



IEEJ : June 2012

KINGDOM OF MOROCCO
MINISTRY OF ENERGY, MINES, WATER AND ENVIRONMENT



ENERGY SECTOR IN MOROCCO

JICA PROGRAM

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Mina OUATTASSI

Chief of Institutional Development and
Competitiveness Division

OUTLINE

- ① MOROCCO AN EMERGING COUNTRY**
- ② ENERGY SECTOR IN MOROCCO**
- ③ NEW ENERGY STRATEGY**
- ④ MAIN BOTTLENECKS IN STRATEGY FORMULATION**
- ⑤ KEY EXPECTATIONS**



MOROCCO : AN EMERGING COUNTRY

A modern society

- **Constitutional Monarchy**
- **Democratic institutions**
- **National Initiative for Human Development**
- **New family code giving women more equal opportunities**



MOROCCO : AN EMERGING COUNTRY



Main implemented reforms



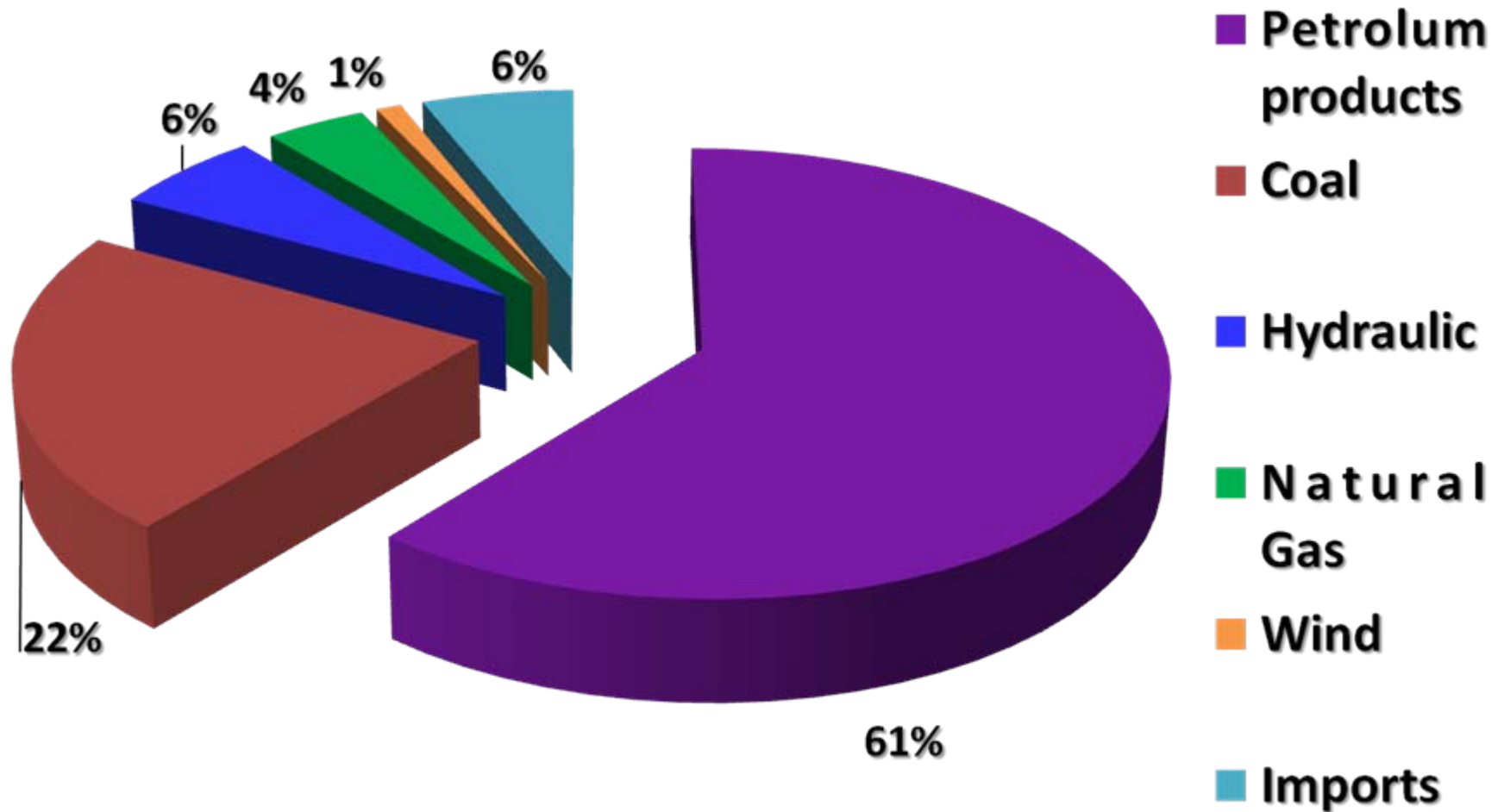
- **New commercial laws**
 - **Labour code revised**
 - **Liberalization of foreign trade and exchange systems**
 - **Protection of intellectual property rights**
 - **Establishment of commercial law courts**
 - **Opening of all economic sectors to foreign investment**
 - **Sector reforms: banking, insurance, transport,...**
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MOROCCAN ENERGY SECTOR

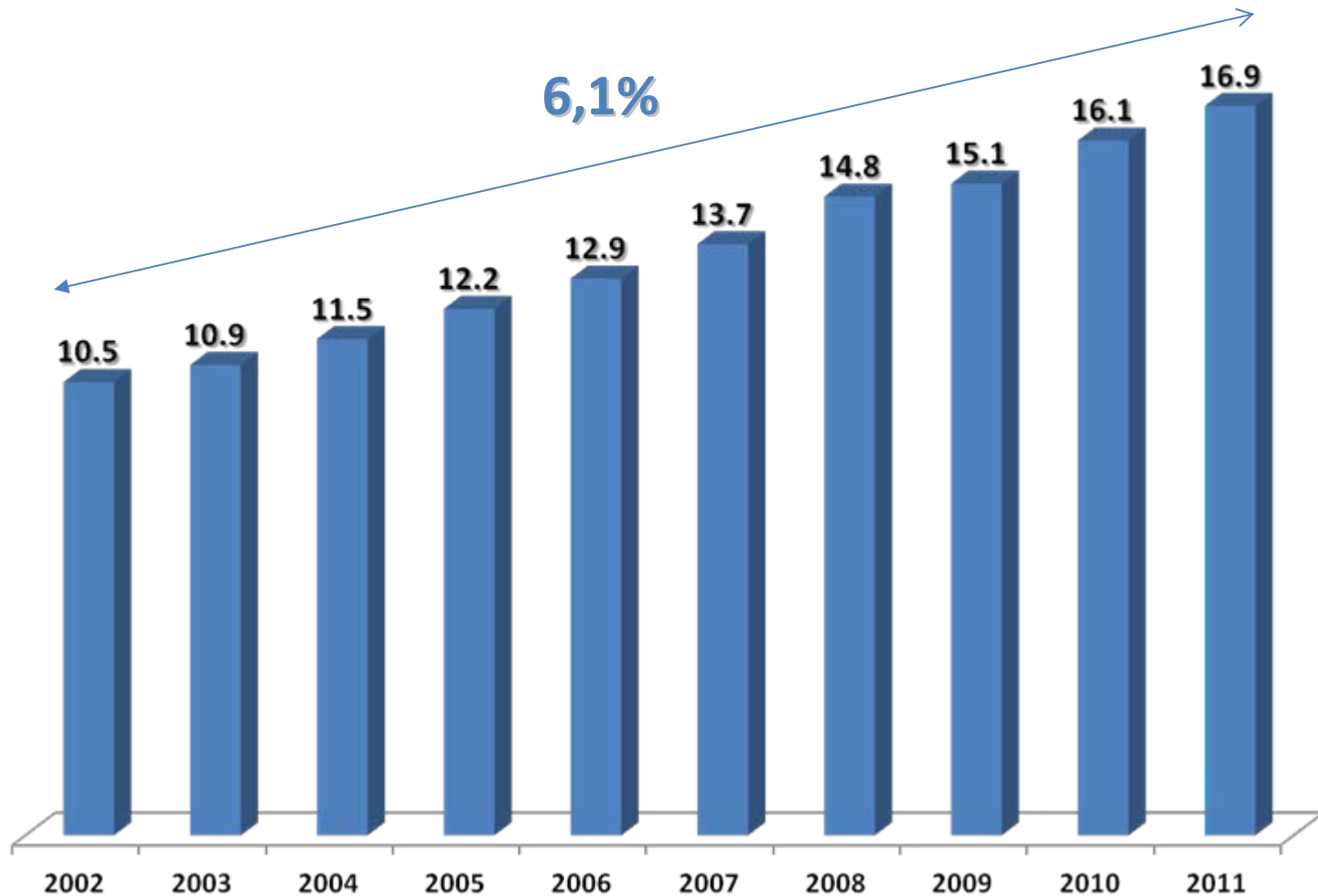
Characteristics

- ➔ **Energy consumption in constant growth**
 - Primary energy (2011) : 5,3%
 - Power consumption (2011) : 8,4%
- ➔ **Limited domestic Energy ressources: Imports 95,5%**
- ➔ **Energy Bill (2011) : 25% Total Imports**
- ➔ **Energy Subsidies (2011) : 3% GDB**

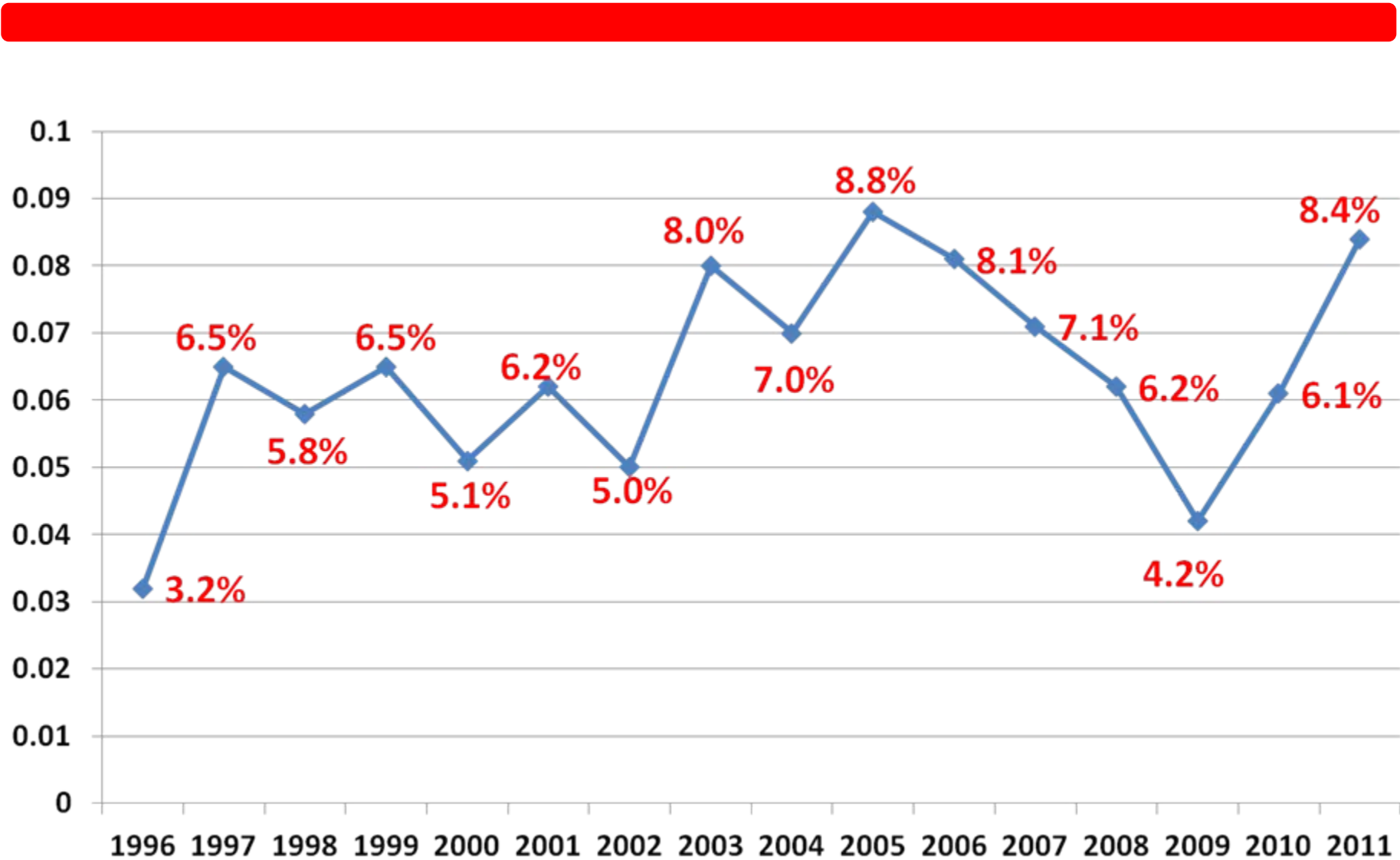
ENERGY CONSUMPTION (2011)



EVOLUTION OF PRIMARY ENERGY CONSUMPTION (MTOE)



EVOLUTION OF ELECTRICITY DEMAND (%)



MOROCCAN ENERGY SECTOR

Main Strategic Achievements

- **Petroleum products distribution and Refineries Privatization**
- **Independent Power Production (IPP) Agreements**
- **Implementation of Maghreb – Europe Gas pipe and power Interconnections with Spain and Algeria**
- **Introduction of Natural Gas use in power production**
- **Program for generalization of Acces to power in Rural area**
- **Intensification of hydrocarbon exploration**

MOROCCO HAS AN INSTALLED CAPACITY OF 6405 MW IN 2011

A QUARTER RUN ON RENEWABLES

	PLANTS	INSTALLED CAPACITY
Thermal power plant IPP	> JLEC (Coal) a > Tahaddart (CCNG) > Thermosolar power plan Ain Beni Mathar (combined cycl)	1320 MW 380 MW 472 MW
Thermal Coal ONE	> Jerada (Coal) > Mohammedia (Coal)	165 MW 300 MW
Thermal Fuel ONE	> Mohammedia (Fuel) > Kenitra (Fuel)	300 MW 300 MW
Renewables in base	> Wind : Essaouira, b Alkoudia, Tanger > Hydraulic	280 MW 1306 MW
Gas Turbines et Diesel thermal	> Gas Turbines & Diesel (Mohammedia, Tan Tan, Dakhla)	1118 MW
ETP	> STEP Afourer c	464 MW

Total Installed capacity 6 405 MW

Technologies in base
 Technologies at Peak

ILLUSTRATIONS

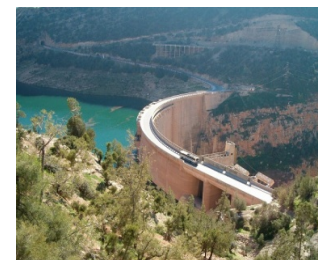
a Thermal power plant of Jorf Lasfar



b Wind plant of Essaouira



c Energy Transfer by Pumping



ENERGY STRATEGY IN MOROCCO



New Challenges



- Growing energy demand:
 - Economic and social development
 - Growth of population with better revenues
 - Steady high Energy prices in international market
 - Needs for huge investments to meet future demand
 - Infrastructures
 - Capacities
 - Competitiveness of Moroccan economy in opened international markets
 - Environmental issues.
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NEW ENERGY STRATEGY IN MOROCCO

FOUR BASIC GOALS

- Security of supply and availability of energy
- Generalized Access to energy at reasonable prices
- Energy efficiency
- Preserving the Environment

4 STRATEGIC ORIENTATIONS

- Diversified Mix and optimized around reliable and competitive technology choices
- Domestic resource mobilization by the rise of renewables
- Energy efficiency built as a national priority
- Regional Integration

KEY PROJECTS OF RENEWBLE POWER GENERATION BY 2020

	INTEGRATED WIND PROGRAM	INTEGRATED SOLAR PROGRAM
CAPACITY	2 000 MW	2 000 MW
POWER PRODUCTION	6 600 GWH	4 500 GWH
INVESTMENTS	3,5 MILLIARDS \$	9 MILLIARDS \$
AVOIDED CO2 EMISSIONS	5,6 MILLION TONS	3,5 MILLION TONS

WIND POTENTIAL

25,000 MW
6000 MW ACHIEVABLE
IN 2030

SOLAR POTENTIAL

3000 H/Y OF SUNSHINE
5 KWH/M2/DAY OF
IRRADIATION

42% of total installed capacity is from renewable sources by 2020

MOROCCO'S ADVANTAGES FOR DEVELOPING RENEWBLES

- Important Potential of renewables
- Energy infrastructure of transit well developed
- Ability to implement major projects
- attractive Legislative and institutional framework
- Significant potential for demand growth

EVOLUTION OF INSTALLED CAPACITIES

(%)	2009	2015	2020
Coal	29%	35%	27%
Fuel	27%	19%	10%
Gas	11%	8%	21%
Hydraulic	29%	21%	14%
Solar	0%	5%	14%
Wind	4%	12%	14%

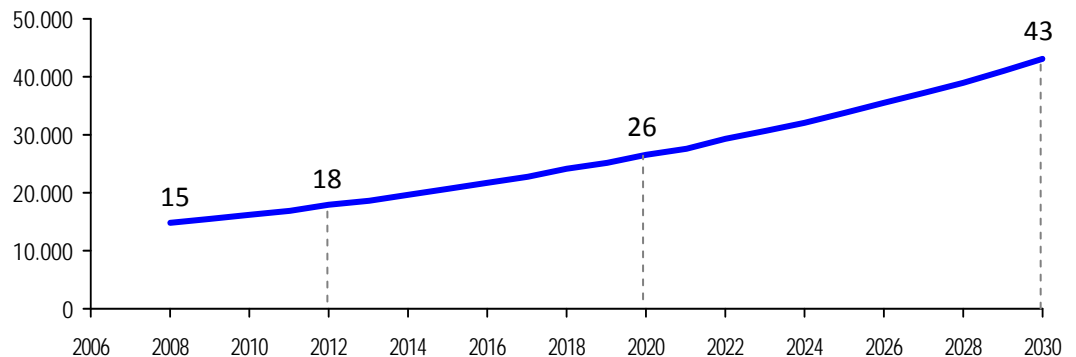
42%

In the coming years, Morocco will face a growing need for energy

The primary energy demand should:

- ✓ Double to 2020
- ✓ Triple to 2030

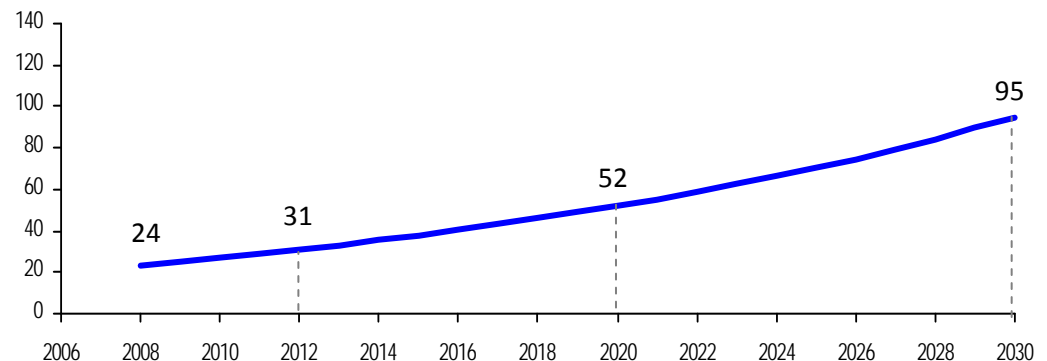
ENERGY CONSUMPTION (MTOE)



The electricity demand should:

- ✓ Double to 2020
- ✓ Quadruple to 2030

ELECTRICITY DEMAND (TWH)



INSTITUTIONAL REFORMS

- ❑ **Adoption of Law 13-09 on renewable energy** which allows:
 - Opening of the generation to competition
 - Access to electricity grid
 - Export of green electricity
 - Construction of a direct line for export

 - ❑ **Creation of the National Agency for the Renewable Energy and Energy Efficiency Development (ADEREE), in charge of :**
 - Promoting renewable energy projects
 - Increased energy efficiency
 - Implementation of Atlas wind and solar
 - Demo for Applied Research

 - ❑ **Establishment of the "Moroccan Agency for Solar Energy" focused on :**
 - Study and design solar program
 - Promotion, investment, financing and implementing projects
 - Contribution to the development of expertise, research and solar industry
 - Management and monitoring of the implementation of solar program
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MAIN BOTTLENECKS IN POLICY FORMULATION IN MOROCCO

1 Review of formulating energy policy when the context change in the perspective of :

- Integrating new issues induced by the change of the context and
- Coordinating different choices made in different periods
- Making the process of formulating much more evolutionary

2 Unbundling economic growth and energy consumption

KEY EXPECTATIONS FROM THIS PROGRAM

- Acquire new methodological approaches and tools to :
- 1 Integrate the change of context (internal and external environment) to review the National Energy Policy
 - 2 Declination of the national energy strategy on a regional level (subnational)
 - 3 Establish a system of assessment of the implementation of energy policy
 - 4 evaluate the impact of the choices made in National Energy Policy on the national economy
 - 5 Unbundle economic growth and energy consumption for a developing country
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Ms. Mina OUATTASSI

m.ouattassi@mem.gov.ma

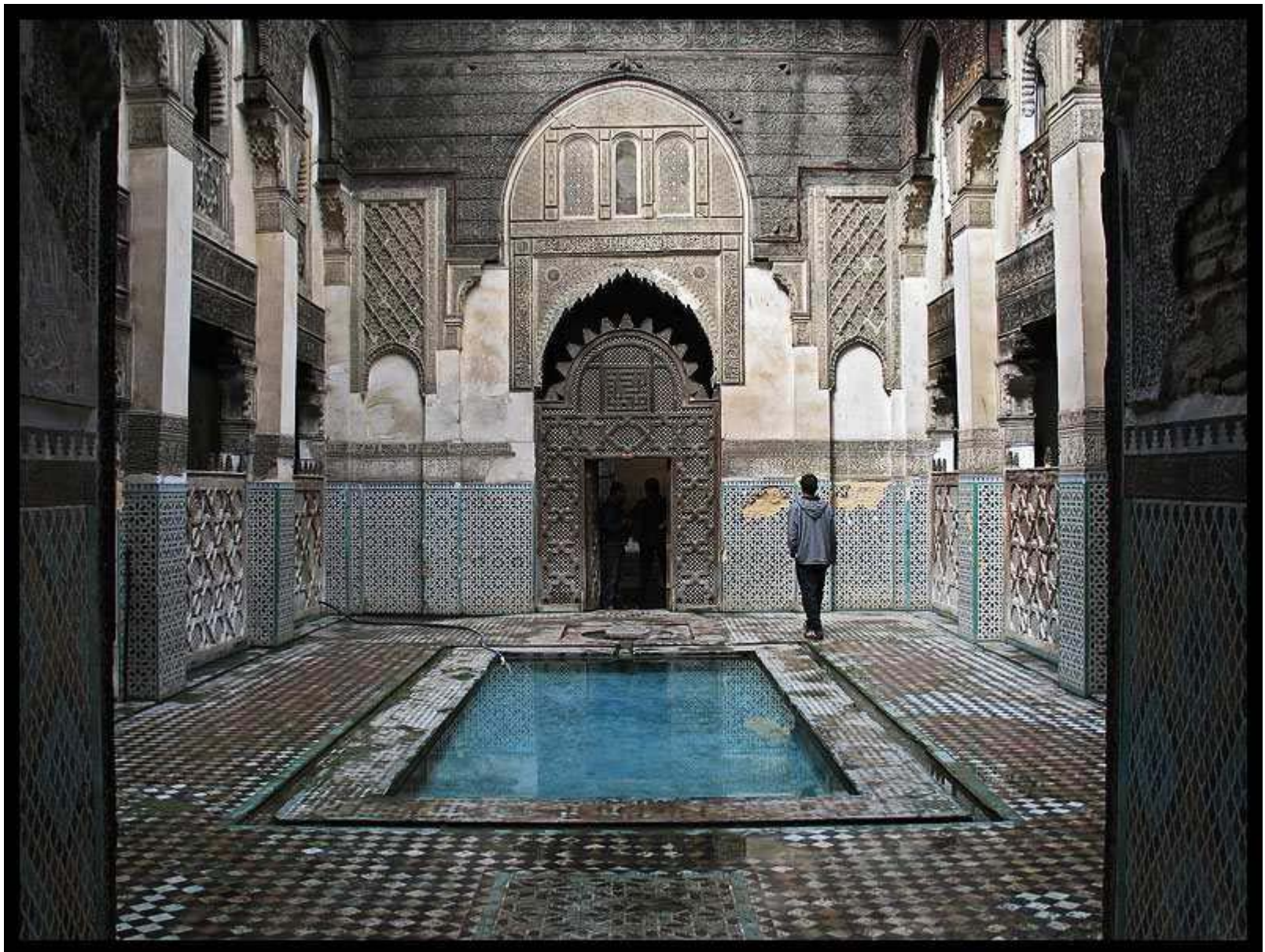
aminaouattassi@yahoo.fr













Contact : report@tky.ieej.or.jp