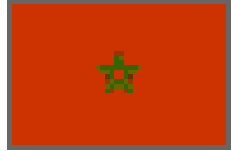


# WIN Global 2008 Annual Meeting

## 26-30 May 2008



Nuclear Revival : Maintaining Key Competencies



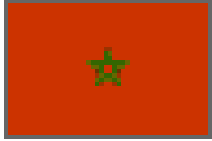
## COUNTRY REPORT

*MOROCCO*

\*\*\*\*\*

*Pr Oum Keltoum BOUHELAL*

*ENIM - Rabat*



# ***Outline***

- 1. Scope of the First NPP Feasibility Study***
- 2. Power Sector: Indicators and Perspectives***
- 3. Managing a First Power Reactor  
Challenge  
**Multidimensional Learning and Capacity Building*****

# ***1. Scope of the First NPP Feasibility Study***

Site and Feasibility Study of a first NPP carried out in cooperation with IAEA during the 80's

Three Phases Studies over a period of 9 years which ended in May 1993  
Main conclusions:

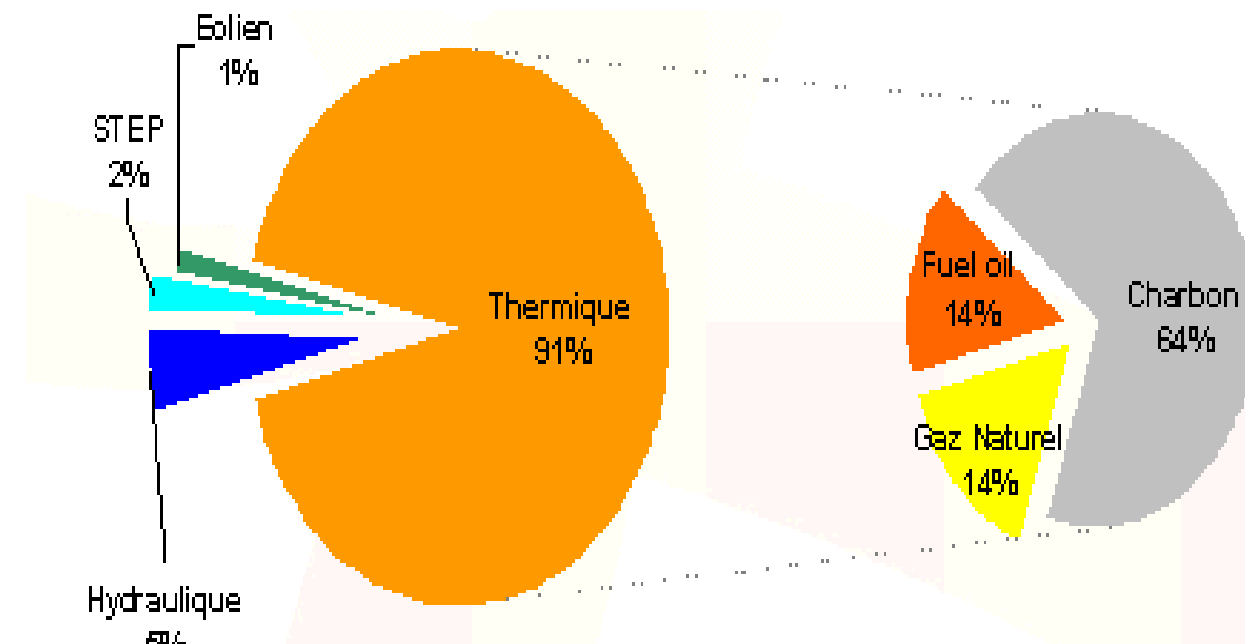
- selection and qualification by IAEA of the preferred site
- NPP in competition with other energy sources: coal and oil

Detailed study of the 900MWe PWR

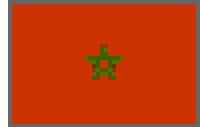
Process of updating toward designs integrating new safety and security criteria and commercially available

## 2. Power Sector: Indicators and Perspectives

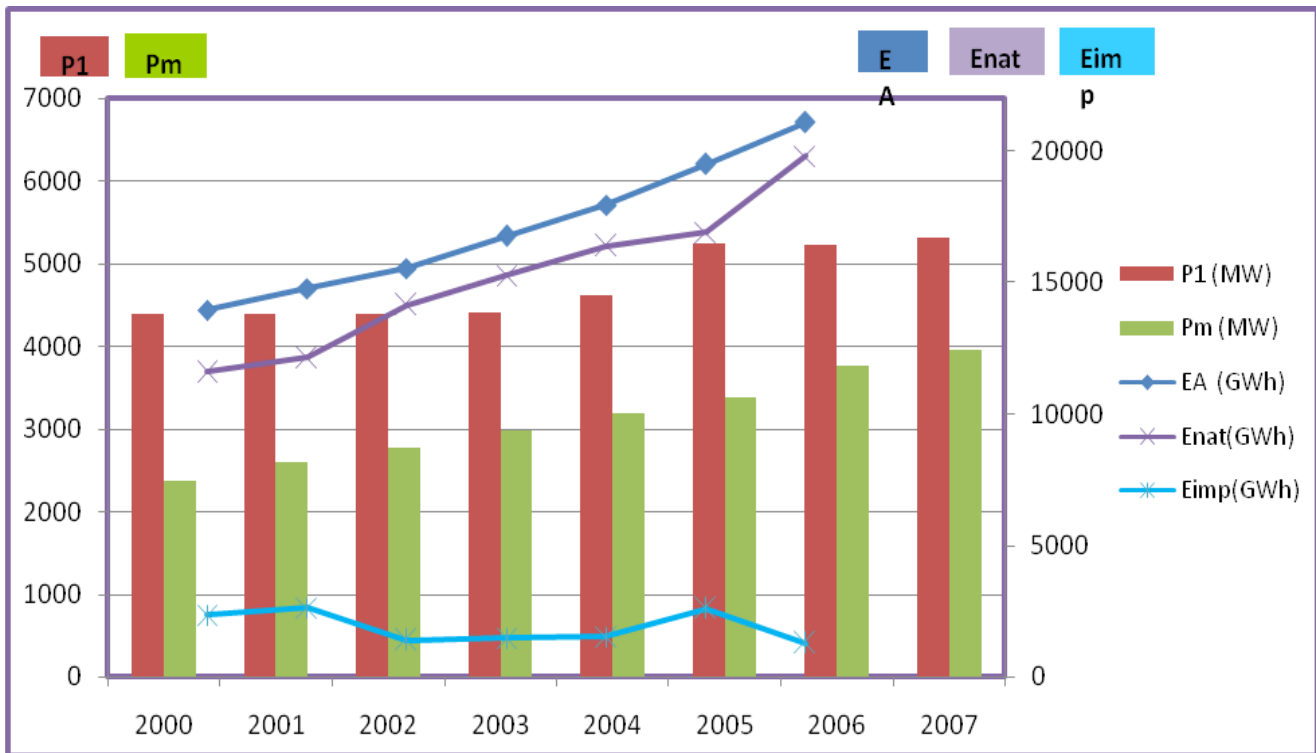
**2007: Electricity production by source**  
**Power delivered: 19807GWh**

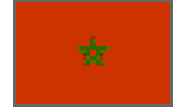


Source: Ministry of Energy and Mines



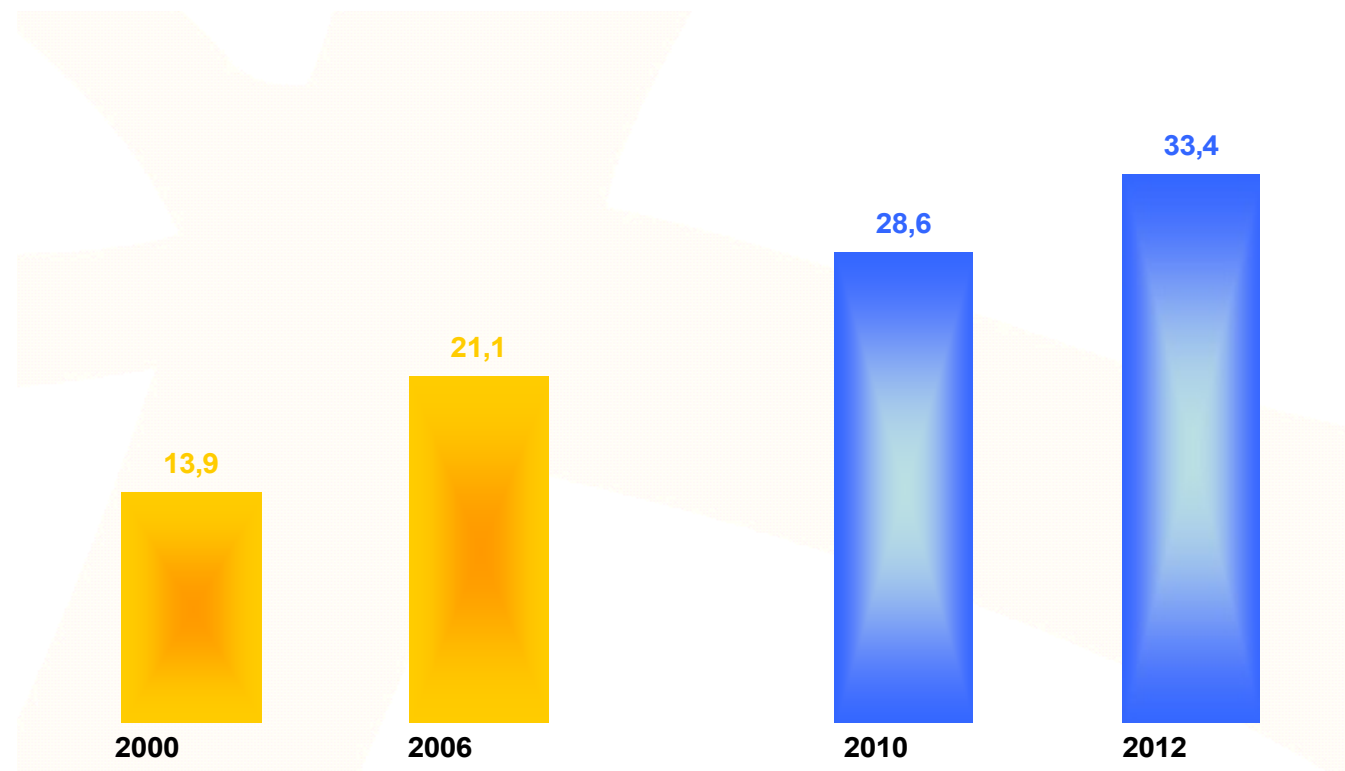
# Evolution of the Main Indicators





# ***National Electricity Sector planning program***

## **Reference Scenario for Electricity Demand (TWh)**

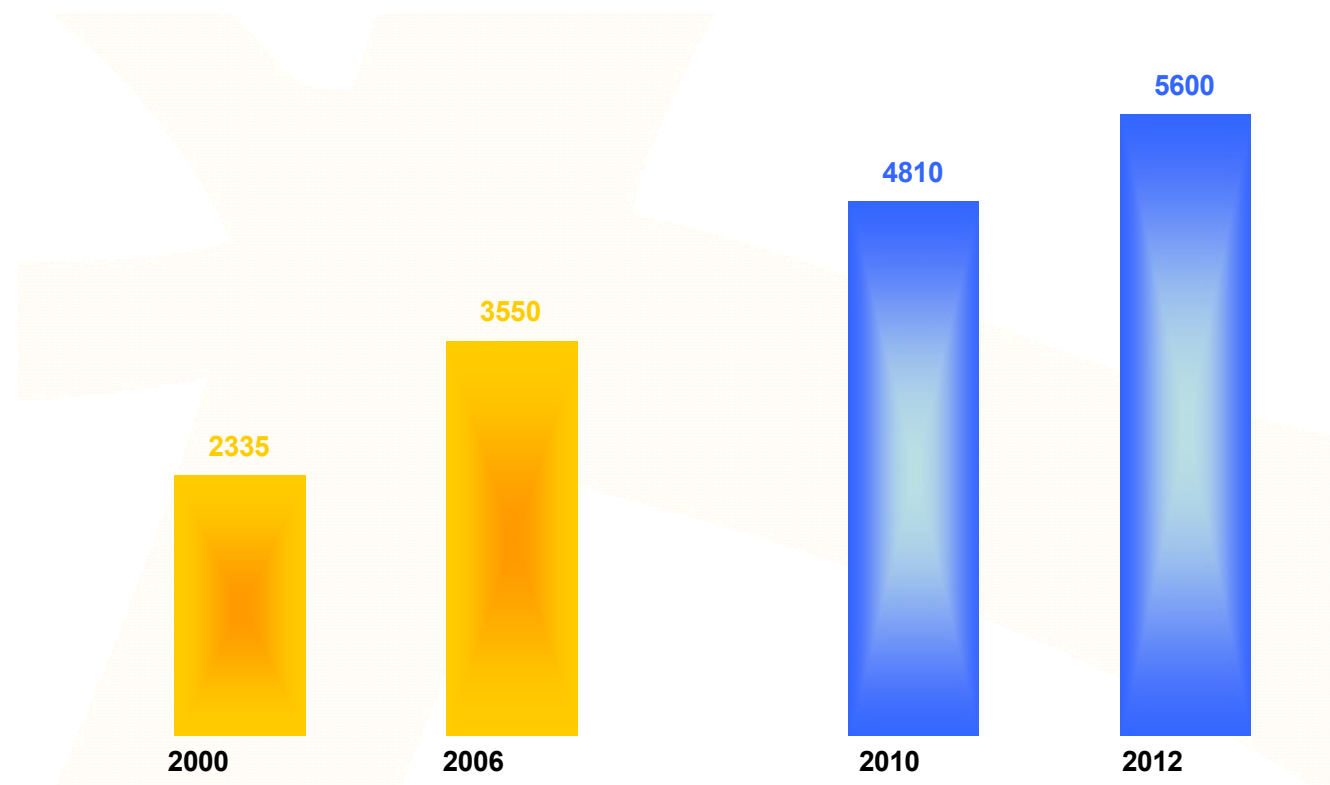


Source: Ministry of Energy and Mines

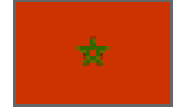


# *National Electricity Sector Planning Program*

## Reference Scenario for Power Supply (MW)

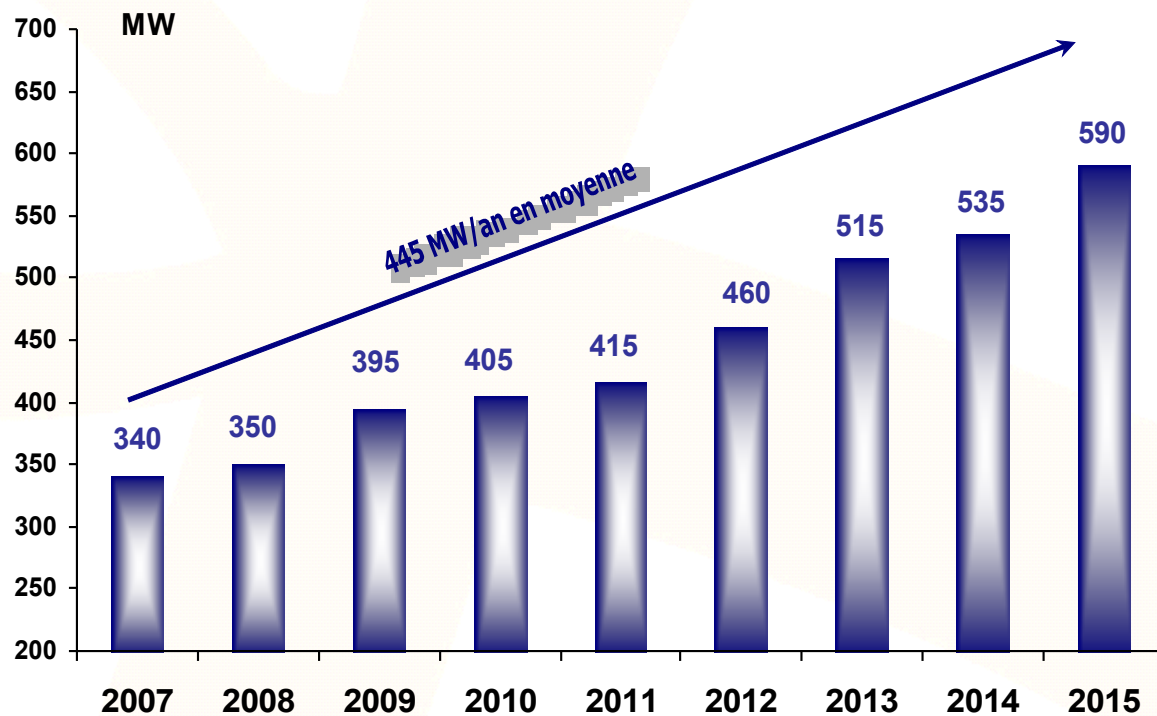


Source: Ministry of Energy and Mines

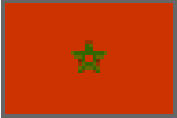


# National Electricity Sector Planning Program

## Evolution of the power growth rate up to 2015



Source: Ministry of Energy and Mines



### 3. Managing a First Power Reactor **CHALLENGE!!**

- **NPP profitability**
- **Ability to understand the benefit from the required investment**
- *Multidimensional Learning and Capacity Building*
- Improvement of the General and Specialized Scientific Education System
- **The very moderate size of the national nuclear program and the limited employment make difficult getting people to take up a nuclear speciality**

**VALUABLE SOURCE OF SKILLS, ENHANCING INFRASTRUCTURES  
FOR THE EXPANSION OF THE NATIONAL POWER SYSTEM**

### 3. Morocco's Nuclear Activities Education, Training, Research



- *Introduced from the 60's : Universities, Engineering Schools*
- **Nuclear Physics  
Reactor's Physics and Technology,  
Nuclear Instrumentation  
Nuclear Applications- Applied Sciences**
- 1986: National Nuclear Center, CNESTEN
  - TRIGA research reactor:
    - promote nuclear knowledge in cooperation with the universities and the industry
    - radioisotopes production and radioactive waste management
- ENIM: New education and training programs in the field of Energy Sciences & Engineering

## MARKETING STUDY

INDUSTRY STANDARDS - PARTNERSHIPS

## OPPORTUNITY

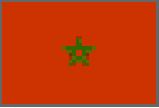
NEW HIGH EDUCATION PROGRAMS

MULTIDISCIPLINARY FIELDS

**business oriented disciplines**

## OBJECTIVE

HIGH LEVEL DEGREES



Organisation - Partnership  
Realisation

**BLOCK I**

Mathematics For  
Engineering

**BLOCK II**

Demand-Side Management and Forecast  
Energy Commodities Market  
Energy Markets Applied to CDM

**BLOCK III**

Nuclear Power and Innovations

Physical Concepts - Nuclear Fuel Cycle - Reactors Codes & Calculations

Renewable Energy

Fossil Energy Technologies

Comparative Analysis Of Power Production Projects

*Costs Methodology & Assessment - Externalities*

*Modélisation Tools - Multicriteria Analysis for Energy Choices*