



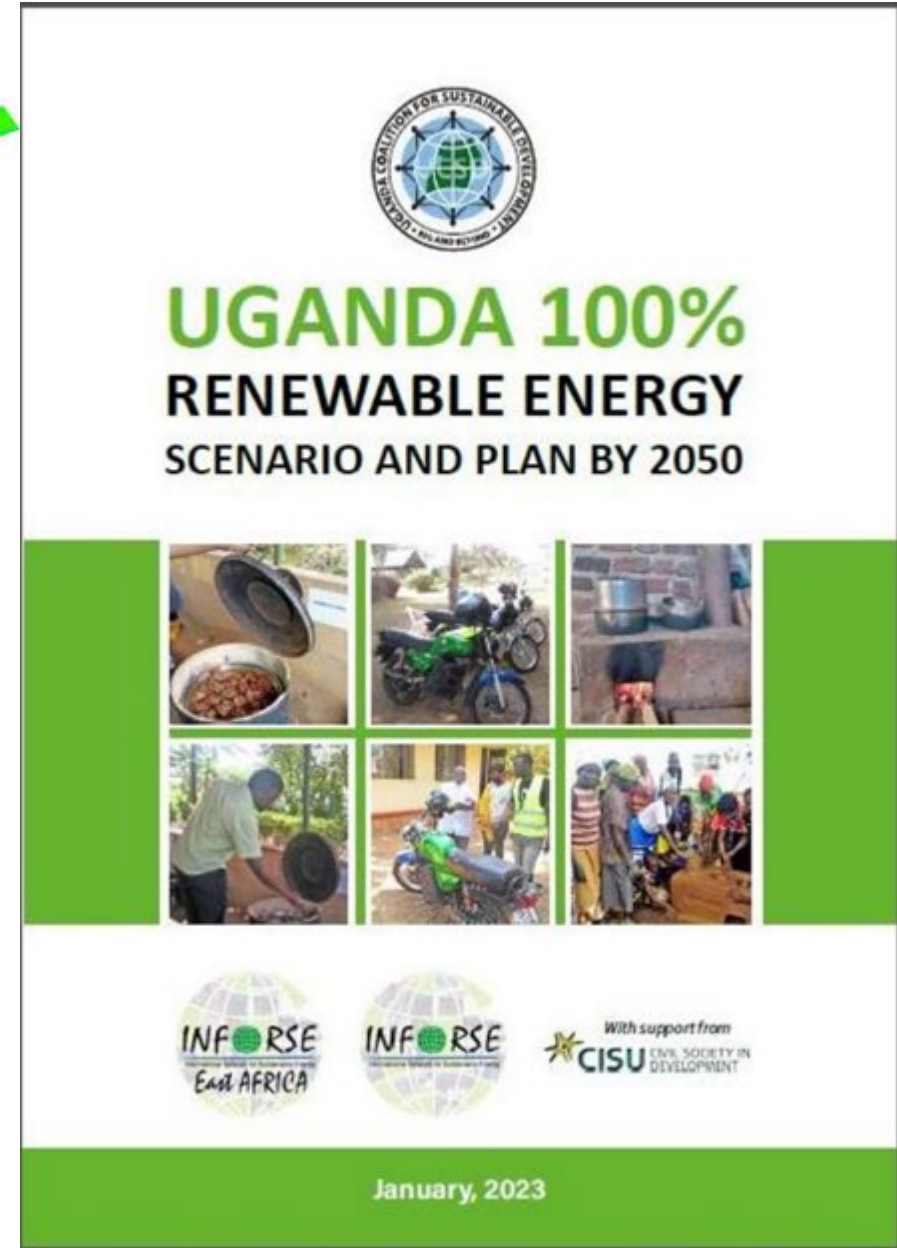
Launch Meeting

Uganda 100% Renewable Energy Scenario & Plan by 2050

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Nature Palace Foundation / Uganda Coalition for Sustainable Development,

Kampala, February 9, 2023



Background

Uganda Coalition for Sustainable Development (UCSD) is a **network of more than 40 NGOs** dedicated to coordinate advocacy and lobby work around issues and commitments made by world governments towards sustainable development since 2004

Mission: Contribute to sustainable development through follow up of the Johannesburg summit outcomes and subsequent global declarations in Uganda

UCSD is a partner in a cooperation Project – East African Civil Society Energy & Climate Action in East Africa (EASE-CA Project), which seeks to promote sustainable energy and climate solutions. The project is supported by CISU Denmark

Objectives of the EASE-CA Project

- I. Strengthen CSO networks in Kenya, Tanzania, Uganda to make joint proposals and advocate for better NDCs, LEDS, SDG7/SE4All plans, using existing coalitions (in Kenya coordinated by Suswatch) and INFORSE
- II. **Develop and promote strategies and scenarios for 100% renewable energy for Kenya and Uganda.**
- III. Strengthen regional networking on climate and energy, including joint positions to UNFCCC and strengthen INFORSE
- IV. Present joint positions at UNFCCC COP's and other places internationally
- V. Develop joint catalogue on local climate solutions, for mobile phones, on paper, web:
<http://localsolutions.inforse.org/>

Project partners



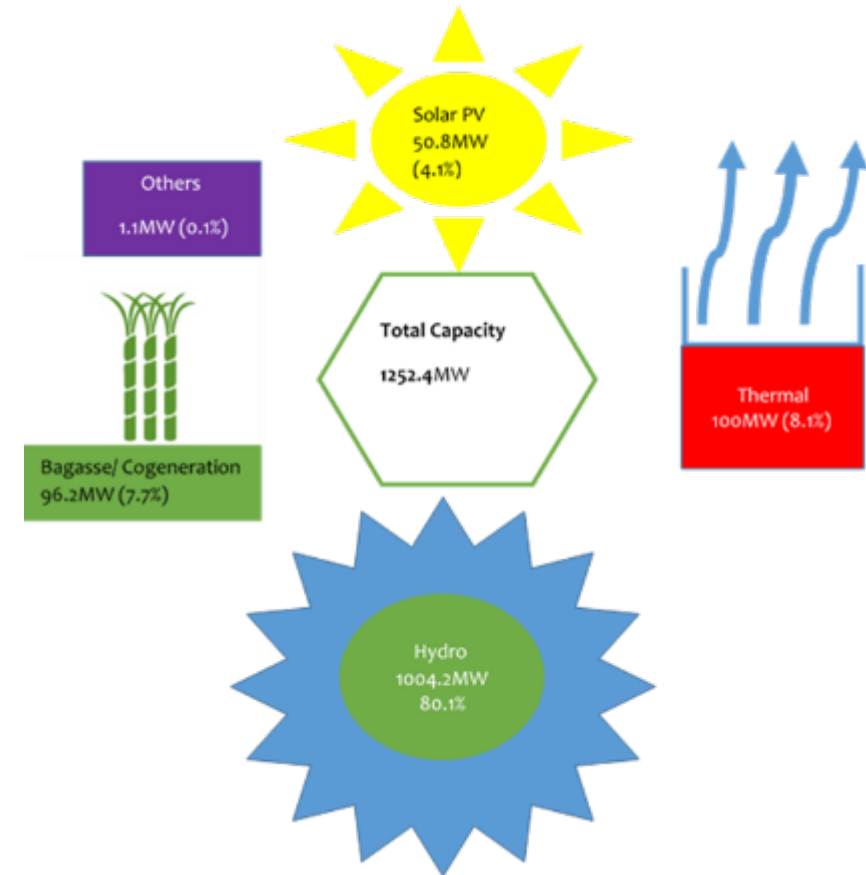
Objective of the study (RE Scenario & Plan)

Assess the current national renewable energy situation, and energy efficiency potentials, the future demands with a continued economic growth in Uganda, and to combine the information to formulate a 100% renewable energy scenario and plan until 2050, that can inform the on-going national renewable energy-related policy processes.



Methodology of the Study

- Literature review - available written national information such as reports, policy, strategies, plans, statistics, and others
- key informant interview, virtual and physical Consultations conducted with government ministries, agencies, academia, private sectors and CSOs
- Energy Modelling - use of INFORSE's spread sheet model for development of energy balances 2000 – 2050 and the Energy Plan model with analysis of variations hour by hour of energy flows and of costs for the years 2030 and 2050.



Summary for 100% Renewable Energy Plan for Uganda

- Plan gives an overview of the Uganda's situation regarding energy supply and demand, and presents a scenario on how Uganda can move into a **100% renewable energy economy by 2050**; and, at the same time move from a low income country into a middle income country - as well as **reduce biomass use for energy to sustainable levels**
- **Uganda has vast potentials for renewable energy**, which give a good basis for realizing a development as described in the 100% renewable energy scenario
- Future energy costs for the **BAU and 100% RE Scenarios** are estimated
- This has been analysed based of official forecasts of technologies for renewable energy and for future costs of fuels, without the present (2022) price hikes in fossil fuels
- The results are that the **economy in the 100% renewable energy scenario is much better than the BAU scenario with lower energy costs** and gradually less and less need for imports of fossil fuels into Uganda

Opportunities for East Africa for 100% Renewables

- ✓ Energy Savings, where it makes economic sense
- ✓ Renewable energy (solar, geothermal, wind) for power demand increase
- ✓ Renewable energy for industry and commerce including SMEs
- ✓ Gradually more electricity in transport (e-bikes, e-buses, e-cars etc.)



KAYOOLA BUS

KIIRA MOTORS PROJECT

TECHNOLOGY Environmental Friendly State-of-the-Art	ENDLESS POSSIBILITIES Hybrid Powertrain High Speed WiFi Network Advanced Navigation Systems Charging Points	REDEFINED COMFORT Premium Interior Finishing Finest Grade Leather Custom Made Seats Luxent Lighting
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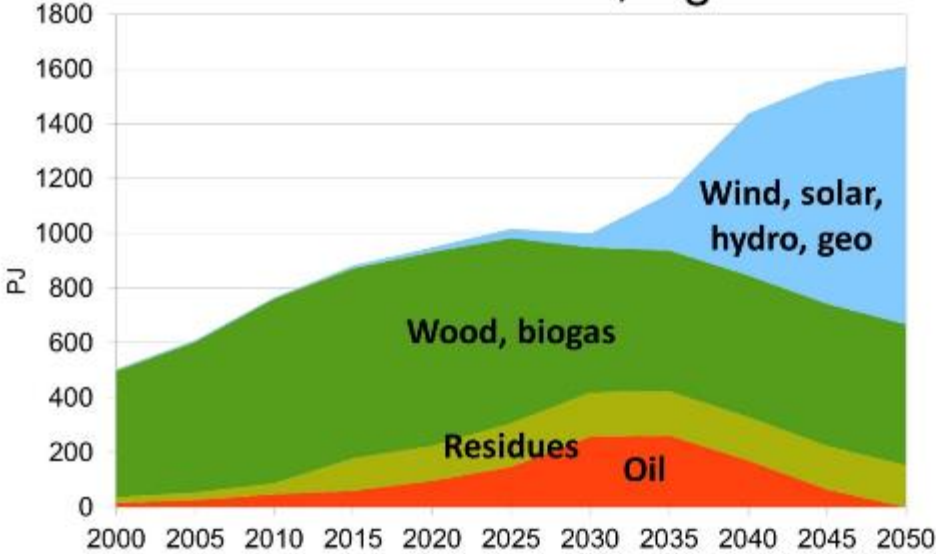
SOLAR BUS

Uganda's Demand for Energy – Important Assumptions

- **There are 4 main demand sectors** are **Households** - cooking demands & Household light and electricity; **Service sector** - Cooking demand & light and electricity demand; **Industry** - fuel demand(coal, oil, and biomass) & electricity demand; and **Transport** - fossil demand; shift to electric vehicles
- **Population grows**, from 45M today, to an expected 100M by 2050
- **GDP continue to grow, 5%/year is expected.** Then GDP will be 4.3 times bigger in 2050 than in 2020
- **Demand for cooking, transport, light, industry etc. will grow in proportion with population and GDP.** With the governments ambitious plan of universal electricity access by 2030, household electricity demand will grow fast 2020 - 2030
- **Increasing energy efficiency** will limit growth in energy demand for cooking, transport, light, industry etc.; but energy demand will still grow
- **With new, efficient technology**, large demands for fuel can be replaced with much smaller demands for electricity: smart cooking, electric vehicles etc.
- **For sustainable development**, Uganda requires a **steady supply of energy that is environmentally friendly, affordable and reliable.** The **basis for the scenarios** in this report is that the **demands for energy services will increase in line with population growth and in tandem with the Country's medium and long term development objectives as enshrined in the NDP III and Vision 2040.**

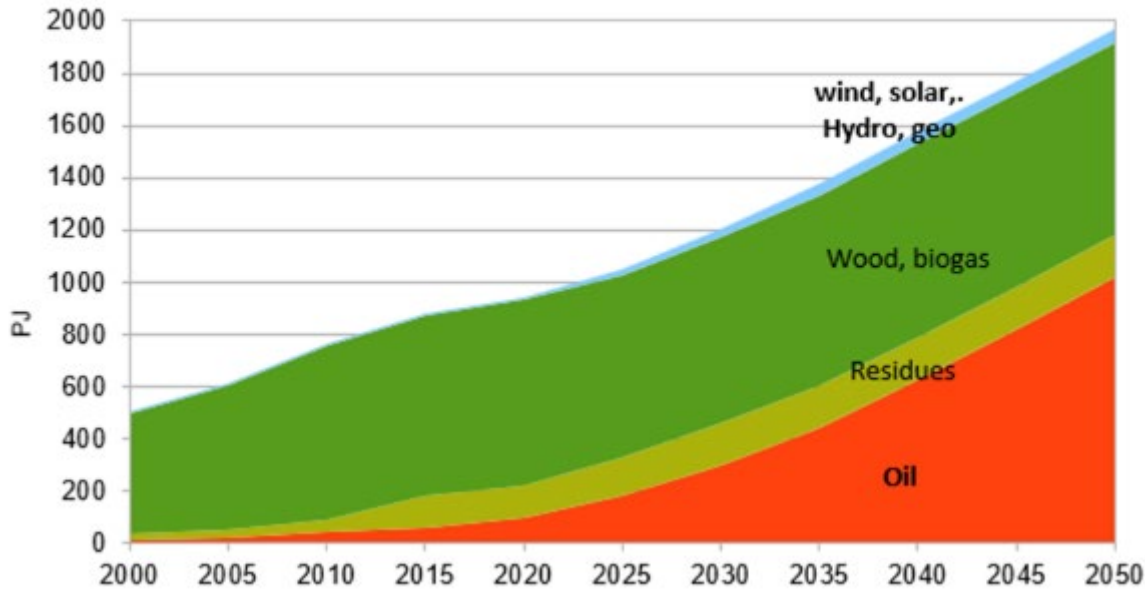
Total Primary Demand

Total primary energy demand, 100% Renewables Scenario, Uganda



100 % RE Scenario: For geothermal electricity production only is included not waste heat

Total primary energy demand, BAU Scenario, Uganda



Business As Usual Scenario

ESTIMATED RENEWABLE ELECTRICITY POTENTIAL

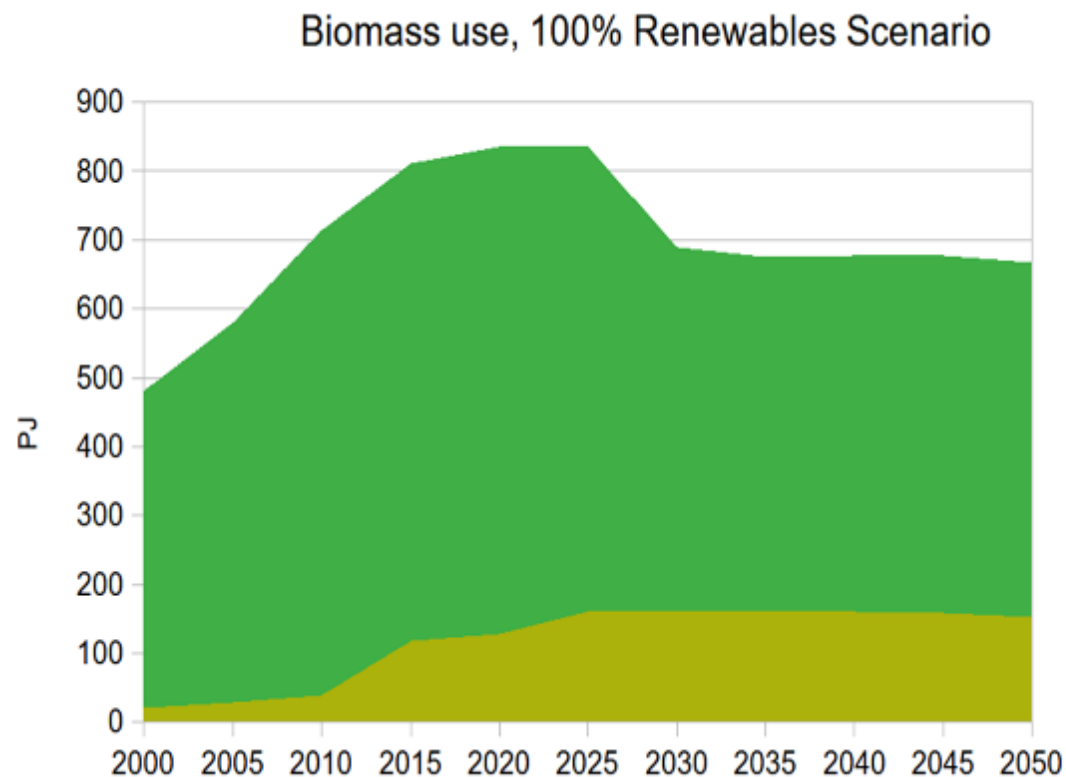
Energy Source	Estimated Renewable Energy Potential (MW)	Estimated Installed Capacity
Hydro	4,500 (4,100 Large & 400 small)	1252.4
Geothermal	1,500	-
Biomass Cogeneration	1,650	96.2
Solar	(No practical limit) > 150,000 MW exploitable	50.8
Wind	≥ 500	1.1
TOTAL	159,550.5	1,400.5

****Biomass** is the leading type of energy used in Uganda, constituting about 94% of the total energy consumed in the country incl. rural industries; and its trade contributes to the rural economy in terms of employment, rural incomes and tax revenue

Despite the many alternative energy sources available, both rural and urban population heavily relies on biomass energy, especially for cooking, due to its accessibility and affordability

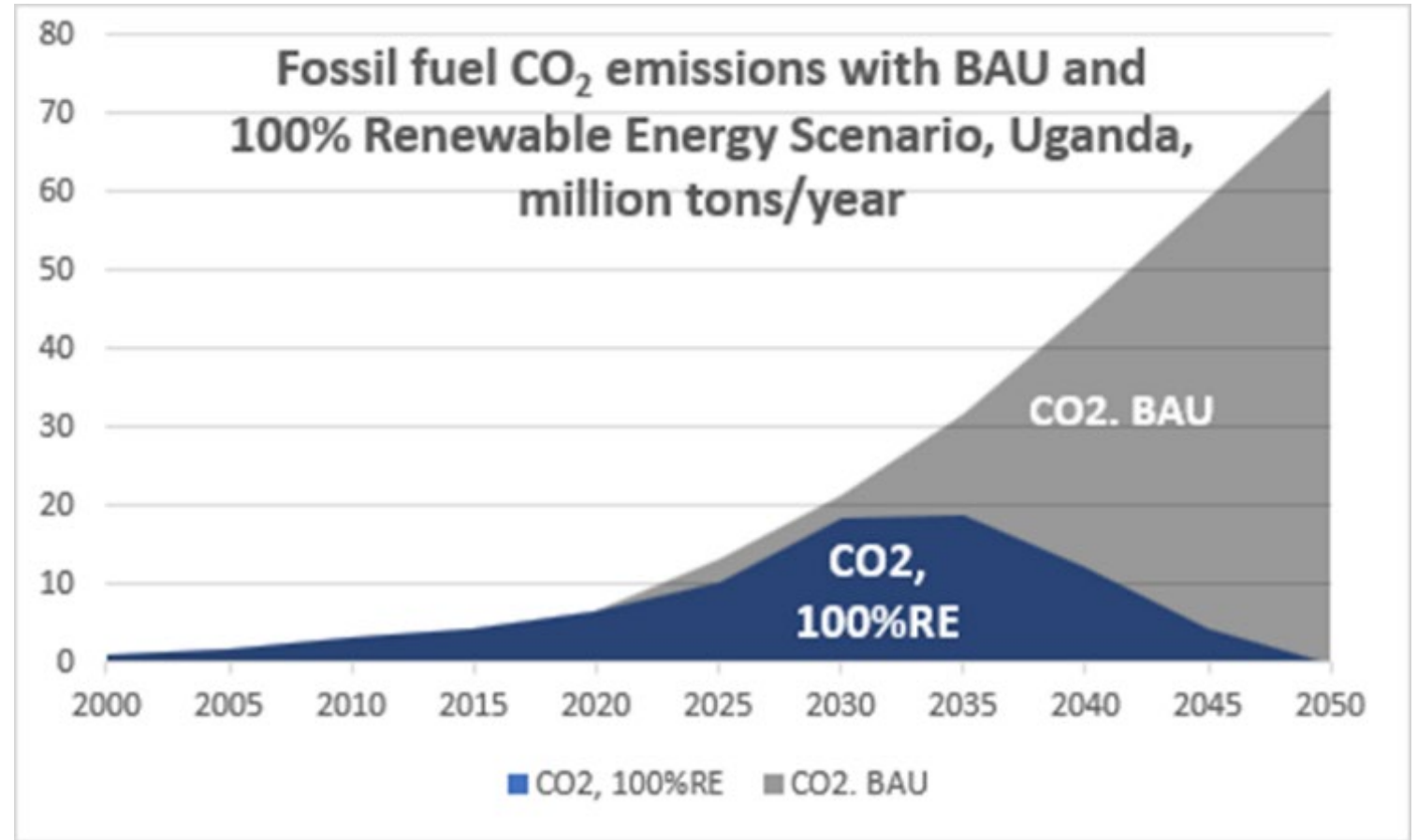
Biomass Sustainability

Uganda is using more wood than its sustainable level, leading to deforestation (BAU). In the 100% renewable energy scenario, this demand is reduced to the sustainable level



CO2 Emissions from Energy – A better Green Dev't Path

CO2 emissions from fossil fuels are small today, but growing. In the BAU scenario they will continue to grow, while in the 100% renewable energy scenario, they will gradually be reduced until 2050.



Net emissions from unsustainable biomass use is much higher than emissions from fossil fuels. In the 100% renewable energy scenario, the net biomass emissions will be brought to zero by 2030 by **tree planting, and the efficient cooking and heating technologies** (new, efficient technology, etc.)

SUMMARY OF THE ROAD-MAP TO A 100% RENEWABLE DEVELOPMENT SCENARIO – What it entails

- Promoting and adopting more Efficient cooking
- Transit transport gradually to electricity, hydrogen and new fuels
- Make charcoal production much more efficient (at least from <15% today to 33%)
- Expanding solar power (can go up to 50,000 MW)
- Expand geothermal power (1500 MW)
- Expand hydroelectric power (4500 MW)
- Expand windpower (600 MW)
- Expand electric interconnectors (3,000 MW capacity)
- Biomass power plants to balance demand and supply

Recommendations

In order for Uganda to move towards 100% Renewable Energy by 2050, there needs to be a **supportive agency and structure**, which requires the following:

- Development of plans with a **multistakeholder approach** to get the 100% RE Plan implemented at all levels from the grassroots (Local Councils) to the national level
- **Grassroots communities need to be involved and sensitised** from the initial stages of energy projects to increase their participation in and contribution to the projects, as well as minimise the potential of conflicts or rejection of the energy technologies.
- **Foster an enabling environment for private sector to play the crucial role** of investing capital and other resources into the energy sector, producing and selling energy technologies and products, consuming energy and thus generating government revenue.
- CSOs roles of creating awareness, disseminating information, and serving as intermediaries for communicating needs, expectations, capabilities etc should be highlighted and enabled.
- **The role of media to publicize information and articulate issues on the energy sector** should be supported so that they enable the population to understand issues related to the energy sector and to communicate these objectively, clearly and accurately.

Recommendations – cont'd

- **Research organizations and academia** should keep abreast of research developments regionally and internationally, and adopt best practices that are customised for the local situation.
- **Local governments should take full responsibility for close supervision and monitoring of energy projects.** They should take full responsibility for promotion and implementation of government energy programmes such as energy efficiency programmes.
- **Government, CSOs and other actors should incorporate a sustainability plan in tree growing** - based on management objective / purpose (indigenous trees, fruit trees for nutrition purposes, etc.)
- **Explore funding options** including climate funding and carbon credits in tree growing and efficient stoves
- **Central government should promote the efficient and sustainable use of energy in the country.** The government will create more favourable conditions for local enterprises to do energy business in the country including ensuring transparency and equity. For example, the legal and regulatory framework for developing energy activities and projects will be streamlined to attract more local private investors and operators, promote new energy projects and encourage innovative ideas.
- **The Government should set up and ensure full implementation of standards for all energy systems, products and services.** It will ensure adherence to the standards for quality service.
- **The Government should promote innovation and creative ideas in the energy sector.** It will enforce local manufacturing and appropriate fiscal policies promoting local manufacturing of systems and components, with emphasis on job creation.
- **The Government should seek funding from development partners for specific programmes and/or projects** especially in areas less attractive to the private sector and complement self-help groups and private sector efforts in rural electrification projects.

Thank you!

More information:

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The full Plan can be accessed from the following websites:

Uganda Coalition for Sustainable Development (UCSD)

<http://ugandacoalition.or.ug/content/resources>

International Network for Sustainable Energy (INFORSE)

<https://www.inforse.org/africa/Vision2050.htm>

