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Impact of the Kenya ReFiT Policy

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Executive Summary

The first Feed-in Tariff (FiT) in Kenya was introduced in 2008 to promote investments in renewable energy, especially wind, geothermal, biogas, small hydro and solar, and revised in 2010 and 2012 to accommodate more diverse energy sources and specific pricing for smaller project sizes. It was ultimately codified into statute through its addition into the Energy Act, 2019. However, the initial FiT did not attract investors due to the unfavourable tariff ceiling and high cost of generation equipment and financing.

The electricity generators operating under the FiT are paid at a fixed amount per kilowatt-hour (kWh) of electricity generated based on the regulators' estimated average generation and pass-through cost of the respective RE technologies.

Several arguments have been advanced against the use of FiT as a tool, including that

- they can lead to upward pressure on power prices in the near term;
- they do not address the high upfront costs of renewable energy technologies as they only kick in when generation starts;
- payment levels are often independent of market dynamics;
- they do not encourage direct price competition between project developers due to their standardized nature; and
- they make it difficult to allocate costs across ratepayer classes.

However, lessons from Kenya show that the FiT as a tool may be quite an effective instrument for spurring investments in renewable energy and that the benefits outweigh the raised issues.

The initial REFiT policy covered wind, biomass, and small hydro for plants with capacities not exceeding 50 MW, 10 MW, and 40 MW, respectively. The initial FiT did not attract investors and was therefore revised in 2010 to more accurately reflect the specific RE generation capacity and capital needs such as:

a) the costs associated with investment;

b) the operations and maintenance (O&M) costs;

c) fuel costs where applicable;

d) financing costs and return on the invested capital;

e) estimated lifetime of the power plant; and

f) the amount of electricity to be generated.

The revision, therefore, set up different tariffs for different technologies and system sizes to reflect this reality. The FiT policy was further revised in 2012 to devise a standardized PPA for projects 10 MW or less to reduce transaction costs. Following this revision, projects below this capacity were not subject to site and resources bidding, were embedded in the national grid, and connected to the grid at distribution voltages. In the policy, the power contribution from this category of generators was capped at 10% of the total national installed capacity. No further revisions have been made on the FiT policy despite recommendations in the Least Cost Power Development Plan 2017–2037 (LCPDP) which proposed that FiT policy should be revised to reflect prevailing industry reality.

The Kenyan FiT policy was designed based on the targets set out in the country's long-term strategy 2012–2030 of generating 5530 MW from geothermal power, 1000 MW from biomass, 200 MW from wind, and 300 MW from small hydro.

The key features of the policy are:

- certainty in price and the long investment period of 20 years that lowers investment risk enabling investors to forecast their costs and profit margins accurately;
- tariffs are denominated in USD eliminating the risk associated with local currency fluctuations; and
- guaranteed access to the grid and priority purchase.

The main goal of the tariff was to attract investments to the renewable energy sector.

The cumulative target output from all the projects under the FiT was capped at 1551 MW, with small renewable energy projects (up to 10 MW) contributing 51 MW and those above 10 MW contributing 1500 MW. However, in December 2020, the Ministry of Energy announced that the FiT projects at different stages of the development cycle, from those in operation to those at the feasibility stage, have a combined capacity of 4938.26 MW, which is more than three times the target under the scheme which, if all were to go into operation would lead to a massive oversupply of power as well as undermine the role of policy and planning in the power sector.

The financing of large-scale renewable energy projects remains a key challenge in their wider adoption towards achieving long-term electrification plans. One way to do this is through private and public partnerships. Under such an arrangement, the state plays a vital role by providing and shaping the institutional context and being a provider and facilitator of risk mitigation and a co-investor.

In the short- to medium-term, investment in large-scale renewable energy projects in Kenya will remain dependent on domestic government and politics and international development finance. The main barriers to the deployment of private finance at scale include:

a) risk and availability of risk mitigation, including the availability of financial products to mitigate risk and land availability and permit issues;

b) equity constraints and donor competition;

c) lending capacity for large-scale options and concessional finance crowd-out effects; and

d) inappropriate forms of finance.

The development of renewable energy investment in Kenya has not been without problems and challenges. Contestation of the land acquisition process between landowners, developers and even local governments is a common experience. Moreover, there are also reports of contestation and rights between developers. Other contentious issues relate to health, livelihoods and environmental impact. The disenfranchisement of segments of society, especially women, in matters relating to land ownership is another key issue. Encouragingly, some projects like the Kipeto Wind Power project in Kajiado have managed to navigate the challenges of acquisition of land rights through effective community engagement and consultations. This has primarily been achieved with the collaboration of civil society organisations (CSOs) and non-governmental organisations (NGOs).

On the other hand, one of the biggest positive outcomes of the development of renewable energy projects is the potential for both direct and indirect job creation. It is reported, for example, that for every 1 MW of solar mini-grid capacity installed, over 800 full-time equivalent jobs are created for Kenyans.

Overall, there is more to be gained through the development of renewable energy investment. A few well-thought-out actions could turn the challenges to advantage, for example:

a) government needs to design incentive structures at national and sub-national levels to create an enabling environment for renewable energy investments;

b) innovative financing models that enhance strategic partnerships among multiple stakeholders should be developed so as to pool financial resources for enhanced affordability, lower risk and increased investment flows for renewable energy;

c) development partners should provide technical assistance and capacity building towards developing an enabling environment for private sector energy investments; and

d) private sector investors should expand on investment models that focus on sustainable development outcomes such as universal access and affordability for consumers at the bottom of the pyramid, in turn creating economic opportunities and improving the overall quality of life for all citizens.

There is also a need to address the cultural barriers that prevent women and other vulnerable demographics from benefitting from large-scale development of RE investments through land lease and job creation. The role of CSOs and NGOs in organizing communities and ensuring the integrity of the investments should also not be overlooked.

01

Introduction

1.1 Background and context

> The Feed-in Tariff (FiT) is a policy instrument used to incentivize investments in renewable energy through long-term, fixed-price electricity purchase agreements and guaranteed grid access for a specified duration

(Huenteler, 2014).

The payments to the electricity generators operating under the FiT are paid at a fixed amount per kilowatt-hour (kWh) of electricity generated based on the regulators' estimated average generation and pass-through cost of the respective RE technologies. There are several arguments against the use of FiTs as a tool, including that

- they can lead to upward pressure on power prices in the near term;
- they do not address the high upfront costs of renewable energy technologies as they only kick in when generation starts; payment levels are often independent of market dynamics;
- they do not encourage direct price competition between project developers due to their standardized nature;
- and they make it difficult to allocate costs across ratepayer classes (Engola, 2019; Boampong and Phillips, 2016).

However, lessons from cases like Kenya show that as a tool FiT may be quite an effective instrument for spurring investments in renewable energy and that the benefits outweigh the raised issues (Janho, 2020; Castalia and Ecoligo, 2017).

In Kenya, a FiT was introduced in 2008 to promote investments in renewable energy, especially wind, geothermal, biogas, small hydro and solar. The policy was revised in 2010 and 2012 to accommodate more diverse energy sources and specific pricing for smaller project sizes. It was later codified into statute through its addition into the Energy Act, 2019 even though its provisions are still in force until the development of regulations under the Act is complete (Roedl and Partner, 2020).

1.1.1 Background of FiT in Kenya

The origin of FiTs in Kenya can be traced to the Sessional Paper No. 4 on Energy (2004) which set out the policy framework for the national strategies in the energy sector, leading to the enactment of the Energy Act, 2006 which also introduced FiTs to promote renewable energy (Castalia and Ecoligo, 2017).

In 2008, Kenya designed her first FiT system for energy generated from renewable energy sources to provide investment security to renewable power generators, reduce administrative and transaction costs and encourage private investors in the establishment of independent power production (IPP).

The initial policy covered wind, biomass, and small hydro for plants with capacities not exceeding 50 MW, 10 MW, and 40 MW, respectively (Roedl and Partner, 2020; GoK, 2010). Due to the unfavourable tariff ceiling and high cost of generation equipment and financing, the initial FiT did not attract investors as anticipated (GoK, 2010). To address these challenges, and also widen the scope to cover other green energy sources not previously covered, particularly geothermal, the FiT policy (2008) was revised in 2010. This particular revision observed that electricity generation costs vary according to the technology and depend on:

a) the investment costs for the plant;
b) the operations and maintenance (O&M) costs;
c) fuel costs where applicable;
d) financing costs and return on the invested capital;
e) estimated lifetime of the power plant; and
f) amount of electricity to be generated.

The revision therefore set up different tariffs for different technologies and system sizes to reflect this reality (GoK, 2010).

In 2012, the FiT policy was again revised to devise a standardized PPA for projects of 10 MW or less, so as to reduce transaction costs (GoK, 2012). After the revision, projects under this category were not subject to site and resources bidding, were embedded in the national grid, and connected to the grid at distribution voltages.

In the policy, the contribution of power from this category of generators was capped at 10% of the total national installed capacity. On the other hand, projects with a capacity larger than 10 MW would be awarded by the government to developers through a competitive bidding process. The FiT policy has not been revised since 2012, even though there is a legal requirement for revision to be undertaken every three years (GoK, 2012; GoK, 2010). As a result, critics argue that since 2012 there have been great developments, especially in solar technology, which have significantly driven down the costs of generating electricity from many renewable energy sources, although policy does not yet reflect this reality (Roedl and Partner, 2020). However, its codification into the Energy Act, 2019, means there is potential for this to be addressed when the requisite regulations under the Act are developed (Day et al., 2019).

The contribution of power from this category of generators was capped at

10%

of the total national installed capacity

Moreover, the Least Cost Power Development Plan 2017–2037 (LCPDP) (GoK, 2018) recommended that FiT policy should be revised to reflect prevailing industry reality while negotiations should start to phase out or reduce tariffs for the committed medium-term wind and solar project. Finally, the plan recommends only retaining projects under 10 MW capacity, while other projects should transition to an energy auction system where procurement will be managed on a price-competitive basis. From these recommendations, and after the enactment of the Energy Act (2019) that lays a foundation for implementation of the recommendations, the current FiT policy will soon see major revisions in the near future.

1.1.2 The design of Feed-in Tariffs

The Kenyan FiT policy was designed based on the targets set out in the country's long-term national planning strategy 2012–2030 of generating 5530 MW from geothermal power, 1000 MW from biomass, 200 MW from wind, and 300 MW from small hydro (Ndiritu and Engola 2020). With the main goal of the tariff being to attract investments in the renewable energy sector, the policy has key features that made the country a very attractive investment destination after the 2012 revision (Janho, 2020). Key among these features are: certainty in price and the long investment period of 20 years that lowers investment risk enabling investors to accurately forecast their costs and profit margins; the tariffs are denominated in USD eliminating the risk associated with local currency fluctuations; and guaranteed access to the grid and priority purchase (Rickerson et al., 2012).

Kenyan FiT policy was designed based on the targets set out in the country's long-term national planning strategy 2012–2030 of generating

5530 MW from geothermal power,

1000 MW from biomass,

200 MW from wind

300 MW from small hydro

Generally, the policy recognizes that electricity generation costs are technology-, site- and context-specific and therefore enumerates key provisions for different technologies when setting out the specific tariff as shown in Box 1:

Box 1 **Provisions of the FiT policy for different RE Technologies. Source: GoK, 2012**

I. FiT values are calculated on a technology-specific basis using the principle of cost, plus reasonable investor return;

II. FiT values shall not exceed the generation long run marginal costs (LRMC), as established in the Least Cost Power Development Plan (LCPD) except solar power plants for off grid;

III. the FiT is denominated in US dollars or the equivalent for other currencies converted at the mean exchange rate on the effective date of the power purchase agreement published by Central Bank of Kenya;

IV. the FiT is calculated for certain specific capacity categories, with a linear interpolation being used to set the value based on the actual capacity of the project;

V. the FiT applicable at the time a PPA is signed is the fixed value which will apply over the 20-year life of the PPA, except for the O&M component of the FiT which will be subject to annual indexation using the US Consumer Price Index, using the base index prevailing at the time of signing the PPA.

Based on these provisions, the FiT for different technologies and capacities is as shown in Table 1 and Table 2. As an example, a wind project with 0.5–100 MW of power plant capacity is USD 0.12/kWh, while that of a biomass-based energy source of similar capacity is USD 0.06–0.08/kWh. Moreover, power sourced from biomass at a capacity of 0.5–100 MW is assigned a tariff of USD 0.06–0.08/kWh, while smaller projects with a maximum capacity of 10 MW capacity are assigned a higher tariff of USD 0.1/kWh.

Table 1: The Feed-in Tariff values for small renewable energy projects (up to 10 MW installed capacity) connected to the grid

	Installed capacity	Standard FiT (USD/kWh)	% Scalable portion of tariff	Min. capacity (MW)	Max. capacity (MW)
Wind	0.5–10	0.11	12%	0.5	10
Hydro*	0.5 10	0.105 0.0825	8%	0.5	10
Biomass	0.5–10	0.10	15%	0.5	10
Biogas	0.2–10	0.10	15%	0.2	10
Solar (grid)	0.5–10	0.12	8%	0.5	10
Solar (off grid)	0.5–10	0.20	8%	0.5	1

**For values 0.5–10 MW, interpolation shall be done to determine the tariff for hydro*

Table 2: The Feed-in Tariff values for renewable energy projects above 10 MW installed capacity

	Installed capacity	Standard FiT (USD/kWh)	% Scalable portion of tariff	Min. capacity (MW)	Max. capacity (MW)
Wind	10.1–50	0.11	12%	10.1	500
Geothermal	35–70	0.088	20% for first 12 years, 15% thereafter	35	500
Hydro	10.1–20	0.0825	8%	10.1	200
Biomass	10.1–40	0.10	15%	10.1	200
Solar (Grid)	10.1–40	0.12	12%	10.1	100

The approval process of renewable energy projects is a long and complex procedure (Castalia and Ecoligo, 2017). First, the developer submits a letter of interest (LOI) after which, when approved, they are required to submit a 'detailed proposal'. The developer is therefore required to carry out detailed feasibility studies including environmental and social impact assessments which constitute part of the detailed proposal. A detailed proposal should be considered as the business plan of the investor and should therefore provide sufficient detail and be presented in a bankable format.

The target cumulative output from all the projects under the FiT was capped at 1551 MW, with the small renewable energy projects (up to 10 MW) contributing 51 MW and those above 10 MW contributing 1500 MW (Engola, 2019). However, according to communication with the Ministry of Energy in December 2020, the FiT projects at different stages of the development cycle, from those in operation to those at the feasibility stage, have a combined capacity of 4938.26 MW (Table 3). This is more than three times the target under the scheme which, if all were to come into operation, would lead to massive oversupply of power as well as undermine the role of policy and planning in the power sector (Ndiritu and Engola, 2020; Engola MK, 2019). However, in terms of the success of the policy implementation, it is apparent that it has not been effective with only seven projects with a combined capacity of 10.3 MW operational after 12 years (eight years since the last revision) of FiTs as shown in Table 3.

In particular, the FiT policy has been criticized for not being able to attract private sector participation in geothermal and biogas technologies and yet it was initially conceptualized for this particular purpose (Engola, 2019).

Table 3: Summary of FiT projects as at June 2020.

Plant	Wind	Biomass/ biogas	Small hydro	Solar PV	Geother-mal	Total projects	Total capacity (MW)
In operation	0	1	5	1	0	7	10.3
With signed PPAs	5	4	11	9	0	29	376.25
With initialled PPAs	1	0	4	2	0	7	338.51
With finalized PPA negotiations and waiting Kenya Power Board approval	0	0	0	2	0	2	80
With PPAs under negotiation	0	6	2	13	0	21	307.65
Approved with PPA negotiations yet to start	3	4	18	26	0	51	165.3
With feasibility studies approved and sent to EPRA	2	0	4	15	0	21	517
In feasibility stage	8	20	79	46	1	154	2674.03
Total approved projects	**19**	**35**	**123**	**114**	**1**	**292**	**4938.26**

Source: Ministry of Energy

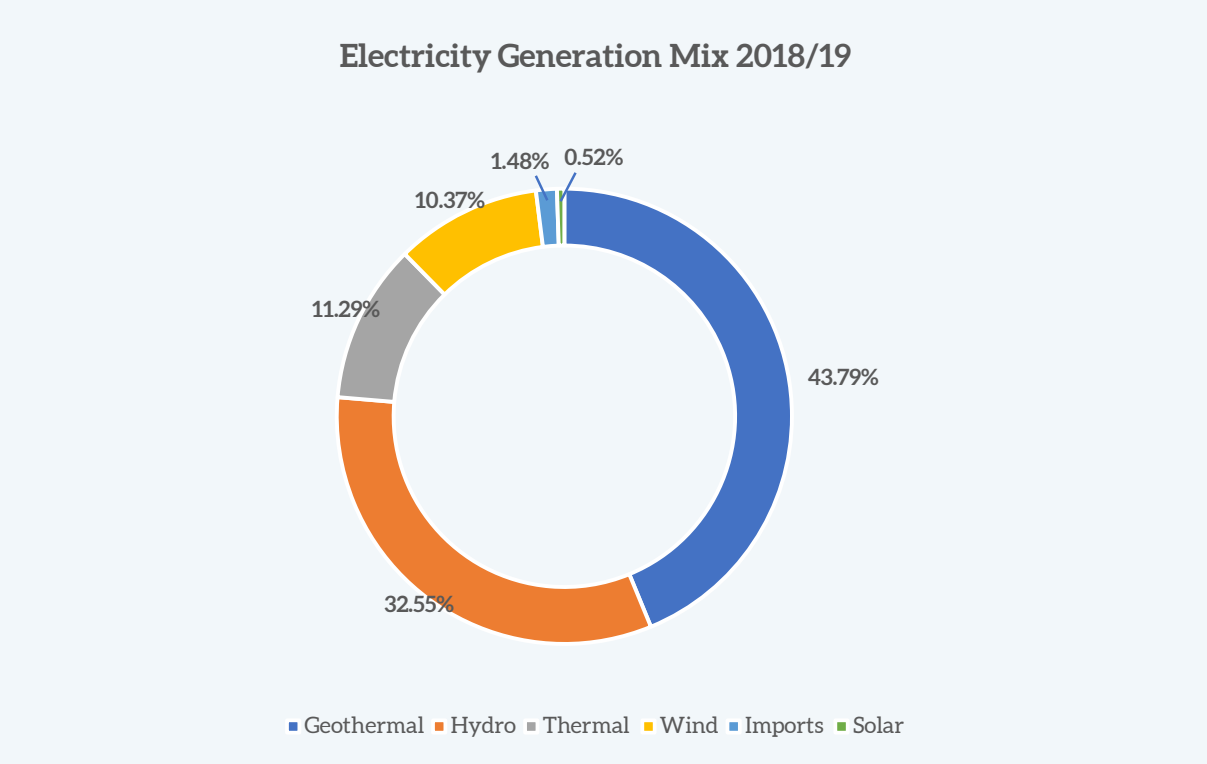
02

Impact of the FiT policy in renewable energy investments

2.1 Kenya's power generation mix and development status

Kenya is hailed as a success story in its integration of renewable energy into the overall energy mix, with KPLC reporting that by June 2019 renewable energy provided 87% of the total power generated (KPLC, 2020). Geothermal leads the contribution in the generation mix followed by hydro as shown in Figure 1. Growth has however been largely driven by wind and geothermal, and these have not been under the FiT scheme. Moreover EPRA (2019) and KPLC (2020) reports show that by 2018, the rate of connectivity stood at 74.7% while the peak power demand was 1859 MW against an installed capacity of 2712 MW. This progress is attributed to investments in renewable energy as well as major initiatives in the last mile connectivity programme in line with Vision 2030 (KPLC, 2020).

Figure 1: Kenya's electricity generation mix 2018/19



Source: KPLC, 2020.

Renewable energy provided

87%

of the total power generated

As mentioned earlier, since its inception in 2008, the FiT policy has only managed to bring 10.3 MW of electricity to the grid. This cannot be hailed as a huge success, though the interest it has generated from investors (with 292 projects totalling almost 5000 MW capacity in the pipeline) shows the policy could have a positive long-term impact. Several challenges have been highlighted for having contributed to this status. Engola (2019) and Ndiritu and Engola (2020) highlight some of these challenges as:

i. Administrative challenges: these include government bureaucracy, long and tedious multi-stakeholder engagement process, poorly drafted documents due to insufficient human capacity and limited human resource capacity within government, both in terms of number of staff and their technical ability.

ii. Policy design flaws: The policy allowed for unsolicited expressions of interest without any control measures to ensure the submissions were in line with the country's energy plans. This deficiency led to, for example, the admission of 187 wind and solar projects amounting to 3000 MW against the recommendations of the LCPDP thus distorting the country's energy plans.

iii. Regulatory shortcomings: The role of the Ministry of Energy was not well stipulated in the policy but was central in overall execution. There were also delays in the process of review of documents and approvals from government entities, while developers also regularly failed to meet set milestones; the overall result being that there were inadequate measures to guard against such occurrences.

iv. Rent-seeking opportunism: Some developers were mere speculators who obtained approvals in unclear circumstances without having adequate capacity to implement the projects. These developers then spend time looking for buyers who can. Other unscrupulous developers delay the implementation of the projects waiting for the overall cost of the equipment to go down, as has traditionally happened, so that they can make astronomical profits. This is because their projects are already approved with tariffs reflecting the higher cost of project development.

v. Financial challenges: As CAPEX costs for power projects are massive and furthermore developers have to acquire wayleaves which is both challenging and expensive, some developers have had difficulty obtaining sufficient financing to see their projects through. This is despite the fact that financial ability is one of the criteria for project approval.

vi. Technical capacity: Lack of adequate technical capacity on the side of project developers leads to delays on project implementation.

vii Ad hoc and informal regulations: Even though the policy sets up caps for different technologies, there is a general understanding that the cost of the technologies has gone down since the tariffs were set in 2012. Without a formal policy revision process, there is an understanding that the offtaker has currently capped the tariff for solar at USD 7.5–8.5 cents per kWh, and that investors are required to negotiate based on this cap contrary to the provisions of the policy. This has brought uncertainty into the sector with the long-term financial prospects unpredictable for investors. Finally, the offtaker has placed a moratorium against signing new PPAs citing financial and excess capacity, throwing confusion into the sector.

2.2 Implications of the FiT policy on power cost to consumer

Electricity tariffs are regulated by the Energy and Petroleum Regulatory Authority (EPRA). The energy consumers are banded into ten bands with domestic consumers being divided into two categories: those who consume less than 100 kWh per month (DC1) and those who consume more than 100 kWh (DC2) as shown in Table 4 (EPRA, 2018). Commercial consumers are banded based on the energy consumed and the connection voltage. The consumer bands are subjected to the same tariff whether connected through the main grid or mini grid (Castalia and Ecoligo, 2017) without differentiation on the source or the FiT terms of the power consumed.

Table 4: Different electricity tariff bands starting from 2018. Source: EPRA, 2018. Schedule of Tariff, 2018.

Consumer	Description	Tariff (KES/kWh)
DC1	Domestic consumers who consume less than 100 units per month	10.00
DC2	Domestic consumers that consume more than 100 units per month but do not exceed 1500 units per month	15.80
SC1	Small commercial consumers that use less than 100 units per month	10.00
SC2	Small commercial consumers that use more than 100 units per month but do not exceed 100 units per month	15.60
C11	Commercial and industrial customers connected at 415 volts whose consumption is more than 15000 units	12.00 per unit; 6.00 per unit during off-peak hours; 800 per kVA demand charge
C12	Commercial and industrial customers connected at 11000 volts	10.90 per unit consumed; 5.45 per unit during off-peak hours; 520 per kVA demand charge
C13	Commercial and industrial customers connected at 33000 volts	10.50 per unit consumed; 5.25 per unit during off-peak hours; 270 per kVA demand charge
C14	Commercial and industrial customers connected at 66000 volts	10.30 per unit consumed; 5.15 per unit during off-peak hours; 220 per kVA demand charge
C15	Commercial and industrial customers connected at 132000 volts	10.10 per unit consumed; 5.05 per unit during off-peak hours; 220 per kVA demand charge
SL	Applicable to public and county government for supply of electricity for street lighting	Energy charged at 7.50 per unit

The final electricity tariff consists of non-fuel charges, VAT, levies and pass-through costs (EPRA, 2019). The pass-through costs are the expenses the power supplier is allowed to recover directly from consumers and includes the fuel cost charge (FCC), foreign exchange rates fluctuations adjustments (FERFA), Water Resource Management Authority (WARMA) levy, and inflation adjustments and taxes.

The rate is computed monthly, but the applicable charge is set by EPRA at an agreed level to mitigate against sharp increases in prices (Castalia and Ecoligo, 2017; EPRA, 2019).

The REFiT policy allows the power supplier to recover 85% of the portion of the FiT for solar and 70% for the other technologies, which means it is treated as a pass-through cost, thus increasing the cost of power to the consumer. If the pass-through costs are more than the supplier is allowed to recover by EPRA, the supplier has to absorb the excess as operating losses which may impact on system and service investments and thus the quality of service delivered (Rickerson et al.,2012).

For example, in the 2019 annual report, KPLC stated that the non-fuel power purchase costs in 2019 increased by 34% partly due to growth in total units purchased from two new renewable energy generation plants, namely, the Lake Turkana Wind Power and the Garissa Solar Power Plant (KPLC, 2020).

This virtually eroded the entire revenue gains for the company even though fuel costs had decreased by 22% due to reduced units purchased from thermal plants.

The REFiT policy allows the power supplier to recover **85%** of the portion of the FiT for solar and **70%** for the other technologies

2.3 Renewable energy financing and financial access

Financing of large-scale renewable energy projects remains a key challenge in their wider adoption towards achieving long-term electrification plans. This is as true for Kenya as it is for most other developing countries. One way of achieving this is through private and public partnerships. However, this approach is not often as clear cut as may be perceived. Klagge and Nweke-Eze (2020) analysed these interactions in a Kenyan case study and observed that while private and international capital is needed to expand renewable energy generation facilities, there is concern that engagement by financial investors other than banks might lead to financialization with various negative implications. They observed further that the national state plays an important role, not only by providing and shaping the institutional context, but also as provider and arranger of risk mitigation as well as a co-investor. Using two case studies from Lake Turkana Wind Park which is largely funded by private capital, and geothermal exploitation which is largely government-funded, the authors argue that investment in large-scale renewable energy projects in Kenya 'is and will remain dependent on domestic government and politics as well as on international development finance'. They concluded that most private, and especially institutional, investor participation in such projects is and will be deterred as a result of their complex risk structure, which stands in the way of imminent emergence of financialization.

The foregoing misgivings notwithstanding, there are a number of such partnerships emerging in Kenya. Castalia and Ecoligo (2017) highlighted a combined Government of Kenya and donor-funded grid electrification program under the Last Mile Connectivity Project (LMCP), which closes the finance gap for rural customers to access electricity thus growing rural demand. Other actors include the United States Agency for International Development (USAID) and the Swedish International Development Authority (Sida) who are sponsoring an aid facility of 26.6 million in Kenya and Tanzania, to provide a 50% shared loss guarantee for loans to energy borrowers, including mini grids.

USAID and Sida are sponsoring an aid facility of **(26.6 million euros)** in Kenya and Tanzania, to provide a **50%** shared loss guarantee for loans to energy borrowers

The Kenya Electricity Modernization Project (KEMP) (ibid.), on the other hand, is implementing a mini-grid project at a cost of US$10 million, financed by the World Bank's International Development Association (IDA) and a SREP Grant in which REA is the implementing agency, and the government has signed a project financing agreement with IDA. Another example is Germany's KfW Development Bank which provided €15 million for the development of three mini grids in the Turkana and Marsabit counties (ibid). The German Agency for International Cooperation (GIZ), also cooperated with Barclays Bank of Kenya (now Absa Kenya) in a results-based financing (RBF) project which offered incentives to project developers to create a market for mini-grid electricity generation to trigger private sector investment. These initiatives collectively demonstrate the willingness of donors and financial institutions to support RE financing in the country.

The main barriers to the deployment of private finance at scale are:

a) risk and availability of risk mitigation including availability of financial products to mitigate risk and land availability and permit issues;

b) equity constraints and donor competition;

c) lending capacity for large-scale options and concessional finance crowd-out effects; and

d) inappropriate forms of finance.

Somorin and Nduhiu (2020) make the following recommendations:

a) government needs to design incentive structures at both national and sub-national levels to create an enabling environment for renewable energy investments;

b) innovative financing models that enhance strategic partnerships among multiple stakeholders should be developed to pool financial resources for enhanced affordability, lower risk and increased investment flows for renewable energy;

c) technical assistance and capacity building from development partners towards developing an enabling environment for private sector energy investments; and

d) private sector investors should expand on investment models that focus on sustainable development outcomes such as universal access and affordability for consumers at the bottom of the pyramid which, in turn, would create economic opportunities and improve the overall quality of life for all citizens.

2.4 A trigger of cultural and land conflicts

The renewable energy landscape has seen its fair share of land and cultural related conflicts that has left some casualties along the way.

» The most famous is the 60.8 MW Kinangop Wind Park project that had to be discontinued in 2016 due to disagreements related to land compensation and alleged health problems associated with the wind turbines (Reuters, 23 February 2016).

» The Lake Turkana Wind Project had also faced contestations from local residents over land compensation, although the challenges were later resolved through both legal and community engagement processes.

» Another project that faces imminent cancellation is the 90 MW Baharini Wind Power Company in Lamu West whose developers, a Belgian company, Kenwind Ltd, have been blamed for failure to meet county conditions related to land compensation, relocation and resettlement. In a new twist, the more than 600 landowners who were set to receive compensation from the investor have gone to court to contest the county assembly decision (Praxidies, 8 September 2020).

» Contestation of land rights between developers is also a common experience with Kenwind Ltd having to go through a long legal process against Cordisons International, an American consortium, over the allocation of 11,000 acres of the Lamu project land (Kagai, 15 May 2020). Cordisons International claimed it was granted a leasehold of the land in 2009 and was planning to invest in a similar power project. The legal battle culminated in the Supreme Court of Kenya where Kenwind Ltd finally received clearance to proceed with the development.

However, some projects like Kipeto Wind Power in Kajiado have managed to navigate the challenges of acquisition of land rights through effective community engagement and consultations (Sena, 2017). During the engagement process, it was agreed that the project would lease the land from the community as well as establish a community trust that would receive 5% of the annual company profit for community projects.

No households were to be displaced from their land, but those settled on the infrastructure path would be relocated to a place within their land, where they would not be affected. The company also engaged the services of a qualified local lawyer to represent community members who could not afford legal services during the negotiations.

For every

1 MW

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2.5 Impact of the REFiT on job creation

One of the biggest outcomes in development of renewable energy projects is the potential for both direct and indirect job creation. Day et al. (2019) report that for every 1 MW of solar mini-grid capacity installed, over 800 full-time-equivalent jobs are created for Kenyans. This includes 485 short-term jobs related to the capital expenditure and approximately 14 annual jobs related to ongoing operational expenditures for a period of approximately 25 years or the lifetime of the project. Castalia and Ecoligo (2017) concur with this, reporting that an assessment done by GIZ on the impact of the Talek Mini Grid in Narok after two years in operation found that 120 new local jobs were created, new shops opened and new productive uses such as welding and woodwork initiated. This does not only lead to individual financial improvement but also general community development.

Renewable energy projects either already have or plan to create a substantial number of jobs for local people in rural and remote locations where opportunities are scarce. For example, during construction, Lake Turkana Wind Park had 2500 workers, with most of the nonskilled positions taken up by the local community (Danwatch, 2016). Cummins Cogeneration Limited (CCL) also estimates their plant will be in operation for 20 years and will employ 2500 locals, many of them women.

Meanwhile, Kopere Solar Power Project estimates that the plant will require 200 skilled and unskilled workers over a period of 12 months during construction, and approximately 20 people during the operations development phase (Voltalia, 2018). The power projects are also expected to create new income generation opportunities for local communities through the sale of local construction materials and food by women and improve the local economy through increased trade activity.

2.6 Gender-related impacts

Being a patriarchal society most of Kenya's resources are owned or controlled by men. This has seen women excluded from negotiations and benefit-sharing discussions or even making decisions on the use of resources resulting from these discussions (Chan and Mbogoh, 2016). For example, Sena (2017) reported that women complained that when the men received lease payments from Kipeto Wind Power Company, some misappropriated the pay-out leaving the family with nothing. To address this problem it was suggested that part of the payment be paid to the women. Danwatch (2016) also reported that women were under-represented in the Lake Turkana Wind Park initial engagements with pastoralist groups thus having their voices largely ignored.

Chan and Mbogoh (2016) observed that the regulatory framework governing capital investments on land has some notable strengths regarding gender considerations. In particular, the law governing land acquisition explicitly provides for the inclusion of wives of both registered and unregistered occupants in consultation and compensation procedures, and gender impacts must be considered in compulsory environmental impact assessments (EIAs).

» However, it is the strict application of these directives that lacks in some instances, leaving the women exposed and vulnerable. Some projects under the REFiT scheme have specifically purposed to integrate gender aspects in their planning and community engagements.

For example, Kipeto Wind Power included women in all the negotiation and decision-making platforms to ensure their views were taken into consideration (Sena, 2017). Cummins Cogeneration Limited (CCL) in Baringo (USAID, 2020) and Kopere Solar Power Project in Kisumu, Nandi County (Voltalia, 2018) made an affirmative decision to employ women in their projects.

» To ensure full representation, some companies undertake gender assessments which helps in developing a community engagement framework that is gender sensitive to guide the community engagement process.

For example, Menengai Geothermal Development Project undertook a comprehensive gender assessment and collected sex-disaggregated data that was available which enabled it to design an inclusive and gender sensitive stakeholder engagement process and monitoring and evaluation mechanisms (IUCN, 2018).

» Moreover, the companies also appointed community engagement experts to ensure the process is effectively undertaken (USAID, 2020; Sena, 2017). When this process is well managed, it leads to several benefits like enhanced participation of women in male-dominated labour segments and the establishment of structures and systems that promote women and girls' rights in,

for example, schools, health and maternity centres, water points, etc. Kipeto Wind Power went as far as facilitating financial literacy training to equip the community with financial resources management and investment (Sena, 2017). This initiative is credited with a reduction in incidences of income wastage among the community. One female member reported that 'Some (landowners) might have wasted the first one or two lease payments. However, they are now wiser in financial expenditure. Home improvements resulting from the lease payments are evident throughout the project area'.

2.7 The role of CSOs in ensuring the integrity of RE investments

The role of CSOs is important during the design and implementation of energy projects to protect the rights of the community and/or the environment.

While the focus of the community might be the immediate financial benefits, they might be tempted to overlook the long-term effects on health, livelihood and the environment. Moreover, they might not have the technical capacity to decipher the actual impact of the renewable energy investments undertaken on their land or in their neighbourhood.

Finally, even though the majority may be convinced to accept the investments, some few dissenting voices with legitimate concerns may have their voices drowned out by the majority if they do not have any backing or organization.

The importance of CSOs in safeguarding community interests was recently displayed in the **deCOALonize Campaign** that supported the Lamu community in opposing the construction of a coal power plant on the island (UNEP, 2019).

The campaign, initiated and supported by local and foreign environmental and human rights organisations that included Save Lamu, Katiba Institute, Natural Justice, Heinrich-Böll-Stiftung, 350 Africa, Centre for Human Rights and Civic Education, Sauti ya Wanjiku, Muhuri–Muslims for Human Rights, Natural Resources Alliance of Kenya, American Jewish World Service and the Center for Justice Governance and Environmental Action, managed to have the power plant construction stopped through both legal and community mobilization processes.

In the case of REFiT projects, Kipeto Energy project presents a good example of where CSOs have played a key role in ensuring the company puts adequate measures in place to protect the habitat of two endangered vultures and other birds on the project site (Sena, 2017).

Indeed, Faber (30 January 2019) reported that the NGO community had to assure the project investors and the community that they were not anti-development but wanted to ensure the investment did not impact negatively on the environment. Together, the community, NGOs, and investors developed and implemented a biodiversity action plan (BAP) that would help achieve a net gain for the ventures through a combination of on-site mitigation and off-site conservation activities.

03

Conclusion

Feed-in-Tariffs (FiTs), alongside other policy instruments, are significant drivers for the deployment of clean energy at scale. However, Kenya's initial FiT did not attract investors due to the unfavourable tariff ceiling and high cost of generation equipment and financing. The first FiT was introduced in 2008 to promote investments in renewable energy, especially wind, geothermal, biogas, small hydro and solar, and revised in 2010 and 2012 to accommodate more diverse energy sources and specific pricing for smaller project sizes, and ultimately codified into statute through its addition into the Energy Act, 2019. While FiTs and RBF schemes were supposed to attract private mini-grid developers to the hybrid projects, initial ventures were characterised by a lack of proposals and it was postulated that the FiT was too low for hybrid systems (USD 0.20 per kWh), combined with a limited revenue stream due to the uncertainty of being able to feed solar power given operational constraints by diesel generation.

Arguments against the use of FiT as a tool include the following: they can lead to upward pressure on power prices in the near term; they do not address the high upfront costs of renewable energy technologies as they only kick in when generation starts; payment levels are often independent of market dynamics; they do not encourage direct price competition between project developers due to their standardized nature; and they make it difficult to allocate costs across ratepayer classes. However, evidence in Kenya shows that the FiT as tool may be a relatively effective instrument for spurring investments in renewable energy and that the benefits outweigh the raised issues, and for this reason it has continued to attract interest, albeit not to the extent initially forecast.

The Kenyan FiT policy sought to address most of the weaknesses identified as responsible for the initial failure. Among the features it introduced were:

- certainty in price and a long investment period of 20 years that lowers investment risk enabling investors to accurately forecast their costs and profit margins;
- the tariffs are denominated in USD eliminating the risk associated with local currency fluctuations;
- and guaranteed access to the grid and priority purchase.

Nevertheless, even this fix has managed to attract no more than 10.3 MW of projects to date. The interest generated since then however indicates that the tool has massive potential if viewed over the country's long-term power strategy, with 292 projects totalling almost 5000 MW capacity in the pipeline. The conclusion therefore is that the policy should be pursued, especially for small solar and biomass projects as recommended in the Least Cost Power Development Plan 2017–2037 (LCPDP), even as efforts are made to address the weaknesses and barriers.

Available evidence shows that investment in large-scale renewable energy projects in Kenya will likely remain dependent on domestic government and politics as well as on international development finance but there is a need to address the complex risk structure to attract more private and institutional investor participation in such projects.

In particular, specific actions are needed to solidify the potential gains from FiTs, namely,

a) the government needs to design incentive structures at national and sub-national levels to create an enabling environment for renewable energy investments;

b) innovative financing models that enhance strategic partnerships among multiple stakeholders should be developed to pool financial resources for enhanced affordability, lower risk and increase investment flows for renewable energy;

c) development partners must provide technical assistance and capacity building towards developing an enabling environment for private sector energy investments; and

d) private sector investors should expand investment models that focus on sustainable development outcomes such as universal access and affordability for consumers at the bottom of the pyramid, in turn creating economic opportunities and improving the overall quality of life for all citizens.

There is also a need to address the cultural barriers that prevent women and other vulnerable demographics from benefitting from large-scale development of RE investments through well-structured land leases and job creation.

The role of CSOs and NGOs in organizing communities should also not be overlooked. Both CSOs and NGOs can help assure project investors and the community that RE projects are not anti-development while ensuring the investment does not impact negatively on the environment and the lives and livelihoods of the vulnerable members of the community.

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