Investment in Renewable Energy in Kenya: Key Legal Issues, Challenges and Prospects

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Abstract

Kenya launched its Kenya Vision 2030 in 2008 which identified "energy" as one of the key enablers to economic, social and political growth. The political economy supports transition from fossil fuels to clean energy sources which is in line with the global commitments to address the climate change problem by reducing greenhouse gases. To achieve the transition, development of renewable energy sources has been identified as one of key components in addressing climate change problem. Renewable energy provides a large source of Kenya's electricity today of about 80 %, a country of over 50 million people which helps in the transition to clean energy by 2030. Achieving the final 20 percent will require the input of country's energy policy experts and investors in utilising Kenya's rich natural potential for geothermal energy, solar energy and wind energy among other sources of clean energy. The legislative framework and institutional changes Kenya put in place are conducive to foreign investment and especially on-grid, off-grid and micro-grid projects. The paper analyses the scope of investment in renewable energy in Kenya, which is important for the purpose of mapping the legal aspects that support such investment, challenges and prospects.

A. Introduction

Kenya is one of the African countries with the largest share of renewables in its generation mix.[1] In 2015, renewables supplied over 70 per cent of electricity, mainly from hydropower and geothermal plants. Climate change creates a justification for a transition to sustainable energy in order to mitigate the impacts.[2] Most countries have committed to do more to achieve a clean energy transition in order to fulfil the ambitions of the Sustainable Development Goals (SDG) especially in making provision for access to affordable, reliable,

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1 *Helen Osiolo et al*, The Political Economy of Investment in Renewable Electricity in Kenya in Institute for Development Studies, Green Power for Africa: Overcoming the Main Constraints 48[2017] 120.

2 A*gnieska Kazimierczuk*, Wind Energy in Kenya: A Status and Policy Framework Review Renewable and Sustainable Energy Reviews 107 (2019) 434.

sustainable and modern energy and clean energy for all.[3] SDG 13 requires the countries to address the challenge of climate change. Further commitments were made during the 21st Conference of the Parties (COP21) to the United Nations Framework Convention on Climate Change (UNFCCC) in Paris in 2015.[4]

Lack of access to energy supplies and transformation systems is a constraint to human and economic development.[5] Sustainable energy is an imperative enabling for better healthcare; food security, shelter, and clothing. A number of initiatives have emerged to address Africa's energy challenges and to support the necessary expansion and modernisation, notably programmes such as Sustainable Energy for All (SEA) to promote universal electricity access, increase the global percentage of renewable energy from 18 % to 36 %, and enhance energy efficiency.[6] Other initiatives are the African Union's Programme of Infrastructure Development in Africa (PIDA), Power Africa, the Africa-EU Energy Partnership, the African Clean Energy Corridor, as well as numerous bilateral, civil society and community efforts.[7] The focus is renewable energy due to the ability to offer sustainable energy that is in line with the objectives of the climate change global legal framework.[8]

Renewable energy is one of the sustainable or modern options for energy security.[9] Renewable energy (RE) is derived from the naturally occurring resources including geothermal, hydro, solar, wind, ocean energy, biomass, biofuels, biogas and municipal waste. RE can supply our energy needs and those of future generations in a sustainable way if effectively harnessed through careful planning and advanced technology, therefore renewable energy can enhance energy security, mitigate climate change, generate income, create employment and generate foreign exchange savings.[10]

Kenya has promising potential for power generation from renewable energy sources due to the availability of solar, hydro, wind, biomass and geothermal resources. The government has prioritized the development of geothermal, wind and solar energy plants as well as solar-fed mini-grids through least cost approach, for rural electrification.[11] Yet, Kenya continues to face significant energy challenges such as issues of energy security, en-

3 UNEP, Goal 7: Affordable and Clean Energy https://www.unep.org/explore-topics/sustainable-development-goals/why-do-sustainable-development-goals-matter/goal-7(accessed July 7, 2024).

4 *Kazimierczuk,* note 2, 434.

5 UNEP, note 3..

6 *Ibrahim Rotich et al*., Renewable Energy Status and Uptake in Kenya [54[2024] Energy Strategy Reviews.

7 *Rotich*, note 6.

8 *Nurtaj Vidadili et al.,* Transition to Renewable Energy and Sustainable Energy Development in Azerbaijan Renewable and Sustainable Energy Reviews 80[2017].

9 *Anthony Amoah*, Corruption: Is it a Bane to Renewable Energy Consumption in Africa? 163[2022] Energy policy.

10 Ministry of Energy, National Energy Policy [October 2018] 11.

11 Energy and Petroleum Regulatory Authority (EPRA) et al, Least Cost Power Development Plan, 2021, 48.

vironmental sustainability, and affordability. Energy equity and security play important roles at the population level based on social and economic pillars. Energy poverty in Kenya is characterized by limited access to modern energy services and reliance on traditional biomass for cooking and heating; remains a significant challenge. According to the World Bank, as of 2020, approximately 75 % of the rural population in Kenya lacks access to electricity. In urban areas, this figure drops to around 23 %, highlighting a stark contrast between urban and rural energy access.[12] In urban areas, the classification can be further performed for high-density areas with perceived better infrastructure for the middle class and the high social class. However, slums experience severe energy poverty due to low income. Approximately 85 % of the population relies on biomass, such as wood, charcoal, and dung, for cooking.[13] This heavy reliance on biomass not only poses health risks due to indoor air pollution but also contributes to deforestation and environmental degradation. The World Health Organization (WHO) estimates that exposure to indoor air pollution from traditional cooking methods leads to approximately 21,560 deaths annually in Kenya.[14]

Being part of the Sustainable Energy for All Initiative (SE4All) launched by the United Nations, Kenya developed in 2016 an Investment Prospectus (Sustainable Energy For All – Kenya Investment Prospectus, 2015) targeting foreign investors, in which it highlighted the reasons Kenya was an attractive renewable energy investment destination. The report highlighted important factors at play enabling a business climatefor foreign renewable energy investors. Some of the factors are :clear tax regimes with incentives on equipment needed renewable energy investment; enforceability of laws and contracts, ability to repatriate profits, existence of bilateral trade agreements, insurance cover for investment which provides political risk insurance, and fair dispute resolution forums such as the Nairobi Centre for International Arbitration.[15] The Renewable Energy Policy Network for the 21st Century (REN21) has indicated in its annual report issued in 2018 that Kenya has renewable energy targets for its power sector as well as an Intended Nationally Determined Contribution (INDC). The regulatory policies that support of renewable energy include feed-in tariff and net metering, fiscal incentives and public financing policies such as tax incentives, energy production payment, as well as public investments, grants, and capital subsidies.[16]

Kenya is moving towards diversifying energy sources by procuring more of its additional power from wind and solar and with the substantial growth in hydro, wind and solar energy in the recent years which has led to a decline in generation from oil, gas and coal

12 *A. O'Neill*, Kenya: Urbanization from 2012 to 2022 https:// www.statista.com/statistics/455860/urbanization-in-kenya/(accessed July 2, 2024).

13 Ministry of Energy, Assessment of the Supply and Demand of Cooking Solutions at the Household Level, 2019.

14 *I.K. Rotich & P.K. Musyimi*, Indoor Air Pollution in Kenya, Aerosol Science and Engineering 8 (1) (Mar. 2024) 54–65.

15 *Rotich & Musyimi*, note 14.

16 *Rotich & Musyimi*, note 14.

sources and electricity imports.[17] Kenya has an estimated hydropower potential of about 6,000MW comprising of large hydros (sites with capacity of more than 10MW) and small hydros. Of the large hydros, 823.8MW has been exploited and accounts for 35.3 % of installed generation capacity as at 2017.[18] The Kenyan electricity system is skewed towards industrial and urban consumers. Large commercial and industrial customers represent 54 per cent of the national electricity sales but only 0.1 per cent of the total connections. On the other side, domestic consumers represent 90 per cent of the connections but only 25 per cent of the sales of electricity. Geographically, 52 per cent of electricity sales are in the Nairobi area (Kenya Power 2014). Industrial and urban consumers are therefore the most powerful actors in pressuring the government to keep electricity tariffs low.[19]

B. The Legal, Policy and Institutional Framework for Investment in Renewable Energy Enabling Policy Framework

Energy is recognised as one of the economic drivers and one of the main focus areas in the Kenya's Vision 2030 and the Big 4 Agenda development programs.[20] Kenya's Vision 2030 (Vision 2030) was launched in 2008 as a vehicle for accelerating the transformation of Kenya into a rapidly industrialising middle-income nation by the year 2030. The Least Cost Power Development Plans (LCPDPs) is another critical policy tool that informs forecasting, generation planning and transmission planning which impact on macroeconomic environment, introduction and application of new technologies.[21]

There have been plans to increase the electricity access and reduction of costs through initiatives such as Vision 2030, the BIG-4 Agenda and universal electricity access through the Last Mile Connectivity Program aiming to ensure reliable and climate-resilient energy systems. The goal of achieving a 100 % transition to renewable energy by 2020 has laid a strong foundation for greener and more sustainable energy. With electricity demand expected to triple in the next decade in East Africa, diversification is necessary to supplement and increase energy equity.[22] In line with the 'Last Mile Project' plan, Government of Kenya appreciates the need to continually invest in infrastructure as well as upgrading energy technology to ensure that all Kenyans have access to modern and sustainable energy.[23] The Last Mile Project is a Government of Kenya programme that is aimed at facilitating the objec-

17 *Kariuki Muigua,* Exploring Alternative Sources of Energy in Kenya, Journal of CMSD, 5 (2) 2020, 3.

18 Ministry of Energy, National Energy Policy, October 2018, 11.

19 Osiolo et al 124.

20 *Kariuki Muigua*, note 17, 3.

21 Energy Petroleum Regulatory Authority et.al, Least Cost Power Development Plan 2021–2030, 2021, 8.

22 *S.J. Chemengich, D.O. Masara,* The State of Renewable Energy in Kenya with a focus on the Future of hydropower, AER Journal 5 (1) (2022) 246–260.

23 *Kariuki Muigua*, note 17, 13.

tive of affordably connecting Kenyan households to the national network grid. This is geared towards achieving a national connectivity rate of 70 % by 2017 as part of the government's goal of universal access to electricity by 2020.[24]

The Third Medium Plan 2017–2022 identifies energy as the country's economic driver that strengthen industrialisation; providing a high quality of life to all its citizens in a clean and secure environment," and as a result access to competitively-priced, reliable, quality, safe and sustainable energy as an essential ingredient for the country's social -economic development.[25] Similarly in the Fourth Medium Term Plan 2023–2027 the government of Kenya seeks to promote the development of energy generation and distribution by increasing investments in green energy (geothermal, wind, solar and hydro) as part of infrastructural development.[26]

In the National Renewable Energy Master Plan under Kenya's Vision 2030; the government outlines energy plans to 'promote development of renewable energy as an alternative source of energy which will include generation of energy from solar, wind, biogas, development of bio-energy including bio-ethanol and diesel value chains and promotion of the use of improved cooking stoves and charcoal kilns, and re-afforestation of water towers.[27]

The Kenya Energy Transition & Investment Plan (ETIP) is another policy developed on the backdrop of Kenya's commitment to champion the fight against climate change. The ETIP provides a clear pathway for the Energy Sector to contribute to the attainment of Kenya's climate ambition of Net Zero emissions by 2050 with opportunities for financing and investment. The ETIP identifies main decarbonization technologies that will anchor an orderly transition, including renewable energy, green hydrogen, e-mobility, energy storage and clean cooking. It further supports the scoping of projects to catalyze funding from both public and private sources.[28]

To promote direct use of geothermal resources, the project targets the establishment of a Green Energy Industrial Park at the Olkaria geothermal hub in Naivasha, which will accommodate both industrial and non-industrial activities such as offices, data centres, research and development centre, hospitality, visitor experience centre, and administrative and commercial uses.[29]In terms of achieving power distribution and access, the energy project aims at enhancing power network expansion and improvement and electricity access in both on-grid and off-grid areas. It entails: construction and upgrading of 54 sub-stations and extension of 1,183km associated HV and MV lines; connecting to electricity 2.3

24 Last Mile Connectivity Program Q & A " https://kplc.co.ke/img/full/TTfrdXBeliBJ_Last%20Mile%20QA.pdf (accessed July 20, 2024).

25 *Kariuki Muigua*, note 17, 2.

26 The National Treasury and Economic Planning 2024, Fourth Medium Term Plan 2023–2027 Bottom Up Economic Transform Agenda for Inclusive Growth, nnniii.

27 *Kariuki Muigua* note 17, 13.

28 Ministry of Energy & Petroleum, Kenya Energy Transition & Investment Plan 2023–2050.

29 State Department for Economic Planning, Fourth Medium Plan 140.

million additional customers and 30,000 public facilities (government institutions, health facilities and public schools); installation and maximization of 90,000 transformers; installation of 248 mini grids; and installation of 75,000 lanterns under the Public Lighting Project.[30]

Further, the energy project aims at promoting clean, affordable, and quality alternative renewable energy sources through the expansion of energy centres; installation of more solar PV systems; development of small hydro's; wind masts and data loggers; development bio fuel plants for value addition; construction of biogas plants in counties; development of energy efficient charcoal kilns and promotion of clean cooking solutions.[31] Other planned activities include promotion of energy efficiency and conservation including e-mobility, green building and reduction of GHGs; electrification of institutions and community boreholes; development of Kenya green hydrogen; and promotion of energy production from municipal waste.[32]

The legal and policy framework has a special focus on investment and is skewed towards encouraging and promoting foreign investment.

I. Kenya Investment law and Policy

The Kenya Investment Policy (KIP) and the Country Investment Handbook promote and facilitate private investment in Kenya through attracting and retaining foreign investment.[33] The policy is guided by seven core principles of which includes: openness and transparency; inclusivity; sustainable development; economic diversification; domestic empowerment; global integration; and investor centeredness.[34]

The Foreign Investments Protection Act (FIPA) seeks to protect the interests of foreign investors in Kenya by affording protection to certain approved investments.[35] For a foreign investor to enjoy the protective measures and incentives envisaged under the Foreign Investments Protection Act, the investor is required to register and obtain a certificate from the Cabinet Secretary. The investment value must be of at least USD 100,000 and must be for a lawful activity which is beneficial to Kenya. To determine whether an investment is beneficial to Kenya; the investment should result in creation of employment for Kenyans; lead to acquisition of new skills or technology for Kenyans; make a contribution to tax revenues or other government revenues; lead to a transfer of technology to Kenya; lead to an increase in foreign exchange, result in utilisation of domestic raw materials, supplies

30 Fourth Medium Term, note 29,140.

31 Fourth Medium Term, note 29,142.

32 Fourth Medium Term, note 29, 142.

33 *Joyce Karanja et al*., Foreign Direct Investment: An Overview of Policy and Regulatory Developments in East and Southern Africa in Mathew Levitt & Baker Bolts(Eds), Foreign Direct Investment Regimes, 2022, 15.

34 Ministry of Industry, Trade and Cooperatives, Kenya Investment Policy, 2019,15.

35 Chapter 518 Laws of Kenya.

and services adoption of value addition in the processing of local, natural and agricultural resources; and utilisation, promotion, development and implementation of information and communication technology.[36] The Kenyan government may have special arrangements with a government of any country to promote and protect investments.[37]

The Investment Promotion Act seeks to promote and facilitate investment by assisting investors to obtain the licences necessary to invest and by providing other forms of assistance and incentives.[38] The legislation establishes the Kenya Investment Authority (KenInvest) whose main objective is to promote investments in Kenya by facilitating the implementation of new investment projects, providing after-care services for new and existing investments, as well as organising investment promotion activities both locally and internationally.[39] A general investment approval can be sought from KenInvest, who will grant the investor an investment certificate that grants the investor a number of advantages such as assistance in obtaining any necessary licences and permits; assistance in obtaining incentives or exemptions under various tax legislation.

The Special Economic Zones Act[40] establishes special economic zones and are aimed at promoting and facilitating global and local investments through offering tax incentives. The Capital Markets Act[41] and Capital Markets (Foreign Investors) Regulations of 2002 regulate capital markets and public issuers of securities and govern the manner in which foreigners may invest in the capital market in Kenya.[42] Any such foreign company must be registered as a foreign company under the Companies Act[43] in order to carry on a business in Kenya.

The National Construction Authority Act[44] provides that foreign contractors (companies incorporated outside Kenya or with more than 50 % ownership by non-Kenyan citizens) must enter into subcontracts or joint ventures with local firms so that at least 30 % of the construction work is carried out by local firms.[45] This legislation may apply as construction is critical in any energy infrastructure.

The Energy Act[46] provides the enabling framework for investment in renewable energy being the framework that lays the structure of energy production in Kenya. The objectives of the legislation are: to consolidate the laws relating to energy; promote renewable ener-

36 *Karanja et al*, note 33,16.
37 Karanja et al,note 33,16.
38 Act No 46 of 2004, *Karanja*, note16.
39 *Karanja* note16.
40 Act Number 16 of 2015.
41 (Cap. 485A) Laws of Kenya.
42 *Karanja* note 16.
43 Act Number 17 of 2015.
44 Act No 41 of 2011.
45 *Karanja* note 17.
46 Act No 1 of 2019.

gy; promote exploration, recovery and commercial utilization of geothermal energy. The Cabinet Secretary (CS) and other institutions established under the Energy Act bear heavy responsibilities in managing the energy sector and enabling investment in the sector. The legislation mandates the government to facilitate the provision of affordable energy services to all persons in Kenya.[47]

The Cabinet Secretary (CS) representing the national government (NG) in the Ministry and county government bear several responsibilities with respect to investment in energy. The respective governments have roles to play in enabling access to affordable energy. The CS while in consultation with the relevant stakeholders is required to develop, publish and review energy plans in respect of coal, renewable energy and electricity so as to ensure delivery of reliable energy services at the least cost. This is after consolidation of plans from the energy service provider and county energy plans.[48] Where the National or County Government determines that a supply of energy in any area is necessary and upon assessment it is established to be commercially inexpedient to provide for the necessary reticulation by any licensee, the CS or County Executive Committee member may undertake the provision of any such works or provide the funds necessary for the development of such works.[49]

The CS is further required to develop and implement a fair, transparent and equitable strategy to ensure that all households are connected to a supply of electricity by 2030.[50]While at it, the CS is supposed to develop a conducive environment for the promotion of investments in energy infrastructure development, including formulation of guidelines in collaboration with relevant county agencies on the development of energy projects and to disseminate the guidelines among potential investors.[51] The National and County Governments are expected to facilitate the acquisition of land for energy infrastructure development in accordance with the law.[52]

EPRA established under the Energy Act; is an independent regulatory agency that regulates; through licencing; generation, importation, exportation, transmission, distribution, supply and use of electrical energy with the exception of licensing of nuclear facilities and production, conversion, distribution, supply, marketing and use of renewable energy.[53] There are a number of considerations to be made by EPRA before they make any grant of licence most of which suffice as obligations that need to be fulfilled. The considerations are: the impact of the undertaking on the social, cultural or recreational life of the community; the need to protect the environment and to conserve the natural resources; land use

47 S 7(1) Energy Act.
48 S 5(5) Energy Act.
49 S 7(2) Energy Act.
50 S 7 (1) Energy Act.
51 S 8 (1) Energy Act.
52 S 8 (2) Energy Act.
53 S 10,119(2) Energy Act.

or the location of the undertaking; economic and financial benefits to the country or area of supply of the undertaking; the economic and energy policies; that the contractual rights, privileges, liabilities and obligations accrued to an existing licensee or any other person are not materially adversely affected; the cost of the undertaking and financing arrangements; the ability of the applicant to operate in a manner designed to protect the health and safety of its employees and users of the service for which the licence is required and other members of the public who could be affected by the undertaking; the technical and financial capacity of the applicant to render the service for which the licence is required.[54]

Rural Electrification and Renewal Energy Corporation (REREC) is another institution set up under the Energy Act which is responsible for accelerating the pace of rural electrification; developing, promoting and managing the use of renewable energy (excluding geothermal); and offering clean development mechanisms, such as carbon credit trading; establishing energy centers in the counties and developing appropriate local capacity for renewable technologies.[55] The institution is therefore critical in the acceleration of investment in the area of rural electrification and renewable energy. The Rural Electrification Programme Fund (REPF) is set up in the Energy Act with the objectives of accelerating electricity infrastructure in the country.[56] The fund consists of the electricity sales levy; such monies as may be appropriated by parliament for that purpose; donations, grants and loans; interests from bank deposits; and all other monies lawfully received or made available for the Rural Electrification Programme as the CS may approve.[57]

The Renewable Energy Resource Advisory Committee (RERAC) an inter-ministerial committee is responsible for advising the responsible CS on matters concerning the: allocation of renewable energy resources; licensing of renewable energy resource areas; management of water towers and catchment areas; development of multi-purpose projects such as dams and reservoirs; and management and development of renewable energy resources.[58] The body is important in influencing decisions that culminate in investment in renewable energy infrastructure.

The CS in consultation with Renewable Energy Resource Advisory Committee may grant a licence for extraction of geothermal resources under such terms and conditions as the CS may determine in accordance with the provisions of the Constitution.[59] The Cabinet Secretary shall promote the development and use of renewable energy technologies, including but not limited to biomass, biodiesel, bioethanol, charcoal, fuelwood, solar, wind, tidal waves, hydropower, biogas and municipal waste.[60] The Cabinet Secretary may impose a

54 S 121(1) Energy Act 2019.
55 S 44 Energy Act.
56 S 143 (1) Energy Act.
57 S144 (2).
58 S 76(4) Energy Act.
59 S 80(1) Energy Act, art 71 Constitution of Kenya on agreements relating to natural resources.
60 S 75(1).

levy of up to five percent on all electricity consumed in the country, the proceeds of which shall go into the Rural Electrification Programme Fund.[61]

The private sector is important in driving investment in the energy sector. The Public Private Partnership Act provides for the legal framework of engagement enabling participation of the private sector in the financing, construction, development, operation, and maintenance of government infrastructure and development projects through concession and other contractual arrangements; and institutions that regulate, monitor and supervise the implementation of project agreements relating to infrastructure or development projects.[62] The Public Private Partnership Unit (PPPU) that is established under the PPP Act as a unit of the National Treasury to serve as the secretariat and technical arm of the PPP committee is responsible for assessing and approving PPP projects in Kenya.

The legal framework allows for establishment of Independent Power Producers (IPPs) which are private companies which generate power and sell electricity in bulk to KPLC. There are about fourteen (14) IPPs in operation which account for about 24 % of the country‘s installed capacity. As at 2018 there were about five thermal plants, one geothermal power plant; several tea factories that run mini hydro power plants and one biogas power plant.[63]

The local private sector in the renewable energy sector is represented by the Kenya Private Sector Alliance (KEPSA), the Kenya Association of Manufacturers (KAM), and the Kenya Renewable Energy Association (KEREA). Whereas KEREA mainly represents the small-scale solar industry, KEPSA and KAM represent a broader range of larger and more powerful businesses.[64]

In resolving disputes relating to renewable energy investment, the Energy Petroleum Tribunal hears and determines disputes and appeals relating to the energy and petroleum sector arising from the Energy Act 2019 and other statutes. The tribunal has power to grant equitable reliefs including but not limited to injunctions, penalties, damages, specific performance and power to, on its own motion or upon application by an aggrieved party, review its judgments and orders.

The investors are expected to comply with local content regulations requiring companies to submit a local content plan when applying for a licence.[65] The local content plan requires the investor to give first consideration to Kenyan services, products, and employees and commit to train Kenyans on the job. The regulations set minimum local content requirements for energy operations in the country, with levels increasing from the start of the project to 75 per cent of the duration of the project to reach 80 per cent of goods

61 S 144.

62 Public Private Partnerships Act 2013.

63 Ministry of Energy, National Energy Policy,2018, 21.

64 *Osiolo*, note 1, 124.

65 The Energy Local Content Regulations of 2014.

and services, 70–80 per cent of management and technical core staff, and 100 per cent of other staff.[66]

The investor is also expected to comply with law for environmental protection. This is with respect to energy related projects that may adversely impact the environment. The investor is expected to undertake environmental impact assessment licence and keep records indicating compliance where necessary.[67]

II Incentives

Kenya is one of only a very few countries in sub-Saharan African to have put in place a system of feed-in-tariffs (which they did in 2008) that cover geothermal, wind, biogas, and small-scale hydro generation.[68] Kenya adopted the FiT Policy 2012 to meet its targets for tackling climate change by reducing reliance on fossil fuels. The FiT Policy promotes the generation of electricity from renewable energy sources by enabling power producers to sell electricity generated at a pre-determined tariff for a given period. Tariffs are available for energy generated from wind power, biomass, small-hydro, geothermal, biogas, and solar resources. The FiT policy provides electricity purchase guarantees by the main power utility KPLC and includes all power generation categories.[69]

The investors may also enjoy tax exemptions under the Finance Act, 2021, for solar and wind energy specialized equipment which promotes the realization of universal electrification and advancing green energy goals in the country.[70]

The Energy Act lays down the architecture for net metering which may act as an incentive especially for investors in others sectors besides the energy sector who may want to generate their energy. The Act allows a consumer to generate their own electricity and to offset the power they utilize from the national grid during peak hours, from the excess power they generate to the grid during off-peak periods.[71] The Energy Act caps the net-metering system to 1MW, beyond which it would consider the electricity producer large enough to enter into a Purchasing Power Agreement (PPA) with Kenya Power. The drive behind the net-metering system is to further encourage households and businesses to invest in renewable energy technologies as a reliable and uninterrupted source of energy.

The Ministry of Energy & Petroleum is required by law to develop an "inventory and resource map for renewable energy resources" which would be made available to interested investors and would save time and cost that would have otherwise been taken

66 *Osiolo* note 1,122.

67 S58, EMCA.

68 *Remco Fischer* note 79, 70.

69 *Osiolo* note 1,122.

70 *Esther Githinji*, Tax Incentives on Renewable Energy, 2021https://cleanenergy4africa.org/tax-incentives-on-renewable-energy/(accessed July 22, 2024).

71 S 162, Energy Act.

up in self-performing resource exploration and assessment efforts.[72] The legislative and institutional framework established in place are conducive to foreign investment which enables renewable energy transformation for on-grid, off-grid and micro-grid projects.[73]

C. Challenges in the Renewable Energy Sector

Despite the elaborate legal and policy framework enabling investment in renewable energy, challenges abound that may hamper the much needed investment. Connectivity rates remain lower than the sub-saharan African average, and reliability is low for those connected outside of the cities, mainly as a result of an insufficient transmission and distribution network.[74] Three key constraints cited that prevent further investment in renewables are namely: low demand and inability to pay in rural areas; high system costs due to a lack of networking infrastructure and an inflexible generation mix; and serious problems of social acceptance and access to land.[75] Low levels of demand are due to high poverty rates and a lack of productive uses. According to data from a private company operating mini-grids in the country, the average monthly electricity consumption of their rural consumers is just 5KWh, compared to more than 200KWh in Nairobi.[76]

Other gaps exist that affect the effectiveness of current renewable energy range from inconsistency and inadequate coordination between relevant regulatory frameworks and agencies. While there are policies in the Energy Act, 2019 promoting renewable energy, such as the Feed-in Tariff (FiT) policy, their implementation often suffers improper governance. The other critical gap revolves around insufficient financial incentives and support mechanisms for renewable energy projects. Although licenses and current policies like FiT aim to provide guaranteed prices for renewable energy producers, the rates are not competitive to attract investment from private sector. Lack of comprehensive fiscal incentives, such as tax subsidies, lowers the initial capital expenditure for renewable energy projects. This gap is worsened by limited access to affordable monetary resources, especially for small and medium-sized enterprises (SMEs) involved in renewable energy.[77]

The uptake of opportunities like renewable energy is hindered in developing countries by corruption in public institutions in the energy and other complementary sectors which makes it inefficient for investors due to the increase of the cost of production for companies

72 Sec 74, Energy Act.

73 Renewable Energy in Kenya: An examination of the legal instruments and institutional changes that successfully attracted foreign investment https://energycentral.com/c/pip/renewable-energy-kenya-examination-legal-instruments-and-institutional-changes (accessed August 22, 2024).

74 *Osiolo* et al note 1, 120.

75 *Osiolo* note 1,120.

76 *Osiolo* note 1, 125.

77 *Chemengich & Masara* note 22.

in the sector.[78] Still, the public institutions and legal systems often lack the stability, ability, and reliability over the medium to long term to put in place and enforce laws and private sector regulation in general, as well as supportive incentives for renewable energy.[79] The politicians may also interfere with the projects through rent seeing behaviour when seeking political or financial gain from the projects.[80]

The other challenge is that the cost of electricity in most of sub-Saharan Africa is exceptionally high already, due to a combination of the small size of the electricity markets and the resulting lack of economies of scale; the common reliance on expensive oil-based generation; and other inefficiencies such as low historic levels of maintenance investment and resulting inefficiencies and electricity losses in generation and distribution.[81] Other fundamental challenges include limited scope and coverage of energy infrastructure in terms of both geographic area and users; a large gap in generating capacity; obsolete employed technologies and the poor state of the overall energy infrastructure; the low levels of resource efficiency that lead to high costs per output unit, given low affordability levels among local populations which are often kept down through subsidies from already constrained public budgets.[82]

Customers served through the grid or mini-grids benefit from cross-subsidies for consumption tariffs, but must still pay a high fee to cover the costs of connection. This keeps connection rates low even for those households within reach of the grid. Grid extension to rural areas that are not able to pay for it places a heavy financial burden on Kenya's distribution utility and creates tension between the goals of universal access to electricity and financial sustainability of the power supply system.[83] Solar mini-grids with higher installed capacities allow a wider diversity of electricity uses, comparable to those provided by the national grid. However, when they are not subsidised, they are considered too expensive for most of the rural population and can only target relatively wealthy households and commercial establishments.[84]

Energy investment is associated with high system costs due to transmission and distribution infrastructure needs and the balancing costs of intermittent renewables. The country has long suffered from a weak power transmission and distribution infrastructure, due to insufficient investments in upgrading the system which brings about a large share of system

78 *Anthony Amoah* et al, https://www.sciencedirect.com/science/article/abs/pii/S0301421522000799 (accessed August 17, 2024).

79 *Remco Fischer et al*, Barriers and Drivers to Renewable Energy Investment in Sub-Saharan Africa, Journal of Environmental Investing [2011] 60.

80 *Osiolo* note 1,132.

81 *Fischer et al*, note 79, 61.

82 *Fischer* et al, note 79, 64.

83 *Osiolo* note 1,125.

84 *Osiolo* note 1,126.

losses, outages, and voltage fluctuations.[85] The electrical network faces new challenges, including the long distance between some renewable energy generation resources and demand centres; the goal of universal electrification; and the growing share of intermittent generation, mainly from wind power plants which lead to increased costs for final consumers.[86]

Social acceptance to energy investment is critical in terms of access to land for putting up the necessary infrastructure. Challenges in social acceptance may exercebate the cost of investment. The local population may contest the right of private and government developers to use the land where they live or work hence raising issues of compensation and consultation. The process may be further complicated when the current users of the land do not hold formal titles. The lack of clarity over land rights also creates the possibility of rent-seeking from local communities seeking compensation for land not used by them. Communities are more favourable to projects when they are given full information about their costs and benefits, when benefit-sharing mechanisms are in place, and when they are involved in consultation and decision-making.[87]

D. Conclusion

The legal and policy framework enabling renewable energy investment is in place despite the challenges that must be addressed. Challenges abound being low demand of electricity and inability to pay in rural areas; high system costs due to a lack of networking infrastructure and an inflexible generation mix; problems of social acceptance and access to land for investment; lack of comprehensive fiscal incentives; rent seeking cost; feed in rate tariffs that do not attract private investment; obsolete employed technologies and the poor state of the overall energy infrastructure; the low levels of resource efficiency that lead to high costs per output unit, given low affordability levels among local populations. Besides investment in renewable energy Kenya has trained her eyes on investment on nuclear energy[88] which is high cost that could lead to slackened growth in renewable energy investment. There should be efforts to achieve policy coherence in order to attract such investment for the right energy mix that could benefit the country.

85 Government of Kenya, Sessional Paper 4 on Energy 2004.

86 *Osiolo* note 1, 128.

87 *Osiolo* note 1,131.

88 *Diana Musyoka & Robert Field*, 'Review of the environmental oversight framework in Kenya, in light of a nuclear power programme' 108 [2018].