

Green Energy Benefits: Policy Options for Kenya

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Executive Summary



The importance of renewable energy in creating employment, boosting economic growth, addressing poverty, environmental degradation, pollution, soil erosion and biodiversity loss has received less attention in Kenya. Currently, the focus is mainly on increasing the share of electricity generation from renewable energy. However, the underlying factors driving this initiative are mostly for energy diversity and security as a response to climate change and volatile fossil fuel prices. Employment creation and economic growth drivers have largely been ignored despite their positive contribution to citizens' welfare. In designing renewable energy policies, it is imperative to understand the importance of renewable energy in creating employment and enhancing economic growth.

Renewable Energy, Economic Growth and Employment in Kenya's Electricity Sector

Renewable energy sources are considered affordable, reliable, sustainable and modern. These attributes do not only meet the Kenya Government's target but also address Sustainable Development Goal (SDG) seven (7), which seeks to ensure access to affordable, reliable, sustainable and modern energy for all. Over the years, the trend for the share of renewable energy has closely corresponded with that of employment from the electricity sector, and economic growth trend. This may imply that investments in renewable energy translate directly to employment creation and the growth of the economy.

Figure 1 shows the trends for the share of renewable energy, employment from electricity sector and the economic growth (GDP) from 1985 to 2014 in Kenya. In 1989, the percentage of electricity generated from renewable energy (hydro and geothermal power) was 96.2 percent while the employment from the electricity sector was 22.4 percent. In 2010, the percentage of electricity generated from renewable energy (hydro, wind, cogeneration and geothermal power) dropped to 68.4 percent while employment from the electricity sector declined also to 11.7 percent in the same period. However in 2012, the percentage of electricity generated from renewable energy (hydro, wind, cogeneration and geothermal power) rose to 72 percent, while that of the employment from the electricity sector also increased to 22.1 percent in the same period.

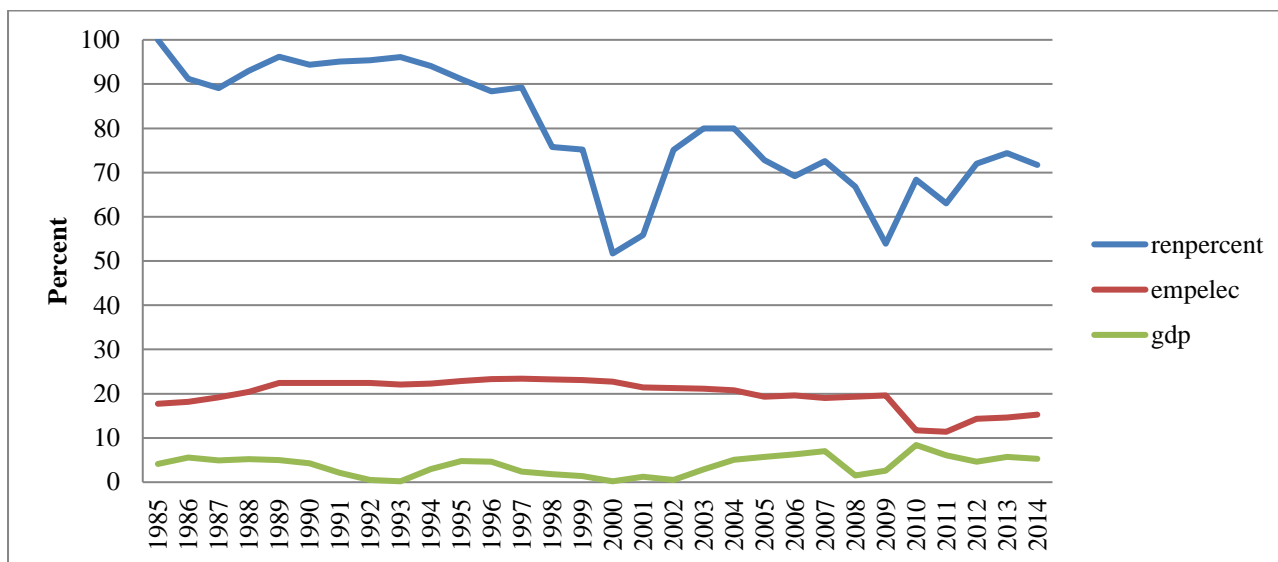


Figure 1: Share of Renewable Energy (renpercent), Employment from the Electricity Sector (empelec) and Economic Growth (gdp) from 1985 to 2014

Over time, the energy sector has relied on electricity generation mainly from hydro and thermal sources. Till date, hydro sources are threatened by climate change while thermal sources which rely on fossil fuels are considered expensive and very erratic. In 2014, Kenya consumed a mix of energy sources, including both renewable and non-renewable energy sources. Renewable energy constituted over 70 percent of total electricity generation and includes sources such as hydro, wind, solar, geothermal and cogeneration. The non-renewable energy sources consisted of coal and petroleum products. An overview of total electricity generated showed that electricity generation increased from 8,447.9 GWh in 2013 to 9,138.7 GWh in 2014 (Table 1).

Table 1: Electricity Generation by Source, 2013-2014 (Gwh)

	2013	2014
Hydro	4,435.0	3569.0
Geothermal	1,780.9	2917.4
Cogeneration	55.6	50.0
Wind	14.7	17.0
Subtotal: Renewable energy	6,286.2	6553.4
Thermal	2,161.7	2585.2
Total	8,447.9	9138.7

Source: KNBS (2015)

As indicated in Table 1, between 2013 and 2014, the share of renewable energy to total electricity generated dropped by about 3 percent from 6,286.20 Gwh to 6,553.4 Gwh due to a slight rise in thermal power generation. The reasons for Government to shy away from producing electricity from thermal power is mainly because renewable energy is secure, affordable, reliable, sustainable, modern, and it offers diversity.

With erratic fossil fuel prices, this may imply that when fossil fuel prices are low, policy makers might be tempted to reduce the share of electricity generated from renewable energy and substitute it with thermal power. In such a case, investments in non-renewable energy may worsen the development problems in rural Africa. For instance, Kenya is an importer of fossil fuels, thus increasing thermal power generation may imply more job losses as a result of the imports, and this could subsequently increase poverty levels in the country, as well as deteriorate the balance of payments. In addition, such investments are associated with the degradation of the environment coupled with pollution.

According to the Kenya Economic Report 2016, the country has abundant renewable energy resources such as solar, wind, hydro, cogeneration and geothermal power. If properly harnessed, the potential of these energy sources is huge, which guarantees the energy reliability and security even for future generations. The generation of electricity from these sources is also sustainable and environmental friendly with low levels of emissions when compared to fossil fuels. The extraction of renewable energy is also less associated with biodiversity losses and soil degradation. Investment made towards electricity generation from renewable energy leads to cheaper electricity in the long run when compared to fossil fuels. Using the Levelized Cost of Energy (LCOE) approach at 8 percent discount rate, it is cheaper to produce electricity using geothermal power (6.1 USc/KWh) when compared to coal (9.1 USc/KWh) as reported in the Least Cost Power Development Plan 2011-2030.

Contribution of Green Energy to the Economy

A study done on Green energy and its impact on employment and economic growth in Kenya revealed that the share of electricity generation from renewable energy strongly and positively contributed to growth.

The contribution of the electricity sector to gross domestic product (GDP) in Kenya is about 1 percent compared to 27 percent for agriculture and 10 percent for financial and insurance activities as indicated by Economic Survey Report 2014. Though the contribution of the electricity sector to GDP seems quite low when compared to other sectors within the country, this figure compares well with those of India (2.3%) and Hong Kong (1.6%). Given that electricity generation from renewable energy is related to growth, it is important to increase electricity supply from renewable energy sources, even as Government gears to enhance the electrification rate from an estimate of 35 percent in 2014. Expanding electricity supply in Kenya can be done by both the Government and the private sector. To ensure effective and efficient private participation, the investment environment must be conducive, of which the Government should play a leading and facilitative role in this endeavour.

Investment in renewable energy has positive impacts including the creation of employment. For instance, the analysis of investment in green energy, in this case the Olkaria IV geothermal plant, which has a capacity of 140 MW, revealed that a geothermal plant brings about 584 jobs and this amounts to an estimated output (i.e. total economic activity or value from geothermal power generation) of US\$ 32 000 000. As of 2014, the country had a total effective capacity of geothermal power of 1798 MW. Basing on this capacity, it can be drawn that an estimated 7,514 full-time equivalent (FTE) jobs can be created per year. In addition, an average of US\$ 413 000 000 value of output (i.e. total economic activity or value from geothermal power generation) will be generated per year. By 2018, the government aims to increase the installed capacity by more than 5,000 MW. This means that employment can grow by 3.6 times, where about 27,050 jobs

will be created. Assuming a business as usual scenario, it is expected that economic growth will more than triple, with the contribution of renewable energy rising to an estimate of 3.7 percent from the current 1 percent by 2018.

Based on the analysis, it is evident that immense growth from investments in renewable energy is possible. Therefore, it can be concluded that, renewable energy has huge potential not only in creating jobs, but in contributing positively to economic growth.

Policy Options

Encouraging investments in renewable energy generation is key to meeting the SDG 7 of providing energy access for all. This goal indicates that the energy should be sustainable, reliable, affordable and modern, at the same time create jobs and contribute positively to economic growth. In order to achieve this, policy makers should:

- Provide a favourable environment for investments in renewable technologies. This is because renewable energy requires massive investments as a result of huge upfront costs. This therefore means that, providing lower interest rates, offering grace periods and longer maturity periods for credits are critical in making renewable energy investments attractive.
- Provide an attractive Feed-in-Tariffs programme. This allows private investments to be assured of some positive returns.
- Address political and regulatory risks. For investments in the sector to benefit from a sound financial framework and achieve the expected returns, a stable political and an appropriate, effective regulatory mechanism are mandatory.

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