



Sustainable Energy for Africa (SE4A 2021)

International conference co-organized by RAOS and ANSALB
8 –11 November 2021, Cotonou, Bénin
<http://www.se4a.africa/>

Concept note (version 10 september 2021)

(1) Historical note (previous conference SE4A / 3 days, October 2017, Brussels)

The first edition of the three-day international conference "Sustainable Energy for Africa" (SE4A1 in short), organised by the Royal Academy of Overseas Sciences of Belgium (RAOS), took place in Brussels (23-25 October 2017, Palace of the Academies).

The following messages were delivered as conclusion:

- **Science:** Energy is a value chain aimed at providing services to society, households and industry, based, for each region of the world, on an optimal mix of secure (24/7/365 supply), affordable and sustainable primary energy sources.
- **Politics:** Energy, together with circular economy, is a primary driver for development - research and innovation as well as education and lifelong learning for all are crucial; international collaboration in the field of energy - climate must be encouraged.
- **Follow-up edition in Africa in 2021:** academia, industry, policy makers and civil society should meet again in conference to report on the latest developments and discuss joint actions in the energy - climate sector in Africa.

The final programme of the previous conference (SE4A1, 23-25 October 2017) and the audio/ video recordings of all presentations are available on the following website:

- https://www.kaowarsom.be/documents/Conferences/Energy/RAOS_programme_sustainability_energy4Africa.pdf
- https://www.kaowarsom.be/en/SustainableEnergy4Africa_presentations%26vidéos

(2) Follow-up edition : SE4A 2021 / 4 days, Monday 8 to Thursday 11 November 2021, Cotonou, Benin

The second edition of the international conference "Sustainable Energy for Africa", SE4A 2021, will take place in Cotonou, Benin, from Monday 8 to Thursday 11 November 2021, jointly organized by :

- the National Academy of Sciences, Arts and Letters of Benin (ANSALB) - <https://academie-sciences.bj/>
- the Royal Academy of Overseas Sciences of Belgium (RAOS in English ; ARSOM in French ; KAOW in Dutch) - - <https://www.kaowarsom.be/en/home>

Taking into account uncertainties caused by the COVID-19 pandemic regarding international travel in November 2021, the conference will be organised in blended mode (i.e presential & virtual) . Speakers and attendees who could not come to Cotonou will be able to take part in the meeting, presentations and discussions, in video-conference.

The following nine topics will be discussed during the first three days (Monday to Wednesday) of the SE4A 2021 conference, addressing an international audience concerned with socio-economic development and access to energy :

- **Energy - key for achieving the Sustainable Development in Africa**

(1) Access to Energy and social & economic development ("Agenda 2030", UN 2015 and "AGENDA 2063 - The Africa We Want", AU 2015)

(2) Appropriation of renewable energy technologies, dispatchable (hydroelectric, biomass) as well as non-dispatchable (sun, wind, tides and waves)

(3) Energy systems that are secured, competitive and affordable, and compatible with a sustainable and inclusive development of the continent, integrated in a modern circular economy (saving of raw materials, energy efficiency, environmental preservation)

The discussion will focus on the overview of the situation, the identification of current initiatives and innovative projects, the mechanisms to accelerate their maturation (research and training programs, technology transfers, funding, etc.).

- **Energy value chain in Africa (including conversion technologies and energy services)**

(4) Management of energy based services in an inclusive and sustainable way (in rural and urban regions), using modern energy production, transport, distribution and storage technologies

(5) Optimisation of energy based services for big consumers (heavy industries, railroads, megacities, etc.): systematic digitalization, energy storage, etc.

(6) Energy supply chain for all types of consumers : centralised production (based on fossil fuels, hydroelectricity, nuclear power) versus distributed production (micro- and mini-networks often based on renewable energies)

- **Research, innovation & education in connection with the energy-intensive sectors**

(7) Materials and sustainable development: balancing use of natural resources with environmental concerns in the energy value chain; state of the art of eco-materials and advanced characterization methods and tools (including standards), development of energy efficient models.

(8) Reinforcement of education and research capacities to meet energy needs of transportation, residential users, industry and services; **valuation of scientific expertise in Africa** to promote and develop the label “Made in Africa”, specifically in the field of local natural and energy resources (materials, building technologies, etc.)

(9) Multidisciplinary approach for a sustainable access to energy: contribution of economic, legal and social sciences to analyse and take into account factors impacting the perception of energy services and usages, their affordability and the achievement of infrastructures.

This second SE4A 2021 international conference will bring together a large number of scientific, technological and political experts from Africa and Europe, from the public and private sectors, who are interested in energy-climate issues in Africa.

The expected outcome of this conference is :

- design a response adapted to the energy-climate challenges specific to Africa, based in particular on research, innovation and education,
- offer concrete, sustainable and innovative solutions to accelerate the maturation of initiatives based on natural resources (primary energies and eco-materials)
- give young researchers the opportunity to participate in scientific debates and engage in actions concerning improvements in the energy sector
- encourage and develop international cooperation (South-South, West-East and North-South) in the energy field, materialized by the signing of partnership agreements at national (public-private), regional and international levels, and intensify academic exchanges according to an Erasmus type model for the mobility of researchers in order to reinforce the capacities of African countries.

Speakers have been invited to choose a theme in line with this "concept note". They will present their topic in plenary session for about 15 minutes, preferably in English. Sufficient time will be allocated for questions and answers with the audience (local and remote) These Q&A times will be grouped for all papers at the end of each session,. After the Q&A time, the authors selected for the posters will have the opportunity to present their work in plenary for three minutes in English or French. All conference documents (invited papers and posters)

will be peer reviewed before being presented at the Cotonou conference and then published in the proceedings (which will be distributed to all participants and interested parties).

(3) Day 4 after SE4A 2021 (seminars)

The fourth day (Thursday) will be devoted to parallel sets of seminars at the higher education level. These seminars will be organised by interested stakeholders with the aim of transferring knowledge and skills in areas such as :

1. Solar energy - harnessing solar energy resources and integrating storage technologies to promote access to electricity in sub-Saharan Africa (Léonide Sinsin and Jean Snoeck).
2. Biomass Energy (Léonide Sinsin)
3. Nuclear energy and challenges for the development of the continent: potentials (human resources and inputs), needs in various fields and vital sectors (health, industry, electric energy production, agriculture, education, crafts, materials, etc.), training, fundamental and applied research, new needs, collaborations, partnerships, etc. (Rajaâ Cherkaoui and Bernard Mairy)
4. Innovative funding mechanisms for the energy sector in Africa (Bernard Mairy and Natalia Svarinska).
5. Development of local institutional capacities and scientific resources to meet Africa's needs in energy and related sectors.(Norbert Hounkonnou and Marc Lobelle)

Finally, a number of cultural and/or technical visits in Benin are scheduled during the week for conference attendees and accompanying persons.

Annex – SE4A 2020 Organizing Committee

(1) Experts proposed by ANSALB - BENIN – African Union

- 1- **Thierry d'ALMEIDA**, SEME-City ;
- 2- **Hippolyte AGBOTON**, Secrétaire perpétuel de l'ANSALB ;
- 3- **Ezinvi BALOÏTCHA**, Secrétaire scientifique CIPMA ;
- 4- **Rajaâ CHERKAOUI EL MOURSLI**, Membre de l'Académie Hassan II des Sciences et Techniques, Rabat, Maroc et vice-Présidente de NASAC ;
- 5- **Mario Roland GBAGUIDI**, AC-ANSALB
- 6- **Edgard GNANSOUNOU**, Ecole Polytechnique de Lausanne, Suisse, Spécialiste en Planification énergétique, bioénergie ;
- 7- **Mahouton Norbert HOUNKONNOU**, Past President ANSALB ; President NASAC (Network of African Science Academies)
- 8- **Badr IKKEN**, Directeur général de l'Institut de Recherche en Energie Solaire et Énergies Nouvelles (IRESEN), Rabat, Maroc ;
- 9- **Prem JAIN**, UNESCO Chair in Renewable Energy and Environment, Department of Physics, University of Zambia (Lusaka) ;
- 10- **Jackie Olang KADO**, Executive Director of the Network of African Science Academies (NASAC), Nairobi, Kenya ;
- 11- **Marc KPODEKON** (CBRST), Représentant du MESRS ;
- 12- **Monique OUASSA KOUARO**, enseignante-chercheure à l'UAC ;
- 13- **Nazaire PADONOU**, Président de l'Académie nationale des Sciences, Arts et Lettres du Bénin (ANSALB) ;

(2) Experts proposed by ARSOM / KAOW - BELGIUM – EU

- 1- **Emmanuel ACKOM**, UNEP DTU (Copenhagen), Senior Energy & Climate Expert
- 2- **Emanuela COLOMBO**, Dep't of Energy, Politecnico di Milano (Italy), Rector's Delegate to Cooperation, UNESCO Chair in Energy for Sustainable Development
- 3- **Georges VAN GOETHEM**, RAOS, main organiser of previous SE4A-2017 event
- 4- **Philippe GOYENS**, former Permanent Secretary of RAOS
- 5- **Patrick HENDRICK**, Aero-Thermo-Mechanics, Ecole Polytechnique ULB
- 6- **Hervé JEANMART**, Energetics, Biomass, alternative fuels, EPL-UCLouvain
- 7- **Benoît LEGRAND**, Coordinator Climate Unit, Enabel, Belgian Development Agency
- 8- **Marc LOBELLE**, Ecole Polytechnique de Louvain (Belgium)
- 9- **Philippe DE MAEYER**, Permanent Secretary of RAOS (ARSOM – KAOW)
- 10- **Bernard MAIRY**, Executive Director, Europ. Society of Engineers and Industrialists
- 11- **Eric PIRARD**, Mineral Processing & Recycling, Univ. Liège, Belgium (RAOS)
- 12- **Jean SNOECK**, consultant for Tractebel and Thermoflow within XRGY Consulting
- 13- **Jean-Pierre TSHIBANGU**, génie minier, Univ. Mons, Belgium (RAOS)

Addresses of the two organising Academies : RAOS (Belgium) and ANSALB (Benin)

- **Royal Academy of Overseas Sciences of Belgium** (RAOS in English)
/ Académie royale des sciences d'outre-mer (ARSOM in French)
/ Koninklijke academie voor overzeese wetenschappen (KAOW in Dutch)
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Website: <http://www.kaowarsom.be/en/home> - E-mail: contact_raos@kaowarsom.be /

ARSOM-KAOW (Belgium) - Aims and objectives

As a tool dedicated to overseas countries the Academy contributes to the progress of scientific knowledge about overseas regions. It acts as a meeting place for communication between North and South and represents an independent reference. It also promotes research and the dissemination of knowledge concerning overseas countries, both inside these countries and within Belgium. The Academy organizes or patronizes seminars or symposia (<https://www.kaowarsom.be/fr/conferences>).

- **Benin National Academy of Sciences, Arts and Letters** (ANSALB)
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ANSALB (Benin) - Aims and objectives

ANSALB is uniquely positioned to bring scientific knowledge to bear on the policies/ strategic direction of the country, and is also dedicated to the development and advancement of Science, Technology, and Innovation (STI), arts and letters in Benin Republic. The aims and objectives of the Academy are to promote the growth, acquisition, and dissemination of scientific knowledge, and to facilitate its use in solving problems of national interest. (<https://academie-sciences.bj/srce/about/>