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A Review Of Energy Access In Kenya

John Kioli
Climate Change & Energy Expert, Green Africa Foundation

Innocent Ngare
Ph.D. Fellow, Environment for Sustainable Urban Development, Kenyatta University

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ABSTRACT

The energy sector in Kenya has made exponential progress in the past 20 years. Through the Vision 2030, a blue print for Kenya's development progress, energy flagship projects have been outlined. Doubling energy capacity to an ambitious goal of 23000MW is critical to the energy sector. This is aligned with the governments' effort to reduce energy cost by 30% in the high consuming industrial and manufacturing sectors stimulating their growth. Through the current Energy Act of 2018, the government aims to develop a sustainable and competitive energy sector that doesn't deplete environmental resources available. Building an environmental and energy nexus that is cost-effective to all. The government has also put in place programs and agencies such as the Last Mile Connectivity project, Rural Electrification Agency and Least Cost Power Development Plan intending to enhance energy access for small businesses particularly among the poor in rural areas. This paper gives a review for the current energy situation in Kenya with relevance to SDG -7, bottlenecks to energy access, government actions, and policy interventions relating to energy infrastructure situation in Kenya. This paper is pegged to evaluate the progress and key challenges that keep befalling Kenya's energy sector. A conclusion and government intervention through policy are outlined.

Key Words: Energy access, Government, Electricity, Policy

LIST OF ABBREVIATIONS

REA - Rural Electrification Authority, SDGs - Sustainable Development Goals, IEA - International Energy Agency, SSA - Sub-Saharan Africa, KIPPRA - Kenya Institute of Public Policy Research and Analysis, SE4All - Sustainable Energy for All, RE - Renewable Energy, KETRACO - Kenya Electricity Transmission Company Limited, NTG - National Transmission Grid, LCPDP - Least Cost Power Development Plan, UNICEF - United Nation Children's Fund

1. INTRODUCTION

Energy access is a state where households have unlimited access to reliable and affordable energy supply (Karanja *et al.*, 2017). The World Economic Outlook Report (2012), through the International Energy Agency (IEA), adds that energy access is the state where clean energy is available for all at the domestic setup – urban or rural. However, the Sub-Saharan African nations still are ambitious to realize the energy agenda by 2030. This by doubling their energy access potential by nearly 75% to both the urban and rural households (Kioli, Wemali, and Ngare, 2017). Majority of the rural households still uses biomass energy that is a pollutant to the environment. In Kenya, the majority of marginalized households mainly rely on fuel-based sources of lighting such as kerosene and candles which expose people, especially children and women, to severe fire and health hazards. Recent studies indicate a positive correlation between the quality of lighting and time spent on more productive activities such as increased study time and improved their educational outcomes for children (Acumen, 2017).

1.1 CURRENT SITUATION

The energy sector in Kenya has taken a milestone majorly dominated by petroleum and electricity where biomass (wood fuel, charcoal, and briquettes) provide a basis to the urban poor and the rural poor. Currently, the intermittence sub-sector that is wind and solar accounts to nearly 1% of the total energy mix in Kenya. This is short the target compared to the solar potential in Morocco with an estimated installed capacity of 25% (Rao and Shonali 2017). A study done by the national energy access in Kenya shows that biomass accounts to 68%, petroleum 22% with electricity coming 3rd with a consumption of 9% (Karekezi, 2010). The energy cost in Kenya has led to a substantial economic challenge that burdens economically poor households, and these poor households roughly spend 20% of their total income on energy. Consequently, the government of Kenya requires strategic, innovative ways to address energy shortages in Kenya that argument the universal goal of energy access.

1.2 BOTTLENECKS TO ENERGY ACCESS IN KENYA

For decades the energy grid has been centralized in urbanized areas with counties hosting significant cities in Kenya reaping the benefits in comparison those that do not host iconic cities. Household energy allocation and behavior in Kenya can be explained by the fuel stacking model where that show dominance of wood fuel (KIPPRA, 2009). These challenges faced by low-income Kenyans are moving up the energy ladder to use more convenient, clean, affordable, and available energy.

Despite the actions taken by the government in an effort to enhance energy access in Kenya, the levels of energy poverty remain relatively high, particularly in rural areas. This is accredited to the high cost of installation and tariff price for consumers worsened by the expensive financing energy infrastructure, like the high cost of acquiring land and wayleaves for power infrastructure. Besides, high prices for liquefied petroleum gas encourages fuel stacking rather than fuel shifting as only a few people in the rural areas can afford the refilling prices. Slow adoption of clean and renewable energy compared to other energy sources like biomass that contribute to energy shortages at the rural marginalized in the counties.

Furthermore, the shortage of facilities to handle cheaper energy resources like coal and natural gas that is marred by delays in the decision making process in the energy sector as a result of complexities in corporate governance. The situation is worse in the counties where fiscal and other incentives for private sector investments are insufficient, and the majority of land use master plans for energy infrastructure are hardly updated. To add on, counties are faced with inadequate energy access data, which is crucial to facilitate implementations and decision at the county level on energy projects.

Energy access poverty in the counties could also be attributed to a lack of prioritization of energy needs of poor communities in both energy and broader development planning and decision-making by counties. This is intensified with little uptake and understanding at the county governments and existing key investors in the

sector. This keeps derailing the realization of SDG 7 and its core benefits that latitude its ambitious indicators. Furthermore, inadequate participation by communities, civil society, and social enterprises in national and county energy planning and decision-making has also contributed to energy poverty, particularly, low electricity connectivity in the counties (KETRACO, 2015).

1.3 THE RELEVANCE OF SDG7-ENERGY ACCESS FOR ALL

Kenya envisions developing a sustainable energy sector with well-networked infrastructure to expand its transmission. This will curb energy deficits to the poor with cost-effective tariffs. The Kenyan government has developed an investment prospectus aimed at investor attraction within the energy sector towards meeting the sustainable energy for all, an ambitious universal goal that will exponentially increase renewable energy. To work towards attaining sustainable in Kenya, the government has mandated KETRACO to take up the planning, designing, constructing, and operating national grid's interconnection and transmissions. This is aligned with the energy flagship projects in the Vision 2030.

KETRACO has commissioned various projects that target electricity access, power evacuation, system strengthening, and increasing regional interconnection. Various projects already have been commissioned to construct a number of high voltage transmission lines, switchgear and sub-stations in the country since they started. These completed projects have assisted on opening up geographical areas that have limited access to the National Grid. The projects include 482 km 400kV double circuit from Mombasa to Nairobi it being the first 400kV line in Kenya, secondly, 97 km 132kV line that transverses from Mumias Sugar Company - Rang'ala to Kisumu, and Kamburu-Meru 122 km single circuit of the 132kV line among others. Also, (REA) has facilitated the expansion of the grid in all the 47 counties in the country. Additionally, Rural Electrification Authority (REA) has increases energy supply from 4% up to 32% to the rural household targeting co connect 60000 public facilities that include schools that are within the 600 meters radius from transformers (MoE, 2015).

The growth projected in Kenya's Vision 2030 implies an increased energy demand, particularly in the form of electricity (MoE, 2015). In line with this, Kenya envisions a 100% electricity access and access to modern cooking solutions for all Kenyans through doubling renewables share in total final energy consumption. Additionally, the energy Act (2016) provides for the (LCPDP) as a long-term plan.. The LCPDP portfolio is to be a guide within the energy sub-sector where energy, environment, and economic issues are holistically addressed without discriminating the other. The LCPDP, as outlined in the Vision 2030, aims to enhance power generation and identification of new power generation sources with the aim to improve energy infrastructure in the country. These ambitions are incorporated in the Energy Act 2018 and the SE4All initiative whose mission is to facilitate provision of clean, sustainable, affordable, competitive, reliable and secure energy services for all Kenyans at least cost while protecting the environment (Energy Act, 2018).

1.4 GOVERNMENT ACTION

The government of Kenya, in partnership with UNICEF, has made remarkable strides modeling energy for the poor using a cash top-up to the existing cash transfer program. The program aims to enhance access to energy by the most vulnerable populations, develop market and increase energy penetration to the poorest households. Additionally, The Last Mile Connectivity Project- a government initiative is intended to increase approximately 1.5m Kenyans to be connected to the grid, especially in rural areas. The project involves extending the low voltage network to reach households located within 600 meter-radius from a transformer, thereby reducing the cost of accessing electricity for the customer and supply for the power provider (Christine and Sammy, 2018).

Through projects, the marginalized rural settings have experienced livelihood improvement expedited by modern energy penetration. For instance, perishable agricultural products can be refrigerated to extend its shelve life, part of value addition and processing at the source. Small businesses such as salons, welding, shopkeeping, barber shops among others have improved as services can be offered in the late evening and at dawn. Furthermore, energy access has improved services in the rural areas for the poor as health facilities and schools have access to required energy standards for optimal service delivery. For example, a student can have extra hours of studying while patients can access technical services such as scanning, X-rays, among others.

1.5 POLICY INTERVENTION

Recently, the president of Kenya signed the Energy Act of 2018. Under (222) the Energy Act of 2018 provides for established a fund by the counties that hopefully will consider and prioritize energy access program. Under the Act, each county shall develop and submit a county energy plan to be submitted to the Cabinet Secretary in respect of its energy requirements. Counties will also be required to carry out feasibility studies for renewable energy in the counties aimed at providing relevant information for optimal exploitation of these resources and to aid in the development of county renewable energy master plans. To realize these, the counties should integrate environmental, cultural, and socio-economic aspects through researchers, partners, and policymakers.

2. CONCLUSION

The Government of Kenya has a responsibility of enhancing energy access for the energy poor and expand renewable energy projects by supporting investments in the renewable energy sector the Ministry of Energy should look for novel concepts to get companies to submit bids in energy investment infrastructure. Secondly, the government to encourage incentives in tax exemption, fast approval processes, and provision of suitable regulations to interested parties by providing better frameworks for interested all stakeholders. Thirdly significant advancement is to enhance affordability and reliability of solar power, Quality assurance which is pertinent to the success of solar projects should be enhanced, particularly in rural areas where few households have access to the grid. The major reason for this is highly expensive costs for solar to penetrate to the national grid to double the energy mix. Additionally, few investors are willing to investing in solar projects that will

double sustainable energy in rural areas. Therefore, the government has a task to attract investors that will fund adequate expansion on energy infrastructure.

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