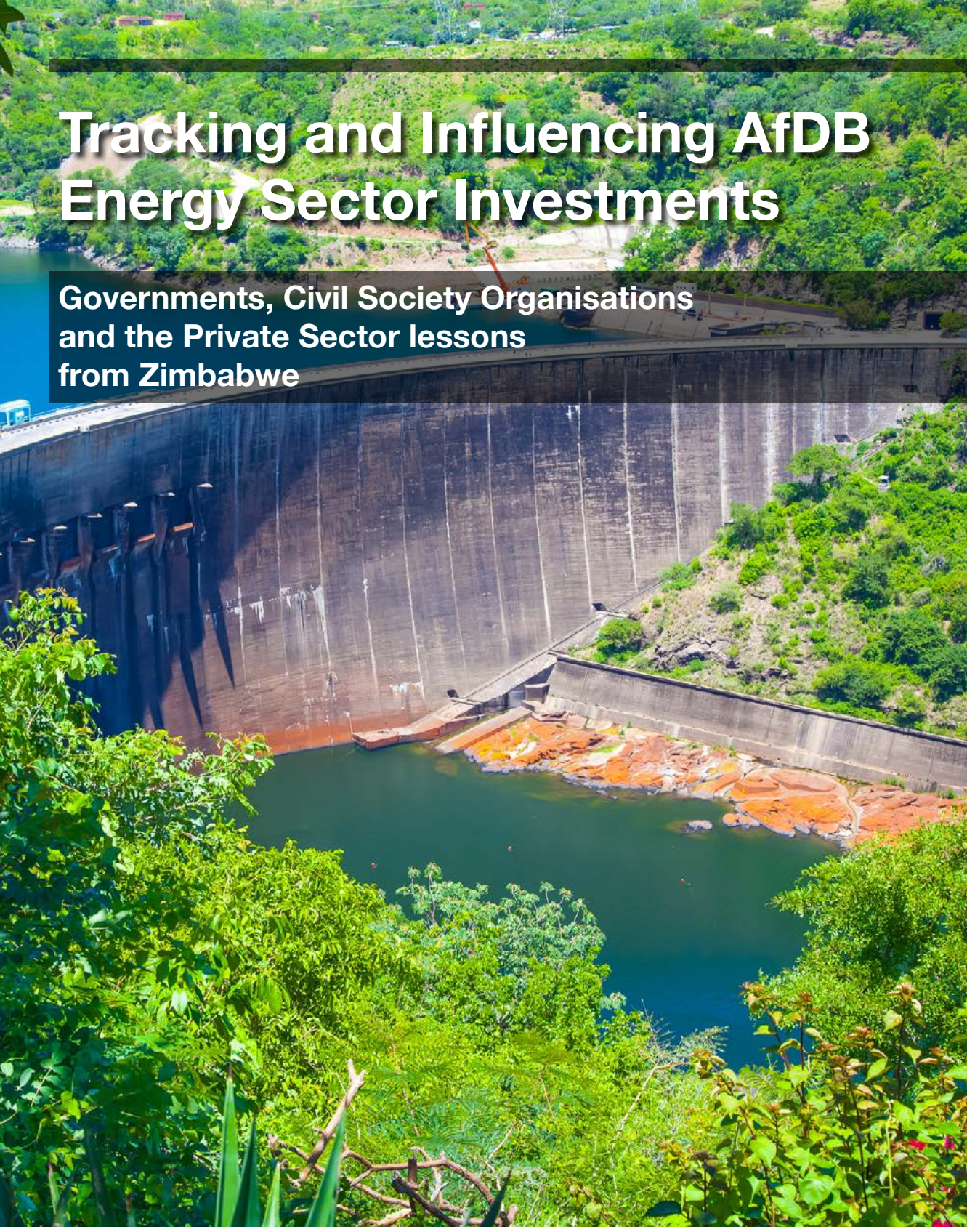
Tracking and Influencing AfDB Energy Sector Investments

Governments, Civil Society Organisations and the Private Sector lessons from Zimbabwe



access Alliance of Civil Society Organisations for Clean Energy Access

Wallace Global Fund
FOR A SUSTAINABLE FUTURE

ACTION 24

This research was commissioned by the Alliance of
Civil Society Organizations for Clean Energy Access.
May 2024

Table of Contents

List of Figures

List of Tables

Acknowledgements

This report was authored by Action 24, the Southern Node of the Alliance of Civil Society Organisations for Clean Energy Access's (ACCESS Coalition), with funding from the Wallace Global Foundation.
The successful accomplishment of this project was made possible through the collaborative efforts of many dedicated individuals and organizations. Their valuable contributions greatly enriched the depth and credibility of the report.

Special thanks to Dr. Nqobizitha M. Dube, who was the lead research consultant for this project.

Executive summary

This paper tracks the AfDB energy sector financing in Zimbabwe past and current, and compares the findings with those obtained in secondary data on AfDB financial flows conducted by the ACCESS coalition sourced from East Africa particularly Kenya, Tanzania and Uganda. The focus is on investments and technical support provided to governments, civil society, and the private sector approved between 2014-2021. In addition, projects in the pipeline as of January 2022 for which data was publicly available were considered. This study largely centred on desk review of relevant literature sourced from various sources. Supporting the review of secondary data were key informant interviews (KIIs) with relevant stakeholders such as officers from Multi-Lateral Development Banks, leaders of CSOs and arms of government. Results show that a total US$78,119,402 have flowed towards Zimbabwe for the purposed of energy projects or technical support. Most of the energy support is grid based, focused on the distribution of hydro and thermal power. Because most of the support focused on distribution and energy infrastructure, it is expected that such efforts will increase general energy access and support clean cooking options for previously unconnected Zimbabwean households.

Decentralized renewable energy was shown to be dominated by solar power which was considered still emerging and more concentrated within the private sector. The major entry points for CSOs relate to issues of advocacy initiatives that support grant-based financing; implications of DRE and grid extension of socio-economic and natural systems; information dissemination and capacity building of the public on issues peculiar to the energy space and the mitigation of information asymmetries and market distortions, exchange rate differentials in the official and parallel market that limit the participation of private players in the generation of clean energy and cooking technology. In comparison to the three east African countries, Zimbabwe has less people without access to energy in comparison to the east African countries which are all in group three regarding issues of power access. Zimbabwe realized much lower financial support for energy projects when compared to Kenya and Tanzania while it received support like that of Uganda. Hydropower dominates the renewable space in Zimbabwe and the east African countries while solar power is the emerging distant second in all cases. Energy poverty has profound implications on empowerment of women and youth, rural and national development as well as attainment of universal access and acceleration of Sustainable Development Goals (SDGs). There are several barriers faced by women and youth, chief among them is access to finance. This is because they do not have access to resources and assets that could be used as collateral security, unbanked and no credit history. Women economic empowerment is one of the entry points to gender equality in renewable energy. Access to energy promotes realization of gender equality, human rights and food security.

List of Acronyms

ACCESS	Alliance of Civil Society Organisation for Clean Energy Access
AEMP	African Energy Market Place
AfDB	African Development Bank
AFREPREN	African Energy Policy Research Network
BGHES	Batoka Gorge Hydro Electric Scheme
COP	Conference of parties
CSO	Civil Society Organisation
DRE	Distributed Renewable Energy
DtP	Desert-to-Power
EPIRP	Emergency Power Infrastructure Rehabilitation
FEI	Funds for Energy Inclusion
GBL	Green Baseload
GDP	Gross Domestic Product
HCC	Hwange Colliery Company
IRENA	International Renewable Energy Agency
KII	Key Informant interview
LMC	Last Mile Connectivity
MDB	Multi-Lateral Development Bank
NDEA	New Deal on Energy for Africa
NOCZIM	National Oil Company of Zimbabwe
NREP	National Renewable Energy Policy
PRA	Petroleum Regulatory Authority
REF	Rural Electrification Fund
RERA	Regional Energy Regulators Association of Southern Africa
SAS	Sustainable Africa Scenario
SDG	Sustainable Development Goal
SE4ALL	Sustainable Energy for All
SEFA	Sustainable Energy Fund for Africa
SHS	Solar Home Systems
SUT	Sustainable Utility Transformation
TSF	Transition Support Facility
ZERA	Zimbabwe Energy Regulatory Authority
ZERC	Zimbabwe Electricity Regulatory Commission
ZESA	Zimbabwe Electricity Supply Authority
ZETDC	Zimbabwe Electricity Transmission and Distribution Company
Zim-MDTF	Zimbabwe Programmatic Multi-Donor Trust Fund
ZWA	Zambezi Water Authority

1. Introduction

The African Development Bank Group has set an aspirational vision to achieve universal access to electricity by 2025 – 100 per cent access in urban areas, 95 per cent access in rural areas, and sufficient uninterrupted energy supply to cover demand needs for those who are grid-connected. This vision is encapsulated in the New Deal on Energy for Africa (NDEA) and is a more aggressive target than the UN's Sustainable Energy for All (SE4All) and Sustainable Development Goal 7 (SDG7) that targets universal access by 2030. Figure 1 summarises this aspiration within the space of other similar continental and global visions.

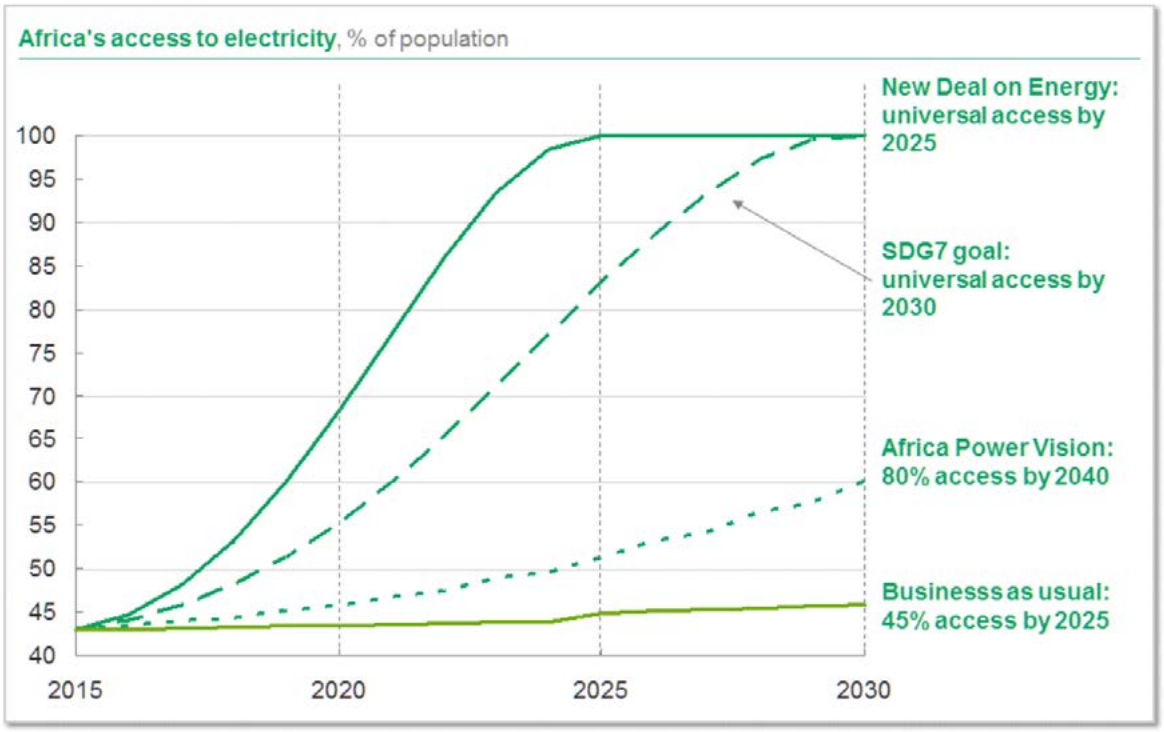


Figure 1: Energy access aspirations for Africa by 2030
Source: New Deal on Energy for Africa (2016)

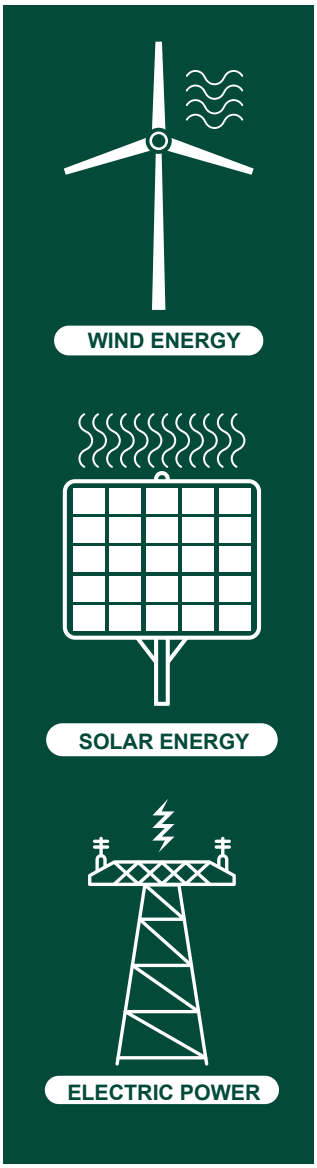
Under the NDEA targets, the AfDB aims to facilitate a total of 150 million households to access clean cooking solutions in Africa by 2025. However, there is no tangible indicative commitment that the Bank is fully committed to realizing the set target on clean cooking solutions. It was only in the year 2020 that the Bank and partners created a spark+ Africa fund for clean cooking. The Bank through SEFA was able to provide a seed of US$ 5 million that was further boosted by the European Union with a total of Euro 10 million. However, with the current magnitude of the problem, coupled with low funding, it will be difficult for the Bank to realize the goal (NDEA, 2016). Hence innovation, increased funding, and engaging partners in a more active manner are urgently needed to accelerate and scale up the clean cooking investment.

1.1. Goals and objectives

This paper tracks the AfDB energy sector financing in Zimbabwe and compares the findings with those found in a similar analysis conducted by the ACCESS coalition focused on the East African countries of Kenya, Tanzania, and Uganda. The focus will be on investments and technical support provided to governments, civil society,and the private sector approved between 2014-2021. In addition, projects in the pipeline as of January 2022 for which data is publicly available were considered.

1.1.1. **Specific objectives**

To achieve the above stated general goal of the assignment, the following specific objectives were pursued:



i. Identify and analyse AfDB investments —Electrification, Decentralized Renewable Energy (DRE), Clean cooking, Energy efficiency— to the government of Zimbabwe private sector and civil society,

ii. Identify and analyse AfDB projects —Electrification, DRE, Clean cooking, Energy efficiency—to the government of Zimbabwe private sector and civil society,

iii. Identify and analyse AfDB technical support —Electrification, DRE, Clean cooking, Energy efficiency—to the government of Zimbabwe private sector and civil society,

iv. Differentiate the support received between renewable and fossil fuel-based energy,

v. Highlight the key entry points that CSOs can engage the AfDB to influence the energy planning process and

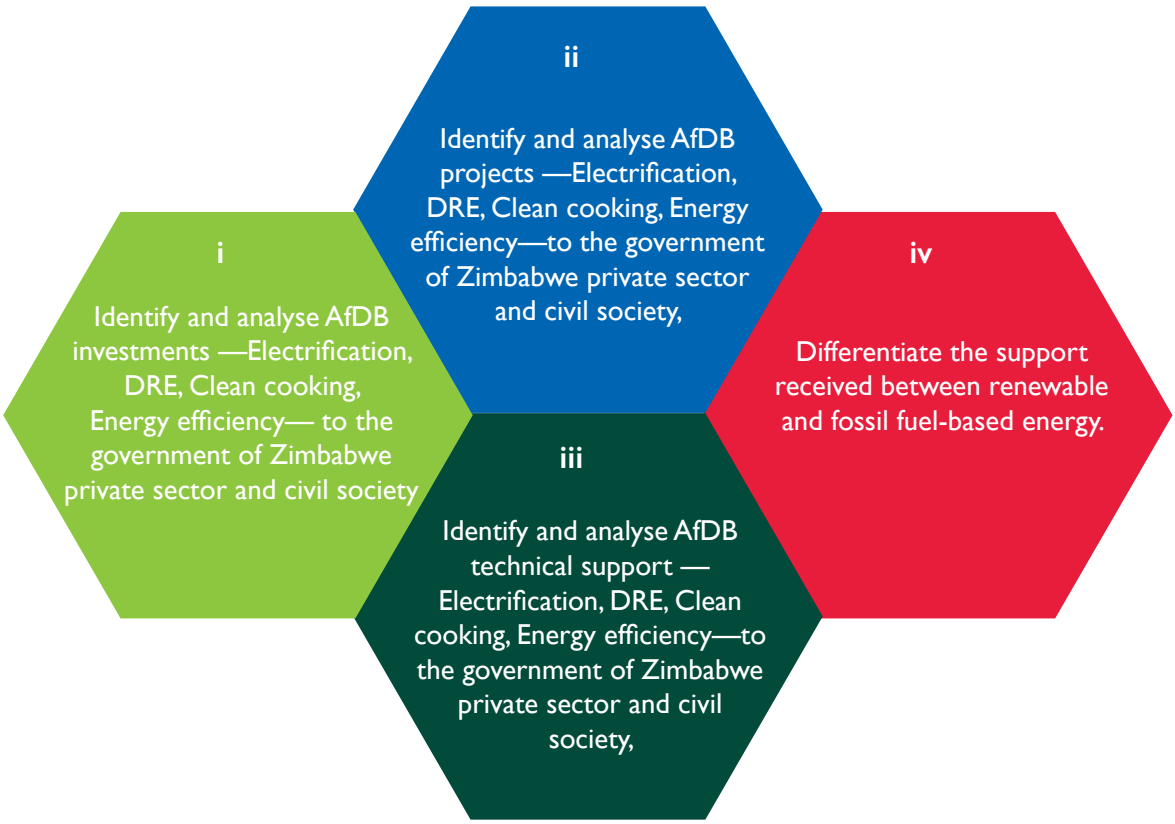
vi. Compare the Zimbabwean findings with those obtained in East Africa —specifically Kenya, Tanzania and Uganda.

1.2. Structure of the paper

The paper proceeds by explaining the broad methodology that was used to realize the specific study objectives and ultimately the overall goal of the study. After the methods section a summary on the AfDB NDEA is given with a focus on the specific goals and its location in the global energy space. The Zimbabwean energy situation follows in the third section and focuses on aspects such as the institutional framework governing energy in Zimbabwe, energy generation, distribution, accessibility and reliability. The fourth section gives a summary of the AfDB energy funding that has gone to Zimbabwe, followed by a comparative analysis of this funding with that obtained from the east African countries of Kenya, Tanzania and Uganda. The seventh section considers the space of civil society organisations in the AfDB energy space and it is followed by the logical conclusions of the paper in the eighth section.

2. Methods

This study largely centres on a desk review of relevant literature sourced from various sources. Supporting the review of secondary data were key informant interviews (KIIs) with relevant stakeholders such as officers from Multi-Lateral Development Banks, leaders of CSOs and arms of government. The specifics of the methods to be used are explained in the parts that follow in accordance with the specific objectives of the assignment.



For the four specific objectives above the AfDB website was consulted for previous records on investments, projects and technical support rendered to Zimbabwe between 2014 and 2022. Furthermore, literature was reviewed using the key words 'AfDB energy in Zimbabwe' given the nature of the data sought, a general Google search which covers much more forms of literature —peer and non-reviewed — was used to identify energy investments, projects and technical support that could have flowed in the direction of Zimbabwe from the AfDB. Key informant interviews were organized with officers from the AfDB, Government of Zimbabwe and other relevant organisations with the aim of getting direction to relevant literature. Data obtained has been chronologically catalogued in accordance with the three dimensions of support and the years in which it was received. The specifics of the methods used are explained in the parts that follow in accordance with the specific objectives of the assignment.

v. Highlight the key entry points that CSOs can engage the AfDB to influence the energy planning process and

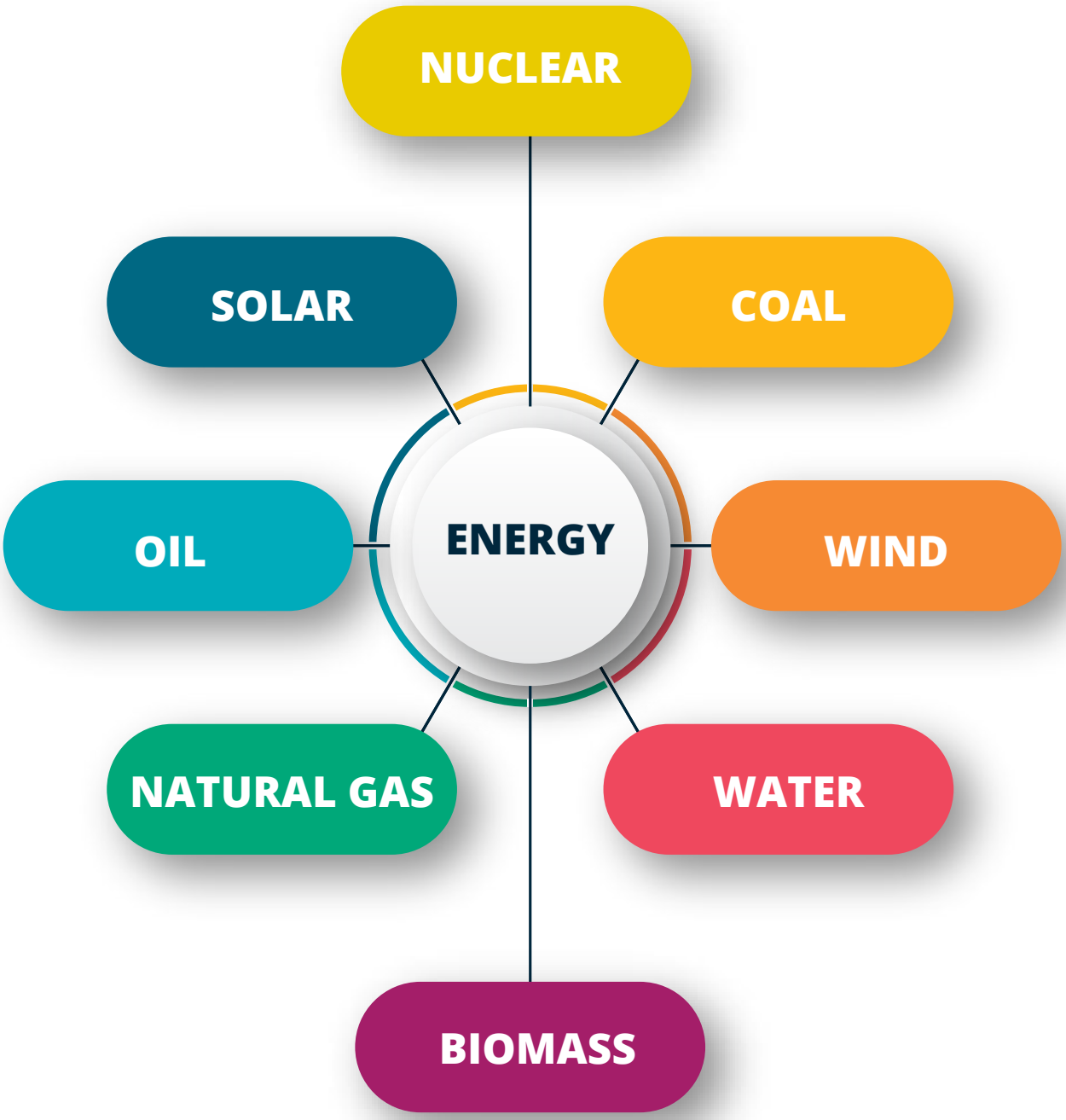
For this specific objective, key informant interviews were held with representatives of CSOs to understand their comprehension of energy financing activities of the AfDB, aspirations in informing the utilization of energy resources and advocacy points they consider key in the energy debate. Literature on the global role of CSOs in the energy debate was also reviewed using the keywords 'CSOs in energy provision for all'. The articles reviewed were sourced from google scholar covering the period 2016 to 2022. Data obtained highlights the key issues to be considered by CSOs in the energy space and thereby highlight the major points of entry and debate where CSOs could participate.

vi. Compare the Zimbabwean findings with those obtained in East Africa -specifically Kenya, Tanzania and Uganda-.

For this specific objective, a comparative analysis was undertaken to show the differences and similarities in the cases of Kenya, Uganda, Tanzania and Zimbabwe. The focus was on the amount of financial flows; dominant investment, projects and technical support within the flows; perspectives of CSOs in the different countries; CSO entry points and CSO activities to date..

2.2. Ethical issues

Regarding research ethics, all key informants that gave information for this assignment gave their consent and were acknowledged or kept anonymous as per their requests. Furthermore, permission was obtained to utilize AFDB information that was not in the public domain. Finally, all secondary data sources are fully acknowledged.


NUCLEAR
SOLAR
COAL
OIL
ENERGY
WIND
NATURAL GAS
WATER
BIOMASS

3. Specifics on the new deal on energy for Africa and the AfDB energy initiatives

Electricity is the backbone of Africa's new energy systems, powered increasingly by renewables. Africa is home to 60% of the best solar resources globally, yet only 1% of installed solar PV capacity. Solar PV – already the cheapest source of power in many parts of Africa – outcompetes all sources continent-wide by 2030. Renewables, including solar, wind, hydropower and geothermal account for over 80% of new power generation capacity to 2030 according to the Sustainable Africa Scenario (SAS). Once coal-fired power plants currently under construction are completed, Africa builds no new ones, underpinned mainly by China's announcement to end support for coal plants abroad. If the investment initially intended for these discontinued coal plants were redirected to solar PV, it could cover half of the cost of all Africa's solar PV capacity additions to 2025 in the SAS. Figure 2 shows the possible option of energy production globally.

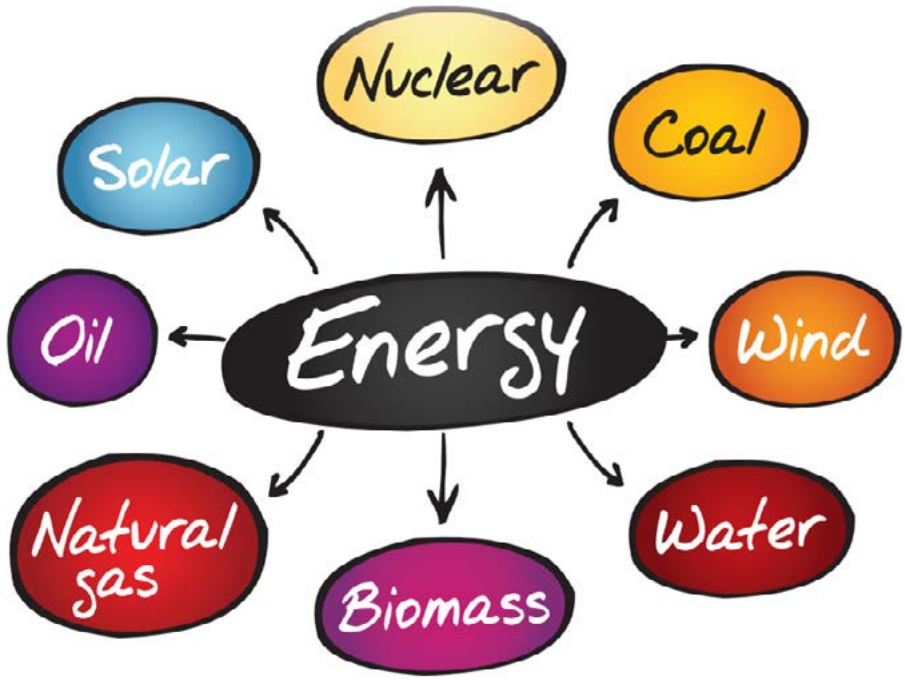


Figure 2: Global energy production options

Demand for energy services in Africa is set to grow rapidly; maintaining affordability remains an urgent priority. Africa has the world's lowest levels of per capita use of modern energy. As its population and incomes grow, demand for modern energy expands by a third between 2020 and 2030. However, under existing subsidy schemes, current price spikes risk doubling energy subsidy burdens in African countries in 2022 – an untenable outcome for many facing debt distress. Some countries, including Egypt, Ethiopia and Uganda, are being driven to halt or reduce subsidies, or to reinstate fuel taxes due to growing financial burdens. International support must play a role in the near term to manage prices, but better targeting of subsidies to the households most in need is essential.

The share of fossil fuels in the energy mix had declined by 11% to 83.5%. During the period, consumption of oil declined by almost a third to 31.4% and consumption of coal declined by 9.3% of total energy consumed. By contrast, the share of natural gas in total energy consumed rose by almost 67% and renewables increased by approximately 162% from 1970 to 2020. Figure 3 shows shares of different primary energy types in the global energy mix in 1970 and 2020[1]. The increased consumption of renewables was largely driven by wind, solar, and other renewables, which started from a very low or zero base in 1970.

1 www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy.html.

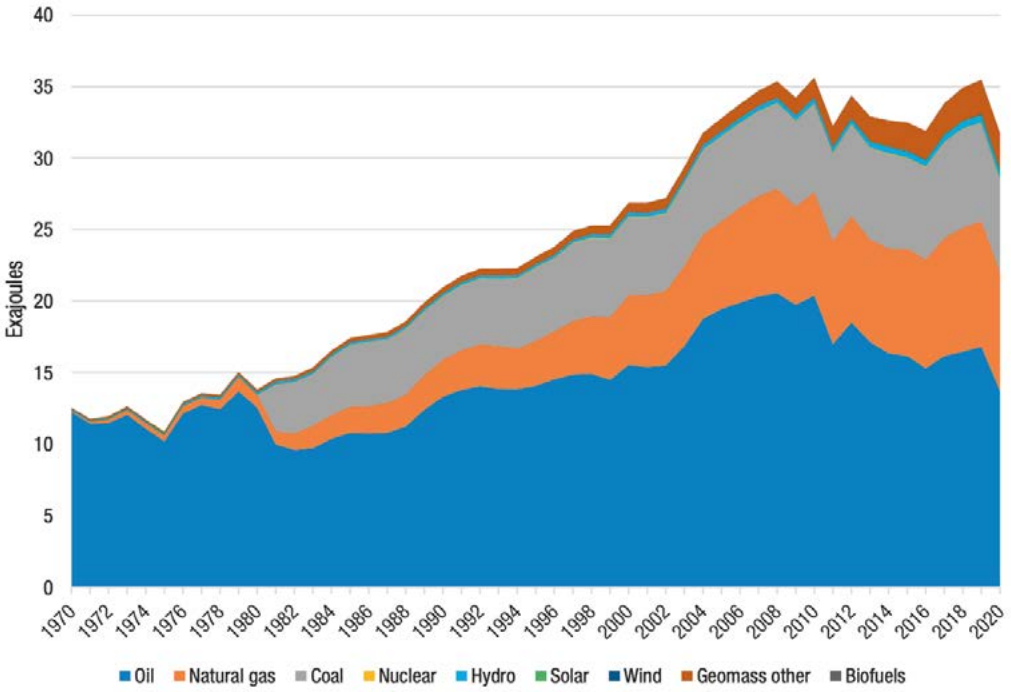


Figure 3: African energy production, 1970 to 2020 (exajoules)
Source: UNCTAD secretariat calculations based on data from British Petroleum, Statistical review of world energy, 2022

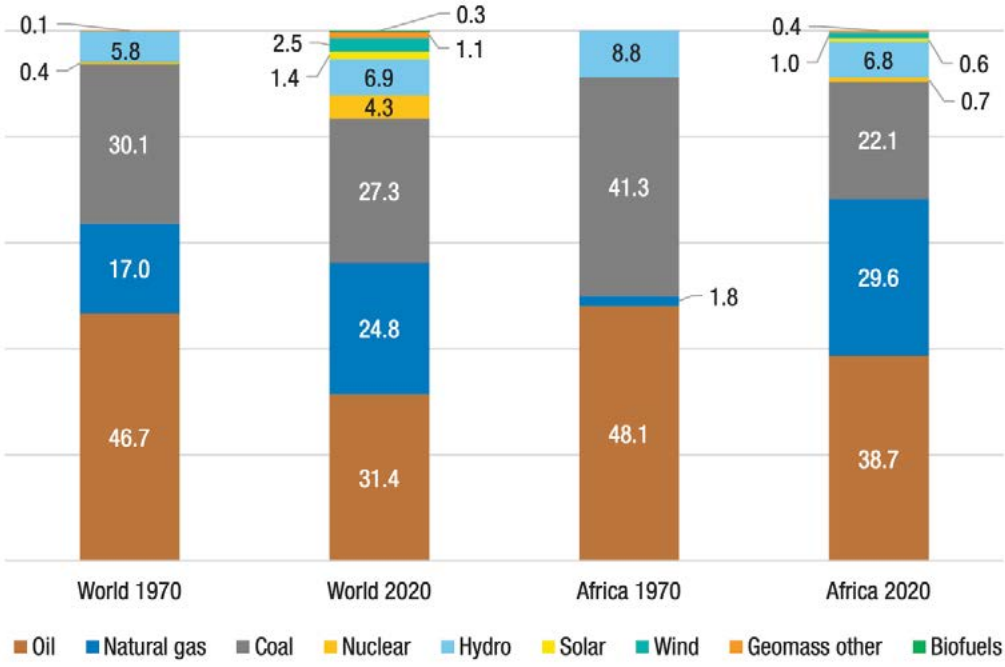


Figure 4: Shares of different energy types in world and Africa energy consumption, 1970 and 2020%
Source: UNCTAD secretariat calculations based on data from British Petroleum, Statistical review of world energy, 2022

3.1. Energy access

The International Energy Agency (IEA)[2] defines energy access as "a household having reliable and affordable access to both clean cooking facilities and to electricity, which is enough to supply a basic bundle of energy services initially, and then an increasing level of electricity over time to reach the regional average." Access to a reliable and quality energy supply is vital to the economic development of any country. It drives industrialization, boosts productivity and economic growth, spurs human development, and is crucial to achieve almost all the United Nations Sustainable Development Goals (SDGs) (Bhatia and Angelou, 2015). Figure 5 shows the global energy access levels in 2020.

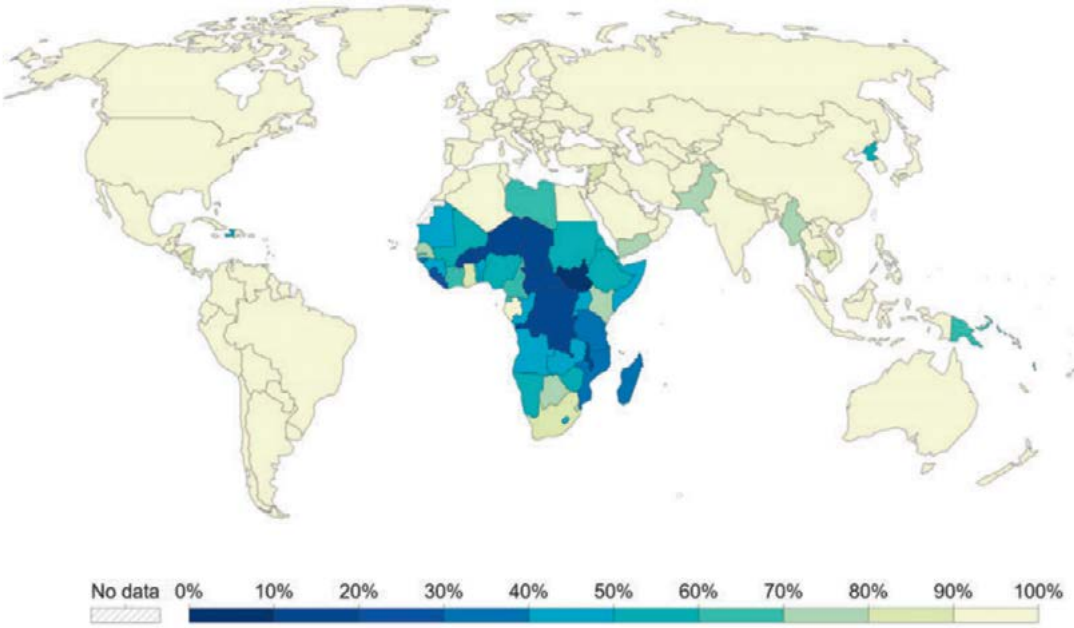


Figure 5: Share of population with access to electricity access, by world region, 2020
Source: UNCTAD secretariat calculations based on data from British Petroleum, Statistical review of world energy, 2022

Globally, 733 million people, or about 9.1 per cent of the world's population, lack access to electricity (World Bank, 2020). The AU aims at universal access to affordable electricity, achieved by 2030 in Africa, requires bringing connections to 90 million people a year, triple the rate of recent years. At present, 600 million people, or 43% of the total population, lack access to electricity, most of them in sub-Saharan Africa. Countries such as Ghana, Kenya and Rwanda are on track for full access by 2030, offering success stories other countries can follow. Detailed analysis shows that extending national grids is the least costly and most prudent option for almost 45% of those gaining access to 2030. In rural areas, where over 80% of the electricity-deprived live, mini-grids and stand-alone systems, mostly solar based, are the most viable solutions[3] (see Figure 6).

2 See IEA, 2020, Defining energy access: 2020 methodology, 13 October, available atwww.iea.org/articles/defining-energy-access-2020-methodology.
3 Key findings – Africa Energy Outlook 2022 – Analysis - IEA

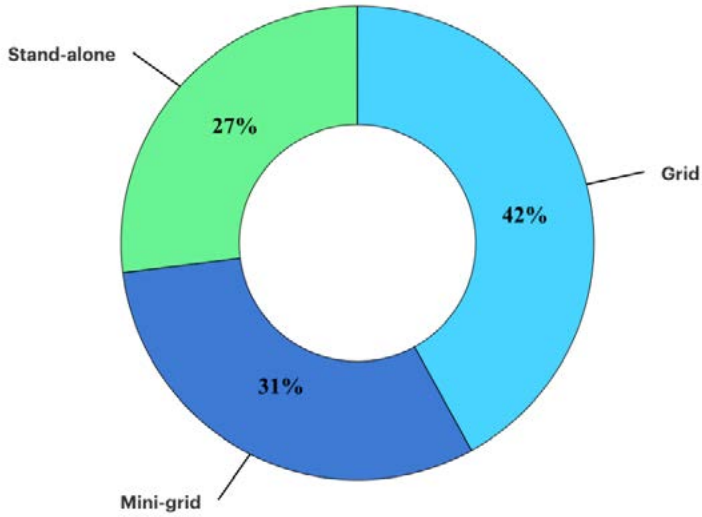


Figure 6: Share of people gaining access to electricity by technology in Africa in the Sustainable Africa Scenario, 2022-2030
Source: Key findings – Africa Energy Outlook 2022 – Analysis - IEA

Access to energy is defined in many ways, but most definitions include having reliable and affordable access to both cooking facilities and electricity that can be scaled up over time. Hundreds of millions more have only limited or unreliable electricity and an estimated 2.4 billion people worldwide (around a third of the global population) cook using open fires or inefficient stoves fuelled by kerosene, biomass (wood, animal dung or crop waste) and coal. Dependence on such fuels has serious health consequences. According to the World Health Organization (WHO)[4], cooking with biomass and stoves fuelled by kerosene and coal is linked to various illnesses and deaths, affecting mostly women and children, and increasing GHGs in the atmosphere. Figure 7 shows the global population that use clean cooking mechanisms.

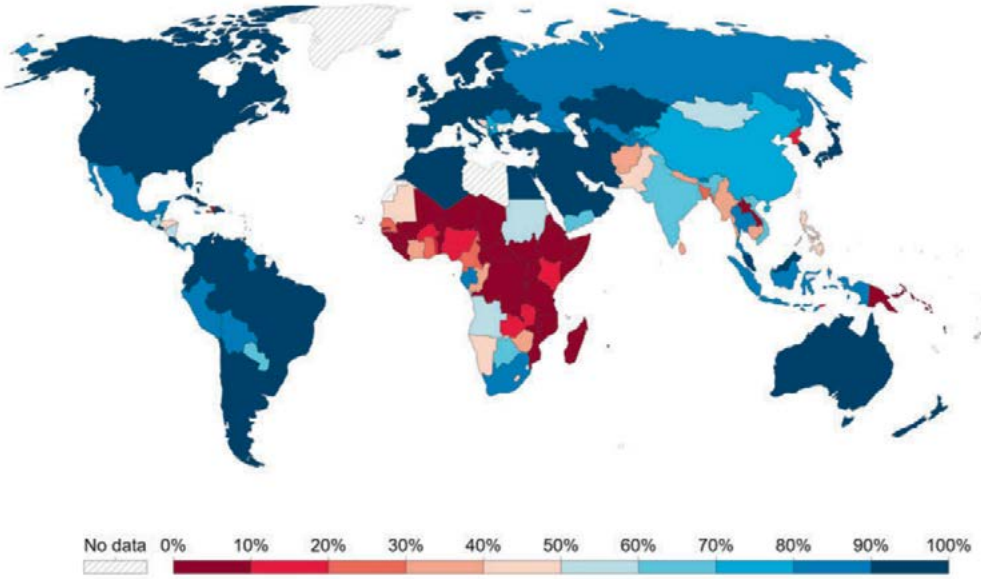


Figure 7: Share of the population with access to clean fuels for cooking, by world region, 2020
Source: UNCTAD secretariat calculations based on data from British Petroleum, Statistical review of world energy, 2022

4 World Health Organization, accelerating access to electricity in health-care facilities, available at www.who.int/activities/ accelerating-access-to-electricity-in-health-care-facilities

Within the continental energy goals, the AU aims at achieving universal access to clean cooking fuels and technologies by 2030 requires shifting 130 million people away from dirty cooking fuels each year. Today, 970 million Africans lack access to clean cooking. Liquefied petroleum gas (LPG) is the leading solution in urban areas, but recent price spikes are making it unaffordable for 30 million people across Africa, pushing many to revert to traditional use of biomass. Countries are re-evaluating clean fuel subsidy schemes and exploring alternatives such as improved biomass cook stoves, electric cooking and biodigesters. The improvement rates needed for universal clean cooking access by 2030 are unprecedented, but the benefits are huge: reducing premature deaths by over 500 000 a year by 2030, drastically cutting time spent gathering fuel and cooking, and allowing millions of women to pursue education, employment and civic involvement.

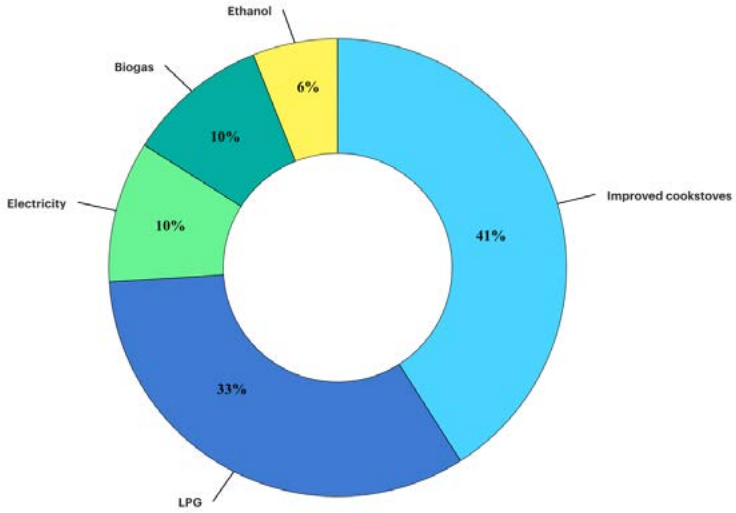


Figure 8: Share of people gaining access to clean cooking by technology in Africa in the Sustainable Africa Scenario, 2022-2030
Source: Key findings – Africa Energy Outlook 2022 – Analysis - IEA

The above goals of universal access to modern energy calls for investment of USD 25 billion per year[5]. This is around 1% of global energy investment today, and similar to the cost of building just one large liquefied natural gas (LNG) terminal. Stimulating more investment requires international support aided by stronger national institutions on the ground laying out clear access strategies – only around 25 African countries have them today.

As Africa's industry, commerce and agriculture expand, so too does the need for productive uses of energy. Energy demand in industry, freight and agriculture grows by almost 40% by 2030. Increased production of fertiliser, steel and cement – as well as manufacturing of appliances, vehicles and clean energy technologies – helps to reduce the burden of imports in Africa, which stands at over 20% of GDP today. Some parts of industry expand their use of the latest, most efficient technologies. In agriculture, which represents one-fifth of Africa's GDP, irrigation pumps are electrified, reducing diesel generator use, and cold-chains (temperature-controlled supply chains) are extended, boosting agricultural productivity and the scope for these products to reach urban markets.

3.2. The African Scenario

Africa's starting point in the energy sector is well known. Africa is home to 16% of the world's population—and to 53% of the global population without access to electricity (see Figure 9). Over 645 million Africans (about 40 per cent of the continent's population) have no access to electricity (NDEA, 2016). Sub-Saharan Africa had only 32% access by 2013, up from 30 per cent in 2009 —a very slow growth. If the increase in access to electricity continues based on 'business as usual', access will still be less than 45 per cent by 2025.

5 UNCTAD secretariat calculations based on data from British Petroleum, Statistical review of world energy, 2022 (www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy.html).

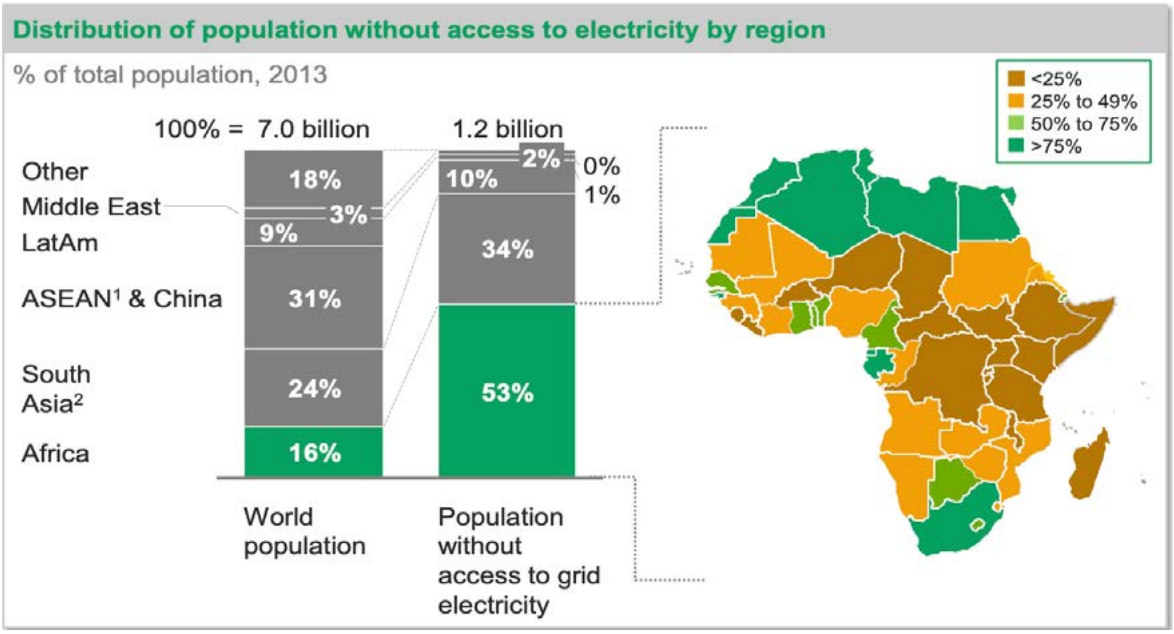


Figure 9: Distribution of population without access to electricity by regions
Source: NDEA (2016)

The NDEA (2016) notes that electricity access rates vary enormously by region. For instance, the access rate is over 85 per cent in South Africa, and over 95 per cent in North African countries. By stark contrast, it is less than 25 per cent in Central and East Africa. In Chad and Sierra Leone, for example, the access rate is lower than 5 per cent. Low access levels to modern energy one of the reasons many African households resort to the use of harmful energy sources that are detrimental to health and the environment. Africa's power consumption per capita is extremely low, compared to that of the rest of the world. The problem is particularly acute in sub-Saharan Africa (excluding South Africa), which has a per capita consumption of 181 kWh. In comparison, the power consumption per capita in the United States is 13,000 kWh per capita and 6,500 kWh per capita in Europe (IRENA, 2021).

From a household time allocation perspective, the NDEA (2016) notes that African men, women and children devote a lot of time to the daily collection of low energy efficiency biomass for cooking and other purposes. In many countries, women and children spend more than 1.5 hours per day per household gathering biomass for energy needs (see Figure 10). In certain cases, this practice prevents women from participation in economic activities, and children from attending school. The Swedish Energy Institute estimates that Africa loses USD 30 - 60 billion yearly to negative health effects, environmental degradation and climate change, and reduced economic productivity associated with high levels of biomass consumption. Thus, there is a clear correlation between GDP per capita and power consumption per capita, where countries with low power consumption per capita have low GDP per capita.; similarly, high power consumption per capita appears to be correlated with high GDP per capita (Figure 11). The loss of productive time due to energy challenges is therefore detrimental to African economies and requires urgent attention.

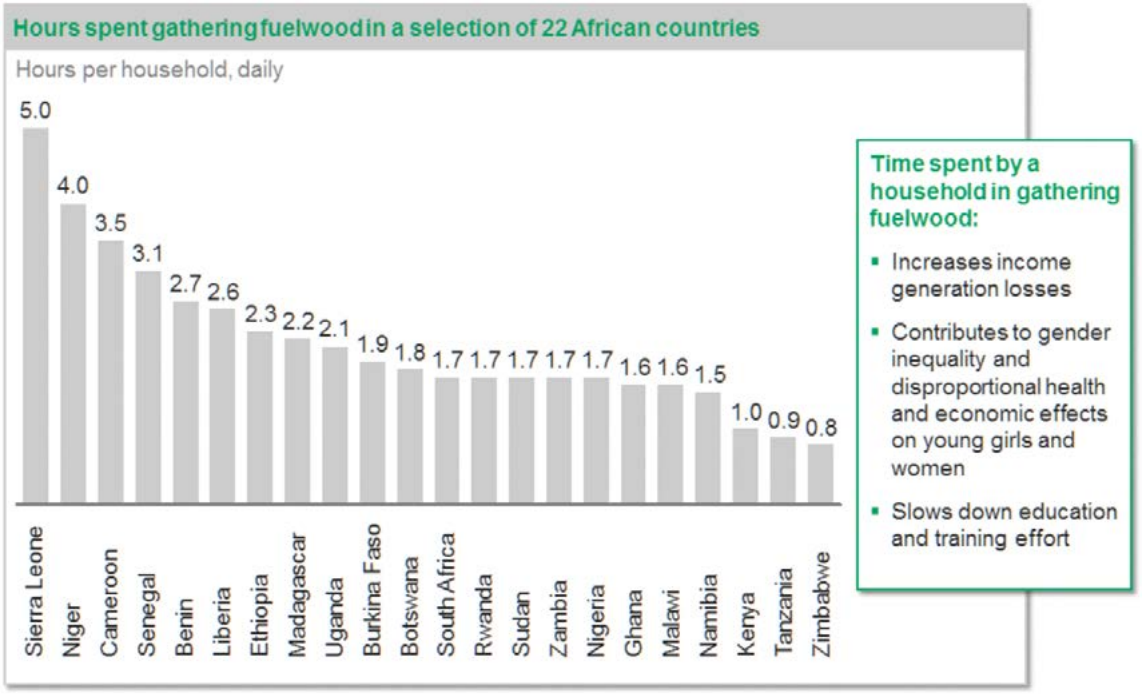


Figure 10: Hours spent gathering fuelwood in 22 African countries
Source: NDEA (2016)

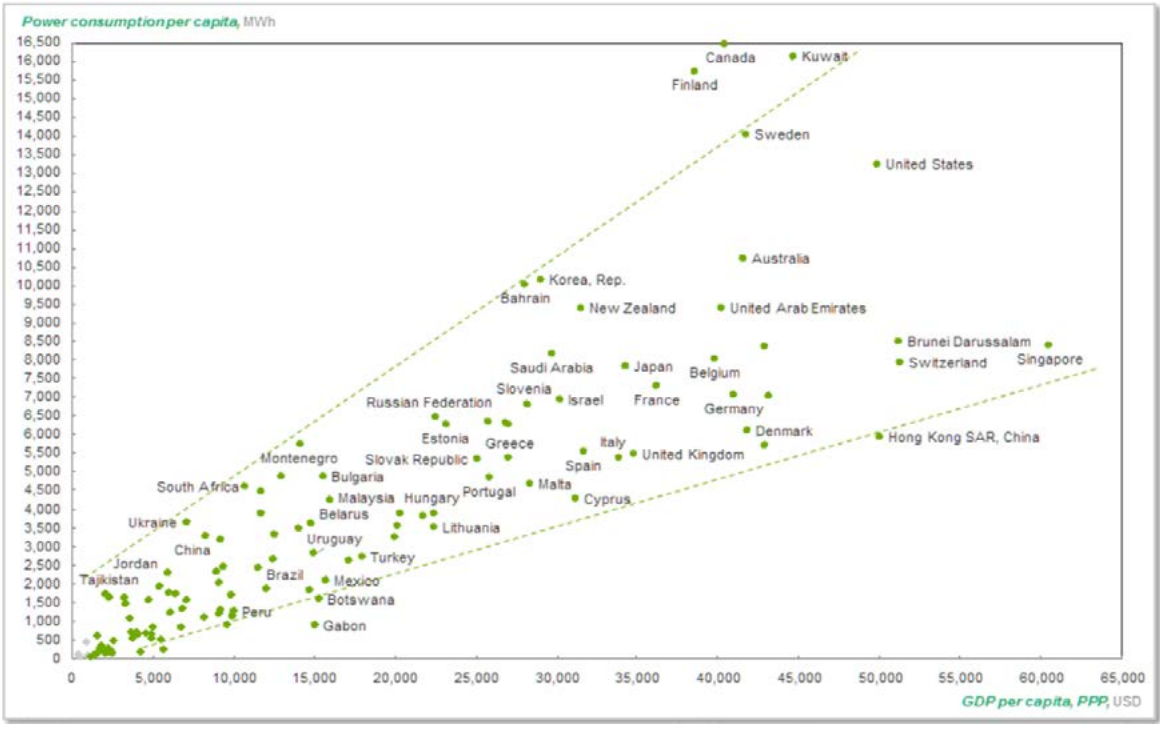


Figure 11: Relationship between power consumption and growth
Source: NDEA (2016).

The rapid growth of Africa's population and GDP is increasing capacity requirements and the number of households that need to be connected to the grid. Universal access to electricity by 2025 means connecting 205 million households and nearly doubling grid generation capacity. The New Deal on Energy for Africa (NDEA) focuses on a set of clear strategic building blocks needed to achieve universal access. These include increasing:

i. on-grid generation to add 160 GW of new capacity by 2025;
ii. on-grid transmission and grid connections that will create 130 million new connections by 2025;
iii. off-grid generation to add 75 million new connections by 2025;
iv. access to clean cooking energy for around 150 million households by 2025 and
v. efficiency technologies along the energy value chain, from generation, transmission, and distribution to the end use sectors.

The NDEA has two objectives:

(i) to support African countries in their efforts to provide all their populations and productive sectors with access to modern, affordable and reliable energy services; and
(ii) to help African countries develop their energy sector in a socially, economically and environmentally sustainable manner.

The New Deal will contribute towards delivering universal access by addressing seven strategic themes. These strategic themes are:

(i) setting up the right enabling policy environment,
(ii) enabling utility companies for success,
(iii) dramatically increasing the number of bankable energy projects,
(iv) increasing the funding pool to deliver new projects,
(v) supporting 'bottom of the pyramid' energy access programmes,
(vi) accelerating major regional projects and driving integration and
(vii) rolling out waves of country-wide energy 'transformations'.

In implementing the NDEA the African Development Bank explained that it will work with the World Bank Group and other MDBs to scale up investments in the energy sector. In addition, the following initiatives are already partnering with the Bank on the New Deal:

i. Power Africa – a transaction and partnership-driven model launched by US President Barack Obama in 2013. Power Africa's goals are to add 60 million new electricity connections and generate 30 GW of new generating capacity by 2030.
ii. Energy Africa campaign – launched by the UK in late 2015 focuses primarily on off-grid solar energy projects, with a view to overcoming financial hurdles and the market failures that prevent firms from raising capital and overcoming the policy and regulatory barriers to household energy access.
iii. Electrification Financing Initiative (Electri-FI), launched by the European Commission during COP 21, aims to support market development and private sector initiatives for affordable, sustainable and reliable energy solutions.
iv. Sustainable Energy for All (SE4All), launched by UN Secretary-General Ban Ki-moon in 2011, aims to achieve three main goals by 2030: ensuring universal access to modern energy services, doubling the global rate of improvement in energy efficiency and doubling the share of renewable energy in the global energy mix.
v. African Energy Leaders Group (AELG) – launched in January 2015, it brings together political and economic leaders at the highest level to drive the reforms and investment needed to end energy poverty and sustainably fuel the continent's economic future.

Pursuing the Strategy for the New Deal on Energy for Africa launched in 2016, the Bank approved a total of USD 7.2 billion from its own resources (public: 80%; private: 20%) and mobilized USD 850 million in co-financing resources over the 2016-2020 period. These commitments are expected to:

i. Increase power generation capacity by an additional 3 GW of installed generation capacity, of which 2.2 GW is from renewable energy sources.
ii. Support grid reinforcement and extension with the construction of over 7,000 km of transmission lines, of which 3,000 km are regional interconnections to facilitate regional integration and power trade. In addition, some 65,000 km of distribution lines with associated substations were financed which

will enable access to electricity for about 12 million people.

iii. Stimulate the market for decentralized energy solutions, with 3 million people gaining off-grid energy access notably through Solar Home Systems (SHS) and Green Mini Grids.

The Bank is also driving important initiatives to scale-up investments in the sector and build resilience. These are:

i. The Desert-to-Power initiative (DtP) DtP aims to accelerate economic development in the Sahel region through the deployment of solar technologies at scale.

ii. The Sustainable Energy Fund for Africa (SEFA), converted into a blended finance facility in 2019, with a new Green Baseload (GBL) component and enhanced financing capability and over USD 150 million in new donor commitments.

iii. The Africa Energy Market Place (AEMP): A platform supporting action-oriented policy dialogue between governments, private sector, and partners with aim of enabling sector reforms and fast-tracking projects. The last 2020 edition was dedicated to supporting DtP G5 Sahel countries and in 2021 five more countries will be on-boarded

iv. The Sustainable Utility Transformation (SUT) agenda: Collaboration with RMCs, utilities, power pools, and development partners to improve the performance and viability of utilities.

v. The Facility for Energy Inclusion investment platform is expected to finance 35 to 50 projects, deliver ~300 MW new capacity and add 3.3 million off-grid connections by 2030.

3.3. Clean energy issues in the NDEA

Africa has enormous renewable energy potential – almost unlimited solar potential (10 TW), abundant hydro resources (350 GW), wind (110 GW) and geothermal energy sources (15 GW). The recent years have seen significant advancements in new renewables (IRENA, 2014). For instance, the solar photovoltaic modules in 2014 cost three-quarters less than in 2009, while wind turbine prices declined by almost a third over the same period. The cost of electricity from utility-scale PV systems has fallen by around half since 2010 (IRENA, 2014). These changes, which are ongoing, provide the opportunity to rethink traditional approaches to the energy sector. Similarly, energy efficiency, which has not traditionally been a priority in the context of low access rates in Africa, will be a significant consideration going forward as Africa works towards addressing its energy deficit.

In the same vein, the AfDB highlighted that it had an active portfolio of energy projects totalling over USD 12 billion, the Bank is a key stakeholder and influencer in supporting access to clean and affordable energy across the African continent. The NDEA aims at achieving universal energy access, with priority given to low-carbon technologies which harness the abundant, hydro, solar, geothermal and wind resources of the continent.

4. The energy situation in Zimbabwe

This section gives a snapshot of the Zimbabwean energy space. Areas covered include the energy institutional environment of Zimbabwe, energy generation, distribution, accessibility and reliability.

4.1. The institutional dimensions of energy in Zimbabwe

The legislation that governs the electricity supply industry in Zimbabwe is the Electricity Act (Chapter 13:19) and Rural Electrification Fund Act (Chapter 13:20) of 2002. The Electricity Act created the Zimbabwe Electricity Regulatory Commission (ZERC) and provided the legal framework for the unbundling of the state-owned utility, Zimbabwe Electricity Supply Authority (ZESA). The Rural Electrification Fund Act (13:20) created a Rural Electrification Agency that has the mandate for the total electrification of all rural areas, funded by electrification levies and government stipends. The main functions of the agency are the planning of projects, the raising and accounting of rural electrification funds, and the monitoring of project implementation. In April 2018, the Rural Electrification Fund (REF) in Zimbabwe announced that they will electrify all public institutions such as schools, government extension offices, and other Government departments for free. REF offers 100% capital subsidy to the public institutions. The institutions only must pay for the internal wiring of their buildings and the connection fees. For schools (only for administration block, science laboratories and computer laboratories), REF will also subsidize the internal wiring and the connection fees. Since 2002, REF has electrified 2 699 primary schools, 1 359 secondary schools, 874 rural health centres, 411 Government extension offices, 244 chiefs' households, 952 business centres, 774 small scale farms, 1175 villages and 803 other institutions[6]. The Petroleum Act, passed in 2006, provided for the establishment of the Petroleum Regulatory Authority (PRA), to licence and regulate the petroleum industry, to promote the development of efficient procurement, sales and distribution of petroleum products, and to safeguard the interests of consumers of petroleum products. The PRA also has an advisory role to the Minister and is yet to be established[7].

The Ministry of Energy and Power Development has overall responsibility for energy issues in Zimbabwe. The terms of reference include policy formulation, performance monitoring and regulation of the energy sector as well as research, development and promotion of new and renewable sources of energy. The Ministry supervises and oversees the performance of the energy parastatals, ZESA Holdings and the National Oil Company of Zimbabwe (NOCZIM). The general functions of the Ministry of energy are summarised as follows:

i. Formulate and implement energy and power development policies.
ii. Develop a legal and regulatory framework for the energy sector.
iii. Monitor and evaluate the implementation of approved energy and power development policies and programmes.
iv. Initiate and implement desirable reforms in the power and petroleum sectors.
v. Facilitate the empowerment of indigenous players in the sector.
vi. Plan and coordinate energy supply and power development options.
vii. Create an enabling investment environment in the energy sector.
viii. Provide oversight on state enterprises and parastatals in the energy sector.
ix. Promote the development and efficient utilization of renewable and non-renewable sources of energy.
x. Promote the use of energy efficient technologies and techniques.
xi. Develop a database on energy use technologies and investment opportunities as well as disseminate such information.
xii. Facilitate the implementation of research and development in the energy sector.

6 Zimbabwe Energy Profile. http://www.reegle.info/countries/zimbabwe-energy-profile/ZW
7 Country Energy Information Zimbabwe. http://www.energyrecipes.org/reports/genericData/Africa/061129%20RECIPES%20country%20info%20Zimbabwe.pdf

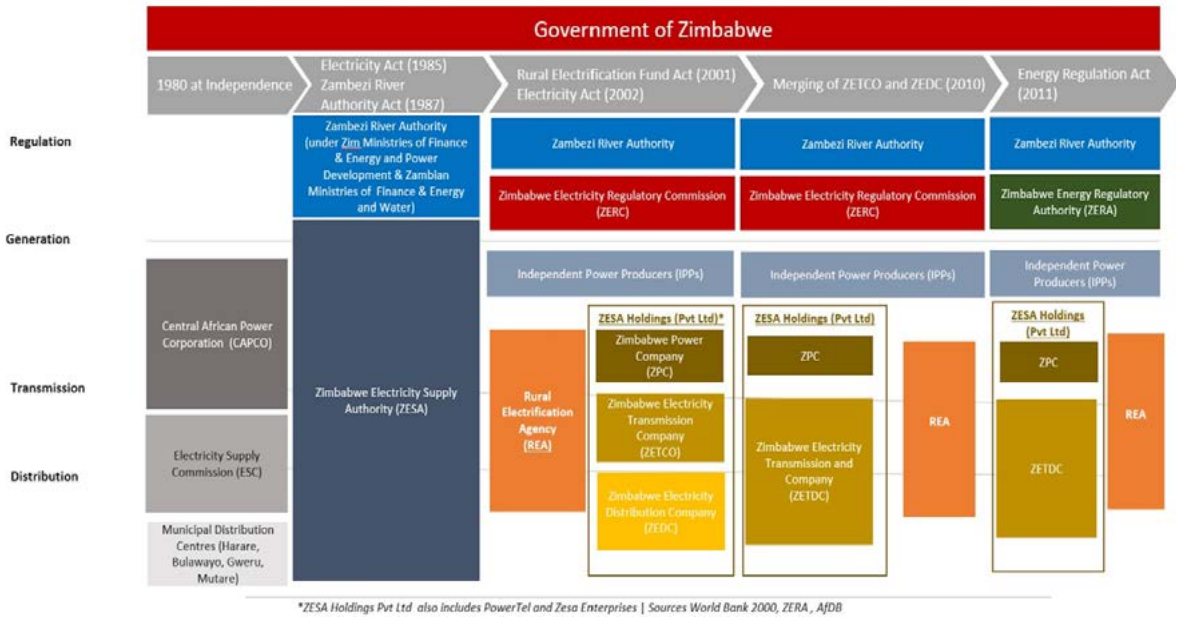


Figure 12: The institutional interactions and frameworks in Zimbabwe's energy space8

4.1.1. **Renewable energy policies**

The Government of Zimbabwe launched the National Renewable Energy Policy (NREP) and the Biofuels Policy of Zimbabwe (BPZ) in 2020. The policies guide the investment and production of clean energy alternatives in the country. The policies emanate from the National Energy policy of 2012 and seek to achieve a 33 percent reduction in greenhouse carbon emissions by 2030 (Africa Energy Portal, 2020). Prior to this and in a move that signalled the support of clean renewable energy in July 2019, Zimbabwe removed import duties on all solar-related products ranging from batteries to cables. The government also introduced a new mandate that all newly constructed infrastructure should have solar systems installed. This new move also aligned with the government's plan to promote local production as it aims to produce 1575 MW of power from solar by 2030 (this is the same amount that Zimbabwe is producing currently from its major generation sources). The government has also rolled out innovation mechanisms such as net metering and feed-in tariff for clean energy to enable Independent Power Producers to add their excess electricity to the national grid. Table 1 summarises the renewable energy policies currently reigning in Zimbabwe.

8 https://iclg.com/practice-areas/renewable-energy-laws-and-regulations/zimbabwe

Table 1: Renewable energy policies in Zimbabwe

National Renewable Energy Policy (NREP) and the Biofuels Policy (2020)	It seeks to achieve: 33% reduction in green house carbon emissions by 2030 20% ethanol blending ratio by 2030
National Energy Policy (2012)	Policy support and strategic planning for multiple RE sources. The objectives of the Energy Policy are: to ensure accelerated economic development to facilitate rural development to promote small-medium scale enterprises to ensure environmentally friendly energy development, and to ensure efficient utilisation of energy resources.
Energy Regulatory Act (2011)	The ZERA (Zimbabwe Energy Regulatory Authority) board issues and withdraws licences from all players in the Electricity, Petroleum and Renewable Energy Sectors. It is also responsible for creating a legal framework for fair competition of both private and public players.
National Electricity Act (2002)	The Electricity Act provided for the establishment of the Zimbabwe Electricity Regulatory Commission (ZERC). ZERC was responsible for licencing operators in the electricity sector, setting of electricity tariff as well as general regulation of the electricity sector to allow for fair competition in the electricity industry. Since the establishment of ZERA in January 2012, all the duties have been transferred to ZERA and ZERC dissolved.
Rural Electrification Act (2002)	The Act allowed for the establishment of the Rural Electrification Fund Board responsible for holding and distribution of Rural Electrification Funds for all rural electrification projects countrywide. Allows for the expansion of the national electricity grid to rural government institutions, business centres and chief's homesteads on 100% subsidy and 60% subsidy on other connections. Also provides for decentralised electrification using renewable energy.

Source: IRENA (2022).

4.2. Forms of energy utilised in Zimbabwe

Currently Zimbabwe produces 1100 MW of power against a national demand of 1500 MW. This leaves a supply gap of 400 MW. The deficit is catered for by imports from Mozambique and South Africa[9]. The energy supply options for Zimbabwe have a mixture of hydroelectricity, solar, coal and renewable sources. Wind and biogas energy are other possibilities. The national grid is well developed with efforts after 1980 having extended supplies to rural business and government administrative areas.

4.2.1. Hydroelectricity

Much of Zimbabwe's electricity is produced at the Kariba Dam Hydroelectric Power Station (about 750 MW), at Hwange Thermal Power Station which has an installed capacity of 920 MW, and at three minor coal fired stations. Apart from the Kariba Dam Hydroelectric Power Station, there is still quite a lot of hydropower potential especially along the Zambezi River. Zimbabwe has a hydropower potential of 18,500 GWh a year, of which 17,500 GWh is technically feasible. To date about 19% of the technically feasible potential has already been exploited. About 8 small-hydro plants are currently installed, ranging from 3 kW to over 700 kW. The total potential of small-hydro in Zimbabwe is estimated at 120 MW.

9 https://energypedia.info/index.php?title=Zimbabwe_Energy_Situation&action=formedit

4.2.2. Solar

Solar power has enormous potential both in small and large scale. The average solar insolation in Zimbabwe is 5.7 kWh/m2/day. There is an enormous potential for use of solar PV and solar water heaters that has not yet been exploited. Technically, solar PV has a potential of 300 MW. At present only 1% of the technical potential for solar water heaters has been exploited. Solar power is mostly installed in rural areas of Zimbabwe at service centres such as schools, clinics, police stations and hospitals. However, the private home market for solar is growing. Solar-powered 'cellular network base stations' for charging electrical appliances have also been installed through the national telecommunications service providers.

4.2.3. Biomass

Biomass —particularly fuelwood— accounts for about 66% of the energy used in Zimbabwe. Fuelwood is the most important domestic fuel in the country as it is the major source of energy for cooking, lighting and heating for over 80% of the population mainly in the rural and peri-urban areas. There is also the potential for power generation from wood waste generated from the timber industry with over 70,000 tons of biomass waste each year. In the long-term, this figure is projected to double. It's estimated that at least 4 MW of power could potentially be generated from waste that is produced from large mills.

4.2.4. Biogas

More than 200 biogas plants have been installed in Zimbabwe, mainly by the Department of Energy. (African Energy Policy Research Network (AFREPREN), 2016). There is also great potential for generating electricity using biogas from animal waste due to the large population of livestock in Zimbabwe.

4.2.5. Wind

The average wind speed in Zimbabwe is estimated to be 3.5 m/s. A non-governmental organization — ZERO— conducted a number of feasibility studies and also financed the production of 1- and 4-kW wind turbines for off-grid use and for providing power to municipal buildings. In the areas of Bulawayo and the Eastern Highlands, there is potential for power generation from wind turbines because these regions have the most prevalent wind speeds ranging from 4 to 6 m/s.

4.2.6. Fossil fuels

Zimbabwe has 30 billion tons of coal in 21 known deposits that could last for over 100 years. Hwange Colliery Company (HCC) is the major coal company in Zimbabwe. HCC has large deposits of coal but does not have the financial resources to significantly boost output. HCC provided coal to the Hwange Thermal Power Plant, the largest thermal facility in Zimbabwe that has a capacity of about 750 MW. In September 2013, a Chinese backed company, China Africa Sunlight Energy, announced plans to develop a 600 MW coal-fired electricity plant in western Zimbabwe, beginning in 2014.

Zimbabwe does not have any indigenous sources of oil and natural gas and thus depends on imports for liquid fuel. The majority of Zimbabwe's refined petroleum and diesel oil are imported via a pipeline from the port of Beira in Mozambique to Mutare. Petroleum and diesel are also imported from South Africa. About 20% of the country's liquid fuel is produced ethanol from sugar cane in Chipinge, Manicaland.

4.3. Energy distribution in Zimbabwe

Regarding national energy distribution, the AfDB in the NDEA recognised three major groups of African countries. The first group consists of countries with the largest populations without access to power. The six countries in this group have more than 30 million people without access to power. Nigeria, with over 90 million people without access, heads this group. Ethiopia and the Democratic Republic of Congo (with 70 million and 60 million, respectively, without power) are other critical countries to focus on. The remaining three are Kenya, Tanzania and Uganda. These countries have a critical energy problem, but a different approach is required for each. Ethiopia, for example, is in the process of building excess generation capacity, so what it needs is to provide adequate connections. Nigeria already has over 70 million people connected, but the power supply is erratic. Nigeria's most important priority needs to be a rapid increase in generation capability to meet the demand of existing connections. More than 325 million people without access to electricity, which is more than 50 per cent of the African population without access to power, live in these six countries (see Figure 13).

The second group is made up of countries that tend to be smaller with consistently less than 20 per cent of the population having access to power. This group comprises twelve countries with a combined population without access of nearly 130 million (an average of 11 million per country— representing 21 per cent of the total African population without access). On average, these twelve countries have over 90% of their population without access to electricity.

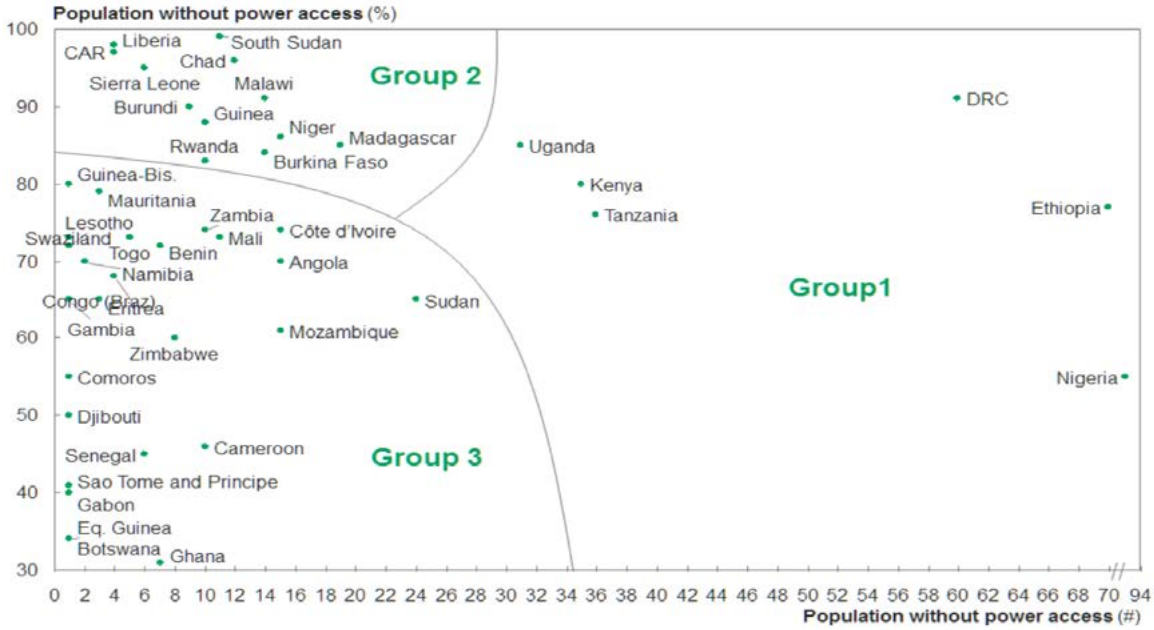


Figure 13: Energy distribution on the continent and in Zimbabwe
Source: NDEA (2016)

Zimbabwe is in the third group which comprises countries that have smaller absolute populations without access, and typically over 20 per cent of the population with access. There are more than 25 countries in this category, with a total of 155 million people without access to power (on average 6 million without access per country). These countries have an average of 60 per cent of their population without access to power. This is not to say that these countries should be deprioritised, but that these elements should be considered during investment decisions.

Despite being in the seemingly less urgent group three, the Zimbabwean government has plans to boost the electrification rate to 85%. To achieve this target, ZESA announced the following plans:

i. Build another coal-fired power plant with a capacity of 1,400 MW
ii. Expand capacity at Hwange Power Station by 600 MW
iii. Add 300 MW to the Kariba Dam Hydroelectric Power Station

All these projects are currently underway and at various levels of completion. Figures 14, 15 and 16 show that at present national energy access levels are above 40% but below 50% — see Figure 14—. The majority of those connected —over 80%— are in urban areas while slightly above 20% of rural Zimbabweans are connected.

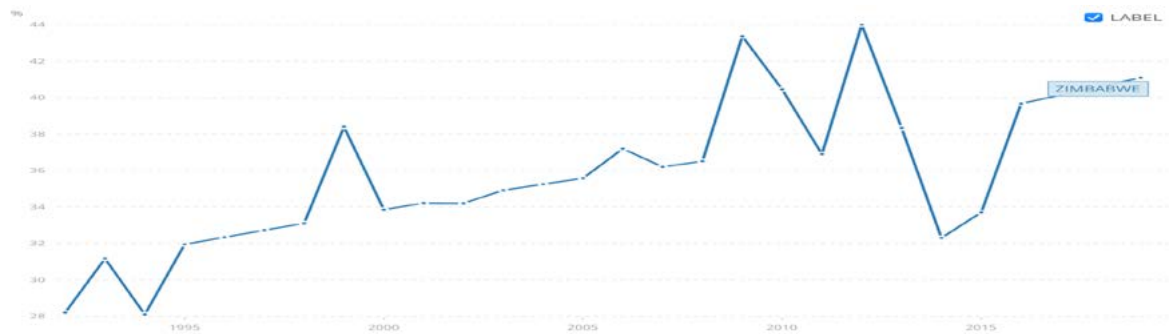


Figure 14: National energy access trends
Source: World Bank (2021).

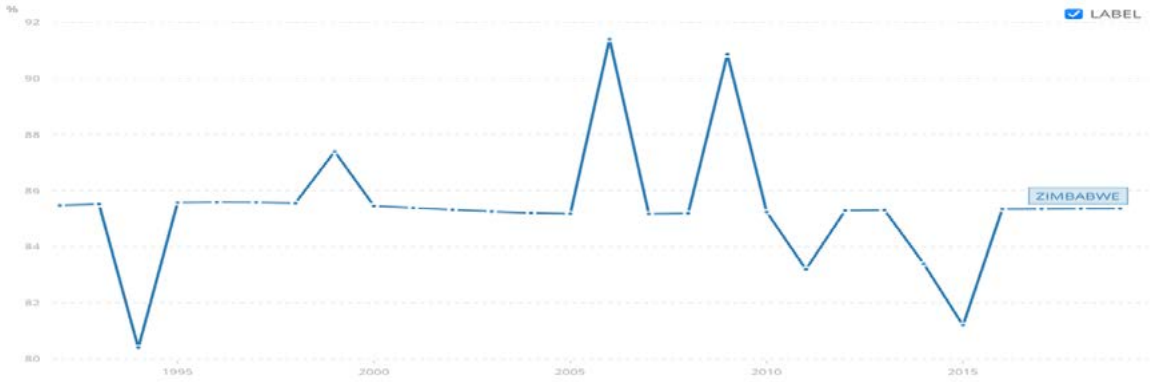


Figure 15: Access to electricity in the urban areas
Source: World Bank (2021).

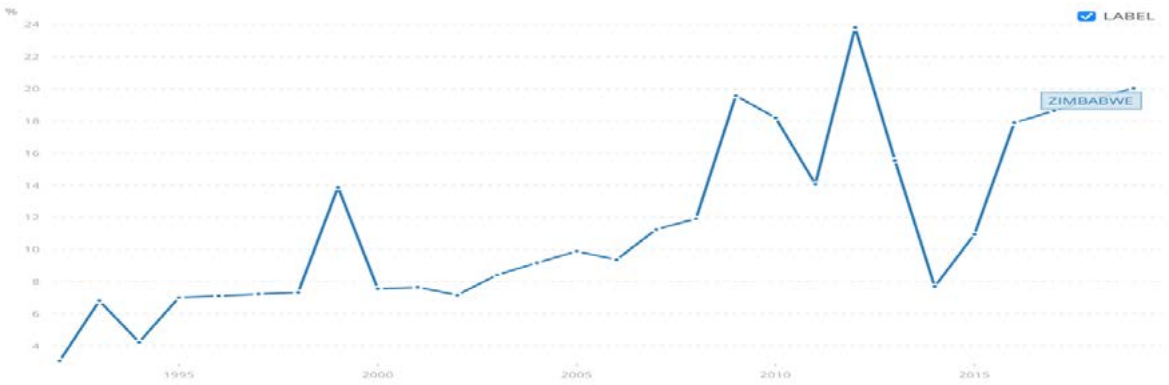


Figure 16: Access to electricity in the rural areas
Source: World Bank (2021).

4.4. Energy efficiency in Zimbabwe

The African Development Bank noted that energy efficiency and conservation offer a powerful and cost-effective tool for achieving universal access to sustainable energy. Estimates show that 30 to 40 per cent of energy savings can be achieved using currently available technology. The NDEA (2016) explains that African countries will be assisted to identify and implement options to reduce losses arising from production, transmission, distribution and end-use inefficiencies. Policy dialogues with governments and relevant agencies will emphasise the importance of energy efficiency. Figure 17 captures average energy losses in the energy distribution processes of Zimbabwe.

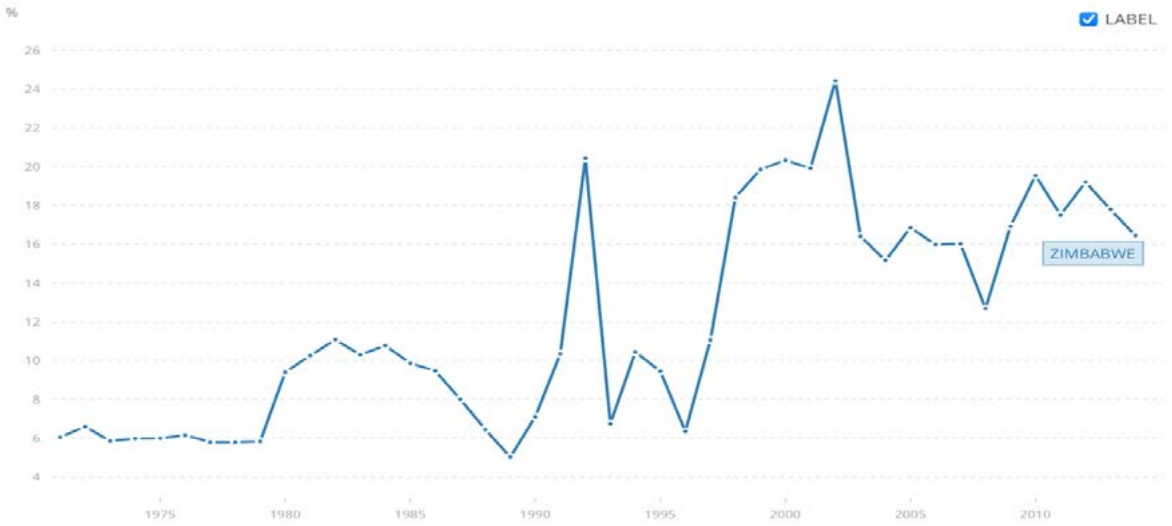


Figure 17: Distribution losses in Zimbabwe
Source: World Bank (2021)

The National Energy Policy notes that, "rural communities meet 94 per cent of their cooking energy requirements from traditional fuels, mainly firewood, and 20 per cent of urban households use wood as the main cooking fuel".[10] Since electricity challenges in the last two or three years, there has been an influx of urban communities that use charcoal for cooking. According to the ZDHS (2015), "thirty-four percent of Zimbabwean households use electricity as a source of energy, and 68 percent of Zimbabwean households use wood as cooking fuel".[11] Danish energy management[12] noted that only 32% of Zimbabweans had access to modern cooking fuel.

10 MoEPD NEP 2012 and also see http://www.energy.gov.zw/index.php/site-administrator
11 Zimbabwe Demographic and Health Survey 2015, p 10.
12 (2017) Renewable Energy Market Landscape Study covering 15 countries in Southern and East Africa. Vol II Country Profiles Stakeholder Maps, p 134.

5. AfDB off-grid and on-grid and clean cooking Finance: 2014-2021

This section gives an overview of the funding disbursed by the AfDB towards energy investments, technical support and potential future projects. Issues covered include the magnitude and chronological ordering of the disbursements; major recipients and type of project supported —renewable or non-renewable.

5.1. The size and chronological ordering of disbursements

Between 2014 and today Zimbabwe has realized a total of US$78,119,402 from the AfDB in forms of investment into power generation, distribution and general rehabilitation of energy infrastructure. There is also potential of realising in excess of US$4Billion —together with Zambia— for the development of the Batoka Gorge hydroelectric power plant. In this regard, the African Development Bank's Vice President for Power, Energy, Climate and Green Growth Sector Complex, Amadou Hott, was in Livingstone, Zambia, on 30 and 31 March 2017 attending the 2,400-MW Batoka Gorge Hydro Electric Scheme (BGHES) investors' conference. The governments of Zambia and Zimbabwe have appointed the Bank as Lead Coordinator for the project, to be implemented in partnership with other development partners. Figure 18 shows the size and the chronology of disbursements by the AfDB towards Zimbabwe for energy related issues.

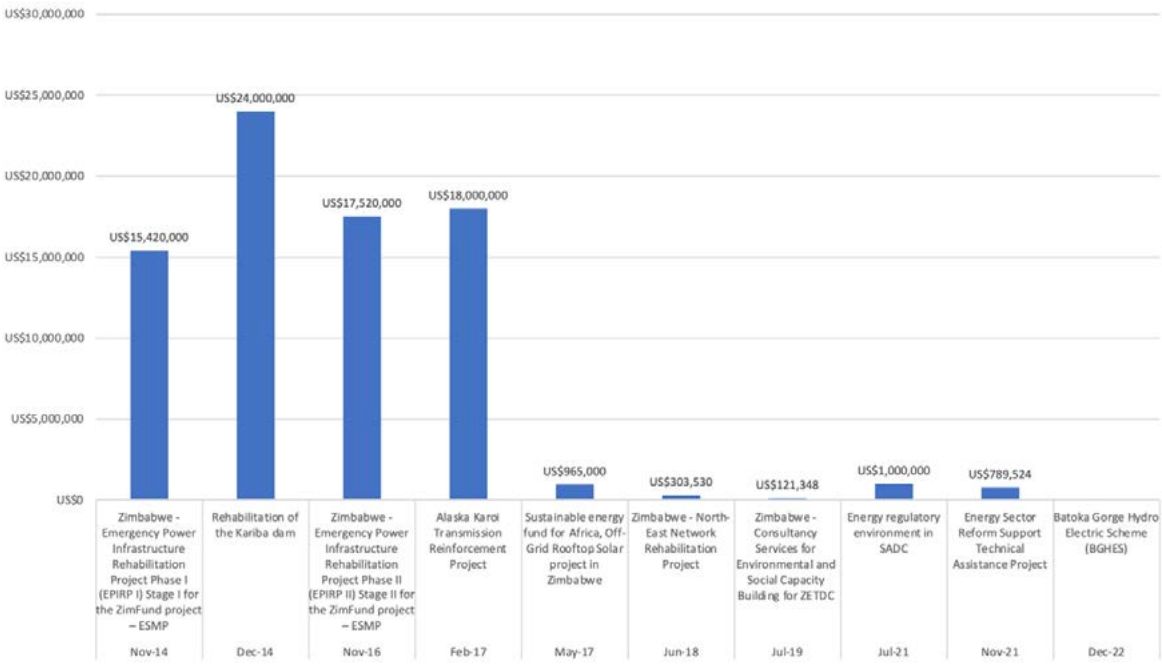


Figure 18: Total investment and technical support

5.1.1. **Brief notes on the projects supported**

Emergency Power Infrastructure Rehabilitation Project: In 2010, a group of donors, in a bid to support priority recovery activities of the Government of Zimbabwe, decided to create the Zimbabwe Multi-Donor Trust Fund (the ZimFund), as a successor to the Zimbabwe Programmatic Multi-Donor Trust Fund (Zim-MDTF). The African Development Bank (AfDB) was designated to manage the ZimFund with endorsement of the Government, the donor community and the United Nations. Zimbabwe - Emergency Power Infrastructure Rehabilitation Project Phase I (EPIRP I) Stage I and II were broadly supported by the ZimFund project. The total project scope was defined and approved at the onset but executing was phased based on the availability of donor funding. Hence it was split into two stages, with Stage I covering components whose funding was available in 2014 and is currently under implementation and Stage II is for components that have been covered by additional resources received from donors in November 2016. The objective of EPIRP I was to improve reliable power supply in an environmentally sound manner through the rehabilitation of the Ash Plant at Hwange Power Station as well as the sub-transmission and distribution facilities. Power supply interruptions have had serious repercussions on efforts by the government to successfully turn around the economy and achieve sustainable social and economic growth targets. By the end of EPIRP I in 2016, more than 529,768 people in residential areas had their sewage reticulation serviced by reliable power, 11,632 others were restored to the electricity network and 11,097 people were added to the network. Phase II of EPIRP was designed to improve the availability of electricity supply through rehabilitation of generation, transmission and distribution facilities. This was achieved through environmental interventions at Hwange Power Station, the replacement of transmission and sub-transmission transformers, in addition to the improvement of power supplies to water and sewage treatment plants. The project target areas were Kwekwe, Gweru, Bulawayo, Mutare, Harare and Hwange, with a combined target population of 5 million people. The project's key outputs included rehabilitated transmission and distribution networks —i.e., repaired and replaced cables, overhead lines, and transformers and their related accessories—.

Rehabilitation of the Kariba dam: The Board of Directors of the African Development Bank Group, during its ordinary sitting on Monday, December 15, 2014 in Abidjan, approved a proposed ADF loan of US $39 million to the Republic of Zambia, and a grant of US $12 million from the Bank's Transition Support Facility (TSF) and a grant of US $24 million from the African Development Fund Regional Operations (RO) envelope to the Republic of Zimbabwe for the Kariba Dam Rehabilitation Project. The project involved the rehabilitation of the Kariba Dam infrastructure by reshaping the plunge pool and rehabilitating the spillway. The plunge pool was reshaped in order to dissipate energy from the spilled water thereby reducing the energy on impact and hence bedrock erosion which could undermine the dam foundations, leading to dam failure. The project rehabilitated the spillway gates to avoid possible jamming in the open or closed positions both of which would result in dam failure and catastrophic regional loss of lives, livelihoods, and billions worth of assets and power. The project also included a capacity-building component which includes training for technical staff of the Zambezi River Authourity (ZRA) and skills transfer through the supervision engineer and panel of experts. Furthermore, the programme strengthened ZRA's Emergency Preparedness Plan and also included a programme for improved community emergency preparedness.

Alaska Karoi Transmission Reinforcement Project: The objective of the Alaska Karoi Transmission Reinforcement Project is to strengthen and increase the country's sub-transmission network capacity resulting in increased reliability and quality of electricity supply in and around Karoi area (agricultural hub) and to develop a national masterplan for the generation, transmission and distribution of energy in the country. The project was conceived in view of the need for the Government of Zimbabwe to increase available capacity, expand access to electricity, improve the reliability of electricity supply and reduce losses along the Alaska-Karoi transmission line.

Sustainable energy fund for Africa, Off-Grid Rooftop Solar project in Zimbabwe: The African Development Bank (AfDB)-managed Sustainable Energy Fund for Africa (SEFA) has 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. The joint Oxygen and Old Mutual Zimbabwe project aims at compensating for the significant baseload lapses of the national grid and at providing reliable electricity to hundreds of Small and Medium Enterprises (SMEs) that are already tenants at the Old Mutual premises. In doing so, the Project will substitute large quantities of diesel oil used as backup fuel.

Zimbabwe - North-East Network Rehabilitation Project: The proposed project involves construction of a Single Wolf 132kV transmission line from Atlanta 132/36kV substation to Mutoko town. The existing Atlanta substation already has space to

accommodate a new line bay. The transmission line will terminate in the proposed Mutoko 132/33kV substation in Mutoko town centre.

Zimbabwe - Consultancy Services for Environmental and Social Capacity Building for ZETDC: Development of an Environmental and Social Management System and Provision of Training Services -AKTP004.

Regional Energy Regulators Association of Southern Africa (RERA): US$1,000,000 for SADC, will be sourced from the African Development Fund, the Bank Group's concessional financing window. The Regional Energy Regulators Association of Southern Africa (RERA) respectively.

The Energy Sector Reform Support Technical Assistance Project: aims to improve the availability of reliable electricity supply through facilitating the creation of an enabling environment for promoting Independent Power Producers and to support further integration of renewable energy power generation capacity. Expected Project outputs include (i) Development of an integrated resource plan, (ii) Wind Resource assessments for wind power generation, (iii) coordinated protection schemes at SAPP interconnectors with ZESA grid, (iv) developed Regulatory Accounting frameworks, (v) reviewing the tariff methodology and regulatory framework and (vi) designed Energy Efficiency programmes in the public sector.

Batoka Gorge Hydro Electric Scheme (BGHES): The African Development Bank's Vice President for Power, Energy, Climate and Green Growth Sector Complex, Amadou Hott, was in Livingstone, Zambia, on 30 and 31 March 2017 attending the 2,400-MW Batoka Gorge Hydro Electric Scheme (BGHES) investors' conference. The governments of Zambia and Zimbabwe have appointed the Bank as Lead Coordinator for the project, to be implemented in partnership with other development partners.

National Integrated Energy Resource Plan (NIERP): The Government of the Republic of Zimbabwe has received grant funding from the African Development Fund and intends to apply part of the agreed amount of the grant For payments under the contract for the provision of consultancy services to carry out the National Integrated Energy Resource Plan (NIERP) under the Energy Sector Reform Support project (ESRSP). The objective of the assignment is to examine available energy resources and determine the least-cost energy supply options, evaluate the security of supply options while providing information on the opportunities for investment into new energy projects. NIERP will also examine specific public policies, including those on security of energy supply and risks associated with the current system.

Energy Sector Reform Support Technical Assistance Project: The AfDB has also supported the Zimbabwe Energy Sector Reform Support Technical Assistance Project aims to improve the availability of reliable electricity supply through facilitating the creation of an enabling environment for promoting Independent Power Producers and to support further integration of renewable energy power generation capacity. Expected Project outputs include

i. Development of an integrated resource plan,
ii. Wind Resource assessments for wind power generation,
iii. coordinated protection schemes at SAPP interconnectors with ZESA grid,
iv. developed Regulatory Accounting frameworks,
v. reviewing the tariff methodology and regulatory framework and
vi. designed Energy Efficiency programmes in the public sector.

The Project cost estimate is UA2.90 million and is scheduled for implementation over a 30-month period, from November 2021 to May 2024.

Energy Efficiency Programme Design: The Government of the Republic of Zimbabwe has received grant funding from the African Development Fund and intends to apply part of the agreed amount of the Grant For payments under the contract for the provision of Consultancy Services for Energy Efficiency Programme Design under the Energy Sector reform Support Project (ESRSP). The objective of this assignment is to design an Energy Efficiency (EE) programme for the public sector (including hospitals, schools, public buildings, municipalities, street lighting and other public facilities), which is a major energy consumer that can significantly contribute to achieving the country targets on GHG emission reduction.

5.2. Forms of support rendered

Table 2 shows forms of support rendered to Zimbabwe in either technical support —shaded green—, investments —shaded grey—or future projects. Evidently most of the support is either technical support or investments. The largest portion —97.5%— of the funding was however in investments particularly in issues of energy infrastructure rehabilitation.

Table 2: Forms of support rendered to Zimbabwe by the AfDB

Name of support	Type
Energy Sector Reform Support Technical Assistance Project	Technical support
Energy regulatory environment in SADC	Technical support
Zimbabwe - Consultancy Services for Environmental and Social Capacity Building for ZETDC	Technical support
Sustainable energy fund for Africa, Off-Grid Rooftop Solar project in Zimbabwe	Technical support
National Integrated Energy Resource Plan (NIERP) under the Energy Sector Reform Support project (ESRSP).	Technical support
Energy Efficiency Programme Design under the Energy Sector reform Support Project (ESRSP)	Technical support
Zimbabwe - North-East Network Rehabilitation Project	Investment
Alaska Karoi Transmission Reinforcement Project	Investment
Zimbabwe - Emergency Power Infrastructure Rehabilitation Project Phase II (EPIRP II) Stage II for the ZimFund project – ESMP	Investment
Rehabilitation of the Kariba dam	Investment
Zimbabwe - Emergency Power Infrastructure Rehabilitation Project Phase I (EPIRP I) Stage I for the ZimFund project – ESMP	Investment
Zimbabwe Energy Sector Reform Support Technical Assistance Project	Investment
Batoka Gorge Hydro Electric Scheme (BGHES)	Future project

The concentration on building the required infrastructure is in line with increasing the overall energy access in Zimbabwe which was previously shown to be exceptionally low especially in rural parts of the country. As such, powerlines through areas such a Karoi generally ease the challenges of connection in rural Zimbabwe.

5.3. The nature of the support rendered

In considering the nature of the support rendered the key issues considered were whether the financial resources went towards renewable energy or fossil fuel based non-renewable sources. Table 3 shows a balance between green energy based on renewable resources and brown energy based on fossil fuels. The largest green energy project in the assessment is the BGHES which is in the AfDB pipeline as a future project. Also, the Kariba hydropower rehabilitation and the solar rooftop projects are green in nature.

Table 3: Dominant energy forms

Name of support	Green/Brown
Energy Sector Reform Support Technical Assistance Project	Green
Zimbabwe - Consultancy Services for Environmental and Social Capacity Building for ZETDC	Green
Sustainable energy fund for Africa, Off-Grid Rooftop Solar project in Zimbabwe	Green
Batoka Gorge Hydro Electric Scheme (BGHES)	Green
Rehabilitation of the Kariba dam	Green
Zimbabwe Energy Sector Reform Support Technical Assistance Project	Green
Zimbabwe - Emergency Power Infrastructure Rehabilitation Project Phase I (EPIRP I) Stage I for the ZimFund project – ESMP	Brown
Alaska Karoi Transmission Reinforcement Project	Brown
Zimbabwe - Emergency Power Infrastructure Rehabilitation Project Phase II (EPIRP II) Stage II for the ZimFund project – ESMP	Brown
Zimbabwe - North-East Network Rehabilitation Project	Brown
Energy regulatory environment in SADC	Combined

Amongst the brown projects, a significant number focus on aspects of extending the grid and distributing power. They have been classified as brown because most of the power distributed comes from coal fired thermal power plants and diesel in certain cases. However, it does not follow that this will always be the case. In the previous section, there was clear evidence that Zimbabwe was working towards increasing the quantifies of green energy on the national grid with the assistance of independent power producers. Therefore, the near future could see the improved distribution lines carry more of green than brown energy. This is already shown by some technical capacity programmes that combine both renewable and non-renewable capacity building.

5.4. Recipients of AfDB support

While the government of Zimbabwe and the citizens of Zimbabwe are the ultimate beneficiaries of the support received from the AfDB, it is critical to note that various institutions act as conduits for the funds received and often oversee the management and implementation of the projects supported. Table 4 shows that these institutions are either the government (local and regional) —which dominates technical support and future projects; government parastatals —ZETDC and ZWA which has the mandate in energy issue— and the private sector which focuses on the new innovations around renewable energy particularly solar. Therefore, technical capacity building seems to be a government dominated area, while specialised parastatals enlarge the infrastructure and the private sector focuses in energy innovations.

Table 4: Recipients of the AfDB support

Name of support	Beneficiary
Energy Sector Reform Support Technical Assistance Project	Ministry of Energy and Power Development
Batoka Gorge Hydro Electric Scheme (BGHES)	GOZ
Energy regulatory environment in SADC	Regional Energy Regulators Association of Southern Africa (RERA)
Rehabilitation of the Kariba dam	Zambezi Water Authority
Alaska Karoi Transmission Reinforcement Project	ZETDC
Zimbabwe - Emergency Power Infrastructure Rehabilitation Project Phase II (EPIRP II) Stage II for the ZimFund project – ESMP	ZETDC
Zimbabwe - Consultancy Services for Environmental and Social Capacity Building for ZETDC	ZETDC
Zimbabwe - North-East Network Rehabilitation Project	ZETDC
Zimbabwe - Emergency Power Infrastructure Rehabilitation Project Phase I (EPIRP I) Stage I for the ZimFund project – ESMP	ZETDC
Sustainable energy fund for Africa, Off-Grid Rooftop Solar project in Zimbabwe	Oxygen Energy Private Limited

5.5. Results of the AfDB support rendered thus far

The financial resources discussed above have seen multiple positives accrue in the Zimbabwean energy space. The Africa Development Effectiveness Review (ADER) 2021 draft report summarised them in the following points.

i. 260,000 people obtained new electricity connections, of whom 131,000 are women
ii. 327 km of new or improved power distribution lines
iii. 175 km of new or improved power transmission lines
iv. 202 MW new total power capacity installed, 101 MW of it renewable
v. 1.6 million tons of carbon dioxide emissions avoided

Key informants from ZETDC also noted that a number of energy projects were underway in the country and that upon completion, energy access in Zimbabwe would see a significant improvement. Regarding renewable energy, ZETDC key informants explained that hydropower was the most viable in Zimbabwe especially when undertaken by the government at its arms or the private sector for private use. Solar was considered still emerging and plagued by storage challenges that often required that the producer sold power to the national grid. Selling power to the national grid was explained to have numerous challenges associated with it chief being the discrepancy between the official and parallel market exchange rates for the local Zimbabwean dollar which was considered overvalued.

6. Lessons from East Africa

This section compares the primary and secondary data from Zimbabwe with the situation in Kenya, Tanzania and Uganda. Like in Zimbabwe the supportive mechanisms in the eastern countries ranged from project-level financing for feasibility studies, project development, and production, supporting infrastructures as well as technical assistance.

Among the three East African countries, Kenya has been leading in terms of investment flow from the Bank followed closely by Tanzania as shown in Figure 19 below. Kenya leading in investment flow could be attributed to its diversified generation portfolio and ambitious government program on Last Mile Connectivity (LMC) that AfDB has played a central role in funding. However even in the case of the country with the lowest energy support levels from the AfDB —Uganda— the support realised is slightly less than that realised by Zimbabwe. The support to Kenya and Tanzania is much higher —almost 3.5 times— than that realised in Zimbabwe.

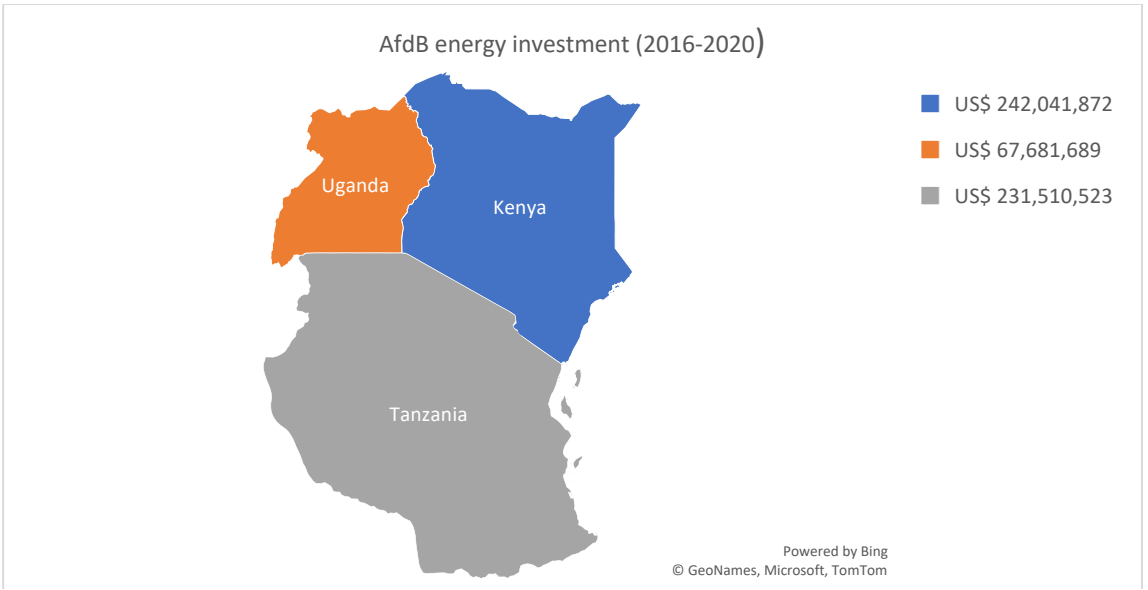


Figure 19: AfDB investment in the energy sector – 2016 to 2020
Source: ACCESS (2021).

However, it should be considered that Kenya and Tanzania are both group 1 countries which rank amongst African countries with the largest populations without access to power. Zimbabwe on the other hand is a group 3 country. Uganda however is also a group 1 country though it gets less funding than a group 3 country like Zimbabwe. This could either point to alternative sources of funding in Uganda —i.e., limited AfDB vibrancy— or general challenges in addressing the energy related issues in the country. ACCESS (2021) also showed more private sector linkages with the private sectors of the east African countries in comparison to those in the Zimbabwean space. For instance, SEFA[13] a multi-donor trust fund that promotes renewable energy and energy efficiency through private sector-driven small to medium-sized projects necessary to stimulate the continent's transition to more inclusive and green growth has been active in East Africa and less in Zimbabwe.

13 SEFA was established in 2011 and is funded by the governments of Denmark, Italy, the United States, and the United Kingdom. It is hosted by AfDB's Renewable Energy and Energy Efficiency Department (PERN). In 2019, SEFA transitioned to a SPECIAL FUND (SEFA 2.0) from a multi-donor trust fund. This upgraded it to provide a wide range of financial investments such as the Africa mini-grid acceleration program, AREF II, and SPARK+ African fund for clean cooking. These funds will create balanced support to the underfunded off-grid and clean cooking solution program.

Other special funds that have funded projects —2 projects— in Kenya, Uganda, and Tanzania between 2014 and 2016 include the Facility for Energy Inclusion (FEI). FEI is a US$ 500 million financing facility spearheaded by the AfDB, Norfund, and partners to catalyze financial support for innovative small-scale energy access solutions. It was launched in 2018. The facility is a new Debt Fund for small-scale renewable energy in Africa to contribute to electrification. The fund is divided into two components: FEI-Off-Grid Energy Fund (FEI-OGEF), a US$ 100 million split as a 40% equity and 60% debt; OGEF On-grid is a US$ 400million fund split as a 35% equity and 65% debt.

Nonetheless even in East Africa like in the south, few bankable businesses demonstrate commercial viability mainly in modern cooking solutions such as ethanol, biogas, and advanced biomass stoves. This has attracted several initiatives that support these enterprises to become investments ready and attract more bankable and scalable enterprises through a market-based approach (ACCESS, 2021).

Out of the total of 21 energy projects funded by the AfDB between 2016 to 2020 in Kenya, Uganda, and Tanzania, both to government and private sector, eighteen of them were focused on on-grid investment ranging from generation, transmission, and distribution and took the biggest share of the AfDB energy funding (ACCESS, 2021).

Similar results were also shown in the case of Zimbabwean funding from the AfDB which was dominated by on grid investment with a focus on generation and transmission. In the East African countries however, the generation was a mix of renewable energy technologies ranging from hydropower, solar, geothermal, waste to energy, and wind. Within the renewable energy space of the East African countries, hydropower took 76% of all the funding going to generation. This is consistent with the global trend and has been followed by solar power. Solar technology has been on an upward trend of late due to the reduced cost of components and advancement in technology. The three East African countries enjoy good sunshine that makes it ideal for both grid, mini-grids, and standalone solar systems. The flexibility of the technology in terms of installation makes it ideal as a technology of choice in electrifying communities that would not be easily reached by the grid. Unlike other technologies such as wind that rely on the wind regime pattern and geothermal that is site-specific. Biomass for electrical generation is at a nascent stage and the projects under implementation are small scale. Similar perspectives were noted in Zimbabwe. The analysis in the previous chapter has already shown that renewable was mostly hydropower based while other forms energy played second fiddle.


Transparency
Energy access
SDG 7
Civic engagement
Accountability
Energy access
People centered
Just Energy Transition
Civic engagement
Accountability
People centered
SDG 7
Transparency
community voices
SDG 7
community engagement
Clean energy
People centered
Just Energy Transition
Transparency
Accountability
SDG 7
Energy Financing
Transparency
People centered
Just Energy Transition
Civic engagement
Accountability
SDG 7
Transparency
Accountability
Civic engagement
Transparency
Clean energy
Energy Financing
Energy Financing
Energy Financing
Energy access
People centered
SDG 7
Just Energy Transition
People centered
Accountability
Accountability
Energy access
SDG 7
SDG 7
SDG 7
SDG 7
Energy Financing Accountability
community engagement
community voices
Energy access
Energy access
community engagement
Clean energy
Accountability
Transparency
community engagement
Clean energy
People centered
Just Energy Transition
SDG 7
SDG 7
SDG 7
SDG 7
SDG 7
SDG 7
Clean energy
SDG 7
Transparency
community voices
Transparency
Energy Financing
SDG 7
SDG 7
Just Energy Transition
SDG 7
Energy Financing
People centered
Clean energy
SDG 7
Civic engagement
Civic engagement
Accountability
SDG 7
People centered
Just Energy Transition
Clean energy
community voices
Clean energy
SDG 7
Just Energy Transition
Transparency
community voices
Energy Financing
Civic engagement
Energy access
Civic engagement
Clean energy
Accountability
Energy Financing
SDG 7
Transparency
Civic engagement
Accountability
Transparency
Energy access
Clean energy
community voices
Energy access
community engagement
Civic engagement
community voices
Transparency
Energy access
Energy Financing
Accountability
community engagement
People centered
Energy Financing

7. Tracing the civil society space in AfDB Energy actions

This section briefly considers the CSO space in the AfDB energy support space. This section aims at exposing those areas that require advocacy actions by CSOs interested in the energy space.

The issues of renewable energy have political economy issues attached to them given that the global financing platforms charged with supporting the development of renewable energy resources to energy deficit countries have often done so through and with the private sector. Climate finance activities have shown that leveraging funds through the private sector is not necessarily wrong, but it brings in the private sector profit motive where projects are likely to be set aside if they don't make a profit. The AfDB has already been shown to be also engaging and working with the private sector in the implementation of projects in Zimbabwe. It becomes incumbent on CSOs to advocate for support that goes beyond the private sector profit motives and comes more in the form of developmental grants that allow for closing of the inherent energy infrastructure deficit.

Still on the private sector and the profit motive, market distortions have been shown to limit private sector participation in energy production as they tend to affect profit. This was shown in the case of Zimbabwe where an overvalued exchange rate led proprietors to lose out when they attempted to repatriate their profits at the official exchange rate especially when inputs were sourced using the parallel market exchange rate. This again is a critical space for CSOs who need to educate stakeholders on the implications of market distortions and advocate for better systems of management.

Regarding information asymmetries, non-state actors and CSOs are best placed to distil and re-package the scientific and jargon- filled energy finance space for the benefit of all members of society. Such a move would allow for a better understanding of national energy goals and actions by all. As such the translation of complex information into easy-to-understand pictures and narratives for different audiences is a critical role that could be played by CSOs in Zimbabwe.

The relationship between energy generation and the access to natural resources evidently requires attention given the socio-political implications that accompany it. In Zimbabwe, a failed solar power generation project in Gwanda, Matabeleland south is constantly discussed in the national media without attention being given to the implications of local land ownership post project failure. The displaced villagers and the implications on biodiversity and ecosystems health is often ignored. Dams also have major environmental effects that require critical attention and advocacy.

Numerous obstacles to the market penetration of clean cooking solutions current exist and these include a lack of clear regulations and standards for the stoves, limited awareness among the consumers, resistance to change, insufficient capacity of local manufacturers to deliver products that respond to user needs, limited development of liquefied petroleum gas (LPG) infrastructure and affordability of the equipment. Other challenges are poor distribution networks of cooking fuels and inadequate enforcement of the regulations related to forestry, fuelwood collection and charcoal transformation. This too is a critical space where information generation and dissemination could be undertaken by CSOs.

8. Conclusions and recommendations

This paper has tracked the AfDB energy sector financing in Zimbabwe —past and current— and compared the findings with those obtained in secondary data sourced from East Africa particularly —Kenya, Uganda and Tanzania.

Results show that a total US$78,119,402 have flowed towards Zimbabwe for the purpose of energy projects or technical support. Most of the energy support is grid based, focused on the distribution of hydro and thermal power. Because most of the support focused on distribution and energy infrastructure, it is expected that such efforts will increase general energy access and support clean cooking options for previously unconnected Zimbabwean household. Decentralised renewable energy was shown to be dominated by solar power which was considered still emerging and more concentrated within private sector spaces.

The major entry points for CSOs relate to issues of advocacy initiatives that support grant-based financing; implications of DRE and grid extension of socio-economic and natural systems; information dissemination and capacity building of the public on issues peculiar to the energy space and the mitigation of information asymmetries and market distortions that limit the participation of private players in the generation of clean energy and cooking technology.

In comparison to the three east African countries, Zimbabwe has less people without access to energy in comparison to the east African countries which are all in group three regarding issues of power access. Zimbabwe realised much lower financial support for energy projects when compared to Kenya and Tanzania while it received support like that of Uganda. Hydropower dominates the renewable space in Zimbabwe and the east African countries while solar power is the emerging distant second in all cases.

This paper has merely scratched the surface of the complex energy space in Zimbabwe from an AfDB perspective. Other major issues still need to be considered particularly those that touch on the gender dimensions of energy. Energy access cannot be addressed in isolation from other SDGs. Energy access can transform lives and livelihoods of women and youth who are smallholders that largely depend on rainfed agriculture. Rainfed agriculture is affected by climate change as a result of extreme weather conditions such as floods and drought. Energy access as a critical enabler can stimulate demand for growth enterprises and productive uses of energy in agriculture and renewable value chains.

Energy poverty has profound implications on empowerment of women and youth, rural and national development as well as attainment of universal access and acceleration of Sustainable Development Goals (SDGs). There are several barriers faced by women and youth, chief among them is access to finance. This is because they do not have access to resources and assets that could be used as collateral security, unbanked and no credit history. Women economic empowerment is one of the entry points to gender equality in renewable energy. Access to energy promotes realization of gender equality, human rights and food security.

Investments in energy projects present opportunities for empowerment of women and youth to grow their enterprises and trigger more demand for renewable energy technologies that can be used for productive uses such as smart agriculture/irrigation, cold chain/refrigeration, food preparation/baking/street foods, agri food and agro-processing, drying and milling, dairy, mining, poultry and hatcheries and fisheries, especially fishing villages along Lake Kariba.

8.1. Recommendations

i. There is need for increased focus of DRE funding by the AFDB in the Zimbabwean space. Such funding is best in the form of developmental grants given the market distortions that limit the participation of private players who are profit driven. Such grants would increase the chances of realizing the NDEA goals and aspirations.

ii. It is critical to build capacity on the negative implications of market distortions —a parallel market exchange rate premium discourages investment— in the DRE space given that they slow down the speed at which the energy deficit may be closed in Zimbabwe. Such capacity must be built through advocacy initiatives by CSOs active in the Zimbabwean space. AfDB could participate in this space by derisking private sector investment through guarantees of exchange rates and currencies of profit repatriation.

iii. There is need for deeper socio-economic analysis —before during and after— of the implications of grid extensions, dams and DRE projects on the natural environment and society at large. This is the case particularly when some of the projects fail. Questions around searching for an alternative investor must be accompanied by those asking about the local communities and ecosystems.

iv. It is critical to pay more attention to the other forms of renewable energy generation particularly wind and geothermal energy. Zimbabwe has also witnessed some disruptive technologies —by SAITH technologies— using radio frequencies to generate electricity. These methods must be understood and evaluated for suitability in the Zimbabwean space.

v. The translation and dissemination of energy related information is critical to increase public debate of critical documents that form the energy institutional framework. Without such downscaling, interpretation and explanation, the energy debate will continue to be esoteric and devoid of the grassroots input. Such a business-as-usual attitude will make AfDB funding occur uncontested and unmonitored by the ordinary Zimbabwean and Africa at large.

vi. The assessment of energy access should be more detailed. For instance, using the Multi-Tier Framework, whichallows a common measure of energy access among communities and has been widely adopted. The MTF initiative redefines the way energy access is measured, going beyond the traditional binary measure of "connected or not connected" for electricity access, and "solid vs non-solid fuels" for cooking. These elements are crucial to economic and social development, as are a number of related issues that are sometimes referred to collectively as 'quality of supply,' such as technical availability, adequacy, reliability, convenience, safety and affordability.

vii. The bank would also benefit from a matrix and tracking Tool for AfDB funding that will show the status of projects being funded (past and present) and future projects in relation to clusters (RE, clean cooking, solar, hydro, capacity building/TA), funding modality (blended finance, grants, loans, guarantees), who is being funded, and who are the intended beneficiaries.

viii. Financing of projects should go beyond energy access towards the socio-economic implications of energy access. The gender dimensions —energy that eases the strain of reproductive roles such as fetching water for household use— of the funds released could also be included in the funding tracking tool for bank finances.

ix. There is need for increased focus of DRE funding by the AFDB in the Zimbabwean space. Such funding is best in the form of developmental grants given the market distortions that limit the participation of private players who are profit driven. Such grants would increase the chances of realizing the NDEA goals and aspirations.

x. It is critical to build capacity on the negative implications of market distortions in the DRE space given that they slow down the speed at which the energy deficit may be closed in Zimbabwe. Such capacity must be built through advocacy initiatives by CSOs active in the Zimbabwean space. AfDB could participate in this space by derisking private sector investment through guarantees of exchange rates and currencies of profit repatriation.

xi. There is need for deeper socio-economic analysis of the implications of grid extensions, dams and DRE projects on the natural environment and society at large. This is the case particularly when some of the projects fail. Questions around searching for an alternative investor must be accompanied by those asking about the local communities and ecosystems.

xii. It is critical to pay more attention to the other forms of renewable energy generation particularly wind and geothermal energy. Zimbabwe has also witnessed some disruptive technologies —by SAITH[14] technologies— using radio frequencies to generate electricity. These methods must be understood and evaluated for suitability in the Zimbabwean space.

xiii. The translation and dissemination of energy related information is critical to increase public debate of critical documents that form the energy institutional framework. Without such downscaling, interpretation and explanation, the energy debate will continue to be esoteric and devoid of the grassroots input. Such a business-as-usual attitude will make AfDB funding occur uncontested and unmonitored by the ordinary Zimbabwean and African at large.

xiv. The assessment of energy access should be more detailed. For instance, using the Multi-Tier Framework (MTF allows a common measure of energy access among communities and has been widely adopted. The MTF initiative redefines the way energy access is measured, going beyond the traditional binary measure of "connected or not connected" for electricity access, and "solid vs non-solid fuels" for cooking[15]. These elements are crucial to economic and social development, as are several related issues that are sometimes referred to collectively as 'quality of supply,' such as technical availability, adequacy, reliability, convenience, safety and affordability.[16]

xv. The bank would also benefit from a matrix and tracking Tool for AfDB funding that will show the status of projects being funded (past and present) and future projects in relation to clusters (RE, clean cooking, solar, hydro, capacity building/TA, funding modality (blended finance, grants, loans, guarantees) who is being funded and beneficiaries etc.

xvi. Financing of projects should go beyond energy access towards the socio-economic implications of energy access. The gender dimensions of the funds released could also be included in the funding tracking tool for bank finances.

14 https://www.saithgroup.com

15 ESMAP (2019). https://www.esmap.org/mtf_multi-tier_framework_for_energy_access#:~:text=The%20Multi%2DTier%20Framework%20(MTF,vs%20nonsolid%20fuels%E2%80%9D%20for%20cooking.

16 IEA (2013). World energy outlook. Chapter 2. http://www.worldenergyoutlook.org/resources/energydevelopment/definingandmodellingenergyaccess

References

World Bank., 2021. Access to electricity (% of the population) _ Zimbabwe https://data.worldbank.org/indicator/EG.ELC.ACCS.ZS?end=2019&locations=ZW&start=1992&view=chart

New Deal for Energy in Africa. https://www.afdb.org/fileadmin/uploads/afdb/Documents/Generic-Documents/Bank_s_strategy_for_New_Energy_on_Energy_for_Africa_EN.pdf

International Renewable Energy Agency (IRENA). 2022. https://www.irena.org/IRENADocuments/Statistical_Profiles/Africa/Zimbabwe_Africa_RE_SP.pdf

Renewable Energy Market Landscape Study., 2017. covering 15 countries in Southern and East Africa. Vol II Country Profiles Stakeholder Maps, p 134.

United Nations publication issued by the United Nations Conference on Trade and Development, 2022. COMMODITIES AT A GLANCE. Special issue on access to energy in sub-Sahara Africa. United Nations Publications, New York.

ACCESS Alliance of Civil Society Organisations for Clean Energy Access

P.O. Box 61912-00200
Nairobi, Kenya

communications@access-coalition.org

www.access-coalition.org

@ACCESSCSOs
ACCESS Coalition
ACCESS Coalition