



**AIN**  
Africa Inhabitation Estimation

**1<sup>ST</sup> EDITION**

# **AFRICAN CITIES MAGAZINE**

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**RESILIENT AND SUSTAINABLE CITIES  
THROUGH INNOVATIVE SOLUTIONS**

**URBAN PLANNING INNOVATION**

**ARCHITECTURE AND INNOVATION**

**AFRICA'S ARCHITECTURE AND URBAN HERITAGE**

**CITIES PIXELS AND COLORS**

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# FOREWORD



**Leandry JIEUTSA**  
Founder of Africa Innovation Network

African cities are home to almost half the continent's population, which is expected to double to 2.5 billion people over the next 30 years. It is also projected that 950 million more people will be living in African cities over the same course of time. For example, Lagos the capital city of Nigeria and also one of the fastest-growing cities in the world, will reach more than 32 million inhabitants by 2050. Whilst, cities and urban areas across the continent face major challenges (poverty, unemployment, poor housing, lack of basic services), African cities are also land of beauty, diversity, and opportunity exemplified through resilient and sustainable innovations. Indeed, more sustainable and resilient African cities will multiply change due to the concentration of economic activities, innovation, job creation, and empowerment in urban areas; This will allow city dwellers to enjoy the potential of cities through social transformation, inclusion and integration.

At Africa Innovation Network, we bring together experts in diverse and varied fields to offer sustainable and innovative solutions to complex problems linked to the continent's urbanization in order to improve the quality of life of all. Through human-centered approaches based on frugal innovations, we aim to cover all fields enabling sustainable and resilient societal development.

Each 31st October on World Cities Day, we will publish a magazine dedicated to African cities. This year, the AFRICAN CITIES Magazine on resilient and sustainable development through innovative solutions, is the first edition of this annual magazine. With a series of innovations, initiatives, and projects on urban planning, architecture or design, this first edition will showcase how innovative ideas and solutions shape urban systems into more resilient, inclusive and sustainable human settlements in Africa. Through different portraits and interviews of practitioners, innovators, and change makers in architecture and urban development, we hope to share experiences, examples, best practices and tools for a more sustainable future. We also hope to showcase the beauty, diversity, challenges, and opportunities in African cities of today, as well as paint a picture of what the cities of tomorrow will look like.

We hope you enjoy this first edition of our magazine and that it encourages you to be more actively involved in the establishment of more inclusive, resilient, and sustainable cities in Africa.

# AFRICA INNOVATION NETWORK



**Leandry JIEUTSA**  
Urban planner  
**Founder**



**Bouchra IDRISSE.T**  
Urban planner  
**Principal manager**



**Corianne RICE**  
City Innovation  
Program Specialist  
**Member**



**KHAOULA BRIOUEL**  
Urban planner  
**Member**



**Hind REZOUK**  
Architect  
**Member**



**Joel Mukalay  
KINE MUKENA**  
Architect  
**Member**

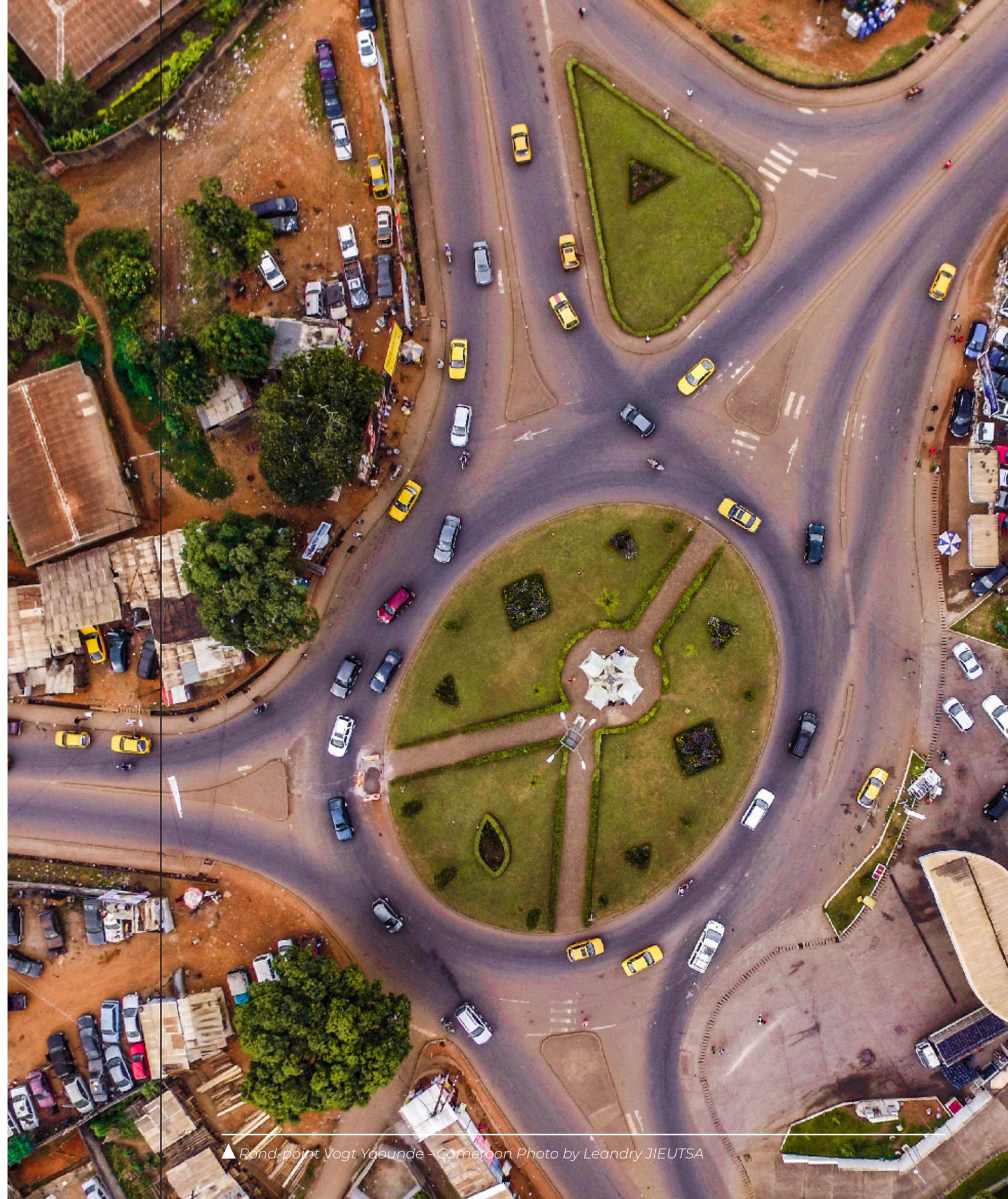
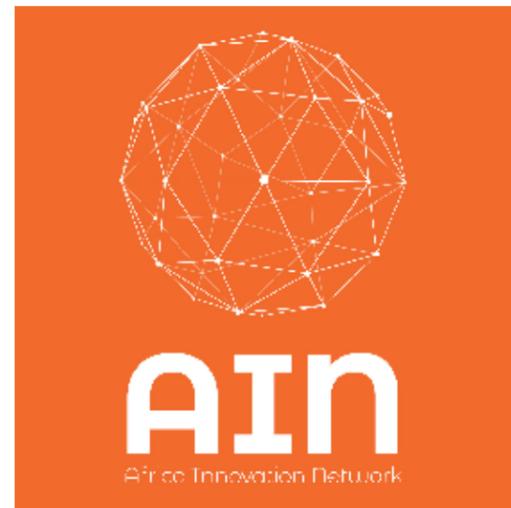


**Stephen SARFO**  
Urban planning  
student  
**Member**

**A**frica Innovation Network brings together experts in diverse and varied fields to offer sustainable and innovative solutions to complex problems linked to the continent's urbanization in order to improve the quality of life of all.

A veritable laboratory for thinking about and implementing solutions adapted to the context of the continent, the target themes of the Africa Innovation Network cover all fields enabling sustainable and resilient societal development throughout Africa. These themes are grouped around the main axes : Inclusive cities; Innovation & Technology; Environment & Climate action.

Our approach is human-centered and based on frugal innovations. We are developing simple, participative ideas and solutions to make our cities and our rural areas a better place for all. Our work is based on creativity and innovation to propose solutions that help to build a better future in our cities for all. Initiatives of Africa Innovation Network are made to analyze, understand and develop solutions in order to promote sustainable development in our cities.



▲ Rond-point Vogt Yaounde - Cameroon Photo by Leandry JIEUTSA



# URBAN PLANNING INNOVATION



▲ Yaounde bastos neighborhood- Cameroon Photo by Leandry JIEUTSA



URBAN PLANNING INNOVATION

# COVID-19 AND AFRICAN CITIES



▲ People leaving Antananarivo Photo by the World bank



▲ A health worker takes the temperature of a person in the Kibera, Kenya Photo by REUTERSBaz Ratner

## COVID-19 AND AFRICAN CITIES

Since the end of February 2020, Africa has been going through a difficult period marked by the Coronavirus pandemic which affects the whole world. Indeed, Africa has recorded more than 1,437,297 cases with 34,696 deaths according to the COVID-19 Daily Situation Update, WHO Regional Office for Africa, as of 25 September, 2020. The ten most affected countries are the South Africa, Morocco, Egypt, Ethiopia, Nigeria, Algeria, Ghana, Kenya, Libya and Cameroon.

This distressing record of Covid-19 is more pronounced in metropolitan areas; main

gateways to countries, followed by other cities. However, these urban areas, being the most vulnerable to COVID-19, concentrate nearly 44% of Africans (UN population projections, 2020) with nearly 47% of urban dwellers living in precarious habitats in 2019 (UN-Habitat, 2020). Thus, AIN questions the resilience of these African cities in the face of COVID-19 on the economic, environmental, social and cultural levels. How did the clash between African cities and covid-19 go? What control measures have been developed? And which of these measures tend to have a lasting impact on the daily life of Africans?



▲ Temperature measurement in Kampala photo by AFP/Sadumi

### “ A decrease of 3.2% of the GDP ”

According to the United Nations Economic Commission for Africa (UNECA), GDP growth in Africa will decline from 3.2% to 1.8% in 2020 with multisectoral economic impacts such as job losses in a context where 71% of urban residents work in the informal sector (UN-Habitat, 2020) and therefore do not benefit from any social protections. There has also been a sharp decline in the tourism industry, particularly in cities such as Marrakech, Tunis, Dakar, etc. coupled with the reduction in the volume of trade due to travel restrictions and the drop in demand: for example, Africa's exports to the EU alone are almost 35% (OECD (Organization for Cooperation and Development Economic), May 2020). Positive impacts are also to be noted, notably with the sharp increase in demand for sanitary and protective equipment; the increase in agriculture practices due to the slowdown of activities in the tertiary and secondary sectors. This has contributed to an increase in yields and the fall in prices for certain local agro-pastoral crops such as: tomatoes, peanuts and poultry, due to the surplus caused by the export limit.

### “ Diverse and resilient economic measures ”

Faced with all this, adaptation measures have been varied and diverse, such as financial aid or in kind. The city of Dori, for example, has set up a communal solidarity fund to help its population. As well as some African countries which have initiated emergency plans with billions of dollars: Ethiopia, Cameroon, Sao Tome and Principe, etc. coupled

with the delivery of essential provisions in West and Central Africa by the WHO, WFP and AU or solidarity between countries on various aspects.

This pandemic has also enabled the emergence of NICTs: this to continue to function and ensure ongoing services such as education via e-learning. In addition, in terms of urban mobility, there has been an increase in urban and interurban travel costs: following measures to restrict travel and reduce the number of places in transport. The health crisis has also favored the emergence of a local covid-19 industry with the production of masks, gels, etc. This allows the informal sector, which establishes nearly 71% of city dwellers, to meet a clear demand for these protection tools while carrying out an income-generating activity. This crisis has nevertheless highlighted the importance of ICTs in the functioning of urban systems in Africa with, for example, e-learning, mobile banking and the dematerialization of services.



▲ People take precautions against COVID-19. Photo by Ousmane Traore (MAKAVELI)

” Increase in fractures and social disparities ”

Although relatively spared, African cities experienced a rapid spread of the virus at the start of the pandemic, according to the COVID-19 in African Cities Report. As the virus traveled from airport hubs to large urban centers, the number of confirmed cases increased by 2.04% from durinf the first months. The social impacts of this spread were evident in several different ways. First, many families were evicted from their homes for missing rent payments. In Kenya, for example, 30.5% of households were unable to pay their rent due to the loss of their employment. Second the insufficiency of basic services is also notable with 53% of urbanites not having had access to services allowing hand cleaning in Africa. In addition, under-equipment in care services also had a significant impact in the management of the crisis, with only an average of 1.8 beds available per 1,000 Africans; and 23 health professionals per 10,000 inhabitants. Fourth, there was an increase in gender-based violence within families during the period of confinement. In Mali there was a 35% increase in this rate of violence in 2020 compared to that of 2019 according to a study conducted by the representative of UNFPA (Regional Office of the United Nations Population Fund for the 'Africa).

masks, applied in practically all African countries with difficulties of implementation in some locations. Curfews and total lockdown in several African countries, have led to family separation and the breaking of certain social ties. Nearly 23 African countries have imposed a curfew. Some, more flexible countries have also opted for a partial lockdown (high-risk areas): 15 cities in Benin, Libreville in Gabon, etc. There has also been an increase in the number of sanitation facilities and facilities to accomodate contaminated people and/or materials. This is evident in the case of Uganda (where the Namboole stadium became an infirmary with nearly 1,500 beds), Cameroon (where social housing of de Bafoussam was transformed into an isolation center). In terms of education, we note the closure of educational establishments and the suspension of classes. However, this measure has created inequalities in education because the most underprivileged could not afford internet access. We have also noted a liberation of prisoners to limit the spread in these areas: Several African countries, like Ethiopia, Morocco, Cameroon, Tunisia, Nigeria, have liberated prisoners in an attempt to limit the spread of the disease.



▲ COVID test on a women Photo by OMS



▲ Social workers helping population



▲ A health worker teaches children how to wash their hands in Umlazi township South Africa, 2020 Photo by (Reuters)

” COVID-19: an ally of environmental protection in African cities? ”

From an environmental standpoint, this crisis has led to a decrease in GHG emissions due to the reduction in urban transport. It has allowed for an increase in plant cover due to the time allocated to agricultural practices. In addition, there has been an increase in special waste relating to barrier measures such as masks and plastic boxes for gels. This crisis has also shed light on the place of soft travel in African cities and the preferred modes of travel in this context.

” Emergence of traditional African medicine ”

COVID-19 is also shaping the cultural fabric of African cities. First of all, the local African pharmacopoeia caused much ink to flow during this crisis. From one medicinal plant alone, we have seen several homegrown responses to the disease. For instance, Artemisia has been used to develop COVID-Organic in Madagascar and a potion by Monsignor Samuel Kihéda in Cameroon. This reveals the importance of local products and the need for African cities to preserve forests and natural areas that are the heart of biodiversity. Second, we have seen a decline in cultural activities in accordance with African customs and traditions. For one, many burial rituals have had to change, impacting the way many African families memorialize their loved ones. The cultural industry is also a victim of the crisis with the cancellation of cultural events and activities. Many cultural actors have mobilized to raise awareness about COVID-19 both through graphic or musical arts and on social and media platforms.

” Effective measures or factor increasing inequalities? ”

Faced with this, measures have been adopted, such as social distancing of one meter and the wearing of



URBAN PLANNING INNOVATION

## NEW GENERATION OF URBAN DEVELOPMENT PROJECTS IN AFRICA





Aware of this state of affairs, the Senegalese political authorities have set up steering and guidance instruments; in particular, Act 3 of Decentralization, and the emerging Senegal Plan (PSE) which are now the frameworks for action and intervention. On the basis of these frameworks for action, and faced with the challenges and issues of the country's development, the Senegalese public authorities launched the "New City" project in 2014. This city aims, firstly, to relieve congestion in the capital Dakar, with a transfer of the headquarters of several public institutions and, secondly, to be the new Senegalese showcase in all areas (knowledge economy, tourism, industry, and international sports competitions).

“ A new city but not only ”

Diamniadio is located in Dakar's hinterlands, roughly thirty kilometers from its center. Built on a site of 1,644 ha, it plans to house nearly 300,000 inhabitants who will be distributed in four zones or districts. The first district, is intended to the international attractiveness of the country with high-standing hotels, the omnisport stadium and an exhibition park. Oriented towards the knowledge economy, the second district should, according to the plans of the Senegalese authorities, become a Mecca for research and scientific and technological innovation. Specializing in STEM (science, technology, engineering and mathematics), the future Amadou Mahtar Mbow University will be its epicenter. The activities of the third district are especially focused on manufacturing industry and logistics, are structured around an integrated industrial park with a surface area of 52 ha, which has already hosted its first factories. According to the authorities, this park will be able to accommodate about sixty companies, allowing the creation of more than 20,000 jobs.

▲ Diamniadio Lake City Main Site Photo by environnement-afrique.com

## THE NEW CITY OF DIAMNIADIO-SENEGAL

“Help, Diamniadio Dakar suffocating”

The conclusion is clear! With more than half of the population living in urban areas, Senegal has one of the highest urbanization rates observed in sub-Saharan Africa (40%). In this country, the proportion of urban dwellers has almost doubled in recent decades - from 23% in the 1960s to 43% in 2013 - and is expected to reach 60% by 2030. However, this growth and urban pressure is mainly experienced in Dakar, the capital. This is the economic lung of the country and its showcase. Following the example of some African capitals, Dakar is experiencing problems in all directions, which has a negative impact on the quality of life, its competitiveness and its attractiveness.



▲ Diamniadio office buildings



▲ *BLAISE DIAGNE Airport of Diamniadio Photo by lechotouristique*

“ *Public-private partnership for a sustainable project* ”

The implementation strategy essentially comprises three phases from 2014 to 2035. The emergence or attractiveness phase (2014-2019), during which certain strategic facilities have been built mainly by the State to boost the attractiveness of the site to private developers (DAKAR-ARENA Stadium, the Ministerial spheres, etc.). The development phase (2019-2025), during this phase, the State supports the installation of developers and invests very little. The phase of continuous development (2025-2035), during which the area develops by ripple effect. The financial package for the new city was provided by a revolving system mobilizing all the structures of the State in order to allow the State to keep a permanent eye on the activities. To this end, incentives and special regulatory provisions have been introduced to attract investors. It is in this sense

that the land is made available to investors through emphyteutic lease at a symbolic price. In return, every investor is required to make a minimum investment of one (1) billion XOF for one (01) hectare of land acquired in the area. In order to be able to recover and reinvest the land capital gain (revolving) and to avoid it being injected into the Public Investment Budget (PIB) circuit, a set of buffer companies has been created in order to build and manage some of the cluster's infrastructure. In addition to vast urban forests, particular emphasis in this project is placed on the choice of building materials and the power supply system. For example, there are solar power plants to supply several facilities. To allow for better social integration, the industries located in the industrial zone are obliged to give priority to employing local Senegalese labour, and the effectiveness of this measure is monitored by the Agence d'Aménagement et de Promotion des Zones Industrielles (Agency for the Development and Promotion of Industrial Zones).



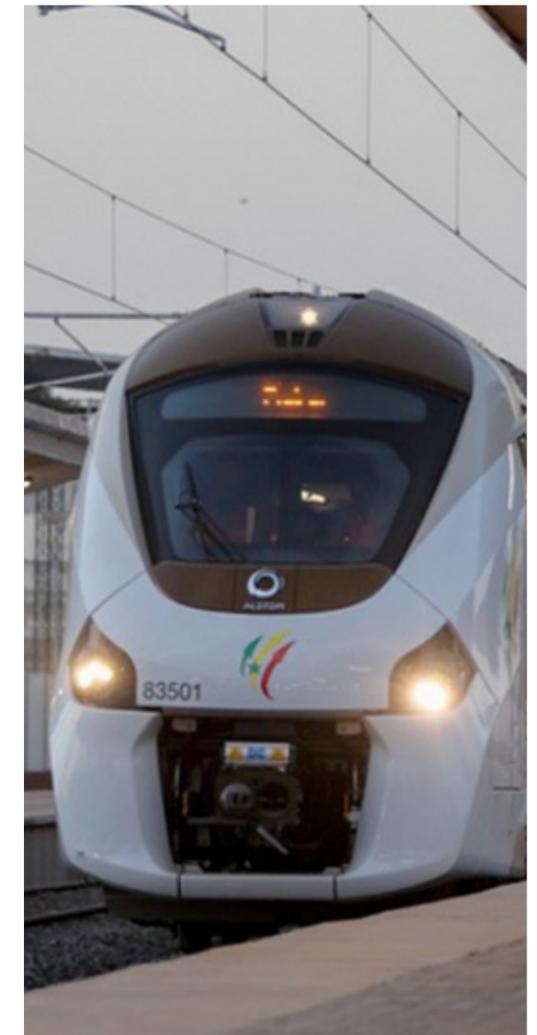
▲ *Industrial platform Diamniadio Photo by skyscrapercity.com*



▲ *Dakar Arena stadium in Diamniadio, 2018 Photo by SEYLOU*

“ *The challenges of Diamniadio: diversity and inclusion* ”

Social mix and inclusion remains one of the major challenges of this city. Indeed, while institutional mix can be ensured, social mix seems to be a difficult equation to solve for the promoters of this project. Indeed, for a project financed by mainly foreign funds, it becomes difficult to allow a complete social mix in view of the high standard of the housing and buildings. Moreover, the economic development model carried by this new city risks excluding the small local economy in favor of large foreign industrial groups.



▲ *Diamniadio, TER*



▲ Green City of Benguerir Photo by SADV OCP Group



▲ Data center in the green city of Benguerir Photo by behance.net

## THE GREEN CITY OF BENGUERIR IN MOROCCO

“ A new city whose identity revolves around knowledge, research, and sustainable development ”

The green city of Benguerir is one of the most important sectorial development projects in Morocco which takes part in a long-term environmental strategy of the country. It holds the big ambition of becoming the first green city in Africa.

The city is planned to cover an area of 1,000 ha for a population of 100,000 inhabitants. It is located next to the town of Benguerir, with an ideal location close to two main cities of Morocco: Marrakech and Casablanca. The Green City aims to establish itself as a world-class academic hub with the vocation of offering an appealing eco-friendly living standard centered around knowledge and learning. The project was conceived as a national laboratory where the OCP wants to experiment all the innovative aspects of



▲ The green city of Benguerir Photo by <http://ssadbenkirane.com>

the future of the urban planning, with a new model which places nature and local knowledge at the heart of the city, and tests new architectural designs based on bioclimatic materials and modes of governance of urban services based on renewable energies. In terms of urban planning, the project sets up a polycentric green flow that forms the structure of the general organization of the city that develops from North to South over nearly 4 Km. While taking into account the presence of talwegs and oueds, with a string of 5 inserted oases that constitute microclimates, housing cultural, and leisure programs. One of the biggest ambitions of this project is to show that there are different ways of making a city, what the urban planning of the future should be, and where a city is a space of knowledge and innovation.

” UM6P: applied research and innovation with a focus on Africa ”

One of the main components of this project is Mohammed VI Polytechnic University, an institution oriented towards applied research and innovation with a focus on Africa. The University is engaged in economic and human development and puts research and innovation at the forefront of African development.



▲ UM6P Benguerir Photo by marocnews.fr 2020

A mechanism that enables it to consolidate Morocco's frontline position in these fields, in a unique partnership-based approach and boosting skills training relevant for the future of Africa. Located in the heart of the Mohammed VI Green City, Mohammed VI Polytechnic University intends to shine on a national, continental and international scale. More than just a traditional academic institution, Mohammed VI Polytechnic University (UM6P) is a platform for experimentation, a breeding ground for opportunities, which students refer to as a "School of Life."



▲ UM6P Benguerir Photo by marocnews.fr 2020



▲ Mohammed VI Polytechnic University Photo by Ricardo Bofill

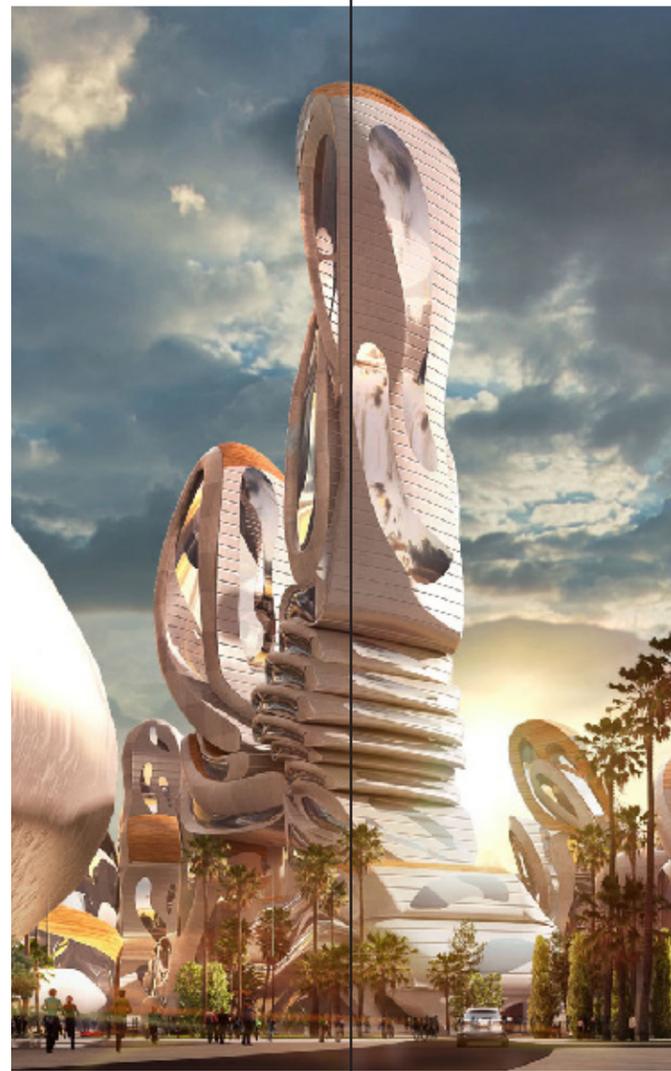


▲ Akon City Photo by akoncity.com

## AKON CITY- SENEGAL

“ A smart city  
with its own  
cryptocurrency ”

The laying of the foundation stone in August 2020 marked the concretization and materialization of this ambitious urban smart city project. With a futuristic architecture combining modernity and tradition inspired by African sculptures, Akon city will be located on the site of the small village of Mbodiène, on the Atlantic coast, a hundred kilometers south of Dakar at a total cost of \$06 billion. The new city will be home to a technological and cultural center, film studios, hotels, a university, hospitals, business and leisure centers, sports facilities and more. This city focuses on technology through its design in advanced materials and its operation turned to digital. Indeed, its operation will revolve around a new cryptomoney called AKOIN. The vision of this currency is to implement is a cryptomony powered by a market of tools and services that feed the dreams of entrepreneurs, business owners and social activists who connect and engage in emerging economies in Africa and elsewhere.



▲ Akon City Photo by akoncity.com

“ An original, offbeat  
and controversial  
approach ”

Considered as one of the avatars of modernity in a context where Senegalese cities and sub-Saharan cities in general are facing basic difficulties, this project is at the heart of many debates and controversies, both within the world of city actors including local populations and within that of social science researchers.

Nevertheless, African countries have entered into a new urban revolution and the dynamics of a new innovative and sustainable urban development has been launched in several countries of the continent. Planned to house approximately 300,000 people, Akon City is leveraging technology and sustainable solutions to build a resilient and inclusive urban environment. Through Akon Lighting Africa, a company whose objective is to electrify Africa with solar energy, Akon City will place particular emphasis on the ecological aspect by making maximum use of renewable materials, primarily of African origin.

The challenges facing African and Senegalese cities are diverse and are becoming more pronounced with galloping urbanization. It is with this in mind that the singer Akon, in an effort to boost the development of Africa in general and Senegal in particular, has taken the initiative to build an intelligent city that is part of the new

language of contemporary urban manufacturing. Indeed, this project poses an original and offbeat approach to meet the challenges of African cities by turning to technological development and innovation as the keystone. Thus, it is now obvious that the future of manufacturing processes and urban production in Senegal and in Africa in general, will rely heavily on smart urban development tools.

“ Which smart city  
model in Africa? ”

The digitalization of African society, on the one hand, and the imperatives of sustainable urban development, on the other hand, now seems to impose the smart city as an imperial based on two intelligences; human and artificial. However, a certain distance needs to be kept from intelligent urban development in the African context, because beyond the saving approach it seems to carry, the smart city in Africa could be part of a "glamorous" and "ceremonial" urbanism that seems to hide certain illusory aspects that such a model carries within itself. Indeed, if the smart city does not rely on a holistic approach to development, drawing on the socio-cultural context to produce people-centered cities, the smart city in Africa will remain nothing more than a façade disconnected from the real needs and well-being of the population. Hence the absolute necessity to see the smart city in Africa as a tool for achieving sustainable development and not as an end in itself.





▲ Sèmè City master plan Photo by DR

## SEME CITY-BENIN

“ City of innovation and knowledge ”

In the Republic of Benin, strategically nestled between its economic capital (Cotonou), the administrative capital (Porto-Novo), and the economic capital of neighbouring Nigeria (Lagos), is the country's first smart city and innovation campus: Sèmè City. Planned over 200 ha in the peri-urban area Sèmè-Kpodji, Sèmè City is defined by its director Claude Borna as "a unique place that supports and trains the talent of tomorrow, and which promotes innovation made in Africa." Investing in knowledge and innovation are two essential strategies for the growth of a continent with the youngest population in the world. Indeed, of Africa's 1.2 billion people, 60% are under the age of 25.



On one hand, this benefits the continent by providing an able, willing workforce. On the other hand, there is a disparity in the skills of these young people and those in demand by Africa's rapidly changing economies. Meanwhile, the continent recognizes its economic transformation hinges upon the promise of young entrepreneurs. This is where Sèmè City comes along. This one-of-a-kind campus looks to foster collaboration between students, entrepreneurs, academia and researchers to address Africa's economic challenges. Its mission is to give young people the opportunity to create solutions that generate value and create employment around three key areas: research, training and high-growth entrepreneurship. Through this alliance, the project hopes to create sustainable, strategic, and affordable innovations for inclusive African development.

“ Foster partnerships and youth empowerment for a brighter Africa ”

Construction of the project began in 2017 and will continue in successive phases until completion targeted for the end of 2021.

The site aims to attract students and private partners from a wide range of sectors including, but not limited to agriculture, design, energy, nanotechnology, programming, sustainable tourism and robotics. Support is offered from best-in-class academic institutions, research and development centres and incubators all within a major West African economic and communication axis. In addition, Sèmè City offers incentives for investment and the creation of innovative companies. Together, these enticements aim to help this eco-city:

- Create over 100,000 jobs by 2030, 1/3 of which will be self-employed and 40% of which will be held by women
- Become the partner of choice for projects in strategic areas of innovation
- Realise regional sustainable development goals

“ African solutions by Africans in a stimulating environment ”

The site is not only designed to foster economic growth and the experimentation of city-wide innovations, it also seeks to provide unique living and working conditions. One new workspace is Sèmè One, a multifunctional building located in Cotonou. This 4,250-square-metre (45,750-square-foot) building includes an information and orientation centre, flexible classrooms, co-working spaces, research laboratories, an auditorium, a language and computer centre, a library, offices, meeting rooms and restaurant space. Among the fully equipped facilities, students can access:

- Programs and courses from leading institutions and experts
- Seed funding for start-up projects
- Mentoring support
- Networking opportunities

The underlying belief behind Sèmè City is that Africans must confront their challenges with African solutions in order to provide the continent's youth with transformative, socially impactful and inclusive opportunities for the future. This is what it means to synchronize the distinctive assets of an African city's ecosystem with the latest technological innovations, and this is what it means to have 'Innovation Made in Africa.'

# INTERVIEW

## ROMARICK ATOKE

”Architect HMONP  
Head of Architecture  
& Urban Design,  
at Sèmè City  
Development Agency”

**Dear Romarick It's a pleasure to have you for this interview. Could you please tell us what's your background, personally and professionally?**

Thank you, the pleasure is shared and I am happy to speak with you as part of this first edition of the magazine African Cities by Africa Innovation Network. I am Romarick ATOKE a Beninese HMONP Architect, Designer and Director of the Global Archiconsult Architecture firm, which operates throughout Africa and mainly in the West Africa sub-region. I am also in charge of Architecture & Urban Design, at the Sèmè City / Cité Internationale de l'Innovation & du Savoir (CIIS) Development Agency. Founding President of AFRIKArchi, I also have as a passion for photography that I practice as an Architecture, Urbanism and Landscape Photographer.

**As an African Architect with international background and a huge commitment for the promotion of architecture in Africa what is the meaning of resilient, sustainable, and smart in Africa's cities for you?**

Functionality. For this is the starting point, above all, the African city must be functional by meeting the needs of city dwellers in several areas such as mobility, urban service provision,



housing, etc. Our cities should meet the needs of populations before talking about these concepts of sustainability, resilience and smart, which can be tools in achieving urban functionality.

Think smart. First of all, the African city must think smart, because the smart must not only refer to technology. Thinking smart refers to the optimized management of natural resources, particularly water by collecting and reusing rainwater, treating wastewater by phyto-purification for reuse. The first aspect is therefore a holistic approach aiming to think smart to achieve sustainability and resilience without necessarily using technology. The second aspect of the smart city in Africa relates to Data. It is about setting up cities that use data to optimize the quality of provision of urban services in education, health and public service. For example, our cities can optimize the quality of public transport by digitizing the service to better understand user behavior and adapt the transport system to uses.

Building materials. When it comes to sustainability, I think it mostly refers in our context to building materials. We must advocate the use of materials adapted to our climatic context and offering better thermal comfort, while reducing the carbon footprint of our cities. Energy is also an important aspect; we have excellent capacities in terms of renewable energy and we must develop them especially through the use of photovoltaic panels.

**Sèmè City is an ambitious smart city project in Benin that you are working on, what is the vision of this project ?**

Sèmè City is indeed a very ambitious project. The State of Benin plans to build a fully functional, intelligent and environmentally friendly city over around 200 ha. To carry out this project, it was a question of avoiding the "copy and paste" of the Western smart city"

model in order to opt for local solutions. Sèmè City aims to be an inclusive project that combines both urban and rural by promoting local materials and integrating the know-how of the locals rather than ousting them from the project.

**What are the main innovations of Sèmè City in terms of resilience, sustainability, or smartness in the African context?**

The project is an innovation and knowledge campus that will house 60% buildings and 40% green space. It incorporates fairly precise principles in particular: taking into account the rugged terrain in order to take advantage of the constraints, the use of the site's morphology in the installation of the sewage network, the recycling of waste water, the use of solar energy for lighting public spaces, designing buildings that do not consume a lot of energy, etc. In addition, one of the originalities will be the use of local materials (earth, straw, wood, bamboo) with modern technology adapted to ensure the durability of the work.

**Building upon the entrepreneurial nature of Sèmè City, what innovations do you wish you could bring to either the architecture, engineering or construction space and why ?**

In terms of general innovation, several approaches have been developed. We have already developed the concept of the "Human urban lab" which is a think tank open to all researchers, doctoral students, and experts to test initiatives and develop local solutions. It will therefore be after validation of innovative ideas to produce prototypes which, once successful, can be implemented on a real scale. It is an approach to allow various actors to propose innovative solutions adapted to the African context.

**What is your vision for the future of African cities?**

I keep a fairly optimistic vision of the African city by 2050. Through the ambition and commitment of our leaders combined with the determination, the expertise and the know-how of the actors of the city that we are, this African city will be a resilient and sustainable city. But above all, it will be a city built by ourselves, which looks like us, and reflects our identity, notably through its architecture and its mode of operation. To achieve this, of course, there are many challenges to be taken up, in particular education and awareness of the population about the new lifestyles and uses that this sustainable city will involve. The development of digital technology offers many opportunities for our cities and we must fill the gap that there is at this level to be a major player in the digital transition in our cities. Population growth and urban sprawl are also major challenges that must be addressed in order to ensure the establishment of inclusive and sustainable cities. But I have no doubt that we will meet all these challenges and succeed in building inclusive, sustainable and resilient cities that use technology and innovation to ensure the well-being of citizens.

**What would your advice be for the next generation of African architects?**

The main advice I can give to this generation that I also think I belong to is to be creative. Avoid copy and paste because our challenge in African cities is greater, so we must always remain in a dynamic of creativity and innovation, in order to offer solutions adapted to our local realities. The positive point is that there are more and more very ambitious and talented young people on the continent, I think we have to keep this momentum and stay in a

spirit of sharing. Because with the butterfly effect, sharing knowledge with two other people is at the end of the chain several other people who will benefit and it is Africa that wins. And finally, don't always wait to get paid for everything you do for Africa, but see further. I think with all of this we will have a radiant Africa by 2050.

**Thank you for your availability and for answering our questions for this magazine**

It's me who thanks you, it's always a pleasure to share and good luck to African Cities magazine by Africa Innovation Network.



URBAN PLANNING INNOVATION

**URBAN PLANNING INNOVATIONS IN AFRICA**



# FREE AND OPEN SPATIAL INFRASTRUCTURE FOR RESILIENT DEVELOPMENT IN CAMEROON

the rural exodus and more often the activating agent that cause these exodus is extreme climatic conditions. These populations increase the effectiveness of cities and exerts an additional pressure on it. This leads to anarchic constructions in non-constructible areas exposed to flooding and landslides. This additional pressure also leads to the degradation of rare green peri-urban spaces and in long term may influence negatively the urban microclimate.

Another consequence of this rural exodus and urban poverty is the increase in informal transport systems among which we have, moto cycles, taxi cars which increase congestion and the CO2 emission. Added to these all, there is also the rise of waste management problems.

The potential effects of climate change have to be well understood and taken into consideration in order to reduce vulnerability in urban areas. In this context, spatial analysis of geographic information constitutes a major tool in assisting decision taking. Good and accessible geospatial data is hard to come by in Africa and the

## ”GeoCameroon”

Cameroon like many other African countries is undergoing a fast urban population increase due to rural exodus mostly caused by poverty. This leads to an increase in urban pressure that causes traffic congestion, pollution, waste management problems, anarchic constructions in risk areas and many other issues. These problems are compounded by a lack of data to help have a better insight of the situation in order to make better decisions regarding sustainable development. Faced with this situation, GeoCameroon was developed (<http://geocameroun.cm/>), a free and opensource Spatial Data Infrastructure (SDI) for a resilient development of Cameroon. Despite Cameroon's ratification of international climate change

”How do we proceed in a context of lack of basic geographical data?”

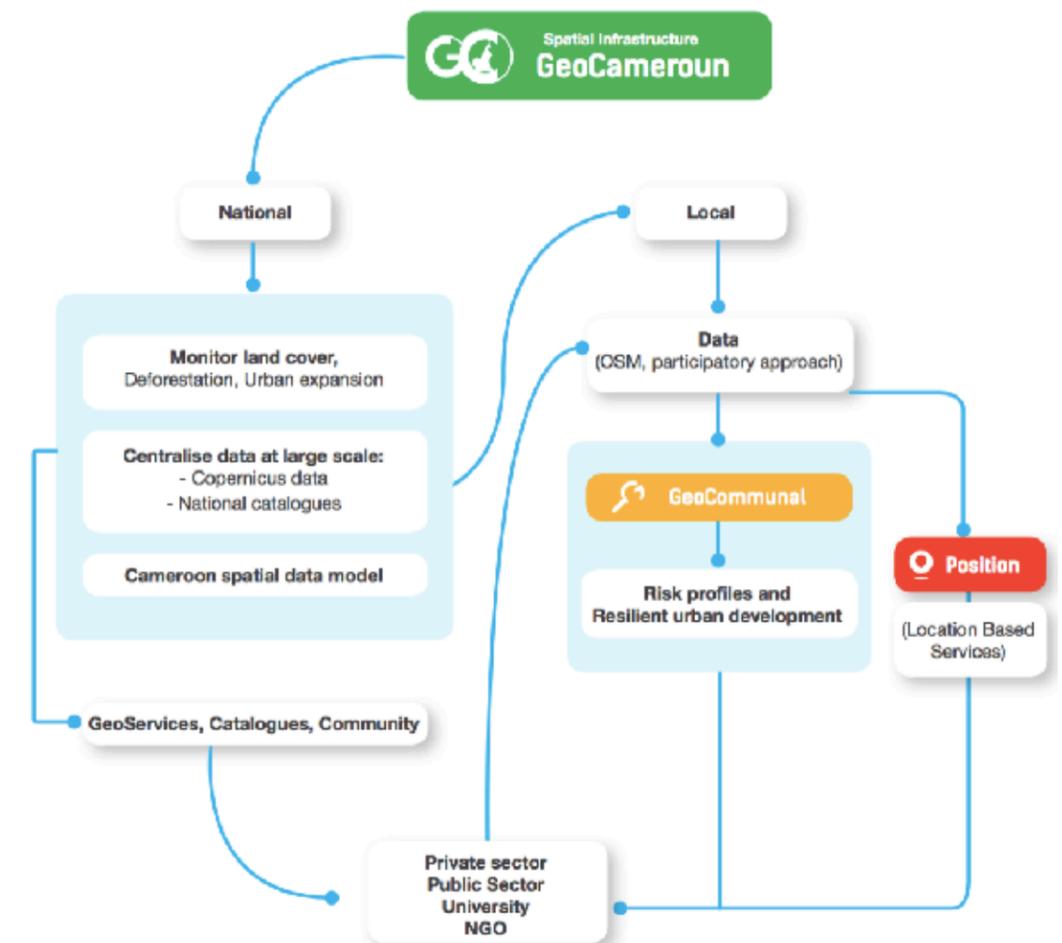
capital investment costs generally form an obstacle for large-scale mapping. An agreement has been signed between EU and Africa (through AEO) to provide Copernicus data for free to the whole of Africa. This agreement will simplify the data access for African people. Added to that, models based on crowdsourcing like OpenStreetMap greatly reduce production costs while facilitating the update.



## ”GeoCameroon: An existing platform”

GeoCameroon ([www.geocameroun.cm](http://www.geocameroun.cm)) is the first Spatial Data Infrastructure (SDI) of Cameroon base on Copernicus and OpenStreetMap. It brings together on a single platform all geographic georeferenced data of the country. GeoCameroon was developed. We have for example developed GeoCommunal (<http://ngong.geocameroun.cm/profil>) at the scale of cities, which at the end will help municipalities build their resilience profiles.

Furthermore, some project concepts will be listed to better understand the challenges of resilience in our cities. For each project, an analysis of the necessary data and digital solution will be realized. Once the items are identified, the learning activities will be organized in several meetings for different actors in the use of OpenStreetMap open source application and the use of Copernicus data. The aim is to grant free access to geographical data but mostly to give peoples the opportunity to understand and acquire knowledge in order to implement services to challenge climate change effects.



## ”Anarchic urban development”

conventions, the country still lacks tools necessary for the evaluation of their impacts in our cities. The rapid increase of these negative impacts in our towns is linked to

” Positive impacts and multiplicative effects ”

Cameroon, like many countries in Africa, has many crucial challenges (risk management, environment and climate change). In general, this project will allow Cameroon to provide a complete cartography and to develop solutions based on geospatial technologies specially IA to achieve the Sustainable Development Goals.

**Economic development**

” Local development and resilience ”

The space industry currently represents a business development opportunity. In 2015, the world's space economy was estimated to be between €217 and 250 billion, with growth of about 5% per year. In Cameroon, the use of space technologies will promote startup creation and new services that will offer opportunities in many domains.

**Collaborations for digital transformation**

This infrastructure based on the Copernicus program and crowdsourcing technology of OpenStreetMap creates a database in which every city can build its resilience profiles. It also serves as a base for the actors of digital transformation sectors who highly depend on geospatial data (NGOs, Universities, public sector, private sector), and use cases will be required for these sectors.

These same actors will in turn feed the infrastructure with data produced from their various studies or projects. This assures sustainability of the infrastructure, or "GeoDjangui," a concept where everybody contributes for everybody to use.

**Digital ecosystem, an assurance for financial sustainability.**

The financial sustainability of this infrastructure come from the fact that it is open to the digital ecosystem, making each and everyone a major actor for the long term.



▲ Strategic contribution of GeoCommunal in urban development and fight against climatic changes



▲ Yaoundé city center Photo by Stephane SONKIN



**LINKS:**

**GeoCameroun:**

<http://geocameroun.cm/> (link to the National Geospatial infrastructure)

**GeoCommunal:**

<http://ngong.geocameroun.cm/profil> (link to one example of GeoCommunal at the scale of the town of Ngong)

**GitHub:**

<https://github.com/GeoOSM> (Here is the link to the code on GitHub)



# ARCHITECTURE AND INNOVATION



▲ Interior teaching building Wall of Knowledge Photo by Doublespace



ARCHITECTURE AND INNOVATION

# INNOVATIVE ARCHITECTURE PROJECTS IN AFRICA



▲ Covered outdoor ramp Greater Accra Regional Hospital Photo by Perkins+Will

” Sustainable  
architecture adapted  
to the context ”

The design team understood very well that this was a different context, with limited resources and technologies and high constraints. Lacking state-of-the-art technology, they exploited other means to give the project optimal resilience. The facility is designed to operate independently of technology, electricity and water supplied by the municipality.

In order to achieve maximum efficiency and autonomy, the facility is designed to make the most of the resources offered by the site and its environment. Numerous ingenious systems have thus been implemented. Some of the most basic are the recovery, storage and use of rainwater, as well as the passive cooling of the various spaces. All areas that do not present high risk thus benefit from natural ventilation. Natural gas-powered generators provide backup energy in the event of a power failure. Water is also reused and solar heating is used to meet hot water needs. In addition, the choice of locally sourced, light-colored exterior materials reduces solar gain while enhancing

the cultural aspect. In this respect, the design of the façades was inspired by the Kente fabric, an icon of African heritage around the world. Concrete, wood and steel, the major materials used in the project are traditional Ghanaian building materials.

The project significantly improves the quality of life of both patients and their families, as well as that of medical, administrative and support staff through the way it meets their needs and expectations. Referring to the local architecture where circulation and gathering spaces have a cultural value, the designers attach great importance to these spaces. In addition, the facilities create links between Ghana and the global medical community. A radiologist at the Johns Hopkins Medical Center, for instance, can consult information from Ghana. As a result, the facility offers comfortable and pleasant spaces that enhance the experience for patients and caregivers.

The Greater Accra Regional Hospital has become the largest hospital in the country to date. But beyond its monumental appearance, the project is above all very sustainable, which has earned it LEED Silver certification. In fact, it is the first healthcare institution to receive this certification on the African continent.



▲ Beauty and cultural heritage Photo by Perkins+Will

## THE GREATER ACCRA REGIONAL HOSPITAL—GHANA

” Architectural  
regeneration  
project ”

**D**esigned by the international firm Perkins+Will, this project is a major component of the urban fabric of North Ridge in Accra, Ghana.

It is the result of the transformation of a small, simple hospital dating from the 1920s into a modern, expandable facility. It was a wood-frame building with 191 beds.

As a result, the facility now stands on five levels with nearly 600 beds and more than 12 operating theaters to meet the country's growing need for quality health care.



▲ Outdoor spaces creating a link with nature Photo by Perkins+Will



▲ Beauty and cultural heritage Photo by Perkins+Will



▲ Esplanade and monumental façade Photo by Doublespace Photography

## WALL OF KNOWLEDGE EL JADIDA-MOROCCO

“Architecture at the service of education”

**W**all of Knowledge is a college designed and built by the firms Mounir Benchekroun Architect and Tarik Zoubdi Architect in the city of El Jadida located 100 km south of Casablanca in Morocco. Architects won the competition organized by the Office cherifien des phosphates with a project judiciously combining cultural identity, adaptation to the climate context and efficient management of the plot. This school was built for the children of OCP employees. As the difficulties of education are a major obstacle to the development of the country and the well-being of the population, architects consider working on a project of this type as an act of commitment. Indeed, the institution welcomes more than 570 students each year in favourable conditions for their development.



▲ Interior teaching building Photo by Doublespace

“Innovation and modernity for a project adapted to its environment”

With a surface area of 8,960 m<sup>2</sup>, the project includes an entrance hall, an auditorium, 18 classrooms, as well as a prayer room and various sports facilities. Most of the classrooms are dedicated to science and technology education. One of the major constraints was the irregular shape of the plot. To overcome it, the designers created a spatial division of the project into three regular areas. The central area hosts a building dedicated to teaching. This strategic position allows it to serve as a landmark for the neighbourhood. All sports facilities are concentrated in the northern area, while the south-eastern area is left free for a future extension of the school. The project is fairly compact, which reduces the walking distances for users.

The project stands out in its environment thanks to its scale, materials and monumental character. It thus becomes an urban landmark in the area. Its retreat from the roadway has allowed the creation of a public square, serving as a space for socialization as well as a safety

perimeter for children. This esplanade is an extension of the monumental façade covered with local stones that pays homage to the architecture of the old Portuguese city of El Jadida. In addition to the calcareous stone and metal used, the project's material palette includes reinforced concrete for the structure, wooden acoustic panels for insulation, a resin floor, flexible PBC, wood and plaster.

Architects integrated a number of bioclimatic architectural solutions into the project. The classrooms, oriented north-south, benefit from efficiently shaded southern façades. This orientation also makes it possible to create a cross-ventilation system inside the classrooms. The use of moucharabiehs on the main façade protects the interior from the western sun and thermal solar panels supply hot water to the gym showers and sanitary facilities. All the lights in the school use light-emitting diodes (LED), which contributes to the project's economy. Measures are taken to collect and use rainwater.

The project was highly appreciated for its adaptation to the site and its intelligent management of the plot surface. Sustainability is also about knowing how to integrate into the design the reflections related to the evolution of needs over time.



▲ Teaching building Photo by Doublespace Photography



▲ Building on site Photo by Kliment Halsband Architects

# CENTRE CHIRURGICAL MOUNT SINAI KYABIRWA

“ Self-contained  
and low-cost  
facility ”

This project, carried out in a rural village called Kyabirwa, near the equator in Uganda, bears the signature of Kliment Halsband Architects. The agency, which had never before designed a health care facility, was contacted by Dr. Michael Marin of Mount Sinai Medical Center in New York, who wanted a new approach for this project. The facility is designed as a prototype of an independent, self-contained ambulatory surgical facility that can be replicated in other resource-poor and underserved areas. It is intended to demonstrate that surgery can be performed in low-cost facilities. To do this, the designers reduced and simplified requirements to the essentials by eliminating some of the complex, expensive and energy-consuming systems related to high technology.



▲ Waiting space Photo by Kliment Halsband Architects

“ Local materials  
to support the  
economy ”

The building has three main parts: a reception pavilion and a courtyard for patients' families, an intermediate pavilion hosts pre- and post-operative activities, and a sterile pavilion with two operating rooms and related support spaces. The walls that structure the various spaces are made of bricks and cladding tiles made from red clay dug directly into the ground near the construction site and fired in a local kiln. The choice of this affordable and locally available material supports the local economy. In addition, the ingeniously perforated walls allow for natural ventilation and lighting in almost any space. Only the operating rooms use air conditioning.

“ Innovative solutions  
for a sustainable and  
human-centered  
project ”

Because the site lacked access to some essential resources such as clean water, reliable electricity or an Internet connection, the designers had to use common sense. A canopy inspired by the banana trees around the project site has a dual function. It produces energy and creates shade thanks to the solar panels it bears. The combination of this device with batteries for storage ensures the energy autonomy of the building. The water from the well as well as that coming from the city is stored if necessary thanks to gravity tanks equipped with a filter and a sterilization system. Water from the roof is collected and stored

for use in the toilets and for watering the vegetable garden where food is produced for patients and staff. Greywater is recycled for toilet flushing and irrigation, while wastewater is treated on-site by a septic tank. Medical waste is disposed of on-site by incineration. The installation of a network of some 32 km of underground cables has provided the facility with a reliable Internet connection. This was essential to enable local doctors to receive support from their counterparts on Mount Sinai in New York City through live surgical consultations and real-time videoconferencing. The project demonstrates very well how vernacular skills and modern techniques and technologies can help and complement each other to improve life.



▲ Access to the reception area Photo by Kliment Halsband Architects



ARCHITECTURE AND INNOVATION

# ARCHITECTURE INNOVATIONS IN AFRICA



▲ Construction of first wall in Kibera by startsomewhere Photo by Startsomewhere





▲ Warka village in south Cameroon Photo by Arturo Vittori



▲ Warka village in south Cameroon Photo by Arturo vittori

## WARKA VILLAGE- CAMEROON

“ Innovative and frugal solutions for a better life ”

**W**arka Water is a nonprofit that focuses on innovative and sustainable solutions to some of humanity’s most enduring issues through the fusion of local knowledge and resources, visionary design, and ancient traditions. The Warka Village aspires to transform the landscape of comprehensive human development, utilizing low-cost, sustainable, community-driven, high-impact multisector development interventions that are tailored to the village’s specific needs. This will address the needs of villagers in terms of essential services that impact their



▲ House in Warka village in south Cameroon Photo by Arturo Vittori

daily standard of living and overall quality of life: rural infrastructure, agriculture, health, water, sanitation and preservation. The project is an integrated village designed to host 1100 people, all local ethnic groups of Cameroon. It will become a cultural center, of social aggregation with quality spaces. The Warka Village is an example of how to collaborate with rural communities, how to construct using indigenous techniques and local natural materials that respect the cultural identity of the place, and it is an example of how to live in harmony with nature.



During the development of the new Start Somewhere construction system, various requirements for the special situation in slums were taken into account:

**Flexible floor plans:** In order to make maximum use of the mostly uneven slum land areas, the wall segments can be folded steplessly;

**De-constructable:** Since slums are informal settlements, residents can only own the buildings but not the land and lose their dwellings, for example as a result of government road construction measures. The mortarless construction system makes it possible to dismantle the buildings manually and reassemble them elsewhere at any time;

**Affordable housing:** Thanks to the material-saving use of concrete, the new buildings are not only more beautiful and of higher quality, but are also similarly inexpensive to the usual construction methods using mud, wood and corrugated iron;

**Fireproof:** In slums, fires often occur which spread quickly due to the dense population and the wooden construction. The new construction system completely replaces wood.

“ Start Somewhere opens first hollow concrete block workshop in Kibera, Nairobi ”

The new workshop still built in the common way with bricks and corrugated iron. The building is located in the middle of Kibera and consists of a workshop with an adjacent warehouse and a water tank. Due to a room height of three meters and a large roof window, temperature and lighting in the workshop are very pleasant. A solar system was installed on the roof, which covers the complete power requirements of the workshop. The interior equipment includes large storage tanks for gravel and sand with adjacent delivery facilities, a concrete mixer and a vibratory plate as well as an area where the concrete blocks are stripped. The adjacent warehouse can store up to 4,000 hollow concrete blocks (about half of the requirements for the new school building for 400 children).

▲ Building on site Photo by Kliment Halsband Architects

## START SOMEWHERE— CHANGE FROM THE INSIDE

“ Innovative construction systems to improve quality of life for everyone ”

Start Somewhere, a social business with the goal to improve the living conditions of people in informal settlements (slums) in developing countries, has been developing a flexible, reusable, cost-effective and fireproof construction system for buildings in slums since 2015. The approach is to change from the inside, create trade jobs in a local hollow concrete block and provide value in the slum. In the future, buildings in slums will no longer be constructed from wood, clay and corrugated iron, but will be built by the residents from locally produced hollow concrete blocks in a functional and appropriate architecture.



▲ Casting of blocks Photo by start Somewhere



▲ Start Somewhere blocks in Kibera workshop Photo by start Somewhere



▲ Roof made with bamboo in Fass School and Teacher's Residence By Toshiko mori in Senegal Photo by Sofia Verzbolovskis

## BAMBOO AND ITS POTENTIAL IN AFRICA

“ An eco-responsible and sustainable material ”

**B**amboo has a high capacity for carbon sequestration. Indeed, the absorption of greenhouse gases by bamboo would be 5 times greater than by a standing tree of equivalent volume, in addition to producing 35% more oxygen. A bamboo plantation of one (01) hectare can capture up to 60 tons of CO2 per year depending on the species and type of crop. This corresponds to a retention of 30 times more important than the culture of other plants. A Life Cycle Assessment (LCA) study conducted at DELFT University (Netherlands) shows that industrial bamboo products such as flooring, panels and beams have negative CO2 emissions even after being produced in China and shipped to Europe.



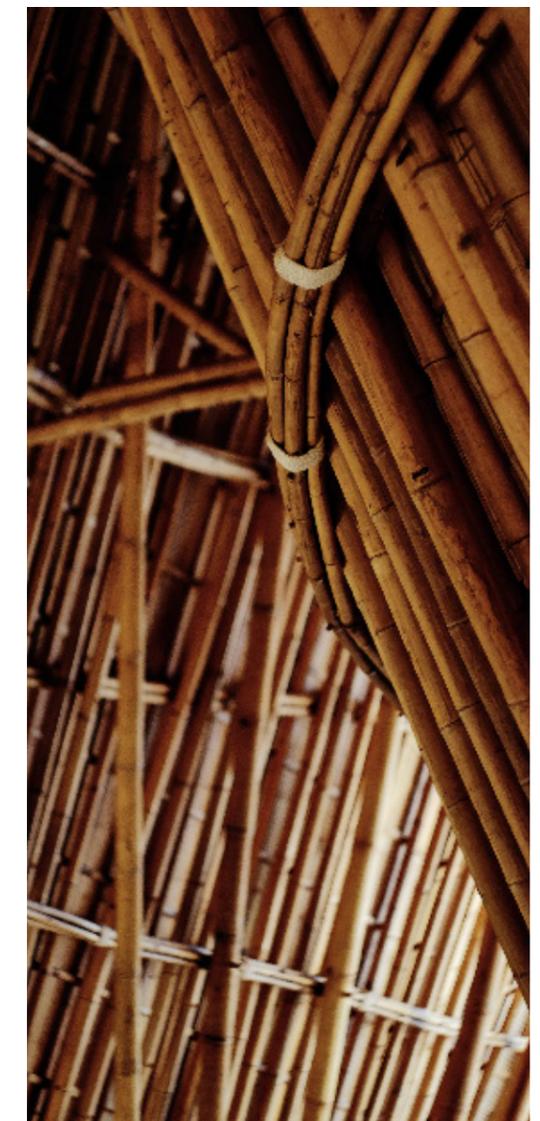
▲ Locally-manufactured cob and bamboo school building, Jar Maulwi, Pakistan

With multiple uses, this material could also be a factor of empowerment and employability for many people in Africa. According to the United Nations Environment Programme (UNEP), there are 2,000 uses of this plant, while in China there are more than 10,000 different uses. Bamboo therefore represents an immense potential for job creation. Used in construction, it would considerably reduce construction costs, thus allowing all social classes to have access to affordable housing. According to International Bamboo and Rattan organization (INBAR), bamboo is a response to 7 of the 17 objectives of sustainable development.

“ Great potential for Africa ”

Bamboo is present in more than 1/3 of Africa; moreover, it is among the champions in the category of bio-sourced materials. The low cost of this material and its local availability make it a material with high potential in construction in Africa. It has the

potential to address the housing deficit in African cities, while creating sustainable employment. Some uses are already made of this material in Africa in the field of handicrafts, construction and design, etc. However, these channels are mostly informal and marginal. Structuring a market around this material through appropriate policies and regulations in the field of construction, art, urban design and handicrafts, would enable to draw the full potential of this resource and promote sustainable economic development. Fortunately, many professionals on the continent are increasingly interested in this material and organizations like INBAR are promoting and developing it at the local level.



▲ Bamboo structure Photo by set.sj

# BIM AND ITS OPPORTUNITIES IN AFRICA

## BY NANDHAA

” *Building Information Modeling* ”

**B**uilding Information Modeling (BIM) is an acronym for Building Information Modeling. It is a highly collaborative process that allows multiple stakeholders and AEC (architecture, engineering, construction) professionals to collaborate on the planning, design, and construction of a building within one 3D model. It can also span into the operation and management of buildings using data that owners have access to. This data allows owners and stakeholders to make decisions based on pertinent information derived from the model- even after the building is constructed.

” *An opportunity for the challenges of urbanization on the continent* ”

Africa is a continent of opportunity engaged in a dynamic development that requires the establishment of many large-scale infrastructures. For a rapidly urbanizing continent that should be home to 1.9 billion additional people by 2050, it is important to

question the construction models to meet the challenges. For many players in the construction industry, BIM is the most appropriate response. Unfortunately, Africa is still lagging behind in this way of working. The reasons for this delay are diverse, nevertheless initiatives such as BIM AFRICA or FASOBIM are trying to promote this tool on the continent. However, the opportunities offered by this tool are numerous. This method allows to have several points of view on a project, thus guaranteeing an optimal quality. Indeed, the BIM method ensures the longevity of the works in the sense that all the information of the building being modeled and previewed, some collisions and imperfections are corrected before the beginning of the works. In other words, the model found in a digital mock-up is the same as in reality and the works are better. Also, the question of time is very important. The time of conception and technical studies and the time of construction are reduced thanks to this tool which would allow to reduce the time of execution of the works of the projects on the continent which are known to be rather long. This tool would also help train a generation of architects and engineers in line with international design and construction practices while creating jobs to build a sustainable Africa by Africans.



NANDHAA Group is a multidisciplinary construction consulting firm focused on BIM tools. Through their innovative methods developed using the Building Information Modeling methods, Nandhaa offers efficient services to various customers around the world. They offer a deep expertise in the design industry, and the building this through experience gained working on many projects in South Asia and Africa.

 [www.nandhaa.com](http://www.nandhaa.com)

 [contact@nandhaa.com](mailto:contact@nandhaa.com)

 0283 520 8760

 +237 682834751

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# AFRICA'S ARCHITECTURE AND URBAN HERITAGE



▲ Bamboo structure Photo by Bernard Hermant on Unsplash



▲ Center for earth architecture in Burkina Faso Photo by Francis Kere



▲ Bamako BCEAO Tower Photo by world-adventurer.com



▲ Kenyatta International Conference Centre Nairobi Kenya

## HOW VERNACULAR ARCHITECTURE IS INTEGRATED INTO ARCHITECTURAL PRACTICES IN AFRICA

With an Africa amidst change, from the post-colonial period to the present day, there has been a considerable resurgence of foreign architectural styles. African cities that are fashioned in the image of the colonist are, for the most part, losing their cultural identities. The history of ancient African societies generally shows the exceptional character of certain significant elements of their tangible and intangible heritage. Within this African tangible heritage, there is the jewel of local architectural styles, which most often adapts to the different lifestyles and climatic conditions of the natural environment.



▲ Center for earth architecture Photo by Francis Kere

Vernacular architecture is a broad concept that encompasses areas of architectural study including aboriginal, indigenous, ancestral, rural and ethnic architecture and contrasts with more intellectual architecture called polished, formal or academic architecture, just as popular art contrasts with art. By defining vernacular architecture, one should not confuse it with so-called "traditional" architecture, although there are links between the two. Linked to their environmental contexts and available resources, they are usually built by the owner or the community, using traditional technologies. All forms of vernacular architecture are built to satisfy specific needs, considering the values, economies and lifestyles of the cultures that produce them.

” Building a cultural identity through sustainable projects ”

In a perspective of sustainability and ecology, the current situation on the continent gives a gleam of hope on the question of the valorization of vernacular architecture through different realizations. Starting sometimes from the source of inspiration to the use of materials, as well as the factor of insertion of the project in its environment, we are witnessing the proliferation of projects such as: the elementary school of Gando in Burkina-Faso, (Architect Francis KERE); the religious and laic center HIKMA in Niger, (Architect Mariam KAMARA); the Library for the community of Muyinga in Burundi, (BC Architects), etc. For most of these projects, although modern and environmentally friendly, the practical elements of vernacular architecture reside in the use of cultural symbols, aesthetics, involvement of the local population and the use of local materials. Therefore, it is important to note that “Architecture has great power to affect people—it is the spaces we inhabit. And because of that, it can be dangerous to create spaces that have



▲ Mkorotlo building Maseru Lesotho Photo by UnsulliedBokeh

nothing to do with the people who are destined to use them.” The other aspect of the subject resides in the architecture and design competitions organized on the continent. These competitions are “engines of research and development for new constructive, programmatic, and urban hypotheses” for typically African and prosperous cities. Indeed, even if the realization of the winning projects is not guaranteed for the most part, most competitions in Africa require certain captivating elements that give identity to the various submissions. This is how the geniuses of African design are perceived in all its possible forms. Between tradition and modernity, the winners carry their curiosity to new heights with project submissions that reconcile ancestral styles and know-how with modern knowledge. Africa’s cultural richness alone is a source of reflection on another vision of its own architecture. Consequently, there is much more to explore for this young generation of builders in this challenge that is facing them. Emancipation of the mind is the first step to truly access an architecture that engages in its current social and economic contexts for more resilient and sustainable African cities.



▲ Mosque converted into a community library in Niger by Atelier Masomi



▲ Gando Primary School Photo by Francis Kere



▲ MUDhouse View from the Street, Photo by MAMOTH



▲ SANKOFA house View from South-East Photo by MAMOTH.

## REINVENTION OF THE SANKOFA HOUSE

The Asante Traditional Buildings, inscribed in 1981 to the World Heritage List as being “rare surviving examples of a significant traditional architectural style of the influential, powerful and wealthy Asante kingdom,” are described as Vernacular architecture built with a minimum of resources and a maximum of effectiveness. Inspired by the recognizable silhouettes of Ashanti’s buildings, M.A.M.O.T.H. reinvents the Sankofa House (1st prize) organized by NKA in 2014. This particular architecture is recognizable by its sloping roofs, its plastered walls, its decorative ornaments and its large base which highlights all.



▲ MUDhouse Internal View of the Courtyard Photo by MAMOTH.

The steep roof minimizes surfaces exposed to sunlight and heat. The height under the roof provides good air circulation. The heat is evacuated by a roof rack system. It also ease discharging heavy rainwater with two metallic gutters placed between the roofs to collect rainwater which can be easily stocked in a tank in the courtyard. The buildings are mainly constructed with laterite soil and termite-proof coco fibers. Builders rely on the Atakpame method, a purely manual construction technique, which is economic, ecological and social.



▲ Children in the Gurunsi village of Tiebele Photo by Davide Comelli

## GURUNSI VERNACULAR ARCHITECTURE – TIEBELE

**T**iébélé is a small village located in the south of Burkina Faso, known for its unique Gurunsi vernacular architecture where the walls represent magnificent works of art.

In this village lives an ancient ethnic group called the Kassena people. The men build and the women take care of the paintings, skills that have been passed down from generation to generation. The constructions are made from local materials; the old technique was based on a mixture of earth with water and cow droppings moistened to a perfect mortar. Today, this has been replaced with mud bricks with stone foundations.

The intricate ornamentation covering the walls remains the most fascinating



▲ Royal Court in Tiébélé Photo by Rita Willaert



▲ Gurunsi village of Tiebele Photo by Davide Comelli

element of this village, decorated with motifs of geometric or more figurative forms. These artworks are renewed every year by the women of the community during the dry season, using mud, white chalk, and natural dyes, with three shades dominating: white, black, and red. Once the paint is dry, the façades are covered with a natural varnish from the African carob tree.

The motifs often carry meanings taken from everyday life, religion, and beliefs, for this reason, the most decorated buildings are the most important ones such as the mausoleum.

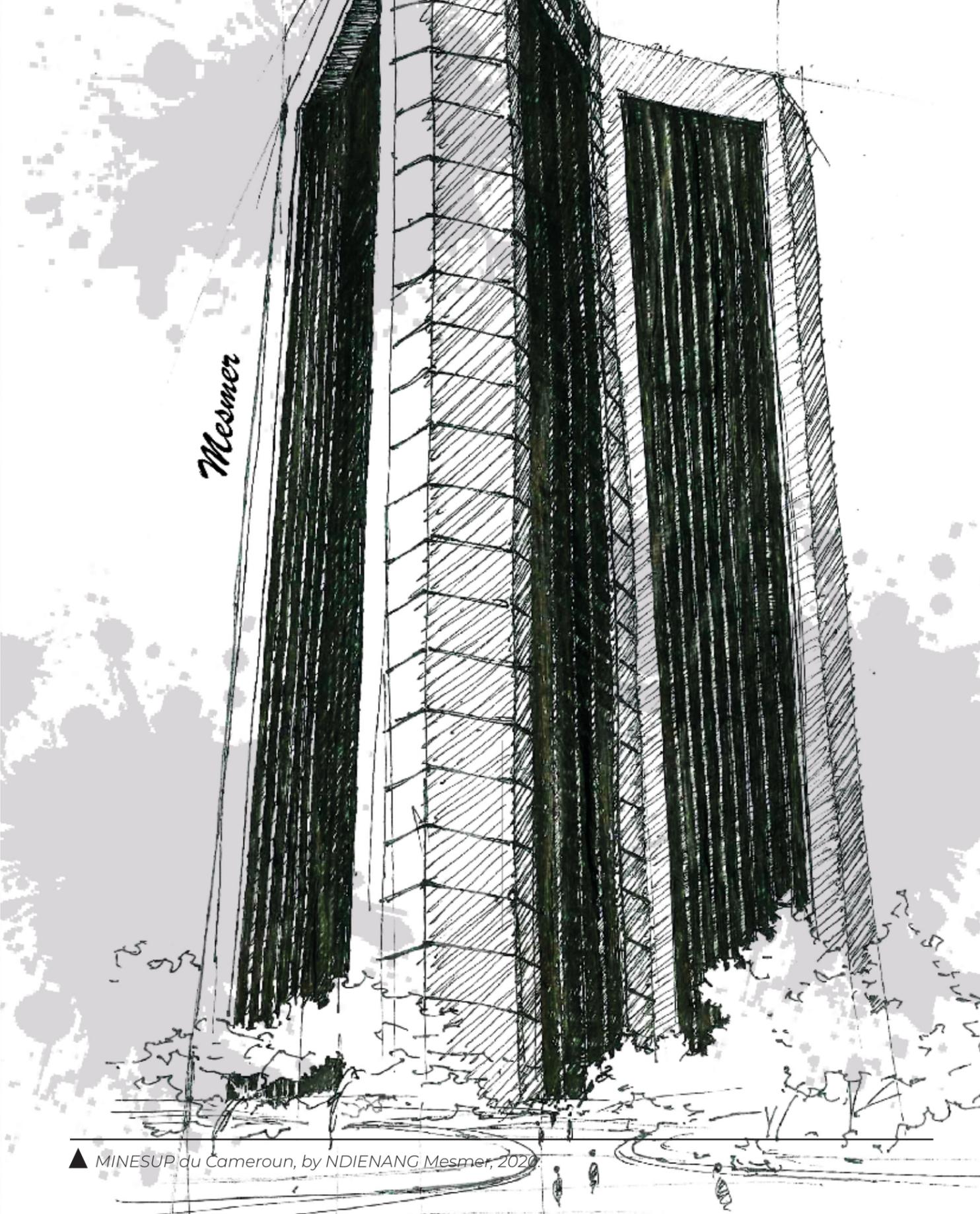
This small village is one of the most culturally rich and architecturally beautiful villages, that was listed as a UNESCO World Heritage Site in 2012.



▲ Tiébélé village Photo by Ronald Vriesena



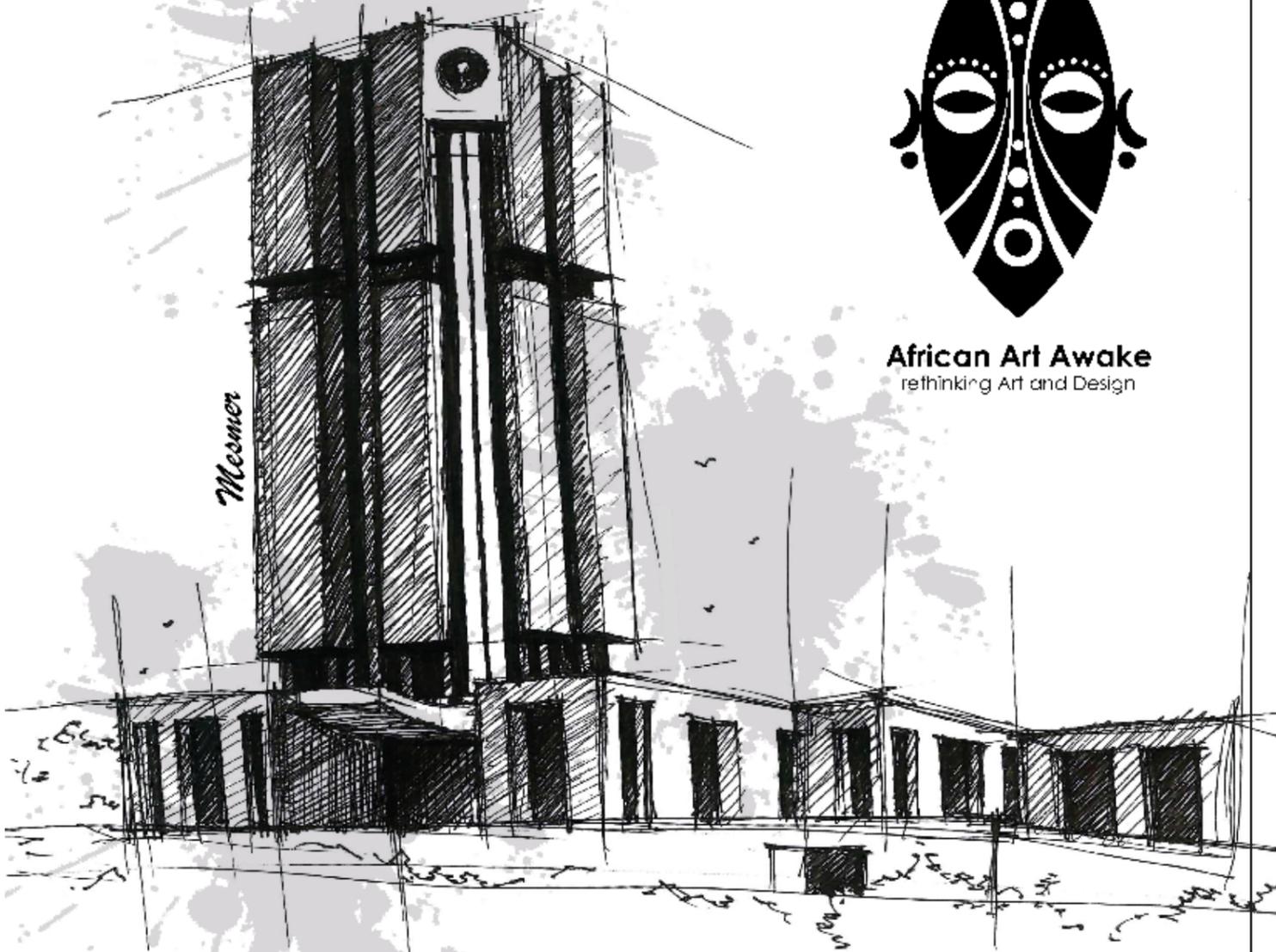
## CITIES PIXELS AND COLORS



▲ MINESUP du Cameroun, by NDIENANG Mesmer, 2020



**African Art Awake**  
rethinking Art and Design



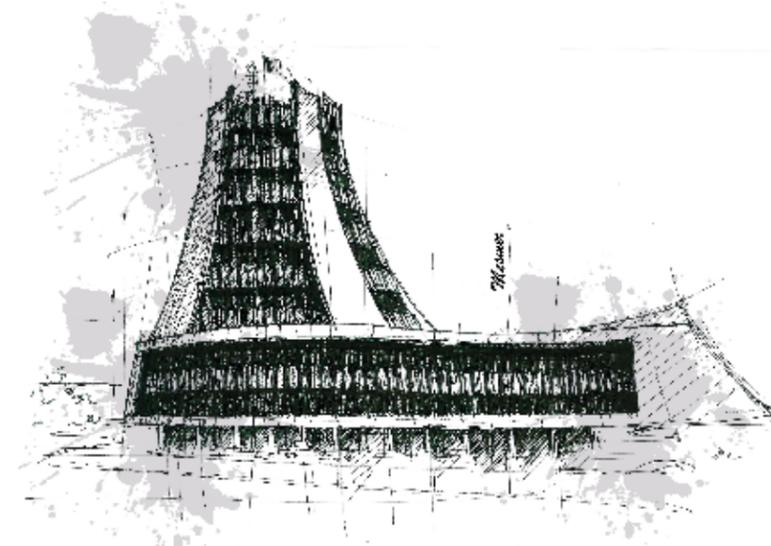
▲ BCEAO Togo by NDIENANG Mesmer, 2020

## PAYING TRIBUTE TO THE ARCHITECTURE OF AFRICAN CITIES

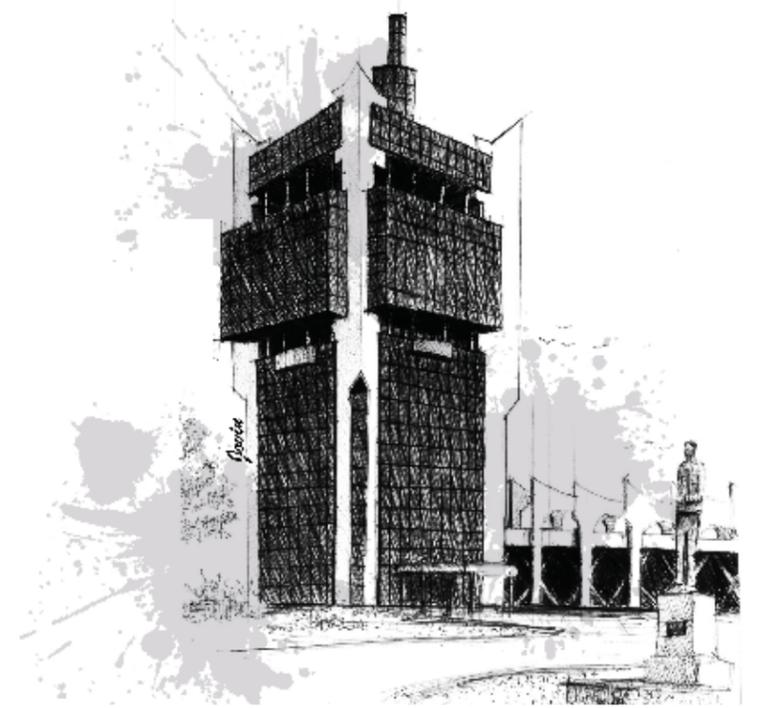
” African Art Awake ”

**A**frican Art Awake is a team of young artists from various horizons who are dedicated to the expression of beauty.

In view of the cultural wealth that abounds in the world, African Art Awake is posed to bring its modest contribution to the popularization of cultural gems of Africa and the world. To do so, she has chosen to rethink the world of fine arts, design and fashion. Based in Togo, she aspires to conquer the world in the years to come thanks to her conceptual approach centered on pluralism and humanism.



▲ MINPT Cameroon, by NDIENANG Mesmer, 2020



▲ BEAC Congo by BIKEDI Jovin, 2020

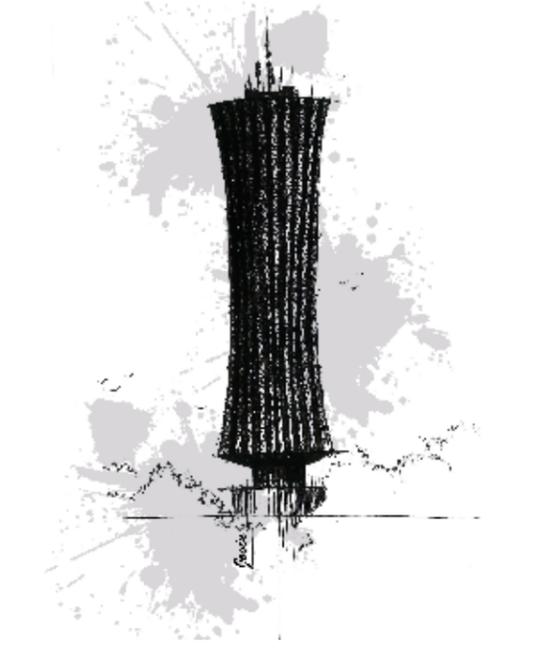


▲ BIDC Togo by BIKEDI Jovin, 2020

It is through the architectural expression of its buildings that we judge the beauty of a city. Indeed, African cities are endowed with several architectural jewels that make them proud and identify them. We are fascinated to see how the composition of simple basic volumes can lead to a masterpiece.

complex whose charge is aesthetics, how the simplicity of a minimalist architecture could exude elegance by blending into a wooded landscape typical of the continent.

As the Japanese architect Tadao Ando says, "the real importance of architecture is its ability to deeply move people's hearts." These illustrations are made not only to pay homage to the great minds that put their genius to good use in the design of these buildings, but also to showcase this architecture that only enriches the architectural heritage of the world in general and Africa in particular. In reality, African architecture is rarely promoted in the media, as it is very often seen as political and private property. these illustrations aim to bring to the forefront the aesthetic charge of the elements that make up the African city, as these elements are of real deposit of the culture.



▲ Tour NABEMBA Congo by BIKEDI Jovin



▲ *Le chemin* by African by Art Awake



▲ *L'ambition la base du developpement* by Art Awake

## WALL FRESCOS AS A VECTOR FOR PEACE AND SUSTAINABLE DEVELOPMENT

” African Art Awake ”

Realized by African Art Awake, on a part of the wall of the fence of the Université of Lomé in Togo, the work stages values such as peace, kindness, benevolence, fraternity, love, service and freedom process. It also takes up themes related to #ecology, waste management, and environmental protection through awareness-raising messages and the re-use of objects such as old tires. It also aims to convey a message and values to be embodied for the emergence of a prosperous and peaceful nation through individual commitment. This fresco is also a reminder of African cultural identity, raising awareness of the symbolic value of the mask in African culture.



▲ *Les messagers vertueux* by African Art Awake



▲ *twins whales by Frank and coe*

**THE REAL WAY  
TO ACHIEVE  
IMMORTALITY IS  
BY THE MEANS OF  
ART ONLY**

” Frank and coe tell us more ! ”

I try to articulate my work around the two mediums I love the most namely photography and illustrative arts. By adding some sketches to preexisting photographs I'm able to create a whole new universe that couldn't be seen before. Through this mixed media technique, I'm free to explore new ways of expressing myself and give a new take to what photography can be when it's explored by the lens of illustrations. With this mini-series I tried to put the focus on the Moroccan landscape and architecture. My intention was to tell stories that could be understood from the first sight; simple yet percutive. I decided to work oin black and white because this format allows, I believe, to truly expose the DNA of any picture that's why this photography format is so attractive to me.



▲ *Window by Frank and coe*



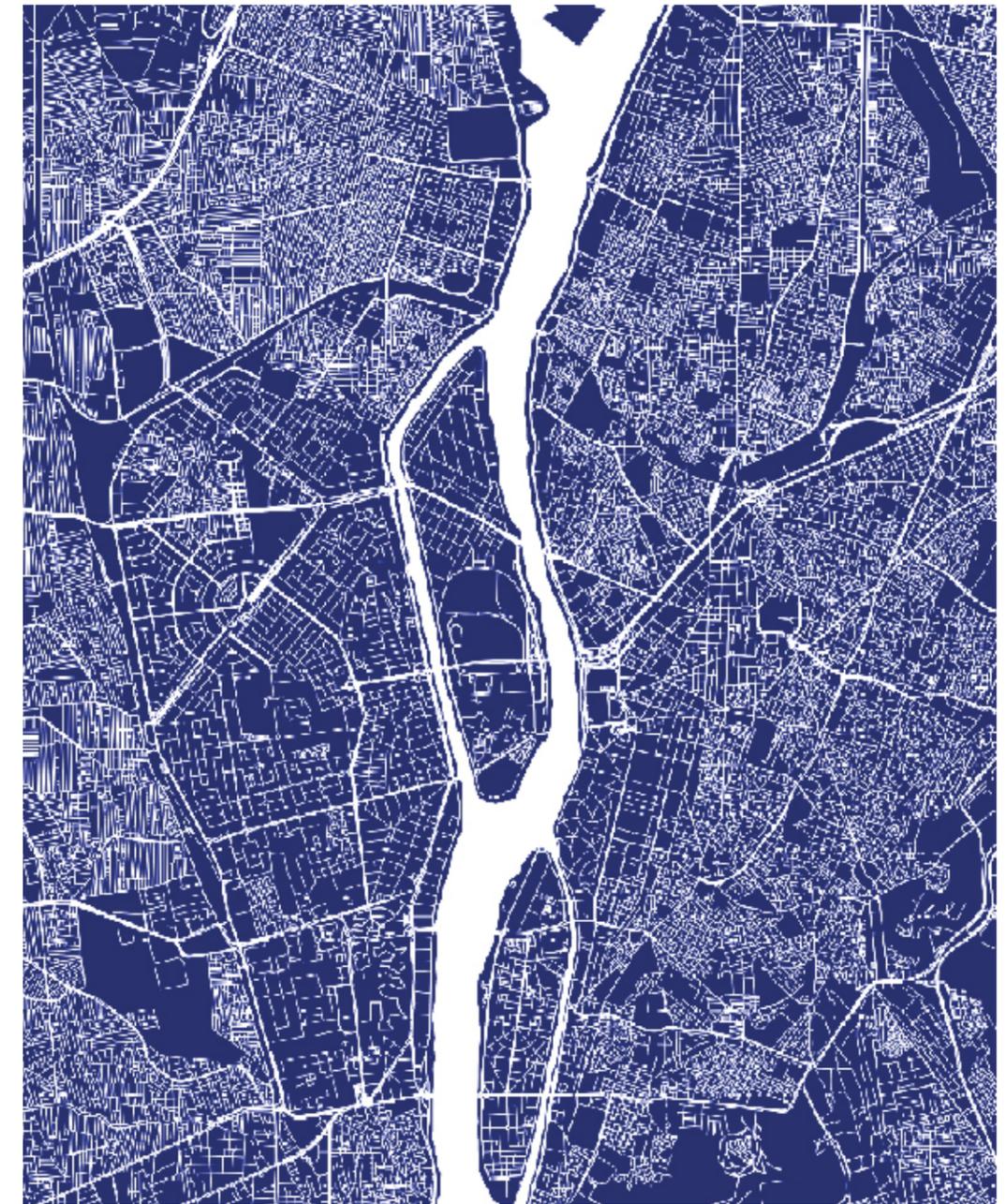
▲ *Fire man by Frank and coe*



▲ *The traveler by Frank and coe*



▲ City center of Nairobi by Loïc NANA



▲ City center of Cairo by Loïc NANA

## AFRICAN CITIES MAPPING

” @nana\_UrbDesign ”

The maps below are a bichromy urban expression of the downtown areas of 30 African cities; Cairo, Nairobi and Johannesburg. Realized by NANA TCHAGNASSI Loïc, Urbanist, they allow a scientific, playful, philosophical and more artistic awareness of the problems or benefits of our living spaces. Today, the report shows urban maps full of informations, generally incomprehensible to the uninitiated in urban planning. Consequently, my cartographic work is oriented toward simplicity and sensitizing the



▲ City center of Johannesburg by Loïc NANA

world on precise problems of urban sustainability, with an artistic touch for a more pleasant interpretation. Indeed, the map of Cairo, presents a city center strongly densified in non-wet zone. This one presented and easily perceptible, allows anyone to have a more creative reflection on the problem. Notice that, this new simplified urban cartographic expression is a visual art form for raising awareness among the general public. In addition, it is an alternative way of expressing urban problems for a better understanding.

# EDITORS

## URBAN PLANNING INNOVATION

### **Keynes Pofd Kacinthe TAMO NWAFFU**

Town planner - Developer DEIAU  
Head of studies at the NTFS urban  
planning firm Local Pathways Fellow à  
UN SDSN-Youth

### **Joseph Fabrice BINDZI WONO**

Urban and territorial developer, expert  
in decentralization, urban planning and  
territorial logics

### **Corianne RICE**

City Innovation Program Specialist

### **Hind REZOUK**

Architect

### **Ariel Brandon AKAMBA BENGONO**

Architect

### **Willy Franck SOB**

CEO of SOGEFI

## ARCHITECTURE AND INNOVATION

### **Franklin YEMELI**

Architect

### **Lionel TSAGUÉ ZEFACK**

Architect

## AFRICA'S ARCHITECTURE AND URBAN HERITAGE

### **Abdou Latifou ALASSANE**

Architect

### **Hind Rezouk**

Architect

### **Joel Mukalay Kine Mukena**

Architect

## CITIES PIXELS AND COLORS

### **African Art Awake**

**Frank and coe** founded by Brondon  
JIEUTSA

### **Loïc NANA TCHAGNASSI**

## DESIGN AND SUPERVISION AIN TEAM

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Africa Innovation Network



[africinno@gmail.com](mailto:africinno@gmail.com)



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