



Uganda Energy Policy Review Symposium

Report on PROCEEDINGS of the Symposium held on 3rd March 2016

Prepared by

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1. Introduction

The Ministry of Energy and Mineral Development (MEMD) is among the three Ugandan ministries that are participating in the DRUSSA¹ Programme. The others are Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) and Ministry of Education, Science, Technology and Sports (MESTS). DRUSSA promotes the uptake of research results in the sector ministries through three components

1. Policy Symposia that seek to create a platform for regular consultation among policy-makers, researchers and the public.
2. Capacity strengthening of policy makers through a short Executive Education Course on evidence-based policy making which is conducted by the Economic Policy Research Centre (EPRC) in collaboration with the Civil Service College Uganda (CSCU).
3. Policy Fellowships where university-based doctoral fellows are attached to the ministries for up to 12 months to facilitate the adoption of evidence based approaches in policy-making. The purpose of the fellowship is to strengthen capacity of the ministries to use research results for policy making. The Policy Fellows will participate in defining ministry policy priorities and develop an inventory of policy-relevant research reviews from which reliable evidence can be adduced to support policy-processes.

The MEMD organised an Energy Review Policy Symposium on 3rd March 2016 to discuss the status of the policy review process, as well as the progress and planned activities of the DRUSSA policy fellows.

2. Objectives of the Symposium

The main agenda and objectives of the symposium were to discuss:

- Key findings on the implementation of the Energy Policy (2002) by Mrs. Doreen Namyalo Kyazze (Consultant).
- Key findings and Energy Policy recommendations by the outgoing DRUSSA Policy Fellow, Dr. Albert Rugumayo.
- Planned activities and work plan of the incoming DRUSSA Policy Fellow, Dr. Geoffrey Bakkabulindi.
- Discussions and input from stakeholders on the policy review process.

3. Emerging Issues

The Symposium was opened by Mr. James Baanabe, Commissioner Energy Efficiency and Conservation – MEMD. He stressed the importance of the ongoing Energy Policy review and called upon all stakeholders to continue contributing to the review process.

An overview of the DRUSSA program was given by Mr. Collins Mwesigwa on behalf of the Uganda National Council for Science and Technology (UNCST). He highlighted the structure and objectives of the programme with regard to the development of effective policies under-pinned by research evidence in the selected Ministries. For reference, the full presentation is appended to this report as **Annex 1**.

Mrs. Doreen N. Kyazze made a presentation on the "Progress of Implementation of Energy Policy 2002 Priorities". The presentation highlighted the different Energy Policy objectives, their priority actions, strategic interventions and current status of implementation. Brief comments, recommendations and new issues were also discussed for each objective. For ease of reference, the full presentation is appended to this report as **Annex 2**.

Dr. Albert Rugumayo, DRUSSA Policy Fellow - Phase 1, presented the Energy Policy recommendations resulting from his fellowship at the MEMD in the period 2014/15. The recommendations were categorized into renewable energy, electrical power (rural electrification and power generation), energy efficiency and

¹ Development Research Uptake in Sub-Saharan Africa

conservation, and oil and gas. For ease of reference, the full presentation, including the proposed recommendations, are attached to this report as **Annex 3**.

The UNCST introduced the Phase 2 DRUSSA Policy Fellow for the period 2015/16 - Dr. Geoffrey Bakkabulindi, who presented his work plan and proposed activities for the fellowship at MEMD. His work will build on the inputs from the phase 1 Policy Fellow and the Consultant. The presentation of the work plan is attached to this report as **Annex 4**.

4. Discussions and Way Forward

The stakeholders raised the following issues in reaction to the various presentations:

- There was need for continued consultations with all key departments at the Ministry to obtain up to date information on the energy sector for the ongoing Policy review.
- It was proposed that the consultant considers whether the thinking behind the initial formulation of the policy objectives in 2002 remains relevant today.
- There should be more clarity on how the previous work of the Consultant / Phase 1 Policy Fellow feeds into the second phase of the DRUSSA fellowship. It was clarified that the previous work does feed into the succeeding phase, but this may need to be better presented.
- The scope of the fellowship should cover all energy sectors and not be limited to the power sub-sector.
- Issues on financing and land conflicts were observed to be pivotal in the implementation of energy projects and more focus should be given to these areas in the energy policy.
- A concern was raised about the limited time given to the review of the Energy Policy by the Fellow. It was clarified that the role of the Policy Fellow is focused on strengthening and contributing to the capacity of MEMD in developing evidence-based policies and policy reviews, rather than on the complete and final review of the of the energy policies.
- It was noted that some parts of the energy sector lack regulation and these should be identified and appropriate recommendations made.
- Examples on best practices and technologies in and around the East African region should be considered since other regions may have different cultural or social settings, such as the rural settlement characteristics.
- The introduction of new energy technologies must consider the specific social setting and economic viability in Uganda for successful local implementation.
- A discussion ensued on how per capita consumption can be increased in light of the impending energy supply surplus. It was noted that increased access through connections alone will contribute little due to the low rural demand. The development of industrial parks will make a much bigger contribution.
- The reliability and safety of nuclear energy must be considered in the energy policy review.
- It was proposed that more academicians and private sector stakeholders should be brought on board in the review process.

5. Questionnaire Feedback

Questionnaires were distributed to the participants in order to obtain feedback on the proceedings of the symposium. There were 23 respondents in total. The results of the responses to the different questions are presented in **Annex 5**. Some key comments highlighted by participants were as follows:

- Presentations and materials on the symposium should be forwarded to participants for review beforehand to enable meaningful inputs.
- Energy should not be categorized mainly as electricity, but all energy forms should be duly acknowledged as well.
- The evidence-based research by the DRUSSA fellows was recognized as a meaningful contribution to the overall Energy Policy review.
- Stakeholders agreed that energy access, particularly in rural areas, was one of the key challenges that need to be tackled by the sector. The involvement of the private sector was reported to be hindered by the low returns and high investment costs.

- Stakeholders acknowledged the need for increased information sharing between departments and organizations to facilitate a smooth and coordinated review of the Energy Policy.
- Guidelines should be established on how to conduct successful policy reviews based on research evidence.

6. List of Participants

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ACRONYMS

- AEC - Atomic Energy Council
 DRUSSA - Development Research Uptake in Sub-Saharan Africa
 EECD - Energy Efficiency and Conservation Department
 EPD - Electrical Power Department
 ERA - Electricity Regulatory Authority
 MEMD - Ministry of Energy and Mineral Development
 NEU - Nuclear Energy Unit
 RED - Renewable Energy Department
 SPPAD - Sector Planning and Policy Analysis Department
 SREP - Scaling Up Renewable Energy Programme
 UECCC - Uganda Energy Credit Capitalisation Company
 UEDCL - Uganda Electricity Distribution Company Limited
 UETCL - Uganda Electricity Transmission Company Limited
 UNCST - Uganda National Council for Science and Technology

ANNEXES

DRUSSA

Development Research Uptake
in Sub-Saharan Africa

[ANNEX 1]

More effective policies, under-pinned by research evidence

High level interaction
with leading academics
to explore policy
relevant research

**Policy
Symposia**

**Political leaders &
Senior Ministry
Officials**

Enhanced skills in
introducing research
material into drafting
& implementing policy

**Executive
Education
Courses**

**Officers
(2 week course)
Commissioners
(1 day Masterclass)**

Enhanced
management tools to
promote consistent
use of evidence

**Policy
Fellowship
Programme**

**Commissioners &
Directors**

DRUSSA Policy Symposia

Ministry role:

- Set the agenda
- Host and chair the symposia
- Invite the right people on the policy side

New policies
informed by
research
evidence

Project role:

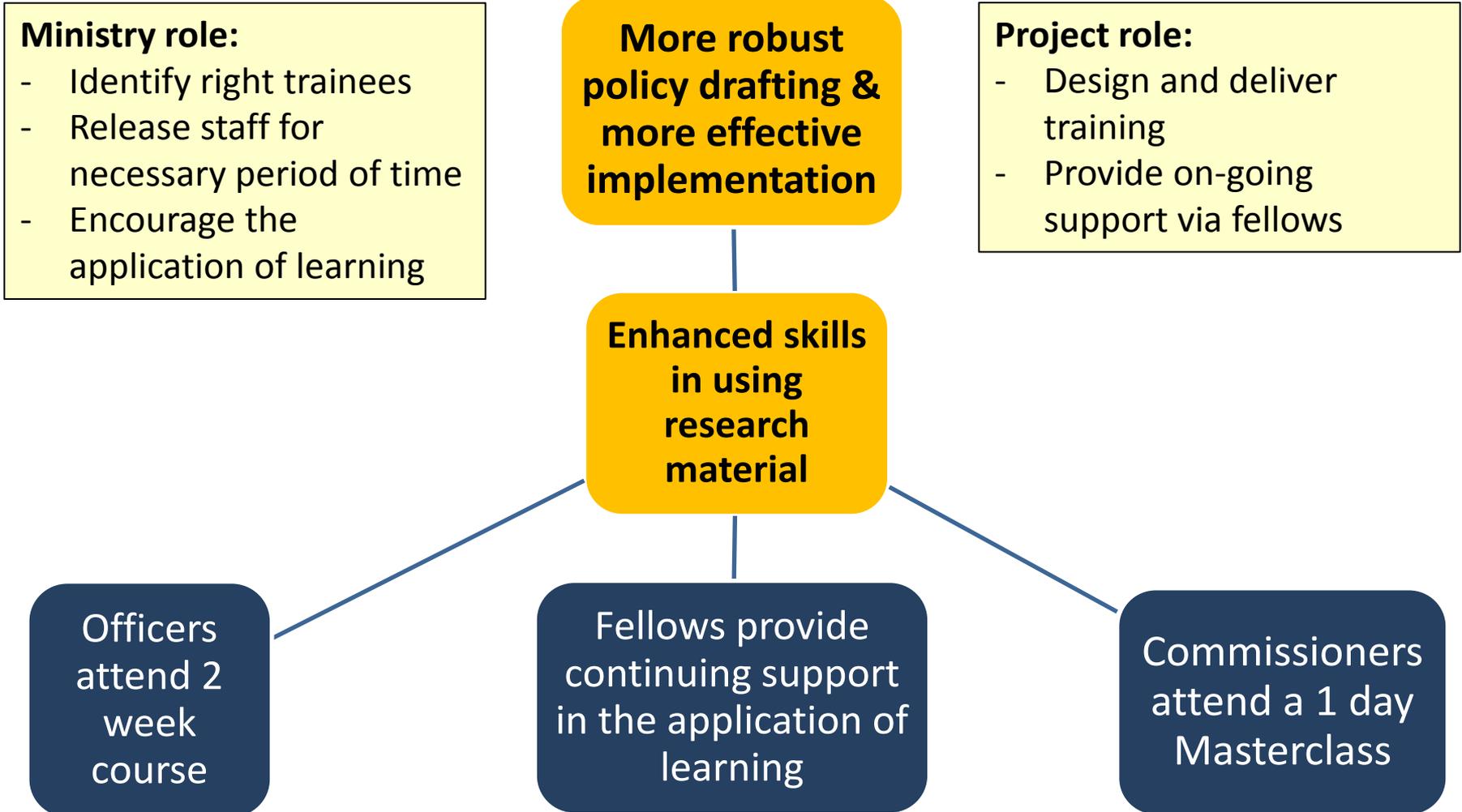
- Supply academic experts
- Document discussions
- Cover modest costs

Senior
Ministry
Officials

Explore
science &
research
relevant to
policy issues

Leading
Academics

DRUSSA Executive Education Courses



DRUSSA Policy Fellowship Programme

Ministry role:

- Agree TOR and use fellows effectively
- Engage in proposals to strengthen policies and processes to promote research evidence use.
- Embrace fellows within the life of the ministry

Working culture supports use of evidence

Project role:

- Recruit and brief fellows
- 'Buy-out' fellows time from home institution
- Provide accommodation if needed
- Support fellows with materials
- Facilitate interaction between fellows

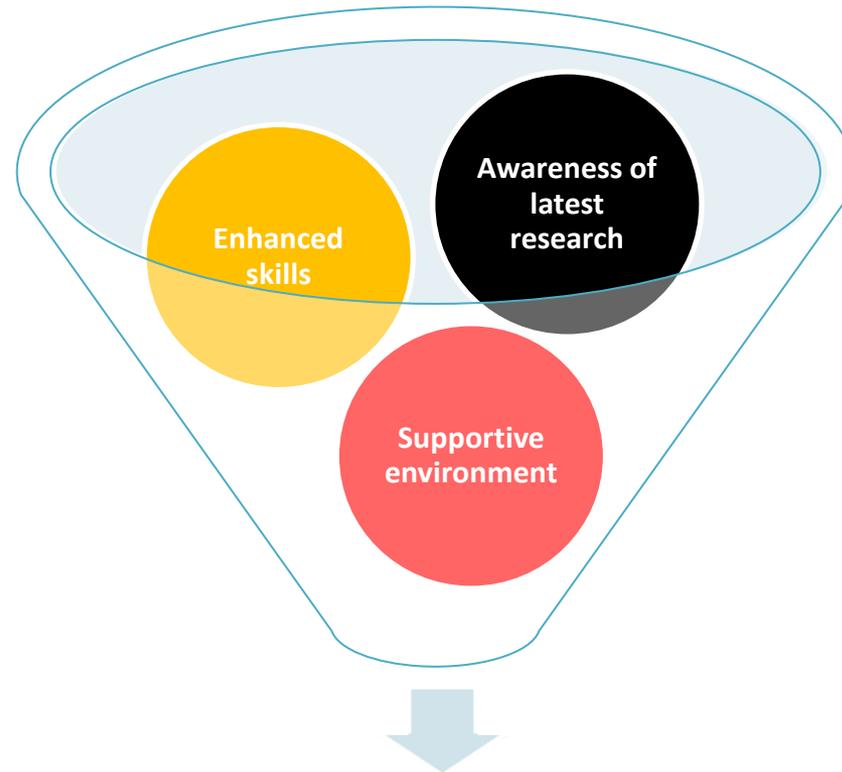
Management tools to promote evidence use

Structural: policies and processes

Fellows actively support development

Cultural: familiarity with routine use of evidence

The three elements combined



Better policy that is informed by evidence...
...leading to positive development outcomes.

ANNEX 2

SECTION A: PROGRESS OF IMPLEMENTATION OF ENERGY POLICY 2002 PRIORITIES

Policy Objective	PRIORITY POLICY ACTION	STRATEGIC INTERVENTION	TIMING	STATUS OF IMPLEMENTATION	COMMENTS/ NEW ISSUES
To establish the availability, potential and demand of the various energy resources in the country	1)Put in Place a data base on available energy sources	a)Prepare a database on all available energy resources and energy consumption patterns.		<p>A GIS data base showing the different energy resources has been established in the MEMD.</p> <p>A power master plan was done to establish the hydropower potential on the river Nile.</p> <p>Prefeasibility studies have been done for a number of min hydros to estimate the available potential.</p> <p>With the Geothermal resource, Geological, geophysical and geochemical investigations have been carried on several sites in Uganda.</p> <ul style="list-style-type: none"> • There are clear indication of geothermal resource availability in Katwe-Kikorongo, Kibiro and at Buranga geothermal sites but little progress has been done then due to lack of funding. • Preliminary investigations have been carried out on other sites such as Panyimur and Kanangorok. 	There is need for government to undertake detailed feasibility studies of the potential sites and resources so as to attract further investment.
		b) Have long term perspective of the options for demand/ supply		<p>The Power Sector Investment Plan was done in 2010 which among others provided a power demand forecast, the generation Plan, transimission investment plan,the distribution plans and Rural Electrification.</p> <p>The demand forecasts were updated in 2014, under a study that aimed at integrating nuclear power generation in the generation plan</p>	There is need for better coordination of the sector and in particular regularly update the Power Sector Investment Plan to ensure that supply meets the growing demand.
		c) Build the necessary local capacity to acquire the required data and assess and evaluate resources.		<p>Staff have been trained in the following areas:</p> <ul style="list-style-type: none"> • Directorate of Petroleum in the areas of resource assessment in the oil and Gas Sectors • Directorate of Minerals in the assessment of Geothermal resources 	Trained staff often get better paying jobs so they are hard to retain.

Policy Objective	PRIORITY POLICY ACTION	STRATEGIC INTERVENTION	TIMING	STATUS OF IMPLEMENTATION	COMMENTS/ NEW ISSUES
				<ul style="list-style-type: none"> Directorate of energy in the data collection in the GIS lab 	
To stimulate economic development.	2) Increase Power Generation	1) Complete the Owen Falls Extension Project (Kiira Power Plant)	2002 – 2004	Kiira Power station 200 MW was constructed	Policy objective met.- Kiira Power station is operational
		2) Construct two Hydroelectric Power Plants	2002 – 2008	Bujagali 250 MW was constructed and commissioned in 2012 Karuma construction is underway. Other large hydros under development include: Isimba 183 MW, Ayago 840 MW. Kiba 290 and Orianga 400 MW	Policy objective partly met There was Delay in construction of Karuma due to unavailability of funds/ Investor . There is need to increase generation capacity to meet the growing supply and meet the NDP II and Vision Of 4,178MW generation capacity by 2020 And 2040 targets of 41,738 MW generation capacity by 2040
To manage energy-related environmental impacts.	2) Diversify Power Generation Sources to Ensure Security of Supply	3) Develop Selected Renewable Energy Projects E.G. Kakira Sugar Co-Generation, Small And Mini-Hydros	2002 - 2012	<p>Several Renewable energy projects developed.</p> <ul style="list-style-type: none"> Ishasha 6.5 MW Nyagak I 3.5 MW Bugoye 13.0 MW Mpanga 18.0 MW Kasese Cobolt 10 MW Buseruka 9 MW Mobuku 1-Kilembe 5 MW Kisizi 0.35 MW Kagando 0.06 MW Kuluva 0.12 MW <ul style="list-style-type: none"> Kakira Cogen 50 MW Kinyara Cogen 9 Kaliro Sugar 9.0 MW <p>Those being developed</p> <ul style="list-style-type: none"> Kikagati 16 MW Muzizi 44.5 MW Nyagak III 4.4 MW Nyamwamba 9 MW Waki 5MW Siti 21.5MW Rwimi 5.5MW Nengo Bridge 10MW 	<p>The objective has been partly been met.</p> <p>Several renewable energy projects are yet to be development</p>

Policy Objective	PRIORITY POLICY ACTION	STRATEGIC INTERVENTION	TIMING	STATUS OF IMPLEMENTATION	COMMENTS/ NEW ISSUES
				<ul style="list-style-type: none"> • Mount Elgon 10MW • Lubilia 5.4MW • Kakaka 5MW 	
To increase access to modern affordable and reliable energy services as a contribution to poverty eradication	Increase Access to Modern Energy In Rural Areas) Implement the Rural Electrification Programme by Grid Extension, Development of Isolated Grids and Dissemination of Solar Photovoltaic Systems	2002 – 2012	<ul style="list-style-type: none"> • Rural Electrification Fund/was established to target rural investments. • Institutional framework (Rural Electrification Agency and Board) was established to manage and Administer the Fund. • Several delivery mechanisms for electrification were put in place like Grid extensions, isolated grids, solar PVs and use of renewable energy generation. • Rural Electrification Strategy and Plan I was implemented and it increased energy access in rural areas from 1 in 2012 to 6% in 2012. • 99 out of 112 Districts headquarters are inter connected or grid connected • Solar PV subsidy program did not deliver as planned. The targets were not met • To date the programme has achieved the following on medium to large grid extension projects; <ul style="list-style-type: none"> ➢ 5,192 km of medium Voltage (MV) power lines and 2,790 km of Low Voltage (LV) reticulation networks ➢ A further 3,670 km of MV power lines and 1,240 km of LV are in advanced stages of construction, and are to be commissioned in the FY 2013/14; • A new Rural Strategy and Plan from 2013 to 2023 is under implementation. Target is to increase access to 26% in rural areas by 2023. <p>Primary Objective of the RESP 2013 to 2023:</p> <ul style="list-style-type: none"> ➢ To achieve an accelerated pace of electricity access and service penetration to meet national development goals during 	<ul style="list-style-type: none"> • Target was 12% so the objective was not met. • Need to have aggressive rural electrification with higher targets. • We still have a lot of suppressed demand as connection fees not affordable to many consumers. • We have to harmonize our targets with the SE4All targets. • Solar PV programs should target market development not subsidies since they never get to the beneficiaries <p>Issues of wayleaves and compensation</p> <ul style="list-style-type: none"> ➢ Resistance to passage of lines over land of individuals in project areas ➢ Demands for compensation even when no crop or property has been tampered with

Policy Objective	PRIORITY POLICY ACTION	STRATEGIC INTERVENTION	TIMING	STATUS OF IMPLEMENTATION	COMMENTS/ NEW ISSUES
				the planning period and beyond".	

Policy Objective	PRIORITY POLICY ACTION	STRATEGIC INTERVENTION	TIMING	STATUS OF IMPLEMENTATION	COMMENTS/ NEW ISSUES
To improve energy governance and administration	4) Increase Operational Efficiency In The Utility Companies and Connect More Customers to the Grid) Concession out UEB Generation, Distribution Business And Invest in the Refurbishment of the Distribution Network	2002 – 2007	<ul style="list-style-type: none"> Government liberalized the sector to allow free entry of Independent Power Producers Over US\$300 million invested in distribution network by Umeme. (Dec 2014) Revenue collection and rate of billing has improved from 70% to 99.1% in 2014 Power losses reduced from 35 to less than 20% in the distribution network About 800,000 people now connected to the main grid 	<ul style="list-style-type: none"> Operation efficiency improved. However Umeme still has not been efficient in getting new customers connected. Progress made on loss reduction. They are still high and these should be reduced to at least below 10%. Measures to be put in place to increase connections in the Umeme territory. Need to ensure that additional power generated by the new power plants gets absorbed
		2002) Expand the Transmission Network	2002 – 2007	<ul style="list-style-type: none"> So far the Transmission network is 1,300 km. This will be increased to 2,750 km and the transmission voltage increased from current 132 kV to cover 220kV and 400kV. The transmission lines to evacuate power from generation plants being constructed or to be constructed soon include: <ul style="list-style-type: none"> Karuma – Kawanda (400KV, 264 km); Karuma – Olwiyo (132KV, 60km); Karuma – Lira (132 KV, 80km); Karuma-Gulu (132KV, 70km) Isimba interconnection (40km). Bujagali – Tororo – Lessos 220kV line Mbarara – Mirama – Birembo 220kV line Bujagali switchyard upgrade to 220kV Kawanda – Masaka 220kV line Nkenda – Fort Portal – Hoima 220kV line Tororo – Opuyo – Lira 132kV line Mbarara – Nkenda 132kV line Mutundwe – Kabulasoke 132kV restringing Namanve South, Luzira, Mukono and Iganga industrial park substations Opuyo – Moroto 132kV line Kabulasoke – Kiboga – Hoima 132kV Line Lira – Gulu – Agago 132kV Line 	<ul style="list-style-type: none"> Need to ensure all generated power is evacuated. Regional interconnections crucial for power trade
To establish the availability, potential and demand of the various energy	5) Determine the Petroleum Potential of the Country	1) Carry Out Exploration Drilling In Semliki Basin	2002 – 2003	<ul style="list-style-type: none"> The exploration Semliki work was done and commercial petroleum reserves found 	<ul style="list-style-type: none"> With the discovery of oil a Separate Oil and Gas Policy for the was put in place for the Oil and Gas Sector

Policy Objective	PRIORITY POLICY ACTION	STRATEGIC INTERVENTION	TIMING	STATUS OF IMPLEMENTATION	COMMENTS/ NEW ISSUES	
resources in the country		2) Carry Out Seismic Survey Of Lake Albert Area	2002 – 2003	Sesimic studies were done		
		3) Acquire More Geological & Geophysical Data In The Unlicenced Areas	2002 – 2005	More geological & Geophysical data obtained		
		4) Monitor Exploration Programme of the Licences	2002 – 2005	Programme of licenced companies monitored		
To stimulate economic development.	6)Create a Competitive Petroleum Supply Market in the Country	1) Establish and Run A Petroleum Monitoring System Based on the New Petroleum Act	2002 – 2012	New Petroleum Monitoring System not in Place		
		2) Promote and Develop the Pipeline Extension from Eldoret to Kampala	2002 – 2007	Pipeline was not constructed due to lack of finances		With the discovery of oil in Uganda the project not very attractive
		3) Improve the Management and Safety of the National Strategic Reserves	2002 – 2005	<ul style="list-style-type: none"> Jinja Strorage Jank was renovated under a PPP arrangement. However Government has not managed to raise the Funds to procure the petroleum products to secure in the tanks 		Security of Petroleum supplies is still an issue
		4) Build Additional Strategic Petroleum Products Reserves	2004 – 2012	<ul style="list-style-type: none"> Additional Reserves yet to be built in other strategic areas such as Nakasongola and Kasese 		Is has not been achieved. Strategic reserves to be constructed in as Nakasongola and Kasese
To manage energy-related environmental impacts.	7)Promote the Use of Renewable	1) Evaluate Renewable Energy Resources	2002 – 2005	<ul style="list-style-type: none"> A number of hydropower sites with potential to supply electricity were identified and pre feasibility studies done. A resource Assessment Study for the renewable energy was done. Renewable Energy Policy 2007 put in place. 	<ul style="list-style-type: none"> Renewable Policy to be reviewed separately 	

Policy Objective	PRIORITY POLICY ACTION	STRATEGIC INTERVENTION	TIMING	STATUS OF IMPLEMENTATION	COMMENTS/ NEW ISSUES
	Energy and Energy Efficient Technologies	2) Promote Through Awareness And Capacity Building Renewable Energy And Energy Efficient Technologies	2002 – 2005	<ul style="list-style-type: none"> About 900,000 improved cookstoves and 200 improved charcoal stoves have been disseminated 800,000 free CFIs were distributed in the country Free LEDs are being distributed in the country Power factor correction done in industries to improve power factor and save energy. Minimum Energy Efficiency Standards introduced for selected appliances. Energy Weeks held annually to sensitize the general public regarding benefits of using RE and EE technologies. Departments of Energy Efficiency and Conservation has been put in place. Department of Renewable Energy put in place. Energy Efficiency Bill under development 	<p>Need to provide Policy on Energy Efficiency in regard to a number of interventions such as:</p> <ul style="list-style-type: none"> Using price signals to influence consumer behavior. Minimum Energy Performance Standards (MEPs) Labeling of equipment such as cars and electrical appliances. Public Awareness and Campaigns Energy Management among large consumers Energy Auditing among large consumers <p>In addition there is need to have a sustainable way of financing energy efficiency investments eg through tariff or levys.</p> <p>Lack of Regulation of construction of renewable energy technologies other than power production.</p>
To manage energy-related environmental impacts.	8)Manage Energy Related Environmental Impact	1) Monitor The Implementation Of Environmental Impact Assessment Of Energy Investments (E.G. Large Hydropower Dams, Petroleum Exploration)	2002 – 2012	<ul style="list-style-type: none"> EIA Guidelines for the energy sector have been developed. All energy projects are subjected to EIAs and public hearings before construction. Monitoring to ensure compliance to the mitigation actions agreed upon is done by a committee of stakeholders at different stages of construction 	<ul style="list-style-type: none"> Issues of resettling PAPs and land compensation still a challenge as some PAPs refuse the compensation offered. District rates for compensating crops are usually not updated regularly making land acquisition rather tedious.
		2) Negotiate For Benefits Accruing Out Of The Kyoto Protocol	2002 - 2012	<p>A number of CDM energy projects were developed and Registered with the UNCCC. These include:</p> <ul style="list-style-type: none"> West Nile Electrification Project (WNEP) Bugoye 13.0 MW Run-of-River Hydropower Project Bujagali Hydropower Project Mpererwe Landfill Gas Project Buseruka Mini Hydro Power Plant 	Development of Energy Projects to continue factoring in issues of Climate change.

Policy Objective	PRIORITY POLICY ACTION	STRATEGIC INTERVENTION	TIMING	STATUS OF IMPLEMENTATION	COMMENTS/ NEW ISSUES
				<ul style="list-style-type: none"> Ishasha 6.6 MW Small Hydropower Project 	
<ul style="list-style-type: none"> To improve energy governance and administration 	9)Improving Energy Governance and Administration	<p>1) Build Capacity Of The Regulatory Agencies: Energy Department; Electricity Regulatory Authority; Electricity Tribunal; Department Of Petroleum Supplies; Petroleum Exploration And Production Dpt, Atomic Energy Council.</p> <p>2) Establish A Regulatory Framework On Atomic Energy/Ionizing Radiation</p>	2002 - 2009	<p>1) To increase energy governance and administration:</p> <p>2) An independent Regulator, the Electricity Regulatory Authority was established to ensure fair play ie. Tariffs are set to allow for a fair return on capital while protecting the electricity consumers.</p> <p>3) UEB monopoly was removed and, UEB unbundled, the distribution (concession out to Umeme) and existing generation assets consessioned to Eskom Ug Ltd.</p> <p>4) Free entry of Independent Power Producers allowed this has attracted investment in the sector</p> <p>5) US\$1.3B has been invested in power generation. With total Generation capacity improved from 380 MW to 880 MW</p> <ul style="list-style-type: none"> - Bujagali HP (250MW) - Thermal generation (150 MW Lugogo, Kiira amd Mutundwe now retired), Jacobsen and Electro max 100 MW on stand by Namanve and Toro -Small renewable power plants constructed totalling about 81.35 MW. These include: Kakira Cogen 50MW Kinyara Co gen 9.5 MW, Ishasha, 6.5 MW, Nyagak I 3.5 MW, Bugoye 13.0 MW , Mpanga18.0 MW, Buseruka 9 MW and Kisizi 0.35 MW etc <p>6) The Electricity Disputes Tribunal was established to hear and determine electricity sector disputes in a business like manner instead of relying on lengthy court processes.</p> <p>7) Department of Petroleum Supply was put in Place.</p>	<p>1. Private sector involvement has come with challenges:</p> <ul style="list-style-type: none"> Excessive hedging by the private sector due to the perceived risks. * Transactions take a long time and require GoU Guarantees. The cost of private capital is very high and results in high tariffs. The delay in construction of a new power plants, past draught, high oil process have affected reliability of power supply and increased tariffs. -The private sector is reluctant to invest in large infrastructure projects. <p>• There is need to have the Public sector led investment to mitigate the above challenges</p> <p>Need to put in place a Policy for power</p>

Policy Objective	PRIORITY POLICY ACTION	STRATEGIC INTERVENTION	TIMING	STATUS OF IMPLEMENTATION	COMMENTS/ NEW ISSUES
				<ul style="list-style-type: none"> 8) Atomic Energy Act, 2008, to provide for the promotion and regulation of all peaceful applications of the atomic or nuclear energy in the country is in place. 9) Atomic Energy Council which is the sector regulator has now been established and fully functioning with a Secretariat. 10) Nuclear Energy Unit has equally been established in the ministry to carry out promotion of nuclear power development. 11) Capacity is being built in both Atomic Energy Council and Nuclear Energy Unit 12) A strategy to develop nuclear power roadmap has been prepared. 	production from nuclear sources.
<ul style="list-style-type: none"> • To improve energy governance and administration 	0) To Increase Operational And Financial Efficiency Of The Power Sector	<ul style="list-style-type: none"> ■ Allow free entry of Independent Power Producers. 		<ul style="list-style-type: none"> • US\$300 million invested in distribution network by Umeme. (Dec 2014) • Revenue collection and rate of billing has improved from 70% to 99.1. • Power losses reduced from 35 to 20% in the distribution network 	11)

SECTION 2 STATUS OF IMPLEMENTATION OF RENEWABLE ENERGY POLICY 2007

How targets set in the Renewable Energy Policy 2007 have been met

PROGRAMMES	BASELINE 2007	TARGETS 2012	CURRENT STATUS
<i>Power Generation</i>			
Hydropower plants (large) (MW installed)	380	830	885
Hydropower plants (mini and micro) (MW installed)	17	70	64.5
Cogeneration (MW installed)	15	35	78.4
Geothermal (MW installed)	0	25	0
Municipal Waste (MW installed)	0	15	0
<i>Rural Electrification and Urban Access</i>	2007	2012	
Electrified households	250,000	375,000	REA to provide no
<i>Modern Energy Services for Households</i>	2007	2012	
Improved woodstoves (No)	170,000	500,000	800,000
Improved charcoal stoves (No)	30,000	100,000	???? Joseph Kirule ??
Institutional stoves (No)	450	1,500	1516
Baking Ovens (No)	60	250	????
Kilns (lime, charcoal, brick...) (No)	10	30	22
Household biogas plants (No)	500	30,000	Hatimu ???
Solar Home Systems (kWp)	200	400	No data
Fruit driers (No)	3	1000	600 ???

PROGRAMMES	BASELINE 2007	TARGETS 2012	CURRENT STATUS
<i>Biofuels</i> (Ethanol, Biodiesel, Biogas) (m ³ /a)	0	720,000	0
<i>Energy Efficiency</i>			
Solar water heaters (m ² installed)	2,000	6,000	
Energy savers (No)	1,000,000	2,000,000	No data
Industrial energy audits implemented (No)	20	70	Over 70
Energy efficient equipment for industries implemented (No)	15	50	No data

STATUS OF IMPLEMENTATION OF STRATEGIES IN THE RENEWABLE ENERGY POLICY 2007

POLICY OBJECTIVE	STRATEGIES	STATUS OF IMPLEMENTATION	COMMENTS / NEW ISSUES
1) Maintain and improve the responsiveness of the legal and institutional framework to promote renewable energy investments.	1. Publish a standardized Power-Purchase Agreement (PPA) with feed-in-tariffs.	Now in place	
	2. Put in place legislation and regulations to promote appropriate use of RETs in other sectors.	Not yet in place	
	3. Develop appropriate regulations for grid connections and wheeling of electricity generated from renewable energy.	Not yet	
	4. Establish a National Energy Committee	Not yet	Is it still relevant
	5. Establish a decentralized coordination framework to support the promotion of renewable energy investments at the lowest level.	Not yet	Challenge with increasing Public service structure to include energy officers at the district
	6. Create a Renewable Energy Department at the Ministry of Energy and Mineral Development ,	New Department for Renewable Energy has been created	
	7. Attract qualified personnel into the sector so as to support Renewable Energy Investments.	Partly done in some agencies.	Issues of adequate capacity still exist
	8. Integrate energy issues into non-energy sector policies and planning for sustainable energy service provision.	Partly done. Energy being mainstreamed in selected districts	Budgetary challenges exist
	9. Introduce a sector-wide approach in energy planning and implementation.	A committee comprising of key stakeholders has been put in place to do energy planning. A Division of technical planning created in MEMD	Need to strengthen capacity for the staff to do adequate planning and monitoring

POLICY OBJECTIVE	STRATEGIES	STATUS OF IMPLEMENTATION	COMMENTS / NEW ISSUES
2) Establish an appropriate financing and fiscal policy framework for RET investments.	1. Implement, through public-private partnerships (PPP), innovative financing mechanisms, including targeted subsidies.	Now in place	Subsidies have been provided for Solar PV, Solar Water Heaters and Stoves. Are they sustainable?
	2. Introduce fiscal measures that favor renewable energy investments.	Tax removed from Renewable Energy investments	Some Tax on RET not fully removed
	3. Implement innovative risk mitigation mechanisms and credit enhancement instruments.	The Uganda Energy Credit Capitalisation Company is now in place	Need additional financing to include all RE and EE Technologies
	4. Enhance social service provision through grant financing of renewable energy projects.	Now in place	
	5. Develop financing schemes adapted to local needs, traditions, and experiences.	Partly done	
	6. Take advantage of the Clean Development Mechanism, Emission Trading and Joint Implementation Programmes under the Kyoto Protocol.	Some projects have been registered as CDM projects	Price of carbon not attractive to develop CDM projects. Tedious process to get project registered.
	7. Determination of feed-in-tariffs for renewable energy projects periodically.	Feed in tariffs in place	Need to be revised
3) Mainstream poverty eradication, equitable distribution, social services and gender issues in renewable energy strategies.	1. Study the linkages and mechanisms between poverty eradication, gender, and renewable energy.	Partly done	
	2. Sensitize stakeholders on the linkages between gender, poverty and renewable energy.	Partly done	
	3. Implement a comprehensive integrated renewable energy, gender sensitive, poverty alleviation plan.	Gender mainstreaming done in energy projects	
	4. Reinforce the gender related benefits of renewable energy in PEAP.	Partly done	

POLICY OBJECTIVE	STRATEGIES	STATUS OF IMPLEMENTATION	COMMENTS / NEW ISSUES
	5. Mainstream HIV/AIDS issues in renewable energy plans, projects and activities.	Has been done	
4) Acquire and disseminate information in order to raise public awareness and attract investments in renewable energy sources and technologies.	1. Continuously acquire data on the renewable energy resource availability.	Studies on Min hydros and wind have started	Need to provide Adequate capacity
	2. Develop capacity to process this data	GIS lab in place	
	3. Develop and promote knowledge and exchange of information on renewable energy to all stakeholders.	Partly done	
	4. Promote and stimulate renewable energy and energy efficiency markets through information dissemination.	Partly done	Budget for awareness campaigns still low considered to other sectors of health and Agriculture
	5. Incorporate renewable energy education into the curricula of educational institutions at all levels.	Done in some universities	Need to Build capacity of Universities to include Energy in Curricular
	6. Develop and implement a comprehensive capacity building programme for the renewable energy sub-sector.	Not yet	
5) Promote research and development, international cooperation, technology transfer and adoption and standards in renewable energy technologies.	1. Promote appropriate R and D and local manufacturing capability in renewable energy technologies.	Partly done	R&D in energy not financed
	2. Allocate funds for R and D in Renewable Energy Technologies.	Not yet	
	3. Set up a Research and Development Division under Renewable Energy Department to liaise with other institutions on R andD in RETs.	Not yet	
	4. Support the research initiatives in tertiary institutions and among other stakeholders.	Partly done	
	5. Develop and adapt RET standards and certification processes.	Partly done	

POLICY OBJECTIVE	STRATEGIES	STATUS OF IMPLEMENTATION	COMMENTS / NEW ISSUES
	6. Identify and enhance mechanisms to gain from technology skills transfer and from international experience.	Not yet	
6) Utilize biomass energy efficiently so as to contribute to the management of the resource in a sustainable manner.	1. Promote, in collaboration with NFA and MAAIF, the growing of energy crops.	Not yet	
	2. Provide incentives for farmers to establish commercial <i>woodlots</i> .	Partly being done in the Green Charcoal Project	
	3. Integrate biomass energy production and efficient utilization and its impacts on climate and health into the formal education system.	Not yet	
	4. Licence charcoal production and transportation and encourage commercial production in an efficient and sustainable manner.	Partly done	
	5. Promote the production and use of biogas household and large/industrial scale. Scale up household biogas units to 100,000 by 2016.	Partly done	
	6. Scale-up the adoption of efficient charcoal fuel stoves from 20,000 currently to 2,500,000 households by 2016.	Partly done	
	7. Increase the adoption of efficient fuel wood stoves from 170,000 currently to 4,000,000 by 2016.	Partly done	The Uganda Alliance for Clean Cooking is now in place and has set some targets ???
	8. Promote interfuel/intertechnology substitution in households, commercial buildings and industry.	Not yet done	
	9. Promote efficiency in intensive wood burning industries.	Partly done	
	10. Promote biomass fired cogeneration in industries and institutions.	Sugar factories are involved in cogeneration.	

POLICY OBJECTIVE	STRATEGIES	STATUS OF IMPLEMENTATION	COMMENTS / NEW ISSUES
	11. Offer training opportunities for “ <i>Jua Kali</i> ” artisans for manufacture, installation and maintenance of efficient cook stoves.	Partly done	The training and regulation of this sub sector still a challenge
	12. Licensing of encroached national forest reserves to investors.	Partly done	This is done by NFA
7) Promote the sustainable production and utilization of biofuels	1. Develop appropriate legislation for the use of biofuels.	Draft bill in place	
	2. Adopt appropriate international standards for the manufacture and blending of biofuels with petroleum fuels.	Not yet	Law yet to be put in place
	3. License companies to blend up to 20% biofuels into gasoline and diesel.	Not yet	
	4. Provide financial incentives for the production of biofuels.		
	5. Set up a biofuels standard testing facility at the UNBS for testing and monitoring purposes.	Not yet	
	6. Monitor the standards of biofuels producers	Not yet	
	7. Sensitize the public and stakeholders on the use of the biofuels.	Not yet	
	8. Facilitate research on biofuels.	Not yet	
8) Promote the conversion of municipal and industrial waste to energy	1. Provide incentives for the conversion of wastes to energy.	Not yet	Ownership of waste is with Municipalities who seem not to have prioritised power production from waste.
	2. Put in place fiscal measures that will discourage open burning or disposal of wastes without extracting their energy content.	Not yet	

[ANNEX 3] ENERGY POLICY RECOMMENDATIONS

BY

DR. ALBERT I. RUGUMAYO

DRUSSA POLICY FELLOW

MINISTRY OF ENERGY AND MINERAL DEVELOPMENT

IMPERIAL ROYALE 3rd March 2016

ORDER OF PRESENTATION

- KEY ISSUES
- METHODOLOGY
- KEY POLICY RECOMMENDATIONS
- Renewable Energy
- Electrical Power – Rural Electrification
- Electrical Power – Power Generation
- Energy Efficiency and Conservation
- Oil and Gas

KEY ISSUES- Electricity Sub sector

- **Low level of electricity access:** Only 16% of the population has access to electricity and rural access is 6%;
- **Increasing electricity demand** of about 10% per annum, which is not being adequately addressed.
- **Inadequate exploitation of resources:** Apart from wood fuel which is over exploited being depleted faster than it is regenerating, the other renewable energy sources though abundant, have not been fully exploited. Only 15% of hydro power potential in Uganda is utilized.

KEY ISSUES- Electricity Sub sector

- **High cost of electricity:** partly due to introduction of thermal power. The cost of energy impacts on the competitiveness of locally manufactured goods relative to imports. In turn high energy prices impact negatively on domestic wealth creation, employment creation and balance of payments.
- **Inadequate financing mechanisms** to develop electricity supply projects to match growing demand;
- **Lack of a gas regulatory and policy framework:** Gas is considered an option for power generation under the Oil and Gas Policy but there is no regulatory framework for its development and production and no infrastructure
- **Lack of a renewable energy regulatory framework** to support some renewable investments such as solar, wind and geothermal.

KEY ISSUES- Petroleum Sub sector

- Lack of policy direction for the downstream petroleum sector in light of the recent oil and gas discovery. Thus current policy focuses on importation of all petroleum products but this is expected to change once local production starts.
- Inexistence of gas infrastructure to support the development and use of gas
- No regulatory framework for LPG-

KEY ISSUES- Energy Efficiency

- Inadequate awareness of the benefits of energy efficient technologies; by stakeholders
- Inadequate financing mechanisms to support Energy Efficiency improvements.
- Lack of a regulatory framework for Energy Efficiency- currently there is no regulatory framework to promote energy efficiency

KEY ISSUES- Cross cutting

- Limited technical capacity: This is both among the key players and stakeholders
- Weak regulatory and institutional framework. For instance there is no clear policy direction for nuclear power and solar, geothermal and gas.
- Poor management of the environment - deforestation leads to degradation.
- Inadequate coordination mechanisms among the various sector players for example government, civil society, private sector and ministerial departments
- Inadequate data and information on the potential of the various energy sources
- Inadequate research and development and poor linkages of academic institutions with sector players

Methodology

- The methodology had two main approaches.
- Stakeholder consultations and Literature review.
- Stakeholder consultations were made with the middle level and top management staff of the MEMD.
- Rural Electrification Agency, UEDCL and UEGCL.
- These were made at the Ministry premises, REA headquarters and during a conference.

Methodology

- Literature review included case studies from the internet and several documents from the Government, Development Partners; World Bank, ESMAP, IFC, UNDP, IPCC, UNEP/GEF, IAEA, multilateral organisations, NGOs, the Private Sector, journals and specific country policies.
- Documented based on their level of success in terms of providing energy services to their respective communities and the usefulness of the experience in terms of the lessons learned

Methodology

- Success was measured with respect to:
 - i) addressing poverty issues, ii) cost effectiveness, iii) degree of sustainability, iv) institutional frameworks, v) capacity building, vi) environmental issues and vii) technology transfer.
- Recommendations are then made based on the gaps identified in the current interventions so that these approaches may be included in future strategies

KEY POLICY RECOMMENDATIONS RENEWABLE ENERGY

- *i) Resource mobilization:* Mobilise relevant human, financial capital and other resources,
- *ii) Prioritisation mechanisms:* Produce incentives for stakeholders to set priorities; ensure there is capability within any particular sector to allow stakeholders to agree priorities across competing technologies,
- *iii) Capacity Building and Awareness Creation:* Develop and expand the breadth and depth of stakeholders' knowledge in both technology and application sectors with an explicit focus on changing behaviour and perception
- *iv) Entrepreneurial experimentation:* Develop an institutional infrastructure that favours entrepreneurial activity, firm establishment and growth, market formation develop market places, identify customers and users, develop viable business models, consider possibilities for exports and/or needs for imports.
- *v) Legitimation and governance:* Work to raise the social acceptance for technology, develop mechanisms for influencing such acceptance, and ensure compliance with requirements of relevant institutions and policies.

KEY POLICY RECOMMENDATIONS

RENEWABLE ENERGY

vi) Private sector interventions alone often cannot reach the poorest of the poor. 'Business as usual' is unlikely to reach the poor as profit margins and time frames are less attractive. Therefore the Government and Development Partners and NGOs will need to intervene.

vii) Understanding the socio-cultural context is important in designing models that reach the poor. This understanding may help identify new entry points for the poor and ways of capturing their dynamism and innovation in designing products and services that meet local preferences. For instance, designing a model that incorporates local preferences and expectations - such as women's views on health and the commercialisation of fuelwood - can be a short term investment that ensures the long term sustainability of the model

viii) The success of energy access initiatives should be measured in terms of development benefits not the number of households connected to the grid or efficient cookstoves distributed. The 'indicators of success' should be defined with the end-users and reflect the development benefits generated by access to energy, such as improved health, education and livelihoods.

ix) Lack of knowledge and understanding of delivery models is a key obstacle to investment. There is a need for more systematic analysis of delivery models, in order to provide investors, governments and donors with evidence of their impact, financial sustainability.

KEY POLICY RECOMMENDATIONS

RENEWABLE ENERGY

- *x) Employing business analysis tools to in-depth case studies can be an effective way to highlight pro-poor innovations within a delivery model in a way that does not compromise the key elements of a sustainable enterprise..*
- *xi) Understanding the socio-economic context of energy investment is crucial and this requires stakeholder involvement including a specific role for women.*
- *xii) In the design of projects there need to link renewable energy, with poverty alleviation and skills development to ensure sustainability of the investments.*
- *xiii) Mini grid pooling facilities are very relevant for promoting and renewable energy and rural electrification and are thus recommended for adoption in our circumstances. This is because they reduce on individual project development, the risk and on reduce on the transaction costs because they are aggregated.*
- *xiv) Coordinate and Integrate Planning: Actions to Improve Planning: share best practices and guidelines for adapting advanced planning capabilities; support capacity of institutions to increase integration, complexity, and coordination of and stakeholder participation in planning; and provide vision for how to move from analyses and recommendations to actions*

KEY POLICY RECOMMENDATIONS RENEWABLE ENERGY

xv) *Decentralized Energy Planning*: Biomass Energy would benefit significantly from a decentralized institutional like regional or even district planning. The impacts are very visible. It is also recommended that the type of projects to be embarked upon initially would fall in the category of *sustainable biomass management*, because this is where there is the greatest need.

xvi) *Bamboo as wood fuel*: Based on the potential of bamboo feedstock which is environmentally friendly, it can provide a rapid source of biomass and is a good alternative to woodfuel. This should be vigorously promoted countrywide.

xvii) *Renewable Energy Institutions*: There is need for dedicated institutions, which can promote and carry out research, in renewable energy development

KEY POLICY RECOMMENDATIONS

ELECTRICAL POWER - RURAL ELECTRIFICATION

- **Privatisation is not a panacea** to our problems of service delivery. As shown in the many case studies, rural electrification was promoted by governments through appropriate policies and financing and supported by development partners.
- **The main implementing agency should be strong and well supported** in the legal framework and should have an adequate institutional framework.
- The Rural Electrification Agency should show the linkage between itself and the owner of the network; ie the Uganda Electricity Distribution Company in its policy documents.
- It should have adequate technical capacity and be able to conduct business in an efficient and transparent manner.
- **Appropriate technologies for low cost grid electrification**, should be promoted as much as possible, because of significant cost savings (~ 30%), which funds could then be used for further investments. These can include optimized line spans, appropriate pole top configurations and conductor sizes. These technologies would not compromise service quality and thus contribute significantly to the pace and scope of electrification programs.

KEY POLICY RECOMMENDATIONS

ELECTRICAL POWER - RURAL ELECTRIFICATION

- Local communities should be involved in the planning process of rural electrification programs.
- A greater emphasis on reducing the connection cost charged to the poor is a cost effective way of increasing electricity access.
- The design of rural electrification schemes should also include health and education benefits as well as promoting businesses like agro processing small scale industries.
- Technology choices in off-grid electrification are not relevant in global environmental terms. Therefore, an off-grid technology-neutral approach should be encouraged.
- Grid extension and off-grid options are not mutually exclusive and could be implemented in parallel and, under specific conditions, in sequence.
- Non-conventional renewable energy systems (solar, wind) can complement other sources (diesel, mini-hydro) in ensuring firm energy supply in mini-grids.
- There should be increased gender responsive strategies in two ways by i) providing entry points for national energy access and strategy policy and ii) policy development, planning and implementation.

KEY POLICY RECOMMENDATIONS

ELECTRICAL POWER - POWER GENERATION

- i) Hydropower
- a) Innovative financing schemes should be adopted for our future large generation projects. Bonds could be floated by one of the companies for instance Uganda Electricity Generation Company Limited, whereby the public can buy shares or pension funds from the National Social Security Fund could be also be accessed. This approach is workable provided there is transparency and accountability in their operations.
- b) Small Hydropower schemes have substantial advantages alongside the larger schemes and should be promoted further.

KEY POLICY RECOMMENDATIONS

ELECTRICAL POWER - POWER GENERATION

ii) Nuclear Energy

A number of lessons can be derived from the literature:

- In the early stages of development significant time and resources should be addressed to capacity building. This can be organised directly through bilateral arrangements or with the support of the IAEA.
- New stations should be based on the application of proven technology and established design. This must be complemented by a high level of design completion in advance of construction, and the licensing basis for the plant must be secure before commitment to construct
- The design must be mature and licensing issues resolved prior to start of construction: This concentration of skills, short direct lines for communication and decision making.
- Establish a highly-qualified team to develop the design, secure the safety case, plan the procurement and build schedule in detail in collaboration with main contractors.

KEY POLICY RECOMMENDATIONS

ELECTRICAL POWER - POWER GENERATION

- Nuclear Energy (contd)
- Ensure that sub-contractors are of high quality and experienced in nuclear construction or are taught the necessary special skills and requirements for quality, traceability and documentation.
- Establish and maintain good communications with the community affected by the project and adequate stakeholder involvement
- Prioritise the disposal of nuclear waste and apply innovative technologies.
- Draw from best practice from international community and the IAEA.
- Ensure sustainable nuclear fuel supply
- Promote adequate public awareness.

KEY POLICY RECOMMENDATIONS

ELECTRICAL POWER - POWER GENERATION

- **iii) Geothermal Energy**
 - The success of geothermal energy in Kenya demonstrates that if Uganda develops geothermal power generation, it will be an opportunity to improve our energy mix from Government or Public Private Partnerships.
- **iv) Biogas Energy**
 - A large grid connected Biogas facility is an important option to consider through a PPP provided the feed in tariff is competitive.
- **v) Solar Power**
 - The use of mirror technology in the concentrated solar power plant should be considered because it can produce power even when the sun goes down. This is an example of using various financing mechanisms including climate funds to develop a large scale project.
- **vi) Waste to Energy**
 - This is innovative technology and is used in a public sector managed project. It has a business potential in all municipalities across the country. It promotes cleanliness, reduces waste and creates employment.

KEY POLICY RECOMMENDATIONS

ENERGY EFFICIENCY AND CONSERVATION

i) Adequate Resources- both funding and staff time - and other tools (such as technical information, changes in administrative rules, etc.) that make it possible and easy for staff to comply.

ii) Strategies. A balance between technological hardware and operational measures

- *Effective energy-saving strategies generally will include an appropriate balance of both technological (hardware) investments and non-capital, operational measures*

iii) Stakeholder engagement in planning and implementation stages

- *Two or more program elements can often work in a complementary fashion, if this is part of a carefully planned and staged program. For example, energy efficiency labelling contributes to successful public procurement programs, since labels give government buyers a quick and easy way to identify and specify efficient products. In turn, government purchasing strengthens labelling programs by providing a strong core of buyer demand for efficient, labelled products.*
- *Similarly, clear energy efficiency labels for building equipment can make it easier to ensure compliance with energy-efficient building codes, for government buildings and private construction alike.*
- *Sometimes the strongest impetus for improving energy efficiency (in the public sector and elsewhere) may come from non-energy policies: a strong government commitment to reducing air pollution or greenhouse gas emissions, a drive to develop domestic industries or to reduce dependence on foreign oil.*

KEY POLICY RECOMMENDATIONS

ENERGY EFFICIENCY AND CONSERVATION

iv) Conduct holistic market assessments, to determine realizable EE potential, public and private capabilities, critical policy and market barriers, misaligned institutional incentives, etc. in order to develop a clear operational strategy to impact the market. _

v) Look to international experiences for common program strategies and approaches, but adapt and tailor models to suit local conditions, including prevailing policy environment, market realities and capacities of institutions to ensure better program effectiveness and local buy-in.

vi) Design programs to be commercially oriented, demand-driven, and flexible in order to help create sustained shifts in the market and adjust based on changing market conditions and implementation realities.

vii) Achieve a strong balance between policy frameworks, institutional arrangements, training, and implementation policy without program implementation or vice versa has had limited effectiveness. A similar balance is needed between the technical information and assessments and the financial and transaction intermediation. _

viii) Focus programs to deliver real energy savings within 1-2 years to build program credibility and learn from a nearly implementation. Programs that have been overly focused on outputs (energy audits, market studies, training, action plans) have generally had minimal *impacts*.

ix) Provide participating institutions (banks, service providers, end users) with clear incentives to actively participate; stakeholders should share in rewards commensurate with risks borne. _

KEY POLICY RECOMMENDATIONS

ENERGY EFFICIENCY AND CONSERVATION

- *x) Develop well-designed parallel marketing efforts:* such channels can include conventional approaches, such as case studies and workshops as well as more innovative ones that may involve non-governmental organizations, local schools, etc. In some cases, use of performance-based contracts for marketing contractors (i.e., payments based on positive leads or sales) can help create more focused and effective strategies. _
- *xi) Provide intensive and sustained technical support* to address unforeseen and emerging barriers, ongoing skills enhancement, behavioural biases, institutional inertia etc. and create feedback loops so that early implementation experiences can be incorporated into future training efforts.
- *xii) The use of local and international technology standards:* The greatest EE contributions to a low-carbon development path lie in systematic efforts to reduce the energy intensity of specific end-use sectors, through efficiency (technological) improvements, rational energy pricing and market liberalization.
- *xiii) Promote NAMAs.* It is necessary to promote the National Appropriate Mitigation Actions alongside several modern energy efficient technologies.

KEY POLICY RECOMMENDATIONS OIL AND GAS

- Introduce a fiscal rule to address oil revenue volatility and smooth public expenditures.
- Develop clear rules and guidelines for investing the proceeds of oil for growth and sustainable development.
- Strengthen transparency and oversight rules to ensure petroleum revenue is managed in the interest of all Ugandans.
- Revenues should be divided into a budget fund, a stabilization fund and a sovereign wealth fund, with clear rules for withdrawals and transfers.
- A strong institutional framework is established to properly manage this finite resource.

KEY POLICY RECOMMENDATIONS

OIL AND GAS

- There is need to choose from a menu of regulatory options to create a hybrid model that best fits its particular situation. Should be flexible enough to evolve according to growth in a country's regulatory commitment and capacity.
- An appropriate capacity building that promotes national content and a law maybe indicating a percentage of 60%-70%. This will also cover locally produced goods.
- There is need to promote research in appropriate technologies and to apply advanced and clean technologies enhanced by priorities and targets of national development. Examples of this are the *Digital Oil Field* a web based visualization platform or *Cleantech* which reduces the harmful effects of hydrocarbons and a *nanotechnology based fuel* that decreases fuel consumption by a minimum of 8%.
- Energy R&D capability could be strengthened by building up the following types of institutions; basic research, engineering design and consultancy, teaching and training, national standards and quality control and investment promotion.
- There is need to promote gender sensitive education and training programmes and to increase the sense of awareness of stakeholders.



Annex 4

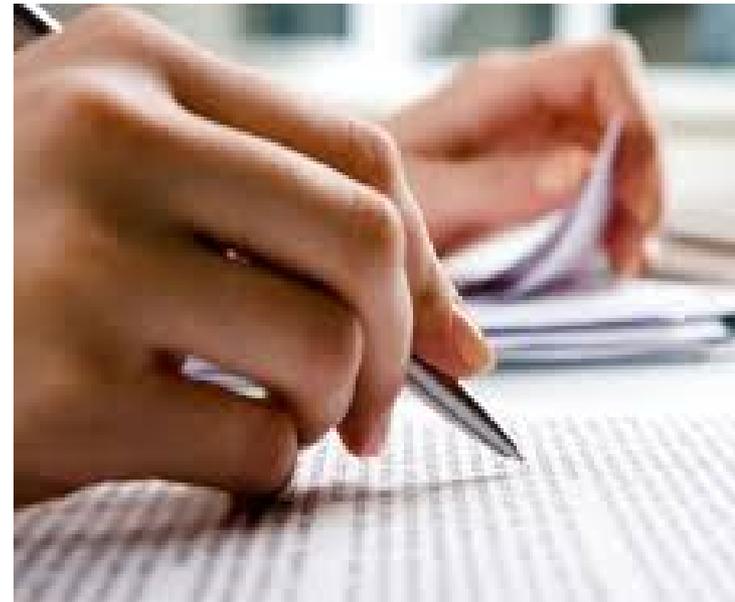
Development Research Uptake in Sub-Saharan Africa (DRUSSA) Phase 2

Dr. Geofrey Bakkabulindi

Department of Electrical and Computer Engineering
Makerere University

DRUSSA MANDATE

To enhance the use of conventional approaches to evidence-based policy making within the Ministry of Energy and Mineral Development (MEMD).



Key Objective

Increase the capacity of the Ministry to review energy policies in order to align them to the current developments in the sector and to embed evidence in the policy making process.



Special Considerations

The Fellowship programme will focus on the review of the National Energy Policy (2002).

Example priority areas:

- Energy efficiency
 - Domestic, industrial, transportation
- Power subsector
 - Low access – rural electrification
 - Anticipated surplus
 - Demand developments
 - Renewable energy investments



Work Plan

Tasks / Activities	Outcomes Success Measures	Timeline (2016)
1. Planning research input to the policy and planning activities within MEMD	Evidence-based policy planning decisions and guidelines	Ongoing
2. Quality assure DRUSSA project activities relating to the development of evidence-based policy within MEMD	Review of work from previous DRUSSA Fellow Technical reports	February Monthly

Tasks / Activities	Outcomes Success Measures	Timeline (2016)
3. Undertake literature searches, including production of policy reports, policy briefs, and other MEMD related publications on emerging energy options.	Periodic articles on emerging energy options and trends in the energy sector	Monthly
4. Provide in-house technical support to MEMD staff in processes that entail the identification, analysis and communication of research evidence for policy and planning processes.	Review of and contribution to the proposed Energy Database and Power Sector Information Centre	Monthly

Tasks / Activities	Outcomes Success Measures	Timeline (2016)
5. Collect and synthesize research evidence to support formulation of a National Energy Policy (2015).	Preparation of research-based proposals for the update of the Energy Policy.	May 2016
6. Facilitate the organisation of MEMD policy symposia on topical issues pertaining to design and implementation of evidence-based policies.	Topics for two (2) policy symposia during the period of the fellowship	March May

Fellowship Collaboration

The Policy Fellow will liaise with MEMD officials and the UNCST DRUSSA team in undertaking the assignment.

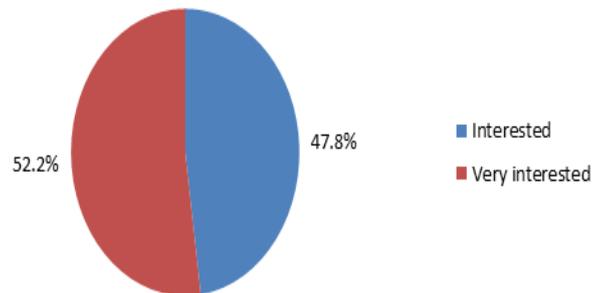
The Fellow will also liaise with all relevant stakeholders and Consultants involved in the implementation of the National Energy Policy of Uganda.

ANNEX 5

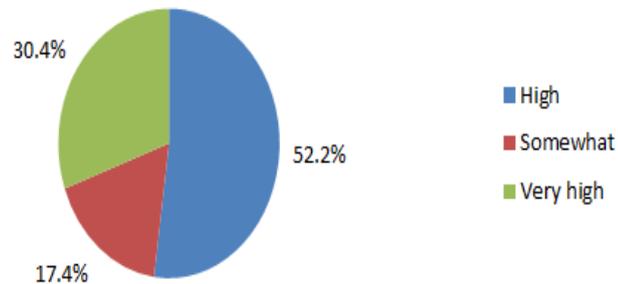
Summary of Participant Questionnaire Responses

Part A: Filled in at start of symposium

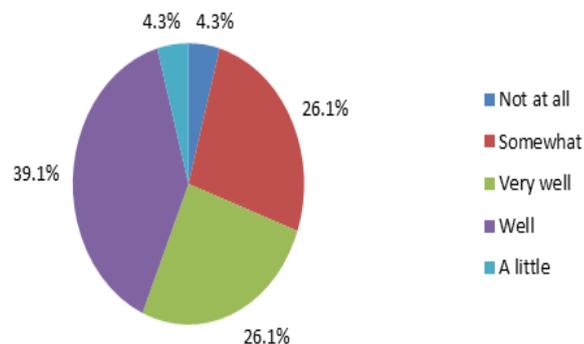
1 How would you rate your level of interest in today's symposium topic?



2 How would you rate your level of understanding of the topics to be covered today?



3 How well do you understand the purpose of today's symposium?

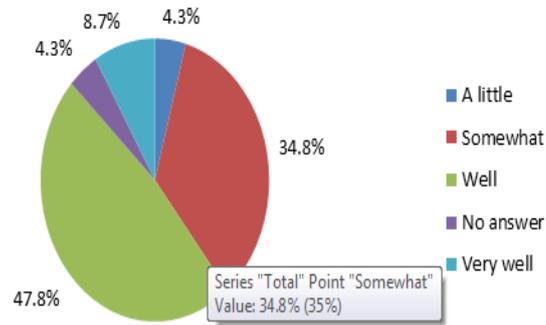


4 Any other comments

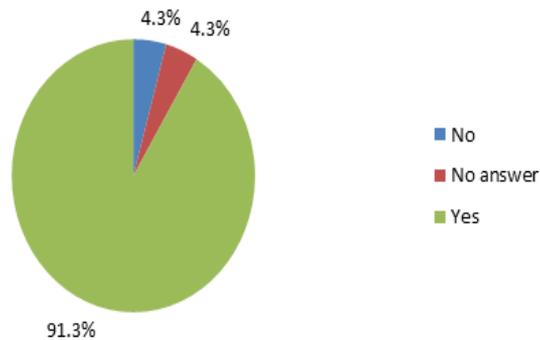
Summarized in report (Section 5)

Part B: Filled in at end of symposium

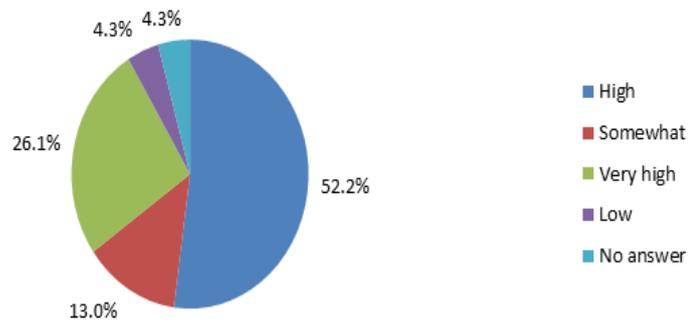
1 How well did today's symposium meet its stated aims?



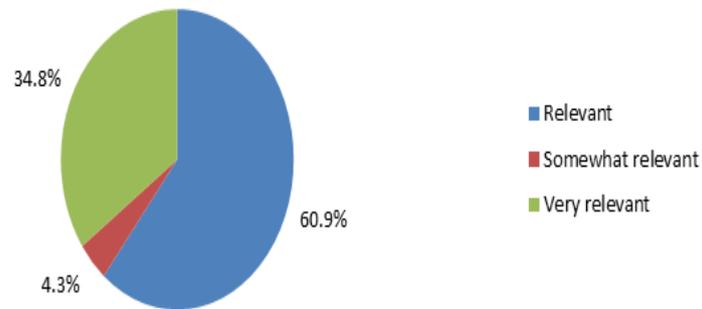
2 Did you learn anything at today's symposium?



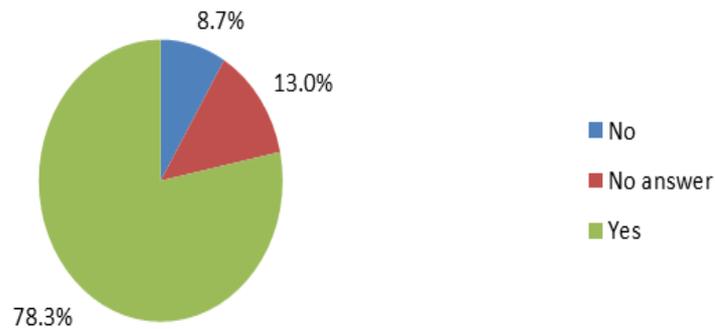
3 How would you rate your level of understanding of the topics covered today?



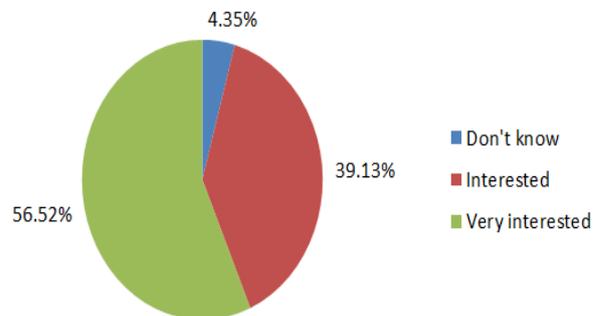
4 How relevant were the issues discussed at today's symposium to your work?



5. Will you do anything different in your work or how you access /share research evidence as a result of the discussion?



5. Would you be interested in attending future symposia?



6. Any other comments

Summarized in report (Section 5)