# SYMPOSIUM ON SDG 7 (ENERGY)

in Preparation for the 20<sup>18</sup> High-Level Political Forum on Sustainable Development

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ENSURING UNIVERSAL ACCESS TO AFFORDABLE, RELIABLE & MODERN ENERGY SERVICES

CHALLENGES & OPPORTUNITIES FOR AFRICA

Monga Mehlwana



What are the key questions that define energy access in Africa, and how these impact on other SDGs (linkages)? Where should interventions be directed to create more impact?





RURAL ELECTRIFICATION AGENCY, ABUJA.



#### Key Issues with regard to Energy Access in Africa





#### 1. Rural modern energy access vis-à-vis electrification

Conventional electrification approaches **DO NOT** yield desired outcomes in rural areas – need of approaches that go beyond supply of off-the shelf hardware to more energy services

• Access to electricity: (1990) = 14.6% & (2014) = 27.3% (24 years!)

# **KEY CONSIDERATIONS:**

- Appropriate financing considerations esp. micro-level institutions
- Small-scale plans for small loads & independent operations
- Community involvement in options and solutions



#### 2. Productive uses of energy – SMEs development

Energy access correlates with economic growth >> energy use should trigger economic development income generation of the local population

# A number of barriers to overcome:

- Difficulty in obtaining finances for small- to medium RE projects
- Policy & regulatory frameworks are greatest risks – still underdeveloped
- Development of skills crucial at local levels
- Forums for sharing experience and best practices



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#### 3. Unreliable supply of electricity ramifications

Some 600 million Africans have no access to electricity = 60% of the population.

Electricity connections DO NOT necessarily mean or ensure electricity supply because of the intermittency of supply •Nigeria 96% of urban HHs connected but only 18% function

#### Economic cost of outages as share of GDP



"...every single African country is experiencing energy shortages and power outages. That is costing the continent 2% of GDP. In fact, an African leader says that we are a continent of miracles. If we are growing at 5% without enough electricity, think about what we could do if we had enough electricity." (Kaberuka, AfDB President)

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#### 4. Growing urban settlements outstripping supply

Urban electrification rate increased from 62.5% in 1990 to 76% in 2014 – about 111 million people still lacked electricity in urban areas by 2014

- The share of Africans living in urban areas is projected to grow from 36% in 2010 to 50% by 2030
- Increased inequality, urban poverty, and proliferation of slums



#### **RURAL PUSH than URBAN PULL**

Energy use in urban areas more intensive and local capacities of municipalities is severely stretched >> use of substandard fuels, electricity theft, etc.

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The main obstacle to the increase in electricity generation capacity is the high cost of producing electricity, forcing governments to subsidize consumption and average tariffs higher than in other developing regions •Average effective tariff in South Asia US \$0.04/kWh, and East Asia was US \$0.07/kWh.

#### **Fossil-fuel based generation**

✓ Costs of emergency generation between US \$0.2 to US \$0.3 per kWh

#### Low demand for electricity

- •235 kWh in 2020 vis-à-vis global average of 2,730 kWh
- •per capita electricity consumption is 620 kWh

•low tariffs & low demand for electricity does not allow utilities to generate a good return on investment.

Exploiting RE sources and liberalizing the energy sector to attract privatesector participation could also improve the cost effectiveness of producing electricity.

#### 6. The gendered nature of energy poverty

Inter-relation between energy, poverty and gender is known as the energy-poverty-gender nexus

- Women in Africa experience energy poverty differently and more severely than men
- Cooking from biomass is detrimental to the health of women and children.
  - Of estimated 2M annual deaths from indoor air pollution, 85% are women and children who die from cancer, acute respiratory infections and lung disease





#### 7. The biomass trap for urban and rural households

- Biomass is primary cooking fuel (charcoal in urban areas)
  - firewood and charcoal provide more than 40% of energy used in Africa
  - 80% of households depend on wood and charcoal as a <u>primary energy source</u>
  - Africans use more than <u>23 million</u> <u>tonnes</u> of charcoal every year, making it a multi-billion dollar industry
- Kerosene and candles are secondary source of lighting
- WHO estimates the number of premature deaths from smoke inhalation to be greater than from malaria and TB







#### 8. Unsustainable deployment of CCFs and Techs

# In baseline period 2000-2010, the share of population using CFTs barely increased from 24.4 percent to 25.6 percent, representing a yearly increase of 6.9 million new users

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Share of population using CFTs and annualized change in share 2000-2014



Dominance of traditional means of cooking esp. preserve social gatherings and certain food tastes. Biogas and solar cookers are insignificant – disseminated only through isolated programmes with limited budget Symposium on SDG 7 (Energy) | UNECA.ORG

#### 9. Major investments on centralized systems

Goal of supplying power for all in Africa could be better addressed with decentralized distributed generation

•Coal power stations convert energy in the fuel to only 40% electricity & may be pushed 60% with the most modern efficiency gas-turbine power plants – remaining losses of electricity through heat

- •Transmission losses of up to 2%
- •Electricity theft



Micro-grids development in Africa a better way of deploying RE technology in the form of wind or solar power



#### **10. Little support for small-to-medium projects**

- Lack of access to early stage capital for small-and medium-sized projects, as well as the low managerial and technical capability of smaller entrepreneurs and developers
- Lack enabling environment for private sector investments in the sustainable energy space in Africa.
  - Advisory and implementation of legal, regulatory and policy regimes that provide clear and predictable rules for project development, implementation and operation, and capacity-building activities



Private Equity Capital
 OTechnical Assistance



Analysis of Linkages and key impacts areas

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#### Priority impacts of access to affordable, modern energy



- Reduction of child mortality through introduction of CFFs and technologies
- Addressing the high unemployment rate esp. of youth
- Energy poverty has a woman face responsible for gathering fuels
- Addressing SME development and productive uses of energy
- Low-carbon energy development contributes to green growth and low emissions
- R&D in new and renewable energy technologies (through NSI)



# The National System of Innovation approach

Address:

•A fragmented and inadequately coordinated Science and

Technology system

- •Erosion of innovative capacity
- •Poor knowledge and technology flows from the science base into industry
- Poor networking both within the region and in the global context
  Inefficiencies and poor levels of investment in research and development.



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#### **Emerging and disruptive technologies**

 Global weighted average cost of electricity could fall by 26% from onshore wind, by 35% from offshore wind, by at least 37% from CSP technologies, and by 59% from PV by 2025 -- IRENA



Mobilization of private capital for infrastructure financing is of utmost importance

- •main constraints for infrastructure development in Africa is well-packaged, bankable projects
- •Project preparation, the process of taking a project from conceptualization to implementation, is a costly and high risk phase in developing infrastructure



# **Understanding biomass transformation**

#### CHALLENGE

Data sources for biomass use for energy are sparse and uncoordinated



#### PROBLEM

Not knowing current biomass use and the potential for bioenergy results in

- 1) Environmental degradation &
- 2) Missed economic opportunity



"Traditional Biomass" use is a rough estimate

Several regions of SSA should be engines of the global bio-economy

# Africa Biomass Data Initiative (ABDI) led by AfDB, FAO, SE4All, ECA

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#### Sustainable clean cooking fuels programmes

Increased use of clean cook stoves and LPG are often the main driver behind improvements in CFTs access rates

Clean cook stoves have been disseminated through initiatives such as the Global Alliance for Clean Cookstoves (GACC) that has been operating in 19 partner countries in Africa and four focus countries since 2010.



Access to CFTs has not received active government support, and strategies are mainly ad hoc and promoted through donor funding. Entrenched policies and strategies targeted at CFTs are thus lacking



more info: Mehlwana@un.org

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