



How Kenya can Become 100% Renewable

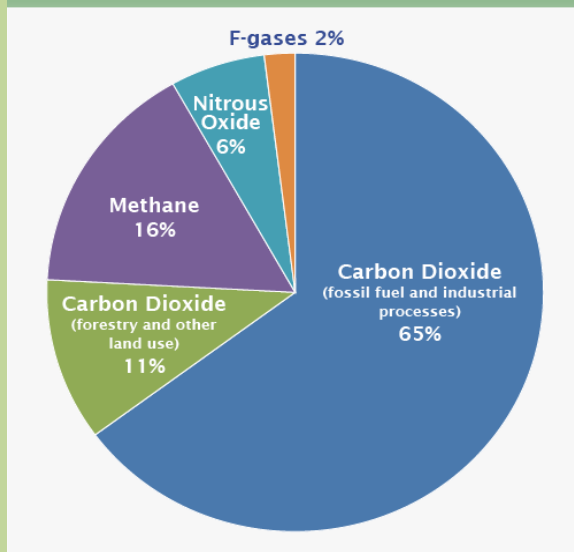
Policy Brief (v. May 15, 2021)



1.0 Introduction

Energy is the lifeblood of all societies. But its production from burning of fossil fuels produces carbon dioxide emissions that are released into the atmosphere on a grand scale. Energy sector accounts for more than 70 percent of total global greenhouse gas emissions, which are driving climate change worldwide. Reducing Carbon Dioxide emissions from the energy sector has a direct and positive impact on climate protection. So there needs to be a transition from the current energy system that relies heavily on fossil fuels to a system that uses renewable energy sources, such as wind, geothermal and solar. Also the use of biomass must be coupled with innovations to enhance sustainability.

Global Greenhouse Gas Emissions by Gas



[IPCC \(2014\)](#)

Provision of clean and sustainable energy is essential for the realization of Kenya's Vision 2030 and the Big Four agenda and is considered as one of the infrastructure enablers of the socio-economic pillar of the Vision.

The 2015 Energy and Petroleum Policy indicate that rapid growth in Kenya's economy over the past decade is partly attributed to increased investment in the energy sector, particularly in the electricity sub-sector. The government's four key pillars of economic growth and the Big Four priority are energy-driven. Further, the development of renewable energy technologies represents a major opportunity for "Growth of green industry in manufacturing" in Kenya.

2.0 Energy Status in Kenya

The energy sector in Kenya is largely dominated by biomass (68 % of the national energy consumption), electricity (9%) and imported petroleum (21%), with biomass (wood fuel, charcoal, and agricultural waste) providing the basic cooking and heating energy needs of the rural communities, urban poor and the informal sector (*Plan for 100% Renewable Energy*

Scenario in Kenya, 2020). Indigenous energy production in Kenya is biomass (wood and agricultural waste), and electricity produced from hydropower, geothermal and other renewables (wind, biomass and solar). This is complemented by imported electricity, coal, crude oil and oil products.

To meet the growing energy needs of its citizens, the Kenyan government actively pursues new technologies to expand and upgrade the networks as well as promote the transition to a renewable based energy system.

Cleaner Cooking

- Kenya has an ambitious target of achieving 100% access to modern cooking services by 2028 including efficient cook stoves for wood and charcoal, household biogas, LPG stoves, and others.
- Government is running the development and promotion of efficient cook stoves for households and institutions (KOSAP).
- Government is collaborating with Clean Cook stove Association of Kenya (CCAK) to promote the development and dissemination of efficient cook stoves.
- A clean cooking component of the Kenya off-grid Solar Access project (KOSAP) seeks to disseminate 150,000 efficient cook stoves to households in selected 14 underserved counties. This expedited through giving incentives for Solar

Service Providers (SSPs) KOSAP provide incentives for SSPs currently operating in the more densely populated areas of Kenya to expand to underserved counties. This includes a results-based financing (RBF) facility, competitively awarded, to compensate SSPs for initial, ongoing incremental, and opportunity costs associated with an expansion of operations in underserved counties. A debt facility will also be established to support SSPs in meeting up-front costs associated with getting hardware inventory into the market, and medium-term consumer financing to enable households to pay off the systems over time.

- Cleaner cooking is an important part of Kenya's climate plans and is included in the Kenya's updated Nationally Determined Contributions (NDC) under the UNFCCC Paris Agreement.

Renewables





- Renewable energy currently accounts for 70% of the installed power capacity including large hydro-power. It accounts for more than 70% of the power generation, but production varies from year to year with hydropower production that is low in dry years (Ministry of Energy 2019)
- Government is supporting a Solar PV electrification of public institutions,

including health facilities. So far, 1,500 institutions have been electrified (Ministry of Energy 2019).

- Under the Feed-in-Tariff (FiT) policy in 2019, 278 renewable energy projects with a combined capacity of over 4.7 Gigawatts (Ministry of Energy 2019) have been approved and are at various stages of implementation. This includes wind power, geothermal power, and solar

PV power projects. Kenya recently commissioned three renewable power projects: 310 MW wind (Lake Turkana wind power project), 100 MW Kipeto (Kajiado) and 51 MW solar (Garissa) (Ministry of Energy, 2020.)

3.0 The Scenarios and the Renewable Energy Use Projections

Energy Type	Existing capacity (2019)	Capacity 2030	Capacity 2050
 Solar	400 MW PV incl small solar +2500 m ² solar heaters	3330 MW PV incl. small, 2 mill. m ² solar heaters	17330 MW PV incl. small, 2 mill. m ² solar heaters
 Biomass/biomass	30,000 bio digesters for cooking 4.7 mill improved stoves	250,000 bio digesters for cooking, 12.6 mill. improved cook stoves*	500,000 bio digesters for cooking, 15.6 mill. improved cook stoves*
 Geothermal Energy	801 MW	2931 MW	5566 MW
 Hydro power	+823 MW	1123 MW	1123 MW
 Wind power	+350 MW	1500 MW	9000 MW

Source: Plan for 100% Renewable Energy scenario for Kenya by 2050, SusWatch-Kenya, EASE-CA project (2020). Full Report: https://www.suswatchkenya.org/wp-content/uploads/2020/09/100-RE-report_compressed.pdf Summary: <https://www.suswatchkenya.org/wp-content/uploads/2020/09/summary-of-100-Renewable-Energy-Scenario-Kenya.pdf>

4.0 Policy Recommendations

Implementation of policies and strategic choices are crucial, if Kenya is to realize the renewable energy targets. *Following are the recommendations:*

- 1) Investing in modern energy solutions with energy efficiency and cleaner, renewable energy should be prioritized. There should be high priority on efficient cooking, but all sectors must be in the scope for increased energy efficiency which includes; e-cooking, first generation improved cook stove among others.
- 2) Diversifying 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.
- 3) More budget to fully finance the exploitation of clean and renewable energy sources that are locally available like geothermal, wind, solar and biogas.
- 4) Fully exploit energy efficiency potentials in all sectors with capacity building on energy efficiency, regulation, and energy audits in domestic, service, and industrial sectors. Need for policy development to guide the process.
- 5) Managing the cost of energy through optimal combination of energy efficiency and affordable renewable energy should be a priority. Expensive energy solutions as nuclear power should be avoided. Need to advocate for efficient and affordable renewable energy through proper policies.
- 6) Make biomass use for energy sustainable with a combination of efficient biomass use, efficient charcoal production, increased supply with plantations etc. and change to affordable alternatives based on renewable energy as they become available. This shall include better enforcement of the legal and regulatory framework for sustainable production, distribution and marketing of biomass as well as stronger promotion of sustainable afforestation programmes.
- 7) Make transport energy sustainable with use of electric transport, based on renewable electricity for instance; small electric vehicles like scooters, e-bikes, 3-wheel taxis on electricity.
- 8) Raising public awareness of more efficient energy use, including energy efficiency measures, local use of renewable energy, and new technology developments. There is a need to raise awareness of the potentials and benefits of renewable energy, including biogas and solar energy for electricity and heat. Therefore need for finance and policy frameworks on public awareness.
- 9) Involving local communities and county governments along the entire energy chain as well as transparent and accountable management of resources for the mutual benefit of

all to reduce tensions and enhance ownership of projects. 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 affects them. 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. Therefore need to embrace participatory approaches in the processes and capacity building.

- 10) Gender mainstreaming in the implementation of energy projects and programs. There is need to implement the gender and energy policy by the ministry of energy.
- 11) Deliberately creating local capacity on all levels in the new energy areas to create employment and reduce foreign domination of labor in the sector. This shall include increasing the expertise in Kenya in geothermal energy, wind power, solar power and biogas.
- 12) To actualize the Investment cost Frameworks to guide private sector investment in DREs; especially for high capital intensive like mini-grids and grid extension for rural electrification. 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.
- 13) Improving regulatory compliance of existing provisions as well as formulation of legal and regulatory framework of energy technologies and resources. This include regulatory compliance of natural gas and oil resources to be able to effectively manage extraction and exploitation, have clear revenue distribution, eradicate corruption, and set sunset dates in line with the Paris Agreement and the renewable energy scenario. It also includes enforcement of standards and regulations for renewable energy, in particular solar technologies, to avoid sub-standard equipment.
- 14) Fiscal investment in greening of the economy to reduce the impact of climate change and environmental degradation.
- 15) Security of the infrastructures: The sector to work closely and create liaison between the respective parastatals security, national security apparatus and local citizens to monitor the street lighting network and address arising challenges that affect the sector infrastructure. The sector to undertake automation of the street lights with a complete central monitoring system and securing memoranda of understanding and Maintenance Agreements with county governments.

The brief has been prepared by SusWatch Kenya and reviewed by national partners as part of the East African Civil Society for Sustainable Energy & Climate Action - EASE &CA project. EASE-CA project is supported by CISU. For further information contact the Sustainable Environmental Development Watch Kenya, P.O. Box 7659- 40100, Kisumu, Kenya, Tel: +254202584757, [Website: suswatchkenya.org](http://www.suswatchkenya.org)