

Long-Term Energy Scenarios (LTES) for Developing National Energy transition plans in Africa

Webinar series

[The Egyptian Experience in Developing Energy Strategies]

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Setting the Scene

Development of Scenarios

Responsible Entities

Supreme Council for Energy

Goals and Challenges

Strategy Development and Update

National Energy Strategy Scenario

Key Steps to prepare the strategy

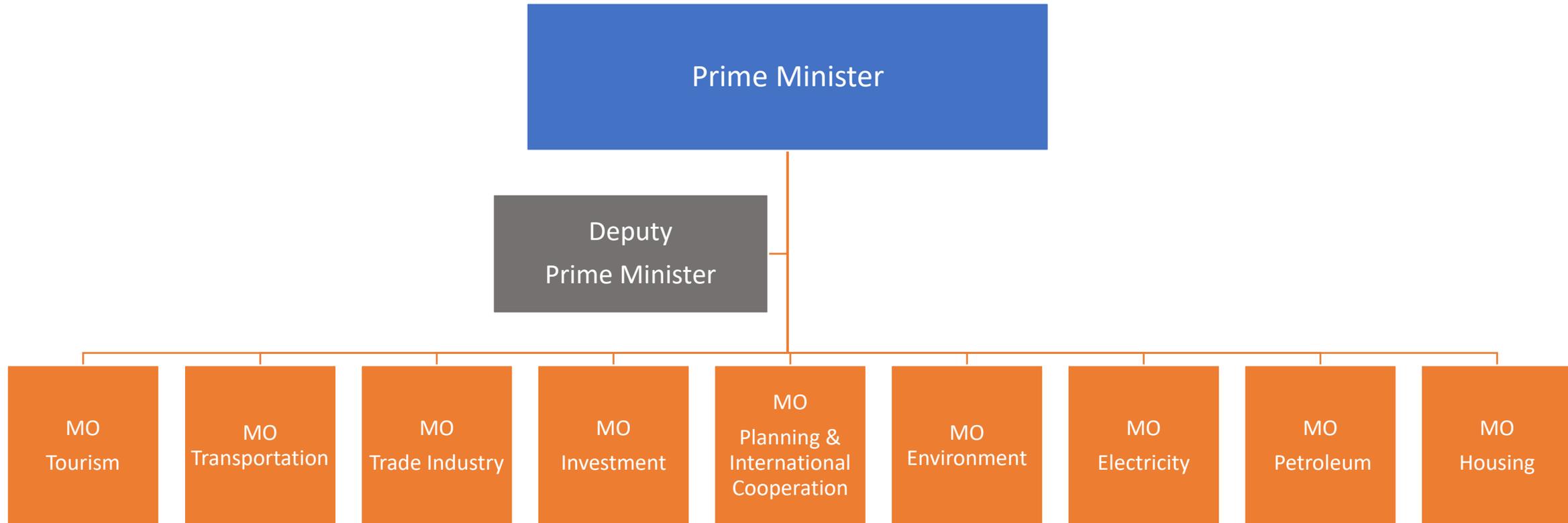
A. Development of scenarios

- First strategy for Egypt was implemented in 1982 “ reach 5% Renewable Energy in 2000 “, but it was not successful due to high cost of renewable energies.

B. Responsible Entities:

- In 1979 the Supreme Council for Energy was established .
- In 1983 The Energy Planning Authority as a governmental Entity was established by a Presidential Decree No. 112.
- In 1986 New and Renewable Energy Authority, (NREA), The national focal point to develop and introduce RE technologies to Egypt , (Recourse assessments & lands available , Establishing RE projects).
- In 2014 the Supreme Council for Energy reconstituted , To be responsible at the level of developing strategies, while the Ministry of Electricity & Renewable Energy and the Ministry of Petroleum & Mineral Resources are responsible at the executive level.

Supreme Council For Energy



Goals & Challenges

Goals

1. Ensure power supply secure
2. Sustainability guarantee
3. Enhancing competitive markets

Challenges

- **Enhancing energy security**, : (infrastructure development - encouraging investment - developing mechanisms and regulations - coordinating cooperation between the concerned ministries -.....)
- **Creating an energy system that is financially self-dependent** : (preparing a five-year plan - adjusting energy prices).
- **Energy Governance sector** : (establishing an entity responsible for energy planning, energy strategy and policy development - supporting the development of the energy information system - transforming the central unit for energy efficiency into an integrated agency for energy efficiency -).
- **Providing the appropriate environment to support effective competition:** (Establishing and support market regulators - encouraging investment in order to meet the changing demand and generation models - Supporting the role that Egypt plays in the markets future regional energy).
- **Encouraging and supporting policies and procedures that mitigate the impact of the energy sector for facing the impact of climate change** : (Supporting investments in terms of energy efficiency & RE - Supporting policies aimed at reducing greenhouse gas emissions - ..).

Strategy development & update

- **In October 2016**, the Supreme Council of Energy has adopted the energy strategy of Egypt 2035. Scenario 4-b (least cost scenario)- **Through a project funded by the European Union.**
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- **In 2018, Through a project funded by the European Union** , currently being built an Energy modeling unit consists of the employers from various concerned sectors to prepare Energy scenarios using the same software.
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- **Main variables of the update :**

1. GDP growth rates.
2. International Prices for (Crude Oil , Gas Imports , Hard Coal)
3. Population growth rates.
4. New Technologies.

National Energy Strategy Scenarios

Basic Elements of the Strategy basis:

Oil and Natural Gas production - Energy subsidies - Availability of Coal for Electric power generation - Nuclear Energy - Renewable Energy - Energy Efficiency

- Scenario 1: Alternatives for Renewable Energy sources.
- Scenario 2: Postpone the use of Nuclear and Renewable Energy sources and relying on high production of Electrical Energy.
- Scenario 3: Focus on Renewable Energy sources and Electric Energy (coal is not used to generate electricity, nuclear energy is not used until 2035)
- Scenario 4: All alternatives compete based on costs.

Key Steps to prepare the strategy:

- Having a responsible organizational structure
- Measuring and evaluating energy sources.
- Enabling Framework:
 1. Objectives.
 2. Regulations and laws.
 3. Support schemes.
 4. Enhance local benefits.
- Develop a roadmap that includes all sectors.
- Evaluate and measure costs, benefits, environmental & social impacts.
- Assessing the situation, reviewing variables and updating.

Cooperating with more than one international organization & integrate all efforts to reach Government's objectives

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Developing Energy Strategy in Egypt

Methodology, Scenarios, tools and Capacity building

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29/11/2021



Arab Republic of Egypt

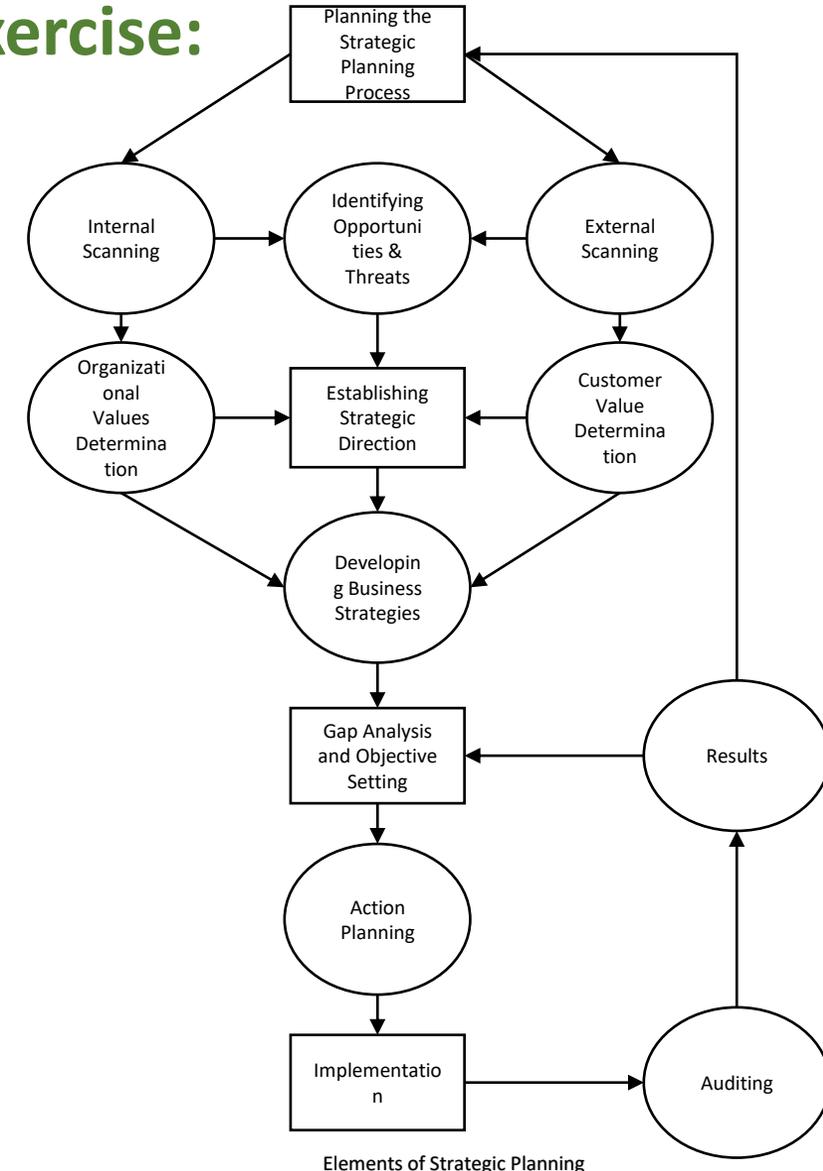
Ministry of Electricity and Renewable Energy

Methodology and process for developing scenarios

Energy System Planning is a strategic planning exercise:

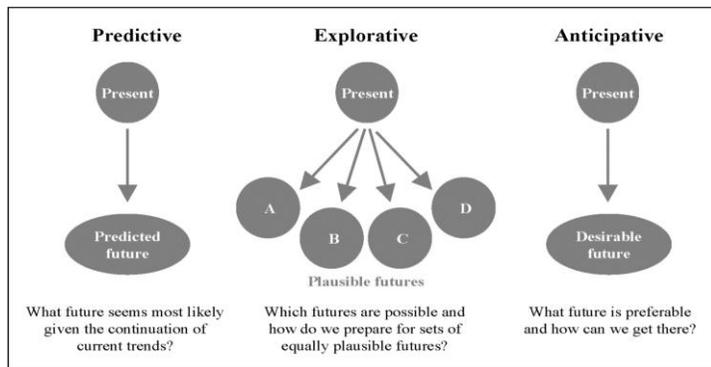
Strategic means it is a visionary interpretation of ideas and thoughts expected to be stated by the supreme relevant authorities.

- Political will.
- Integration of different stakeholders views. (Supreme Council of Energy, Ministries of Electricity and Renewable Energy, Petroleum, Environment, Planning, Investment, International Coop., Housing and Central Agency for Public Mobilization and Statistics (CAPMS) ... etc.).
- Institutional structure and governance of the relevant committees are essential as well.



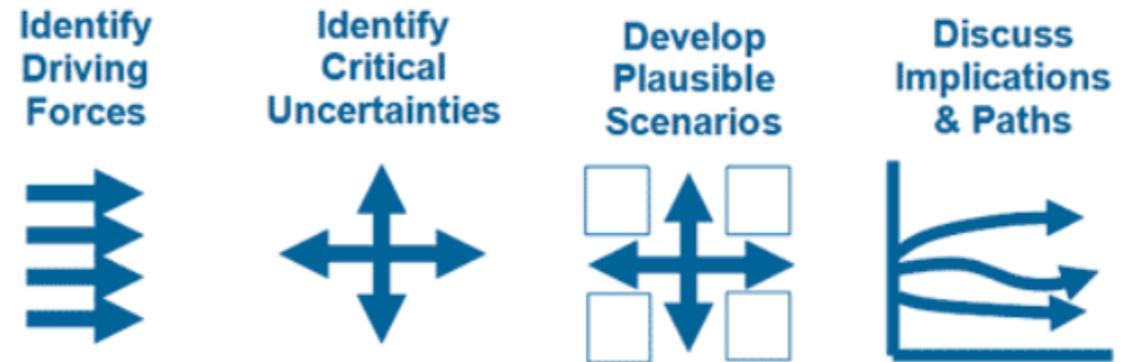
Scenarios and their role in developing Energy strategy

What are scenarios and what are the types of scenarios?



Source: Baumgartner and Midttun (1987a), Godet and Roubelat (1996), Dreborg (1996) and Robinson (1982)

Scenario development process in Egypt



Source: DTU Management Engineering, Technical University of Denmark

- **6 driving forces & several uncertainties**
- Oil and natural gas production.
- Energy subsidies.
- Coal as an energy resource.
- Nuclear Energy.
- Renewable Energy resources.
- Energy efficiency.

Energy System Modeling tools

What is an Energy System Model?

Why using system modeling?

Considerations for modeling tools selection in Egypt model.

Capacity Building

Since Egypt had initiated the energy system planning efforts and integrated both petroleum and electricity and renewable energy sectors under a unified umbrella of the integrated sustainable energy strategy until 2035, an embedded plan for building capacities has been prepared to realize the sustainable development targets in the country.

Conclusion

- Energy Planning is a strategic planning exercise.
- The political will is a significant commitment.
- Integration of sectors and involvement of relevant stakeholders are pillars of a successful planning exercise.
- Scenarios are the building blocks of the energy strategy.
- The scenarios development process requires the identification of driving forces and critical uncertainties in order to develop plausible scenarios that are able to be discussed within the relevant committees and workgroups.
- There are several considerations for selecting the suitable modeling tools including available capacities, recognition, analysis frames, cost ... etc.
- Capacity building helps ensure the successful implementation, analysis, and interpretation of the results of the scenarios.

Thank you for your attention



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