**“Accelerating Progress toward SDG 7: UN System Contributions”**

**Thursday, 21 July 2016, 09.00-13.00**

**Conference Room 5, UNHQ, New York**

# “ Mainstreaming Energy and Resources Efficiency in the Built Environment UN-Habitat’s experience in Africa.”

# Rapid Urbanization and increasing demand for energy

- Today, over **50%** of the world population lived in cities;
- In 2050, **75%** of them, estimated at 9 billion people, will be living in cities.

- Out of the over 3.5 billion people living today in cities, ***one billion live in informal settlements with no proper shelter, no access to basic services including energy.***

- The **increasing urbanization** is followed by **increasing demand for energy services estimated at 7%** annually in most developing countries).

# Energy use in buildings in Sub Saharan Africa

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

**Big cities** consume more than 75 % of all electricity generated and are responsible for 70% of greenhouse emissions.

Majority of modern buildings in most African countries with tropical climates - **are replica of building designs from western countries** with cold and temperate climates.

Modern cities are **fossil fuel driven cities**.

Very few **urban planners** take into consideration **bioclimatic elements or passive building methods** in their new urban plans.
New buildings are aligned along main roads, rivers and the resulting settlements are **high energy dependent**.

# Rapid Urbanization: Housing shortage and inadequate housing

- Housing deficit is estimated globally at one billion. Those without adequate housing live in inadequate housing.

- There is a mismatch between the offer and the demand for housing:
- **Adequate shelter that is unaffordable!**
  and
- **Affordable housing that is inadequate.**

- **It is estimated that 75% of the housing stock that will exist in 2050 in developing countries is yet to be built.**

# Solution: Rapid provision of housing on large scales that are not always environmental friendly.

- New mass housing in Africa with poor environmental considerations.

# Housing policies and regulations: building code / standards in Africa

- Majority of building codes in Africa were developed and in some case copied from the European building codes with limited consideration to the local context.
- Most of these codes are prescriptive and do not have reference to **energy and resources efficient measures.**

*Energy/Resource efficient Building Code has the highest potential of saving energy in buildings over a long run.*

***Kigali Declaration on mainstreaming energy efficiency measures into building code, building policies and building regulations in east Africa. April 2013.***

**KIGALI DECLARATION ON MAINSTREAMING ENERGY EFFICIENCY IN BUILDING CODES, BUILDING POLICIES AND BUILDING REGULATIONSIN EAST AFRICA**

***Call upon:***

- **Governments of the East African Countries to:**

1. Fully endorse and implement the concept of Energy Efficiency Building Codes (EEBC), and subsequently to review existing housing policies and building codes, as well as guarantee the involvement and capacity building of relevant stakeholders in energy and resource efficiency in order to meet the requirements set by the new codes,
2. Adopt and integrate measures of energy and resource efficiency as an essential element of the EEBC,
3. Harmonize building codes, regulations and laws at the national level and among the East African Community countries in order to achieve coherence,
4. Create public awareness among all relevant stakeholders regarding the importance of energy efficiency in buildings, the required and available measures, its contribution to mitigate climatic change and the urgent need to make individual contributions,
5. Identify and promote innovative approaches that demonstrate efficient use of energy and resources with particular emphasis on buildings (currently estimated to account for more than 40% of the available energy),
6. Organize national and regional exhibitions and awards for the promotion of Energy and Resource Efficiency in Buildings,
7. Establish a regular forum for networking and exchange of ideas, experiences and best practices which could lead to integrated sustainable buildings,
8. Actively participate in the collection and dissemination of the required data, especially climatic data that may lead to the successful implementation and recording of the effectiveness of the progress resulting from various initiatives under implementation,
9. Create an enabling fiscal environment for adopting energy and resource efficient technologies by the private sector.

**Development Partners in collaboration with the Governments to:**

1. Share experiences and resources to create both a knowledge pool and meaningful sustainable responses,
2. Facilitate and support the development of local expertise and research capacity through knowledge sharing, exchange visits, and thematic workshops and training courses,

**Training institutions to:**

1) Review and re-orient educational curricula to incorporate energy and resource efficiency as a theme to the benefit of various relevant stakeholders,
2) Undertake action research on affordable and appropriate building materials, cost-benefit and life-cycle analyses of energy and resource efficient buildings,

**The private sector to:**

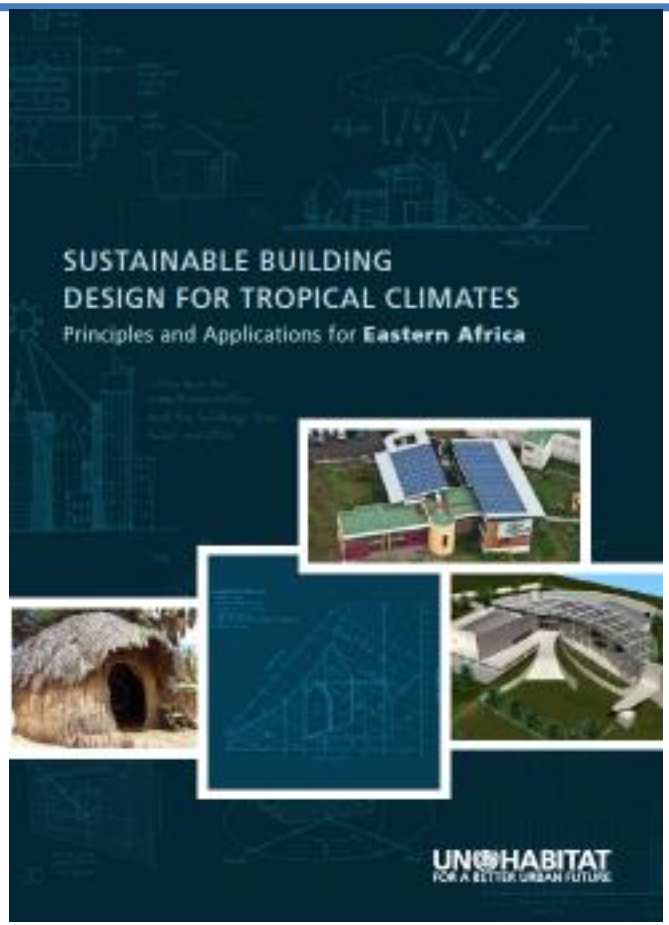
1) Support and promote energy and resource efficient operations and lifestyle,
2) Establish voluntary market-based performance-oriented Green Building Rating Systems and to support mandatory Energy Performance Certificates and Energy Savings Performance Contracts,
3) Establish affordable and sustainable 'Green Mortgage' scheme to support the implementation and scaling-up of energy and resource efficient building projects, and
4) Develop and distribute resource efficient building and construction materials and equipment.

**Kigali 26th April, 2013**

# Promoting Energy Efficiency in Buildings in East Africa

- In response to the rapid urbanization taken place mainly in Africa and Asia, and to the poor access to energy, together with the aim of addressing SDG7 and climate change, UN-Habitat has developed several programs to address the urban energy challenges.

- Promoting energy efficiency in buildings in East Africa which objective is to mainstream Energy Efficiency Measures into Housing policies, Building Codes, Housing finance and building practices in East Africa.
- Review of the building codes in Nigeria, Cameroon and Senegal to integrate energy and resources efficiency measures.
- Training the youth on renewable energy technologies and energy efficiency measures.



# Promoting Energy Efficiency in Buildings in East Africa

The program has conducted **energy audits** in 1200 buildings to asses energy consumption trend and also establish an energy benchmark for buildings. This work is particular relevant as it is the basis for energy rating system.

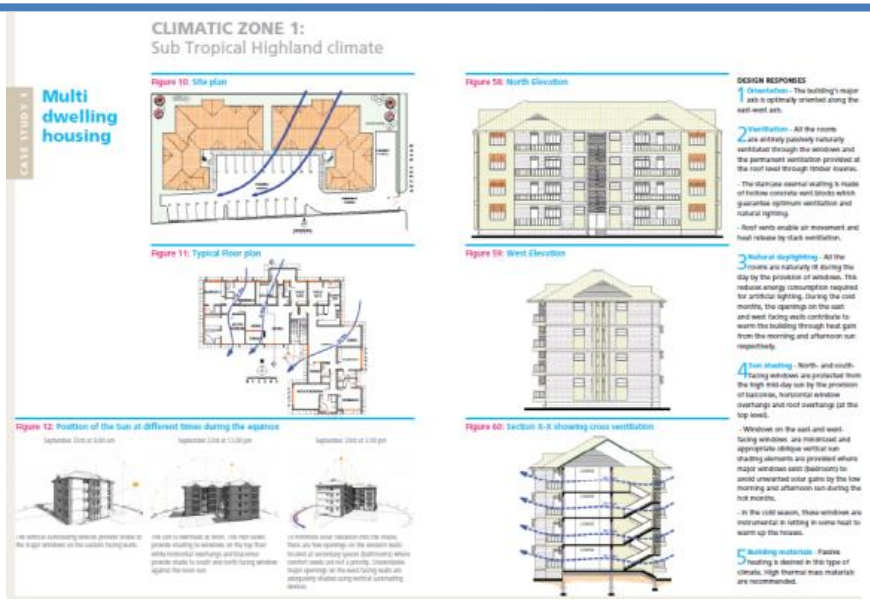
The Government of **Rwanda has just adopted a new building code** with a chapter on energy. Kenya has enacted a regulation that make solar hot water system mandatory for all new buildings. Uganda has included energy issues in their housing policies. All these has happen through UN-Habitat advocacy and technical assistance to those countries on Energy Efficiency (EE ).

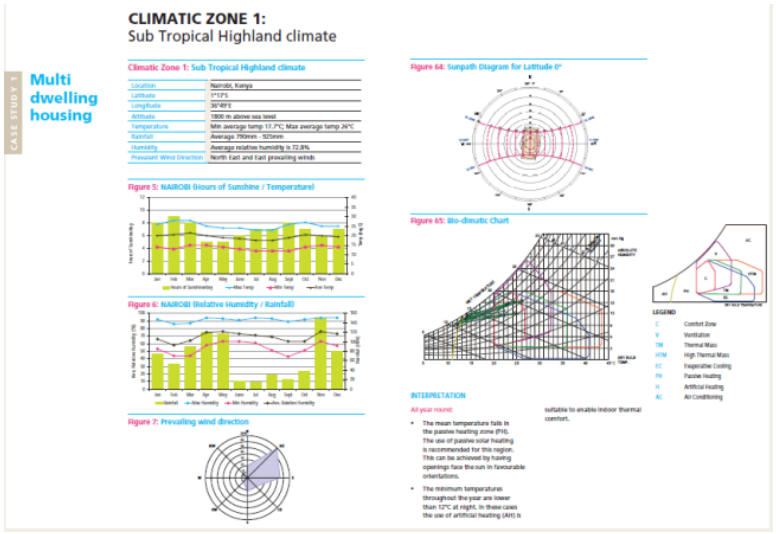
**Awareness programs and training workshop** on sustainable building design are conducted to building the capacity of building practitioners. Several guidelines and training tools have been developed.

An **appropriate financial mechanism** for the promotion of energy efficient measures in buildings is under development.

The program provides **technical advices** to ongoing new housing and building projects to make them green.

# Promoting Energy Efficiency in Buildings in East Africa

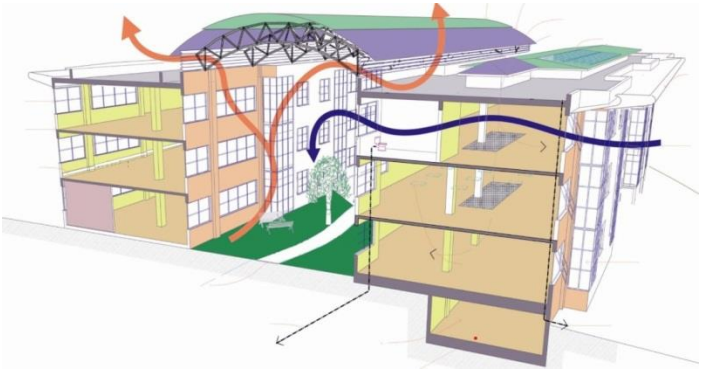


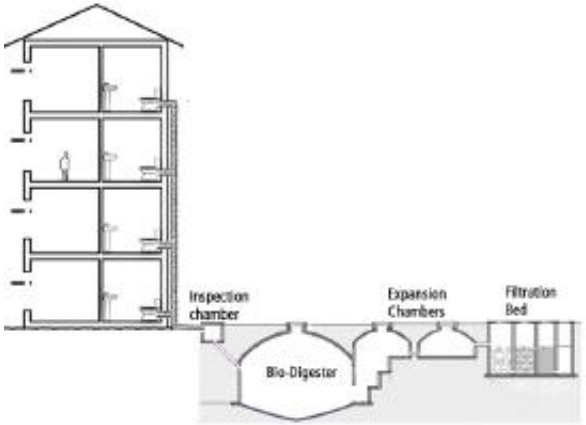



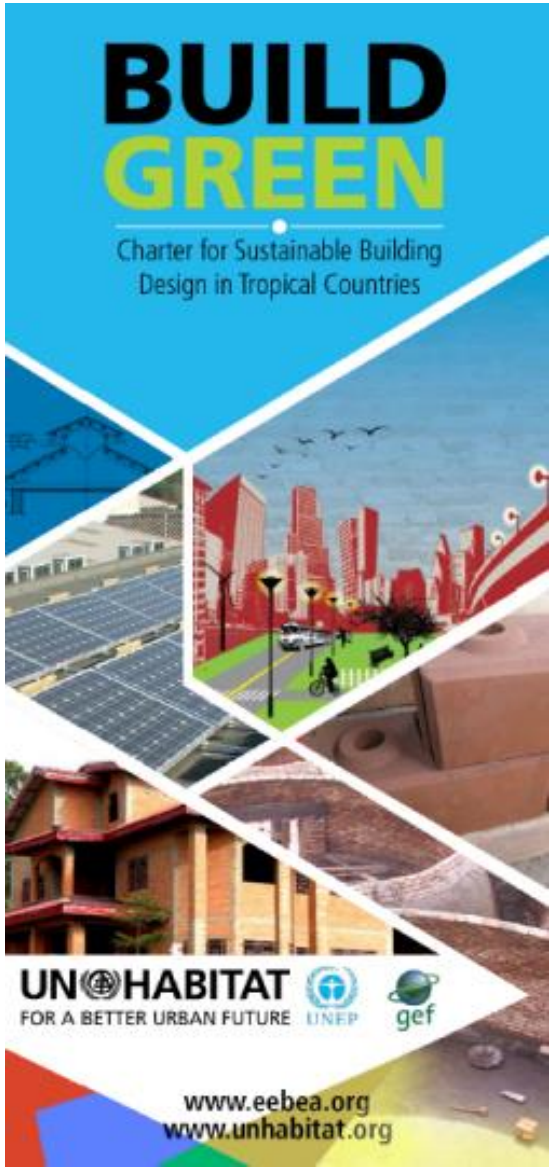

# Promoting Energy Efficiency in Buildings in East Africa

- UN-Habitat has developed **a user friendly charter for sustainable building design** in tropical countries.

- The charter has 20 tips on green buildings and 10 tips on sustainable neighborhood design.
- The charter address issues related to:
- Proper orientation, natural ventilation, solar protection, daylighting, waste management, renewable energy etc.

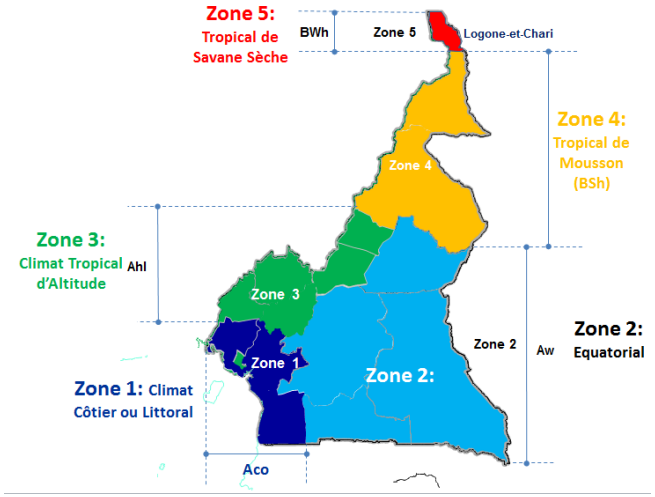




# Housing policies and regulations: building code / standards in NIGERIA, CAMEROON AND SENEGAL

- Nigeria has a housing deficit of 17 million. The existing building codes, building regulations and standards have limited references on sustainable construction and passive building design principles.
- UN-Habitat has just finalized the review of the 3 countries building codes and regulations. Measures on energy efficiency and clean energy systems are being developed to be included in the codes.
- These measures take into consideration: local climate, traditional architecture, colonial and post colonial architectures, locally available building materials, local context/ costumes and the geographical context.
- The solutions are also based on the results from energy audits conducted.



# Recommendations for building code amendment

1. Environmental friendly design incorporating green building concepts and regulations (**passive building design as per climatic zone**);
2. Use of climate adapted and **sustainable building materials**;
3. Use of **energy efficiency appliances** such as mandatory use of Solar Hot Water (SWH), lighting, air conditioning and ventilation, HVAC
4. Water efficiency: **mandatory rainwater harvesting**, water reuse and recycling;
5. **Renewable energies** (mandatory use of solar PV in nonresidential building > 300m2 for lighting and other electrical appliances);
6. Sustainable site planning: **sewage separation and treatment**; waste management; land/vegetation and landscaping; drainage, urban layout and street orientation; erosion prevention etc.
7. Energy management and conservation for buildings through **Energy Certification of Buildings**
8. Procedures for **building inspection** and **penalties** for non-compliances

# Hand-on Training on Energy Efficiency and Renewable Energy for Youth Empowerment

- The youth constitute the majority of the African population and empowering them to participate in activities focusing on renewable energy uptake is key to the achievement of SDG7
- UN-Habitat has developed a program to empower the youth through the provision of training courses on energy efficiency and renewable energy technologies.
- During the training young people learn how to; build solar lanterns; install small biogas systems; set up briquette production; build improved cook stoves; and assemble and install solar bulb lights.
- 5 training courses have been undertaken in different in Kenya, Tanzania, Cameroon, Burundi and Nigeria.
- An online training course program is under development.

# Conclusion

**Adoption of Energy efficient building code** will allows countries to:

- Reduce their energy demand for buildings;
- Reduce their carbon footprint as buildings contribute significantly to the greenhouse gases emission;
- Make significant economic saving in term of fuel import and for the building owners.

- **Building permit requirements should** include **environmental design strategies** and passive building measures.;
- The **integration of the renewable energy technologies** in building will generate additional energy which excess could be sell to the national grid.

- **Reviewing the building code is not enough there is a need to:**
  - **Develop awareness and implementation tools;**
  - **Build the capacity of architects**, engineers and other building practitioners on sustainable building design.
  - **Integrate passive building design into Universities curriculum**.
  - **Involve the youth into renewable energy technologies .**
- **Special financial mechanism need also to be put in place: dedicated line for credit; incentives, green mortgage etc.**

**HABITAT III is the turning point for the transition towards sustainable energy use in cities.**

# THANK YOU FOR YOUR ATTENTION

Our homes & offices create as much energy as they use

Cars are efficient and powered by clean energy

Electricity is generated by sun, wind, and waves

Our communities center around people, not cars

We choose eco-friendly products

UN HABITAT
FOR A BETTER URBAN FUTURE