County Update 2

Strategic Partnership on Sustainable Renewable Energy for Enhanced Economic Opportunities in Kenya

Bomet & Homa Bay Counties

Provided by

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Introduction

The National Energy and Petroleum Policy (NEPP, 2015) acknowledges renewable energy (RE) as the best solution to the current energy insecurity in Kenya because of its self-replenishing capabilities and as such, can sustainably serve present and future generations. The use of RE technologies (RET) has the ability to devolve socioeconomic prospects to rural off-grid communities and simultaneously impact positively on many social aspects ranging from health to education (Johnson & Nyambane, 2016; WB, 2014).

This County Update Note discusses ways through which the sustainable use of RE can enhance economic opportunities for men and women in the counties of Homa Bay and Bomet. It outlines the possible RE technologies applicable to the two counties. The data used was collected from a desk review study, county ministry officials; community based organizations (CBOs) as well as feedback from CUTS- moderated consumer energy forums in the counties of Bomet and Homa Bay.

Relevant small-scale Renewable Energy Technologies and solutions for rural economies

Bomet and Homa Bay counties are well endowed with RE sources yet they are ranked as energy insecure due to lack of strong institutional framework, cost related challenges as well as lack of technical capacity (Owino et. al., 2017; Karekezi & Kithyoma, 2003). Besides, relevant technologies such as improved cook stoves/ *jikos,* and the

necessary raw materials are locally available. According to NEPP (2015), RET can be broken down into ten (10) main categories- geothermal, hydropower, biomass, biofuels, biogas, solar, wind, municipal waste and other renewables (ocean energy, biomass gasification, bio-refinery technologies and concentrating solar power). **Four of these sources are applicable in the case of Bomet and Homa Bay counties, i.e. hydropower, biomass, biogas, and solar**.

Hydropower

Hydropower is electricity generated from machines that are run by moving water. The two counties should make use of the national government's Feed-in-Tariff (FIT) policy to set up small hydropower stations that can supply electricity to households in the local communities, businesses, farms and possibly deliver the surplus to the national grid.

Bomet County has rivers cutting through its four sub-counties thus making it viable to generate hydropower- Tenwek Falls is already functional while negotiations are ongoing with Iria Maina Multipurpose Co-operative Society Limited to set up a station along Itare River. These small hydropower plants will contribute towards satisfying the present and future demand for electricity in the county (USAID, 2015). On the other hand, Homa Bay County has the Sondu Miriu Hydropower Station with an installed capacity of 60MW (KENGEN, 2017) as well as River Kibuon with potential for a small hydropower generation.

Biomass

Firewood and crop residue are used for cooking in rural communities because they can be sourced cheaply. The continued use of biomass for traditional cooking coupled with rapid population growth has however put pressure on the environment and resulted into gross deforestation (NEPP, 2015). More recently, briquettes have been fronted as a more sustainable use of biomass energy (Cohen & Marega, 2013).

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Nevertheless, there is no demand for briquettes in Bomet and Homa Bay counties due to low levels of awareness and inadequate capacity for production (Owino et. al., 2017).

Biogas

Biogas is produced by digesting animal manure, sewage and other biodegradable wastes. The generated gas can be piped into households and businesses to be used for cooking and heating purposes. Though not yet fully explored, several households Bomet county are already producing it in small quantities as they practice zero-grazing, therefore making it possible to collect cow dung (County Government of Bomet, 2013). In Homa Bay, biogas production has not developed as the local communities free range their cattle, making it unfeasible to collect the

primary raw material for biogas generation. Low awareness levels on production and use of biogas is evident in both counties.

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Solar

Nationally, the solar market is estimated to grow at 10 per cent per annum (KEREA, 2012). This growth is driven by the demand of small photovoltaic (PV) systems and the electrification of off-grid facilities such as schools, hospitals and businesses (NEPP, 2015). Solar energy enterprises such as *M-Kopa*[1] and *D-Light*[2] are well distributed in urban as well as rural areas and offer a myriad of products and services to the market.

The County Government of Homa Bay has made significant progress in the adoption of solar street lighting programmes in Homa Bay town and Oyugis as well as the Nyakwere Solar Project (CGHB, 2017; Ngugi, B. 2016). Meanwhile, Bomet County is seeking funds for the purchase of solar panels for lighting up rural areas that have not been connected to the national grid (County Government of Bomet, 2014).

[1] Supplier of solar technologies on credit embedded on daily payment plans via mobile money

[2] A global company in solar-powered solutions for people without access to reliable electricity

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Benefits associated with adoption of Renewable Energy Technologies

Social Benefits

RE is clean energy since it doesn't pollute the environment as other non-RE sources. They contribute low greenhouse gases associated with global warming.

There is reduced the rate of deforestation due to low demand of firewood and charcoal.

Additionally, RE sources such as solar and wind are readily available within communities implying the time that could have been spent by women and girls collecting firewood, for instance, is invested in more productive activities.

The use of solar street lighting has enhanced security in off-grid towns and market centers as well as made it possible for the business community to extend their working hours.

The construction of dams for hydroelectric power generation have also benefited communities by controlling floods, availing piped water and providing recreational activities such as water sports.

Economic Benefits

The costs associated with the use of RET have been reducing over the recent years. For example, the importation of solar appliances and accessories is currently duty free. Though the initial cost of setting up may be high, there is no consumption related charges accrued post installation.

RET provide direct and indirect employment opportunities. Jobs may accrue directly in power generation plants, solar accessories distributorships, manufacture of improved *jikos,* maintenance service providers among others. Other enterprise development activities associated with RET are; barber shops/ salons, secretarial services, phone and battery charging, entertainment galleries, etc.

The farming communities benefit through improved practices such as RE-powered water pumping. Secondary benefits are in the form of increased disposable income available for households.

Challenges to accessing Renewable Energy Technologies

The rate of adoption of RET is greatly hindered by high initial costs. For instance, electricity coverage in Bomet and Homa Bay counties are at 32 per cent and 15 per cent respectively (Owino et. al., 2017). This is due to the prohibitive costs associated with wiring houses and the initial connection fee of Kshs. 15,000. Likewise, the uptake of solar and biogas technologies is low due to similar sentiments.

There is low level of awareness of some of the clean energy technologies in the two counties. This is mostly evident with briquettes and biogas. Cultural beliefs and misconceptions such as the use of human waste as raw material for producing biogas in Bomet County, or that LPG lacks adequate calorific value and does not cook food with good taste have contributed towards the slow uptake.

Institutionally, Homa Bay and Bomet counties lack RE-specific policies and regulations. Bomet is currently working towards a county energy policy while Homa Bay has in-exhaustive mention of RE in its CIDP. This makes it difficult to fully realize the opportunities existing in RE. The lack of pertinent county-level policies is further attributed to low capacity of the county assemblies to deliberate on and pass sound and relevant laws.

The regulatory environment is not well defined and has a negative effect towards the quality of RET appliances in the market. For example, there are many sub-standard solar panels and accessories offered for sale by unscrupulous businesspeople exposing members of public to financial loses and health hazards.

Conclusion

Homa Bay and Bomet counties have taken important steps towards adopting sustainable RE yet there is much more to be done. The sustainable exploration and use of clean RET has a massive potential to open up economic opportunities for both men and women in the two counties. Prospects exist for setting up new businesses in production, distribution and maintenance of renewable energies. Economic gains will further accrue in the form of savings through reduced expenditures on non-renewable and traditional biomass, and on associated medical expenses.

Recommendations

a) The initial costs of setting up RET is prohibitive. The county governments of Homa-Bay and Bomet should explore ways of making it easier to setup by exploring different approaches such as credit facilities by dealers and subsidy arrangements with the national government.

b) Awareness creation on the benefits, relevance, availability and applicability of RET in the two counties should be organized through *barazas,* marketing and other forums. The sessions should clearly demonstrate to the community members the various economic opportunities associated with RE, as well as address cultural and social misconceptions held by the communities.

c) Both Homa-Bay and Bomet County governments to consider establishing sound policy and legal environment favorable for the implementation of RET projects. This must be coupled with capacity building and technical support to the policy community particularly within the county assemblies.

d) Regulation of the RE sub-sector has to be improved through effective implementation of existing laws, as well as, developing and implementing new ones where they do not exist. Effective regulation will ensure consumer protection, professionalism, and increased investment in the sector by the private sector.

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This county update note is compiled by CUTS Africa Resource Centre, Nairobi. CUTS' county updates aim to inform individual champions of renewable energy at the county and national government, to update them on the on-going issues related to uptake of renewable energy. The information gathered will also inform the objectives of the multi-stakeholder engagement forums and community meetings. They will be more reactive owing to the fact that they will be responding to trending topics on R.E.

Yaya Court- 2nd Floor, No.5
nairobi@cuts.org ● http://www.cuts-international.org/ARC/Nairobi/
Ph: +254203862149 | Mob: +254733990202|

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