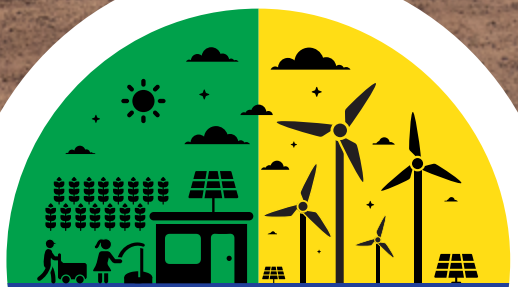
Insights and Questions for Localisation and Decent Employment

KENYA RENEWABLE ENERGY POLICY SCAN



Just Energy Transition:
Localisations, Decent Work, SMMEs, and Sustainable Livelihoods

INSTITUTE FOR ECONOMIC JUSTICE

COSATU

ACEP Africa Centre for Energy Policy

ACTS

IDRC · CRDI
International Development Research Centre
Centre de recherches pour le développement international

Authors:

Gillian Faith Achieng, Joel Onyango,

Eric Magale, Erica Atieno.

TABLE OF CONTENTS

Table of Figures 4

List of Tables 4

List of Abbreviations 5

1. Introduction 7

1.1 Context 8

1.2 Scope 9

1.3 Methodology 9

2. Kenya's energy sector in context 10

2.1 Structure 11

2.2 Energy consumption and demand 11

2.3 Current energy mix 12

2.4 Overview of renewable energy resources in the country 12

2.5 Technological innovations in Kenya's renewable energy sector 13

3. Background of policy regime on renewable energy development 16

3.1 Driving private investment: the impact of renewable energy policies in Kenya 17

4. Policy Landscapes in Support of RE 19

4.1 Localisation 20

4.2 Gender and social inclusivity x 22

4.3 Decent work 23

5. References 25

TABLE OF FIGURES

Figure 1: Overview of sources of energy feeding into national grid 16

LIST OF TABLES

Table 1: Kenya's Poverty rate 2005 to 2020 16

Table 2: Installed RE capacity 17

LIST OF ABBREVIATIONS

BCC	Behaviour change and communication
AFD	Agence Française de Développement (French Development Agency)
BKBK	Buy Kenya, Build Kenya
COTU	Central Organisation of Trade Unions
EAP&L	East African Power and Lighting Company
EPRA	Energy and Petroleum Regulatory Authority
ERB	Electricity Regulatory Board
FiT	Feed-in Tariff
GEEP	Green Entrepreneurship and Empowerment Program
GPN	Global Production Network
ILO	International Labour Organisation
IPP	Independent Power Producer
IRENA	International Renewable Energy Agency
KEEP	Kenya Electricity Expansion Project
KEMP	Kenya Electricity Modernisation Project
KenGen	Kenya Electricity Generating Company
KETRACO	Kenya Electricity Transmission Company
KEREA	Kenya Renewable Energy Association
KITP	Kenya Industrial Transformation Programme
KPC	Kenya Power Company
KPLC	Kenya Power and Lighting Company
LCPDP	Least Cost Power Development Plan
ME	Medium Enterprise
MSE	Micro and Small Enterprises
MSEA	Micro and Small Enterprises Authority
NDC	National Determined Contribution
NDF	Nordic Development Fund
NIPF	National Industrial Policy Framework
PA	Paris Agreement
PV	Photovoltaic
R&D	Research and development
RE	Renewable Energy
REA	Rural Electrification Authority
RERAC	Renewable Energy Resources Advisory Committee
REREC	Rural Electrification and Renewable Energy Corporation
SDG	Sustainable Development Goal

SEZ	Special Economic Zone
SME	Small and medium enterprise
SREP	Scaling up Renewable Energy Programme
SWT	Small Wind Turbine

SECTION ONE: **INTRODUCTION**

SECTION ONE: INTRODUCTION

1.1 CONTEXT

Climate change poses significant challenges, prompting the global community to accelerate its response to environmental threats resulting from it. Building on the momentum inspired by the ratification of the Paris Agreement (PA) and the Sustainable Development Goals (SDGs), countries around the world are committing to combat climate change through formulation of National Determined Contributions (NDCs) and domestication of national policies to align with global goals.

Kenya, for example, submitted a revised NDC, with enhanced ambitions of reducing greenhouse gas emissions by 32% by 2030, relative to a business-as-usual scenario (Kenya, 2007).

As countries commit to transition to a low-carbon, climate-resilient pathway, the concept of just transition becomes increasingly important. This concept was acknowledged in the international climate policy landscape when it was included in the preamble to the 2015 Paris Agreement, which emphasises "the imperatives of a just transition of the workforce and the creation of decent work and quality jobs in line with nationally defined development priorities (UNFCCC, United Nations Framework Convention on Climate Change, 2015). "Further commitments to a just transition were outlined in the 2018 Silesia Declaration in Poland and the Climate Action for Jobs Initiative (UNFCCC, Conference of the parties, 2018). Additionally, in 2015, the International Labour Organisation (ILO) developed the Guidelines for a Just Transition towards Environmentally Sustainable Economies and Societies for All.

Across Africa, countries like Kenya face a triple challenge to benefit from the transition: ensuring local participation, developing industrial capabilities, and moving up the global production network (GPN) ladder, while also promoting decent work, gender equality, sustainable livelihoods, and the development of the capabilities of medium enterprises. This is important given existing challenges of high poverty rates and income inequality across the continent. While Kenya has historically translated economic growth into poverty reduction, the Covid-19 pandemic temporarily reversed some of these gains, disproportionately affecting urban areas. Nationally, the poverty rate increased by 9.3 percentage points from 33.6% to 42.9% between

2019 and 2020, with urban poverty rising by 15.7 percentage points to 41.7% (See Table 1).

Table 1: Kenya's Poverty rate 2005 to 2020

Year	Rate of National Poverty
2005	46.7%
2015	36.1%
2019	33.6%
2020	42.9 %

Source: Kenya Poverty and Equity Assessment 2023 - From Poverty to Prosperity: Making Growth More Inclusive. World Bank.

Without deliberate intervention, the transition to sustainable energy systems risks exacerbating this triple challenge, perpetuating pre-existing injustices such as energy poverty, disenfranchisement of vulnerable communities, and environmental degradation (Doumon, 2024). This triple threat highlights the interconnected goals of sustainability and social progress. To address these challenges, the Just Energy transition project focuses on localisation and structural transformation, particularly the current lack of local manufacturing capacity for renewable energy components such as solar panels, wind turbines, and battery storage. This limits job creation, economic diversification, and Kenya's ability to fully harness its renewable energy potential. Additionally, there are concerns about decent work, gender inclusivity, sustainable livelihoods, and the

development of medium enterprises. These include the underrepresentation of women in technical roles, the prevalence of low-wage and informal jobs in the renewable energy sector, and the barriers that medium enterprises face. These include limited access to financing, technical expertise, and market opportunities. Together, these hinder equitable participation in the clean energy transition.

Kenya has made significant progress in renewable energy. Over 90% of its electricity generation comes from renewable sources, primarily geothermal, hydro, wind, and solar, with fossil fuels contributing only 10%. The country currently has a renewable energy capacity exceeding 2,800 MW, with geothermal contributing around 860 MW, hydro 837 MW, wind 436 MW, and solar 210 MW. However, the demand for electricity is projected to increase to over 10,000 MW by 2040, a target requiring substantial investments in solar and wind energy expansion.

Kenya has set the ambitious target of achieving 100% renewable energy (RE) generation by 2030, and aims not only to combat climate change, but also to enhance energy access and reduce poverty. However, there is limited information on how these policies support the participation of local players, to ensure that the capability of Medium Enterprises (MEs) develops, that local firms climb up the production ladder into high value-add, and that they ensure decent work, gender equality, and sustainable livelihoods.

1.2. SCOPE

This policy scan focuses on an examination of how Kenyan policies address these key challenges of the just transition: localisation and structural transformation, decent work, gender equity/equality, sustainable livelihoods, and the capability of Medium Enterprises (MEs). By prioritising these areas, Kenya can ensure an energy transition that is inclusive, equitable, and beneficial for all segments of society's development, whilst at the same time being environmentally, economically, and socially sustainable.

1.3. METHODOLOGY

This review of Kenya's policy landscape derives from a systematic literature review, examining existing policy frameworks and a wide array of reports, as well as published academic literature. The review focused on policies on energy, support for the energy sector, labour, gender, climate change, and industry. The overarching question guiding the review was: How do existing policies address the key challenges of: localisation and structural transformation, decent work, gender equity/equality, sustainable livelihoods, and ME capability development?

Specific questions that the review aimed at answering are:

- How do existing policies in Kenya address the issue of RE industrial capabilities?
- How do existing policies deal with the key challenges?
- How do the policies identified above hinder/support/align with the key challenges?

We defined parameters based on local context, allowing for relevant context analysis. By synthesising information from diverse sources, the study identifies gaps and areas for potential improvement within Kenya's regulatory framework to support a just energy transition, while focusing on the key challenges.

The report presents the findings of a mapping and evaluation of Kenyan energy policies and regulations, including the identified gaps, based on the key parameters of the project.

SECTION TWO: KENYA'S ENERGY SECTOR IN CONTEXT

SECTION TWO: KENYA'S ENERGY SECTOR IN CONTEXT

2.1 STRUCTURE

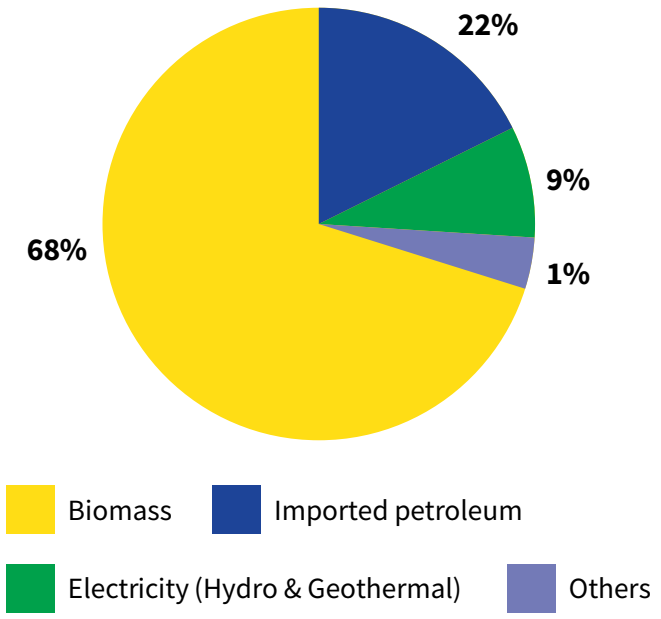
The evolution of Kenya's energy sector began in 1922 with the merger of two power supply companies to form the East African Power and Lighting Company (EAP&L).

Subsequently, in 1954, the Kenya Power Company (KPC) was established as a subsidiary of EAP&L, primarily tasked with constructing transmission lines to import power from Uganda. In 1983, EAP&L transformed into Kenya Power and Lighting Company Limited (KPLC), later rebranded as Kenya Power in 2013. Government-led power sector reforms, initiated in 1996 aimed to unbundle and restructure the sector, facilitating private investor participation. The Electric Power Act of 1997 led to the creation of the Electricity Regulatory Board (ERB) and the unbundling of KPLC into Kenya Electricity Generating Company Limited (KenGen) and KPLC. Subsequent reforms included the adoption of Sessional Paper No. 4 on Energy in 2004, the Energy Act of 2006, and the recent Energy Act 2019, which established new regulatory bodies such as the Energy and Petroleum Regulatory Authority (EPRA), and restructured existing entities to drive modernisation and development in the energy sector (Petrik, Maina, Muriuki, & Munyoki, 2020).

2.2 ENERGY CONSUMPTION AND DEMAND

The demand for, and consumption of, electricity in Kenya have been steadily increasing due to several key driving factors. Firstly, demographic patterns have had a significant impact. Kenya's population has doubled over the past 20 years, with a projected further increase to 57.8 million by 2030 (Kenya National Treasury & Economic Planning, 2023). This has led to a higher demand for services, including energy. Secondly, urbanisation plays a crucial role, with urban centres experiencing rapid growth, resulting in increased demand for electricity, particularly in the commercial and industrial sectors. Thirdly, GDP growth directly influences household income and industrial activity, leading to higher electricity consumption. Finally, flagship projects of Vision 20301 contribute to GDP growth and demand for electricity, especially in sectors like manufacturing, food security, and housing[1].

Kenya relies heavily on biomass, electricity, and imported petroleum to provide energy. They account for 68%, 9%, and 22% of national energy consumption, respectively. Biomass, including wood fuel, charcoal, and agricultural waste, serves as the main source of cooking and heating energy for rural communities, urban poor, and the informal sector. Approximately 55% of the biomass used for primary energy consumption originates from farmlands; it consists of woody biomass, crop residue, and animal waste. The remaining 45% is sourced from forests.



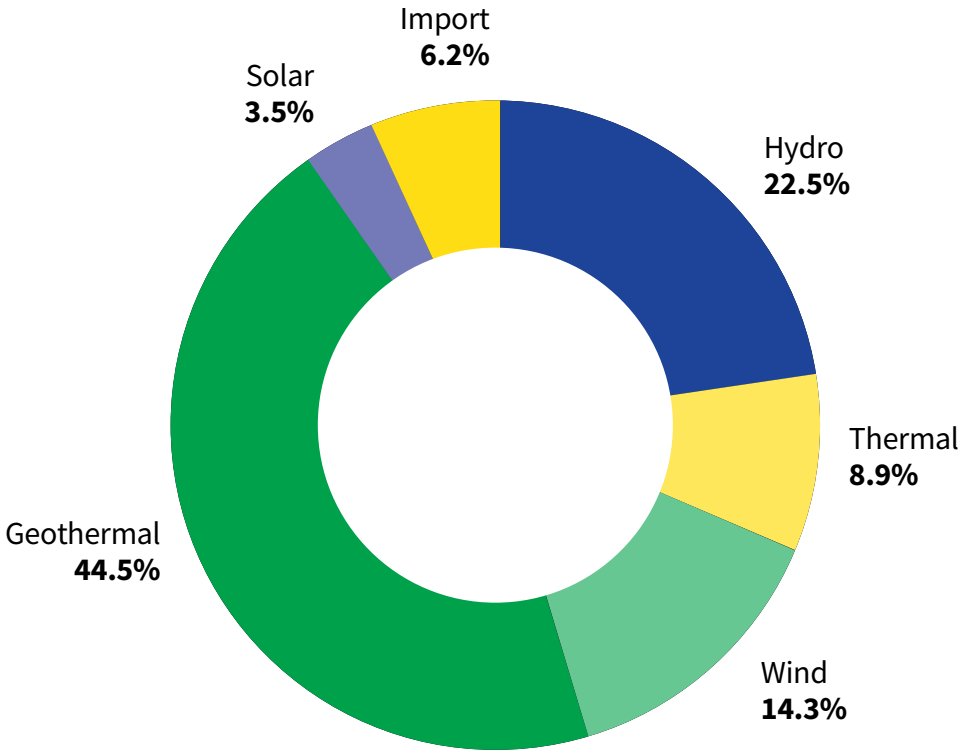
The Kenyan government, in its Least Cost Power Development Plan (LCPDP) for the period 2011-2031, identified geothermal as the most economical technology to meet the country's growing energy demand. The goal is to achieve a cumulative geothermal capacity of 5.5 GW, equivalent to 26% of the anticipated peak demand, by 2031. Wind and hydro power plants are projected to provide 9% and 5% of the total capacity, respectively, by 2030 (Bowmans, 2021).

[1] Vision 2030 is a comprehensive development blueprint aiming to transform the country to a middle-income economy by 2030 https://vision2030.go.ke/

2.3 CURRENT ENERGY MIX

The energy landscape in the country is a blend of renewables and non-renewables, creating a dynamic mix. Hydropower, geothermal, solar, and wind energy form the backbone of this diverse portfolio, actively contributing to power generation and promising immense potential for future growth. According to the Energy and Petroleum Statistics report of 2023, 84.65% of the energy feeding into Kenya's national grid was from renewable sources, showcasing a noteworthy commitment to environmentally friendly energy solutions (See Figure 2 below). This not only underscores the nation's dedication to reducing its carbon footprint but also positions it on the forefront of a global shift towards cleaner and more sustainable energy practices.

Figure 1: Overview of sources of energy feeding into national grid



Source: Energy and Petroleum statistics report, 2023

2.4 OVERVIEW OF RENEWABLE ENERGY RESOURCES IN THE COUNTRY

Kenya possesses abundant renewable energy resources, encompassing geothermal, hydro, wind, and solar. Recognising the significance of these resources in fostering sustainable development, the Kenyan government has placed a strong emphasis on their development. This is evident from the implementation of various policies, notably the Least Cost Power Development Plan (LCPDP) and the Feed-in Tariff (FiT) policy among others, as discussed in Section 3.

The LCPDP serves as a strategic framework, guiding the prioritisation and development of RE projects. The plan prioritises investment in RE projects that offer the most significant benefits at the lowest cost, and promotes innovation and Kenya's goal of achieving universal electricity access, while minimising the environmental impact of energy production.

Kenya has a significant solar energy potential, receiving an average 4–6 kWh/m^2/day of solar radiation, making it ideal for solar power generation. As of December 2023, Kenya's solar installed capacity was 410.4MW, comprising 210.3MW of grid-interconnected capacity, 3.9MW of off-grid capacity, and 196.2MW of captive capacity (Bowmans, 2024) (EPRA, n.d.). Key components of solar energy systems in Kenya include photovoltaic (PV) modules, inverters, charge controllers, and battery storage units, which are crucial for both large-scale solar farms and small-scale solar home systems.

The government has implemented policies, such as the FiT Policy, and tax incentives to encourage investment in solar PV projects, leading to the growth of solar mini-grids and commercial solar installations[2]. However, local manufacturing of solar components remains limited, with Kenya relying heavily on imports for PV panels, inverters, and lithium-ion batteries, creating challenges for affordability and supply chain resilience. The expansion of solar energy in Kenya is expected to play a key role in achieving universal electricity access by 2030, while also supporting productive uses of energy in sectors such as agriculture and small-scale industries (Rotich, Chepkerui, & Musyimi, 2024).

Additionally, Kenya's wind energy sector has seen rapid growth, with an installed capacity of 436 MW, primarily driven by the Lake Turkana Wind Power (LTWP) project, which contributes 310 MW to the national grid. The country's wind energy potential is highest in regions such as Marsabit, Samburu, Turkana, and the Rift Valley, where wind speeds range between 6–10 m/s at 50m hub height, making them ideal for utility-scale wind farms.

Wind energy systems in Kenya consist of key components such as wind turbines, rotor blades, generators, towers, and power converters, with most of these technologies being imported due to a lack of local manufacturing capacity. While large-scale projects have gained traction, small and medium-scale wind installations remain underdeveloped, partly due to high initial costs, grid integration challenges, and policy uncertainties. The government has identified wind power as a critical component of its LCPDP and aims to increase capacity through additional projects. Table 2 below shows recent statistics from the Energy and Petroleum Kenya highlighting the capacity of installed renewable energy in Kenya.

Table 2: Installed renewable energy capacity (MW) in Kenya

Technology	Grid-Connected (MW)	Off-Grid (MW)	Captive (MW)	Effective (MW)	Total RE Capacity (MW)
Wind	436.1	0	0	425.5	**436.1**
Solar	212.6	3.9	196.0	212.2	**367.5**

Source: Energy and Petroleum Statistics report, 2023

2.5 TECHNOLOGICAL INNOVATIONS IN KENYA'S RENEWABLE ENERGY SECTOR

With rapid advancements in technology, Kenya's solar energy sector is poised for notable breakthroughs. Solar innovations are transforming the landscape, making solar panels more efficient and cost-effective. Recent developments in PV technology are increasing energy conversion rates, allowing the harvesting of more power from the same amount of sunlight. These high-efficiency PV cells can potentially raise the standard efficiency from about 15-20% to over 25%.

Energy storage is another vital area witnessing rapid progress. Advanced battery technologies, such as lithium-ion and emerging solid-state batteries, are now offering longer storage durations and faster charge-discharge cycles due to improvements in energy density, lifespan, safety, and cost reductions. This allows the storage of excess solar energy during the day for use at night or during cloudy periods, markedly enhancing grid stability and reliability. While these innovations are fueling greater adoption worldwide, Kenya is increasingly deploying lithium-ion batteries, especially in off-grid solar systems and mini-grids, though solid-state batteries remain largely at the research and development stage globally and are not yet common in Kenya. Moreover, smart grid technologies are playing a key role. With real-time monitoring and automated energy distribution, these systems optimise the use of solar power, reducing wastage and improving energy efficiency. The integration of AI and the Internet of Things (IoT) into solar grids offers predictive maintenance and operational analytics, ensuring that solar systems

[2] A mini-grid is a set of small-scale electricity generators interconnected to a distribution network that supplies electricity to a small, localized group of customers. It usually operates independently from the national transmission grid

run at peak performance. These technological advancements collectively promise to make Kenya's solar energy sector more sustainable and resilient.

Decentralised renewable energy, particularly solar PV systems, has opened substantial economic opportunities for women and youth in Kenya's rural energy sector. Since its inception in 2015, the women-led cooperative, Women in Sustainable Energy & Entrepreneurship (WISEe), has provided level-1 to level-3 solar technician training, including hands-on installations and entrepreneurship mentoring, benefiting 99 women in Kenya so far (Training, n.d.). As of March 2025, through their partnership with Remote Energy, WISEe's Solar Career Pathways programme saw seven additional women obtain EPRA PV licenses, helping raise Kenya's total female-licensed PV installers to 37 (Remote Energy, 2025). Between 2015 and 2023, WISEe conducted 29 trainings, reaching over 880 trainees and impacting 16,000 beneficiaries via system installations in schools, hospitals, and homes. Graduates now play critical roles in system distribution, installation, and maintenance, installing solar home systems, pumps, refrigerators, and EV chargers across remote communities (PES, 2024). Additionally, youth engagement is growing through programmes like GEEP (Green Entrepreneurship and Empowerment Program), which nurtures young solar entrepreneurs to establish rural businesses selling and servicing solar devices.

Source: https://www.remoteenergy.org/blog/solar-career-pathways

Data from the International Renewable Energy Agency (IRENA) indicates that renewable energy projects can create up to five times more jobs per megawatt than fossil fuel projects. This presents a significant opportunity for Kenya to reduce unemployment rates. According to the Kenya Renewable Energy Association (KEREA), solar energy projects could generate over 50,000 jobs by 2030. Currently, the Small Wind Turbine SWT sector in Kenya offers an avenue for women and youth involvement in distribution, installation, and maintenance. However, there's a need for capacity-building programmes that can equip them with the skills and knowledge required to tap into this emerging market and contribute to its growth.

Historically, mini-grids in Kenya relied on diesel as their primary power source and were operated by the national utility, KPLC. However, starting from 2011, numerous diesel-powered mini-grids underwent a transformation into hybrid systems, incorporating additional solar or wind power components. new mini-grids have been introduced, exclusively powered by renewable energy technologies. Alongside publicly owned mini-grids, there has been a notable rise in privately owned and community-operated mini-grid initiatives (Newclimate.org, 2019). International support for mini-grid systems in Kenya has been significant, with various initiatives and funding from organisations like the World Bank, Climate Investment Funds (CIF), and bilateral institutions. The World Bank has financed projects such as the Kenya Electricity Expansion Project (KEEP) and the Kenya Electricity Modernisation Project (KEMP), along with highly concessional financing from the Scaling up Renewable Energy Programme in Low Income Countries (SREP) of the Climate Investment Funds (CIF). Specifically, within SREP, there's a project focused on supporting mini-grid hybridisation. Additionally, bilateral institutions like the French Development Agency (AFD) and the Nordic Development Fund (NDF) are contributing to hybridising existing mini-grids and those under construction in Kenya through financial support and retrofitting efforts.

Kenya's energy landscape showcases over 200,000 operational PV systems, with annual sales estimated at 20,000 as of 2016. This market, supported by approximately 30–40 distributor firms and 600 trained technicians, owes its growth to innovative business models and declining global PV prices, establishing PV as a leading technology in decentralised electrification efforts (Lema, Andersen, Hanlin, & Nzila, 2022). PV systems are commonly utilised in households for activities like powering televisions and radios, and charging cellular phones. Additionally, they significantly contribute to providing lighting

In contrast, the SWT sector in Kenya comprises around 500 installations primarily serving the communications industry. However, with only about 20 SWT distributor firms and a scarcity of trained technicians, SWT adoption remains limited compared to solar PV5. The expertise and technological infrastructure within Kenya's domestic industry for wind-powered mini-grids are characterised by simplicity and small-scale production, all manufactured locally. These systems, though smaller in scale, are highly adaptable to diverse local conditions and can be constructed from locally sourced materials, ensuring durability and resilience.

In areas devoid of grid connections or reliant on diesel generation, PV plants efficiently produce electricity at a relatively low cost. In Kenya, mini-grids have been extensively deployed to electrify rural areas, predominantly utilising PV modules. When connected to the mini-grid systems, these PV plants offer a practical and cost-effective solution for supplying electricity to rural regions in Kenya, leveraging the abundant sunlight available throughout much of the year (Saulo, 2015). The advantage of these systems is that they operate as independent entities, unlike the conventional grid systems (Marissa, Raestad, Anderson, & Sainju, 2012). This decentralised approach to energy management ensures greater reliability, with any disruptions promptly identified and addressed. Furthermore, by situating power generation closer to the point of consumption, transmission and distribution, losses are minimised.

Additionally, the adoption of smart grid integration and improved battery storage technologies has bolstered the efficiency and reliability of solar energy systems. The Energy Act of 2019 and various tax rebates have provided a supportive regulatory framework, encouraging rapid adoption of these technologies across the country.

SECTION THREE: BACKGROUND OF POLICY REGIME ON RENEWABLE ENERGY DEVELOPMENT

SECTION THREE: BACKGROUND OF POLICY REGIME ON RENEWABLE ENERGY DEVELOPMENT

The energy sector reforms in Kenya date back to the mid-1990s when the Electric Power Act of 1997, aimed to separate power generation from transmission and distribution. Under the Electric Power Act, No. 11 of 1997, KenGen was tasked with power generation, while KPLC assumed responsibility for transmission and distribution.

Private Independent Power Producers (IPPs) entered the market. Despite reforms, KenGen, mostly state-owned, remains dominant. Through the Act, The Electricity Regulatory Board (ERB) was established to regulate tariffs and promote competition. In 2004, the government acknowledged the need to fully separate the transmission and distribution functions of KPLC. However, instead of immediate unbundling, in 2008, a separate state-owned entity called Kenya Electricity Transmission Company Limited (KETRACO) was established to construct future transmission lines, with KPLC retaining control of existing transmission systems. Consequently, Kenya Power maintains a quasi-monopoly over electricity transmission and distribution, leaving the unbundling process incomplete in the electricity sub-sector.

Vision 2030 was launched in 2008. Recognising the pivotal role of energy in fostering economic growth and enhancing the well-being of citizens, Vision 2030 outlines ambitious objectives and strategies for ensuring Kenya's access to adequate, reliable, affordable, and sustainable energy for all.

Kenya passed The Energy Act (2019), regulating energy production, transmission, distribution, and sale. The Act introduced net metering for renewable energy, capped at 1MW, to incentivise investment in renewables. It dissolved the Rural Electrification Authority (REA) and established the Rural Electrification and Renewable Energy Corporation (REREC) to lead Kenya's green energy drive and regulate renewable energy policy through the Renewable Energy Resources Advisory Committee (RERAC). REREC's mandate extends beyond rural electrification to promoting renewable energy nationwide.

3.1 DRIVING PRIVATE INVESTMENT: THE IMPACT OF RENEWABLE ENERGY POLICIES IN KENYA

Kenya's proactive approach to renewable energy policy implementation has not only addressed energy challenges but has also catalysed private investment in the sector. By leveraging targeted support instruments and fostering a conducive investment climate, the nation has positioned itself as a roadmap for renewable energy investment. The private sector is usually concerned with the anticipated return and the corresponding level of risk. The nation has addressed some of these concerns through innovative support instruments that have been influential in attracting a significant amount of foreign investments into renewable energy:

01 The Feed-in Tariff (FiT), introduced in 2008, offered predictable pricing and guaranteed grid access over a 20-year horizon, which was pivotal in attracting large-scale foreign investments into wind and solar projects during the sector's nascent stages (IEA, 2025). However, this policy's rigidity has resulted in problematic "lock-ins" where Kenyan consumers remain tied to paying outdated, higher tariffs despite the steep decline in global renewable technology costs, undermining affordability and raising questions about equitable benefit sharing. Transitioning to more flexible pricing mechanisms such as competitive auctions could help align future contracts with current market realities.

02 The reinstatement of VAT exemptions in 2021 for solar and wind equipment has lowered upfront costs and expanded access to decentralised renewable energy systems, but these incentives remain highly vulnerable

to abrupt policy reversals, as seen in earlier years when their removal stalled market growth (Githunji, 2021). A more consistent, long-term fiscal strategy could sustain investor and consumer confidence.

03 Net metering under the Energy Act, 2019 has further encouraged small-scale producers to feed surplus electricity back into the grid, fostering prosumer participation and supporting energy redistribution. Yet, its implementation is hindered by weak grid infrastructure, regulatory gaps, and concerns from utilities over revenue losses, constraining its potential as a decentralisation tool.

04 Similarly, guarantee instruments like the African Development Fund's partial risk guarantee for the Lake Turkana Wind Power project have been effective in de-risking investments and ensuring contractual compliance for large-scale projects (Stanbrook, 2019). However, such mechanisms tend to disproportionately favour multinational developers and high-capital ventures, side-lining local investors and small enterprises that lack the financial muscle to access these facilities. This concentration of benefits exposes a gap in policy design, suggesting the need for tailored guarantee schemes or blended finance models that can empower local entrepreneurs and community-based renewable energy initiatives.

Taken together, Kenya's policy framework demonstrates an ambitious effort to attract private capital but reveals critical shortcomings in adaptability, inclusivity, and equity, pointing to opportunities for more balanced, context-sensitive interventions in the renewable energy transition.

SECTION FOUR:
POLICY LANDSCAPES IN SUPPORT OF RE

SECTION FOUR: POLICY LANDSCAPES IN SUPPORT OF RE

4.1. LOCALISATION

Kenya's localisation policies, embedded in its broader development and energy frameworks, reflect a deliberate effort to strengthen domestic industries, enhance value addition, and create employment opportunities.

However, while these policies are ambitious in scope, their effectiveness in fostering a vibrant local RE sector remains contested in the literature, with evidence pointing to both progress and significant shortcomings. The Big Four Agenda (2018–2022) and its manufacturing pillar, anchored in the Buy Kenya, Build Kenya (BKBK) strategy, aimed to reduce

import dependency and promote local production (Republic of Kenya, 2021). Although these initiatives contributed to increased local procurement in public institutions, studies suggest they have had limited impact on high-tech sectors like RE, due to Kenya's underdeveloped manufacturing base and weak linkages between policy goals and industrial capacity. The focus has largely benefited low-value industries (e.g., textiles, agro-processing), with minimal progress in supporting local production of solar PV components or wind turbine parts, which remain dominated by imports (IRENA, 2021). This lack of progress is linked to several structural barriers identified in the literature. First, renewable energy component production requires high upfront capital, advanced manufacturing infrastructure, and sustained R&D investments areas where Kenya has historically underinvested (Altenburg & Assmann, 2017). Second, weak linkages between policy ambitions and firm-level capabilities have constrained outcomes: although policies like Buy Kenya Build Kenya mandate local content, they have not been paired with subsidies, tax incentives, or technology transfer mechanisms necessary to make RE manufacturing competitive (Velasco & Cruz, 2020). Third, skills shortages and the absence of domestic certification and quality standards further limit Kenya's ability to produce components that meet global market requirements (UNCTAD, 2021). Consequently, despite political recognition of the importance of industrial upgrading, local firms remain confined to assembly and distribution while higher-value segments of the RE value chain are controlled by global suppliers.

Similarly, the Kenya Industrial Transformation Programme (KITP) sought to foster industrial diversification and innovation-driven manufacturing. While the strategy moved beyond traditional import substitution, to include value addition and regional value chains, its implementation faced structural constraints. Weak research and development (R&D) ecosystems, limited technology transfer, and inadequate financial support for local enterprises have slowed progress. Studies highlight a mismatch between policy ambitions and on-the-ground realities, with local firms often unable to meet quality and scale requirements to compete with imported technologies (World Bank, 2019).

The Vision 2030 development blueprint also underscored the importance of localisation through infrastructure development and economic diversification. However, a decade into implementation, Kenya's renewable energy sector still relies heavily on foreign expertise, capital, and technology. According to Ockwell and Byrne (2016), this dependency reflects a broader trend in African energy transitions, where localisation policies fail due to insufficient domestic technological capabilities and institutional weaknesses that hinder knowledge transfer (Ockwell & Byrne, 2016). The Public Procurement and Asset Disposal Act (2015) mandated foreign tenderers to source at least 40% of their supplies from local contractors (PPRA). While this provision was intended to create market opportunities for Kenyan businesses, enforcement has been inconsistent, and capacity constraints among local firms have limited their participation in large-scale RE projects.

The Energy Act (2019) introduced provisions to promote localisation within the energy sector, including capacity building for local manufacturing, prioritisation of locally sourced goods and services, and sharing royalties from geothermal energy production with county governments and local communities. These

provisions signal a progressive approach to embedding localisation in energy governance. Yet, critics argue that the Act's ambitions have not translated into measurable outcomes. For instance, the establishment of a local content development unit has been slow, and the lack of clear monitoring frameworks undermines accountability. The partial success of initiatives like the Lake Turkana Wind Power project, which sourced most of its equipment from abroad, illustrates persistent challenges in embedding local content requirements within large-scale RE projects. Furthermore, the Medium-Term Plan (MTP 2008–2012) called for the development of local manufacturing capabilities for advanced RE technologies, yet Kenya has made limited progress in this area. The literature attributes this to inadequate investment in R&D, insufficient collaboration between academia and industry, and weak policy coherence across sectors (IRENA, 2021). Although there have been calls for a national energy research strategy, budgetary allocations remain minimal, constraining the ability of local institutions to drive innovation and build technological capacity.

Taken together, Kenya's localisation policies demonstrate strong rhetorical commitment to enhancing local participation in the RE sector. However, their limited effectiveness reflects deeper structural and institutional barriers, including weak enforcement, inadequate technological capabilities, and insufficient support for small and medium enterprises (SMEs). Addressing these challenges requires moving beyond policy declarations to building robust local supply chains, investing in skills development, fostering technology transfer, and providing targeted incentives for local innovators. Comparative studies from countries like South Africa and Brazil show that successful localisation in the RE sector hinges on comprehensive industrial policies that integrate R&D support, quality standards, and long-term financing mechanisms (Eberhard et al., 2014). Kenya could draw lessons from these experiences to reorient its localisation agenda toward more sustainable and inclusive outcomes.

4.1.1 Localisation and ME capability development

Kenya's localisation agenda recognises micro and small enterprises (MEs) as key drivers of industrialisation and RE sector growth. The National Industrial Policy Framework (NIPF) and the Micro and Small Enterprises (MSE) Act of 2022 articulate ambitious strategies to build domestic industrial capacity, promote technological upgrading, and enhance the global competitiveness of local industries (Kenyalaw, 2022). However, while these policies present a strong rhetorical commitment to ME development, their effectiveness in delivering tangible outcomes has been mixed, with evidence of both progress and persistent challenges. The NIPF seeks to position Kenya as a leading industrialised nation in Africa by supporting domestic and foreign direct investments in priority sectors, including green energy. It proposes incentives for high-value processing, mandates minimum local content thresholds (25% for domestically produced industrial components and 60% for exports), and targets increased regional market share for Kenyan products (Ogot, Guchu, Muthee, Muriuki, & Kiara, 2020). It also envisages the establishment of special economic zones (SEZs) and industrial parks, coupled with a KSh10 billion Industrial Development Fund for long-term manufacturing support.

While these measures are promising, progress has been slow. Kenya's renewable energy sector remains heavily dependent on imported technologies such as solar PV panels and wind turbines, with few local manufacturers able to meet international quality and scale requirements. Moreover, the envisioned SEZs and industrial parks have faced delays due to bureaucratic inefficiencies, land acquisition challenges, and underdeveloped infrastructure, limiting their ability to stimulate localisation and industrial growth.In the renewable energy context, they were designed to host component manufacturing, such as solar panel assembly and wind tower fabrication, while fostering technology transfer and clustering effects between firms, suppliers, and research institutions. However, progress has been slow, as many SEZs, including flagship projects like Konza Technopolis and Dongo Kundu SEZ, have faced delays due to bureaucratic inefficiencies, land acquisition challenges, and underdeveloped infrastructure. These constraints have limited their ability to deliver on localisation and industrial growth, leaving Kenya's renewable energy sector heavily dependent on imported technologies.

Source: https://sun-connect.org/china-supplies-98-percent-of-kenyas-solar-panels/

The MSE Act of 2022 complements the NIPF by focusing on enhancing ME capabilities through targeted interventions. It mandates the Micro and Small Enterprises Authority (MSEA) to deliver capacity-building programmes, promote technological modernisation, support business development services, and facilitate market access. These measures aim to improve the

competitiveness and integration into local value chains within Kenya as well as regional supply chains across the East African Community (EAC) and the wider African Continental Free Trade Area (AfCFTA). However, implementation challenges have constrained their impact.

Many capacity-building programmes have been criticised for being generic rather than tailored to the specific needs of Micro and Small Enterprises (MSEs) in high-tech sectors like renewable energy. Technological modernisation efforts have been hindered by limited access to affordable financing, weak collaboration between research institutions and industry, and inadequate investment in innovation ecosystems. Provisions for technology transfer and adaptation have also struggled to take root due to gaps in intellectual property frameworks and limited partnerships with global technology leaders. Furthermore, while the MSE Act emphasises market development and protection against substandard imports, local manufacturers continue to face unfair competition from cheap imports and counterfeit goods. Enforcement of public procurement preferences for locally manufactured products has been inconsistent, often excluding smaller enterprises unable to meet stringent quality or production capacity requirements.

These systemic challenges have undermined the potential of MEs to scale up and meaningfully participate in the renewable energy sector. Overall, while the NIPF and MSE Act provide a solid policy framework for localisation and ME development, their impact has been muted by weak implementation, governance challenges, and structural barriers within Kenya's industrial ecosystem. Unlocking their potential requires integrated policy approaches that combine targeted financial support, sector-specific capacity building, stronger enforcement of local content requirements, and robust monitoring mechanisms. Lessons from other emerging economies suggesting that successful localisation in the renewable energy sector hinges on sustained investment in R&D,partnerships that enable structured technology transfer, joint ventures, and supplier-development programs between local enterprises and global firms, as well as a stable policy environment that builds confidence among domestic players.

4.2 GENDER AND SOCIAL INCLUSIVITY X

Kenya's policy framework demonstrates a strong rhetorical commitment to gender equality and social inclusion, particularly through the Constitution of Kenya (2010), Vision 2030, the Social Protection Policy (2011), the National Policy on Gender and Development, and the Gender Policy in Energy (2019). Collectively, these instruments seek to address historical and systemic barriers that have excluded women, youth, and other marginalised groups from equitable participation in economic, social, and political spheres. However, critical analysis of their implementation reveals a mixed record, with considerable gaps between policy intent and practical outcomes.

Article 27 of the Constitution mandates equality and non-discrimination on the basis of gender, aiming to ensure equal access to opportunities in employment, leadership, and resource allocation (Katiba Institute, 2022). While this has provided a strong legal foundation for gender-responsive policymaking, enforcement has been inconsistent. For example, the constitutional requirement for a minimum one-third representation of either gender in public bodies has faced challenges in implementation, as evidenced by repeated court rulings against Parliament for failing to meet this threshold (FIDA-Kenya, 2022). This reflects broader institutional weaknesses that limit the translation of constitutional guarantees into transformative change.

Kenya Vision 2030 further emphasises gender equality as essential for sustainable development, advocating for increased participation of women and marginalised groups in economic activities (Republic of Kenya, nd). Yet, a decade into its implementation, progress has been uneven. Reports show that while women's participation in formal employment has improved, significant disparities remain in high-paying sectors such as energy, where women are underrepresented in technical and leadership roles (UNDP, 2023).

The Social Protection Policy (Republic of Kenya, 2011) and the National Policy on Gender and Development (Republic of Kenya, 2019) outline strategies to include vulnerable groups in societal development. These policies advocate for fair distribution of resources, targeted affirmative action, and removal of structural barriers. However, their effectiveness has been hindered by inadequate funding, weak inter-agency coordination, and limited monitoring frameworks. A 2018 evaluation by the Ministry of Labour and Social Protection found that many programmes under the Social Protection Policy lacked gender-sensitive targeting mechanisms, resulting in limited reach to the most disadvantaged

women and youth in rural areas (Republic of Kenya, 2018).

Gender disparities are particularly pronounced in the energy sector. Women are the primary users of household energy for cooking, heating, and lighting, yet they often lack decision-making power over energy choices and face financial barriers to adopting cleaner alternatives. Limited access to affordable, modern energy forces many women to rely on firewood and charcoal, exposing them to health risks from indoor air pollution and the burden of unpaid labour in fuel collection. This situation constrains women's time for education, economic activities, and leadership.

The Gender Policy in Energy (2019) was designed to address such inequities by strengthening institutional frameworks for gender equality in energy, promoting clean cooking solutions, and increasing women's representation in energy governance (Johnson, Gerber, & Muhoza, 2019). However, its implementation has been slow, partly due to lack of political will and resource constraints. Studies also highlight the persistence of patriarchal norms that hinder women's access to financing and training opportunities in the energy sector, further perpetuating gendered energy poverty.

Evidence from similar contexts highlights the need for more than policy pronouncements. For example, in rural Africa, (Jessel, Sawyer, & Herandez, 2019) found that women's dependence on biomass energy reinforced economic and social inequalities, a pattern mirrored in Kenya where modern energy transitions have yet to reach the poorest households. They also note that energy poverty exacerbates mental health stresses for women in areas affected by climate change. These insights suggest that unless Kenya's gender and energy policies adopt more inclusive, community-driven approaches, coupled with financial inclusion mechanisms for women entrepreneurs, their transformative potential will remain unrealised. While Kenya has a comprehensive legal and policy architecture for gender and social inclusion, its success has been undermined by weak enforcement, insufficient resources, and deep-rooted socio-cultural barriers.

4.3. DECENT WORK

Industrial and labour policies are central to ensuring a just energy transition in Kenya, as they aim to promote local manufacturing, fair wages, safe working conditions, and inclusive employment practices. These measures are crucial for building a sustainable workforce that not only drives economic growth but also enhances social well-being. Kenya's Constitution (2010) provides a strong legal framework for decent work, with Article 41 guaranteeing every person the right to fair labour practices, including fair remuneration, safe working conditions, and freedom of association (Kenyalaw, 2012 (revised)). However, the interpretation of "fairness" remains contested. Workers often equate fairness with a living wage and job security, while employers balance this against profitability. In the energy sector, characterised by large infrastructure projects and supply chains, this tension frequently surfaces in wage disputes and concerns about precarious employment for casual and contract workers.

The Employment Act (2007) operationalises these constitutional rights by prohibiting discrimination (Section 5), establishing minimum employment standards, and supporting collective agreements between trade unions and employers (KNHCR, 2022). While it has improved awareness of labour rights, enforcement remains weak. For example, a study by the Kenya Human Rights Commission found widespread violations in construction and energy projects, including underpayment and lack of maternity protection (Secretary General, 2021).

Many workers in renewable energy projects are engaged on short-term contracts, limiting access to social protection schemes. Additionally, the Occupational Safety and Health Act (2007) addresses workplace hazards by mandating safe environments and appointing safety officers. Yet, implementation is uneven. Reports by the Central Organisation of Trade Unions (COTU) have documented frequent accidents in large-scale energy infrastructure projects, often linked to poor compliance and insufficient oversight by regulatory authorities (Odhiambo, 2025). Similarly, small RE enterprises often lack capacity and resources to implement robust safety standards, exposing workers, particularly technicians and installers, to occupational risks.

The Labour Relations Act (2007) reinforces workers' rights to unionise and engage in collective bargaining. However, Kenya's energy sector has been marked by significant casualization and informality; nationally less than10% of workers are in permanent, full-time jobs, while a substantially 28.5% are casually employed, a pattern mirrored in energy-linked trades.. This limits their ability to negotiate better wages and working conditions. As pointed out in a recent article,

the casualisation of labour in Kenya undermines the effectiveness of collective bargaining, particularly in industries such as energy that rely heavily on temporary workers (Kenyalaw, 2007).

The Work Injury Benefits Act (WIBA) (2007) seeks to guarantee compensation for workplace injuries and illnesses (Kenyalaw, 2012). While this is a critical protection, access to compensation is often constrained by bureaucratic delays, lack of awareness among workers, and employers' reluctance to report workplace incidents (ILO, 2019). Studies have shown that in some energy projects, workers injured on site face lengthy battles to receive compensation, with many abandoning claims due to the cumbersome process.

Collectively, these policies establish a robust legal foundation for decent work but fall short in implementation due to institutional weaknesses, resource constraints, and socio-economic dynamics such as high unemployment, which leaves workers with little bargaining power. The International Labour Organisation (ILO) highlights that Kenya's enforcement agencies are understaffed and underfunded, limiting workplace inspections and monitoring. Furthermore, the increasing reliance on private contractors in RE projects has created accountability gaps, where subcontracted workers are often excluded from formal protections (ILO, 2021).

To strengthen the contribution of labour policies to Kenya's energy transition, experts advocate for improved enforcement of labour standards, the extension of social protection to informal workers, and enhanced collaboration between regulators, employers, and trade unions. Lessons from South Africa's Just Energy Transition strategy illustrate how integrating labour rights into energy policies, backed by strong institutional frameworks, can mitigate inequalities and foster a more equitable transition (Baker, Newell, & Phillips, 2021). For Kenya, ensuring that decent work provisions are not merely aspirational but transformative requires political commitment, adequate resources for regulatory agencies, and proactive engagement with all stakeholders in the energy value chain.

REFERENCES

Baker, L., Newell, P., & Phillips, J. (2021). The political economy of energy transtions: The case of South Africa. *Energy Policy*, 148. doi:https://doi.org/10.1016/j.enpol.2020.111928

Bowmans. (2021). Retrieved from Kenya: The 2021-2030 least cost power deveopment plan: https://bowmanslaw.com/insights/the-2021-2030-least-cost-power-development-plan-introduction-of-the-2021-renewable-energy-auction-policy-and-the-2021-fit-policy/

Bowmans. (2024). Retrieved from Kenya: Insights on the Energy (Net-Metering) Regulations, 2024 – Key highlights: https://bowmanslaw.com/insights/kenya-insights-on-the-energy-net-metering-regulations-2024-key-highlights/

Doumon, N. (2024). *PennState Institute of Energy and the Environment*. Retrieved from Transitioning to renewable energy: Cha;;enges and opportunities: https://iee.psu.edu/news/blog/transitioning-renewable-energy-challenges-and-opport unities

EPRA. (n.d.). Retrieved from Energy & Petroleum Satistics Report for the financial year ended 30th June 2024: https://www.epra.go.ke/sites/default/files/2024-10/EPRA%20Energy%20and%20Petr oleum%20Statistics%20Report%20FY%202023-2024_2.pdf

FIDA-Kenya. (2022). Retrieved from 2021 Policy Gap Report on Women's Political Participation in Kenya: https://fidakenya.org/2022/04/20/2021-policy-gap-report-on-womens-political-particip ation-in-kenya/

Githunji, E. (2021). *Tax incentives on Renewable Energy*. Retrieved from Clean Energy 4 Africa: https://cleanenergy4africa.org/tax-incentives-on-renewable-energy/

IEA. (2025). Retrieved from Revised Feed-in-Tariffs for Renewable Energy: https://www.iea.org/policies/4957-revised-feed-in-tariffs-for-renewable-energy

ILO. (2021). Retrieved from 3rd Generation Decent WOrk Country Programme: https://www.ilo.org/sites/default/files/wcmsp5/groups/public/%40ed_mas/%40progra m/documents/genericdocument/wcms_829831.pdf

IRENA. (2021). Retrieved from Renewable Energy Market Analysis: Africa and its Regions: https://www.irena.org/publications

Jessel, S., Sawyer, S., & Herandez, D. (2019). Energy, Poverty, and Health in Climate Change: A Comprehensive Review of an Emerging Literature. *Frontiers in Public Health*, 7, https://doi.org/10.3389/fpubh.2019.00357.

Johnson, O., Gerber, V., & Muhoza, C. (2019). Gender, culture and energy transitions in rural Africa. *Energy Research & Social Science*, 49, 169-179. doi:https://doi.org/10.1016/j.erss.2018.11.004

Kenya Association of Manufacturers (KAM). (2021). *Manufacturing Priority Agenda 2021: Policy and Sustainability Report*.https://kam.co.ke/wp-content/uploads/2022/06/KAM-Policy-Sustainability-Report-2021.pdf

Katiba Institute. (2022). *Equality under Article 27 of the Constitution*. Katiba Institute.

Kenya National Treasury & Economic Planning. (2023). Retrieved from The Annual State of Kenya and State of World Populations reports 2023 launch: https://www.planning.go.ke/the-annual-state-of-kenya-and-state-of-world-populations-reports-2023-launch/

Kenya, R. o. (2007). *Labour Relations Act*, 2007. Retrieved from Kenyalaw: https://kenyalaw.org/kl/fileadmin/pdfdownloads/Acts/LabourRelationAct_No14of2007. pdf

Kenyalaw. (2007). Retrieved from Work Injury Benefts Act: https://kenyalaw.org/kl/fileadmin/pdfdownloads/Acts/WorkInjuryBenefitsAct_Cap236 No13of2007.pdf

Kenyalaw. (2012). Retrieved from Work Injury Benefits Act: https://kenyalaw.org/kl/fileadmin/pdfdownloads/Acts/WorkInjuryBenefitsAct_Cap236 No13of2007.pdf

Kenyalaw. (2012 (revised)). Retrieved from Labour Relations Act 2007: https://kenyalaw.org/kl/fileadmin/pdfdownloads/Acts/LabourRelationAct_No14of2007. pdf

Kenyalaw. (2022). Retrieved from Micro and Small Enterprises Act: https://new.kenyalaw.org/akn/ke/act/2012/55/eng@2022-12-31

KNHCR. (2022). Retrieved from Scoping Paper: Human Rights and the Energy Transition in Kenya: https://www.humanrights.dk/files/media/document/Kenya%20Energy%20Transition% 20and%20Human%20Rights%20Scoping_accessible.pdf#:~:text=Forced%20evictio ns%20and%20involuntary%20resettlement%20are%20critical,contribute%20to%20si gnificant%20human%20rights%20pro

Lake Turkana Wind Power. (n.d.). Retrieved from The Lake Turkana Wind Power (LTWP) Proect: https://ltwp.co.ke/

Lema, R., Andersen, M., Hanlin, R., & Nzila, C. (2022). *Building innovation capabilities for sustainable industrialisation: Renewable electrification in developing economies*. Routledge.

Marissa, B., Raestad, J., Anderson, R., & Sainju, P. (2012). *Rural Electrification: The Potential of Solar PV Off-Grid Systems*. Norplan.

Maundu, M. D., & Misati, D. N. S. (2023). The Impact of Economic Growth on Poverty Reduction in Kenya: Empirical Analysis Using Autoregressive Distributed Lag (ARDL) Model. International Journal Of Management And Economics Invention, 9(2), 2848–2855. https://doi.org/10.47191/ijmei/v9i2.04

Newclimate.org. (2019). Retrieved from The role of renewable energy mini-grids in Kenya's electricity sector: https://newclimate.org/sites/default/files/2019/11/The-role-of-renewable-energy-mini- grids-in-Kenya%E2%80%99s-electricity-sector.pdf

Ockwell, D., & Byrne, R. (2016). *Sustainable Energy for All: Innovation, technology and pro-poor green transformations*. London: Routledge. doi:https://doi.org/10.4324/9781315621623

Odhiambo, J. (2025). *Mount Kenya Times*. Retrieved from The rights of casual workers in Kenya: enforcing oral contracts and legal safeguards: https://mountkenyatimes.co.ke/the-rights-of-casual-workers-in-kenya-enforcing-oral-c ontracts-and-legal-safeguards/#:~:text=Casual%20workers%20in%20Kenya%2C%2 0often%20engaged%20for,over%2080%25%20of%20Kenya's%20employment%20i s%20informal.&text=The%20Consti

Ogot, M., Guchu, S., Muthee, M., Muriuki, R., & Kiara, P. (2020). *Kenya National Innovation Policy Framework (Proposed)*. Retrieved from https://kenia.go.ke/storage/pub-docs/phpdeP0tt.pdf

PES. (2024). Retrieved from Remote Energy and WISEe celebrate successful completion of the solar career pathways program in Kenya: https://pes.eu.com/press-releases/remote-energy-and-wisee-celebrate-successful-co mpletion-of-the-solar-career-pathways-program-in-kenya

Petrik, D., Maina, G., Muriuki, M., & Munyoki, J. (2020). *County Government of Kisumu, Kenya*. Retrieved from ICLEI Africa - Local Government for Sustainability: https://www.kisumu.go.ke/wp-content/uploads/2021/02/National-Energy-Situational-A nalysis_8-February.pdf

PPRA. (n.d.). Retrieved from The Public Procurement and Asset Disposal Act, 2015: https://ppra.go.ke/ppda/

Republic of Kenya. (2011). Retrieved from Kenya National Social Protection Policy: https://clr.africanchildforum.org/policy%20per%20country/kenya/kenya_socialprot_20 11_en.pdf

Republic of Kenya. (2019). Retrieved from National Policy on Gender and Development: https://gender.go.ke/sites/default/files/publications/NATIONAL-POLICY-ON-GENDER-AND-DEVELOPMENT.pdf

Republic of Kenya. (2021). Retrieved from Ministry of Industrialisation, Trade and Enterprise: http://www.industrialization.go.ke

Republic of Kenya. (nd). Retrieved from Kenya Vision 2030: https://vision2030.go.ke/

Rotich, I., Chepkerui, H., & Musyimi, P. (2024). Renewable enery status and uptake in Kenya. *Energy Strategy Reviews*, 54(1), 101453 - 101453. doi:https://doi.org/10.1016/j.esr.2024.101453

Saulo, M. (2015). Design and Analysis of Solar Energy Mini-Grid for Rural Electrification. *Open Access Library*, 2 (09)(1).

Secretary General, C. (2021). *Secretary General's Report*. Retrieved from https://cotu-kenya.org/wp-content/uploads/2021/04/COTU-report-1.pdf

Stanbrook, L. (2019). *African Development Bank*. Retrieved from African Development Bank helps power wind of change in Kenya: https://www.afdb.org/en/news-and-events/african-development-bank-helps-power-wi nd-change-kenya-28239

Training. (n.d.). Retrieved from WISEe: https://wiseeafrica.org/training/?

UNDP. (2023). Retrieved from Energy and gender equality: https://www.undp.org/energy/our-work-areas/energy-and-gender-equality

UNFCCC. (2015). *United Nations Framework Convention on Climate Change*. Retrieved from The Paris Agreement: https://unfccc.int/sites/default/files/resource/parisagreement_publication.pdf

UNFCCC. (2018). *Conference of the parties*. Retrieved from UNFCCC: https://unfccc.int/sites/default/files/resource/CMA2018_03a02E.pdf

World Bank. (2019). Retrieved from Kenya Industrial Transformation Programme: Building a globally competitive manufacturing sector.: https://www.worldbank.org/en/country/kenya/publication