



## **WORKSHOP REPORT**

# **EACREEE CONSULTATION MEETING ON ENERGY EFFICIENCY WITH MINISTRY REPRESENTATIVES**

### **VENUE:**

**WHITE SANDS HOTEL, AFRICANA ROAD, DAR ES  
SALAAM, TANZANIA**

### **DATE:**

**13<sup>TH</sup> FEBRUARY 2019**



## **1. OPENING**

The meeting started at 9:00 am chaired by Mr. Bagilishya Ngoga Juluis, a Telecommunications and Multimedia Engineering Officer from Rwanda Bureau of Standards.

The meeting focused on national policies landscape on energy efficiency, status of policy implementation and opportunities and challenges for scaling up energy efficiency initiatives in the six EAC Partner States namely: Burundi, Tanzania, Rwanda, South Sudan, Kenya and Uganda. It concluded on a discussion on proposed regional project on Industrial energy efficiency.

## **2. PRESENTATIONS AND DISCUSSIONS**

### **BURUNDI – Presented by Mr. Moise Makuwa, a Technical Advisor of Ministry of Mines**

On national policies on energy efficiency, the Energy Policy Letter from 2011 does not cover aspects of energy efficiency. However in 2012, the government got support from the World Bank on the distribution of 200,000 CFL lamps and awareness raising on energy efficiency. Capacity building on energy audits for big consumers have been done.

A department of energy efficiency was created in 2014 under the Directorate General of Energy, but there is still limited action on the ground because there is no budgetary allocation for energy-efficiency projects. A private factory for compact fluorescent lamps (CFL) was launched in March 2018 focused to supply the market in Burundi and Democratic Republic of Congo.

Opportunities are there but political will and action remains key. To unlock energy efficiency challenges, the existing department of energy efficiency and the Bureau of Standards and Quality Control needs to be supported.

Challenges to implement energy efficiency initiatives and programmes are; lack of policies and adequate legal framework, lack of equipment for testing, lack of communication on energy efficiency, lack of capacity building for local expertise, and, lack of fund for supporting energy efficiency initiatives. Possible solutions will include putting in place policies and legal framework, establishing and capacitating testing laboratory testing products compliance with MEPS, employing efficient communication strategy on energy efficiency all stakeholders, building capacity and competency for players in the market, and, enhancing collaborations with technical and financial partners.

### **KENYA – Presented by Mr. Julius James Gitonga, Senior Assistant Director, Renewable Energy, Ministry of Energy**

Kenya has invested in expanding and upgrading of transmission and distribution infrastructure to reduce losses. The country has also increased generation capacity from cheaper, sustainable sources. Electricity generation stands at 2,712 MW: Hydro – 826 MW; Geothermal – 662 MW; Thermal (MSD) – 748 MW; Thermal (Gas Turbine) – 60 MW; Wind – 337 MW; Biomass – 28 MW; Solar – 51 MW and Imports – 0 MW. Kenya's peak demand stands at 1832 MW. The demand for power does not seem to be growing as fast as the generation and connections. Western Kenya is still experiencing power shortages due to technical challenges. The government is working on the power network aggressively. Electricity access based on actual connections stands at 73%. Electricity access strategies include: last mile connectivity

with Phase 1 – Those near transformers targeting target 3.4M Kenyans, Phase 2 – Increasing the transformers, and Phase 3 – Reaching Off grid areas.

On energy policies, the Energy Act of 2006 necessitated the creation of energy-efficiency and conservation, functions, programmes, standards and regulations. The Energy Management Regulation of 2012 came to force for implementation of the Energy Efficiency and Conservation. Regulation requires commercial and industrial sector meeting a set threshold to have an energy management unit and carry out periodic energy audits with licensed firms or individuals. Every facility that is within the large consumer list is required to have an energy officer in charge of energy issues and able to advise management where specific adjustments to cut down on energy use. The government is positioning itself on energy efficiency by having private sector taking the lead. Currently, Kenya Association of Manufacturers are implementing some of the activities the government thinks the private sector should be doing. For instance, Kenya Association of Manufacturers (KAM) and other private sector entities have played a key role in Training of Energy Auditors, supporting energy auditors get Certification, and recognition of industries that are effecting audit recommendations with success on savings.

CFL promotions by KPLC, the national grid retailer was first done in 2015. 1.3 million CFLs were distributed with each customer getting three bulbs. Appliances Energy Performance and Labelling Regulations came to force in 2016 and were amended in 2018. Six appliances: self-ballasted CFL lamp, double-capped fluorescent lamps, ballast for fluorescent lamps, refrigerated appliances, non-ducted air conditions, three phase cage induction motors. The Energy (Solar Water Heating) Regulations, 2012 requires that all premises within the jurisdiction of a local authority with hot water requirements of a capacity exceeding one hundred litres per day shall install and use solar heating systems. Within a period of five years from the date of coming into force of these regulation, all existing premises with hot water requirements of a capacity exceeding one hundred litres per day shall install and use solar heating systems. Fine not exceeding one million shillings or to imprisonment for term not exceeding one year, or to both for non-compliance. The legislation was however was put on hold. Enforcement has been a coordinated approach between the Energy Regulatory Commission (ERC), Kenya Bureau of Standards (KEBS), Kenya Revenue Authority (KRA) among others.

Challenges in scaling up energy efficiency includes: business as usual syndrome – resistance to change; cost implication – initial cost of implementing Energy Audit recommendations; costs of developing and Reviewing National standards; lack of technical expertise on energy audits; and, Underdeveloped modern energy infrastructure – high generation tariffs, power losses, unpaid bills, huge lifeline segment (15-20% losses, including theft). Opportunities for scaling up includes: awareness creation including awareness projects, sharing on business case arising from potential savings; support from private sector and partners; concern environmental benefits; ensuring social benefits.

The government is keen on sensitizing the population to be vigilant on quality, so they do not bring in products that are of poor quality. Some of the challenges now are about quality, some LED lamps claim 15,000 hours but they only operate for 2 weeks. Because of the slightly higher cost of the lamps (costing about \$1.50 against incandescent lamp cost of about \$0.30), after two failures, many goes back to old lamps, which have yet not been phased out. There is no local production of lamps in Kenya; all are imported. The government is trying to bring about growth to local industries. The issue remains on regulation.

**RWANDA – Presented by Mr. Bagilishya Ngoga Juluis, Telecommunications and Multimedia Engineering Officer, Rwanda Bureau of Standards**

The Energy Department under the Ministry of Infrastructure is mandated to do specific work on energy. The Rwanda Energy Group, which is government owned operator has two subsidiaries, one on scaling-up the power production, the Rwanda Energy Development Cooperation and the other one to manage energy on the group.

The government believes that improving energy efficiency is fastest, cost-effective way to unleash sustainable development.

Rwanda generates electricity from different resources as follows: 41% from hydropower; 4% from solar; 14% from methane gas; 25% from diesel; 3% imported from Democratic Republic of Congo and Burundi; and, 7% from peat. Almost 70% of the people are not connected to the grid electricity. The government targets at least 54% to be connected on the national grid by the year 2025. Electricity cost came down to US\$0.15/kWh in 2017 from US\$0.17/kWh in 2014.

Some of the initiatives on energy efficiency include the on-going project on the Montreal Protocol and Kigali Cooling efficiency Program (K-CEP) as an important program being followed up by Rwanda government. Under this programme major contributors to energy-efficiency were identified in terms of the appliances, taking air conditioners and refrigerators as a priority since they are the ones most commonly used across the country.

The National Quality Policy gives a long-term framework, standards base. The government looks at setting up an energy-efficiency laboratory by 2022 to be able to test for all the products, so that by 2025, all these traditional lighting and appliances are phased out from the market.

Main challenges on energy efficiency implementation in the country are inadequate policies and regulations on energy efficiency, lack of awareness making it difficult to phase-out inefficient products from the market. In addition, there is general inadequacy of a monitoring tool and competence to verify energy-efficiency.

**SOUTH SUDAN - Presented by Faustino Tombe Yugusuk Loku, Director General, Engineering and Grid Operation**

Rural population in South Sudan stands at about 83% with about 99% of people having no access to grid electricity. The main challenge facing the electricity sector is not only limited to weak power consumption but also the level of under-development in the country, being among the least under-developed country in the world. Although South Sudan is rich in minerals, hydropower resource that can be harnessed to generate reliable and affordable electricity to provide basic services to its citizens for economic development, political stability had remained a key barrier to these resources exploitation.

Key strategic objectives planned in 2012 have never been implemented after the civil war started in 2013. The Ministry on Minerals and Dams looked at improving reliability of power supply, enhancing access to reliable and affordable electricity services, promoting development and utilization of indigenous energy resources, and encouraging the use of renewable energy resources.

Currently, key issues to be addressed includes increase in generation capacity, expansion of the transmission and distribution network in the state capitals, construction of new lines and

substations, importation of power from neighbor countries and investment in regional interconnection with East Africa Power Pool (EAPP) to gain access to wider market.

Planned hydropower projects with feasibility studies completed are: Grand Fula (890-1080 MW); Beden (540-780 MW); Lakki (410 MW); Shukole (235 MW); and, Fula Rapids HPP (40 MW). Currently, planned Regional Interconnection Projects are: 220 kV Ethiopia – South Sudan Transmission line; 220 kV Sudan – South Sudan Transmission line; and, 400 kV Uganda – South Sudan Transmission line.

Challenges South Sudan is facing include among others: lack of political will to finalize the legal, regulatory and policy framework, to have the consumers and investors gain confidence; and, lack of goodwill and confidence to mobilize adequate financial resources for investment in the country.

Priority areas include investment in hydropower development to provide cheap power, promotion of efficient lamps and appliances to increase capacity for more access, and resolving conflict in the country to attract private and foreign investment.

### **TANZANIA – Presented by Eng. Salma Bakary, Energy Engineer, Ministry of Energy**

Tanzania has diverse energy sources: hydro, gas, coal, geothermal, nuclear, solar, biomass and wind. There is a general national energy balance dominance of biomass in charcoal and firewood. Biomass accounts to about 85% of household total energy consumption. National gas and hydropower are largest sources of fuels in electricity generation in Tanzania. Currently, installed capacity stands at 1613 MW with a grid capacity of 1558 MW and off-grid capacity of 55 MW. About 32.8% of the population have access to electricity. The power demand growth is 10-15% per annum.

On national Policies on energy efficiency, Tanzania has no energy efficiency policy or strategy, National Energy Policy 2015 significantly strengthened emphasis on promotion of energy efficiency, moreover, there are some efforts to institute demand side management measures. Preparation of Energy Efficiency Strategy is in consultation stage. At the end of March 2019, the consultant will submit the final document. The energy efficiency strategy is funded by the European Union (EU). The Energy Efficiency Action Plan has been approved with the next step being inception to Implementation.

Key challenges for scaling up energy efficiency initiative are lack of awareness and information on energy efficiency, and, lack or limited institutional/individual capacity on energy efficiency. Opportunities for scaling up energy efficiency lies on development and implementation of MEPS for Fridge, Lights fixtures, Motors and AC, and, building capacity on energy management.

### **UGANDA- presented by Usamah Kaggwa, Senior Energy Officer, Ministry of Energy and Mineral Development**

Uganda's electricity demand growth averages at 8.2% since 2008. The peak demand is currently 600 MW, and installed capacity is 1000 MW. Access to electricity is 26% of population with the government targeting 60% by 2027. Key energy sector challenges includes: low access of rural electrification; high power tariffs due to the 'Bujagali tariff'; low and inefficient energy consumption; strengthening transmission and distribution; land acquisition for government projects; and, inadequate counterpart funding for compensation

which delays disbursements by other funding partners. Energy regulation relevant to energy efficiency include: 1999 – Electricity Act – being amended; 2002 – Energy policy for Uganda – being revised in 2019; 2007 – renewable energy policy; 2009 – Draft Energy efficiency strategy - including training, audits, etc.; 2014 – Creation of Energy Efficiency and MEMD; and, 2016 - Draft Bill – EE and Conservation Bill drafted and submitted, waiting for comments

Energy efficiency barriers and action plans encompasses both regulatory, informational economic and financial aspects. Among the barriers are: lack of policies and regulations to enforce energy-efficiency; lack of prioritization of investment in energy efficiency; lack of information and knowledge about the benefits of energy efficiency; lack of technical expertise in energy efficiency; and, lack of access to affordable capital and financing.

A number of initiatives on energy efficiency have been done and/or are on-going. They include; Time of use – off-peak 23:00 – 05:00 – Peak 1800 – 23:00; Power Factor charge and reward; LED distribution – 500,000 in 2015-16; CFLs in 2007-2010; Energy audits – public buildings, universities, hospitals, HWSC, street lighting; MEPS – 5 appliances: lighting, fridges, A/C, freezers/electric motors: 13 MEPS; have a test bench for lighting – sphere at National Bureau of Standards; Power Factor Correction programme: 50% cost sharing for capacitor banks; Solar water heaters – 50% cost sharing for hospitals and institutions; Training – Energy Auditors Certification Programme; Awareness Campaigns: Energy Week, Regional shows; and, Energy Management Awards – public institutions, private companies.

Proposed Action plan up to 2030 includes, enhancing regulations on energy efficiency, creating a database to help in planning and policy or regulatory formulation, raising awareness to different stakeholders and developing programme on energy efficiency in buildings.

Uganda has an Energy Efficiency Roadmap. The 2017 energy efficiency Roadmap 2017 estimated “technical potential” for savings in the year 2030 indicates that 2,333 GWh of meter-level consumption can be saved across all sectors, which is equivalent to 27% of the forecasted load. Based on current barriers, local capacity and likely financial resources, we estimate that the maximum “achievable” energy efficiency potential is 27 % of the technical potential. This translates into 160 MW of peak demand can be saved from efficiency improvements in the medium term. This further translates in an average of 2 million tons of carbon dioxide (CO<sub>2</sub>) emissions that can be avoided through the implementation of energy efficiency.

Biggest challenge on the implementation of the Minimum Energy Performance Standards (MEPS) has been the enforcement. One key barriers is the lack of the energy efficiency law where the enforcement will be carried out. A lot of voluntary work and awareness among the importers through the energy week and other platforms. There are 1-2 workshop per year on to create awareness on energy efficiency. The ministry of Energy and Mineral Development (MEMD) in Uganda has developed an importers user-guide and work closely with Uganda National Bureau of Standards (UNBS) to enforce standards. Another key barrier is resource constraint.

Free distribution of CFLs was aimed at triggering the public into realizing that CFL (a more efficient lights) are much better lights than incandescent ones. The unfortunate. part is that until certain regulations are put in force to ban and phase-out the old technologies, people still go for the cheaper shelf option in the market.

MEMD have been working to pilot Energy Service Companies (ESCOs) business models for a few years now but it has never really kicked-off. A couple of challenges have been finding a company ready to take on the risks financially and also lack of local experience in ESCOs

business operations. An opportunity could be to find an international company to partner with a local company who can train/support the local companies.

### **EACREEE – Presented by Fred Ishugah, Sustainable Energy Expert, EACREEE, Uganda**

Industrial sector is responsible for about 36% of global final energy and 24% of energy savings can be achieved through improved equipment and process design and adoption of energy management systems and practices. Most industries generally employ old and inefficient technologies, which result in very high industrial energy intensities. East Africa has embarked on implementing a very ambitious policy with the industrial sector expected to grow rapidly. There are large opportunities for reduction in greenhouse gases emissions through improving energy efficiency in the manufacturing industries.

Energy efficiency improvement is a least-cost energy approach to reducing overall demand, decreasing the need for expensive peak capacity, and allowing energy supply to be expanded. EACREEE is looking at promoting enhanced competitiveness of manufacturing industries in the East African Community (EAC) Partner States while reducing GHG emissions by improving and harmonizing national policies and regulatory frameworks and institutional capacity building for industrial energy efficiency and the implementation of energy management system. The Centre's energy efficiency programmes will be aligned with regional priorities that includes: East African Community Industrialisation Policy (2012 – 2032); East African Community Climate Change Policy (2011); National development plans of the EAC Partner States; Nationally Determined Contributions of the EAC Partner States; and, Sustainable Development goal 7 (SDG#7) targeting SDG 7.3 that seeks to double the global rate of improvements in energy efficiency.

Main outcomes of the energy efficient programme. includes: establishment of a regional mechanism and to coordinate actions on improvements of industrial energy efficiency in EAC partner States; creating enabling environment to promote investments in industrial energy efficiency; supporting industries in the EAC region in efforts to adopted the Industrial Energy Management Standards compatible with ISO 50001; promoting energy savings to reduce GHG emissions through energy efficiency investments; and, building capacity of Energy Service Companies (ESCOs) and Energy Management Professionals enhanced to support energy efficient programmes. The Centre will coordinate regional activities and seek for partners to support the global agenda on energy efficiency.

### **3. CLOSING REMARKS**

Prof. Mackay Okure, the Interim Executive Director of EACREEE, thanked all the participants for taking part in this important conversation. He echoed all the presenters by emphasizing that energy efficiency is the most effective and cost reflective approach to improve access, remain competitive at national and regional level and safeguard our environment. As an intergovernmental entity, EACREEE affirms the views that increased efficiency in the use of electricity is a fundamental component of achieving the regions sustainable development objectives and regionally organized interventions. He added that the market transition would among other things result in making best use of available electricity and best available appropriate technology to provide quality services. He noted that EACREEE considers the sharing as very important to aligning their programmes on energy efficiency. He closed by wishing all the participants safe travels back to their countries. **The workshop ended at 1:30pm.**



## **AGENDA:**

Chairperson: Mr. Bagilishya Ngoga Juluis, Telecommunications and Multimedia Engineering Officer, Rwanda Bureau of Standards, Rwanda.

<b>Time</b>	<b>Event</b>	<b>Presenter</b>
9:00-10:30	Presentations and discussion from Partner States on; <ol style="list-style-type: none"><li>1. National policies landscape on energy efficiency,</li><li>2. status of implementation,</li><li>3. Opportunities and challenges for scaling up energy efficiency initiatives</li></ol>	Ministry representatives <ol style="list-style-type: none"><li>1. Mr. Moise Makuwa, a Technical Advisor of Ministry of Mines, Burundi</li><li>2. Mr. Julius James Gitonga, Senior Assistant Director, Renewable Energy, Ministry of Energy, Kenya</li><li>3. Mr. Bagilishya Ngoga Juluis, Telecommunications and Multimedia Engineering Officer, Rwanda Bureau of Standards, Rwanda</li><li>4. Mr. Faustino Tombe Yugusuk Loku, Director General, Engineering and Grid Operation, South Sudan</li><li>5. Eng. Salma Bakary, Energy Engineer, Ministry of Energy, Tanzania</li><li>6. Mr. Usamah Kaggwa, Senior Energy Officer, Ministry of Energy and Mineral Development, Uganda</li></ol>
10:45-11:30	Presentation on proposed regional project on Industrial energy efficiency.	Mr. Fred Ishugah, Sustainable Energy Expert, EACREEE
11:30-11:45	Closing Remarks	Prof. Mackay Okure, Interim Executive Director, EACREEE

## List of Participants

<b>S/No</b>	<b>Name</b>	<b>Position</b>	<b>Organization</b>	<b>Country</b>
1.	Moise Makuwa	Technical Advisor	Ministry of Hydraulics, Energy and Mines	Burundi
2.	Peter Kinuthia	Infrastructure and Energy Expert	African Union Commission	Ethiopia
3.	Julius James Gitonga	Senior Assistant Director, Renewable Energy	Ministry of Energy	Kenya
4.	Naomi Wagura	Senior Associate, East Africa	CLASP	Kenya
5.	Bagilishya Ngoga Juluis	Telecommunications and Multimedia Engineering Officer	Rwanda Bureau of Standards	Rwanda
6.	Faustino Tombe Yugusuk Loku	Director General, Engineering and Grid Operation		South Sudan
7.	Monica Gullberg		Sida	Sweden
8.	Eng. Salma Bakary	Energy Engineer	Ministry of Energy	Tanzania
9.	Anthony Karomba		Ministry of Energy	Tanzania
10.	Paschal Nduma		Ministry of Energy	Tanzania
11.	Usamah Kaggwa	Senior Energy Officer	Ministry of Energy and Mineral Development	Uganda
	Prof. Mackay Okure	Interim Executive Director	EACREEE	Uganda
12.	Fred Ishugah	Sustainable Energy Expert	EACREEE	Uganda
13.	Michael Scholand	Senior Advisor, Europe	CLASP	United Kingdom



### Meeting Sponsors



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