



## Africa-Europe BioClimatic buildings for XXI century

Policies and legislations on Energy and Resource Efficiency  
in the building and construction sector in Sub-Saharan Africa



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Ifrane, Morocco

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[www.abc21.eu](http://www.abc21.eu)



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- The **world's rapid population growth** will reach 9.6 billion in 2050 with 6 billion people living in urban areas.
- **Rapid urbanization** is taking place in sub-Africa with 3.7 % growth rate annually.
- African cities will see their populations almost triple by 2050 from 567 million urban today (47 % of the total pop.) to **1.3 billion** (56% of the total pop of 2.5 billion people.).
- Majority of urban population in Africa – estimated at 60% – live in informal settlements with **poor access to adequate housing**, basic services (water, sanitation, road, waste management, electricity etc.) and are more vulnerable to the effects of climate change.
- Sub-Sahara Africa has a housing deficit estimated at 160 million units. This is projected to reach 230 million homes by 2030 that should be built to achieve SDG 11 Target 11.1 ***“By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums”***.
- All new buildings should adopt **net zero carbon architectural principles** to address climate change.
- This will require **new policies and legislations** such as **resource efficient building codes**. This will also require **changes in the way buildings are designed**, constructed and managed.



- Housing shortages
- Building with inefficient use of resources and energy
- Absence of legislations and resource efficient standards
- The Kenya New building code 2020
- The Rwanda building code
- Uganda building code
- Opportunities and available tools
- Way forwards

- Urban population growth in Africa creates enormous needs for housing, buildings and urban services.
- The housing need of African cities is officially estimated at about 160 million housing units with an annual growth of more than 10 million new demands.
- The city of Abidjan alone in Ivory Coast has a deficit that exceeds 500,000 homes.
- In Kenya, the deficit is estimated at 2 million with an annual demand of 200,000 housing units and a supply of only 20 percent. Hence the gradual accumulation of the deficit.
- In Nigeria, the most populous country in the region has a deficit of around 30 – 40 million homes.
- It should be noted that about 75% of the housing stock of African countries in 2050 is still to be built.



# BUILDINGS WITH INEFFICIENT USE OF RESOURCES

- Energy used in buildings in Africa is estimated at more than 56% of total national electricity consumption (UNEP).
- Buildings contribute 30 to 40% of greenhouse gas (GHG) emissions (IEA).
- These buildings are not designed with energy and resource efficient measures and strategies resulting in excessive energy consumption.
- Most building materials are imported with minimum local contents.



- Building codes in most African countries were developed during the colonial periods or immediately after the independences.
- Codes, regulations and standard were copy and paste from Westerns countries with completely different climates.
- Building codes gives preference to strong and imported building materials.
- Roof sometime are designed to withstand snow in a place where there is no snow. The Tanzanian building regulations recommends that roof structures should be inline with the British construction norms.
- Some building codes make reference to natural ventilation, solar protections, building materials.
- There is a strong need to review building codes and mainstream energy and resource efficiency measure in those codes.
- UN-Habitat has developed a template to assist governments to develop their building codes.



- The final draft of Kenya Building Code 2020,
- Encourages the use of local resources and materials;
- Promotes the use of secure and durable materials.
- Presents guidelines on natural cooling, lighting, and ventilation, prompting maximization of energy efficiency;
- Advocates for the installation of renewable energy as per Energy Act 2019.
- Encourage the adoption of circular economy in the building construction industry.
- Promotes rain-water harvesting, and proper handling of stormwater.

This is a good start but needs more input on how to achieve circularity in the building and construction industry.

There is a need to train everyone in the construction industry's value chain to promote sustainability practices.



LEGAL NOTICE NO.....

THE NATIONAL CONSTRUCTION AUTHORITY ACT  
(No. 41 of 2011)

THE NATIONAL BUILDING CODE, 2020

ARRANGEMENT OF PARAGRAPHS

*Paragraph*

PART I—PRELIMINARIES

1. Citation.
2. Interpretation.
3. Purpose of this Code.
4. Scope of this Code.
5. Compliance with the applicable laws.
6. Supervision of construction works.

PART II—SITING AND SPACE ABOUT BUILDINGS

7. Compliance to basic physical planning requirements.
8. Siting of a building.
9. Access to a site.
10. Frontage.
11. Service area.
12. Means of an enclosure of a building.
13. Obstruction of view.
14. Space around a residential building.
15. New building on an existing street.
16. Protection edge above ground floor.
17. Space in front of a building.
18. Side space.
19. Minimum measurement of courtyard.
20. Means of access.
21. External passage.
22. Eave, cornice or molding.
23. A balcony or canopy over a street.
24. No door on to canopy.
25. Use of veranda or balcony.
26. Door, window and gate not to open over street.
27. Tenement house.
28. Live wire or cable to be made safe.
29. Fence or wall to enclose combustible material.



- Rwanda was the first country in Sub-Saharan Africa – except South Africa to adopt a building code that make reference to energy and resource efficiency.
- The code advocate for the use of energy efficient appliances; renewable energy technologies and valorisation of local building materials.
- These recommendations have transformed the building sector in the country.
- The code is more prescriptive for energy and passive building design but does not requires any performance measures.





- The Ugandan government adopted its new building code in 2019. In the code several sections are dedicated to passive building design principles.
- The code is very prescriptive but it gives the direction for green building adoption.
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**STATUTORY INSTRUMENTS**  
**SUPPLEMENT No. 21**

16th August, 2019

**STATUTORY INSTRUMENTS SUPPLEMENT**  
*to The Uganda Gazette No. 40, Volume CXII, dated 16th August, 2019*  
Printed by UPPC, Entebbe, by Order of the Government.

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**S T A T U T O R Y I N S T R U M E N T S**

**2019 No. 60.**

THE NATIONAL BUILDING (STANDARDS FOR MECHANICAL  
INSTALLATIONS IN BUILDINGS) CODE, 2019.

**PART I—PRELIMINARY**

*Paragraph*

1. Title.
2. Application.
3. Interpretation.

**PART II—DOMESTIC WATER SUPPLY AND DISTRIBUTION**

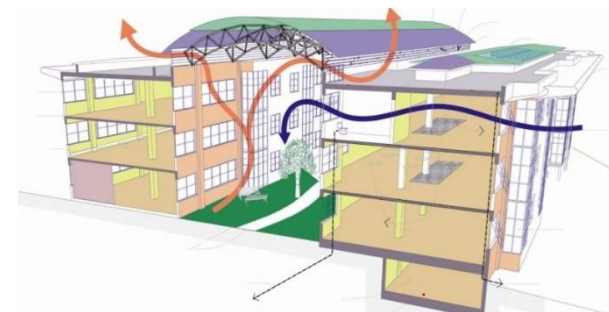
4. Pipes and fittings.
5. Joints and connections of pipes.
6. Connections between different materials.
7. Jointing pipes to cisterns.
8. Quality of water supply.
9. Preservation of water quality.
10. Cold water supply.
11. Stopcocks and valves.
12. Pumps and equipment.



- Emergence of national green building councils.
- Development of tools to assist designer in building green like the EDGE tool of the IFC that is assisting practitioners in designing green buildings.
- Development of manuals and training tools
- Creation of master program on green building design and construction.



- There is a need to move from the prescriptive building codes to performance building codes.
- We need also to move from sensitisation, capacity building to the **mandatory adoption** of green building practices in the building and construction sector.
- Government should adopt the stick and carrot approach in the building and construction sector. In one side, there is a need for incentives and on the other side, there is a need for sanctions for those that are not compliant.
- ABC21 has provided a lot of tools and recommendations that should help sub Saharan Africa to transition towards net Zero architecture by 2050.





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**Thank You!**  
**Q & A**

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