale-up financing, current annual financing levels are below this required level. In 2018, IRENA reported that climate and energy financing levels were at USD \$514 billion per year. (United Nations Development Programme (UNDP), 2019, p. 3). There are various challenges and barriers to scaling up and implementing international climate financing. This section will explore three main barriers to shifting and utilizing the trillions required to achieve SDG 7 targets.

The first barrier to moving trillions of dollars in international climate financing is the general lack of investment in low carbon, clean, and reliable energy solutions (SEforALL & CPI, 2019, p. 10). The fact of the matter is that while the growth rate for investments has been considerable, it is simply not enough to close the energy access gap (SEforALL & CPI, 2019, p. 10). In 2019, Sustainable Energy for All (SEforALL) and the Climate Policy Initiative (CPI) released a joint report tracking investments into electricity and clean cooking sources in 20 countries across sub-Saharan Africa and Asia. The report, *Energizing Finance: Understanding the Landscape*, found that climate and energy investments have been severely lagging. For instance, only USD \$36 billion has been invested in electricity, short of the USD \$51 billion needed to achieve universal electricity access for all households by 2030 (SEforALL & CPI, 2019, p. 12). Additionally, only one third of the USD \$36 billion investment is estimated to have provided residential access (SEforALL & CPI, 2019, p. 12). As for

clean cooking services, only USD \$32 million has been invested, which is less than 1% of the \$4.5 billion needed to provide clean cookers to all households that need them (SEforALL & CPI, 2019, p. 14). Furthermore, the report portrays a clear correlation between energy access and population increase in sub-Saharan Africa. Briefly put, increases in population are cancelling out the allocations of new energy finance. Going forward, population growth will increase energy demand in developing countries, thus further widening the investment gap. The aforementioned figures present a bleak reality of the sheer lack of investment in clean energy. Unfortunately, this issue risks jeopardizing the likelihood of meeting SDG7 and resulting in a reality that will be inconsistent with the overarching objective of the SDGs: to leave no one behind. If the international community cannot overcome this challenge, the lack of investments in climate and clean energy projects will continue to pose a huge risk to public health and the environment. Moreover, this challenge is further exacerbated by the global pandemic. This year, energy investments in renewables are predicted to fall by one-fifth due to the COVID-19 pandemic (IEA, 2020C). However, according to the IEA's Sustainable Development Scenario, spending on renewable power needs to double by the late 2020s (IEA, 2020E). There is a clear conflict between how much capital the low-carbon transition requires and how much is available. The international community has a difficult task ahead of itself to mobilize and implement financing for clean and reliable energy solutions.

The second barrier to providing the required capital flow to achieve SDG7 targets is the institutional capacity of the Nigerian government to implement financing in a competent manner. Institutional capacity determines the quality and cost of implementation and is crucial to the success of accepting global financing (Gurara et al., 2018, p. 23). In this context, institutional capacity refers to the Nigerian government's access to a robust administrative mechanism that is capable of allocating and utilizing international climate finance in a cost-effective manner (Aklin et al., 2018, p. 8). Nigeria's investment profile is quite dynamic and erratic. In 2019, investment flows to Nigeria totaled USD \$3.3 billion, which



was a 48.5% decrease compared to the previous year (United Nations Conference on Trade and Development, 2020, p. 29). There are various obstacles to foreign direct investments (FDI) in Nigeria, including a federal government that is heavily plagued by ethnic tensions and conflicts, perpetual political instability, and increasing violence and lack of security due to the extremist Boko Haram terrorist group operating in the North East region of the country (Koko et al., 2017). Coincidentally, this region is also the most energy poor in all of Nigeria (Ashagidigbi et al., 2020). These institutional obstacles are further exacerbated by poor energy infrastructure and high operating costs. Although Nigeria has taken measures to encourage and assist international investments, such as by creating the Nigerian Investment Promotion Commission, it still lacks robust policy support to appropriately administer international climate finance (Orie, 2021, p. 1908; Fatoki, 2015, p. 86). Essentially, Nigeria's investment profile presents a challenge for the social, technical, and political feasibility of implementing climate and energy finance received from international actors. With the advent of the COVID-19 pandemic, an opportunity has presented itself to global governments to respond to the crisis by creating policy frameworks that will combine the economic recovery with energy and climate goals. The Nigerian government must strengthen its institutional capacity and foster a policy environment that will not only stimulate the low carbon energy transition, but also create enough stability to attract investments in clean, reliable, and modern energy solutions.

The third barrier to successfully supplying and implementing trillions in international climate finance flows is that it will contribute to the debt trap, which occurs when a borrowing country finds itself in a situation where a debt is difficult or impossible to repay (Toussaint, 2020). This situation contributes to the continuous poverty cycle that many developing nations, such as Nigeria, already experience. The financing landscape has long represented the global hierarchical order and power imbalance between countries in the North and the South (Toussaint, 2020). Debt instruments contribute to maintaining this power imbalance as they make it difficult for developing countries to escape the debt trap. Before the COVID-19 pandemic, the debts of

developing countries were at the highest level on record (World Bank, 2020). Since then, countries have struggled to attract FDI and keep their revenue generating sectors (e.g., tourism) afloat. In April, the IMF reported that 103 countries approached the organization asking them for emergency financing to help address rising poverty (Georgieva, 2020). It is quite clear that developing nations with high levels of debt will not be able to pay the full amount of their loans, resulting in them falling deeper into the debt trap (Toussaint, 2020). To remedy this grave situation, there needs to be a structural reform of the debt system. One solution to this is the concept of the debt swap. The debt swap, originating from the 1980s debt crisis, posits that the full value of a loan is discounted or reduced in exchange for commitments by the debtor. In recent years, debt for climate swaps have been used in this way to exchange debt for climate action commitments. The money owed is instead invested in poverty-reducing climate resilience projects (Steele & Patel, 2020). As the low-carbon transition progresses and the global community accelerates the mobilization of climate finance, perhaps developed countries should explore their portfolios for debt assistance and examine how they could support debt for energy swaps. This innovative option could make the pathway to meeting SDG7 in countries like Nigeria more sustainable.

### **Conclusion**

In conclusion, it is evident that the world is not on track to meet the SDG7 targets by 2030. From the investors' viewpoint, there is a huge amount of capital that is lacking. One of the biggest barriers that must be broken is that of providing an annual investment of USD \$1.4 trillion into the energy sector to meet SDG7 by 2030 (IEA, 2020D, p. 172). It is crucial that public and private sector actors work to scale-up climate financing. Not only is it necessary for the low-carbon transition that is underway, but it is also a part of their mandates. These actors committed and pledged to do better by the environment and global communities at the Paris Agreement and through the 2030 Agenda for Sustainable Development. If the SDG targets are to be met, it is the duty of powerful actors within the global community to provide the necessary support and resources to those who need it the

most. The global community must take urgent action and cooperate to mobilize and provide the adequate financing needed to meet climate and energy targets. Conversely, from the beneficiaries' viewpoint, the biggest barrier that must be broken is that of building institutional capacity. Eradicating energy poverty without robust policies in place and a lack of infrastructure is an extremely difficult task. If strong action is taken to strengthen the country's institutional capacity, then Nigeria's energy poverty situation can improve through the financing and implementation of low-carbon sustainable development projects. As discussed in previous sections of this paper, debts and grants are climate finance instruments that can eradicate energy poverty in Nigeria. Although both instruments have their limitations, they should still be regarded as practical tools that can be used by states and institutions to improve energy access. In fact, global actors should explore innovative ways to make these tools more sustainable and accessible. A promising mechanism that could facilitate the financing of successful low-carbon development projects and take the burden off Nigerians is the *debt for energy swap* mechanism. Moving forward, the global community must make a concerted effort to mobilize finance towards low-carbon development projects in inclusive ways that will not contribute to the poverty cycles already experienced by developing nations.

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