Dialogue Forum 11

INPRO Dialogue Forum Roadmaps for a Transition to Globally Sustainable Nuclear Energy Systems

20–23 October 2015
Egypt
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ETRR –2
Contents

- Energy Strategy
- Nuclear Energy Strategy
- Basic features of the 1st NPP project
- Energy mix Scenarios in Egypt
Electricity Sector in Egypt

Installed Capacity by Type

- Steam: 43%
- Combined Cycle: 10.67%
- Renewable: 8.74%
- Gas: 43%
- Hydro: 35.39%
1 – Electric Energy Development Strategy

The strategy for the electric power development is based on:

• Rationalizing the use of energy, and
• Diversifying energy sources of production; in particular through:

  1. Expanding use of renewable energy sources
  2. Implementing the Nuclear Power Program
  3. Implementing advanced coal power plants with clean energy technologies
Contents

1. Reasons for decision to use nuclear energy
2. Current Status of the Nuclear Power Project
3. Basic Features of the 1st NPP Project Bid Invitation Specifications
1. Reasons for the decision to use nuclear energy

- Population growth
- Meeting the energy requirements for economical and social development
- Limited resources of oil and natural gas
- Almost full utilization of available hydro resources
- Renewable resources share limited to 35% by year 2027
- Diversification of energy resources
- Upgrading local industry capabilities and quality
- Limiting environment pollution
The following activities were completed:

- Nuclear Law Issuance.
- Site selection and relevant studies.
- Power plant (NPP) type selection.
- Concluding bid invitation specifications for the first NPP including the lessons learnt from Fukushima Accident.
- Completion of updating El-Dabaa site studies and site approval Body approval by the Egyptian Regulatory Body.
3. Basic features of the 1st NPP project

- The project comprises up to 8 nuclear power units and started of two unit.
- Turnkey Contract.
- The tender will call for all qualified international vendors to submit their bids.
- Nominal power of 1200 MWe for each Unit.
- PWR for which there are several contractors;
- EPC contractor is required to include all lessons learned from Fukushima accident as updated
Basic features of the 1st NPP project (Cont)

- The plant life time is 60 years

- Minimum 20% local participation for the 1st unit, 35% for the 2nd unit, and increases in the subsequent units

- Horizontal Acceleration 0.3g and the NPP level is 10 meters above sea level

- The bid includes supply of a nuclear power plant simulator
Current Main Challenges on the path of implementing the 1st NPP in Egypt

- Building up qualified personnel to manage and operation the first nuclear power plant activities.

- Building up nuclear energy public acceptance

- Maximizing local participation in the first nuclear power plant.

- Building up nuclear safety/security/SG culture
## The Schedule of started NPP on electrical network

<table>
<thead>
<tr>
<th></th>
<th>2016 to 2035</th>
<th>2036 to 2055</th>
<th>2056 to 2100</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NPP Size</strong></td>
<td>a– 4.8 Gwe</td>
<td>b– 9.6 Gwe</td>
<td>b– 24 Gwe</td>
</tr>
<tr>
<td><strong>No of unit</strong></td>
<td>4</td>
<td>8</td>
<td>20</td>
</tr>
<tr>
<td><strong>Unit size Gwe</strong></td>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
</tr>
</tbody>
</table>

a. The official plan    

b. scenario study
Energy mix Scenarios In Egypt

Power generation mix [TWh]

- Biomass
- Hydro
- Solar
- Wind on sheard
- Nuclear
- Gas Fired
- Oil fired

years

2015 2020 2025 2030 2035 2040 2045 2050 2055 2060 2065 2070 2075 2080 2085 2090 2095 2100

(a) The official plan until 2030 (b): scenario study from 2030 to 2100

not that
Power generation cost $/kWh with and without nuclear energy

$/kWh

With Nuclear
Without Nuclear
Carbon intensity of electricity supply [g-CO2/kWh] With and without Nuclear energy
Conclusion

- Electricity in Egypt is not sufficient, especially in the summer with the business is increasing demand for energy, which Art separate part of the loads.

- The final document for the first NPP of El–Dabaa is ready for international bidding once the Egyptian government takes the decision to resume the project.

- It is expected that the Bidder shall provide a schedule that allows for Unit 1 of the NPP to be completed within 7.5 years of the contract effective date.
Thank you