



Workshop 7 - Sustainable Building and Construction

Climate Chance Summit 2019 – Africa

Key ideas:

The main challenge in Africa is construction, to avoid the question of renovation or rehabilitation being raised in a few years' time and to ensure that the construction sector is no longer one of the main factors in greenhouse gas emissions. Green construction and buildings are part of the several SDGs and are therefore essential for achieving sustainable development.

The objective of the workshop is to produce a concrete roadmap with the first step of actions and to have a mapping of existing good practices. Following the presentations on the state of play of the construction and building sector in Africa, various projects were proposed:

- Global Alliance for Buildings and Construction currently working on an African Roadmap for Buildings and Construction
- "La Voûte Nubienne" which offers an adapted construction technique. The voûte nubienne is an ancestral African technique used in the Sahelian areas, which uses local materials and promotes the training of local workers.
- Ghanaian architectural firm orthner orthner associates - OOA offers green buildings that integrate both new technologies and local art and materials.
- TyCCAO which aims to use typha (invasive plant) as an insulating material.
- EDGE Buildings is an online platform that provides access to green building standards and a certification system for more than 150 countries. EDGE identifies the measures to be taken to have a green building and allows financial simulations to be carried out.
- Building Efficiency Accelerator as a support tool for cities and a multilateral platform of companies, NGOs, helping local governments take action to improve their construction.

Introduction by Ronan Dantec, President of Climate Chance

In France, there is a debate on the rehabilitation of the old housing stock, because building emissions are one of the main factors in greenhouse gas emissions. Most of the French park was built at a time when there was no climate change problem. Today, very significant investments are needed for renovation.

We must therefore build in Africa in such a way that in 30- or 40-years' time, we will not have the same difficulties as in France today. The essential challenge is to ensure that what is being built today in Africa does not raise the question of renovation or rehabilitation in a few years' time

The objective of this workshop is to produce a concrete roadmap with the first step of actions, to see if there is funding to support the projects, and to showcase good practices. This is necessary in order to have a basis for generalized action. The major challenge for the workshop is to come out with a roadmap that starts with the basics. We have difficulties due to a bad construction 40 years ago, don't make the same mistakes.



Yves Laurent Sapoval

The construction sector accounts for 1/3 of the world's GHG emissions, 80% of what will be built in 2050 in Africa is not currently being built. Real estate in the world represents half of the world's wealth. The demand for air conditioning is the fastest growing demand for energy.

However, energy is a scarce commodity, it will become increasingly scarce in the future, and efforts to deploy renewable energies are essential. But renewable energies will only cover half of the world's energy needs. Energy poverty will become a crucial issue for a big part of the world.

We are facing two paths:

- Using energy to cool and warm homes
- or let's save our energy for our primary needs.

The most efficient energy is the one we don't use. There is a revolution to be led in the field of construction. The real luxury is the design and buildings that work with nature.

Hélène Sabathié Akonor, ADEME

By 2050, with increasing urbanization, 75% of buildings will have to be built. Here the issue is construction and not renovation as in the northern countries. Cities are also developing in coastal areas with a problem of rising water levels. Before saving energy through equipment, we must return to the basics, to what was done before electricity. We must take into account the lessons of the past and build according to local practices.

Combining modernity with traditional practices seems to be the solution. We must look for solutions and do our best to understand climate change. By 2050 it is expected that all buildings and constructions will become energy neutral (energy net zero). We need energy-efficient and environmentally friendly buildings, which meet different sustainable development objectives:

- 1 Reduce poverty by creating jobs in building construction,
- 3 Good health and well-being: quality of the indoor environment,
- 4 Quality education: improving our school buildings to make them comfortable,
- 5 Clean water and sanitation: helping to store water,
- 7 Affordable and clean energy,
- 8 Decent economic growth: green jobs with recycling of building materials,
- 11 Sustainable Cities: Green buildings are the fabric of sustainable communities,
- 12 Responsible consumption and production: circular principles for the production of materials,
- 15 Life on Earth: Green buildings improve biodiversity
- 17 Partnerships to achieve objectives

Vincent Kitio, architect and Head of Urban Energy Unit, United Nations Human Settlements Programme.

Planning and building for all: challenges and opportunities. The objective we want to achieve is affordable homes for all. We need to understand the context of buildings, which are the key actors of climate change.

Some specific challenges of buildings in hot and tropical climates in the 21st century: rapid population growth, rapid urbanization, poverty, climate change (floods...). There is a huge need for housing and buildings because 60-70% of the urban population in Africa lives in dilapidated housing. The housing need by 2025 in African cities is estimated at more than 300 million.

The UN-Habitat Project: providing homes for all, even if in reality decent housing is not affordable. And mass housing doesn't take ecological considerations into account, so the strategy must be rethought.



We need to look at the type of equipment we are going to use, funding is not the beginning, we must first address this issue of access to land.

Then, for the design and construction of the building, there is a shortage of architects and technicians. Alternative materials for workforce intensive constructions must be found. But with a need to industrialize the construction sector. We need to focus on building codes.

(find more information on the Global Alliance for Buildings and Construction website). We have work in progress, including the African Roadmap for Buildings and Construction. In Nairobi in May 2019, 25 experts met to defend housing affordability, with the main actions being the renovation of buildings, materials, resilience and the consideration of polluted land, the experience of climatic events, according to the reference state, the short term, medium term and long term.

Yves Laurent Sapoval

At the COP and in the Global ABC, a lot of work has been done to invite governments to join the alliance and give roadmaps for action. But the action of local authorities is also essential. Ex: city of Dakar.

The association La Voûte Nubienne

The challenge of housing in Africa concerns the use of imported and exogenous know-how and a loss of African architectural tradition.

Our technique of construction adapted from an ancestral African technique has long been used in the Sahelian areas. This technique uses only local materials, the main one being soil. The process is simplified and standardized: in terms of building width, the length is modular. The houses are more comfortable in terms of thermal, acoustic and sanitary comfort, but also resistant to violent climatic episodes.

This labour-intensive technique requires few machines, only sun-dried earth brick moulds.

The core target: rural areas and very poor households. It is still possible to build in urban areas, since it is a very modular technique for building multi-storey buildings or collective buildings. We seek to create a market dynamic by training a profession in this technique, to create a demand by raising awareness among the populations and project owners.

Different stages of this methodology:

- Conceptualization,
- Launch the market (15 years),
- Densification of the market (insist on mason training and create the offer),
- Today the methodology is proven, a technology transfer to local partners is in place

We therefore have an impact in terms of climate (adaptation and mitigation) but also in terms of employment. Some key figures:

2018: 32,000 beneficiaries, 3,000 construction projects completed, 770 active masons, 25% annual market growth, 85,500 tonnes of CO2 avoided, strengthening local economies by avoiding the import of materials. We are present in 5 West African countries.

Functions:

- Technical support
- Monitoring and evaluation
- Development of own technologies
- Partners to promote the market
- How to get involved in the program?
- 3 years: 65,000 euros: train a local organization to promote the VN market, 36 learners
- 350 euros per building: incentive for customers from poor rural areas to build the house, no donation but incentive to choose this technique
- 190 euros m2 for construction

Therefore, we need an operational and financial partner.



Ghanaian architectural firm: orthner orthner ; associates - OOA

Reducing the heat of buildings in tropical areas is one of the main challenges that OOA has faced. We have found solutions for water and heat saving. It is a bio-digestive system linked to an irrigation system.

The construction is made of bamboo according to local culture and including local art. Small and simple local concept for more luxury. Luxury does not mean great and brilliant. Smaller units make it possible to be more energy efficient. Sustainable development is not expensive. Thus, we offer affordable homes for \$15,000.

Yves Laurent Sapoval

There are technical solutions for all construction markets and solutions adapted for all categories of population.

Hélène Sabathié Akonor: PEEB Energy Efficiency in Buildings Program

TyCCAO project: 5 pilot countries including Senegal. Typha is an invasive plant, which created problems for biodiversity and leads to the development of diseases (nests to mosquitoes). Trying to eradicate typha is a vain and costly fight, but rather it's necessary to try to take advantage of this plant. Indeed, it serves as an insulating structure for better insulation, which means less imported materials, less emissions and energy consumption.

In insulation, roof protection is the most important thing. Protecting the roof saves 70% of the heat entering the building.

4 steps are necessary for this exploitation and valorisation of the typha:

- Better knowledge of the resource: define the collection areas and the areas to be left, improve the
- cutting technique and the processing of the material
- Valuation of typha as a coal fuel
- Valuation for construction: earth/typha, concrete/typha combinations
- Capitalization

Participation in international meetings, ex FIBRA world first prize for contemporary vegetable fibre architecture.

Timothy Blatch ICLEI: Building Efficiency Accelerator

The BEA is a support tool for cities, a platform for engagement for the city. 3 objectives:

- Universal access to modern energy services
- Energy efficiency: 6 different sectors, building is a key sector
- Multilateral platform of companies, NGOs, helping local governments to take measures to improve their construction

About 35 partners including World GBC, supported by the Global Environment Facility and new partnerships are built around public-private collaboration.

The BEA is in fact the complement of an action work, it's a support to:

- Process for setting priorities for local action,
- Expertise and solutions in tools,
- Funding opportunities,
- International recognition and collaboration.

ICLEI calls for actions to all those present in the room who work in local government

- Make your contribution clear:
- Adopt and implement an enabling policy to institutionalize building energy efficiency efforts,



- Pilot program: Demonstrate the potential of building energy efficiency, designed to be adapted for
- use in other buildings,
- Monitoring and communication.

Two ways:

- Register to become a partner / Africa Regional Network (meeting place, partners, case studies)
- Join the Global Alliance for Building and Construction and become a member of the steering committee

Yves Laurent Sapoval

The objective would be to create a network of municipalities that want to work on building issues. It is not easy to find the right people to talk to. We want to create a central network of municipalities that want to work together and for the next Climate Chance, we want to have a real assessment of what municipalities have accomplished.

EDGE Buildings Project

The International Finance Corporation (IFC) strategy is divided into four parts to support investment in "green"; construction:

- Investment and advice for banks
- Provide facilities
- Investing in the construction sector
- Encouraging the adoption of "green"; construction methods through : property taxes, subsidies, permits, height bonuses, etc.

EDGE is an online platform, green building standard and certification system for more than 150 countries. The EDGE application helps to determine the most cost-effective options for designing green buildings in a local climate context. EDGE can be used for all buildings, new or existing, and for major renovations. EDGE identifies the measures to be taken to have a green building and simulates an initial and final budget. It is accompanied by an audit instrument that simplifies the compliance of the work performed. The application adapts to the characteristics of the country, it is specific to each country. The value of EDGE certification is a promotional advantage, as customers benefit from lower utility bills. EDGE is part of a holistic strategy to guide construction in rapidly urbanizing economies towards a more low-carbon path. This is an example of IFC's commitment to creating competitive, sustainable, inclusive and resilient markets.

Desmond C Appiah

How to build dense cities in the face of urban sprawl and the degradation of nature? This requires solving the problem of the mobility of people who want to come to the city centre through planning.

In Accra: a key instrument is the building permit regime that impacts what needs to be built. But there is a problem of enforcement and respect for the law.

Energy efficiency must be promoted, especially in schools, and cities must be encouraged to go green, including by increasing the use of renewable energy. The example of territorial Energy Climate Plan in Dakar by Ndeye Rokhaya Sarr : Dakar is a very dense city with many unhealthy infrastructures. 30% of the city's energy consumption comes from the building sector.

Improvement program:

- Climate and Energy Plan of the territory
- Awareness-raising of stakeholders



- Energy Efficiency Project: Example of an eco-friendly geriatric centre built with typha to insulate the roof.

The other example is the Climate Energy Project of the city of Pikine (officially the second most populated city in Senegal) The question of the safety and solidity of constructions, particularly with the use of new materials was discussed. Finally, we must not forget the environment in which the sustainable building must be built.

Questions

- What kind of energy for a hut? No cement floor, no air conditioning. High-tech technologies are not suitable.
- How can we densify the old structures to reduce the rate of urban sprawl and urban growth? The problem of the lack of available land must be addressed.
- How can we educate and train the population on the issue of climate change through the theme of buildings?
- What access to affordable housing? Renting, social housing? Question of the material used that affects the price.
- How to adapt existing houses and convince their inhabitants? Solutions must be found to deal with climate change by staying in their homes.

