

**Technical Meeting on Topical Issues in the Development of Nuclear Power
Infrastructure**

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Recent Developments in Sudan Nuclear Power Infrastructure

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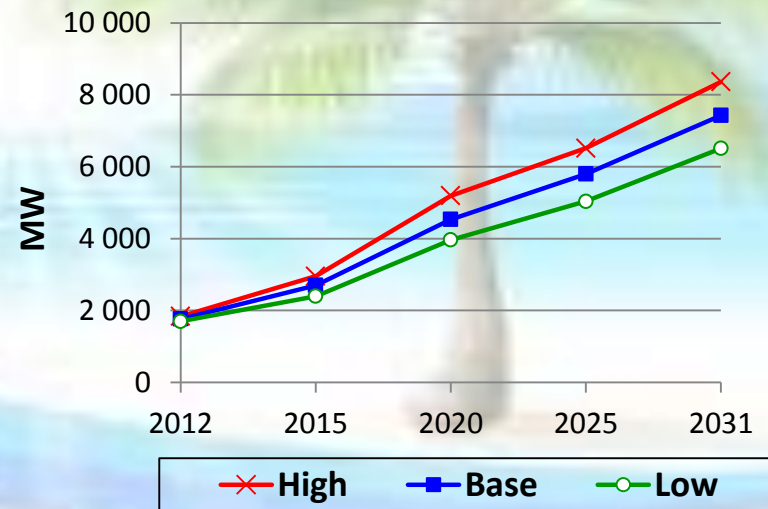
Ministry of Water Resources and Electricity (SUDAN)

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Introduction

- Area: 1,886,068 km²
- Population: 30,894,000
- Current installed capacity is 3025 MW (50% hydro and 50% thermal).
- Demand for electricity is expected to reach ~ 8500 MW by 2031.
- Sudan plans to introduce nuclear power in 2026.
- Sudan prepared strategic plan for introduction of nuclear power with the assistance of IAEA in 2010.



Electricity Demand Forecast

Sudan's NEPIO

- Ministry of Water Resources and Electricity (MWRE) is the core of Sudan's NEPIO.
- Sudan's NEPIO is headed by the Undersecretary of MWRE.
- The Directorate of Nuclear Power in MWRE and the National teams formally set up by Sudan NEPIO's Director are the major constituents of Sudan's NEPIO.
- The national teams involve members from relevant stakeholder organisations in Sudan, such as Sudan Atomic Energy Commission, Nuclear Regulatory Body, Ministry of Minerals, Ministry of Justice, Ministry of Environment, Ministry of Internal Affairs, Ministry of Foreign Affairs, Ministry of Oil, Geology Research Authority, Meoto Authority, Universities, MWRE, ...etc.
- Recent reviews of Sudan's NEPIO set up suggested adding teams for nuclear safety, security, safeguards and radioactive waste management.

Possible Technology Suppliers

- Sudan has signed numerous MOUs and cooperation agreements with a Chinese vendor for constructing its 1st NPP.
- Sudan has signed (in 2013) and activated (in 2014) agreement of “Peaceful Uses of Atomic Energy” with the Chinese Government.

Legislative and Regulatory Frame Work

- Nuclear law (drafted in 2012) is now in the Council of Ministers for endorsement.
- Amending/Developing other related laws is being considered.
- International conventions relevant to nuclear power were studied and recommendations were raised to decision makers.
- Ministerial decision in 2010 expanded the then existing “Radiation Protection Committee” into a “Nuclear Regulatory Body (NRB)”.
- Resources unavailability for NRB hindered developing nuclear regulations.
- Benefitting from IAEA recommendation on establishing independent Review Committee to carry out roles of regulatory body in early siting activities, Sudan’s NEPIO Director established in 2013 a committee including members from relevant stakeholders to develop nuclear regulations and provide them later to NRB.
- So far, the committee drafted siting regulations covering anticipated siting studies and reviewed relevant Chinese Siting codes and compared them with other international codes.

Siting

- International consultant finalised site survey studies in May 2013 and selected 9 potential sites.
- Preparing for next stages of siting studies, it was decided to carry out further confirmatory studies which will cover some of the selected potential sites.
- Confirmatory studies will start in the 2nd quarter of 2015.
- IAEA review mission, expected in 2015, will review results of previous siting studies as well as the work plan of confirmatory studies.

Feasibility Study

- International consultant hired in Jun 2011 finalised feasibility study for Sudan 1st NPP in 2013.
- The study, which comprises 18 reports, has identified many gaps in Sudan infrastructure.
- Incompletion of some parts of Sudan strategic plan at the time of conducting the study as well as likely delay in starting NPP construction may lead to updating some parts of the FS.

Human Resources

- International consultant hired in May 2012 finalised HRD master plan.
- The plan covers the 1st, 2nd and 3rd NPPs as well as the needs of the NRB and supporting organisations.
- Anticipated IAEA mission to Sudan this month will review Sudan HRD master plan.
- 70 Sudanese candidates were trained in China in two batches; one in 2011 and the other in 2014 (general training on nuclear power infrastructure development).

Stakeholders Management, Public Consultation and Quality Assurance Plans

- International consultant hired in May 2012 finalised stakeholders management, public consultation and quality Assurance plans for Sudan Nuclear Power Programme.
- The above mentioned plans are being reviewed by national teams supported by international experts.

Detailed Scheduling and Electric Grid Studies

- International consultant hired in May 2012 finalised detailed level 3 Scheduling for Sudan pre-project (pre-construction) activities and level 1 scheduling for all other project stages.
- The schedule has been reviewed and is constantly being updated by a national team.
- A national committee has identified nine electric grid studies needed for assessing required grid enhancement.
- Identification covers who will conduct each study and when.
- Implementation of grid assessment studies will start in 2015.

Bid invitation Specifications (BIS)

- International consultant hired in Aug 2011 started preparing BIS for Sudan 1st NPP.
- Lack of input data needed for preparing the BIS documents led to amending the BIS contract.
- The amendment is aimed at enabling the consultant produce each contracted part of the BIS in two stages.
- Stage one for producing partial deliverables of the BIS contracted parts while clarifying missing input information needed for completing each part of the BIS.
- Stage two for revising the partial deliverables by the consultant and incorporating missing information when it is produced by Sudan.

Finance

- Sudan is investigating various methods for financing construction of its 1st NPP.
- Investigations will include “commodity swapping” and “Independent Power Producer” methods.
- Investigations will also include studying innovative financial-grantee methods e.g. using minerals, agriculture or tourism.

General Advisory Services

- Sudan has hired a consultant to act as General Advisor.
- General Advisor's duties include assisting Sudan to carry out its role as knowledgeable costumer.
- The range of services delivered by the General Advisor covers preparation of ToRs before contracting any service provider, reviewing technical proposals and reviewing reports of delivered services and opetioneering.

Main Challenges

- Lack of trained and competent human resources.
- Enhancement of Sudan's NEPIO formation.
- Developing realistically practical models of innovative finance means and financial-grantee tools.

A vibrant tropical beach scene. In the foreground, a white sandy beach curves along the bottom. A single palm tree with green fronds stands on the right. The ocean is a clear turquoise blue, with a small white sailboat visible on the left. A bright sun is low on the horizon, creating a lens flare effect with rays of light across the sky and water. A multi-colored rainbow arches over the ocean on the left side. The sky is a clear, bright blue with a few wispy white clouds.

Thanks for listening