



# **1<sup>st</sup> International Conference on Water – Energy – Food – Habitat Nexus**

## **SustainEng 2018**

### **Dec. 12 – 14, 2018**

#### **Concept Note**

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#### **CONTEXT**

Water control, affordable energy generation and environmental protection are factors necessary to create value through exploiting the enormous natural resources available and to ensure the conditions for sustainable human development on the African continent. However, uncertainties about water resources are persistent. Quantitative and qualitative pressures on water resources are increasing sharply with population growth. Access to sustainable energy and habitat remains also critical issues. In addition to the low access to energy rate and unenviable housing conditions, many African countries are beginning to suffer from water stress and its consequences on food security, not to mention the risks of local and international conflicts that this situation may induce. Climate degradation is a global phenomenon. It modifies the hydrological cycle with, among other predictable consequences, an exacerbation of availability and resource management issues while a sustained increase in demand and its diversification are certain. Current trends in climate analysis indicate globally that rainfall in the tropical humid regions could increase significantly in the coming decades, while in arid and semi-arid regions there is a strong climatic variability with more and more increasing frequency of extreme climatic events. This impacts surface runoff, groundwater recharge and natural resources in general. The effects of this phenomenon are already strongly felt in West Africa, where economies are mainly based on the primary sector. Indeed, as one of the immediate consequences of climate variability is the appearance of large and prolonged rainfall deficits, agricultural production (80% rain-fed in West Africa) and the hydropower generation are quite affected.

The electricity access rate in sub-Saharan Africa was estimated in 2016 at 43% and only 23% in rural areas. Africa, however, has natural resources that can be valued and put to

use for its economic growth. Nevertheless, only a tiny fraction of this potential is currently exploited. Developing alternative energies to fossil hydrocarbons, especially solar energy and biofuels, and mastering the efficient tools and processes of smart grids are indisputable possible responses, considering the huge potential of renewable resources available on the African continent.

In addition, housing shortage and infrastructure are among major challenges to meet in order to improve the living conditions of the people and develop the economy in Africa. The strategic sector of construction must provide sustainable solutions to address these challenges. Ecomaterials for construction are one of the best ways to achieve this. They reduce greenhouse gas emissions, limit energy consumption and optimize the use of non-renewable natural resources. Moreover, by offering professionals high-performance and economically viable technical solutions, ecomaterials offer a real potential for the growth of green growth on the African continent.

This is why the Sustainable Development Goals (SDGs) aiming at eradicating poverty and hunger within only 15 years can be achieved only through the integration, within development actions, the sectors of Water, Energy, Food Security and Sustainable Habitats (Water-Energy-Food-Habitat nexus).

### **Goal**

The overall objective of the conference is to understand the major challenges of to manage water, energy, food security and sustainable construction in order to stimulate green growth in Africa through scientific contributions. More specifically, this conference will help:

- Create a framework to share the results of different researchers from Africa and the rest of the world
- Offer young researchers and PhD students the opportunity to share and discuss their findings
- Contribute to the improvement of knowledge and practices on the Water-Energy-Food-Habitats nexus

### **Organisation**

The conference will be held every two years on topical scientific issues integrating mainly the Water-Energy-Food-Habitats nexus. For this first edition, the general theme is “Science and Eco-innovation for Sustainable Management of Natural Resources”.

Papers should specifically fit into the following sub-themes:

Sub-theme 1: Climate and Hydrological Cycle

Sub-theme 2: Pollution, Water Quality and Ecosystems

Sub-theme 3: Ecomaterials for Construction and Sustainability of Structures

Sub-theme 4: Renewable Energy and Smart Systems

The conference will include plenary and parallel sessions. A visit to 2iE’s research and demonstration platforms is planned.

### **Committees**

Local Organizing Committee (with its subcommittees)

Publication Committee

Chairs of the sub-themes

Scientific Committee  
Mobilization of financing Partners

### **Partners**

- Financing partners

The conference is organized with the financial assistance of the French Embassy in Burkina Faso, UEMOA and the ADB.

- Institutional partners

The conference associates the following institutional partners: Ministry of Urban Development and Housing, Ministry of Infrastructures and Transport, Ministry of Scientific Research and Innovation, International Labour Office, Ministry of Water and Sanitation, Ministry of Energy, UNICEF.

- Scientific partners

French National Institute for Solar Energy (INES-CEA, France), GREAH (Université du Havre, France), KNUST (Ghana), ANSOLE, LOCIE (Université de Savoie Mont-Blanc, France), Groupe INSA-FRANCE, Université de Liège (Belgium), Université Catholique de Louvain (Belgium), EAMAU-TOGO, Tuskegee University (USA), Penn State (USA), CIRAD, African Water Association, IWA, IRD.

- International Scientific Committee

Pr J.-M. Karimou AMBOUTA (Niger), Dr Felix ABAGALE (Ghana), Pr Edmond ADJOVI (Benin), Pr Kodjo AGBOSSOU (Canada), Pr Karifa BAYO (Burkina Faso), Pr Boumediene BENYOUCEF (Algeria), Dr Joël BLIN (France), Pr Luc COURARD (Belgique), Pr Brayima DAKYO (France), Pr Daniel EGBE (Austria), Pr Isabelle Adolé GLITHO (Togo), Pr László G. HAYDE (Netherlands), Dr Bamory KAMAGATE (Côte d'Ivoire), Pr Zacharie KOALAGA (Burkina Faso), Pr Nolwenn LE PIERRÈS (France), Pr Malik MAAZA (South Africa), Dr Gil MAHE (France), Pr A. S. Hassane MAIGA (Senegal), Pr Kossi NAPO (Togo), Pr Samuel Nii ODAI (Ghana), Pr Anne PANTET (France), Pr William PRINCE-AGBODJAN (France), Pr Xavier PY (France), Dr Emmanuel RAMDE (Ghana), Pr Pierre RIBSTEIN (France), Pr Arthur RIEDACKER (France), Dr Oumar SANOGO (Burkina Faso), Dr Erick TAMBO (Algeria), Pr Emmanuel TANYI (Cameroun), Pr Quoc Tuan TRAN (France), Pr Siaka TOURE (Côte d'Ivoire), Pr Issakha YOUM (Senegal).

- Organizing Committee

Pr Hama YACOUBA, Pr Harouna KARAMBIRI, Pr Yézouma COULIBALY, Dr K. Edem N'TSOUKPOE, Dr Amadou KEITA, Dr Yacouba KONATE, Dr Adamah MESSAN, Dr Sayon SIDIBE, Dr Daniel YAMEGUEU, Dr Mahamadou KOÏTA, M. Amadou BOUREIMA, Mme Farida THIOMBIANO.

### **Valorisation**

The conference papers are promoted on the one hand through publications of the proceedings, hard and soft copies are distributed to participants and other researchers. The best articles will be published in African Journal of Science, Technology, Innovation and Development (AJSTID).

### **Schedules**

Establishment of the various committees: April 1, 2018

Official Announcement for Donors / General Public: April 15, 2018

Date of abstract submission: July 15, 2018

Date of selection for the papers and result communication: September 30, 2018

Date of submission of selected paper/poster submission: October 30, 2018