SUSTAINABLE ARCHITECTURE CHALLENGES AND OPPORTUNITIES IN DEVELOPING COUNTRIES

THE ENERGIES 2050 NOTES

Turn challenges into opportunities of action

ENERGIES 2050

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SUSTAINABLE ARCHITECTURE
CHALLENGES AND OPPORTUNITIES IN DEVELOPING COUNTRIES
This note is a Working document by ENERGIES 2050 prepared within the frame of the Sustainable architecture roundtable held May 31st 2017 in Abuja, Nigeria, Organised by L’Institut Français and Green Habitat Nigeria.

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Buildings and cities are at the heart of sustainability issues. Urban areas only cover 4% of the earth’s surface but represent more than half of the world’s population and are source to three quarters of our natural resources consumption, 60 to 80% of the world’s energy demand and 75% of total greenhouse gas emissions. Some cities have annual water consumption rates equivalent to more than 80% of their resources, a rate well beyond the 40% sustainability threshold set by UNESCO (United Nations Educational, Scientific and Cultural Organization).\(^1\) Urban settlements are in addition increasingly vulnerable to the impacts of climate change, especially in developing countries.

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Scaling down to buildings, the International Panel on Climate Change (IPCC) reported in its fifth and last global assessment report, published in 2014-2015, that these account for 32% of global energy demand (with two third coming from the domestic sector), and 51% of the world’s electricity consumption. The related greenhouse gas emissions were estimated at 9.18 GtCO2 in 2010 (a fifth of total emissions), a number that could double or triple by 2050 in a business as usual scenario.

The building and construction industry also consumes more than 3 billion tons of raw materials and 12% of the world’s freshwater consumed every year, while the construction, renovation and demolition is responsible for over 40% of solid waste generated in industrialised countries. These numbers could increase further as developing and emerging economies could accommodate an additional 2 billion urban people by 2050.

3 Lucon et al. IPCC 2014, Buildings, Chapter 9 of the Working Group III contribution to the 5th Assessment report “Climate Change 2014 : Mitigation of Climate Change”.
To face up these challenges, a large number of cities already started to design and implement sustainable policies adapted to their own context, with a large focus on buildings. We can mention here as an example the PCAETs (Plan Climat Air Energie Territorial which are territorial strategies with regards to climate, energy and air issues) mandatory for any French urban area of over 20 thousand inhabitants, or the obligations set also to local authorities in the United Kingdom to design climate and energy plans. Examples in some developing countries (Dakar in Senegal, Alexandria in Egypt, etc.) may be mentioned as well, whereas initiatives such as the Covenant of Mayors for Climate and Energy\(^5\) reflects on the cities’ willing to engage in the transition across the world.

The importance of buildings and the built environment in general was also enhanced in the sustainable development goals, global programme of the United Nations for the period 2015-2030, and in the climate pledges (the Intentional Nationally Determined Contributions - INDCs) presented by the Parties of the United Nations Framework Convention on Climate Change ahead of the 21st Conference of the Parties (COP21) in Paris in 2015.

A large proportion of INDCs referred to the built environment as a key focus of intervention with regards to both climate change adaptation and mitigation.

Figure 2. Urban content in INDCs in Africa, Latin America and Asia


Sustainable architecture – Challenges and opportunities in developing countries
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Despite a shared understanding of challenges, strategies adopted to promote sustainable buildings may differ widely depending on the local situation.

In industrialised countries, policies will usually focus on refurbishing the existing stock and promoting energy efficiency through the use of financial incentives, awareness raising and training policies among other measures, beside thermal regulations and building codes for new building and large renovation.

The situation in developing countries calls for a rather different and innovative approach, with a large focus on new constructions and buildings design, even though in many places the existing stock need also to be considered. This is especially due to the fast urbanisation these countries are facing.
As was mentioned in the first part of this paper, the urban population in developing countries may grow by 2 billion people by 2050.

The Asian continent already welcomes 12 of the 21 cities having over 10 million inhabitants in the world, and its population could reach 2.6 billion by 2030 (against 1.76 billion in 2010\(^7\)). Central and Latin America have some of the highest urban rates in the world, 80% in average, a ratio which could increase to 90% by 2050\(^8\).

In Africa, according to data from UN Habitat, the urban population could triple from 455 million to 1.34 billion by 2050\(^9\), and it is estimated that, in some areas, the building stock could increase fivefold by 2050\(^{10}\).


Developing and emerging countries within these three continents are already facing multiple issues and usually lack the means to properly accommodate this growing urban population. It was estimated that in Sub-Saharan Africa alone, US$45 billion per year of investments would be necessary to support the additional 340 million people expected to live in the region’s urban areas over the next 15 to 20 years\textsuperscript{11}. In Asia, a staggering US$ 4 700 billion in total could be needed to finance the infrastructures for new urban developments\textsuperscript{12}.

This lack of means, often combined with urban policies inadequate to the local contexts, contributed to a so-called “urbanization of poverty”\textsuperscript{13}. Studies thus show that more than 40% of households live in unhealthy conditions in Asia, with overexposure to health problems, lack of basic services (tap water, electricity, health care, etc.) and dependence on harmful polluting energies such as coal or gas oil\textsuperscript{14}. Despite urban growth, 1.3 billion people still lack access to electricity in the world\textsuperscript{15} and a total of 800 million people lack access to decent housing\textsuperscript{16}.

The role of cities as drivers of economic growth and social integration is less evident as they become a vector of poverty and environmental strains. Their governance lacks efficiency and urban areas are often competing with other sectors (e.g. agriculture) for the appropriation of resources, among others land, water and energy.

\begin{footnotesize}
\begin{enumerate}
\item UN Habitat, 2012a, Sustainable Urbanization in Asia, A sourcebook for local governments, United Nations Settlements Programme, Nairobi, Kenya, http://mirror.unhabitat.org/pmss/listItemDetails.aspx?publicationID=3345 p. 28
\item O. Lucon et al. IPCC 2014, Buildings, Chapter 9 of the Working Group III contribution to the 5th Assessment report “Climate Change 2014 : Mitigation of Climate Change”., pp. 4-17, from IEA, 2012 and Pachauri et al., 2012.
\end{enumerate}
\end{footnotesize}
Inequalities are also becoming increasingly visible: fortified enclaves of wealth can now be found in the midst of slums, creating real and perceived inequalities as well as security problems\(^\text{17}\). Some areas have become no-go zones lacking any formal control from the authorities\(^\text{18}\). Confronted to the incapacity of cities to provide a sufficient number of housing (in some countries such as Nicaragua or Honduras, the housing shortage can affect more than 50% of households\(^\text{19}\)) informal settlements have developed significantly, a phenomena especially related to\(^\text{20}\):

- The high pressure on land use and building plots, scarce, expensive and poorly regulated;
- The difficult access to land and housing credits, with requirements that are too restrictive to local markets;
- The elevated price of formal housing.

The sprawling of informal settlements goes not without consequences. Unplanned urbanization can increase a city’s energy consumption significantly, with additional impacts on energy consumed in buildings and transports\(^\text{21}\). Most settlements are not connected to the national grid and people are therefore dependent on unhealthy traditional biomass for cooking and heating. The population is also prone to expropriation and vulnerable to extreme weather events such as tropical storms and flooding\(^\text{22}\), likely to get more intense under climate change.

Finally, informal housing is often homemade, does not comply with any specific norms and generally makes use of construction materials that are readily available but unfit for local climates (e.g. metal sheets).

\(^{17}\) Barnett, J. and W.N. Adger., 2007, Climate change, human security and violent conflict, Political Geography
In parallel, in the formal sector, there is currently a large demand for buildings that represent some form of modernity and wealth. The application of inadequate standards, largely inspired by industrialized countries, often result in intensive use of energy systems, lack of comfort and premature wear of materials. To illustrate this issue, we can mention here a study\textsuperscript{23} based on the audits of 42 air-conditioned tertiary buildings (in Douala and Yaoundé) in Cameroun, which showed the following results.

**Table. Characteristics of existing tertiary buildings in Yaoundé and Douala\textsuperscript{24}**

<table>
<thead>
<tr>
<th>Cities</th>
<th>Types of building</th>
<th>Orientation</th>
<th>Types of wall</th>
<th>Wall’s color</th>
<th>Roofing’s types</th>
<th>Solar protection</th>
<th>Type of Glass</th>
<th>ROM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yaoundé</td>
<td>CHE (Hospital)</td>
<td>E/O</td>
<td>Concrete block</td>
<td>Clear</td>
<td>Tile</td>
<td>Any</td>
<td>Double and Nacco</td>
<td>35%</td>
</tr>
<tr>
<td></td>
<td>SCB-CL (Bank)</td>
<td>E/O</td>
<td>Block of glass</td>
<td>Brown</td>
<td>Non-isolated tile</td>
<td>Interior curtain</td>
<td>Simple</td>
<td>45%</td>
</tr>
<tr>
<td></td>
<td>SOFITEL (Hotel)</td>
<td>E/O</td>
<td>Concrete block</td>
<td>Brown</td>
<td>Isolated tile</td>
<td>Interior blind</td>
<td>Tinted</td>
<td>30%</td>
</tr>
<tr>
<td></td>
<td>MINREX (Public)</td>
<td>E/O</td>
<td>Concrete</td>
<td>Beige</td>
<td>Tile/metal sheet</td>
<td>Mediocre</td>
<td>Nacco</td>
<td>25%</td>
</tr>
<tr>
<td></td>
<td>Group of 17 buildings of the tertiary sector</td>
<td>E/O</td>
<td>80% E/O 20% S/O</td>
<td>40% Concrete block, 60% glass block</td>
<td>80% brown, 20% beige</td>
<td>Tile/sheet metal, 40% interior curtain, 60% any</td>
<td>30% simple, 20% Nacco</td>
<td>50 to 70%</td>
</tr>
<tr>
<td>Douala</td>
<td>General Hospital</td>
<td>E/O</td>
<td>Concrete</td>
<td>Beige</td>
<td>Tile</td>
<td>Any</td>
<td>Nacco</td>
<td>40%</td>
</tr>
<tr>
<td></td>
<td>BICIC (Bank)</td>
<td>E/O</td>
<td>Block of glass</td>
<td>Brown</td>
<td>Non-isolated tile</td>
<td>Interior curtain</td>
<td>Tinted</td>
<td>80%</td>
</tr>
<tr>
<td></td>
<td>SAWA (Hotel)</td>
<td>E/O</td>
<td>Concrete</td>
<td>Brown</td>
<td>Isolated tile</td>
<td>Solar-break</td>
<td>Simple</td>
<td>30%</td>
</tr>
<tr>
<td></td>
<td>ONCPB (Public)</td>
<td>E/O</td>
<td>Concrete and glass block</td>
<td>Beige</td>
<td>Tile metal sheet</td>
<td>Any</td>
<td>Simple and Nacco</td>
<td>70%</td>
</tr>
</tbody>
</table>

In addition to inefficient management, these buildings naturally accumulate heat gains with an orientation East-West following the sun-path, high ROM (ratio of glazed surface area related to the wall’s surface), low solar protection, dark and non-isolated roofs and construction materials poorly adapted to local climate. Energy consumption per building is at 302kWh/m² for buildings of up to three floors and 450 kWh/m²/year for the rest, far above the benchmark set up in the country (building code) at 160kWh/m²/year\textsuperscript{25}.

Unfit buildings design in most developing countries create pressure on energy and basic services networks and contribute to high energy prices, selective power cuts and pressure on electrical infrastructures already significantly vulnerable. To underline the potential impacts, it was estimated that in some countries, 25% of the electricity produced is lost during transmission and supply\textsuperscript{26}, with costs equivalent to up to 5% of Gross Domestic Products\textsuperscript{27}.


\textsuperscript{24} Kemajou et al. (2012)


\textsuperscript{27} Foster, V. and C. Briceno-Garmendia, eds., 2010, Africa’s Infrastructure: A Time for Transformation, AFD/WB, Washington, D.C.

Sustainable architecture – Challenges and opportunities in developing countries

ENERGIES 2050 – May 2017
SUSTAINABLE ARCHITECTURE TO HELP ADDRESSING URBAN AND BUILDINGS CHALLENGES IN DEVELOPING COUNTRIES

The first parts of this paper focused on some potential negative impacts and numerous concerns (economic, social and environmental) associated to the current urbanization process, with potential lock-in effects lasting for decades. There are however no fatalities and the promotion of sustainable architecture could help to partially address these issues.

Lake Rose in Dakar, Senegal – ENERGIES 2050 ©

Energy efficiency in buildings is usually promoted either through a combination of passive (natural cooling, ventilation, lighting, etc.) and active (efficient equipment, use of renewable energy) strategies.

Sustainable architecture belongs to the formers and aims to limit the negative impacts of buildings through a reduction in the use of space, materials, resources and energy as well as waste generation.
It can also contribute to reinforce the structure’s resilience to local climate and conditions, and reduce the building’s embodied energy and environmental footprint.

Sustainable architecture, usually based on bioclimatic and vernacular approaches, also enhances traditional and local knowledge and resources. Parameters of the local climate and surrounding environment (topography for example) are integrated to the building design with the aim to guarantee a certain level of comfort and limit the need for power hungry equipment such as air-conditioning.

To give a scale of the potential benefits, it was estimated that green buildings in general could save up to 70% in waste generation and 40% in water consumption compared to standards. They can also lead to reduction in construction costs, higher resilience to climate change, enhanced local employment, more healthy and productive users and sustainable economic growth.

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32 Chiffres disponibles via UNEP-SBCI 2012 et Keivani et al., 2010.
It is also worth noting that, with the right measures and according to the IPCC’s last report, energy demand in buildings could be reduced by 25 to 30% at low or negative costs, and total savings could reach 90% for new buildings (compared to benchmarks) and 75% for existing structures through refurbishment\textsuperscript{33}.

At cities and national levels, scaling up the number of sustainable buildings, especially when coupled with the use of renewables, could help to mitigate energy dependency to (often imported) fossil fuels. The efficiency of national grids will also be improved thanks to a reduction in peaks of demand, the development of decentralized sources of energy production, and a higher exploitation of domestic resources\textsuperscript{34}. This improved reliability will contribute to support the development of economic activities, through reduction in shortage and selective power cuts for example.

Through sustainable architecture, various aspects of sustainability will therefore be enhanced\textsuperscript{35}:

- Social and cultural sustainability (proven and safe building design which is culturally sensitive);
- Environmental sustainability, with resource efficiency in handling water, energy and waste;
- Economic sustainability with structures that are cost-effective over time.

\textsuperscript{33} O. Lucon et al. IPCC 2014, Buildings, Chapter 9 of the Working Group III contribution to the 5th Assessment report “Climate Change 2014 : Mitigation of Climate Change”, pp. 4-17, from IEA, 2012 and Pachauri et al., 2012
\textsuperscript{34} O. Lucon et al. IPCC 2014, Buildings, Chapter 9 of the Working Group III contribution to the 5th Assessment report “Climate Change 2014 : Mitigation of Climate Change”, pp. 4-17, from IEA, 2012 and Pachauri et al., 2012
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ROADBLOCKS TO SUSTAINABLE BUILDINGS IN DEVELOPING COUNTRIES

Whereas sustainable architecture and buildings could have significant benefits in developing countries, the definition of an inclusive strategy remains a difficult exercise considering the segmentation of this sector, the diversity of stakeholders involved, the divergence of interests, the cross-sectorial problems, the sprawling of informal settlements as well as the cultural and climate differences between regions.

As an example, building codes which are used to establish energy efficiency criteria for new or refurbished buildings in most industrialized countries proved more difficult to implement in developing countries due to:

- The dominance of the informal sector, which do not comply to any potential formal standard;
- A general lack of competencies and awareness, at all levels;
- The difficulties faced by Governments to enforce regulations;
- The need to adapt regulations to local climate and conditions, which require an intensive work of research and experimentation.

Figure 3. Countries having implemented building codes

http://publications.wri.org/buildingefficiency/
The following roadblocks can also be mentioned as significant barriers to the implementation of sustainable architecture policies in developing countries:

- **FRAGMENTATION AND INFORMALITY**
  The application of an integrated strategy in the building sector is a difficult exercise due to the variety of stakeholders involved and the interrelated cross-sectorial issues. The lack of coordination and mutualisation often lead to duplication of efforts and low efficiency of policies, which fail to exploit synergies and to enhance potential outcomes. The sprawling of informal housing and slums also makes the implementation of policies more complex.

- **LACK OF FINANCIAL MEANS**
  Cities in developing countries are usually limited by insufficient means and lack of active governance in addition to current demographic trends. Projects based on sustainable architecture often pay for themselves thanks to energy savings, but potential initial added capital costs are at the developers’ expenses while savings benefit building users. In addition, full life cycle assessments are in most cases not carried out and therefore energy and resources savings are too often excluded from decision processes.

- **LACK OF CAPACITIES**
  Professional are insufficiently trained to deal with the challenges of the transition towards sustainable buildings and construction. Sustainability issues are rarely integrated into conventional training programmes, forcing already experienced professionals to seek additional courses on their own. This need for capacity building not only concerns architects and urban planners, but all stakeholders from (local) government representatives to workers on construction sites and end users.

- **CULTURAL AND GOVERNANCE ISSUES**
  Whereas in developed countries, buildings based on vernacular architecture and traditional materials (earth, stone) can be highly demanded, the market in developing countries for these types of construction remains relatively low and unable to generate a momentum to attract private developers. The opposite even occurs as “modern” buildings, even though they are energy and resource intensive and unsuited to local climates, are often associated with wealth and development - when traditional materials remains culturally linked to rural life and poverty. In addition, innovative projects are generally confronted with governance issues and inertia that add to their costs. As a typical example, administrations are often reluctant to deliver construction permits for modern clay houses, as they doubt the resilience and quality of these structures.

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37 These roadblocks were enhanced during a range of workshops on sustainable buildings and cities organized by ENERGIES 2050, the United Nations Environment Programme and the Institute of La Francophonie for Sustainable Development (IFDD – Institut de la Francophonie pour le développement durable, subsidiary organ of the International Organisation of La Francophonie), as well as their partners, in several African countries in 2015-2016.
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THOUGHTS AND RECOMMENDATIONS FOR SUSTAINABLE ARCHITECTURE UPTAKE IN DEVELOPING COUNTRIES

Despite these structural barriers, nothing is definite and some measures could unlock a rapid development of sustainable architecture in developing countries. As an example, and as an answer to the current lack of demand, there is a clear need to reconsider vernacular architecture within a modern approach, so that it can fit the needs of the urban population. Researches are carried out and numerous good practices can already be found in particular within the touristic sector, where demand for buildings that respect traditions but still offer greater levels of comfort exist.

Figure 4. Clay wall of the Onomo Hotel in Dakar

Whereas traditional materials remain in many cases associated with poverty, rurality as well as lack of resilience, researches now focus on the use of improved local materials as an alternative. It involves a combination of local resources with, for example, cement, to create composite materials answering to modern needs, especially:

- Better efficiency, durability and stability requirements;
- Constitution of national industrial production networks eventually leading to costs reduction;
- Improved security regarding supply in materials and equipment.

38 https://www.facebook.com/pg/OnomoHotels/photos/?tab=album&album_id=1451719964872655
Improvements of local materials can be done at reduced costs, with simple technics and tools. It offers strong opportunities for the development of small companies (including within the informal sector) and creation of new employments, but this needs to be supported by relevant policies and the setting-up of norms and standards that guarantee the performances of these materials. Guidelines based on best practices along with the promotion of such materials in public buildings could help to spur on their developments.

More globally, policies related to sustainable architecture can only be addressed using a systemic approach, which also a focus on the training needs of all stakeholders. Result of these policies need to be measurable, reportable and verifiable to attract the necessary national and international funding. In this context, it is essential to (better) define and implement performance criteria and benchmarks in order to demonstrate the added value of sustainable architecture. This could include labelling and certification programmes and the creation of technical standards on natural and local construction/insulation materials, including thermal and technical characteristics, comfort aspects, fabrication processes, and quality and origin of materials.

Setting up flexible methodologies that stakeholders can adapt at the local level is also crucial. These methodologies must emphasise a life cycle and systemic approach that also integrate the question of informality. Pilot projects would help to raise awareness and convince decision makers. They could at first be supported by Governments, international organisations, or rely on economic sectors’ specific demands (e.g. tourism) to be quickly competitive.
Sustainable architecture policies will finally only make sense if they are integrated into wider sustainable urban planning policies, based on a participative approach and the collaboration of all stakeholders.

Urban planning has considerable impacts on a wide range of domains, such as:
- Waste management;
- Access to basic services;
- Environmental management;
- Transportation, as a crucial factor of social integration and energy consumption;
- Energy use and opportunities for renewables development;
- Land use and transformation of forestry areas / agricultural lands for urban extension;
- Resilience of cities to climate change;
- Agricultural production (urban agriculture).

With the current pace of cities’ development, there is in any cases an urgent need to define systemic processes and global methodologies to be used as references for sustainable buildings development. Taking these opportunities will require strong leadership at all scales, supported by a better coordination between stakeholders.
Reforms are also needed in institutions and local authorities, which are often reluctant to engage with innovative ideas and still tend to replicate models from developed countries.39

An "updated synthesis report on the aggregate effect of Intended Nationally Determined Contributions (INDCs)"\textsuperscript{40}, of the Secretariat of the United Nations Framework Convention on Climate Change (UNFCCC) was published in May 2016. It stressed out, in particular, that national commitments to fight climate change (the INDCs) remain insufficient to meet the 2°C target (and to a greater extent the 1.5°C target) set in the Paris Agreement\textsuperscript{41}.

But what could appear as an apparent fatality is in fact an opportunity to re-think our actions with a new and innovative bottom-up approach.

\textbf{Figure 5. Projected rise in the global temperature by 2100, based on emissions pathways from 1990 to 2030}\textsuperscript{42}


\textsuperscript{41} More information on the UNFCCC’s process of negotiations can be found online with the IFDD’s guide to the negotiations for COP22 http://www.ifdd.francophonie.org/ressources/ressources-desc.php?id=695


Estimations based on the following emissions: 38.7 GtCO2e (1990); 60.8 GtCO2e (2030: +4.8°C); 56.2 GtCO2e (2030: full implementation of INDC); 42.5 GtCO2e (2030: +2°C); 33.9 GtCO2e (2030: +1.5°C) drawn from the INDC summary updated by the Convention Secretariat on 2 May 2016.
Beyond the States’ lack of ambition, no one can ignore that cities and other sub-national authorities, but also the civil society, the private sector, financial institutions, local communities and indigenous peoples, have confirmed for several years their commitments to the fight against climate change and the promotion of sustainable models.

The important role of non-state actors was also largely recognized during COP21 and was recalled in the preamble of Decision 1/CP.21 of the Paris Agreement. The COP22 permitted to reinforce this recognition, notably with the Marrakech Partnership for Global Climate Action, which, once again, involves non-state actors in implementation by validating a program of action over the period 2017-2020, putting forward the indispensable role that the latter will have to play alongside the States Parties.

This engagement of all is besides supported by a wide range of international initiatives and programmes - we can mention here again, for local and regional authorities, the new Covenant of Mayors on energy and climate which gathers over 7000 signatories across 57 countries.

Figure 6. Covenant of Mayors Signatories Map

http://unfccc.int/files/paris_agreement/application/pdf/marrakech_partnership_for_global_climate_action.pdf
Website consulted on 27th of May 2017 - http://www.covenantofmayors.eu/Participation/covenant_map_en.html

http://unfccc.int/files/paris_agreement/application/pdf/marrakech_partnership_for_global_climate_action.pdf
Website consulted on 27th of May 2017 - http://www.covenantofmayors.eu/Participation/covenant_map_en.html
More globally, we are today at an historical crossroad where the Agendas of sustainable development and climate change come together, with a not-to-be missed opportunity to shift our development pathways, in particular within cities and buildings. The sustainable Development Goals programme set up by the United Nations for the period 2015-2030 have, for example, specific objectives focusing on the built environment, e.g. through the SDG11 on sustainable cities and communities, the SDG9 on Industry, Innovation and Infrastructure but also through cross-sectorial objectives on climate (SDG13), energy (SDG7) or economic growth (SDG8), among others.

Figure 7. The Sustainable Development Goals

In 2015 was also organized the third International Conference on financing for Development, in Addis Ababa with progresses which, along with climate dedicated funds available especially through the Green Climate Fund, could help to unlock the significant investments needed to support a sustainable built environment transition in developing countries.

All of these indicate that, in the years to come, there will be considerable opportunities for innovative and demonstrative sustainable architecture projects involving a wide range of stakeholders in developing countries. These are good signals but the need to reinforce stakeholders’ capacities remains so that they can access these funds in the frame of their daily activities.

Photo credit: United Nations
ENERGIES 2050 was born with the certainty that the current development trajectories of our societies are not inevitable. As an informal network since 2007 and, since 2011, as a French non-profit and non-governmental organisation working exclusively in the general interest, ENERGIES 2050 contributes relentlessly to the transformation of our societies for a more humane, plural and united future.

Gathering members and partners of more than sixty nationalities, ENERGIES 2050 works internationally to set up a new, positive and inclusive development model and to convert constraints into action. As a collective adventure in the quest for better ways of living together, ENERGIES 2050 is committed to the Great Transition, including the energy transition, sustainable cities and regions and the shift towards a more humane, plural and united society, bringing peace and respecting the common goods of humanity.

ENERGIES 2050 breaks its activities down into five complementary areas:

- Executing demonstrative and scalable implementation projects along with technical studies and research actions to show the possibilities for actions.
- Organising or attending meetings and conferences in order to create opportunities for exchanges and discussions.
- Publishing research results to pool and share knowledge.
- Educating, training and building capacities so that each individual can understand, know and act.
- Communicating to the greatest number to inform, mobilise and unit the desire to act.

ENERGIES 2050 implements projects in more than thirty countries and is active in the following topics: eco-development and sustainable development; climate, environment and energy policy; energy transition; development of renewable energy sources; buildings and the construction sector; challenges and opportunities in rural and urban areas; sustainable cities; responsible and sustainable tourism; natural resources and the common goods of humanity; ecological and environmental economics; responsible business dynamics and corporate performance; low-carbon development strategies; gender; environmental education; social dynamics; behaviour change and citizen action; and the social solidarity economy.

ENERGIES 2050 is a recognised player in climate change negotiations and in the sustainable development international agenda and contribute to the preparation and setting up of national and international strategies and action programmes. ENERGIES 2050 is also known for successfully introducing concrete mitigation and adaptation projects integrating gender issues with huge innovation potential and for deploying essential capacity-building programmes to support countries’ ownership and boost national excellence.

ENERGIES 2050 has, among others, been honoured to support several African countries in preparing their Intended Nationally Determined Contributions (INDC) within the COP21 preparation process as their contribution to the 2015’s Paris Agreement. The NGO has also supported some developing countries to produce briefing files for submission to the Green Climate Fund. The association has besides launched ethiCarbon Afrique® in 2015 which is a strong, solidarity-based and innovative tool designed to contribute to a real African energy revolution.
Sustainable buildings, cities and territories constitute one of the main focus of intervention of the NGO. The (non-exhaustive) list of activities below illustrates some of ENERGIES 2050 activities on sustainable cities and buildings:

**COUNSELOR AND EXPERT MEMBER OF THE UCLG AFRICA TASK FORCE TO HELP AFRICAN CITIES TO HAVE ACCESS TO CLIMATE FINANCE**

The United Cities and Local Governments of Africa (UCLG Africa), taking note of the difficulties encountered by African local and regional authorities in accessing climate finance in general and in particular the Green Climate Fund (GCF) has recently set up a Task Force and defined a roadmap proposing a set of actions to unlock this situation.

The ultimate objective is that cities to be in position to propose appropriate projects that meet the expected standards to be eligible for climate finance and the GCF in order to help financing the urban transition. It also involves strengthening the capacities of all stakeholders involve on climate-compatible urban policies, urban managers who implement them (spatial planning professionals, technical service managers, construction professionals and financial, legal, etc.) and civil society actors involved in this transformation (NGOs, companies, etc.).
THE FRANCOPHONIE’S INITIATIVE FOR SUSTAINABLE CITIES

ENERGIES 2050 is co-founder, with the IFDD (Institut de la Francophonie pour le Développement Durable, subsidiary organ of l’Organisation Internationale de la Francophonie – OIF), of the Francophonie’s Initiative for Sustainable cities. The goal is to enhance the implementation of sustainable urban strategies and to bring concrete answers to critical situations.

The Francophonie’s Initiative for Sustainable cities encourages links between cities and the exchange of best practice as well as the implementation of innovative and sustainable concrete solutions for cities that can be replicated elsewhere. The purpose of this initiative is to give a systematic approach to the implementation of sustainable development in cities that is practical, adaptable, transparent and comparable. This new approach is, in practice, like building a puzzle (the strategy) in which each piece (component topics and actions) is independent and essential but only useful when connected to the others as part of a planned, optimized and coherent organization.

This initiative has been designed and co-founded by ENERGIES 2050 with the goal of addressing the problem that, among the numerous existing initiatives for sustainable cities, very few are based on binding agreements or transparent methodologies, and on which many stakeholders are working but not necessarily together, resulting in inconsistent approaches and competition among actors to access the available funds, which are already insufficient.

The initiative is wide-reaching, not just through ENERGIES 2050 members, but also thanks to the OIF network of 77 states and governments (54 member states, 3 associated states and 20 observers), which together represent over one-third of the United Nations’ member states.
AFRICAN TRAINING MODULE ON ENERGY EFFICIENCY FOR URBAN AND CONSTRUCTION PROFESSIONALS

ENERGIES 2050, in partnership with the Institut de la Francophonie pour le Développement Durable (IFDD) and the African School of Architects and Urban professions (EAMAU – Ecole Africaine des Métiers de l’Architecture et de l’Urbanisme), has created and implemented, with the support of several institutional partners, a training module for African professionals in the built environment. The goal is to develop a good understanding of the challenges, as well as the strategies and the actions to implement in order to build or renovate buildings, infrastructure and urban development and, in general, Cities that meet the needs of today and tomorrow in terms of the energy transition.


The objective is to invite each participant to change their professional practices, taking into account the opportunities offered by the energy transition in terms of energy conservation, energy efficiency and integration of renewable energies. The aim is also to convey the strategies, tools, techniques and methods for integrating these issues so that everyone can act to improve their quality of life while implementing a better life together in a sustainable environment.

This training is divided into regional and national sessions:
- Regional sessions organised in Lomé run since 2012, gathering professionals from sub-Saharan Francophone countries. The first part of the fifth regional session was held in March 2017.
- The first two national sessions were held in Togo, Senegal and Burundi.
NUMEROUS PUBLICATIONS TO BUILD CAPACITIES

Among other, ENERGIES 2050 is lead author of the UNEP publication “Climate Finance for Cities and Buildings: A Handbook for Local Government”. This Handbook aims to help raise awareness among local stakeholders regarding climate finance and the challenges and opportunities for GHG mitigation in the built environment. It provides an overview of the main climate finance mechanisms, and discusses their relevance to the urban context. It also discusses key considerations for measurement, reporting and verification (MRV), which is crucial for building trust and keeping track of climate change mitigation activities.


FRANCOPHONE WEB PORTAL AND COMMUNITY ON SUSTAINABLE CITIES

ENERGIES 2050 is in charge of a dedicated web portal on Sustainable cities, within the first francophone information platform on sustainable development: MédiaTerre (5000 visits per day, http://www.mediterrae.org/).

ENERGIES 2050 is also in charge of animating a francophone community, on the same topic, on the Francophone portal on Innovation: FINNOV (http://www.francophonieinnovation.org/).
THE IMPLEMENTATION OF SEVERAL EUROPEAN PROJECTS

ENERGIES 2050 is involved in the project Trust EPC South, which aims at encouraging financing of energy efficiency (EE) solutions by creating up a framework for standardisation, assessment and benchmarking of EE investments, and in the project ENERFUND, aiming to develop a tool for stakeholders that will enable them to make better decisions with regard to energy renovation strategies and financing deep renovation of buildings. Both of these two projects receive support by the European Commission under the Horizon 2020 programme.

ENERGIES 2050 was also involved in the European project neZEH (nearly Zero Energy Hotels) which was co-funded by the Intelligent Energy for Europe Programme. The objective of this project was to support hoteliers in the implementation of measures aiming energy excellency. More specifically, ENERGIES 2050 was in charge of the implementation of the project in France, which notably included running two pilot projects.

POLICY SUPPORT AND ENGAGEMENT IN INTERNATIONAL INITIATIVES

The association has supported, as a team leader or within a consortium, the design of seven African countries’ INDCs (e.g. Senegal, Togo, etc.) ahead of COP21 in Paris, and also supports the development of climate and energy plans at territorial level.

A RECOGNIZED MEMBER OF SEVERAL INTERNATIONAL NETWORKS AND INITIATIVES

ENERGIES 2050 is a member of the MAC (Member Advisory Committee) of the Sustainable Buildings and Sustainable Buildings Program of the United Nations 10-Year Framework Program on Sustainable Consumption and Production (SCP 10YFP). The NGO is also part of the Global Alliance for Building and Construction (GABC) as well as of the United Nations Environment Program Sustainable Buildings and Construction Initiative (UNEP SBCI) and the Global Initiative for Resource Efficient Cities Global for resource-efficient cities (GI-REC).
NGO ENERGIES 2050

As an informal network since 2007 and, since 2011, as a French non-profit and non-governmental organisation working exclusively in the general interest, ENERGIES 2050 contributes relentlessly to the transformation of our societies for a more humane, plural and united future.

Gathering members and partners of more than sixty nationalities, ENERGIES 2050 works internationally to set up a new, positive and inclusive development model. As a collective adventure in the quest for better ways of living together, ENERGIES 2050 is committed to the Great Transition, including the energy transition, sustainable cities and regions and the shift towards a more humane, plural and united society, bringing peace and respecting the common goods of humanity.

Today, ENERGIES 2050 implements projects in more than thirty countries.

Read more: http://www.energies2050.org