

Market for Solid Bioenergy in Uganda

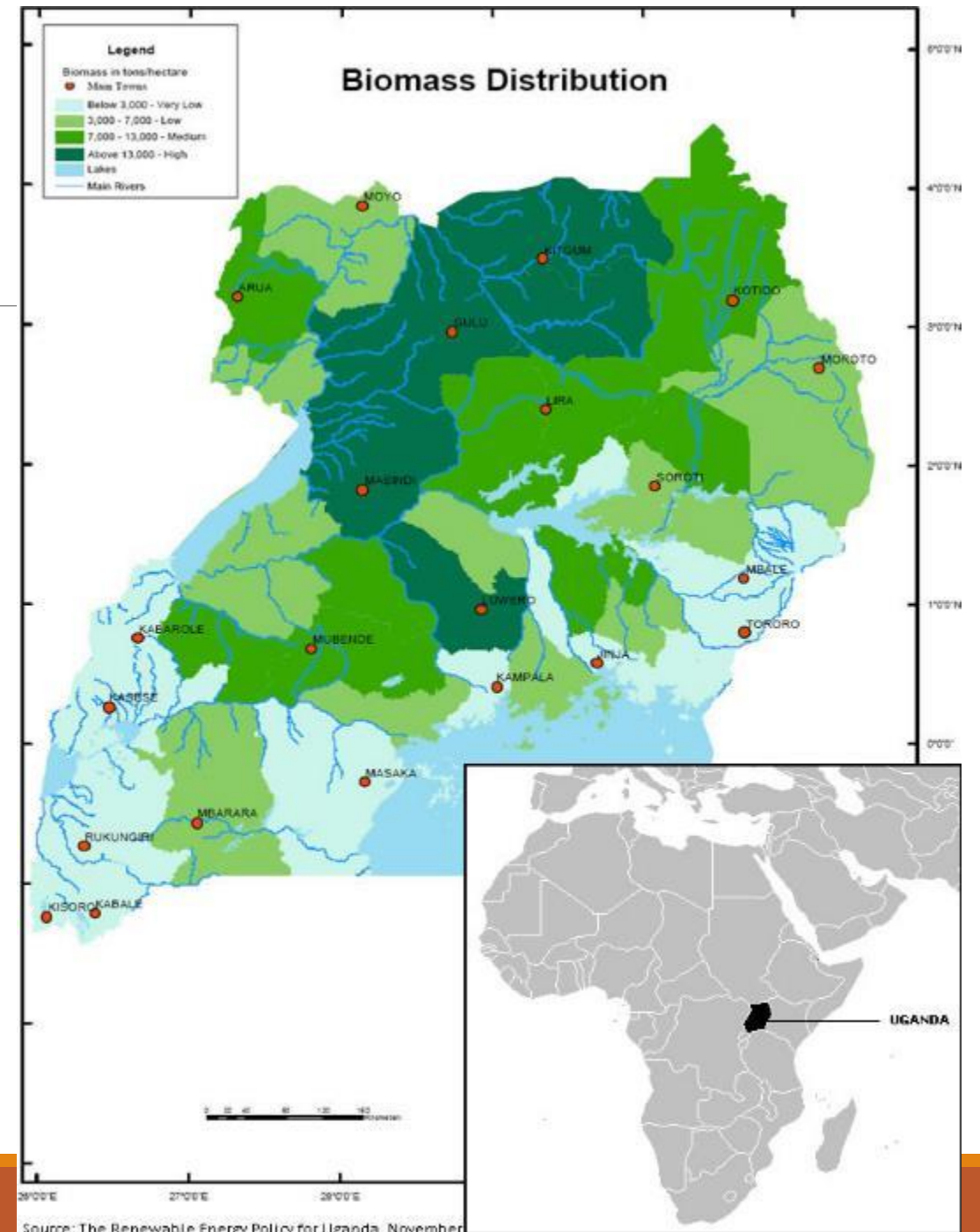


NOLBERT MUHUMUZA
CHAIRPERSON

About Uganda

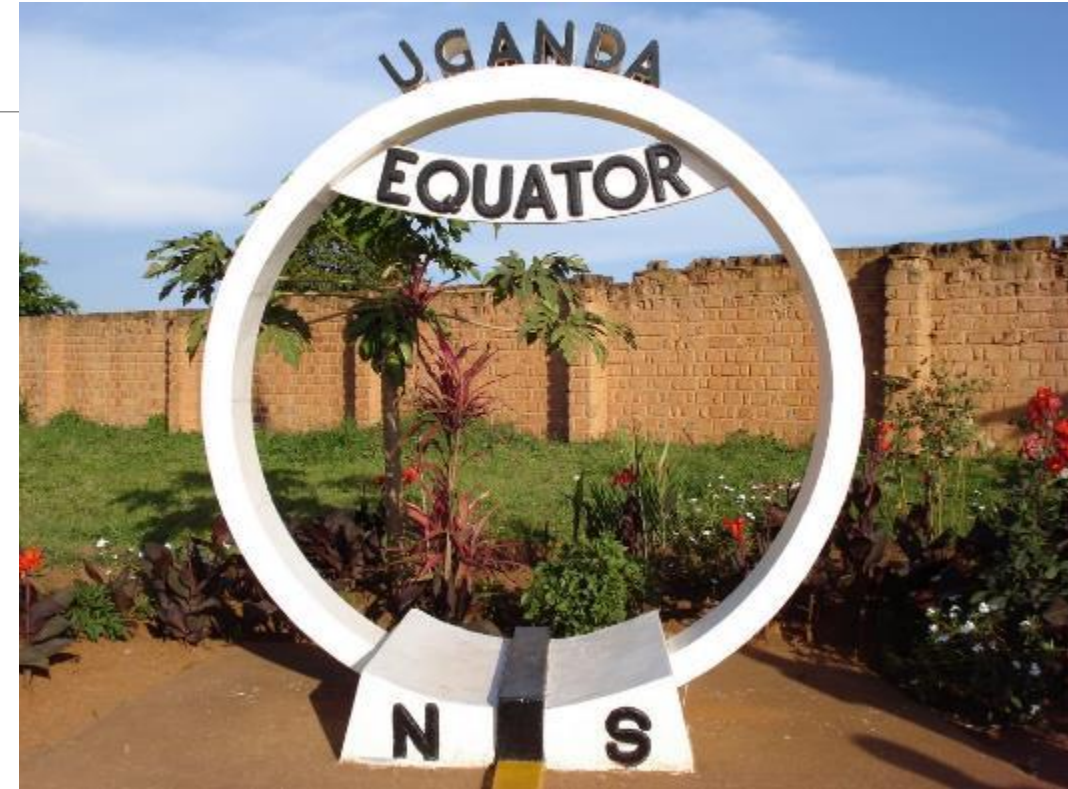
- ❑ Located: East Africa
- ❑ Area: 241,550 Km² (15% water)
 - Landlocked
- ❑ Capital: Kampala
- ❑ Population: 39 Million (Estimate 2015)
- ❑ Rural Population: 87%
- ❑ Currency: Uganda Shilling (UGX)

NB: Has the lowest median age in the world (15yrs)



Macro Environment

- ❑ Rural/Urban Split: 78% / 22%
- ❑ Population density: 173 persons per sq. Km
- ❑ Average Households size: 4.7
- ❑ GDP: \$27.5 Billion
- ❑ GDP Composition: Agriculture: 23.1%, Industry: 26.9% and Services: 50% (2013 est.)
- ❑ Imports: \$3.5 billion (2013 est.)
(coffee, fish, tea, cotton, flowers, horticultural products, gold)
- ❑ Exports: \$4.9 billion (2013 est.)
(capital equipment, vehicles, petroleum, medical supplies, cereals)



About BEETA

- ❑ Not-for-profit
- ❑ Membership organization
- ❑ Formed in September 2010
- ❑ Has over 65 members
- ❑ Targets individuals, organizations, companies, and institutions
- ❑ Members engage in;
 - Improved cook stoves
 - Biomass fuels
 - Energy for productive use
 - Biomass power generation
 - Next generation biofuels
 - Testing
 - Development, distribution and promotion



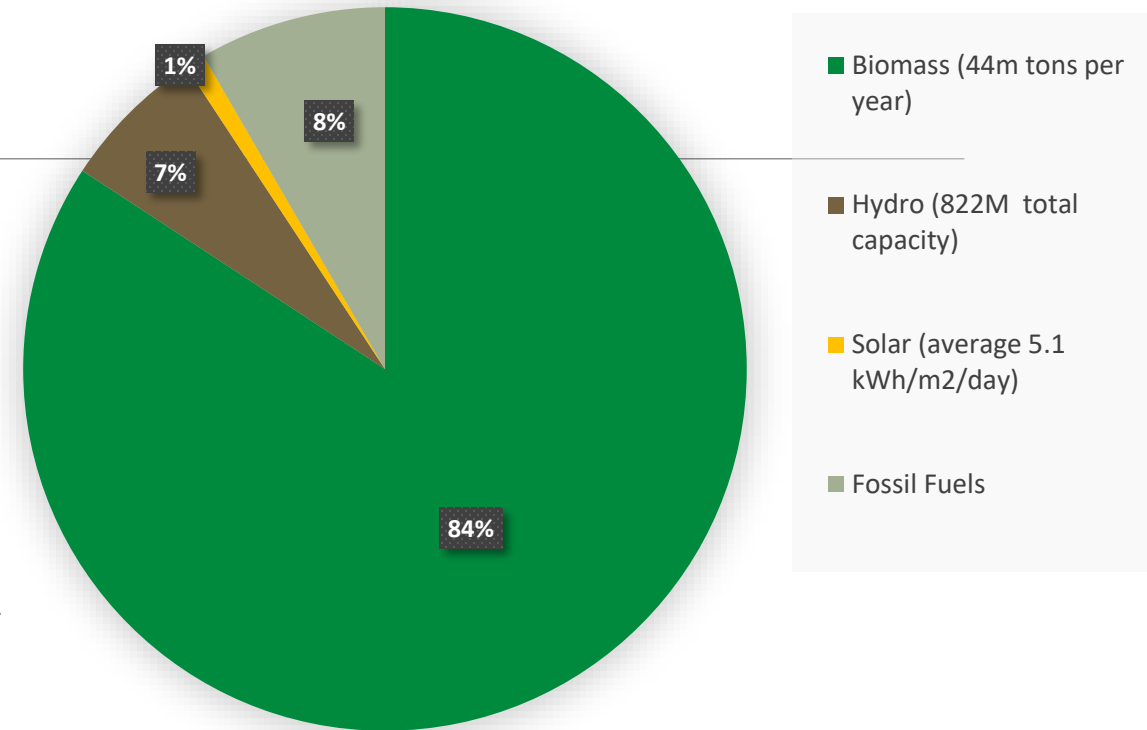
About BEETA

- ❑ **Mission:** To promote biomass energy efficient technologies and conserve the environment.
- ❑ **Objectives;**
 - Platform for information, support & networking
 - Lobby and advocacy
 - Awareness
 - Capacity building
 - Data collection
 - Development of standards
 - Financial support
 - Collaborations



Energy Resources Potential in Uganda

- ❑ 2,000 MW of Hydro power
- ❑ 450 MW of Geothermal
- ❑ 1,650 MW of Biomass cogeneration
- ❑ 460 million tons of Biomass standing stock
- ❑ 5.1 kWh/m² of Solar energy
- ❑ 250 Mtoe of Peat (800 MW)
- ❑ 6.5 billion barrels of Petroleum (estimated)



Sources: Census 2014,
energypedia.info/wiki/Uganda_Energy_Situation

Energy Consumption

Firewood

Availability: - **44 million tons**

Current Usage;

Potential;

Projects:

Vegetal waste briquettes (maize cobs, coffee husks, Ground nut shells, Rice husks, Sun Flower, Palm shells) – **9 million tons**

Municipal waste – **360,000 tons produced annually**



also include the names of large sawmills, agricultural processing facilities, and other plants that are creating and not using their waste for energy?
This would be very interesting for our participants. Maybe also include invasive species on this list of sources? Are any projects underway trying to tackle invasive species?
Maybe touch upon collaborations between companies and farms/individuals to secure sources?
Many will not know what is meant by “Forbs” in the last bullet point, could you please clarify this in the presentation?

Bioenergy Situation

- ❑ 96% use Firewood or Charcoal for cooking
- ❑ Biogas usage <1% (mainly for cooking)
 - Biogas mainly from animal waste
- ❑ Agricultural waste ~ 3%



Bioenergy Sources

- ❑ Tree biomass - 51%
- ❑ Bushes – 21%
- ❑ Farm vegetal waste – 12%
- ❑ Papyrus & Reeds – 9%
- ❑ Agro processing waste – 3%
- ❑ Grass, Forbs – 2%



Can you link bioenergy demand to any growing sectors?
Could you speak about in which sectors the greatest potential lies—is it domestic or industrial? (Possibly link this to any policies that are particularly favourable to specific industries).

Bioenergy Demand

- ❑ Households utilize ~74% of delivered energy
- ❑ The industrial sector utilizes 18%
- ❑ The commercial sector takes at least 5%
- ❑ Institutions utilize ~3%



Biogas Situation

- ❑ Biogas systems in Uganda since 1980s
- ❑ 7,000+ operating domestic biogas
- ❑ Household sizes range from 3 to 12m³
- ❑ Institutional plants range from 20 to 200m³



Budget Allocations

- ❑ Allocation for biomass technology increasing over the last 5 years
- ❑ BEST strategy (2014) addresses;
 - Policy and regulatory issues
 - Supply management interventions
 - Demand management interventions
 - Cross-cutting issues

* Allocation in Billion Shillings

Financial Year	11/12	12/13	13/14	14/15
Approved development budget	1,325	1,547	1,335	1,768
Average project Funding	76.88	67.8	68.6	75.9
Biomass technology	0.2	1	1	3.93
% of Social Sector	0.01	0.06	0.07	0.2

Source: Approved Budget Estimates FY 2011/12-14/15

MOFPED



Supportive Regulatory Framework for Bioenergy

- ❑ Energy Policy (2002)
- ❑ Renewable Energy Policy (2007)
- ❑ Biofuels Bill
- ❑ National Biomass Energy Strategy (BEST), 2014
- ❑ Sector Strategic Investment Plan (2015)
- ❑ National Development Plan Phase II



**BIOMASS ENERGY
STRATEGY (BEST)
UGANDA**

MINISTRY OF ENERGY AND MINERAL DEVELOPMENT (MEMD)- GOU



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support from



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In addition to the key issues, will you address the solutions? Were you going to use the projects to propose solutions to these issues?

Key Issues

Awareness

Inadequate awareness of the availability of appropriate technologies to harness the biomass

Investment

There is low investment in bioenergy in Uganda despite its economic importance and significance as a major fuel

Funding

High upfront cost is a critical barrier to adaptation of improved biomass technologies

Bioenergy Cases

Biomass Power Plants

- ❑ **Pamoja CleanTec** - 40 KW since 2012
(mainly uses agro-waste)
- ❑ **Mandulis Energy** – 28MW biomass plants
[off-grid – 8MW; Grid-connected – 20MW]
- ❑ **Kakira Sugar** (Co-generation) – 31 MW



- Opportunity-

Only 20% of Uganda use electricity for lighting; 61% use kerosene

Bioenergy Cases

Un-Carbonized Briquettes

- ❑ 2 main companies
- ❑ Capacity of 60 Tons/ day
- ❑ Utilize Coffee & Rice husks, Sawdust, Ground nut shells, wastes from Cereals



- Opportunity -

Households, Industries, Commercial businesses and institutions require 44 million tons of biomass annually

Bioenergy Cases

Carbonized Briquettes

- ❑ Many small (Cottage) producers
- ❑ Few large producers mainly in Kampala
- ❑ Sector rely heavily on charcoal dust
- ❑ No proper documentation on production procedures
- ❑ Urban markets require ~ 16 million tons annually



- Opportunity -

Increasing urbanization will increase demand for carbonized briquettes

Bioenergy Cases

OTHER Bioenergy efforts

- ❑ Pellets (very small project in Eastern Uganda), otherwise used for chicken feed
- ❑ Wood chips (mainly as research projects) – small project in Gulu



Maybe list any pellet/ woodchip/ research projects? Who's involved?

- Opportunity -

Bush,, grasses, agro waste and vegetal waste constitute 49% of annual biomass supply

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Thank you...

