



Government of Malawi



City of Lilongwe



UNOSD



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Lilongwe International Mayors Forum

Bingu Wa Mutharika International Convention Centre

Umodzi Park, Lilongwe, Malawi

16 -18 May 2018

Sustainable Energy in Cities

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FOR A BETTER URBAN FUTURE

Lilongwe International Mayors Forum
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Presentation Overview

- **Urban Energy Challenges:** Rapid urbanization; cities as major consumers of resources; Inefficient use of resources and poor building designs
- **Opportunities:** Energy Efficiency and Renewable E.
- **Actions:** Municipal Energy Strategy (MES)
- UN-Habitat **Approaches and methodologies;**
- Conclusions.

Urban Energy Challenges: Rapid Urbanization

- The rapid **urbanization** is taken place in all African countries followed by **increasing demand for shelters; infrastructures; basic services; energy; jobs; education; consumer products etc.**
- The **energy demand** increases annually by **7%**.
- Slow increased of the energy supply.
- **Mismatch between the demand and supply of energy.**
- Majority of people still relies on **biomass energy** for cooking.
- **Over 50 %** of national energy is generated from imported fossil fuels to **bridge the energy gaps. High**



Urban Energy Challenges: Rapid Urbanization

- Urbanization without **proper urban planning!**
- Urbanization **without proper shelter and basic services!**
- Urbanization with slow industrialization!
- 50% of the urban population in Africa without access to modern energy!
- Between 30 – 60 % of the urban population live in informal settlements (slums).



- Cities occupy **3 % of the Earth's** surface
- Cities in developed world consume more than **75 %** of the total national **energy**;
- Cities in developing world consume over **80 % of total energy**;
- Cities are responsible of **70 % of GHG** emission;
- Cities generate around **70 % of national GDP** and are the drivers of national economy.
- Cities **generate more wastes**, much of which are not recycled;
- **Over 50% of** the world population lives in cities. This will reach **75% in 2050**.



Urban Energy Challenge.: Energy demand

No consideration for energy efficiency:

- **Architecture and buildings** that are not adapted to their respective climates,
- **Wastage of electricity** and other energies sources (fossil fuel, biomass) through **old and inefficient appliances**,
- **Power transmission losses**, (20 – 30 %)
- **Soaring energy demand**: World energy consumption forecast to triple by 2050

Absence of adequate urban planning:

- **Urban sprawl with low density development** leading to **high energy demand** and need for **private cars**
- Traffic congestion and blockage and wastage of **valuable time in traffic**.

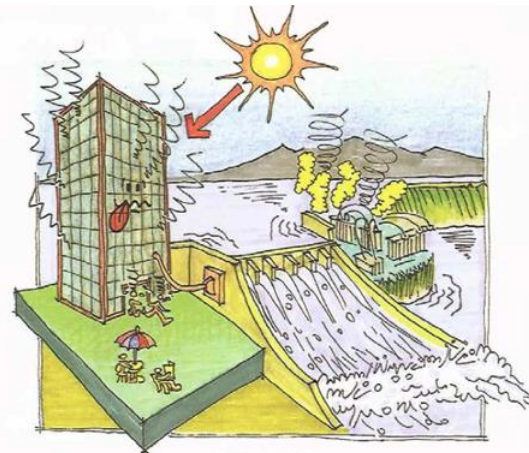


Urban Energy Challenge: Inefficient Building designs

Energy used in buildings in Africa is estimated at **56% of the total national electricity** consumption.

Across African cities, with **tropical climates**, majority of modern buildings are **replica of building designs** in western countries with cold and temperate climates. This result in **huge energy wastage in buildings**.

Modern buildings are poorly designed and consume more energy than necessary.



Opportunities: Energy Efficiency and Renewable E.

Untapped Energy Efficiency (EE) and Renewable Energy Resources:

- Huge **untapped RE** potentials such as: solar, wind, biomass, water, geothermal etc.
- Unprocessed **municipal waste**;
- Decreasing **cost of renewable energy technologies**. The cost of solar energy technologies has decreased by nearly 60 % in the last 7 years;
- Increasing availability of **innovative financing mechanisms** for RETs.

Technology innovation (R&D):

- More **efficient appliances** are available,
- Efficient **energy generation** equipment developed.



Opportunities: At the cities level

Adequate urban planning:

- Plan for **density and compact city**,
- Avoiding zoning and **promote social and economic mix**,
- Allocate at least **40% of space for streets, basic services and other public spaces**,
- Promote **public transport**.

Energy Demand Management:

- Energy efficiency in **buildings, industry, transport** etc. (**there is a potential of 50% energy savings**)

The Green Economy.

- Proper **development of EE and RE potentials** could transform cities into **energy producers**.



Save Energy
Save Money
Save The Earth



Opportunities: Municipal Energy Strategy (MES)

As demand for energy increases due to rapid urban population growth and economic development, local governments are phased with energy challenges.

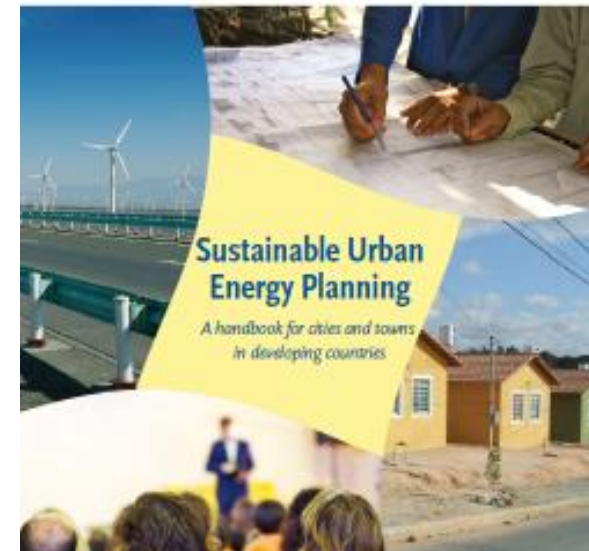
There is a need to develop **Municipal Energy Strategies (MES)** as a planning and management tool for enhancing energy access and reduce energy wastages.

MES is based on the following criteria:

- **Proper mapping of both energy demand and supply** (development of energy balance);
- **Urban energy planning;**
- **Energy generation** within municipal boundaries;
- Development of **energy demand managements**
- Formulations of mandatory regulations and by-laws.
- Establishment of a **municipal energy office.**



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Local Governments for Sustainability



Cities as energy prosumer: producer and consumer of energy:

75 % of energy are consumed in urban areas. Cities are endowed with huge renewable energy potentials: solar, wind, biomass, hydro etc. Cities should produce part of its energy needs



**Transforming
municipal
waste into
energy and
increase access
to electricity**

Oppor.:Covenant of Mayors Sub Saharan Africa

Learning from the European covenant of Mayor with over 7000 municipalities that have come together to address their energy and climate change issues, the European Commission has launched in 2015 the **“Covenant of Mayors in Sub-Saharan Africa” (CoM SSA)** to support African cities to develop their **Sustainable Energy Access and Climate Action Plans (SECAP)**.



Covenant of Mayors
Office for Sub-Saharan Africa

CoM SSA is a platform to **share knowledge and best practices**. It is currently hosted by the United Cities and Local Governments (UCLG Africa) base in Accra Ghana.



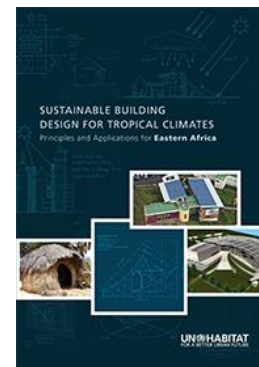
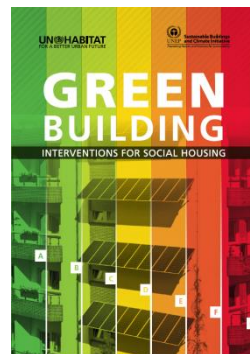
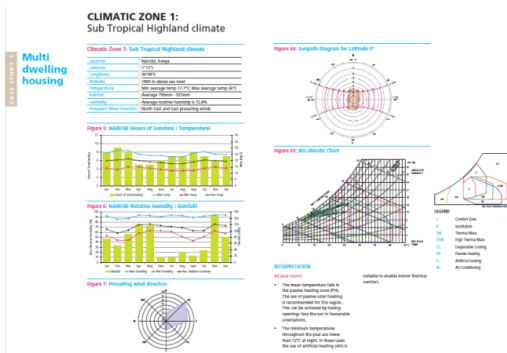
UCLG Africa - CGLU Afrique

African mayors are invited to join the Covenant of Mayors SSA through UCLG office.

UN-Habitat Approaches and Methodologies in the promotion of EEB

UN-Habitat approaches are to:

- 1. Assist national and local governments to develop policies and regulations:** EE Building Regulations / Standards; EE building code.
- 2. Create awareness, promote capacity buildings and develop tools:** for green building and sustainable energy technologies;
- 3. Advocating for proper financial mechanisms:** tax incentives; green mortgage.
- 4. Undertake demonstration and pilot projects:** integration of sustainable buildings design in new building projects.



BUILD GREEN
Charter for Sustainable Building, Neighborhood Design and Urban Mobility in Tropical Countries

Sunshading

Daylighting

Local building materials

Energy generation

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UNEP

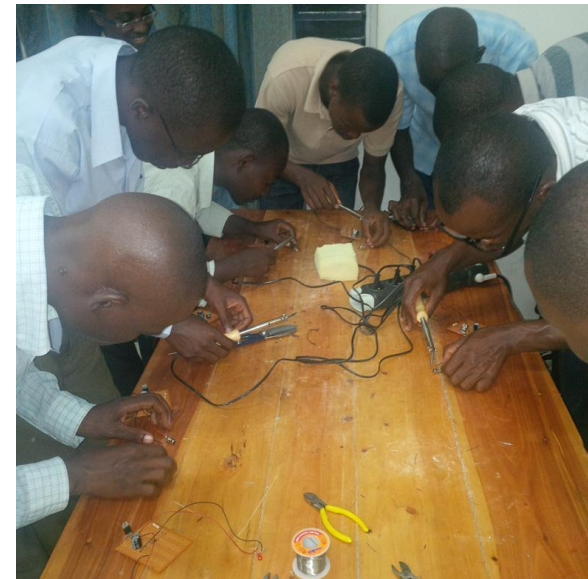
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www.unhabitat.org

www.eebee.org

Hands-on Training on Energy Efficiency and Renewable Energy for Youth Empowerment

UN-Habitat has developed a program to empower the youth through the provision of **training courses on energy efficiency and renewable energy technologies**. The main objective of the program is **to involve the youth in the green economy contributing to climate change mitigation**.



Conclusion

- There is a **growing demand for sustainable energy systems in urban areas** for socio-economic development .
- There are a lot of **untapped potentials in terms of EE and RE**;
- Solutions to promote urban energy system exist.
- **Energy demand management** for both buildings and cities is one of the solutions.
- Local governments need to put in place their **Energy Strategies for short to long term and develop an action agenda.**
- Local governments should set green requirements for resource efficient buildings. **Building permit requirements** should include environmental design strategies. **Green procurements** should be included in tenders.
- **Cities today can generate most of their energies needs through renewable resources!**



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