

Long-Term Energy Scenarios for the Energy Transition: Experience and Good Practices in Africa

Presenters:

Juan Jose Gracia, Angela Mutsotso | IRENA

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SPEAKERS



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Long-Term Energy Scenarios for the Energy Transition: Experience and Good Practices in Africa

IRENA Insights webinar, 12 March 2024
Juan Jose Gracia & Angela Mutsotso

IRENA is grateful for the generous support of the Ministry of Foreign Affairs of Denmark in developing the Webinar Series and Report

IRENA's long term energy planning support portfolio

1. Institutional Capacity Building



National
masterplan
development



Regional model
analysis and
planning



Energy planning
for NDCs

<https://www.irena.org/Energy-Transition/Planning/Long-term-energy-planning-support/Capacity-building-for-energy-planning-and-modelling>

2. Planning model development and applications

- » SPLAT Starter model kits
- » Renewable data for planning



"Planning and prospects for renewable power in Africa series" since 2012

3. IRENA LTES Network

Peer-to-peer learning



<https://www.irena.org/energytransition/Energy-Transition-Scenarios-Network>

What is long-term energy planning? What are the benefits?

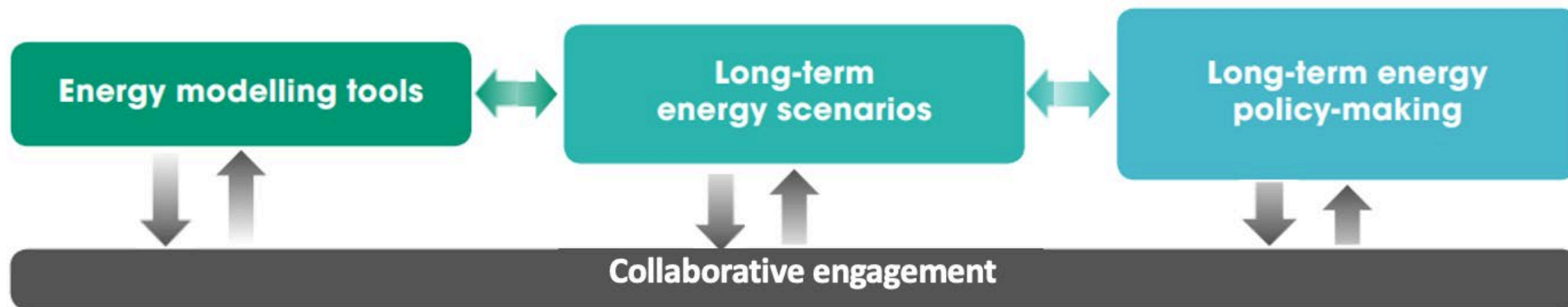
Long-term energy planning, if done properly:

- » Creates consensus among stakeholders
- » Can help to avoid costly stop-gap solutions or investment mistakes
- » Reduces uncertainties in policy direction and project selection
- » Accelerates investment and service delivery



Summary from “Planning renewable energy strategies: Africa power sector, achievements and way forward”, Abu Dhabi January 2015

A transparent and open LTES development process is essential for the clean energy transition



Source: IRENA 2020, *Scenarios for the Energy Transition (adapted)*

- Provides a global platform to **exchange national long-term energy scenario (LTES) practices** among scenario practitioners.
- Promotes wider and more effective use of LTES for the clean energy transition in **governments**.
- +60 country examples over 70 international and regional events and webinars organized.

29 Country Members



14 Technical Partners



Long-Term Energy Scenario (LTES) Network

Focus



Practices and experiences collected



Report's Framework



The Africa Webinar series

- To facilitate the peer-to-peer exchange of practices and experiences on long-term energy scenarios (LTES) in the region to accelerate the clean energy transition.
- Webinar series focuses on **countries that have harnessed LTES** to promote clean energy transitions.
- Selected government energy scenario practitioners discussed **current practices, experiences, challenges, and opportunities** in developing and using LTES.



nepad.org



afdb.org



au.int/commission



get-transform.eu



energy.go.ke



irena.org



uneca.org

Speakers (LTES Members)



Hala Ramadan

Director of Economic
& Environment
Studies Department,
New & Renewable
Energy Authority



Simpson Attieku

Principal Energy Analyst
Energy Commission of Ghana



Grace Njeru

Senior Economist
KETRACO

From top left to right: Egypt, Ghana and Kenya

Speakers



Nolwazi Khumalo

Senior Energy Officer
Ministry of Natural Resources and Energy



Eli Jidere Bala

Director General
Energy Commission



Fatiha Machkori

Head of the Observation and Forecasting Division,
Ministry of Energy, Mines and Environment



Hassen Elagrebi

Head of International Cooperation
National Agency of Energy of Tunisia



Clinton Carter Brown

Energy Centre Head
CSIR



Oagile Johannes Setlhare

Principal Energy Engineer
Department of Energy, Ministry of Mineral
Resources, Green Technology and Energy Security

From top left to right and to
the bottom:
Eswatini, Nigeria, Morocco
Tunisia, South Africa and
Botswana

ENERGY PLANNING DOCUMENTS AND MODELLING TOOLS

This dashboard shows modelling tools used by governmental and technical institutions in developing their planning documents.

Filter by country

All

▼

Filter by region

All

▼

DATA COLLECTED

74

Countries

111

Documents

Search by modelling to

Search

🔍

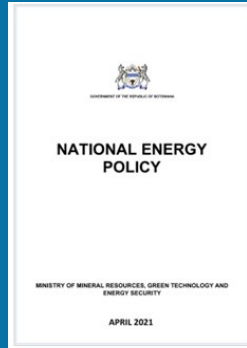
✕

Search by modelling tool

Modelling scope

Country	Planning document	Responsible institution	Planning horizon	Year of publication	Planning document scope	Modelling tools used	Energy system	Power capacity expansion
Andorra	Long-Term Strategy on Energy and Climate Change	Oficina de l'Energia i del Canvi Climàtic/Agency of Energy and Climate Change, Ministry of the Environment, Agriculture and Sustainability	2020-2050	2021	Energy system	Unclear	<div></div>	<div></div>
Argentina	Energy Scenarios Argentina 2040: Commonalities and divergences about the future of energy in Argentina	Ministry of Finance	2030-2040	2018	Energy system	LEAP, Excel	<div></div>	<div></div>
Argentina	Escenarios Energéticos 2030	Ministro de Hacienda	2018-2					

National Energy Planning Documents



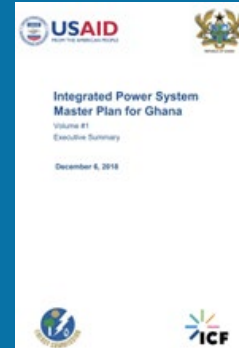
Botswana



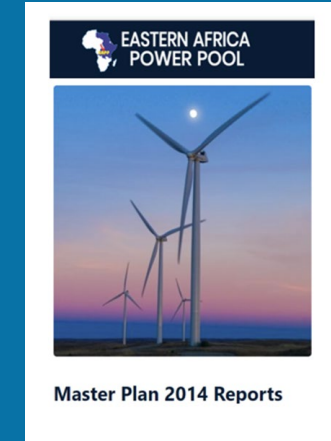
Egypt



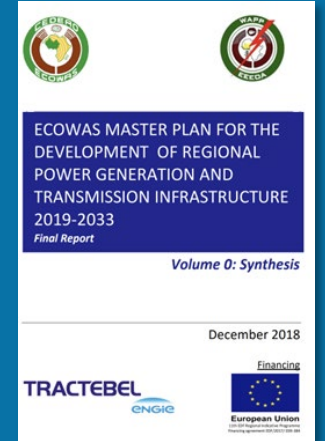
Eswatini



Ghana



East African Power Pool



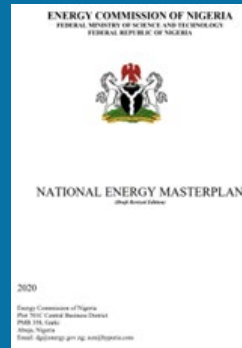
West African Power Pool



Kenya



Morocco



Nigeria



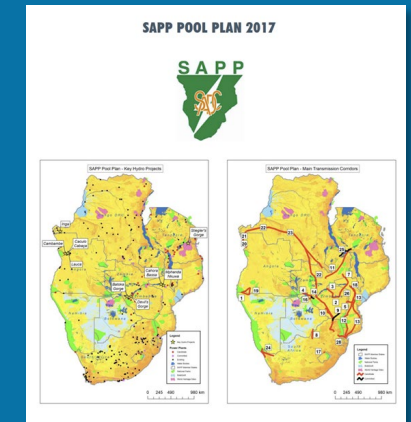
South Africa



Tunisia



Med- TSO



Southern Africa Power Pool



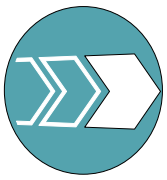
STRENGTHENING INSTITUTIONAL OWNERSHIP

Building the Right Type of Scenario Capacity in Government

	In-source	Outsource	National partners	International partners
Botswana	X		X	
Egypt	←			X
Eswatini	X			X
Ghana	X		X	X
Kenya	X		X	
Morocco	?			X
Nigeria	X			X
South Africa	X		X	
Tunisia	X			X

Strengthening capacity for mid- to long-term energy planning

- Countries have partnered with international organisations and the private sector to strengthen their capacity for energy planning
- Countries secure financial resources and technical assistance through international partnerships
- Kenya, EAPP, WAPP and Med-TSO work in close collaboration with consultants to ensure their skill sets are transferred to government institutions



IMPROVING SCENARIO USE

Morocco

- LTES used to plan for **deployment of renewables** & assess **climate mitigation actions**
- LTES are communicated through **targeted outreach**

Egypt

- Communicate LTES through **workshops and media**

Kenya

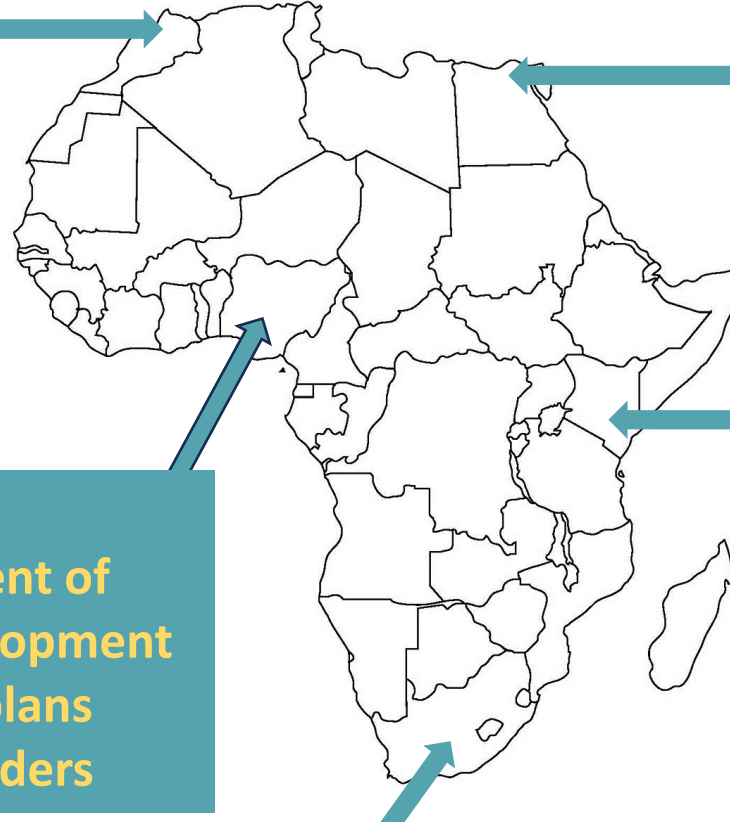
- LTES Inform power sector optimization to **minimise risk** and deployment of renewables
- Targeted stakeholder outreach

Nigeria

- LTES used to plan for **deployment of renewables** & **infrastructure development**
- LTES inform **decarbonisation plans**
- LTES are **validated by stakeholders**

South Africa

- LTES used to assess **deployment of renewables**
- LTES used in policy formulation to achieve **social & environmental outcomes**





STRENGTHENING SCENARIO DEVELOPMENT PROCESSES

Morocco

- LTES are formed as part of an **NDC-driven** process
- Extensive **stakeholder consultation**
- Account for all **emitting sectors**



Egypt

- Updated every **2 years** as stated in **legislation**
- **Multiple ministries and institutions** participate in LTES development

Kenya

- Updated every **2 years**
- Multiple ministries and institutions** participate in LTES development
- Scenarios focus on the **power sector**

Nigeria

- Updated every **5 years** as stated in **legislation**
- **Multiple ministries and institutions** participate in LTES development
- **National planning office** conducts energy planning
- **LTES and LT-LEDS** are aligned

South Africa

- Extensive **stakeholder consultation** is conducted
- Scenarios assess **battery technologies** to support VRE focusing on the **power sector**

Support countries and regions to devise their own strategies:

Continental level

African Continental Power Systems Masterplan:

- A continent-wide collaborative process of African power pools and AUDA-NEPAD to plan the electricity generation and transmission and promote capacity building in energy planning
- In 37th AU assembly on 17-18 Feb, the African heads of States officially endorsed the first CMP plan entailing African energy transition scenarios up to 2040, as AU's flagship project under Agenda 2063
- IRENA is supporting the CMP initiative as official partner:
 - Organized a 3 year long training programme on generation modelling & contributed to over 30 stakeholder meetings
 - Next in plan are the joint capacity building programme for East African Power Pool and outreach efforts on mobilizing finance for CMP



Example: Senegal Masterplan Development Support Programme

Outcomes:

- IRENA and GIZ supporting the Ministry of Petroleum and Energy in Power System Planning with 1+ year programme
- **Building capacity:** National team trained on use of IRENA SPLAT-MESSAGE model for their own power system planning
- **Establishing governance:** Cross-divisional national team from every official planning institution



1st Training 19-23 June 2023 Dakar, Senegal



Kick off Meeting 20-21 March 2023 Dakar, Senegal



2nd Training 28 Aug-1 Sept 2023
Dakar, Senegal

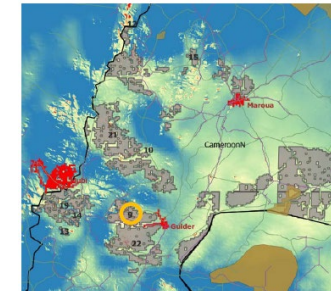
Example: Cameroon national programme



RÉSUMÉ DU PLAN DE DÉVELOPPEMENT NATIONAL POUR LES ÉNERGIES RENOUVELABLES

1. LE CONTEXTE GÉNÉRAL, LES OBJECTIFS ET L'ÉTAT D'ACCELERATION DES TRAVAUX

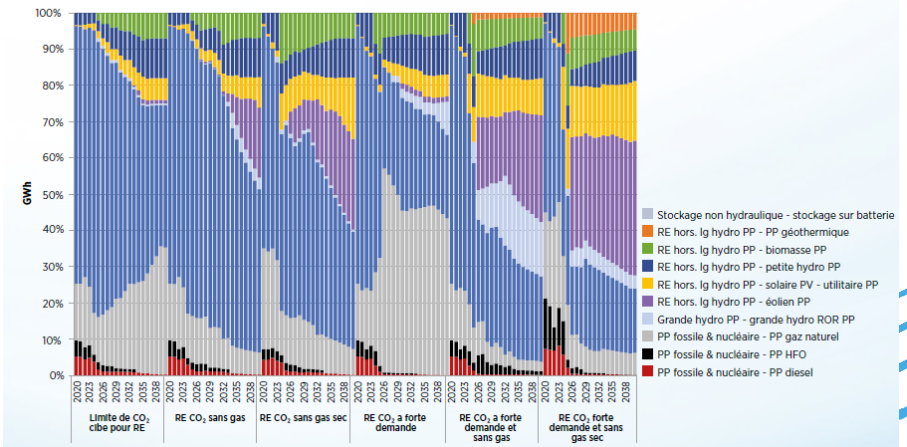
Les différents objectifs de développement fixés par le gouvernement du Cameroun dans des documents tels que la Stratégie Nationale de Développement (SND30) et la Vision 2035 nécessitent une transformation et une amélioration significatives du paysage énergétique du pays. Compte tenu du rôle que les énergies renouvelables peuvent jouer dans la satisfaction des besoins énergétiques de la nation, un plan visant à guider les investissements dans divers projets d'énergie renouvelable est essentiel. La planification à long terme, en tenant compte des objectifs, est essentielle pour offrir une vision claire de la manière dont le pays peut atteindre ses objectifs.



Outcomes:

- New inter-agency planning structures formed in the government
- Ca. 300 hours of training for 20+ staff over 1.5 years
- Six key scenarios developed using SPLAT-MESSAGE to explore official policy goals
- Already being used as internal benchmark to screen project investments

Figure 1 Comparaison de la production entre les différents scénarios



Thank you!

The bottom half of the slide is decorated with a series of wavy, overlapping lines in shades of green and blue, creating a dynamic, flowing effect.



Q & A
10 min

THANK YOU FOR JOINING US!

SEE YOU IN OUR NEXT WEBINARS
www.irena.org/events/2020/Jun/IRENA-Insights