Report of Energy Research and Development Workshop Convened Virtually

Enhancing Research and Development in Renewable Energy in Kenya towards Universal Energy Access

17TH December 2021

Sustainable Energy Access Forum – Kenya (SEAF--K)

www.seafkenya.org

Acknowledgement

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Acronyms

CSO	- Civil Society Organization
GDP	- Gross Domestic Product
KCCWG	- Kenya Climate Change Working Group
KenGen	- Kenya Electricity Generation Company
NACOSTI	- National Commission for Science, Technology, and Innovations
NDCs	- Nationally Determined Contributions
NEPAD	- New Partnership for Africa's Development
R and D	- Research and Development
RTI	- Research, Technology, and Innovation
SDG	- Sustainable Development Goal
SEAF-K	- Sustainable Energy Access Forum Kenya
TWG	- Thematic Working Group
WWF	- World Wide Fund for nature

1. Background information

Energy system in Kenya is a complex web of interrelated actors and networks, in physical, social, economic, and institutional senses. Research, technology, and innovations (RTI) is a critical enabler of the sector. Collaboration between state agencies and other actors of the research, technology and innovation landscape need to be strengthened. This has potential to significantly increase the number of agents benefiting from knowledge creation and diffusion especially the last mile within the energy space that can never be achieved if for instance the government, or academia or privates sector works isolatively. For this reason, a well-coordinated RTI structure will ensure sustained knowledge management processes, a key tool for translating renewable energy information to modern products and processes. There is need to strengthen this among various state agencies and non-state actors. For instance, universities as critical actors in generation and development of required capacities need to be involved in dialogue around collaboration with communities, advocacy organizations and the private sector. Though this exists to some extent, more can be done. Several policies and legislations exist such as Science, Technology, and Innovation Act. 2013 and Energy Act.2019. However, translating these into real benefits to the end users is still a big challenge hence part of the issues that this concept seeks to unpack as per specific objectives. Coevolution aspects of research, technology, and innovation and how they overlap, reinforce or clash with physical, social, economic, and institutional dynamics is of significance and can help planners in deriving critical data.

2. Introduction

From above background, the Research and Development thematic group of SEAF-K convened the second stakeholder consultative workshop on 17th December 2021, succeeding a similar stakeholder meeting held in October 2020. The meeting which sought to bring research, technology and innovation stakeholders to speed regarding milestones achieved following the aforementioned consultative workshop was attended by 18 participants including 11 male and 7 females drawn from academia, civil society organizations, private sector and government ministries and parastatals.

3. Objectives of the meeting

The Main objective of convening the virtual workshop was to inform and strengthen research and development of renewable energy technologies and innovations through sharing outcomes of SEAF-K strategic meetings with select institutions of research and Development in energy sector and consultatively deriving stakeholder perspectives.

The discussions involved unpacking the renewable energy research and technology development landscape through understanding of critical policy aspects underpinning energy research, institutionalization of energy research in Kenya (what has worked and what has failed) and addressing issues of renewable energy technology failures.

4. Remarks

4.1. Remarks by Mr. John Kioli,
Chairperson,
Sustainable Energy Access Forum-Kenya

"Issues of renewable energy are critical in the struggle towards enhancing access. Research into use in energy is essential in advancing this narrative. We are focused to transiting to net zero and energy must be at the centre of discussion including meeting our nationally determined contributions. Research is important in this course. Advancements in motor vehicle industry are remarkable, however, we are left with challenges as electric vehicles can only travel 100 km after which they would require charging. In cooking, we need research, technology and innovations to lower down cost of accessing efficient technologies"

4.2. Remarks by Dr. Faith Odongo,
Senior Deputy Director,
Ministry of Energy

"Renewable energy development has gained central focus based on the contribution in the development arena. We notice the drastic changes in climate with rising temperatures. Our energy policy 2018 articulates the need for coordinated research in energy and setting aside 2 percent of proceeds in energy towards sector research and development. The cabinet secretary is mandated to work with relevant stakeholders/agencies to formulate a national strategy to coordinate research in renewable energy. It commits to establishing an institute to enhance research and capacity building in energy sector as well as linking academia and industry. Strategic plan 2018-2022 requires establishment of energy lab in year 4 and 5. However, institutionalization of energy research has not been realized in the Ministry. NuPEA has been given the mandate to coordinate research in the sector but the depth of this is yet to be realized. Ministry has been benefiting from interactions with the mandate KIRDI, EPRA, University of Nairobi, Kenyatta University etc. There has been uncoordinated research from civil society and other stakeholders for own purposes. There is no integration of efforts and results have been underutilized. The bringing us together by SEAF-K is timely. Its imperative that if we are to make any difference, the frequency of these meetings need to be increased."

4.4. Remarks by Prof. Walter Oyaya,
Director General,
National Commission for Science, Technology, and Innovation.

"Lowering carbon emissions is critical in averting climate change. Having coordinated mechanisms is critical. Africa's challenge lies within working in silos. We need understand our priorities. Globally, countries are prioritizing cutting down coal, what about Africa? What are we

doing in Dandora dumpsite? What do we do about the stench coming from Ruai human waste site? Can we transform this into solutions e.g., biogas without necessary looking at policy lens? Nakuru is now a city, how are they planning to dump their waste effectively? How do we partner with solar manufactures? We need to look at innovations to localize these without reinventing the wheel. There is vast land in North Eastern, how can wind be made an effective resource there? How can we lower costs, and make energy available? NACOSTI through her research system of innovation component, science, research and, technology is willing to steer this forward. We can organize to have more of this in future."

5. Plenary remarks

5.1. Plenary remarks: Policy issues critical to strengthening energy research in Kenya

By Dr. Benson Mburu,
National Commission for Science Technology and Innovation
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Energy is one of the drivers of our economy and is significant for developing agriculture, health, environment etc. as well as the social sector besides industrialization. There is lack of a national research institution dedicated for the sector. It is important to have a policy towards establishing a national research center with yearly strategic outputs and reporting to the Cabinet Secretary of energy. University research is tailored towards academia. Most agencies are dedicated to data in their lines, but an overarching institution lacks. Issues of technology are critical in power generation, for instance, how well can training can be enhanced for *jua kali* to make wind energy masts etc.? This presents an institutionalization gap for energy s it can be vividly seen that; Kenya Marine and Fisheries Institute exists for marine and fisheries research, Kenya Medical Research Institute exists for health research while for forestry sector, there exists Kenya Forestry Research Institute. Stakeholder's present were urged to think in-depth on modalities of having such an institute that can that coordinates all energy agencies and research stakeholders.

5.2. Plenary remarks: The missing link between academia and energy CSOs that is critical to enhancing research, technology and innovation in renewables

By Dr. Waita Sabastian,
Senior Lecturer,
University of Nairobi.

University of Nairobi is involved in research on various solar energy applications, through which they produce prototypes and hand over to the industry. There have been attempts to come up with a science park i.e., incubation centre of research outcomes that come out of academia. The incubation is meant to enhance finetuning of products developed before release to the market. The science park thought is yet to materialize. Most industries found in Kenya are high-end technology oriented with minimal localization. There is need to strengthen collaboration to make it better. Setting up of a testing centre can begin with testing modules and also gauge the luminance. There is need to test whether the luminance and power specifications on the labels are as indicated on packaging. Discussions are on-going to set up this at the University of Nairobi and may proceed to batteries. There are concerns that consumers don't get value for money due to malpresentation of information by unethical manufactures.

7. Plenary remarks: The missing link between academia and energy CSOs that is critical to enhancing research, technology and innovation in renewables

By Sara Kwach,
Scientist,
Kenya Industrial Research and Development Institute

The Kenya Industrial Research and Development Institute has research and technical department where research scientists come up with ideas and raise funds of which the main donor is government. First stage is prototyping after which the product is taken to the market for technology transfer followed by release to industry for community uptake. Trainings are offered and incubation services provided. People are natured up to a certain point on how to handle the technology. Key challenge is in the range of funding available; hence the technology continuity often breaks forth. There is need for a system through which research approach is facilitated from initial stages, sustained and monitored for effective return onto investment. Reverse engineering is key. Researchers If well supported can effectively support achievement of vision 2030. Research institutions can be empowered to curb substandard products through sufficient infrastructure for testing.

6. Plenary

- Kenya National Innovations Agency is open to supporting innovations across the country
- Innovators are encouraged to pursuing patent protection through Kenya Intellectual Property Institute
- KENGEN is in the process of setting up and a research and development centre
- Kenya can tap on opportunities for reverse engineering to avoid importing basic products which just need us to build local expertise
- We need to do the hard stuff for the country to move forward and the secret is to empower small and medium enterprises to be able to deliver right quality of products
- There is a challenge in people placing ‘money aspect’ in front instead of knowledge which undermines entry of various entities who are willing to hold innovators hands
- We need to explore issues of centralizing information on energy and climate change at one place for ease of access
- A lean team comprising state and non-state actors will be convened in January 2022 sieve some of the outcomes of 2020 consultative workshop and the current meeting
- Nuclear Power and Energy Agency was in the process of developing an energy research strategy, however, it was not clear whether, the institute will consider all energy portfolios and efforts were to be made link with the institutions

7. Closing remarks

By Dr. Anderson,
Research Fellow,
Stockholm Environment Institute-Nairobi.

There is need to close the policy-research-innovation gap. Affordable and scalable renewable energy options are critical in the gapping efforts during and post the pandemic. National strategies and ambitious targets and clear pathways complemented with Collaborations such as SEAF-K re necessary to bring in public and private investment priorities and activities to act in concerted perspective. Political ambition and system approach across r, tec and policy are instrumental for energy transition. Public funds can be used as a leverage to encourage private funding, which is quite critical in this transition. This is important to give private sector a sense of confidence and trust, to be in the right direction. SEI has been working over the past years on innovative business models for accelerating access to renewables. Has been partnering with European Union and African partners towards off-grid options such as battery banks for power storage, solar post-harvest handling, solar refiguration, solar lighting for off grid communities and solar e-mobility.