

100 % Renewables in Kenya by 2050

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Proceedings: <https://www.inforse.org/cd2020.php3>

UNFCCC: <https://unfccc.int/cd2020/specialevents>



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INTRODUCTION

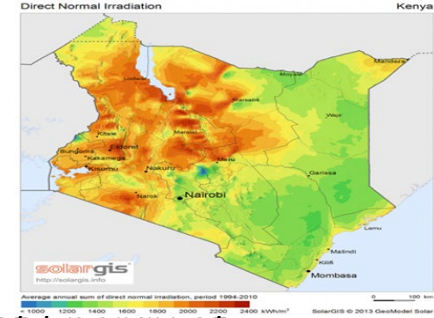
100% Renewable Energy achieves the Paris climate targets and supports implementation of Agenda 2030.

Integrated 100%RE pathways aiming to achieve stable energy access for everybody while eradicating poverty and decarbonizing the energy system are an obligation for countries who signed both Agenda 2030 and the Paris Agreement.

Kenya Launched 100% RE in September 3, 2020

The image shows the cover of a report titled "EAST AFRICAN CIVIL SOCIETY FOR SUSTAINABLE ENERGY AND CLIMATE ACTION (EASE&CA) PLAN FOR 100% RENEWABLE ENERGY SCENARIO IN KENYA BY 2050 AUGUST 2020". The cover is divided into three horizontal sections. The top section is dark green and contains the SUSWATCH KENYA logo (a map of Kenya with an eye) and the title. The middle section is light green and contains the subtitle and date. The bottom section is a photograph of a solar panel installation in a rural setting. On the right side, there is a vertical column of logos: INFORSE, the UN Sustainable Development Goals logo, the Nordic Folkecenter for Renewable Energy logo, the JEEP logo, the TaTEDO logo, and the CISU logo.

ENERGY STATUS IN KENYA



Electrification

- In 2019, 75% of Kenyans had access to electricity (*Directorate of Renewable Energy, Ministry of Energy of Kenya, 2019*). The number of connected households tripled from 2.3 million in 2013 to 6.9 million in 2018.

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.
- Government is collaborating with Clean Cook stove Alliance 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 for households in selected 14 under-served counties.
- **Cleaner cooking is an important part of Kenya's climate plans and is included in the Kenya's National Determined Contributions (NDC) to the UNFCCC Paris Agreement**

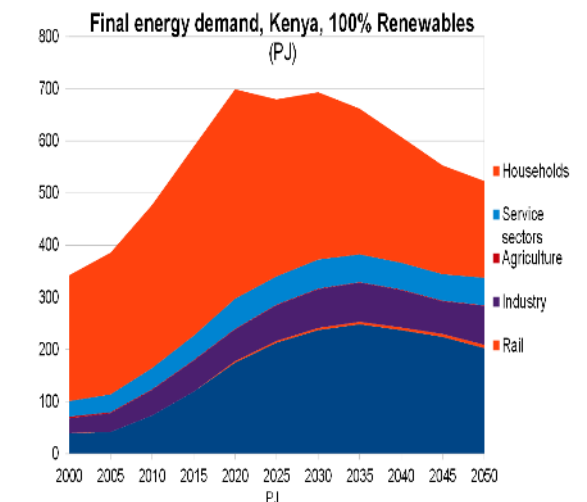
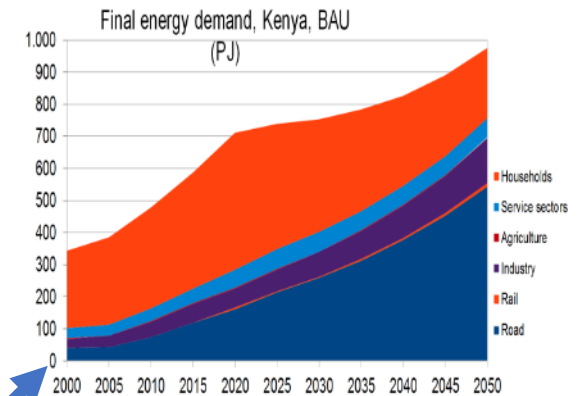
Renewables in Kenya

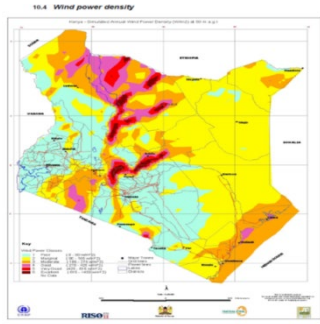
- Renewable energy currently accounts for 70% of the installed power capacity including large hydro-power. It accounts for more than 70% of the power generation, but production varies from year to year with hydropower production that is low in dry years.
- Government is supporting a Solar PV electrification of public institutions, including health facilities. So far, 1,500 institutions have been electrified.
- Under the Feed-in-Tariff (FiT) policy, 278 renewable energy projects with a combined capacity of over 4.7 Gigawatts 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).



Kenya's Demand for Energy

- Population grows, from 48 mill. today(2019), to (maybe) 84 mill. in 2050
- GDP continue to grow, 5.7%/year in average, GDP 5 times bigger in 2050 than in 2020, change from lower middle income country to higher middle income country.
- Demand for cooking, transport, light, industry etc. (energy services) will grow with population and GDP.
- Increasing energy efficiency will limit growth in energy demand for cooking, transport, light, industry etc.; but without new actions, energy demand will still grow.
- With new, efficient technology, large demands for fuel can be replaced with much smaller demands for electricity: charcoal replaced with electric smart cooking, diesel vehicles with electric vehicles etc.





Potential for Renewables in Kenya

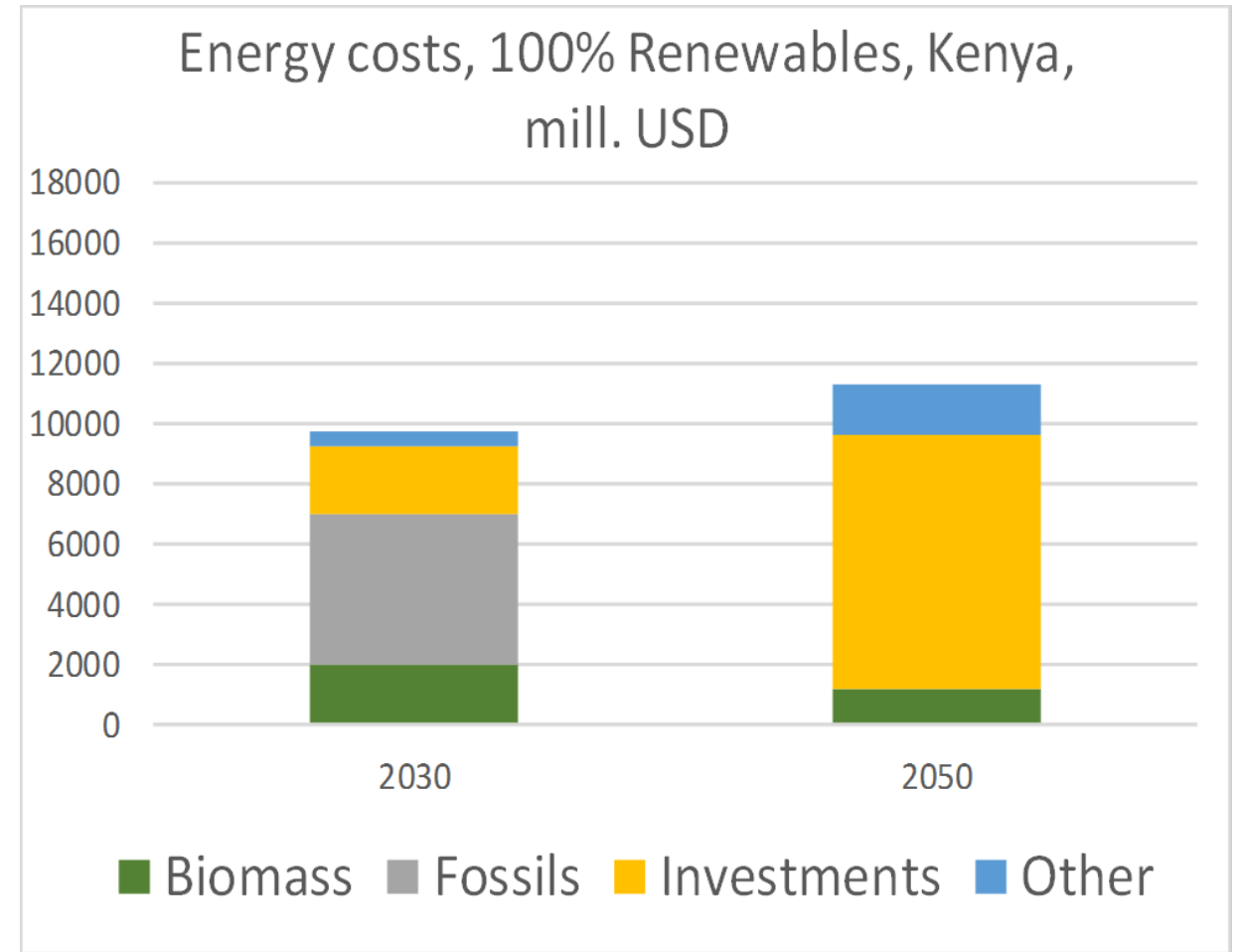
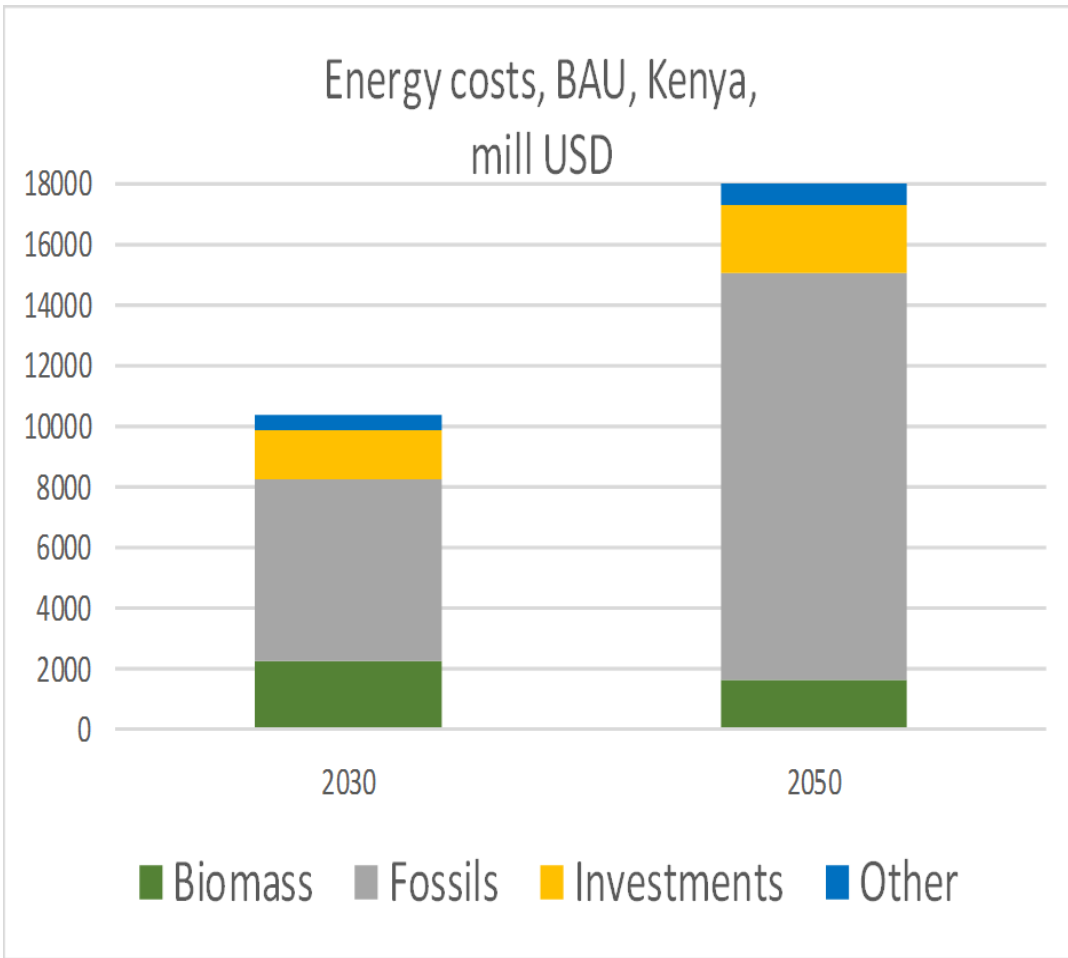
- Geothermal power 8500 MW, around 801 MW developed today
- Wind power, 500,000 MW in best wind classes, 300 MW today
- Solar power > 75,000 MW, around 50 MW developed today (off-grid)
- Hydro power theoretical 6000 MW, practical 1100-1200 MW, 823 MW developed today
- BUT Biomass (wood, etc.) resource is overused. Sustainable biomass use has been estimated to around 20 mio. ton/year, current consumption around 50 mio. ton/year. Biomass use must be reduced



Proposal for a 100% RE Development for Kenya

- Efficient cooking
- Change transport gradually to electricity, hydrogen and renewable fuels
- Make charcoal production much more efficient, from <15% today to 33%
- Expand windpower to 9,000 MW
- Expand solar power to 17,000 MW
- Expand geothermal power to 5,600 MW
- Expand electric interconnectors to 3,000 MW capacity
- Biomass power plants to balance demand and supply
- Our analysis shows that the 100% renewable alternative is cheaper than nuclear power and also the fossil fuel alternative with coal power.

BAU and 100% RE costs in 2030 and 2050



Thank You



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More information:

**Website: www.suswatchkenya.org/ease/
www.inforse.org/africa/EASE.htm**