Thematic Block: Technology – Energy Transition
11:00 – 13:25
TECHNOLOGY FOR ENERGY TRANSITION

ZELDA KERUBO
AFRICAN YOUTH INITIATIVE ON CLIMATE CHANGE
21ST MARCH, 2019
Africa is rising...
Renewable energy
Technologies

Determining factor is **Efficiency**

- A mix of centralized & decentralized; on and offgrid
- Innovative & Sustainable
- Batteries
- Reduce demand
- Strengthen institutional & human capacity
- Business models
Importance of technology

- Eliminate pollution
- Halt deforestation
- Achieve the NDCs; Paris Agreement
- Healthy populations
- Affordable energy
- Sustainable economies
The best way to predict the future, is to create it!

MEDASSE

ZELDA KERUBO
AFRICAN YOUTH INITIATIVE ON CLIMATE CHANGE
zeldakerubo@gmail.com
ayicckenerya@gmail.com
@thenamezelda
@ayicckenerya
Innovative Technology Solutions for Africa’s Energy Transition

Moderator: Mr. Gurbuz Gonul, Director, Country Support and Partnerships, IRENA

Speakers:
• H.R.H. Princess Abze Djigma, Chair of the H.R.H. Princess Abze Djigma Foundation
• Bernice Dapaah, Chief Executive, Ghana Bamboo Bikes Initiative
• Dr. Isaiah Owiunji, Programme Coordinator: Energy and Climate Programme, WWF Uganda
• Prince Essel, CEO and Co-Founder, Maiseville Groupe

A RACE WE CAN WIN
Africa Climate Week 2019

Innovative Technology Solutions for Africa's Energy Transition - Highlights on Opportunities, Innovations and Successful Business Models.

Prince Essel, GHANA
Off Grid Box - Energy & Water Access
Compact Solutions for Productive Uses of Energy
Energy Access via Nanogrids & Smart Metering
Pay-As-You-Go Models
Arojintech SunBox - Energy Access & Repels Mosquitoes
Candela Solar - Energy & Cellular Connectivity
Compact Biogas Solutions
I urge more investors to see off-grid Africa as an opportunity, not a risk.

KOFI ANNAN
Chair, Africa Progress Panel
Technology as a Backbone of National Strategies and Plans

**Moderator:** Mr. Mahama Kappiah, Executive Director, ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE)

**Speakers:**
- Safiatou Alzouma Nouhou, Director of Independent Delivery Unit, Renewable Energy Initiative for Africa
- Nii Darko K. Asante, Head of Technical Regulation and Chair of Integrated Resource and Resilience Planning Steering Committee, Energy Commission, Ghana
- Edwin Aalders, Senior Principal Scientist for Climate Change, DNV GL
- Mr. Ndiafhi Patrick Tuwani, Deputy Director, Department of Energy, South Africa
Energy Transition Outlook 2018

POWER SUPPLY AND USE

Forecast to 2050

Edwin Aalders
Senior Principle Research
Decades of rapid and extensive change lie ahead for the world’s energy systems, particularly for power generation, networks, and electricity use.
4x as many people with access to modern energy
DECOUPLING OF ECONOMY AND ENERGY USE

Units: Percentages of 2016 levels

- GDP
- Population
- Primary energy supply
- Energy-related emissions
ENERGY DEMAND PEAKING IN 2035

Units: EJ/yr

- Transport
- Buildings
- Manufacturing
- Non-energy
- Other

PEAK
DRAMATIC RISE IN SOLAR PV AND WIND

Units: PWh/yr

70%
SUB-SAHARAN AFRICA

Gigajoules per person

2016: 23
2050: 23

GDP per person (USD)

2016: 2,173
2050: 5,792
EXTRAORDINARY EFFORT & A MIX OF SOLUTIONS

- Energy efficiency
- Renewables
- Carbon capture and storage
WHAT CAN THE POWER SECTOR DO?

Rethink electricity market mechanisms

Build flexibility in the grids

Invest in renewables, grids and energy storage
SUITE OF PUBLICATIONS
THANK YOU

eto.dnvgl.com/2018
Integrated Power Sector Master Plan (IPSMP)

Integrated Resource and Resilience Planning

Supply Side

Demand Side

Existing & New Sources
- Hydropower
- Coal, Oil, Nuclear
- Natural Gas
- Renewables
- Electricity Imports

Transmission

Existing and New Lines
- HV Transmission Lines
- New line build options

Performance and Cost Characteristics

Least-Cost Planning Model
Power and/or other fuels: Scenario Modeling
addressing selected sensitivities, policies, risk mitigation/adaptation

Resilience Assessment and Planning
Environmental, Social, Financial Impacts Analysis
Risk Analysis and Management; Stakeholder Interactions
(Regulatory, Financial, Environmental, Climate Change, Upstream, Infrastructure, Political)

Integrated Power Sector Master Plan
2018 Version of Ghana IPSMP
Least Regrets Generation & Transmission Additions

- **2022-23**
  - Gen 180 MW
    - 80 MW Small Hydro
    - 100 MW Solar
  - Trans 125 MVA

- **2024-25**
  - Gen 250 MW
    - 100 MW Solar
    - 150 MW Wind
  - Trans 140 MVA

- **2026-27**
  - Gen 410 MW
    - 200 MW Solar
    - 150 MW Wind
    - 60 MW Biomass

- **2028-29**
  - Gen 600 MW
    - 500 MW CC
    - 100 MW Solar

- **2030-32**
  - Gen 530 MW
    - 280 MW CC
    - 50 MW Solar
    - 200 MW Wind
  - Trans. 235 MVA

- **2033-37**
  - Gen 1890 MW
    - 480 MW Solar
    - 300 MW Wind
    - 1,110 MW CC
  - Trans. 425 MVA