



# RENEWABLE ENERGY CONFERENCE 2021 (REC21)



## Key Discussions and Undertakings



# Opening Ceremony

**Speakers:** Eng. Irene P. Bateebe, Permanent Secretary, Ministry of Energy and Mineral Development; Hon. Dr. Ruth Nankabirwa Ssentamu, Minister of Energy and Mineral Development; Hon. Peter Lokeris, Minister of State for Mineral Development; Uganda.

**Master of Ceremonies:** Mr. Andrew Kyamagero, NTV Uganda

*“Renewable energy development is partnership driven, requiring sustained government, development partner, and private sector investments”*



*Eng. Irene P. Bateebe,  
Permanent Secretary, MEMD.*

1. At the onset of the REC21, Eng. Bateebe welcomed the workshop participants to the first ever Renewable Energy Conference in Uganda. She expressed her excitement that the ministry was holding REC21 at a time when the world was discussing transitioning to renewable energy.
2. Emphasized that the REC21 converged stakeholders in the renewable energy to discuss good ways to accelerate deployment of renewable energy. Advised that for a fast deployment of renewable energy, all stakeholders will have to contribute ideas on solving the barriers that affect renewable energy quick delivery and deployment in the country.
3. The development of renewable energy in Uganda is anchored on several policy documents that include the renewable energy policy 2007, the energy policy 2002 and the attendant regulations. Renewable energy development also anchors the deployment to other existing policy documents like the NDP3, Vision 2030, and is well aligned within the short term, midterm and long term strategies.
4. Among the targets in the midterm strategies is to double the shares of renewables in the energy mix. This is a deliberate effort by government to ensure that the population has access to clean energy for use in households and institutions.
5. The government realized that there was a gap in accessing financing for renewable energy development in this country. The available financing modalities had not been suitable for renewable energy deployment. We have been operating small scale businesses in the renewable energy space. It is very important to support renewable energy businesses to grow and compete on the global scale.
6. The government found it necessary to create an agency to manage the capitalization of renewable energy businesses and help them to grow. In this case, government created Uganda Energy Credit Capitalization Company (UECCC) to support the credit facilities

for the renewable energy businesses.

7. In the renewable energy space, we have also a challenge of standards. We are importing most of the renewable energy products and technologies. In the process, some unscrupulous people infiltrate the market with substandard products. Such products provide lower quality service and sometimes discourage Ugandans from quickly adopting such technologies. We are working with Uganda National Bureau of Standards to set standards for all renewable energy technologies to as to make sure quality products are available.
8. We are also working with the technology providers to institute self-regulation mechanisms. Some strategies have included organizing the technology providers to form associations. These associations have resulted into the Uganda national Renewable Energy Association (UNREEA) which is expected to provide more oversight in self-regulation. UNREEA has been key in organizing today's conference.
9. There are big opportunities for investment in renewable energy in Uganda. This country is endowed with abundant renewable energy resources. Being at the equator, the country receives an average of 8 hours per day of continuous sunshine. This gives a good potential for investment.
10. The weather in Uganda is good all year around for biomass replenishment. This biomass can be used to achieve various energy outputs. Currently biomass is not being utilized in efficient ways. However, efforts are being put in place to improve on the efficiency of utilization. Also efforts are in place to promote diversification of biomass utilization. The government recently passed the Biofuels Bill (2020) to foster fossil fuels blending.
11. As the country continues on the road to urbanization, more wastes are being generated. The urban wastes in Uganda are approximately 70% organic and therefore biodegradable. We are doing studies and proposing technologies that will harness energy from this resource so that it's no longer a waste but a rich energy resource.
12. The country has geothermal resource which is still under exploration. We have learnt from our neighbors that geothermal will be able to provide a good base load for our energy mix when it's finally harvested. We are hopeful of this resource because the geology of our country gives us confidence of good output.
13. Studies are ongoing to determine wind potential in the country and preliminary studies show a very good potential for investment.
14. Uganda is endowed with several rivers which give us a good potential for energy harvesting. River Nile starts from Uganda with several cascades presenting a good head at every cascade. Also, river Nile has a huge water storage in Lake Victoria. This presents a good opportunity for hydro power generation and therefore good investment in the country. In addition, there is huge potential for mini-hydros in the country which will be good to support the mini-grids in the country.
15. All these opportunities will be pursued to help the country to diversify the energy sources and therefore improve on energy security. The energy consumption per capita is still low and we are still striving to improve it. The more the per capita energy consumed, the better for the country in terms of development. Therefore the investments from different stakeholders will be encouraged to the extent that the energy per capita improves.
16. Government will continuously build capacity to harness these resources for the benefit of this country. In addition, government will continue to improve on the available institutional framework

so that good support is available for the investment in renewable energy. The Renewable Energy Department will continually be strengthened to provide good oversight for the renewable energy development.

17. Government will continuously provide financing frameworks to support the investments in renewable energy. The financing frameworks should be able to support data acquisition, resource mapping and support to private sector investments.
18. Government will continually improve on the available sector policies and

regulations to support good and meaningful investments in renewable energy.

19. In conclusion, renewable energy in Uganda comprises of the greatest percentage in the overall energy mix for the country. We shall continue to give due attention to harness it and make it available for the population. As the world transitions to renewable energy, Uganda is already ahead in the transition agenda. The country will continue to lead in the transition while supporting the whole energy spectrum. I want to appreciate the organizers of this conference that is intended to discuss the key issues surrounding the renewable energy deployment in the country.



*“Valuable contributions and advice in this conference will no doubt lead to better management of the renewable energy sub sector as well as a modern energy sector that will ensure adequate and affordable energy for all Ugandans”*



*Hon. Dr. Ruth Nankabirwa Ssentamu,  
Minister of Energy and Mineral  
Development, Uganda.*

1. Welcomed and thanked all the participants, led by the Permanent Secretary, for organizing the REC21. Challenged the participants to ensure that the outputs and recommendations of REC21 compliment and inform Government efforts and plans to increase the adoption and uptake of renewable energy technologies as well as renewable energy development in the country.
2. Informed the participants that Uganda’s access to electricity and other modern energy services is still low, standing at just 57% of the population. The energy sector is still dominated by solid biomass mainly in form of firewood, charcoal and crop residues which contribute 89.2% of the country’s consumable energy. Biomass-based fuels continue to be widely used in households, institutions, commerce and industry.
3. Uganda is well endowed with a variety of renewable energy resources. These include; plentiful biomass and hydropower, solar, mini/micro hydro, wind and geothermal resources. In addition, different forms of organic wastes including agricultural residues, forest wastes, commercial and municipal waste also constitute an abundant and widespread resource in many parts of the country. However, apart from biomass whose share is already enormous, the contribution of the remaining energy sources in Uganda’s energy mix is still low.
4. The predominance of biomass in Uganda’s energy mix is unsustainable even in the short run as the demand for this fuel has already outstripped its supply. This over dependency has resulted in over exploitation and unsustainable utilization of forest cover, woodlands and other vegetation. The unsustainable utilization of woody biomass is closely associated with climate change, indoor air pollution and other forms of environmental degradation in Uganda.
5. According to official statistics, an estimated 44 million tons of woody biomass are consumed annually against an estimated sustainable yield of 26 million tons, thus eating into the available wood stock. This rapid depletion is attributed to population pressure, accelerated biomass energy needs as well as over reliance on natural resources for economic survival. There is thus, urgent need to diversify and develop new and alternative sources of energy in Uganda.
6. The low level of development and modest contribution of modern renewables to the energy mix can be attributed to several barriers and challenges in the renewable energy sub-sector. To ensure a steady increase in the contribution of renewables, Government adopted the

Renewable Energy Policy for Uganda in 2007. This policy, currently under review created an enabling environment for addressing a range of constraints that have hindered the development and adoption of modern renewable energy in the country.

7. The overall goal of the Renewable Energy Policy was to increase the share of renewable energy in the country's energy mix. The policy also aimed to diversify the country's energy supply sources and enhance energy security and independence.
8. To further ensure an optimal environment for promoting the development of renewable energy sources, Government has also taken the following actions:
9. Feed-in-Tariffs were introduced to provide a predictable environment. These tariffs for renewable energy projects are published regularly by the regulator, Electricity Regulatory Authority (ERA).
10. A Standardized Power Purchase Agreement, PPA was introduced to reduce the lengthy time involved in negotiations between the developer and the off-taker. This dramatically cut down time spent on negotiations as well as on transaction costs.
11. Specific regimes that favor renewable energy were introduced. These include preferential tax treatment, tax exemption and accelerated depreciation provisions.
12. The Uganda Energy Credit Capitalization Company (UECCC) was established to assist project developers in renewable energy projects attain financial closure.
13. These and other measures by government have yielded significant improvements in the power and renewable energy sub-sectors. The improvements include: grid-installed generation capacity has increased from 183 MW in 1997 to over 1270 MW in 2021; energy losses in the distribution segment reduced from 38% to 16.4% in 2020; collection rates increased from 55% to 99.7%; private sector investment of nearly \$2bn and a cost-reflective tariff and regulatory regime.
14. Uganda's location along the equator ensures high level of solar radiation averaging at 5.4KW/m<sup>2</sup>/day which is direct and uniformly distributed throughout the year. This resource is adequate to support all forms of solar energy applications. Government is focusing on exploiting and developing the abundant solar energy resources in the country through grid-generation, standalone and decentralized solar systems.
15. Solar energy for water pumping is a key government priority. This technology will provide water for farming purposes and mitigate the current challenges faced by Uganda's farming communities who currently rely on rain-fed agriculture. Once adopted on a wide scale, solar water pumping will greatly improve food security and farmers' yields. The water sources to support this drive are abundantly available across the country.
16. Government efforts in promoting solar technology have already yielded several benefits. Uganda so far has installed 50MW of grid-connected solar while over 24MW are planned for installation in the near future. In addition, over 710,000 solar home and institutional systems have been installed for various off-grid applications including lighting, refrigeration and water heating. Development of professional human capacity to facilitate installation and management of these solar energy technologies continues to be undertaken.
17. Government through my Ministry is also implementing other programs for the sustainable management of the biomass energy resource including the promotion of use of ethanol for cooking and boiling water as a substitute to woody biomass. In addition, other cleaner and more sustainable fuels such as LPG, biogas and briquettes as well as efficient technologies are being promoted across the country as clean and sustainable cooking solutions. These interventions in turn enhance

energy supply and also ease pressure on the dwindling biomass resources in Uganda.

18. As part of operationalizing the Renewable Energy Policy, Government also adopted a Wastes-to-Energy Program. This entails the conversion of waste to energy through biological conversion to biogas, gasification or direct combustion. To fully develop the huge waste to energy potential in Uganda, the Ministry is collaborating and partnering with municipal authorities and industries that generate sizeable quantities of wastes to produce various forms of energy including biogas to electricity. Under this initiative, wastes have been fully integrated in the country's energy resource base. Other key co-benefits of social, economic and environmental nature have been realized as a result of converting wastes to energy.
19. Government of Uganda also enacted the Biofuels Act, 2020 whose major objective is to provide a comprehensive legal and regulatory framework for the production, processing, transportation and blending of biofuels (Ethanol and bio diesel) with fossil fuels, namely petrol and diesel respectively. This Act obliges all oil companies to blend biofuels with fossil fuels up to a ratio of 20%. Regulations to give effect to the law have been finalized, and the gazette process is on-going.
20. The production of petroleum products and associated goods in the Albertine Graben is planned to commence in the near future, and Government will utilize part of the earned revenues to boost the growth of a green economy in Uganda. Investments in Renewable Energy Technologies (RETs), renewable energy development, energy efficiency and climate-resilient infrastructure among others will be supported further to ensure a low-carbon development path for the country.
21. Let me take this opportunity to appreciate the efforts of various stakeholders in the renewable energy arena especially those who have been consistent in advocating for, and advising government on issues of renewable energy policy and energy development in general.
22. My Ministry is fully committed to working with, and coordinating all stakeholders and industry players in the renewable energy sub sector in order to ensure a predictable and vibrant energy sector. I wish to assure you that Government remains very keen on forging and maintaining strategic partnerships and collaboration with all stakeholders and industry players in the Renewable Energy space in order to realize its development objectives and plans.
23. Once again, your valuable contributions and advice in this conference will no doubt lead to better management of the renewable energy sub sector as well as a modern energy sector that will ensure adequate and affordable energy for all Ugandans.

## Launch of the National Renewable Energy Platform-NREP



In the presence of over 160 stakeholders, the Minister of Energy and Mineral Development, Hon. Dr. Ruth Nankabirwa Ssentamu, the Minister of State of Mineral Development, Hon. Peter Lokeris, and the Permanent Secretary, Eng. Irene P. Bateebe, officially launched the National Renewable Energy Platform-NREP.

Handing over the NREP instruments of power to the Commissioner, Renewable Energy Department, the Hon. Minister challenged all the stakeholders to embrace the Platform as a forum for galvanizing and harmonizing all efforts towards the development of the renewable energy sector in Uganda.

The Minister emphasized that the Platform is a decisive step for Uganda to strengthen collective action, curtail duplication of efforts and enhance resource mobilization and optimum utilization for the development of the renewable energy sector in Uganda. The Minister further thanked and called upon all development partners to support the initiative as a means to increasing partnerships between the private sector, development actors and government. She stressed the critical importance of national cooperation, and the need to improve the monitoring and the availability of data for the development of national baselines and planning and to facilitate information sharing and learning in the energy sector. She reechoed government support in facilitating long term partnerships in the renewable energy sector in Uganda.



## Award of Lifetime Achievement Award



The 2021 Renewable Energy Lifetime Achievement Award was given to the Late Prof. Noble E. Banadda. Hon. Dr. Ruth Nankabirwa Ssentamu, handed over the award to the family of Late Prof. Banadda. He died on 1 July 2021, in Kampala, Uganda, of complications from COVID-19. Prof. Banadda had a trailblazing scientific career. He was hired by Makerere University, serving in the Department of Agricultural and Biosystems Engineering, in the College of Agricultural and Environmental Sciences. Noble was the first African recipient of the

Pius XI Golden Medal awarded by Pope Francis in Vatican; a laureate of the Next Einstein Fellowship; Oliver Reginald Tambo Research Chair; honored young scientist at the World Economic Forum; alumni of the Global Young Academy; Member of the Malabo Panel of Experts; fellow of the Uganda National Academy of Sciences; council member of the Pan African Society for Agricultural Engineering; Member of the Makerere University Senate; adjunct professor at Iowa State University (US); research fellow at Clare Hall at University of Cambridge; and college member of the UKRI GCRF programme.

## High-level Panel on Renewable Energy Development in Uganda

Panel: Dr. Nkem Johnson, UNDP Uganda; Philippe Groueix, Country General Manager, TotalEnergies, Uganda; H.E. Maria Håkansson, Ambassador Sweden; and Gavilan Marin Jesus, EEAS.

Moderator: Eng. Irene P. Bateebe, Permanent Secretary, Ministry of Energy and Mineral Development.



The high-level panel discussion provided an opportunity for development partners, key private sector leaders and government officials to offer their perspectives on the opportunities and challenges inherent in Uganda's transition to a sustainable energy future. The panelists addressed the challenges and barriers to accelerating the uptake of renewable energy; the use of enabling frameworks for advancing renewable energy deployment in Uganda; the importance of partnerships in increasing energy access and security; and the role of renewable energy in addressing climate change challenge and emergency response. **Mr. Gavilan Marin Jesus** shared the ways the EU is making a difference in the RE- Space in Uganda and elsewhere, while **Dr. Nkem** offered insights in the UNDP's extensive experience in the energy sector. **H E the Ambassador** of Sweden in Uganda shared the Swedish experience in renewable energy development and what plans and strategies the embassy has for Uganda. **Mr. Philippe Groueix** elaborated the plans by TotalEnergies for supporting the renewable energy sector in Uganda, and elsewhere. **All panelists** contextualized the much needed efforts for enhancing access to affordable, reliable, sustainable and modern energy for all in Uganda. Key issues that were highlighted by all the panelists include:

### 1. **Financing needs for the high-capital demand of the transition to renewable energy**

- All panelists agreed that there is a lot of financing necessary to support the transition to renewable energies
- The EU and UNDP are both funding renewable energy projects in Uganda, for the EU it is one of the main pillars of their intervention package for energy and climate in Uganda
- The Swedish embassy is financing smaller projects, like a recent grant for a floating solar installation
- Total Energies has committed to invest heavily in renewable energies, as they

see this as the future after phasing out of fossil fuel based energy

### 2. **Technical support and capacity building needed for the renewable energy sector**

- Most of the organizations represented in the panel are engaged in technical projects in the energy sector in Uganda
- The UNDP, EU and Swedish embassy are all working on rural electrification projects, including the development of mini-grids, which were launched during the Energy and Minerals week 2021, and Solar Home Systems
- Total Energies acknowledges the fast-moving developments in technologies for renewable energy. As a technology company, they own the current most efficient solar panel. They see the need to bring these technologies to the countries where they can make a difference
- The Swedish embassy is implementing several capacity building projects for renewable energy in the country. They are also financing scholarships for master programs in the energy sector

### 3. **Policy support for guiding the transition**

- UNDP touched upon the sensitive point of not losing the national emissions targets out of sight
- UNDP also mentioned policy are greatly needed for the energy sector, however these policies need to materialize into activities as well
- The EU has recently adopted the green deal, an ambitious policy on climate in which renewable energy

plays an important role

- Sweden has had several very progressive policies on climate and renewable energy, which have played out well for their country and from which lesson's Uganda could benefit

UNDP also recognizes the need for data and statistics to support the transition of the energy sector to renewable energy. They acknowledged that it is at the moment hard to find the necessary information and data on this topic. All of the highlighted issues are reflected in the outputs of the newly launched National Renewable Energy Platform (NREP), which stipulate that the platform should enable sharing of policies and regulations, technical knowledge and capacity building modules, sector relevant data and information and access to finance. There was one main question from the audience, addressed to all panel members. It inquired what the individual organizations were doing regarding the creation

of energy demand for the generation projects that were mentioned. Individual answers included:

- The Government of Uganda is supporting the creation of new industrial park, to ensure productive use of energy
- The UNDP and EU are both focusing on increasing the energy demand through their productive use of energy products, mainly focusing on adding value to products in their rural energy projects
- The Swedish embassy is creating productive demand in health centers through their maternal- and child health projects in Uganda. Sweden is also supporting capacity building.

## Parallel Sessions: Advances in Transformative Renewable Energy Development



The parallel sessions discussed RE technology cost, policy and revenue streams, suppliers and supply chains, and capacity and investment outlook. The panelists and the audience shared lessons and best practices, and considered advances in the Solar, bioenergy and clean cooking sectors in the renewable energy space.

## Session 1: Making Clean Cooking Bankable, Innovative and Affordable for All.

**Panelists:** Ms. Justine Akumu, Energy Officer, MEMD; Ms. Cotilda Nakyeyune, Programme Manager, Natural Resource Governance, CARE-Uganda; Mr. James Banaabe, Consultant Modern Energy Cooking Services (MECs); Mr. Joseph Ndemere Arinaitwe, Centre for Integrated Research and Community Development Uganda-CIRCODU; Mr. Edward Nuwamanya, Principal Petroleum Officer, MEMD.

**Moderator:** Mr. Michael Ahimbisibwe, Principal Energy Officer, Ministry of Energy and Mineral Development, Uganda.



Panelists deliberated on the policy options and actions that can promote clean cooking, and shared experiences and knowledge on access to clean cooking solutions, and provided insight into synergies and trade-offs of achieving the SDG targets on human health, biodiversity and climate change. **Cotilda** shared the prospects of eCOCA in the Clean Cooking space in Uganda, and the projections for the next 5 to 10 years; **Edward** highlighted the advances in LPG cooking technology in Uganda, and the government strategy and target for LPG in the next 5 to 10 years; while **James** presented on how we make Electric Cookers affordable and scalable in the Clean Cooking sector in Uganda. **Joseph** made a case for the energy saving cookstoves in the Clean Cooking transition; and **Justine** justified the place and status of Ethanol fuel in the Clean Cooking in Uganda? **All Panelists**

**and the audience** discussed the several efforts being instituted to advance accessibility and affordability of clean cooking, particularly for the poor households in Uganda.

While a lot of strides have been achieved in the sector, generally, an unmatched level of effort is needed to achieve universal access to clean cooking and realize its multiple benefits across health, air pollution, poverty, gender equality and climate change. It was recommended that the country (Uganda) needs to mainstream the clean cooking agenda into national energy policies and strategies, which necessitates an all-inclusive target setting and enabling policy, market and regulatory instruments, coupled with patient financial and de-risking measures to stimulate the investment required. It was also severally suggested and there was consensus

that clean cooking initiatives, policies and strategies should be implemented within a comprehensive framework that capitalizes on multisectoral expertise beyond the energy sector, including health, gender, environment and agriculture. The launched National Renewable Energy Platform provides such a multifaceted frontline framework in that pursuit. The existing, under review and future policies, initiatives and strategies should ensure inclusivity through engaging vulnerable groups, youths, local communities and women. The Market provides the much needed technology and products pull, hence, development of sustainable markets that expand consumer choice and address affordability and reliability constraints should be an explicit undertaking of all clean cooking programmes. Far-reaching piloting; and continuous monitoring and evaluation through a robust data, information and knowledge collection and experience sharing is critical to the efficient and sustainable development of the clean cooking sector.



## Session 2: Paradigm Shifts in the Solar Sector Energy Landscape

**Panelists:** Mr. Fredrick Barasa, Global Green Growth Initiative-GGGI; Mr. Yonah Turinayo, World Wide Fund-WWF; Mr. Janon S. Bisaaso, Bodawerk, Uganda; Mr. Jumba Henry, GIZ-Uganda; and Prof. Wilson Musinguzi Babu, Busitema University.

**Moderator:** Dr. Brian E. Isabirye, Commissioner, Renewable Energy Department, Ministry of Energy and Mineral Development, Uganda.

Panelists deliberated on the productive/ income generating options under solar development in Uganda. The session discussed the barriers to scaling- up off-grid renewable energy deployment and proposed possible solutions. Fredrick presented on the GGGI experience with Solar Rooftop Project and Net Metering in Uganda; Yonah shared the WWF experiences and lessons with Minigrids and other offgrid options; while Janon introduced several Circular Innovative Energy Solutions that Bodawerk is promoting across the country. Prof. Musinguzi shared the landmarks with the ongrid Solar (4 MW) MEMD-Busitema University Project; and Henry discussed the place for solar applications in building Resilient Refugee and Host Communities in Uganda. The Panelists made recommendations on the need for effective policy and regulatory framework options for enhancing adoption in the country. Innovative tailored business and financing models are critical in adapting



technologies to the rural and mostly offgrid contexts. The role of political commitment to rural electrification, together with the effect of institutional framework for attracting private sector involvement was severally mentioned as game changer in the sector. At the same time, access to affordable finance and providing smart incentives that de-risk private sector investments and provide patient capital were proposed for promoting sustainable business models. Indigenous entrepreneurs, although not as strong as their international partners, are helpful in extending electricity access in rural areas, and hence need to be fostered and supported through equitability and affirmative actions. Off-grid renewable energy technologies, yield outstanding synergies with sectors critical for human development, and play an important role in improving access

to livelihood options such as water supply, healthcare and telecommunication services, and other productive purposes. Establish a National Renewable Energy Lab as an epicenter for scientific research, innovations development, standards, testing, technology transfer and knowledge exchange was recommended. The National Renewable Energy Lab will be a central facility under MEMD with nodes at regional centres of excellence and/or universities. This will position Uganda to leapfrog and significantly participate in the industrial revolution at higher value levels. Realistic Foreign Direct Investment (FDI) should be geared towards a complete value chain bringing down the cost of solar energy systems through efficient local manufacturing of solar components, particularly energy storage.



## Session 3: Bioenergy Driven Transition to a Carbon Neutral Uganda

**Panelists:** Mr. John Tumuhimbise, Ag. Assistant Commissioner, Renewable Energy Department, MEMD; Dr. Miria Agunyo, NAMA Biogas Project Manager, MEMD; Alex Bukonya, Bukona Agro Limited; Vallence Turyamureba, FAO-Uganda; and Faran Narkhooda, Kakira Sugar Limited.

**Moderator:** Ms. Zainabu Kakungulu, FAO-Uganda.



Agriculture contributes to biofuels and woodlots, hence, lifting agricultural productivity is also an important way to reduce emissions per unit of production and strengthen the sustainability of these fuels. Unblemished extension services should be developed and provided to farmers regarding land use and crop changes to ensure that threats to food security are avoided and excessive harmful greenhouse gas emissions and biodiversity

This session shared experiences on sustainable production of bioenergy resources, and their critical role in the reduction of GHG emissions. This session will discuss the key bioenergy project features, together with their success factors and the lessons that can be learned from their implementation, and the innovation sustainability factors. **John** took the stakeholders in the status and roadmap of the Biofuels Development Program Uganda; **Dr. Miria** shared the detailed experience gained by the MEMD and her partners on the NAMA Biogas (Waste-to-Energy) Project; while **Alex** shared the milestones and tribulations on the Ethanol Distillery and the prospects of production of the anhydrous ethanol for the biofuels blending program in Uganda. **Faran** and **Vallence** shared experiences and proposals for the Kakira Sugar limited cogeneration and the Bioenergy Woodlots Programs in Uganda, respectively. The panelists and workshop participants recommended that to sustainably improve the productivity of biomass and agriculture in Uganda, there is need for prioritizing research, extension services and incentives.

loss are mitigated. Actions to improve the public perception and appreciation of biofuels and develop the flexible-fuel ethanol vehicle market should be prioritized to ensure that domestic market demand for biofuels grows to meet the anticipated production. Making the transition toward flexible-fuel vehicles is a huge endeavor that will require appropriate incentives for consumers, which in-turn needs effective coordination among all stakeholders: government, development partners, CSOs and the private sector. Further ex-ante assessments should be commissioned to better understand the impact of the biofuel sector on households and the economy and develop more appropriate strategies to ensure that biofuel developments benefit poorer communities and do not lead to further incidence of poverty and a worsening of food security, particularly in sugar growing communities. A regular multi-stakeholder review of progress on the biofuel blending program roadmap should be established within the confines of NREP to ensure that

the targets and milestones are being met. Given the growing impacts of solid waste, as a large source of methane, (a powerful GHG), contribution to flooding, air pollution and public health impacts such as respiratory ailments, diarrhea and dengue fever, it was recommended that Uganda promotes cleaner production, waste minimization, reuse, recycling and waste treatment, with energy streams as a priority action.



## Session 4: Policies, Regulations, Standards and Partnerships

**Panelists:** Mr. Richard Mwesigwa, CEO-Uganda Solar Energy Alliance; Mr. Richard Ebong, UNBS; Mr. Godfrey Mucurezi, Uganda Revenue Authority; Mr. Adam Mutebi, Uganda Investment Authority; Vian Musika, Ecological Christian Organization-ECHO; Eng. Akena Komakech, UNREEEA.

**Moderator:** Mr. Michael Ahimbisibwe, Principal Energy Officer, Ministry of Energy and Mineral Development, Uganda.



This session discussed the root challenges of providing quality services to consumers, and the need for proper sector regulation and technology deployment. The Panelists also discussed aspects of self-regulation, status of standards compliance, including for bioenergy (charcoal and biofuels) that are currently less attended to. The regulation and investment environment of the off grid sector and captive power was also considered. Finally, the panelists considered

innovative specialized task groups and partnerships for energizing the RE sector in Uganda. **Eng. Akena** elaborated on the unique nature and value add of the National Renewable Energy Platform-NREP, while **Vian** addressed the objectives, plans and initiatives of the Multistakeholder Platform for Transition to 100% renewables. **Michael** addressed the regional (EACREE and EAC) and international platforms (IRENA and ISA). On policy, political commitment; clear rural electrification strategy with realistic targets; and dedicated policies were highlighted as the weakest link in the sector. To attract competitive markets for the sector, it was suggested that the involvement of local enterprises and attracting investments is critical. Energy sector transformations, such as regulations allowing for independent power producers, were noted



as enablers for private sector involvement. The benefits of creating dedicated bodies, such as NREP with Ministry support and a clear mandate to promote renewable deployment was bold statement of intent by the MEMD. The Participants also stressed the role of such a platform in coordinating with all public stakeholders involved in the renewable energy sector to ensure effective and efficient utilization of resources, provide clarity to the private sector, and reduce the administrative costs incurred by developers. It was stressed

that such a platform would be critical coordinating efforts by national and international institutions towards a sustainable renewable energy market, beyond the grant-driven project-by-project approach common in the sector. The need to address existing barriers, particularly in the offgrid sector, for instance, in defining tariffs for mini-grid or captive power projects, ERA should consider the local socio-economic conditions as well as the commercial feasibility for private sector mini-grid developers.

## Session 5: Unlocking and De-risking RE Investments in Uganda

**Panelists:** Mr. Daphne Ayiekoh, Embassy of Sweden-Uganda; Mr. Oscar Ankunda, Energy Specialist, USAID Uganda; Mr. Michael Kiza, UNDP-Uganda; Roy Baguma, Uganda Energy Credit Capitalization Company-UECCCC, Uganda.

**Moderator:** Mr. Joshua Kabugo, Digital and Energy Finance Specialist, UN Capital Development Fund- UNCDF.



Achieving improved energy access, security, and sustainability requires significant financial investments. However, the financial landscape in Uganda presents unique barriers to commercial opportunities, making it difficult to attract investment from the private sector and development partners. This session explored the options for accessing the patient capital necessary to achieve renewable energy

targets. Through experiences and perspectives provided by various sector players and multilateral development partners and banks, panelists considered issues such as: opportunities and financial mechanisms available for infrastructure investment; the creation of enabling environments for attracting investment (including effective policy, regulatory, and legal frameworks); and risk mitigation for financial investors in the renewable energy sector in Uganda. The panelists also discussed a proposed 1 Trillion Shillings Renewable Energy Trust for Uganda (RETU), a donor-advised fund under Uganda Energy Credit Capitalization Trust. RETU will support renewable energy projects in Uganda. From the discussions,

it became clear that Tax incentives are in place, URSB has set up one center business registration facility. A blend of financing facilities is critical. The RETU is viable but need multifaceted approach. Not just about the Money, but how it is structured. Catalyzing financing requires clear understanding of priorities. It is important that we have a national consensus on what we need to focus our resources to make sure that they are utilized well. Develop bankable proposals and engaging more the funders through streamlined platforms like NREP holds significant promise.

We need to find effective way of developing a robust learning agenda to show case success cases. USAID launching a new 5 year financing facility for deals in productive use of energy in agriculture and health. Energrow productive use asset financing is available for market players, and is already working with UMEME and other utilities. It is important to devise financing models that provide patient capital for expanding access to clean cooking technologies, particularly for the last mile financing.

## Session 6: Meeting the Challenge, REC21 Outcomes and Recommendations

This section draws together the REC21 themes and discussions into recommendations on the next steps to assist Uganda in achieving her renewable energy goals. The Section summarizes the High level discussion on renewable energy development; Making Clean Cooking Bankable, Innovative and Affordable for All; Paradigm Shifts in the Solar Sector Energy Landscape; Bioenergy Driven Transition to a Carbon Neutral Uganda; RE Regulation, Standards, Quality Assurance and Incentives; Innovative communities of practice, partnerships and initiatives; and Unlocking and De-risking RE Investments in Uganda.

1. Aware that, to transition from the current 57% to 80% access by 2040, affirmative action needs to be geared towards the 43% households that currently do not have any form of electricity access in Uganda. Mindful that this requires that grid and off-grid renewable solutions are adopted based on site-specific suitability and efficacy principles. Apprehensive that Uganda needs

to take full advantage of her exceptional and sustainable solar, wind, geothermal, biomass, and hydropower resources. Cognizant that as of today 99% of households and institutions in Uganda lack access to clean forms of cooking energy which needs to be addressed in order to achieve the universal access target.

2. Acknowledging the vibrant growth that renewable energy has seen over the last years in the country. Alive to the fact that solar energy has become the technology of choice, particularly in the rural areas. Conscious that renewables enable sustainable energy access, thus promoting social justice; it creates economic and job opportunities; it improves air quality and mitigates climate change and emergency shocks; it can contribute to heightened food and water security and gender equality; and it enhances energy security, human health and sustainable development across the country.
3. The REC21 Delegates discussed and resolved that, to track the clean energy transition, the following undertakings are crucial:

- a. Given the significance of aligning the actors in the renewable energy space for accelerated access to energy in Uganda, the Delegates noted with delight the high-level Ministry and Development partner expression of support for the NREP. The very presence and endorsement of the Minister of Energy and Mineral Development, the State Minister and Minerals, the Permanent Secretary (MEMD), the Ambassador of Sweden to Uganda, the Representative of the European Union, Representative of the Country Director on UNDP, and the Country Director for TotalEnergies, Uganda is a magnanimous statement of intent for the renewables sector, and the NREP.
- b. NREP should aim to be a one stop center for collecting streamlined renewable energy data nationally, and the delegates challenged the Platform to further evidence based policy development and best practice sharing. The Platform should ensure integration and mainstreaming of renewable energy into national sustainable development strategies for poverty reduction (Parish Development Model), industrial development, agriculture, education, health and family welfare as a value add to other existing mechanisms.
- c. NREP should be positioned as a model strategic cooperation platform between Uganda and the other international partnerships for jointly addressing energy challenges and harnessing opportunities in the country. NREP should be at the frontline for Uganda's participation in the International Energy Agency (IEA) Technology Network, which is an effective catalyzer for multilateral cooperation and for sharing best practices in renewable energies.
- d. Sector Integrated planning: Sector integrated planning through a united national platform (NREP) is critical to the sustainability and further development of the sector, economy and society, since the energy sector does not operate in isolation; but in tandem with all key players and initiatives in the development space. National interconnectivity among actors enhanced by integrated planning and harmonized regulatory policies has proven to be a game changer in the renewable energy space in many countries. A node approach that integrates policies, especially regarding energy, water and food security, is vital for synergies and conflict mitigation and resolution.
- e. Cognizant that the lack of access to modern energy services places a particularly heavy load on women, children and other vulnerable groups, develop and promote a gender mainstreaming and development strategy for the UREAP under NREP to elevate the role of women and vulnerable groups in sustainable energy development.
- f. Advance efforts on the development and deployment of clean, sustainable and efficient technologies and innovations such as biogas installations, improved cook stoves in combination with solar energy, electricity for cooking, ethanol, new efficient technologies for charcoal production, programs for reforestation and sustainable forest management for the supply of energy for clean cooking in Uganda.
- g. Institute plans and mechanisms for catalyzing support from development partners for taking to scale energy trade and developing of clean and renewable energy resources. Such support should be fast tracked through development and lobbying for bankable projects that will secure sustainable, efficient and affordable energy supply based on economies of scales and diversification of the energy mix in Uganda. Consolidation of existing projects through the NREP

- platform should enhance the reach and geographical scope of the current fragmented initiatives.
- h. Initiatives such as those promoted Energrow, USAID, UNCDF, CAMCO and others that provide access to the much needed “patient” capital for scaling access to the energy poor with renewable energy are much welcome. There should be efforts to harmonize the modalities for accessing such financing through a unifying and harmonization initiative, such as the “Access to Finance Theme under NREP”.
  - i. The Sustainable Energy Development Programme (SEDP), under the National Development Plan III has become a model of national collaboration in the action on energy development, and the NREP should be anchored in the detailed SEDP Secretariat as the Sector platform for collaboration on clean energy and energy efficiency in Uganda.
  - j. Designing and promoting market enablers, such as subsidies, that ensure a reliable, cost-efficient and effective market incorporation of big shares of renewables, ensuring the maximum possible degree of supply security, while keeping the cost down for consumers and industry should be pursued.
  - k. Develop and implement a Uganda Renewable Energy Action Plan (UREAP) as one of the first outputs of the NREP. UREAP should have clear targets in terms of quantity and timelines for the deployment of bioenergy, solar, wind, geothermal and hydro energy resources. UREAP should mirror the SE4All Action Agendas with overall national harmonization of district actions plans into a national agenda for access, and efficiency in a holistic manner. NREP should then develop a clear reporting mechanism for SE4All as one of the key outputs of the platform.
  - l. The importance of regional, continental and global centers and partnerships such as EACREEE, ISA and IRENA as a means for beyond the country seamless resolution of the challenges and harnessing of energy access, energy security and climate change and emergency mitigation and adaptation is noted. The establishment of a NREP for Uganda as launched at the REC21 should anchor, escalate and mainstream the international renewable energy and energy efficiency obligations in Uganda. NREP should harnessing and promote the role that international cooperation plays in fostering renewable energy, energy efficiency and modern and sustainable energy access in the country.
  - m. A fundamental bottleneck to the effective implementation of renewable energy projects is the insufficient resources for project preparation and development. Further, renewable energy projects require “patient” financing facilities that link repayments with project revenue generation, which is not always available in Uganda. It is critical that we design, pilot and roll out innovative financial tools and mechanisms to mitigate such defies. Development partners and financial institutions, such as UECCC should provide a new finance stream for renewable energy deployment that will address how to raise equity for renewable energy investors.
  - n. The Delegates reaffirmed the importance of investments in research, development and deployment for more cost-effective and advanced energy technologies. The government of Uganda and her partners were advised to step up investments in targeted research and development.
  - o. Uganda is richly gifted with renewable energy resources that should quickly be developed in support of a desired low-carbon future under our Nationally Determined Contributions-NDCs.

- Renewable energy technologies are viewed not only as tools for improving energy security and mitigating and adapting to climate change and other emergency shocks, but are also progressively recognized as investments that can provide sustainable economic rewards by reducing dependence on imported fuels; improving local air quality and safety; advancing energy access and security; propelling economic development; and the much needed jobs in Uganda.
- p. Uganda still faces one of the highest energy poverty levels in the continent (215 kWh per capita). Sustained support of financing, technology and institutional capacity building, can significantly enhance the country's economic, social and environmental development using a diversity of renewable energy sources.
  - q. To address the glaring shortages of skills coupled with limited financial resources for training, increased cooperation in skills development in this sector is a priority. To realize the great potential as a technological and engineering hub, it is imperious to develop the necessary skills base to facilitate technology transfer, and to ensure that technologies are needs-driven and appropriate for local conditions including undertaking resource assessment, as a core opportunity for the united NREP.
  - r. The capacity and role of indigenous suppliers should be enhanced, while acknowledging the paybacks of and the need for an open market to attract international investments. Installations with local ownership can make sure that the local communities benefit directly and that they are involved in the scheduling process. This will generate jobs and grow skills as well as may reduce costs and will considerably increase community acceptance.
  - s. Regular and unrelenting government policies are important to provide investment security and impact favorably on technology deployment. Supportive, reliable and predictable market and policy agendas, procurement policies, a level playing field, providing access to affordable and patient finance, will increase the uptake of renewable energy in Uganda. Mainstreaming of renewable energy into national and local government strategies will further provide more opportunities for scaling-up renewable in Uganda.
  - t. The Utilities 2.0 vision for adapting Utility Companies to this new paradigm of decentralized electricity generation and to develop new business models was noted as the future in low energy access in Uganda. The demonstration needs to be supported to go to scale across the country as a win-win-win business model that accelerate electricity access, while benefiting utilities, private sector service companies and energy-poor consumers.
  - u. The significant role of decentralized energy in the Uganda energy transition is noted. Off-grid and mini-grid systems, as well as hybrid systems for transition periods play a crucial role in enabling access to energy through renewables, particularly in rural areas. Developing appropriate mechanisms and regulations for the offgrid sector in Uganda is urgent. This should consider net metering and regulation of captive power.

## REC21 Mini Exhibition

The REC21 Mini exhibition provided stakeholders an opportunity to view some of the latest developments in the technology space in Uganda. Bodawerk Uganda exhibited eco-mobility technologies. Some of the stakeholders took a ride electric bicycles powered by the energy- dense modular battery systems developed by Bodawerk, Uganda Limited. Others showcased a number of different solar PV products. There were exhibitions on electric cooking, with the latest state of art electric pressure cooker by MECs and eCOCA by CARE Uganda. The latest technology in the space at the exhibition was the Hydrogen for energy nascent technology, a new energy frontier for Uganda. The CODE Uganda team showcased technologies that have a positive impact on women’s lives, especially those technologies that will improve the living conditions of households.





# RENEWABLE ENERGY CONFERENCE 21 (REC 21)

Venue: MESTIL HOTEL

Date: 24<sup>TH</sup> NOVEMBER, 2021

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