Welcome

The webinar will begin shortly...
Welcome!
Remigijus Lapinskas
President,
World Bioenergy Association
*Moderator*
Africa-EU Renewable Energy Cooperation Programme (RECP)

A European Platform for Private Sector Investments in Africa’s RE Markets

Alexander Huppertz
What is the RECP?

- The RECP is an African-European platform for promoting renewable energy market development and investment in Africa.

- Funded by the European Commission, the Netherlands, Germany, Austria, and Finland.
Background II: Key Market Segments for RE in Africa

**Large / Meso-scale on-grid (IPP)**
Key regulations: PPA (FiT)

**Small on-grid (captive power)**
Key regulations: FiT / Net-Metering

**Off-Grid (Mini-Grids)**
Key regulations: Licences, Tariffs, Grid-connection standards

**Off-Grid (Standalone Systems)**
Key regulations: Standards, Import Tax / Duties
How can the RECP provide support?

- Well structured and accessible Market Information
- Identifying Project Opportunities in Partner Countries
- Match-Making Events in Africa and Europe
- Project preparation support and access to financial support
- Successful Access to Financing
  + complementary policy advisory
  + support to skills development and innovation
How can the RECP provide support?

Access to market information

- **Web-based market briefings** introducing the political and economic situation, the electricity sector and the RE potential

- **Market Studies** with “how-to”-information, providing an in-depth analysis of a certain market segment (e.g. Captive-Power/Self-Consumption in Nigeria)

- **Project scouting**: through in-country partners, and consultants

- **Information events**: workshops that introduce certain markets presentations or panels; organized through partners
How can the RECP provide support?

Access to potential business partners and project opportunities

- RECP matchmaking events help you identify your next project/partner:
  - Meet technology suppliers, project developers, service providers from Europe
  - Meet potential clients and business partners from African markets
  - Meet potential financiers

- More than 16 events implemented since 01/2016, both in Africa and Europe
- Events are organized standalone or attached to other events, through partners (African and European industry associations or equivalent), with structured match-making sessions
How can the RECP provide support?

Information on Financing Opportunities

- RECP’s finance database helps you identify sources of funding:
  - Information on more than 50 individual sources of funding; currently gathering data on funds
  - Initial risk-mitigation instruments included, to be expanded
  - Inclusion of local banks is planned
Advisory to Project Developers: the “Finance Catalyst”

- Provides advisory support to project developers on project development, structuring and access to finance (“bankability TA”)
- Cooperation (“two-way-street”) with existing financing instruments (ElectriFI, REPP, SEFA, and many others): “feeding into” as well as “upstream referral”
- Delivered through a team of highly experienced professionals
- Standardized and fair access procedure through an “intake” on the RECP website
- Time “budget” of up to 100 hours per project (deviations possible)
Initial Results – Access to Finance II

Strong interface with ElectriFi established

- Very close collaboration on working and management level between ElectriFi and RECP Finance Catalyst.
- Mutual referral system in place.
- Close exchange facilitates targeted advisory from Finance Catalyst Team towards „feeding“ into ElectriFi.

- Additional interfaces established with:
  - EEP
  - REPP
  - SEFA
  - FMO
  - DEG
  - Energy Access Ventures
  - Et. Al.

- RECP services are bridging the gap between projects and finance!
Initial Results – Access to Finance

Finance Catalyst is supporting projects in accessing finance

- **27 Projects Currently Supported:**
  - Solar Home Systems: 3
  - Solar PV: 16
  - Hydro: 1
  - Biocrops combustion: 1
  - WtE: 2
  - WtE Biogas: 4
  - IPP: 15
  - Mini-Grid provider: 6
  - Captive Power: 2
  - Distributor of energy systems: 1
  - Financial intermediary: 3

- ... with a total projected installed capacity of 315 MW
- ... with a total projected investment volume of EUR 955 Mio.
- **Clear need in the market for this type of early-stage project preparation support!**
How can the services and products be accessed?

Countries, Partners and Access

- The RECP operates „in depth“ in six African countries (Nigeria, Rwanda, Uganda, Senegal, Zambia and Mozambique)

- We cooperate with and implement through a network of partners, both in-country as well as global or European industry associations

- Information and support services are accessible through www.africa-eu-renewables.org
Thank you for your attention!

Suggestions & Feedback always welcome!

www.africa-eu-renewables.org

Contact: Alexander Huppertz, alexander.huppertz@euei-pdf.org
Webinar on Biomass Residues & Waste in Southern Africa

12th June 2017, 15:00 - 16:45 (CEST)

Questions?
Zambian Biomass: An Overview

Opportunities & Challenges
Mr. Francis Mwila
Geography and Demography

- Zambia is a landlocked country of 740,700 km² located in Southern Africa
- Most of the country is classified as humid subtropical or tropical wet and dry.
- In 2015, Zambia population was 15.5 million, and in 2030 is estimated to be 22 millions based on an estimated net demographic growth of 2.3% per year

Socioeconomic Context

- The industrial sector contributed 34% to GDP with main exports of copper, cobalt and electricity; agriculture 20% (with tobacco, flowers, cotton as the main products); and services 46%. Zambia is predominantly a mining country.
- The long term economic outlook till 2020 is for an average GDP growth of between 5-6%
- A moderate growth in the GDP per capita as population growth is expected to be on average 2.3% per year

Political Context

- Zambia is a multi-party democracy country.
- With clear separation of powers between the three arms of Government; Legislature (Parliament), Executive (President and Government) and Judiciary (Courts of Law).
Prof. FRANCIS YAMBA
Director of the Centre of Energy, Environment and Engineering Zambia Limited (CEEEZ)

Prof. F.D Yamba has wide experience in project management and research having supervised and participated in over 40 projects in climate related studies, including climate modelling and adaptation analysis, mitigation analysis related to energy and combustion, industry, land use change and forestry, and energy related studies (energy modelling and planning, renewable energy and energy efficiency analysis).

FRANCIS MWILA
Natural Resources Officer at the Centre of Energy, Environment and Engineering Zambia Limited (CEEEZ)

Francis Mwila has experience in biomass research having participated in a number of projects in energy and climate related studies, including climate mitigation analysis related to energy and combustion, industry, land use change and forestry, and energy related studies, renewable energy and energy efficiency analysis.
The NEP sets out the government’s intentions to harness the energy sector’s potential to drive economic growth, while also reducing poverty.

Renewable energy technologies (Biomass) play an important role they have the potential to meet the country’s electricity demand requirements in a sustainable manner.

The Zambian government, through the Ministry of Energy prepared the draft National Renewable Energy Strategy.

The key objectives of this strategy, which are also in line with the NEP objectives, the Sixth National Development Plan (2011 – 2016) and the Vision 2030 are:

- Access to modern energy services for all
- Meeting growing energy demands in a sustainable way.
• According to the Strategy, the government aims to add 400 MW of renewable energy capacity by 2030 (solar, biomass and small hydro)

• National grid connection very expensive affair: consider decentralized Bioenergy supply options given large expanse and low population density

• Transition from on-grid hydro to decentralized RE/Bioenergy is imperative
Zambia has a total biomass resource and economic bioenergy potential of 2.15 million tonnes, and 498 MW respectively.
Opportunities & Challenges

Challenges facing Biomass Energy Sector in Zambia:

• Inadequate access to modern energy services is an obstacle to economic growth and poverty reduction in Zambia.

• Currently energy services are not affordable for the poor segments of the population.

• Unreliability of energy services is a challenge for Zambia.

• Insufficient financing packages for scaling up exploitation and utilization of modern bioenergy technologies which has considerably higher investment costs in comparison to traditional biomass technologies.

• Deforestation rate of around 276,021 hectares annually also poses a challenge to sustainability of traditional biomass.
Opportunities in the Biomass Energy Sector in Zambia:

- **Energy sector reforms at the country level:** Zambia has undertaken a range of reforms in the energy sector, the most significant being the formulation of more comprehensive energy policies and the incorporation of the private sector’s role in the national development agenda.

- **Bioenergy is not being fully exploited.** Efforts to optimize bioenergy utilization are being made by various institutions at a much smaller scale which clearly needs targeted interventions for scaling up.

- **For on grid bioenergy technologies less than 20MW,** a Renewable Energy Feed in Tariff should be computed.

- **For utility scale (20MW – 100MW) Bioenergy technologies** outside the framework of the REFIT, public tendering should be implored to promote competitiveness.
Examples of Biomass Projects
Emerging Cooking Solutions

The Project

Zambia’s new cooking fuel

Emerging Cooking Solutions

Improving household economy, combating deforestation and improving health through social business
The Project

Introducing two new technologies + an innovative business model

Advantages

• We offer a more high performing, cheaper and healthier solution than charcoal or kerosene
• People pay for performance, not weight or materials
• We take responsibility for keeping the materials in closed loops and extending the effective life of the product

We are selling "cooking hours" to people with existing purchasing power for cooking fuel
We make the stove available to people who cannot afford to buy it (people save money from day 1)
Pellet production
ZESCO, in conjunction with United Nations Industrial Development Organisation (UNIDO), had planned to install a 1 MW biomass electricity generation plant.

To meet the electricity needs of Kaputa District.

This facility was meant to replace 440 kW installed capacity of a diesel power generation system.

ZESCO has since extended the national grid to Kaputa.

The concept was taken over by the CEC, which will utilise feedstock from sawmills on the Copperbelt.
THANK YOU FOR YOUR ATTENTION

Centre for Energy Environment and Engineering Zambia (CEEEZ) Ltd, 176 Parirenyatwa Road
Suite B. Fairview, P/B E721
Lusaka, Zambia
Tel/Fax: +260 968 400 232
Email: francismwila67@yahoo.com
Questions?
Forest regeneration and economic development under sustainable management in Zambia

June 2017
Problem statement

- High deforestation rate – energy & agric. expansion
- Electricity provision (96%) from hydropower
- 45% urban households on the grid, 4% rural
  → 12 million relying on charcoal
  → 95% of charcoal illegal
  (poor legislation and control)
Miombo woodland -- Pine plantation
Current provision of biomass for the household market:
- Poles: woodchips
- Saw mill: pellets
Peko Pe Cookstoves:
- any dry biomass
- more efficient
- more healthy
Collaboration with Vitalite Ltd.

- Social enterprise
- Zambian based
- Collaborating since 2014
- Solar & Stoves
Collaboration with BeeSweet Ltd.
Bio-energy plant

• Copperbelt
• 400 tonnes dry mass per day → 10 MegaWatt
• 6000 ha of Eucalyptus
• Combined with Miombo: 10,000 ha sust. managed Miombo.
• Operational within 2 years
• Combined with sawmill: furniture for hardwoods
Opportunities

• Invest in woodchips/pellets
• Invest in woodchipper/pelletizer
• Invest in clean stoves

Matthias De Beenhouwer - WeForest
Matthias.debeenhouwer@weforest.org
+260 96 8709024

• Invest in Bio Energy plant

Nick O’Connor - Rainlands Timber
oconnors.nick@googlemail.com
+260 96 5803122
Thank you for your attention
Webinar on Biomass Residues & Waste in Southern Africa

12th June 2017, 15:00 - 16:45 (CEST)

Questions?
Biomass Energy Business Opportunities in Mozambique

Boris Atanassov  – 12/06/2017
Webinar on Biomass Residues & Waste in Southern Africa - AEBIOM
About GreenLight

GreenLight is a Mozambican company operating since 2010 in the bio-energy and environmental consulting field.

GreenLight specialises in project management, research and development, environmental services and climate financing.

Projects are implemented at a national and regional level.
Initiatives up to date – Biomass Energy

- Mozambique Biomass Energy Analysis (data used for Biomass Energy Strategy)
  - Client: Ministry of Energy
  - Year: 2011

- Sustainable biomass value chain development in Manica and Sofala Provinces
  - Client: Solidaridad
  - Year: 2011 - 2014

- Bamboo briquette project in Maputo city
  - Client: Solidaridad
  - Year: 2013
Feasibility study for private sector engagement in charcoal production (semi-industrial scale)
- Client: Everest Energy
- Year: 2014

Sustainable charcoal production pilot in Gaza Province
- Client: Belgian government
- Year: 2015

Development of a NAMA framework for sustainable charcoal in Mozambique
- Client: MITADER (Financed by the Belgian government)
- Year: 2016
Cotton waste to energy project (gasification)
- Client: Energias de Portugal (EDP) and JFS
- Year: 2016

Alternative bio energy market assessment in Sub-Saharan Africa
- Client: World Bank
- Year: 2016
Country context – Biomass Energy in Mozambique
Mozambique regulatory environment for Biomass Energy

Government institutions responsible for biomass energy
- Ministry of Mineral Resources and Energy (MIREME)
- Ministry of Land, Environment and Rural Development (MITADER)
- Ministry of Agriculture and Food Security (MASA)
- Mozambican Energy Fund (FUNAE)

Legislation applicable to biomass energy
- The National Energy Strategy (2009)
- Feed in Tariff regulation (2015) – currently reformulated
Market Potential – Electrical Energy Generation
(Source: ALER 2016 and Mozambique RE Atlas)

- Current access to electricity rate = 27%.
- 4 million households without electricity
- A total identified potential of = 2.2 GW
- Forest based biomass = 1 GW
- Co-generation from paper industry = 280 MW
- Sugar Industry (co-gen) = 832 MW
- Urban Solid waste = 63 MW

Furthermore, the potential for the use of agricultural waste includes that of cotton, maize, banana, rice, sugar and soya.
Promoted technologies

- Gasification
- Anaerobic digestion
- Co-generation
Market Potential – Cooking Energy

- The estimated total biomass consumption for household and institutional sector is over 17 million tons (Projection based on WISDOM 2008 figures).
- Charcoal sector valued at 400 Million USD per annum (De Koning et al. 2014).
- Scenario in urban Maputo (Capital):
  - 87% of the population uses charcoal to cook (70% use as primary source).
  - The average household consumes 2.6 kg of charcoal per day.
  - An estimated 2.5 million tons of biomass is necessary to cater for this demand each year (Atanassov et al. 2012).
- Price of charcoal in Maputo is averaged at 300 USD/ton.
Promoted initiatives

- Sustainable charcoal production
- Pellets and briquettes
- Improved / efficient cook-stoves
Useful resources and links

- Centre for promotion of investment (CPI) - www.cpi.co.mz
For more information feel free to contact me directly:
Boris Atanassov: boris@greenlight-africa.com

GreenLight
Address: Rua de Argélia 159, Maputo
Telephone: +258 21081864
Email: mail@greenlight-africa.com
Website: www.greenlight-africa.com

Obrigado
Webinar on Biomass Residues & Waste in Southern Africa
12th June 2017, 15:00-16:45 (CEST)
supported by:
Questions?
Utilising Namibia’s encroacher bush – *harvesting the potential*

Webinar on Bioenergy Residues and Waste in the Southern African Region

12 June 2017
Today’s discussions

About N-BiG

The Namibian biomass resource and its particularities

Collaboration opportunities for European companies or other parties
About N-BiG

N-BiG’s objectives

What N-BiG holds for you in the Namibian context

Whom N-BiG represents

N-BiG’s membership base

N-BiG activities of international interest
N-BiG’s objectives are to:

• develop market opportunities

• Facilitate up-scaling of harvesting and supply capacities

• address and resolve industry bottlenecks (skills shortages, R&D)

• create an enabling environment for the biomass industry; and

• provide support to N-BiG members and associates

➢ Bush harvesting with shear excavator (OBI, 2016)
N-BiG represents

- Land owners with an interest in bush utilisation
- Bush-biomass producers
- Contract harvesters
- Firewood & charcoal producers
- Bush to animal feed producers
- Equipment suppliers
- Energy & engineering management service providers

➢ Commercial production of wood chips (OBI, 2016).
**N-BiG summary of activities**

- Various product categories from “bush to …”, e.g.
  - Charcoal
  - Animal feed, or combination of these two
  - Wood chips
  - Artefacts, furniture, fencing poles, ....

- Marketing opportunities to sell woodchips from bush are growing;
  - Ohorongo Cement ~ 85kt pa since 2012, but <40kt pa delivered
  - Namibia Breweries Ltd ~ 20kt pa since 2016
  - NamPower - a fuel supply agreement under discussion, >150kt pa by ~2019/2020
The Namibian biomass resource, and its particularities

- Bush encroachment
- Namibian realities
- Resource availability
- Utilisation to date
The extent of bush encroachment

Bush encroachment in Namibia is one of the largest and most widespread environmental, economic, social threats and technical challenges to our country in recent history.

What is bush encroachment?

Bush encroachment in Namibia is defined as the densification and rapid spread of native bush and shrub species, resulting in an imbalance of biodiversity.

The biomass, from its utilisation, can be seen as a waste product of clearing the land for regeneration and conservation.
Bush, rain & livestock

$y = 0.467x + 3.2272$

$R^2 = 0.9604$

Area reported as bush encroached (Mha)

Rainfall (dm/a)

Total livestock numbers (M-LSU)

Reported area bush encroached during periods (Mha)

Source: Dagmar Honsbein, 2016
Bush growth over time occurs regardless of rainfall and livestock stocking rate.

Bush encroachment in Namibia expands at a rate of 3.18% pa. In SA, e.g. at 2.5% pa where approx. 29Mha are bush encroached; and 10Mha are covered by alien invasive species.

By ~2035 all agriculturally demarcated areas of Namibia would be encroached, i.e. ~52Mha
The Namibian realities - today

• Less than 2% of the wood-based biomass resource is commercially exploited.

• The wood-biomass industry is too fragmented to make a noticeable impact at macro-economic level currently.

• Unsustainable practices, e.g. large scale utilisation of arboricides, negatively affect the outlook on wood-biomass utilisation.

Exploitation hurdles to utilise the resource seems to an insurmountable endeavour.
Namibia’s resource availability is vast!

With current rates of utilisation, it would take more than 100 years to harvest the resource on an initial basis.

The re-growth rate is much faster than its utilisation rate.
Bush harvesting & utilisation today
Bush was harvested here in 2013

Farm Omatozu, September 2016
Shortly after harvest in July 2016
The same site after the rains in 2017

Farm Tirol, April 2017
Collaboration opportunities for European companies or other parties

- Machine parks, maintenance teams and product guarantees
- Routine product testing
- Dedicated R&D; and business development
- Skills development
Machine parks, maintenance, guarantees ...

• Find the suitable “NamChipper”
• Annual dedicated product service teams à la machine park
• Piloting new equipment with extended service & product guarantees
Routine product testing

- Basic analysis
- Physical & chemical properties
- Elemental analysis
- Thermal analysis & ash melting behaviour
- Mineral content
- Ash melting behaviour
- Cellulose, hemicellulose, lignin
- Aflatoxins & tannins
Dedicated R&D; business development

- Setting up the "Biomass Institute"
- Initialising the "Biomass Fund"
- Biomass database & information system
- Value chain development – from primary production to e.g. biorefinery concepts

Long-term vegetation mapping
Skills development

• Sustainability & marketing, e.g. FSC, Fair Trade, etc.

• Vocational training & development
  ▪ Repairs & maintenance of diverse imported equipment
  ▪ Old equipment remodelled ... Made in Namibia

• Site & production management
The key messages

• Without substantial biomass extraction, Namibia will not be able to mitigate the effects of bush encroachment in a meaningful manner.

• The biomass potential is enormous, with some constituencies alone offering several millions of tonnes of biomass at first time harvest.

• Namibian wood-based biomass can support several biomass-fuelled electricity production plants without adversely affecting the environment.
The key messages

- Practical extraction means e.g. that at up to 500ha per farm of total basis are harvested annually over a 20 year harvesting & treatment cycle
- The bush growth rate there would slow to >2% per annum
- The remaining biomass potential would still be enormous, several millions of tonnes

For our farmers, even treatment of between 100 to 500ha per farm annually makes a great difference and has the advantage that rehabilitation of farmland progresses speedily!
N-BiG, means complementarity & strength
Acknowledgements

• N-BiG Founding Subscribers
• N-BiG members
• MAWF/GIZ Support to De-bushing Project
• iDeal-x integrated scientific services
Thank you!

Dagmar Honsbein, Executive Manager

(+264) 81 149 1086 / (+264) 61 371 196

d.honsbein@n-big.org or honsbein@gmail.com

www.n-big.org or www.facebook.com/biomassnamibia
Webinar on Biomass Residues & Waste in Southern Africa
12th June 2017, 15:00-16:45 (CEST)
supported by:

Questions?
Upcoming Events

September 26th 2017
Waste to Bioenergy Africa: Harnessing the Potential (Information Event)

November 21-22nd 2017
Focus on Africa (Workshop & B2B Matchmaking Session)
Thank you!