# Energy Modelling Platform for Africa (EMP-A) 2021

*Concept Note*

*Version 1: 06.10.2021*

## Context

Secure, adequate, and reliable access to modern energy forms and services for livelihoods and industrialisation is critical for attaining Africa's sustainable and inclusive development transformation, framed by the African Union's Agenda 2063 and the UN 2030 Agenda for Sustainable Development. This will simultaneously bring about resilience to shocks posed by climate change.

Against a background of increased energy demand for structural transformation, a rising population, the need for sustainable livelihoods, and the adverse impacts of climate change on the continent, there is an urgent need to support African countries to strengthen their capacities in energy planning. This will optimise investments in energy production and services to take advantage of the continent's abundant renewable energy resources, falling technology prices, and increasing availability of free open-source and robust energy planning models, data, and interfaces for customised applications to the needs of each country.

Furthermore, almost all African countries have included renewable power generation in their Nationally Determined Contributions (NDCs) to climate action under the Paris Agreement on climate change framework. The prominence of renewable energy in these actions, coupled with Africa's abundant renewable energy resources (including variable renewable energy sources such as wind and solar) and the urgent need to mobilise investments to meet a considerable energy deficit on the continent, requires strategic assessment planning. This is needed to ensure (i) enough generation capacity and expansion of supply to meet demand, (ii) system flexibility to accommodate high shares of renewables, (iii) adequate transmission capacity to dispatch power to demand centres, (iv) grid stability to accommodate short time frame variations, (v) appropriate and effective off-grid systems, (vi) optimised investments that capitalise on falling costs of low-carbon technologies to minimise the risk of stranded underperforming energy infrastructure assets in the future, and (vii) sustainable and coordinated use of energy, land, and water resources. Climate action has gained even more credence in light of the ongoing energy transition and growing calls for Africa to define net-zero emission targets. Yet, much of Africa has a considerable deficit in human and institutional capacity regarding effectively using models and modelling tools for energy supply, demand, and investment planning and management.

To date, two rounds of the EMP-A, namely EMP-A 2018 and EMP-A 2019, have taken place, witnessing growing participation and resounding calls for more

dedicated sessions. Owing to the COVID-19 pandemic, EMP-A 2020 was postponed to the current year; EMP-A 2021 will now take place from the end of November to mid-December 2021.

## Objective

The main objective of the EMP-A 2021 is to contribute to creating optimised investments for the energy transition in Africa to meet the continent's growing demand for low-carbon, inclusive, and climate-resilient development pathways whilst accessing its large resource base. It is an excellent opportunity to acquire free training, access to discussion forums, and coaching skills in models and tools for energy planning needs.

Although the EMP-A acknowledges that different countries and regions within Africa will require context-specific approaches, the overarching objectives of the platform are to:

- Gather the energy planning and modelling community in Africa to share experiences, models, and data in climate, land, energy, and water systems.
- Support human and institutional capacity in Africa for integrated energy modelling and investment planning.
- Support the development of centres of excellence for energy planning in Africa.
- Promote efficient and widespread use of open-source modelling tools to support the implementation of the SDGs, the Paris Agreement, and Africa's Agenda 2063.

## Structure of the EMP-A 2021

In light of the COVID-19 pandemic, this year's EMP-A will be a fully online event from 22nd November to 10th December 2021.


During the EMP-A 2021, participants will acquire energy and resource modelling skills using one of the following open-source modelling tools for sustainable development pathways under leading academics and researchers in the field of model-informed development strategies. There are five tracks. They will focus on:

- **OnSSET / The Global Electrification Platform**

  This course will help participants learn about geospatial energy modelling, how to build your own electrification analysis, how to include the geospatial dimension in your energy modelling to unlock new dimensions and gain an understanding of the earth's different energy resources, and how to incorporate them in your energy modelling.

- **Energy and Flexibility Modelling: OSeMOSYS & IRENA FlexTool**

  This course will help participants to understand what investments, when, and at what scale are needed in the energy sector to meet the growing demand for energy while meeting security, environmental, and other constraints. Special considerations will be made for modelling the flexibility of the electricity system, to account for high renewables penetration.

- **FinPlan (Financial Planning of Energy Infrastructure) and Investment Pipelines**

  This training course will provide basic knowledge on financial theory, will show how financing is done in the power sector across the world, with primary focus on developing countries, and will demonstrate how to carry out financial analysis of power projects using FINPLAN.

- **MAED and Energy Balance Studio**

  This course will teach participants how to use two of the International Atomic Energy Agency (IAEA) modelling tools: the Model for Analysis of Energy Demand (MAED) and the Energy Balance Studio (in the process, participants will learn about energy balances and energy systems in general, assisting them in energy system planning).

- **Introduction to CLEWS: Climate, Land-Use, Energy and Water Systems**

This course will teach participants how to analyse policy decisions on issues such as the promotion of clean energy, competition for water and agricultural modernisation by teaching how to define model components, linking them together in an integrated system representation, populating the model with data, running a model, and interpreting results using CLEWS.

Each course has two parts:

- **Self-paced study** (until the end of Week 1, the 26th of November). This will begin with an Induction Session (the 2nd of November), where participants will attend an introductory session on the geopolitics/political economy of the energy transition vis-à-vis long-term energy planning to set the scene for the training course. Participants will also be assisted in the installation of the softwares of their chosen Track. Online forums will be available to ask questions to peers and experts. In Week 1 of the School (22nd to 26th of November) troubleshooting sessions will be scheduled to support applicants.
- **In-depth hands-on training** (Week 2 - from 29th Nov to 3rd Dec): interactive component with dedicated trainers. Applicants will receive further coaching and training on using the tool from their chosen track for a national case study. Applicants are expected to develop a policy note, a poster, and an 'elevator pitch' presentation for a senior decision-maker. After that, applicants are required to present the PowerPoint, poster, and policy note in Week 3. Feedback will be given based on these presentations, as well as invitations to a high-level dialogue.

You will receive two certificates: one from the Open University for the self-paced portion and one from the Economic Commission for Africa & University of Mauritius on successful completion of the hands-on training. Participants must submit the Open University course certificate (self-learning part) by **16:00 CEST on Friday 26th November** to be admitted to Week 2.

The last two days of the School (Week 3b) will be dedicated to:

- **A High-Level Strategic Dialogue** of government officials, representatives of international organisations, and the expert community on planning and policies for national and sustainable development for the 2030 Agenda. This strategic dialogue is scheduled to occur on the 9th of December.

- **A complementary event organised by the FCDO – Seventh Roundtable Discussion on Strategic Energy Planning.** This event is scheduled to occur on the 10th of December.

## Application

There is no fee to attend; however, competition for space is high, and space is limited. Applicants interested in participating in the EMP-A are required to complete the application form using the link below:

https://share-eu1.hsforms.com/1mC7JMT0vSUyy8Fw0rQYraAexfzv

This form has a 'Personal Details' section and an 'Application' section, where candidates are required to share information such as, but not limited to, their current job responsibilities, motivation for the application, and field of interest. Such writing from the candidate will subsequently be taken into consideration for the application process.

**Furthermore, a stamped letter stipulating an Express Statement from participants' respective institutions towards attendance of the module of choice is mandatory for attendance**. To apply, you will have to demonstrate:

- That the output of your study (which will include a policy note) is in demand by the government that you represent; or
- That the skills, tools, and teaching material that you acquire will be used in university teaching or government planning knowledge management; or
- That the output will fit into policy-relevant research to be published on a visible platform.

Supporting documentation will require a letter from a head of unit or higher (government) or head of department or higher (university and others). Exceptions will be made for selected candidates from participating organisations and ongoing technical assistance programmes, and applicants will be notified via those channels. Priority will be given to participants from countries with a demonstrated need and ability to apply the training to policy development. The selection of participants will include considerations of equity, diversity, and inclusion.

The deadline to submit the application form is at **11.00 pm GMT+1 on the 22nd of October**, and applicants will be notified of their outcome by **11.00 pm GMT+1 on the 29th of October**. It should be noted that spaces are limited and the application

process is highly competitive. Furthermore, full-time commitment towards the EMP-A is crucial.

## Partners

In alphabetical order:

- African Climate Policy Centre - United Nations Economic Commission for Africa (ACPC-UNECA)
- Climate Compatible Growth Programme (#CCG)
    - Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)
    - Energy Sector Management Assistance Program (ESMAP)
    - International Atomic Energy Agency (IAEA)
- International Renewable Energy Agency (IRENA)
- Imperial College London (ICL)
- KTH Royal Institute of Technology (KTH)
- OpTIMUS Community of Practice
- Simon Fraser University
- Sustainable Energy for All (SEforALL)
- The Loughborough Centre for Sustainable Transitions: Energy, Environment, and Resilience (STEER)
- United Kingdom Foreign, Commonwealth and Development Office (UK FCDO)
    - United Nations Department of Economic and Social Affairs (UNDESA)
    - United Nations Development Programme (UNDP)
- United Nations African Institute for Economic Development and Planning (UN-IDEP)
- University of Cambridge
- University of Mauritius
- University of Oxford
- World Bank Group (WBG)

## IT requirements

Note that participants will require a computer with stable internet access to participate in the training. It is recommended, for all tracks, that participants have at

least 8 GB of RAM and a relatively new computer. Specific Tracks have additional computer requirements above and beyond this minimum:

- CLEWs - Windows 10 computer
- Energy Modelling and Power System Flexibility - Windows 10 computer, 8GB RAM, MS Office with Microsoft Access.

**Further information contact:**

Email: inquiries@optimus.community