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Renewable Energy, The Promised Land: Obligations Under The Unfccc (1992) & Steps Towards Fulfilling Kenya Vision 2030 On Renewable Energy

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Abstract

Renewable energy sources provide for environment and climate friendly mechanisms for harnessing natural resources. They are also important in meeting energy demands due to the increasing social and economic activities brought about by rise in population. Kenya is not an exception to implementing this mode of energy generation. To that effect, Kenya is mandated by various international instruments such as the United Nations Framework Convention on Climate Change as well as domestic laws and policies such as, inter alia, the Energy Act (2019) and the National Energy Policy (2018). Consequently, various institutions are also established to that effect. In the long-run Kenya also seeks to fulfil the objectives of the Kenya Vision 2030 Plan holistically and consequently fulfil goals in the plan seeking to improve the energy sector in Kenya. Some of the goals relating to the energy sector involve those revolving around the question of increase in utility of renewable energy sources in Kenya. This paper seeks to discuss the progress Kenya has made towards attaining substantial utility of renewable energy with a goal to fulfil the Kenya Vision 2030 Plan as well as recommendations to fulfil this milestone. Furthermore, this paper will also discuss Kenya's obligations under the UNFCCC (1992), which is one of the vital and progressive conventions averring on ecofriendly energy utility.

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1.0 Introduction

Environmental and Climate conduciveness and tranquility is a pivotal aspect for any nation.[1] For other developments revolving around social, political and economic to take place, positive status of the aforementioned aspects must be of utmost consideration.[2] One of such ways is utilization of environmental and climate friendly mechanisms in various sectors of the state.[3] The Energy Sector for example is one of the pivotal spheres of any state including Kenya. In fulfilling the aforementioned environmental and climate goals, investment in, and utility of renewable energy is one of the most Important facets of development. This paper discusses the essence of utilizing renewable energy sources, Kenya's obligation towards the Convention on Climate Change (1992) with regards to renewable energy, the track towards fulfilling Kenya Vision 2030 with regards to renewable energy and the legal, policy & institutional framework governing renewable energy in Kenya. It also looks at the challenges and recommendations towards making further considerable process towards utility of renewable energy in Kenya.

2.0 The United Nations Framework Convention on Climate Change (UNFCCC)

2.1 Overview of the UNFCCC

The United Nations Framework Convention on Climate Change is one of the most far-reaching treaties ever negotiated The United Nations Framework Convention on Climate Change (UNFCCC) is an

[1] European Environment Agency, 'Healthy Environment Is a Must for Sustainable Economy and Equitable Society' (2019).

[2] Organisation for Economic Cooperation and Development, 'THE ECONOMIC SIGNIFICANCE of NATURAL RESOURCES: KEY POINTS for REFORMERS in EASTERN EUROPE, CAUCASUS and CENTRAL ASIA' (2011).

[3] Ibid

international environmental treaty established in 1992.[4] The Earth Summit, also known as the United Nations Conference on Environment and Development (UNCED), which took place in Rio de Janeiro, Brazil, saw the treaty's adoption.[5] During its adoption, it was signed by 154 states which vowed to be bound by the provisions of this convention. It entered into force on 21 March 1994.[6]

Its main goals are to address stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system and allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.[7]

The Conference of the Parties (COP) is the supreme decision-making body of the UNFCCC.[8] It brings together representatives from member countries to review progress, negotiate agreements, and make decisions on various climate-related issues.[9]

The UNFCCC has had significant essence in championing for protection of climate. One of such is laying a foundation for other

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[4] United Nations, 'United Nations Conference on Environment and Development, Rio de Janeiro, Brazil, 3-14 June 1992' (*United Nations*1992) <*https://www.un.org/en/conferences/environment/rio1992*> accessed 21 September 2023.

[5] Ibid

[6] United Nations Climate Change, 'What Is the United Nations Framework Convention on Climate Change?' (*Unfccc.int*2022) <*https://unfccc.int/process-and-meetings/what-is-the-united-nations-framework-convention-on-climate-change#:~:text=The%20UNFCCC%20entered%20into%20force*> accessed 21 September 2023.

[7] United Nations Framework Convention on Climate Change, Article 2

[8] Ibid, Article 7

[9] Ibid

international treaties such as the Paris Agreement (2015) and the Kyoto Protocol (1997).[10] The Paris Agreement is a landmark global agreement under the UNFCCC that was adopted in 2015.[11] Its goal is to limit global warming well below 2 degrees Celsius above pre-industrial levels and pursue efforts to limit the temperature increase to 1.5 degrees Celsius. [12] The Kyoto Protocol operationalizes the UNFCCC, committing industrialized countries and economies in transition to limit and reduce greenhouse gases (GHG) emissions in accordance with agreed individual targets. The Convention itself only asks those countries to adopt policies and measures on mitigation and to report periodically.[13]

2.2 Kenya and Implementation of the UNFCCC

Kenya ratified the United Nations Framework Convention on Climate (UNFCCC) in 1994[14], and since then the country has been working towards the achievement of the objectives of the Convention. As a party to the UNFCCC, Kenya is required to periodically report to the Convention through a National

[10] Graham Research Institute on Climate Change and the Environment, 'What Is the UN Framework Convention on Climate Change (UNFCCC)?' (24 October 2022) <*https://www.lse.ac.uk/granthaminstitute/explainers/what-is-the-un-framework-convention-on-climate-change-unfccc/#:~:text=Signed%20in%201992%2C%20the%20United,the%20Paris%20Agreement%20(2015).*> accessed 21 September 2023.

[11] United Nations Climate Change, 'The Paris Agreement' (*Unfccc.int*2023) <*https://unfccc.int/process-and-meetings/the-paris-agreement#:~:text=The%20Paris%20Agreement%20is%20a*> accessed 21 September 2023.

[12] Conference of the Parties, Adoption of the Paris Agreement, Dec. 12, 2015

[13] Kyoto Protocol to the United Nations Framework Convention on Climate Change, Dec. 10, 1997

[14] National Environment Management Authority (NEMA), 'Second National Communication to the United Nations Framework Convention on Climate Change' (National Environment Management Authority, Government of Kenya 2015), Foreword

Communication that accounts for common but differentiated responsibilities and specific national and regional development priorities, objectives and circumstances. [15] Like all parties to the convention, Kenya is obligated to submit national communications as required by the UNFCCC.[16] The Communication must be prepared in accordance with the provisions of the Articles 4.1 and 12.1 of the UNFCCC.

To fulfil this obligation, Kenya prepared its First National Communication (FNC) to the Conference of the Parties in 2002.[17] The Second National Communication (SNC) which is the latest one was done in 2015.[18] It averred on Kenya's situation with regard to national circumstances and responses to climate change.[19] It must also entail other updates to the convention such as those pertinent to the level of emission of GHG and measures the member state wishes to implement to mitigate their harm to climate and environment.[20]
Pursuant to Article 4 of the UNFCCC that requires all parties to develop, periodically update, publish and make available to the Conference of the Parties, in accordance with Article 12, national inventories of anthropogenic emissions by sources and removals by

[15] Article 12 of the UNFCCC (1992) mandates member states to communicate to the Conference of the Parties, information related to implementation of the convention
[16] Ibid
[17] Ministry of Environment and Natural Resources, National Environment Secretariat, 'First National Communication to the Conference of the Parties' (2002).
[18] National Environment Management Authority (NEMA), 'Second National Communication to the United Nations Framework Convention on Climate Change' (National Environment Management Authority, Government of Kenya 2015).
[19] Ibid, foreword
[20] United Nations Framework Convention on Climate Change, Article 12

sinks of all greenhouse gases[21], Kenya took an inventory on emission of GHG in the year 2000.[22] The IPCC Guidelines for National Greenhouse Gas Inventories (1996)[23] and the Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories[24] were used as the basis to undertake the necessary calculations on GHG emissions and removals. In 2000, Kenya's total GHG emissions were, among other gases, approximately 55 million tons of Carbon (IV) Oxide gas coming from all the UNFCCC sectors such as Energy, waste, Industrial processes and product use, Agriculture, forestry, and other land use.[25]

2.3 The UNFCCC on Renewable Energy

The transition towards renewables such as solar and wind energy is critical part of meeting the goals of not only the UNFCCC, but also other conventions such as the Paris Agreement, which aims to limit the rise of global average temperatures to well below 2 degrees Celsius, and ideally below 1.5 degrees Celsius above pre-industrial

[21] Ibid, Article 4

[22] Kenya Second National Communication to the United Nations Framework Convention on Climate Change (2015)

[23] These are guidelines for preparing national greenhouse gas (GHG) inventories. However, it must be noted that the IPCC periodically updates its guidelines to incorporate scientific advancements and improve the accuracy and completeness of GHG inventories. The latest version of the IPCC guidelines is the 2006 IPCC Guidelines for National Greenhouse Gas Inventories.

[24] Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories complements the IPCC guidelines and provides additional information and best practices for improving the quality and accuracy of GHG inventories. The latest version of the Good Practice Guidance was published in 2000.

[25] Kenya Second National Communication to the United Nations Framework Convention on Climate Change (2015)

levels.[26] To fulfil this, utility of fossil fuels that emit GHG in countries such as Kenya must be mitigated and reduced.

The first principle of the UNFCCC is that 'The Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities'.[27] Other principles include exhorting the parties to give special consideration for developing countries, take 'precautionary measures,' promote sustainable development, and promote a 'supportive and open international economic system. [28] From the objective of the UNFCCC as set out in Article 2 of the convention, fossil fuels as is the bone of contention herein, have been discovered as a contributor to climate harm in various ways. One of such is emission of greenhouse gases. Greenhouse gases are defined in the UNFCCC as gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and re-emit infrared radiation. [29] Greenhouse gases trap heat and make the planet warmer. Human activities are responsible for almost all of the increase in greenhouse gases in the atmosphere over the last 150 years.[30]

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[26] United Nations Climate Change, 'The Paris Agreement' (*Unfccc.int*2023) <*https://unfccc.int/process-and-meetings/the-parisagreement#:~:text=The%20Paris%20Agreement%20is%20a*>.accessed 21 September 2023

[27] United Nations Framework Convention on Climate Change, Article 3

[28] Ibid

[29] Ibid, Article 1

[30] IPCC, 2013: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 1535 pp

This convention seeks to advocate for utility of methods that mitigate, reduce or extinguish climate harm. The Paris Agreement (2015) and the Kyoto Protocol (1997) which reinforce provisions of the UNFCCC as afore discussed, also speak on the need to utilize renewable energy sources in efforts to enhance environmental and climate protection and preservation.

Sparking this conversation is the question on the use of fossil fuels and renewable sources of energy. Article 4.1(c) of the UNFCCC calls for all parties to the convention to "promote sustainable development and to promote and cooperate in the development, application, and diffusion of, and take into account, the best available scientific, technical, economic, and social practices, including the development of renewable forms of energy".[31]

Further, Article 4.5 emphasizes the importance of transferring environmentally sound technologies, including renewable energy technologies, to developing countries to support their efforts in mitigating and adapting to climate change.[32]

The UNFCCC has been able to spearhead utility of renewable sources of energy through partnerships and cooperation with other organizations. The International Renewable Energy Agency (IREA) is one of such bodies. IREA is a leader in scaling up the deployment of renewable energy around the world. IREA promotes the widespread adoption and sustainable use of all forms of renewable energy, including bioenergy, geothermal, hydropower, ocean, solar and wind energy.[33]

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[31] United Nations Framework Convention on Climate Change, Article 4.1 (c)
[32] Ibid, Article 4.5
[33] United Nations Framework Convention on Climate Change Resources, International Cooperation,

3.0 The Kenya Vision 2030 Plan

3.1 Overview of the Kenya Vision 2030 Plan

The Kenya Vision 2030 is a long-term development blueprint for Kenya that was launched in 2008.[34] It outlines the country's development goals and strategies to transform Kenya into a globally competitive, middle-income country by the year 2030. The plan focuses on three key pillars. These include the economic pillar, social pillar, and political governance pillar.[35]

To implement the Kenya Vision 2030, the plan also emphasizes the need for strong partnerships between the GOK, private sector, civil society, and development partners.[36] It emphasizes the importance of good governance, effective resource mobilization, and monitoring and evaluation mechanisms to track progress towards the goals.[37]

In a nutshell, the Kenya Vision 2030 represents a comprehensive roadmap for Kenya's socio-economic development and guides the country's policies, strategies, and investments to achieve sustainable development and improve the quality of life for its citizens.

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https://unfccc.int/resource/climateaction2020/tep/thematic-areas/renewable-energy/index.html> accessed 21 September 2023

[34] Government of the Republic of Kenya, 'KENYA VISION 2030 (the POPULAR VERSION)' (2008) <*https://nairobi.aics.gov.it/wp-content/uploads/2019/01/Kenya-Vision-2030.pdf*> accessed 21 September 2023.

[35] Government of Kenya (2008) Kenya Vision 2030: A Globally Competitive and Prosperous Kenya. National Economic and Social Council (NESC), Nairobi.

[36] Ibid, p 160

[37] Ibid, p 53

3.2 Need for Renewable Energy?

One of the three Vision 2030 pillars' infrastructure enablers is energy.[38] A nation's commercial energy consumption is a significant indicator of its level of economic development and growth.[39] On the way to 2030, Kenya is therefore anticipated to utilize more energy in the commercial sector. Household energy demand will rise along with rising earnings and accelerated urbanization. The Kenya Vision 2030 Plan, as shall be hereinafter seen, envisages appropriate preparations for increased energy use, due to increase in demand for energy.

During development of the plan, Commercial energy in Kenya is seen to be dominated by petroleum and electricity as the prime movers of the modern sector of the economy, while wood fuel provides energy needs of the traditional sector including rural communities and the urban poor.[40] Renewable sources such as solar energy, are also used but not as much as the aforementioned energy giants.[41] Electricity remains the most sought after energy source by Kenya society and access to electricity is normally associated with rising or high quality of life.[42]

The plan addresses weaknesses in the energy sector that seem to shed light on the need to adopt renewable sources of energy. The plan recognizes that Kenya's global competitiveness in the energy sector is still weak, due to a myriad of reasons. Energy cost in Kenya is high per kWh. This compares poorly with countries such as Mexico, Taiwan, China, Colombia and South Africa.[43] The blue print also

[38] Ibid, p 16
[39] Ibid
[40] Ibid
[41] Ibid, p15
[42] Ibid, p17
[43] Ibid, p12

points out the demerits of overreliance of hydroelectricity as the main mode of production of power. It avers that this over-reliance may hamper production and other sectoral activities in the event of an outage. [44] Consumption in Kenya is extremely low at 121 kWh per capita (compared to 503 kWh in Vietnam or 4,595 kWh for South Africa) and national access rate at about 15%. The access rate in the rural areas is estimated at 4%.[45] All that is changing rapidly as the country invests more resources in power generation, in addition to policy and institutional reforms in the sector and bringing in new providers.[46] From the foregoing, this calls for more investment in other modes of energy production such as renewables to increase energy production.

Development projects recommended under Vision 2030 and overall economic growth, will increase demand on Kenya's energy supply. Currently, Kenya's energy costs are higher than those of her competitors. Kenya must, therefore, generate more energy through renewable sources and increase efficiency in energy consumption.[47] The GOK is committed to continued institutional reforms in the energy sector, including a strong regulatory framework and encouraging private generators of power.[48] New sources of energy will be found through exploitation of geothermal power, coal, renewable energy sources, and connecting Kenya to energy-surplus countries in the region.[49]

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[44] Ibid
[45] Ibid , p16
[46] Ibid, p17
[47] Ibid, p viii
[48] Ibid
[49] World Bank, 'OPEN ENERGY DATA ASSESSMENT NAIROBI, KENYA' (2015).

3.3 Progress to fulfilling the Kenya Vision 2030 Plan

Since the conception of the Kenya Vision 2030 Plan, the GOK as well as private investors have invested in various renewable energy projects. Among others include:

a) Lake Turkana Wind Power Project[50] (Marsabit County) - The Lake Turkana Wind Power Project is one of the largest wind farms in Africa. It has a capacity of 310 megawatts (MW) and consists of 365 wind turbines. The project started operations in 2018 and significantly contributes to Kenya's renewable energy generation.
b) Ngong Hills Wind Power Project[51] (Ngong Hills) - This Wind Power Project was one of the first utility-scale wind farms in Kenya. It has a capacity of 25.5 MW and consists of 16 wind turbines. The project has been operational since 2009.
c) Alten Keesses One[52] (Uasin Gishu County) – This is one of the largest solar projects in Kenya. It has capacity of 51.5 Mw. The electricity generated from the farm could power 245,000 homes through the national grid. Its construction started in December 2018 and is by date 3rd of the largest solar projects in Kenya.
d) Garissa Solar Power Plant[53] (Garissa County) - This is one of the largest solar power plants in East Africa. It has a capacity of 54.6 MW and comprises over 200,000 solar panels. The plant began operations in 2018 and provides clean electricity to the national grid.

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[50] Rodl and Partner, Wind Energy in Kenya, <*https://www.roedl.com/insights/renewable-energy/2021/february/wind-energy-kenya*> accessed 21 September 2023

[51] Ibid

[52] Solar Projects in Kenya: 10 Largest Solar Power Plants in MW < *https://solarfinanced.africa/solar-projects-in-kenya-10-largest-solar-power-plants/*> accessed 21 September 2023

[53] Ibid

e) Olkaria Geothermal Power Plants[54] (Great Rift Valley) - These plants tap into the geothermal resources of the area. Olkaria I, Olkaria II, Olkaria III, and Olkaria IV have capacities of 45 MW, 105 MW, 140 MW, and 140 MW, respectively. They contribute significantly to Kenya's geothermal power generation.

4.0 Legal, Institutional and Policy Framework on Renewable Energy in Kenya

4.1 Legal Framework

4.1.1 Constitution of Kenya (2010)

The essence of utility of renewable sources of energy in the COK begins at the preamble. [55] The Preamble recognizes the need to be respectful of the environment, which is our heritage, and also puts emphasis that the COK is determined to sustain it for the benefit of future generations.[56] This can be fulfilled by harnessing energy from renewable sources due to their environmental friendliness.

It is notable that the language of the COK does not expressly aver on renewable energy sources. However, it contains provisions on natural resources. Natural resources pursuant to Article 260 of the COK means the physical non-human factors and components, whether renewable or non-renewable, including energy sources. [57]

[54] Peter Omenda and others, 'Geothermal Energy in Kenya - Country Update Report for Kenya 2015-2019' (Proceedings World Geothermal Congress 2021).
[55] Constitution of Kenya 2010, Preamble
[56] Ibid
[57] Ibid, Article 260

The question of renewable energy sources is therefore interconnected with natural resources.[58]

The state is mandated by Article 69 to ensure sustainable exploitation, utilization, management and conservation of the environment and natural resources, and ensure the equitable sharing of the accruing benefits[59] and utilize the environment and natural resources for the benefit of the people of Kenya.[60]

Part 1 of the Fourth Schedule of the COK mandates the national government to protect the environment and natural resources with a view to establishing a durable and sustainable system of development, including, an energy policy.[61]

The COK also expresses the need for different state institutions to collaborate to ensure protection and sustainable utility of renewable sources of energy. Article 67 for example mandates the National Land Commission to conduct research related to land and the use of natural resources, and make recommendations to appropriate authorities.[62] The appropriate authority in the context of renewable energy sources, as is the subject herein is the Energy and Petroleum Regulatory authority as hereafter discussed.

[58] Kariuki Muigua, 'Towards Energy Justice in Kenya Kariuki Muigua' (2020) <*https://kmco.co.ke/wp-content/uploads/2020/02/Towards-Energy-Justice-in-Kenya-00000005.pdf*> accessed 21 September 2023.
[59] Constitution of Kenya 2010, Article 69.1(c)
[60] Ibid, Article 69.1(h)
[61] Ibid, Fourth Schedule
[62] Ibid, Article 67.2(d)

4.1.2 Energy Act (2019)

This is the main statute that governs the energy sector in Kenya.[63] Kenya adopted the Act No. 1 of 2019 (the Energy Act) to, among other objectives, promote the generation of renewable energy in Kenya. The act refers defines renewable energy as non-fossil energy generated from natural non-depleting resources including but not limited to solar energy, wind energy, biomass energy, biological waste energy, hydro energy, geothermal energy and ocean and tidal energy.[64] Provisions to that effect, are discussed in this subsection.

To begin with, the Cabinet Secretary in charge of the MoE is mandated by section 5 of the act to consultation with the relevant stakeholders and consequently develop, publish and review energy plans in respect of coal, renewable energy and electricity to ensure delivery of reliable energy services at least cost.[65]

Section 10 also mandates EPRA, as hereinafter discussed, to regulate, among other factors, production, conversion, distribution, supply, marketing and use of renewable energy.[66] Other bodies that the Energy Act (2019) establishes is the Rural Electrification and Renewable Energy Corporation (REREC)[67] and the Renewable

[63] See the Energy Act (2019) Long Title, An act of parliament to consolidate the laws relating to energy, to provide for National and County Government functions in relation to energy, to provide for the establishment, powers and functions of the energy sector entities; promotion of renewable energy; exploration, recovery and commercial utilization of geothermal energy; regulation of midstream and downstream petroleum and coal activities; regulation, production, supply and use of electricity and other energy forms; and for connected purposes

[64] Energy Act (2019), s2

[65] Ibid, s5

[66] Ibid, s10

[67] Ibid, s43

Energy Resource Advisory Committee[68], whose functions in relation to renewable energy are hereinafter discussed in the institutional framework.

Part Four of the act specifically avers on renewable energy. Section 73 postulates on proprietary rights of renewable energy resources. All unexploited renewable energy resources under or in any land vests in the National Government subject to any rights which, by or under any written law, have been or are granted or recognized as being vested in any other person.[69] The Cabinet Secretary in charge of energy is also mandated by the act to carry out a countrywide survey and a resource assessment of all renewable energy resources and prepare resource maps and a renewable energy resources inventory.[70] On promotion of utility of renewable energy the Cabinet Secretary in charge of the MoE is also obligated to 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.[71]

The Consolidated Energy Fund is also an important element in the development and promotion of utility of renewable energy in Kenya. Section 216 of the act avers on its importance. The Consolidated Energy Fund is to cater for, inter alia, hydro risk mitigation, promotion of renewable energy initiatives, energy efficiency and conservation and applied research, technology development and innovation allied to energy sector including technology needs assessment, deployment and scaling up.[72]

[68] Ibid, s76
[69] Ibid, s73
[70] Ibid, s74
[71] Ibid, s75
[72] Ibid, s216

The Energy Act (2019) also establishes the Renewable Energy Feed-in Tariff System (FiT), whose objective is to catalyze the generation of electricity through renewable energy sources and reducing greenhouse gas emissions by lessening reliance on nonrenewable energy resources.[73] With regards to regulation of the feed-in-tariff system, the Cabinet Secretary may upon recommendation of EPRA, make regulations necessary for the administration and implementation of the FiT system such as those on the priority of purchase by distribution licensees of electrical energy generated using renewable energy sources.[74]

Net Metering, as hereinafter discussed is also addressed in the act. This is a system that operates in parallel with the distribution system of a licensee and that measures, by means of one or more meters, the amount of electrical energy that is supplied by the distribution licensee or retailer to a consumer who owns the renewable energy generator, and by the consumer who owns the renewable energy generator to the distribution licensee or retailer.[75]

It is also important to note that although the Energy Act (2019) repealed the Energy Act (2006), some subsidiary legislation and regulations under the repealed act are still operational as savings, under the new act. An example of such regulations that govern renewable energy sources include The Energy (Solar Photovoltaic Systems) Regulations (Legal Notice 103 of 2012) that legally prescribes on Solar Photovoltaic Systems as a renewable source of energy.[76]

[73] Ibid, 91
[74] Ibid, s92
[75] Ibid, s162
[76] See the Energy (Solar Photovoltaic Systems) Regulations, 2012

4.1.3 Environmental Management and Coordination Act (1999)

This is an Act of Parliament to provide for the establishment of an appropriate legal and institutional framework for the management of the environment.[77] It is an important piece of legislation in Kenya that provides the legal framework for environmental management and conservation in the country. The act was enacted in 1999 and has since undergone amendments to strengthen its provisions and address emerging environmental issues.[78]

In its efforts to champion for environmental conservation and protection, the EMCA advocates for use of renewable energy sources.[79] This is because, as inferred from this paper, that they have less detrimental effects to the environment unlike other sources like fossil fuels. Section 49 of the EMCA affirms on Conservation of energy and planting of trees or woodlots. It mandates the National Environment Management Authority (NEMA), in consultation with the relevant lead agencies, promote the use of renewable sources of energy by promoting research in appropriate renewable sources of energy, creating incentives for the promotion of renewable sources of energy and promoting measures for the conservation of non-renewable sources of energy.[80]

[77] Environmental Management and Coordination Act (1999), Long Title

[78] Since its enactment, EMCA has been amended by Act No. 6 of 2006, Act No. 17 of 2006, Act No. 5 of 2007,Act No. 6 of 2009, Act No. 5 of 2015, Act No. 25 of 2015, Act No. 12 of 2017,8, Act No. 18 of 2018 and L.N. 31/2019.

[79] Environmental Management and Coordination Act (1999), s2. EMCA advocates for environmentally friendly activities that does not cause harm or degradation to the environment

[80]Ibid, s49

4.1.4 Climate Change Act (2016)

This is an act of parliament to provide for a regulatory framework for enhanced response to climate change; to provide for mechanism and measures to achieve low carbon climate development. [81] In championing for matters revolving around climate change, this act also avers on renewable energy sources.[82]

The Cabinet Secretary responsible for matters relating to climate change is mandated by section 13 of the act to formulate a National Climate Change Action Plan. The function of the National Climate Change Action Plan is to prescribe measures and mechanisms that, inter alia, enhance energy conservation, efficiency and use of renewable energy in industrial, commercial, transport, domestic and other uses. [83]

Most notable from this act is the introduction of incentives for promotion of climate change initiatives. Section 26 of the act mandates The Cabinet Secretary responsible for matters relating to climate change in conjunction with the National Treasury to grant to persons who encourage and put in place measures for the elimination of climate change including reduction of greenhouse emissions and use of renewable energy such incentives as may be necessary for the advancement of the elimination of and mitigation against climate change and the effects of climate change. [84] This is a milestone in promotion of utility of renewable energy sources in Kenya.

4.2 Institutional Framework

[81] Climate Change Act (2016), Long Title
[82] Ibid, s13 and s26
[83]Ibid, s13
[84] Ibid, s26

4.2.1 Energy and Petroleum Regulatory Authority (EPRA)

Section 9 of the Energy Act (2019) establishes the EPRA[85] to, among other functions: regulate production, conversion, distribution, supply, marketing and use of renewable energy; collect and maintain energy data; ensure, in collaboration with the Kenya Bureau of Standards, that only energy-efficient and cost-effective appliances and equipment are imported into the country; and co-ordinate the development and implementation of a national energy efficiency and conservation action plan.[86]

The powers of the Authority include, but are not limited to, the power to: issue and renew licences and permits for all undertakings and activities in the energy sector; manage electric power tariffs and tariff structures; investigate tariff charges; formulate, set, enforce and review environmental, health, safety and quality standards for the energy sector; approve electric power purchase and network service contracts for all persons engaging in electric power undertakings; investigate and determine complaints or disputes between parties over any matter relating to licences and licence conditions under the Energy Act; and impose such sanctions and fines as may be appropriate for violation.[87]
EPRA is responsible for regulating the energy sector in Kenya, including promoting the development and use of renewable energy sources.[88] EPRA works to create policies, regulations, and standards that encourage the use of renewable energy technologies and increase investment in the sector.[89]

[85] See Energy Act (2019), s9
[86] Ibid, s10
[87] Ibid, s11
[88] Ibid, s10
[89] Ibid

4.2.2 Rural Electrification and Renewable Energy Corporation (REREC)

Section 43 of the Energy Act (2019) establishes the Rural Electrification and Renewable Energy Corporation.[90] Some of the functions of the corporation include develop and update the renewable energy master plan taking into account county specific needs and the principle of equity in the development of renewable energy resources, undertake feasibility studies and maintain data with a view to availing the same to developers of renewable energy resources, formulate, in conjunction with the Nuclear Power and Energy Agency (NPEA), a national strategy for coordinating research in renewable energy and undertake, in conjunction with NPEA, research, development and dissemination of appropriate renewable energy technologies.[91]

With regards to funding of REREC to carry out its functions, section 53 of the Energy Act (2019) postulates on the sources such as monies from the Rural Electrification Programme Fund[92], allocation by parliament, money's allocated from the consolidated energy fund for promotion and development of renewable energy initiatives, interest from bank deposits and revenue from other sources including loans, grants, gifts or donations approved by the Cabinet Secretary. [93]

In a nutshell, the main purposes of the REREC are to spearhead development of renewable energy resources in Kenya and to accelerate the pace of rural electrification in the country.[94] The REREC

[90] Ibid, s43
[91] Ibid, s44
[92] Ibid, s143
[93] Ibid, s53
[94] Ibid, s44

is mandated under the Energy Act to undertake feasibility studies and maintain data with a view to availing the same to developers of renewable energy resources and provide an enabling framework for the efficient and sustainable production, conversion, distribution, marketing and utilization of renewable sources in Kenya. In light of their functions and mandate, the following projects by the REREC are underway:

a) ***The 50 mW Garissa Solar Power Plant.***[95] This is said to be the largest grid connected solar power plant in East and Central Africa. The project was developed with the aim of diversifying the power generation mix and reduce energy costs in Kenya.
b) ***Electrification of Public Utilities Project.***[96] This project is being implemented under the Rural Electrification Programme and the Digital Learning Programme through grid extension for public facilities within the grid network and installation of solar PV systems for facilities in off-grid areas particularly in northern Kenya. The utilities include public secondary schools, trading centres and health centres, public primary schools, polytechnics, administrative offices, churches, mosques, coffee factories and processing plants, police posts, tea buying centres and water projects.

[95] Solar Projects in Kenya: 10 Largest Solar Power Plants in MW < *https://solarfinanced.africa/solar-projects-in-kenya-10-largest-solar-power-plants/*> accessed 22 September 2023

[96] Kenya National Electrification Strategy (KNES) Key Highlights, *https://pubdocs.worldbank.org/en/413001554284496731/Kenya-National-Electrification-Strategy-KNES-Key-Highlights-2018.pdf* accessed 22 September 2023

c) ***Transformer Maximization Project.***[97] This project aims to increase electricity access and connectivity in areas with large populations that are beyond the 600-metre radius transformer limitation. Priority areas are currently being identified for implementation of the project.
d) ***The Kenya Off-Grid Solar Access Project (K-OSAP).***[98] This is aimed at increasing modern energy services in 14 out of the 47 counties in Kenya that have been defined as marginalized by the Commission on Revenue Allocation. The counties include: Garissa, Isiolo, Kilifi, Kwale, Lamu, Mandera, Marsabit, Narok, Samburu, Taita Taveta, Tana River, Turkana, Wajir and West Pokot.

4.2.3 Renewable Energy Resource Advisory Committee

Section 76 of the Energy Act (2019) establishes the Renewable Energy Resource Advisory Committee.[99]

The Committee is intended to play an advisory role to the Cabinet Secretary for the MoE and Petroleum on the criteria for allocation of renewable energy resource, licensing of renewable energy resource areas, management of water towers and catchment areas, development of multi-purpose projects such as dams and reservoirs for power generation and management and development of renewable energy resources.[100]

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[97] Rural Electrification and Renewable Energy Corporation, Kenya Off-Grid Solar Access Project (KOSAP), <*https://www.rerec.co.ke/K-OSAP.php*> accessed 22 September 2023
[98] Rural Electrification and Renewable Energy Corporation, Kenya Off-Grid Solar Access Project (KOSAP), <*https://www.rerec.co.ke/transformer-maximization.php*> accessed 22 September 2023
[99] Energy Act (2019), s76
[100] Ibid, s76 (4)

The Renewable Energy Resource Advisory Committee may upon request advise the County Governments on matters relating to renewable energy resources.[101]

4.2.4 Kenya Renewable Energy Association (KEREA)

There also exist independent institutions in the Renewable Energy sector in Kenya. The Kenya Renewable Energy Association (KEREA) is an independent non-profit association dedicated to facilitating the growth and development of renewable energy business in Kenya. [102] KEREA was formed in August 2002 by members of the Renewable Energy Resources Technical Committee of the Kenya Bureau of Standards (KEBS) and is registered under section 10 of the Societies Act.[103]

KEREA is a professional association that brings together stakeholders in the renewable energy sector in Kenya. It promotes the development and utilization of renewable energy sources, advocates for favorable policies and regulations, and provides a platform for collaboration and knowledge sharing among industry players.[104]
Amongst its key roles are promoting the interests of members of the renewable energy industry among government, public sector, the general public and any other organizations that may impact on the development of the industry; and the creation of a forum for the dissemination and exchange of information and ideas on matters

[101] Ibid, s76 (5)
[102] Jack Salter, Jordan Levey Kenya Renewable Energy Association (KEREA) : Spotlight (2022) <*https://www.africaoutlookmag.com/company-profiles/1486-kenya-renewable-energy-association-kerea*> accessed 23 September 2023
[103] Enacted in 1968, this is an Act of Parliament to make provision for the registration and control of societies.
[104] Supra, 43

relating to renewable energy development and utilization in Kenya.[105]

4.3 Policy Framework

4.3.1 The National Energy Policy.

The most vital policy governing the energy sector in Kenya is the National Energy Policy (2018) Pursuant to this policy, the GOK has committed to the provision of affordable quality energy for all Kenyans to be achieved through the provision of clean, sustainable, affordable, competitive, reliable and secure energy services at the least cost while protecting the environment. The policy also recognizes that renewable energy has potential to enhance energy security, mitigate climate change, generate income, create employment and generate foreign exchange savings.[106]

Connected to the aforementioned averment is the question on the environment vis a vis renewable energy sources. Generally, renewable energy is considered an environmentally friendly option for energy development. However, some concerns exist raising the need for mitigation measures to be incorporated in projects to ensure minimal impact and sustainability.[107]

The National Energy Policy (2018) recognizes renewable sources of energy such as geothermal energy, hydropower, biomass, biofuels, biogas, solar energy and wind energy.[108] This policy is far reaching and also addresses the challenges encountered in energy generation from each source, as well as short term, mid-term and long-term

[105] KEREA, 'Association Overview - KEREA | Kenya Renewable Energy Association' (15 December 2015) <*https://kerea.org/association-overview/*> accessed 23 September 2023.
[106] National Energy Policy (2018), s7
[107] Ibid, s6.2
[108] Ibid, Chapter 3

policies and strategies to mitigate the challenges and improve efficiency.

The need for investment in generation of energy using renewable sources is reiterated in the policy. The funding required for the energy sector is substantial. New investments are needed for exploration, utilization, generation, transmission and distribution activities.[109] Long-term financing options that involve both foreign and domestic financing resources are required. However, foreign investment capital and national foreign earnings provide the greater proportion of needed funds. The GOK shall continue to encourage private sector investment in the energy sector. Experience has shown that Independent Power Producers (IPPs) require incentives to mitigate the perceived political and economic risks.[110]

In addition to the role of the National Government in promoting utility and development of renewable energy, the policy also addresses on devolution and provision of energy services. County Governments have a role to play in preparation of county energy plans, incorporating renewable energy and electricity master plans, establishment of energy centres for promotion of renewable energy technologies, energy efficiency and conservation.[111]
These are some of the ways in which the National Energy Policy (2018) champions for the utility of renewable sources in Kenya. From the foregoing, this policy acts as a vital framework in giving a blueprint for the energy sector in Kenya. This also extends to the renewable energy sector as we garner pace towards achieving the Kenya Vision 2030 Plan.

[109] Ibid, Chapter 8
[110] Ibid
[111] Ibid, Chapter 7

4.3.2 The Feed-in-Tariff Policy

The Energy Act (2019) provides for a Feed-in-Tariff (FiT) System aimed at diversifying the generation of electricity through renewable energy sources.[112] This consequently encourages locally generated and distributed energy thereby reducing demand on the network and the technical losses associated with transmission and distribution of electricity over long distances Other benefits of the FiT Policy include encouraging uptake of, and stimulating innovation in, renewable energy technology; and reducing greenhouse gas emissions by lessening reliance on non-renewable energy resources.[113]

The Energy Act (2019) mandates the Cabinet Secretary to make regulations necessary for the administration and implementation of the FiT system as earlier discussed.[114] Currently, there exists a FiT Policy (2021)[115] which set out the procedures for applying for and implementing the FiT system. The objectives of the FiT Policy are to facilitate resource mobilization by providing investment security and market stability for investors in electricity generation from renewable energy sources; reduce transaction and administrative costs and delays associated with the conventional procurement processes; Encourage private investors to operate their power plants prudently and efficiently and encourage local investors to participate in power generation.[116]

The first FiT Policy (2008) set out the applicable tariffs for wind, small hydro and biomass sources, for plants with capacities not exceeding 50 MW, 10 MW and 40 MW respectively. The current FiT Policy

[112] Energy Act (2019), s2
[113] Ibid, s91
[114] Supra 38
[115] Ministry of Energy Feed-in-Tariffs policy for Biomass, Small Hydros, and Biogas 3rd revision, January 2021
[116] Ibid, s7

applies to renewable energy power plants not exceeding 20MW in Biomass, Biogas and Small Hydro technologies.[117] Previously, the 2012 FiT Policy prescribed FiT thresholds for wind, solar, small hydro, biomass, biogas and geothermal energy plants for small projects (of up to 10MW) and medium projects (of up to 70MW) as applicable. The 2021 FiT Policy has now been limited to small-scale biomass, biogas and small hydro projects (of up to 20 MW).[118] All solar and wind power projects, as well as other renewable energy projects larger than 20MW will be procured under the Auctions Policy rather than the FiT Policy. The exception to the above is geothermal projects that will be procured under the Policy on Licensing of Geothermal Greenfields.[119]

The policy also specifies the contents of a Standardized Power Purchase Agreement (which applies to all technologies) for both up to and above 10 MW plants connected to the grid. The FiT applicable at the time when a Power Purchase Agreement (PPA) is signed is the fixed value which will apply over the 20-year life of the PPA. Renewable energy projects which are larger than 10 MW of installed capacity may be considered. However, they must pass load flow and system stability tests.[120]

The Feed-in-Tariffs policy is subject to review every three years from the date of publication. However, a policy review may be undertaken

[117] Ibid, s18

[118] Beatrice Nyabira, Judy Muigai and Christine Murangi, The FiT Policy, 2021 and the Renewable Energy Auctions Policy, 2021 *https://www.dlapiperafrica.com/en/kenya/insights/2021/The-FiT-Policy-2021-and-The-Renewable-Energy-Auctions-Policy-2021-Key-Highlights.html* accessed 24 September 2023

[119] Ibid

[120] Ministry of Education Feed-in-Tariffs policy for Biomass, Small Hydros, and Biogas 3rd revision, January 2021

earlier than three years in exceptional cases. Any changes made during such reviews shall only apply to renewable energy power plants developed after the revised policy is published.[121]

4.3.3 *Renewable Energy Auctions Policy*

The Renewable Energy Auctions Policy, 2021 is issued pursuant to the Act which provides that EPRA may run a competitive process before awarding a generation licence under the Act.[122]

The primary objective of the Auctions Policy is to procure renewable energy capacity at competitive prices aligned to the Least Cost Power Development Plan (LCPDP) and the Integrated National Energy Plan (INEP).[123] The Auctions Policy applies to all solar and wind power projects, as well as other renewable energy projects larger than 20MW. Auctions will be announced by MoE, upon advice by the LCPDP/INEP Committee on the appropriate timing and targeted capacity.[124]

The MoE through the Renewable Energy Auctions Committee, will be responsible for the implementation of the Auctions Policy.[125] According to the 2021 FiT Policy, the MoE will outline requirements for site selection to participate in the auctions. It is unclear as to whether the auctions will be site specific based on the requirements given by the MoE or whether bidders will be free to bid based on their preferred locations. We however note that as part of the prequalification process, interested bidders will be required to demonstrate land rights/access for the project and interconnection infrastructure.[126]

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[121] Ibid, s48
[122] Energy Act (2019), s119
[123] Ministry of Energy, Renewable Energy Auctions Policy (2021)
[124] Ibid
[125] Ibid, s4
[126] Ibid, s12

4.3.4 Net Metering Policy

The Net Metering Policy allows consumers to install small-scale renewable energy systems, such as rooftop solar panels, and offset their electricity consumption against the electricity generated. Excess electricity can be fed back into the grid, and consumers receive credit for it. This is also provided for by section 162 of the Energy Act (2019).[127]

The Energy Act allows grid-connected consumers who own an electric power generator of a capacity not exceeding one megawatt to supply the excess power to a distribution licensee or retailer, if that consumer has a generation facility that is located in the area of supply of the distribution licensee or retailer such as KPLC.[128] Under the Energy Act, every distribution licensee/retailer is mandated, upon receipt of an application, to make available the net metering service to any electricity consumer that the licensee serves.[129]

According to a report titled Grid Connection of Solar PV: Technical and Economical Assessment of Net-Metering in Kenya, compiled by GIZ on behalf of the German Federal Ministry of Economics and Technology in 2014, Kenya's solar potential is not sufficiently tapped, hence the need for developments such as net metering within the energy sector.[130] This new development would pave the way for developers to exploit the opportunity and presents a cheaper energy solution for consumers.

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[127] Energy Act (2019), s162

[128] Ibid

[129] Ibid

[130] 'Grid Connection of Solar PV: Technical and Economical Assessment of Net-Metering in Kenya', GIZ on behalf of the German Federal Ministry of Economics and Technology (2014)

In the oversight and regulation of the Net-Metering Policy, EPRA has drafted the Energy (Net-metering) Regulations, 2022 to that effect.

5.0 Way Forward Towards Realizing the Kenya Vision 2030 Plan

As discussed in Chapter 3, the GOK will promote development of renewable energy as an alternative source of energy. This includes generation of energy from solar, wind, biogas ("Biogas for Better Life") and development of bio-energy including bio-ethanol and diesel value chains. The use of improved cooking stoves and charcoal kilns, and re-afforestation of water towers will be promoted. National Renewable Energy Master Plan and updated renewable energy database will be developed.[131]

Kenya has set ambitious goals to increase its use of renewable energy sources as part of its Vision 2030 development plan.[132] However, there are several challenges that the country faces in achieving these goals.

One major challenge is the high cost of renewable energy technologies compared to traditional fossil fuels.[133] This makes it difficult for many Kenyans, especially those living in poverty, to access renewable energy sources. Production of hydroelectricity in Kenya can be looked at as an example. Kenya has an estimated

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[131] Kenya Vision 2030, Development of New and Renewable Sources of Energy, *https://vision2030.go.ke/project/development-of-new-and-renewable-sources-of-energy/* accessed 25 September 2023

[132] Leandro Berg, 'Powering Kenya's Progress: Support to GoK on the Energy Sector White Paper' (*Dalberg*September 2023) <*https://dalberg.com/our-ideas/powering-kenyas-progress-support-to-gok-on-the-energy-sector-white-paper/*> accessed 25 September 2023.

[133] AfricaNews, 'Kenya Championing Greater Use of Renewable Energy in Africa' (*Africanews*2023) <*https://www.africanews.com/2023/09/05/kenya-championing-greater-use-of-renewable-energy-in-africa//#:~:text=However%2C%20solar%20technology%20that%20is*> accessed 25 September 2023.

hydropower potential of up to 6,000 MW comprising large hydro (sites with capacity of more than 10MW)[134] and also a potential of small hydro, but several of the potential some sites are expensive to develop and/or development of hydro power at the sites have considerable environmental issues. [135] Additionally, the lack of adequate financing and investment in renewable energy projects has slowed down the country's progress towards achieving its renewable energy goals. To this assertion is the utilization of Nuclear Power in Kenya. Nuclear power has been suggested for Kenya and is included in this comparison with a large plant, 1000 MW or larger. As such, it is costly to establish and develop nuclear plants in Kenya.[136]

Another challenge is the lack of infrastructure to support renewable energy development. For example, there is a need for more transmission lines and grid upgrades to accommodate the increasing amount of renewable energy being generated.[137] The East African

[134] National Energy Policy October 2018.pdf *https://kplc.co.ke/img/full/BL4PdOqKtxFT_National%20Energy%20Policy%20October%20%202018.pd*f accessed 25 September 2023

[135] East African Civil Society for Sustainable Energy and Climate Action, Plan for 100% Renewable Energy Scenario in Kenya by 2050 (2020), 2.1.6

[136] Kenya Least Cost Power Development Plan 2011-2031 identifies nuclear together with coal power as the more expensive than other power options, being wind power, geothermal power and a large hydropower project. Assuming the large increase in demand for power, the plan includes, however, nuclear power at a later stage when the cheaper options have been exhausted. Sine this study was made in particular solar power and also wind power have reduced in price, making other alternatives, as nuclear power less competitive. See plan at *https://www.renewableenergy.go.ke/downloads/studies/LCPDP-2011-2030-Study.pdf* accessed 26 September 2023

[137] Srishti Slaria, Molly Robertson and Karen Palmer, 'Expanding the Possibilities: When and Where Can Grid-Enhancing Technologies, Distributed Energy Resources, and Microgrids Support the Grid of the Future?' (*Resources for the Future*21 September 2023) <*https://www.rff.org/publications/reports/expanding-the-possibilities-when-and-where-can-grid-enhancing-technologies-distributed-energy-resources-and-*

CSOs for Sustainable Energy and Climate Action (EASE-CA) Project Report points out this as one of the challenges facing the energy sector in Kenya. [138] Much of the distribution network does not have adequate capacity to effectively manage the present demand; the distribution network suffers from poor reliability and quality of supply, which is generally due to underinvestment.[139] The country also needs to invest in energy storage technologies to ensure a reliable and consistent supply of renewable energy.[140]

Despite these challenges, Kenya has made significant progress in increasing its use of renewable energy sources in recent years. Notably, the GOK has implemented policies and strategies such as the introduction of incentives and the feed-in tariff system to encourage investment in renewable energy and to promote the development of small-scale renewable energy projects.[141]

Kenya can fulfill its vision 2030 on renewable energy by implementing policies and strategies that promote the use of renewable energy sources such as wind, solar, geothermal, and hydropower. One of such policies and strategies is streamlining

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microgrids-support-the-grid-of-the-future/#:~:text=New%20lines%20can%20increase%20reliability> accessed 21 September 2023.

[138] East African CSOs for Sustainable Energy and Climate Action (EASE-CA) Project Report, p91

[139] Ibid

[140] Demetrios Papathanasiou, 'Why Energy Storage Matters for the Global Energy Transition' (blogs.worldbank.org30 June 2023) <*https://blogs.worldbank.org/energy/why-energy-storage-matters-global-energy-transition*> accessed 25 September 2023.

[141] S Wagura Ndiritu and Monica Katungi Engola, 'The Effectiveness of Feed-In-Tariff Policy in Promoting Power Generation from Renewable Energy in Kenya' (2020) 161 Renewable Energy.

approval processes.[142] This creates a favorable investment climate and encourages private sector participation. Secondly is developing Investment cost Frameworks to guide private sector investment in renewable energy sources especially for high capital intensive like mini-grids and grid extension for rural electrification.[143] There is also need to review the existing policies and provisions to protect the private sectors in energy sector from exploitation in energy research, innovations, production and benefits by the government as a way to facilitate sustainable partnerships.[144]

Increased investment should also be key in fulfilling the Kenya Vision 2030 in general and on renewable energy as is the subject herein. Both domestic and international investments should be mobilized in renewable energy projects.[145] Investing in modern energy solutions with energy efficiency and cleaner, renewable energy should be priorities. This can be achieved through partnerships with development finance institutions, public-private partnerships, and targeted incentives for renewable energy investments. [146]

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[142] Deborah Murphy and Melissa Harris, 'Policy and Regulatory Barriers in Kenya's National Climate Change Action Plan: Areas for Private Sector Action a Report Delivered under the "Kenya --Communicating Climate Compatible Development with the Private Sector" Project' (2014).

[143] Policy Advisory Services and Capacity Building Directorate (PACB) of International Renewable Energy Agency (IRENA), 'Financial Mechanisms and Investment Frameworks for Renewables in Developing Countries' (2012).

[144] United Nations Development Programme (2020). Engaging private sector in NDC implementation - Assessment of private sector investment potential in the energy sector, Executive Summary - Kenya, UNDP, New York

[145] UNCTAD, 'World Investment Report 2023, Investing in Sustainable Energy for All' (2023) <*https://unctad.org/system/files/official-document/wir2023_ch04_en.pdf*> accessed 25 September 2023.

[146] Ibid

Diversification of Renewable Sources should also be prioritized enroute to fulfilling the Kenya Vision 2030 plan.[147] The MoE should diversify the energy mix into different renewables to reduce over-reliance on finite resources like hydro-generation and petroleum sources of energy without creating new dependencies on energy imports.[148] While Kenya has made significant progress in geothermal, wind, and solar energy, there is a need to diversify the renewable energy mix. Exploration of other potential sources such as biomass, small hydropower, and tidal energy to maximize the country's renewable energy potential is very crucial.[149]

Raising public awareness of more efficient energy use, including energy efficiency measures, local use of renewable energy, and new technology developments would also advance progress towards utility of renewable sources in Kenya.[150] There is a need to raise awareness of the potentials and benefits of renewable energy, including biogas and solar energy for electricity and heat.[151] Local communities must be included in decisions on siting of renewable energy installations (solar, wind, geothermal, hydro), and have benefits that at least compensate for the change in land-use that

[147] National Energy Policy (2018),

[148] Ibid

[149] Avtar and others, 'Exploring Renewable Energy Resources Using Remote Sensing and GIS—A Review' (2019) 8 Resources 149 http://dx.doi.org/10.3390/resources8030149 accessed 25 September 2023

[150] Ministry of Energy, Kenya National Energy Efficiency and Conservation Strategy (2020)

[151] See for example Part VIII of the Energy Act 2019, section 193-196, proposes specific roles of county governments in promoting energy efficiency and conservation measures which includes awareness creation on renewable energy.

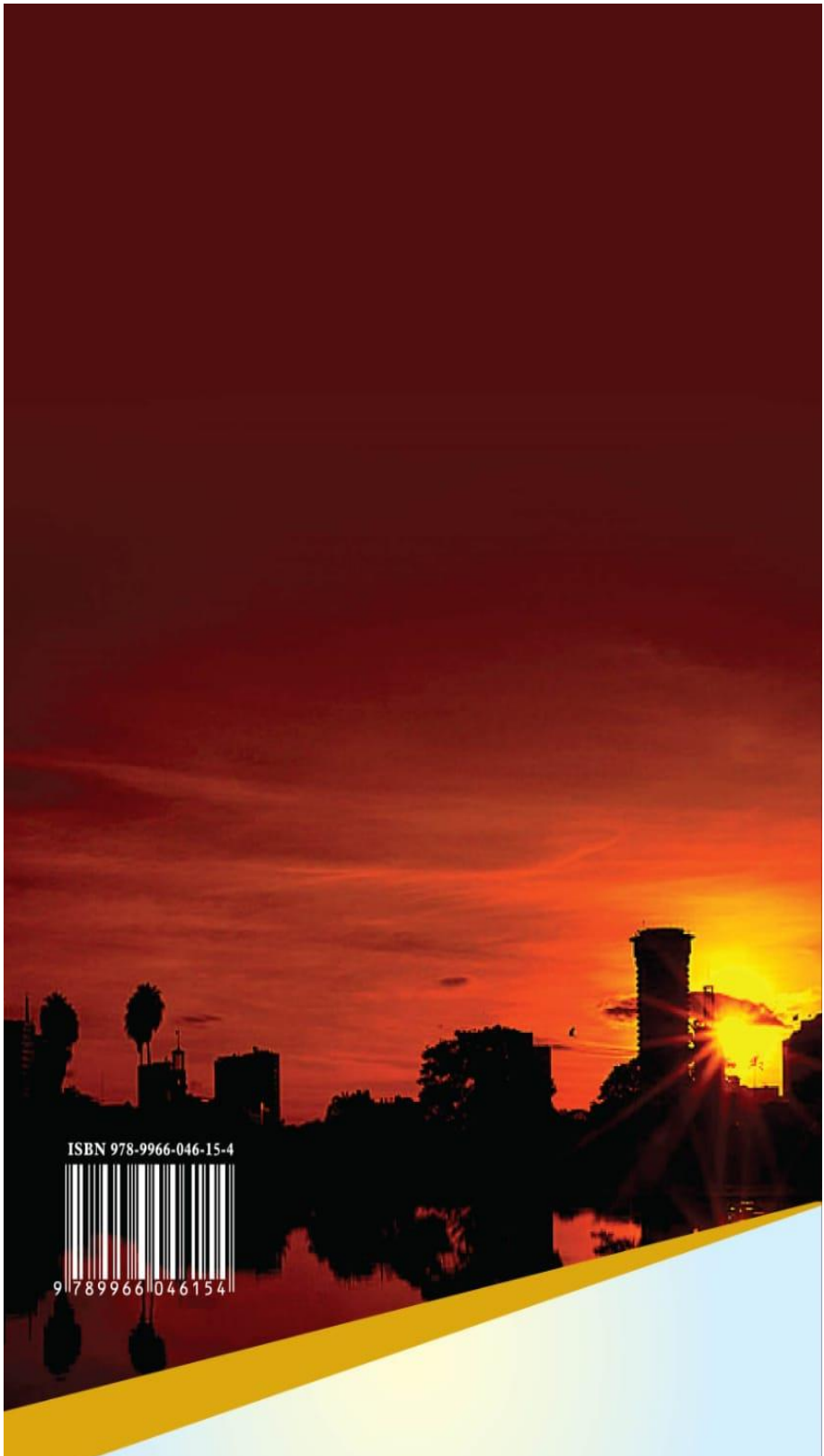
affects them.[152] The benefits should be long lasting and can include job opportunities, affordable power supply, and infrastructure as better water supply. Renewable energy installations shall create local development.[153]

6.0 Conclusion

From the foregoing, an inference can be made that Kenya is making considerable steps in harnessing energy from renewable sources. This is in line with international treaty engagements, domestic legal obligations as well as development plans and goals such as the Kenya Vision 2030 plan. Despite certain setbacks, many projects to tap energy from renewable sources are still undergoing while some are projected to start. With Kenya being endowed with natural resources, there is need to tap more energy from renewable energy sources to meet the constantly increasing demand in Kenya.

[152] Abdullahi Gira Ali, 'EFFECT of COMMUNITY INVOLVEMENT on EFFECTIVE IMPLEMENTATION of WIND POWER PROJECTS in KENYA' (2023) 5 African Journal of Emerging Issues 99.

[153] Marula Tsagkari, Jordi Roca and Phedeas Stephanides, 'Sustainability of Local Renewable Energy Projects: A Comprehensive Framework and an Empirical Analysis on Two Islands' (2022) 30.



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