



United Nations
Economic Commission for Africa



**CLIMATE, LAND, ENERGY AND WATER STRATEGIES (CLEWS) TO SUPPORT
THE IMPLEMENTATION OF NATIONALLY DETERMINED CONTRIBUTIONS
(NDCS) TO CLIMATE ACTION**

APRIL 26TH, 2018, ADDIS ABABA, ETHIOPIA.

PRESENTATIONS

Linus Mofor, Senior Environmental Affairs Officer (Energy, Infrastructure and Climate Change), **ACPC**

Mark Howells, Professor, Energy Systems Analysis, **KTH**

Toshiaki Nagata: Senior Programme Officer, NDC Implementation, **IRENA**

Hannah Daly, Energy analyst, **IEA**

BACKGROUND OF THE MEETING

The overall objective of the meeting is to review and validate the Climate, Land, Energy and Water Strategies (CLEWs) models by the African Climate Policy Centre (ACPC) of the Economic Commission for Africa. It further evaluates the suitability of open source tools to support the implementation of African countries nationally determined contributions (NDCs) to climate action under the framework of the Paris Agreement. The presentations focused on the importance of the Land, energy, and water nexus since they are crucial resources that are intrinsically linked to human well-being and sustainable development.

The country specific presentation made by prof, Mark Howells focused on how the CLEWs model can translate policy goals into quantitative things. He further demonstrated the application of such tools in selected pilot countries captures the socio-economic benefits of NDCs through the nexus approach.

The meeting was engaging and participants were impressed on the fruitful exchanges, on the cross sectorial approach and provided valuable inputs for better improvement of the model that reflect on country specific situation. The model is impressive and highlights the need and importance of political will in the integration of the energy, land, water into NDCs process. Participant further indicated the need in CLEWS model training courses to build capacity.

OPENING REMARKS

Toshiaki Nagata (IRENA)

- To help countries make their commitments stronger in their NDCs and include Renewable Energy (RE) processes
- 50% of countries in NDCs realize that RE can contribute to climate change adaptation
- The 2015 report on Water, energy, food is released and it talks the importance of linking RE with the nexus work that was initiated in 2013 linking food and water
- Energy Modelling Programme (EMP) – Africa initiative is involved in producing a training module for research institute in RE process

Hannah Daly (IEA)

- Global energy stat hub on energy statistics – 170 countries compile energy balances
- Is part of the global custodian agency for SDG 7, in tracking RE and Efficiency
- Annual WEO in-depth analysis of global energy policy landscape – produce outlooks
- Provides policy advice to countries
- IEA launched sustainable development scenario. Where Integrating approaches are the only way to make meaningful progress in achieving the SDGs bringing energy access should not put climate goals to risk

SETTING THE SCENE AND INTRODUCTION TO CLEWS (Linus Mofor, ACPC)

African countries are already experiencing catastrophic climate change and variability impacts in inter-related ways across many economic sectors - including agriculture, energy, ecosystems, and infrastructure. This calls for integrated approaches that respond to the increasing energy demand to, rising population pressures, to power their economies and provide for sustainable livelihoods while designing and implementing climate response measures. As a means to enforce the Paris Agreement, many African countries have outlined renewable energy and energy efficiency actions in their NDCs. In this regards and as a way forward it is vital for African countries to implement those actions in ways that capitalize and optimizing the benefits of using a nexus approach of Land, Energy and Water resources.

Against the backdrop of a rapidly changing climate, an additional layer of complexity is brought about by feedback loops and interdependencies between these three resources. Thus, appropriate open source tools for assessing the nexus and climate change for strategic investment and planning for multiple benefits of energy access, emissions reduction, land-use management, and adaptation is required. In this regard, the CLEWs framework developed by KTH have been known to provide valuable insights between conflicting uses of natural resources and underscore potential trade-offs and synergic solutions to overcome them. Furthermore, the model will provide efficient resource management and cross-sectoral approaches for policymakers in resource security, effective mitigation as well as adaptation measures.

Key remarks

- Countries need to align actions to their overall national development plans
- Integration across key sectors are necessary as trillions of dollars of investment are fit for purpose
- In most countries NDC– actions on the use of land, energy and water resources are specified
- Sierra Leone and Ethiopia are picked as country studies to see the integrated CLEWs framework of actions.

COUNTRY SPECIFIC CLEWS MODEL DISCUSSION (Prof, Mark Howells, KTH)

The Case of Sierra Leone

Main priority is energy access for all -> aim is through mini grids -> current energy resource is hydro

Modelling Assumptions

- Time domain used is 2015-2040 *Comment:* need to be aligned with major developmental agendas like SDG and Agenda 2063 (time domain to be changed to 2015 – 2063)
- Time resolution used: 2 seasons represented; Change of the wet and dry seasons; May to October (the Wet Season) and November to April (the Dry season)
- Water demand include; water demand for commercial and industrial purposes
- Power generation options; biomass, HFO- fired turbines, natural gas, Hydro-Electricity, solar PV
- Renewable Energy Opportunities; solar and wind energy
- Energy balances and demand include: existing and planned power generation capacity, electricity demand growth

- Land use include: forest area as constant, permanent meadows and pastures as well irrigated land
- Crops used in the model include; cassava, rice, pulses, cocoa, palm oil
- Demand for crop depends on population and per capita income in this regard rice is consumed more in Sierra Leone and is assumed for Sierra Leone to becomes self-sufficient in rice production along the model estimated time
- Household are used
- Provision for social facilities is also part of the model as prices for these facilities are different
- The model is flexible and can be run using different scenarios

Baseline result

- Energy is used highest during the day with Industries using 6-8 hours while in homes between 4-5am start of the peak in the morning
- Suppressed energy demand in line with suppressed supply also changes with season; where the model can customize customer demand and changes
- Gas is optimistic; diesel plan, solar plant could compliment, other energy sources; renewables should be used instead of gas
- Cost of rice importing is more than the cost of production. Model should be tuned to rice production to avoid importation which is costly

The Case of Ethiopia

Since the CLEWs model was done together with the Ethiopian Committee, it reflects the country situation to an extent. The data was provided by the Ethiopian country representative and gives a closer picture of the country's CLEWs perspective in their Growth and Transformation plan (GTP II).

The discussion was highly focused on the Sierra Leone case study since the modelers did not consult country representative and wanted a concrete input. The following were the prominent issues raised in the countries' presentations and needs to be reflected in the model

- Liaise with the ministry for updated and accurate data
- Model should provide good illustration of planning and implementation
- Need to Include the issue of women; capacity building approach
- The generation cost does not reflect the tariff cost of the consumer (concerning the assumption that people close to grids use the grid rather than other sources of energy)
- Socio Economic Benefits (SEBs) of the CLEWs model especially with regards to employment of youths through various Renewable Energy mechanisms
- in the model, Fishing sector is in the agricultural sector, however it should also be in the commercial sector
- Animal rearing needs to be included, as it is an upcoming important aspect of development
- Efficiency parameter need to be used in all sectors for example, in the case of agricultural land encroachment into forest; Different levels of intensification can be used for production
- Cost of solar and other technologies are dropping, this needs to be reflected in the model

Way forward

- Partnership of Sierra Leone and KTH to figure out the total energy potential
- Sierra Leone looking forward to provide data needed to fine-tune model. And encourage better communication with universities which can be used to help research in Climate Change
- Sierra Leone to provide the 5 scenarios of the socio-economic pathway
- Identification of ways of income that integrates development approach for cross sectorial partnership
- Creation of a Steering committee within sierra Leone that cuts across sectors to use model in the NDCs of the country

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