



23rd World Gas Conference Amsterdam, Netherlands



IGU-PGC.C

STUDY GROUP 2

Developing Gas Markets in
Mediterranean Basin:
Country case- EGYPT



LIST OF MEMBERS OF THE STUDY GROUP:

- Miss Amira Remadna, SONATRACH, Algeria;
 - Mr. Marco Gianninoto, ENI, Italy;
 - Mr. Martin Bosman, BBL Company, Netherlands;
 - Mr. Johann Gallistl, OMV, Austria;
 - Mr. Paul Ngii Nag, SNH, Cameroon;
 - Mr. Habib ELAndalousi, OME, Sophia Antipolis ;
 - Mr. Manuel Esteves, Transgas, Portugal ;
 - Mr Juan Varelameras, Union Fenosa, Spain;
 - Mr Khaled Abubakr, EGA, Egypt,
-
- Nasseradine RARRBO Algeria –ARH-
Coordinator of the Study Group 2 (PGC-C)



Mediterranean: *Gas share in strong progress*

2005 (948 Mtoe)

Electricity Production

2005 (1784 TWh)

27% gas

Nuclear
13%

Hydro&RE
4%

Coal
11%

Gas
25%

Oil
47%

2020 (1380 Mtoe)

Electricity Production

2020 (2880 TWh)

41% gas

Nuclear
10%

Hydro&RE
5%

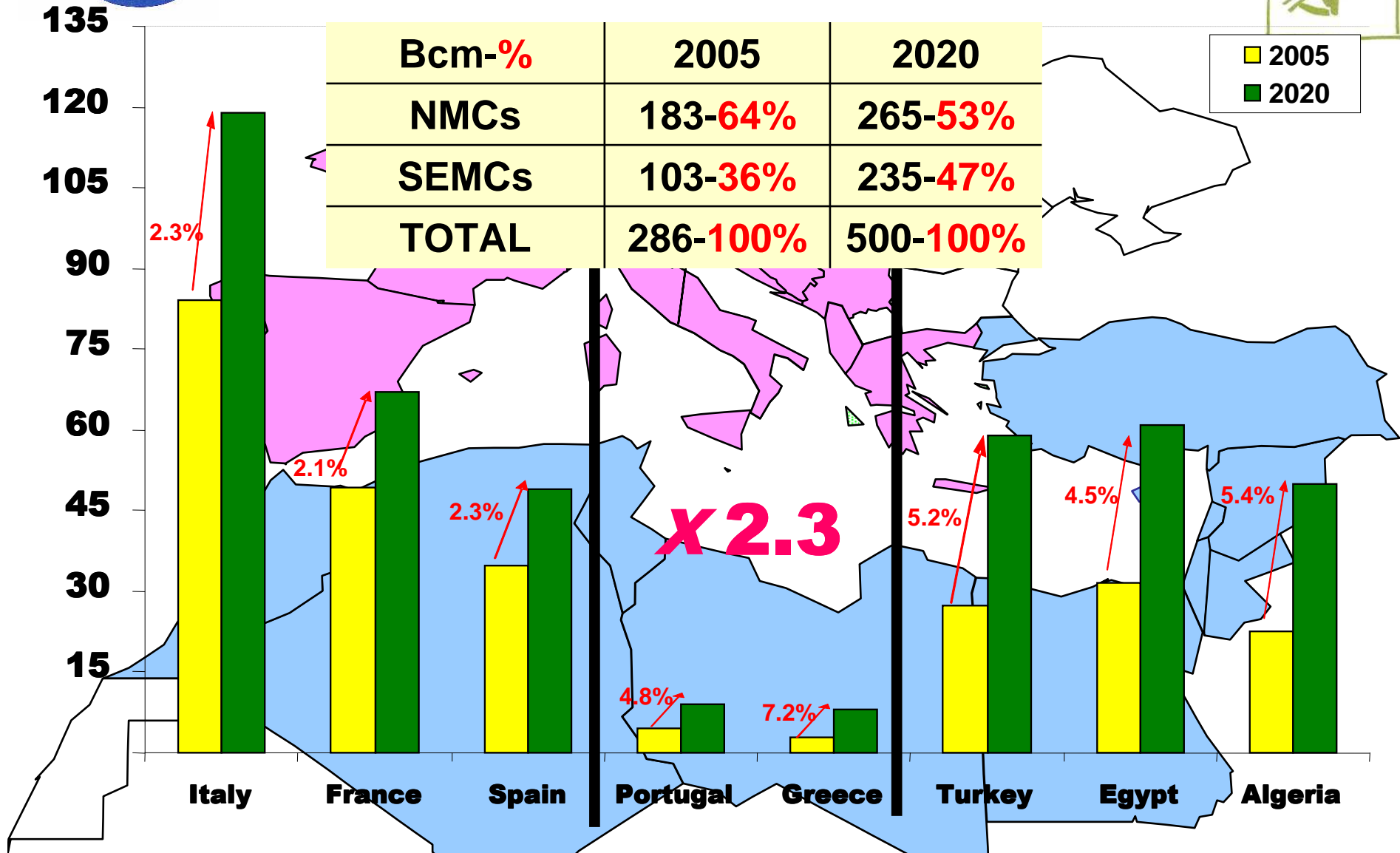
Coal
13%

Gas
31%

Oil
41%



Evolution of Gas Demand (by country)



+ New entrants as Morocco, Lebanon & Israel



Important Gas Markets in the Mediterranean by 2020



Big Gas Markets

Italy **> 119 bcm**

France **about 68 bcm**

Spain, Turkey, Egypt, Algeria **(50-60 bcm each)**

Emerging Gas Markets (Strong Growing)

Portugal **x2** **9 bcm**

Greece **x3** **8 bcm**

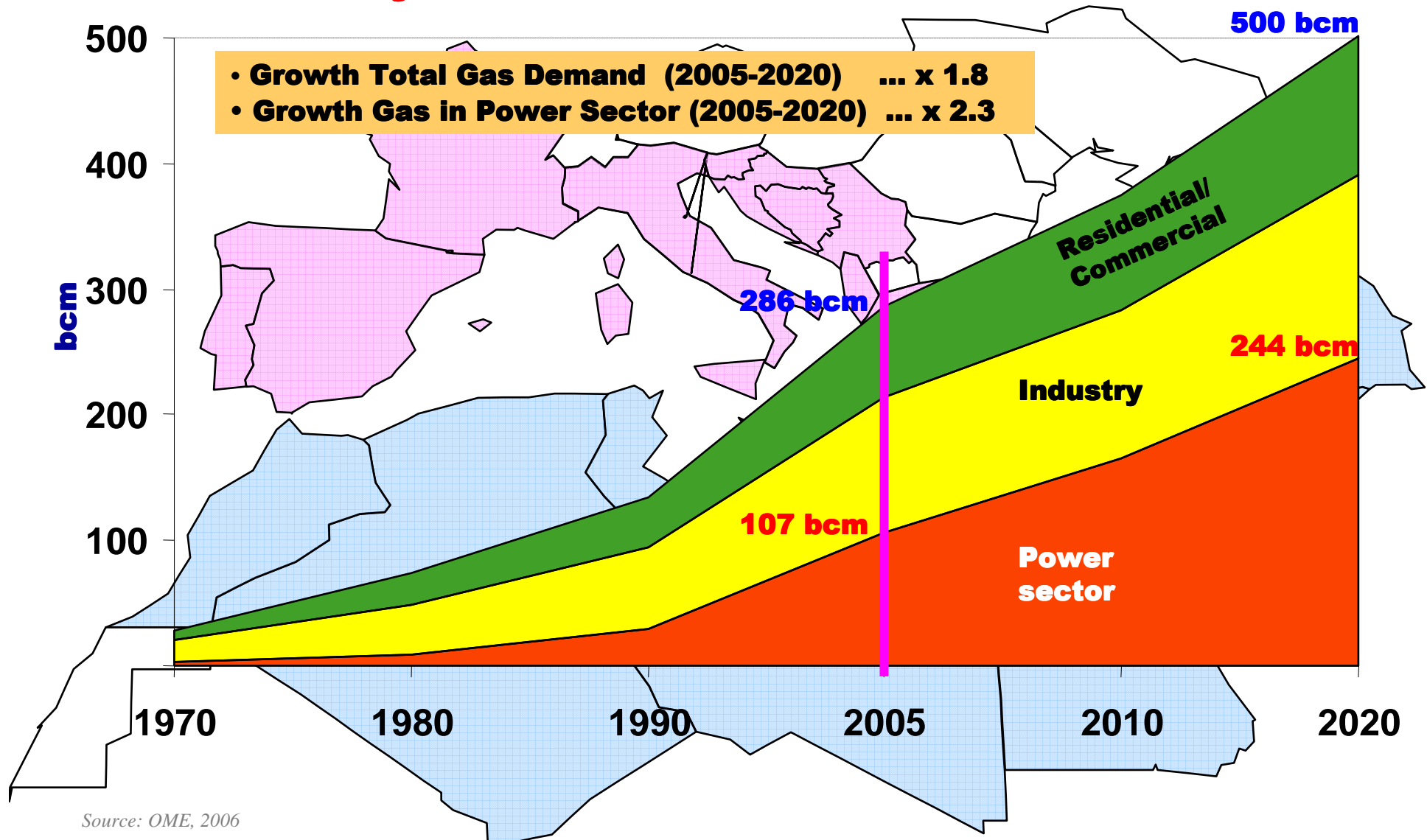
New Gas Markets

Morocco, Lebanon & Israel *No consumption of gas presently* **4-10 bcm**



Mediterranean : Breakdown of Gas Consumption by Sector

The driving force of Gas Demand is the Power Sector





Are there sufficient Gas Reserves & Resources ?

***Total Proved Gas Reserves = 8300 bcm
(>60 y of present production)***

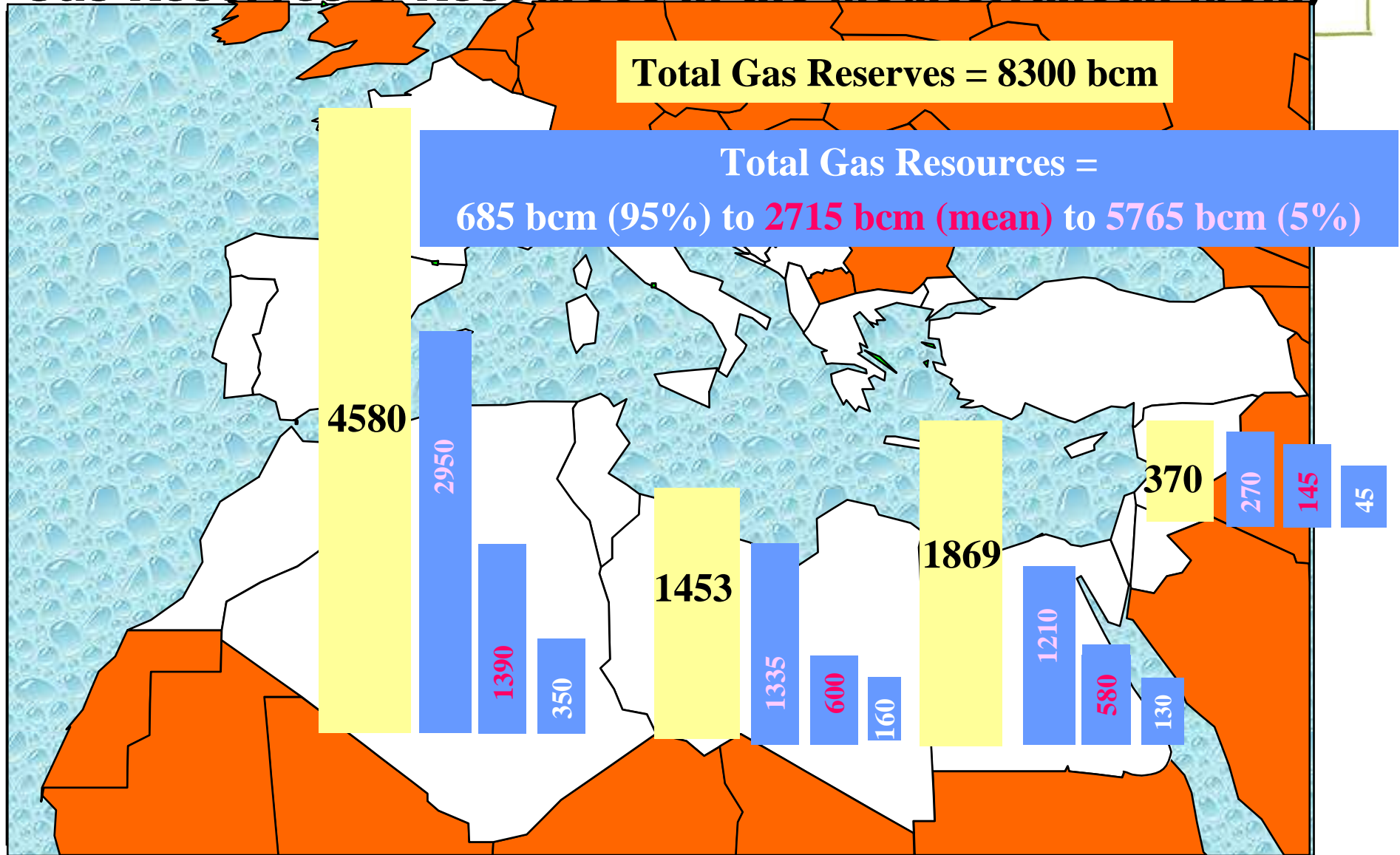
***+ an estimated undiscovered resources by USGS
= about 700 bcm (95% value, quasi sure)
& 5800 bcm (5% value, <sure)***

But

Due to relatively unexplored structure of the region, many experts and foreign partners in the Mediterranean countries believe that the undiscovered amounts reported by the USGS are pessimistic (probably >10 000 bcm)



Gas Reserves & Resources in the Mediterranean (bcm)



Source: Reserves from CEDIGAZ July 2005; & Resources from USGS



How Mediterranean countries are supplied by natural gas in present situation ?



Total Gas Imports = 175 bcm in 2004 :

- ⇒ *North Africa (34%) 59 bcm*
(mostly from Algeria & libya)
- ⇒ *Outside MED...(66%)..... 116 bcm*

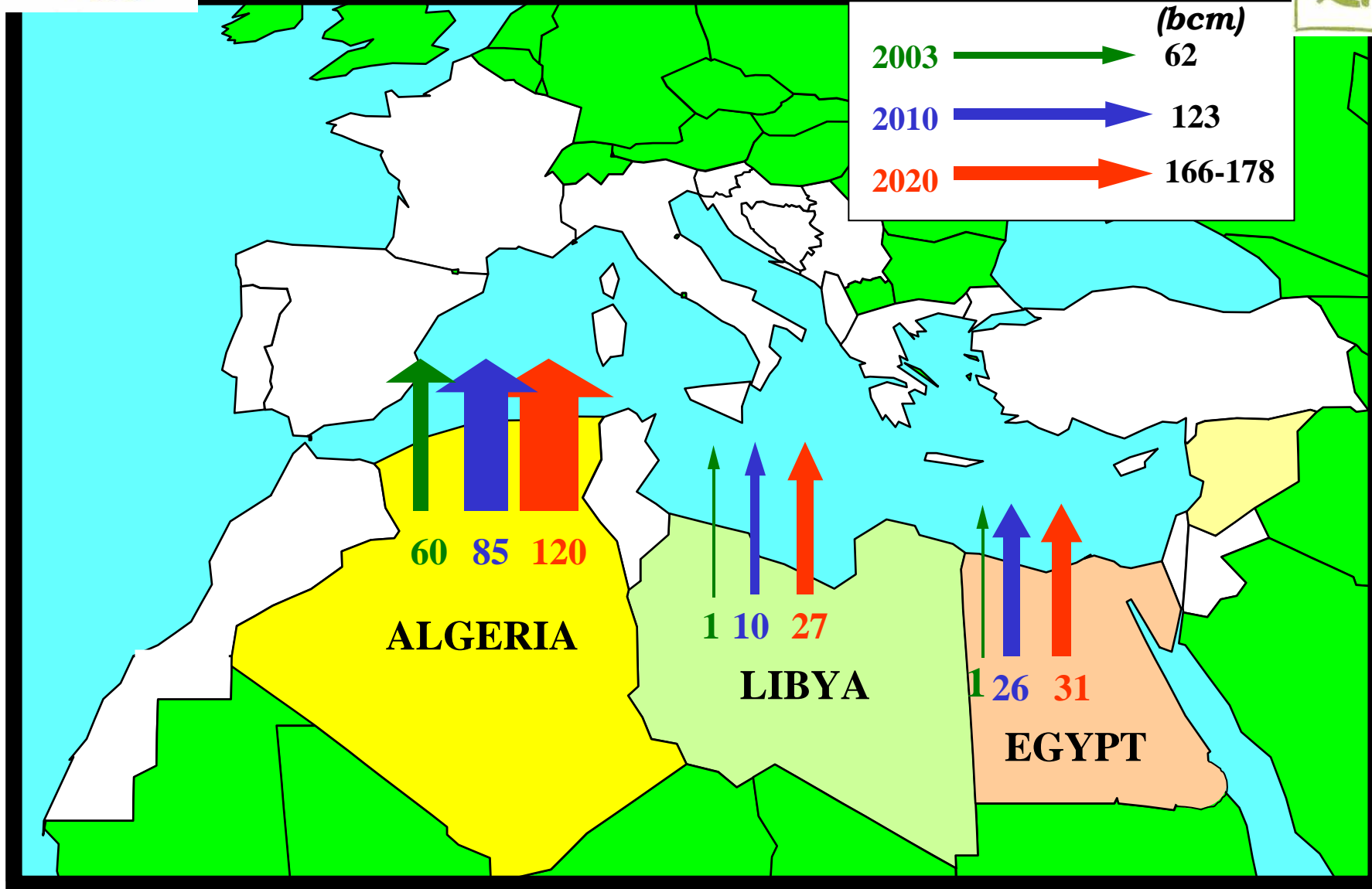
By 2020 Total Gas Imports would reach 350 bcm :

- ⇒ *North Africa...(51%)..... 180 bcm*
of which Algeria 120 bcm
Libya 30 bcm
Egypt 30 bcm
- ⇒ *Outside MED.....(48%)...170 bcm*

Egypt began its first gas export to Spain in January 2005 and France in July 2005.



Gas Export Potential from SEMCs

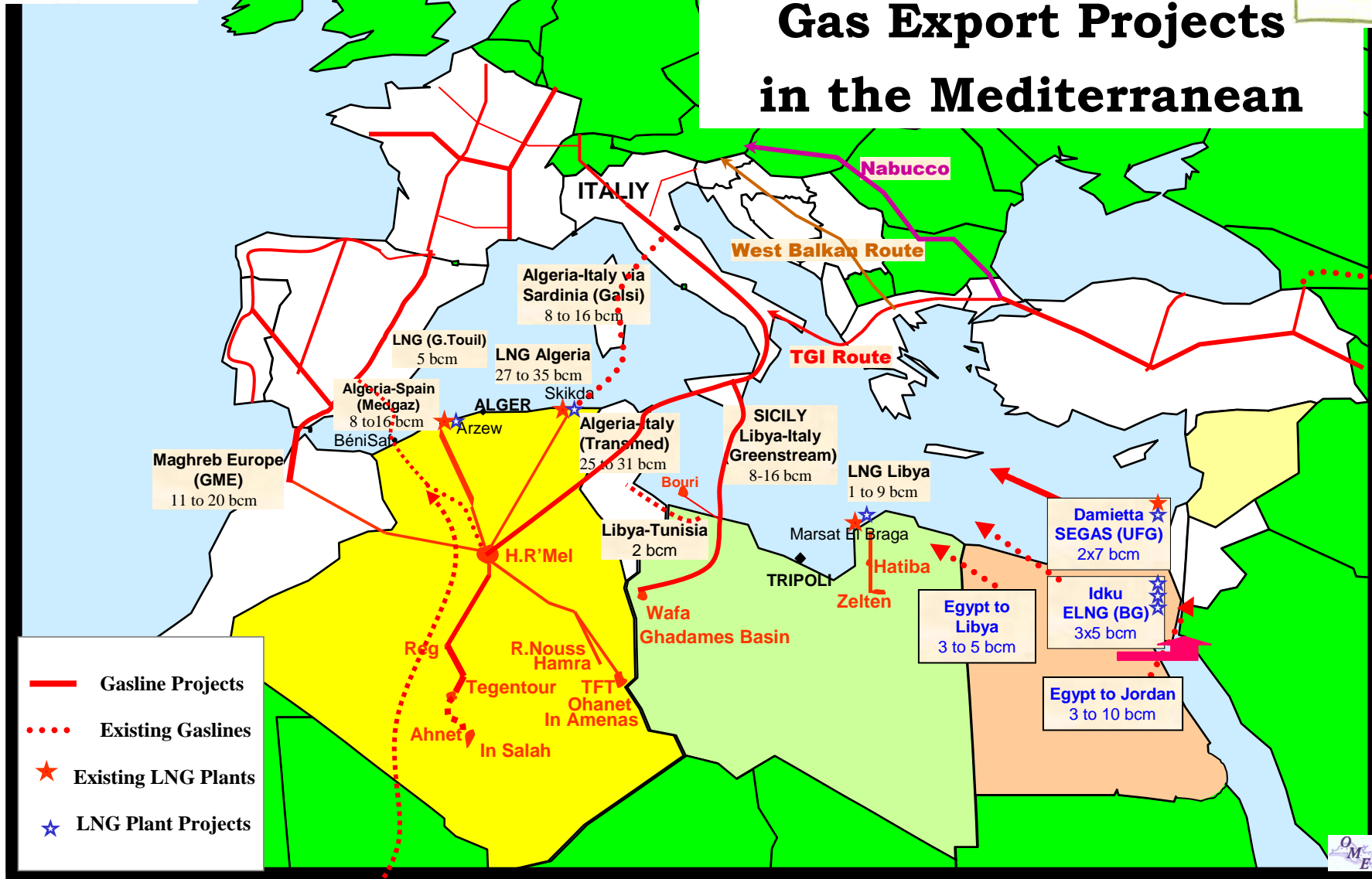


Source: OME, June 2005





Gas Export Projects in the Mediterranean



Nigeria-Algeria to Europe

Source: OME, June 2005



Institutional and Regulatory Aspects



Objectives of the analysis performed:

- Give an appraisal of existing regulatory systems: are they effective and efficient to facilitate the operation of the gas industry?
- Are there lessons to be learned, hence is it necessary and possible modifying regulatory systems according to the results experienced?

The role and impact of regulatory systems:

- Regulation is part of energy policy;
- Regulatory provisions depend on country-specific situation and objectives;
- Objectives may change over time: Legislation and Regulation are supposed to change accordingly.



Institutional and Regulatory Aspects



Objectives of regulation in developing countries :

- Attract international investments;
- Maximise and secure revenues from oil and gas exports;
- Guarantee Public Service obligations for the internal market;
- Ensure coherence between electricity and gas sectors

Gas sector Regulation in Egypt - Main elements

- Energy policy target: maximise use of gas as substitute for oil;
- Pricing policy: subsidisation of gas in domestic market;
- Manage the development/exploitation of national gas resources;
- Reform of gas industry (subjects and responsibilities).



COUNTRY CASE : EGYPT



The final report studies all the aspects of the energy situation - mainly the gas industry - of Egypt.

It shows that Egypt will face ongoing challenges in developing further its oil reserves, building natural gas exporting infrastructures, and initiate its strategy to create value added products from its production.

In fact, we can observe that the country has no option, but to continue to entice foreign investments, not only for its upstream opportunities but also for its downstream potential.

Because the energy sector dominate the Egyptian economy, the Government's policy is based on realistic strategy to faces many challenges.



COUNTRY CASE : EGYPT



Two Energy ministries : Ministry of petroleum & Ministry of Electricity.

-Proven oil reserves: 3.68Billions-bbls

-Oil production: 32.3 MT -Oil consumption: 23.4 MT

-Oil exports: 8.9 MT - Refining Capacity: 726,250 bbl/d

-Gas reserves: 1.890 BCM *(3400 BCM-deepwater)

-Gas production: 28 BCM

-Gas consumption: 2005: 27 BCM (63% for power)

2020: 55 BCM (86% for power).

Nat.Gas VS National Energy Balance: 2005: 39%

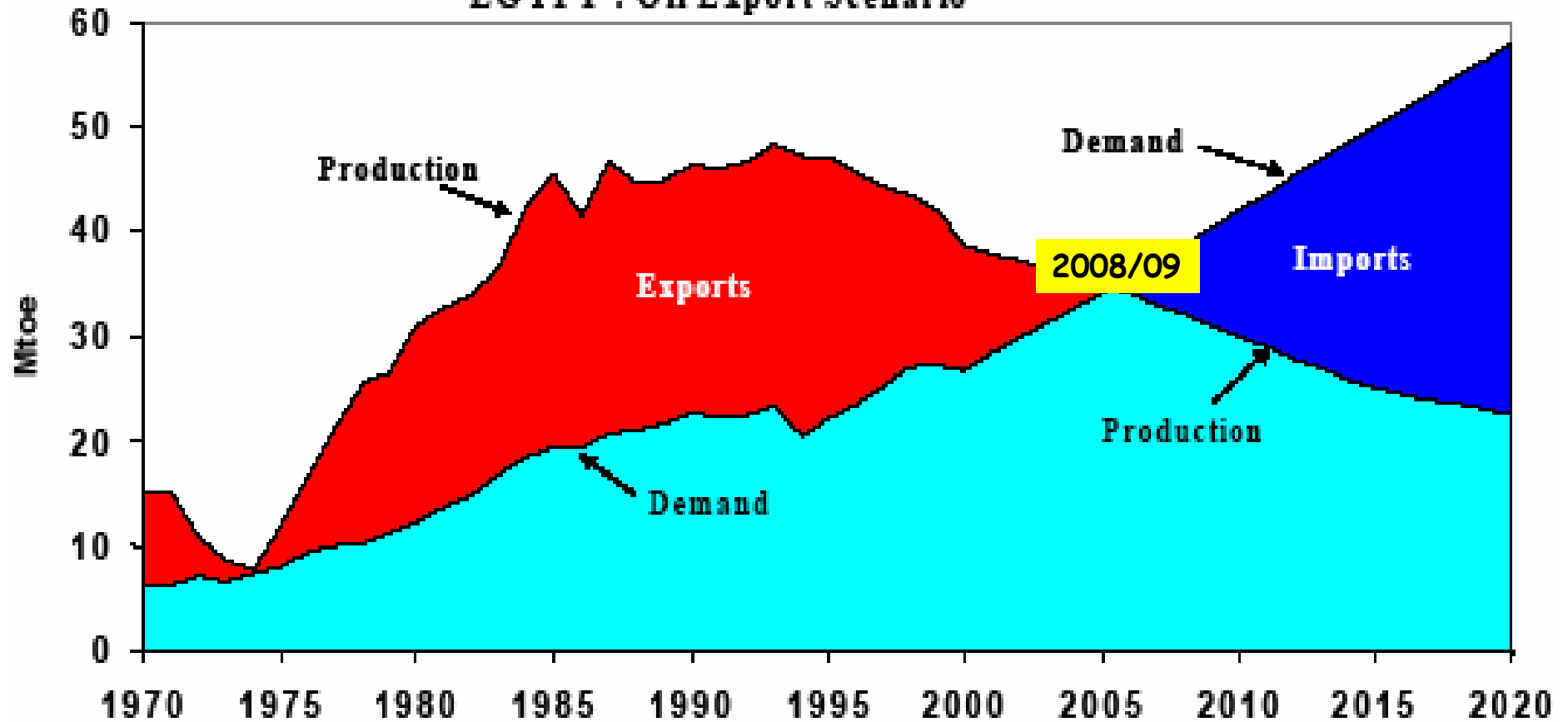
2020: 42%



COUNTRY CASE : EGYPT



EGYPT : Oil Export Scenario

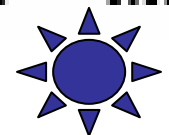
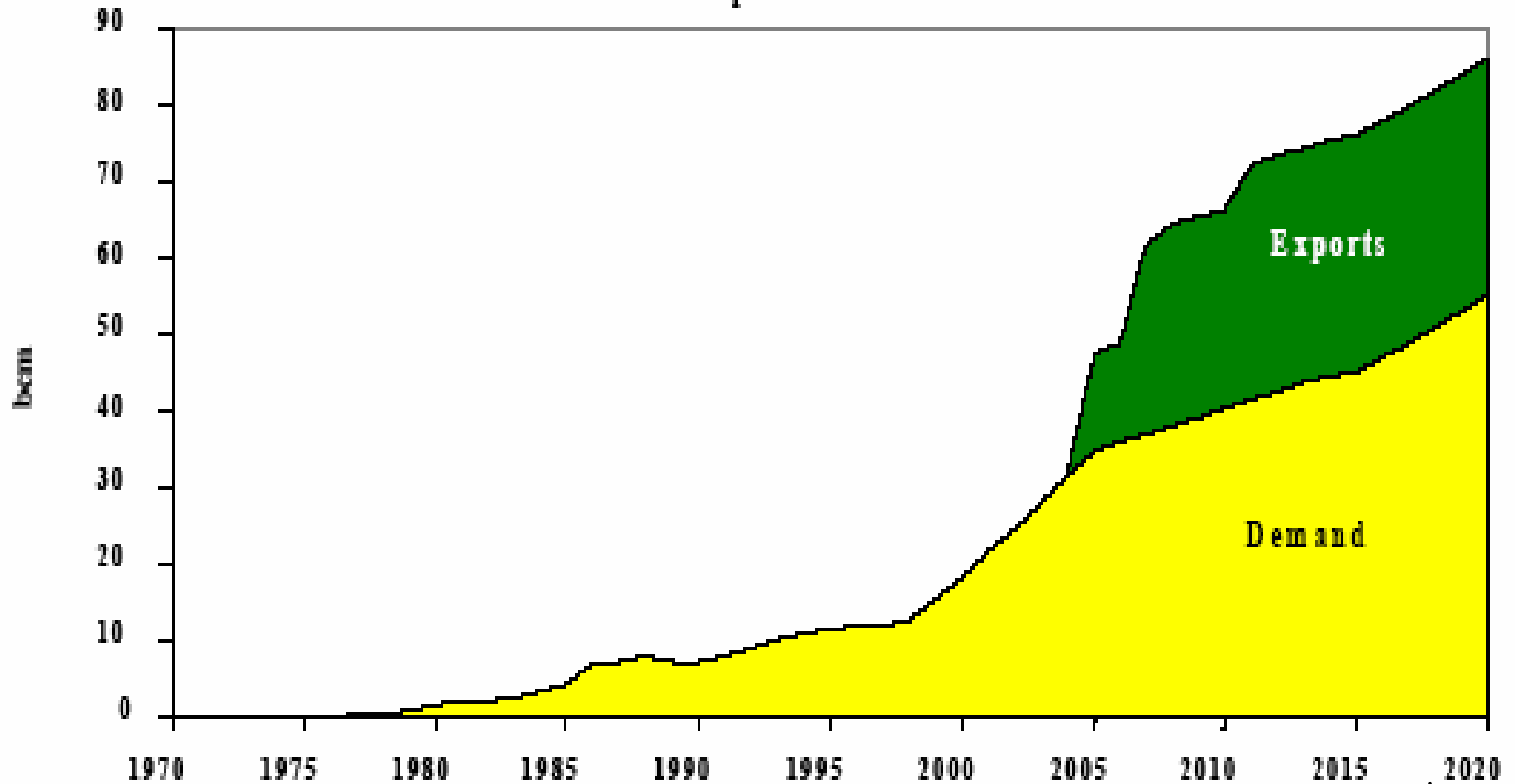




COUNTRY CASE : EGYPT



EGYPT : Gas Export Scenario





COUNTRY CASE : EGYPT



• Egypt's current total primary energy consumption is **34.5 mtoe**, with a growth rate from **4 to 5 percent**.

The country's primary energy consumption for the **last two decades has been more than tripled**. With the current growth rate for oil products consumption, some projections expect that Egypt will begin importing oil early as 2008/09 due to the declining production level of the oil fields.

• Important additional generating capacity will be needed to supply the electric power for the rapid demand growth in the industrial, commercial and agriculture sectors.

The expected maximum load of electricity will reach **33.200 MW by 2020 compared to the actual maximum load of about 15.000 MW**.

To face this challenge, the Government has taken different policy measures that are presented in the report :



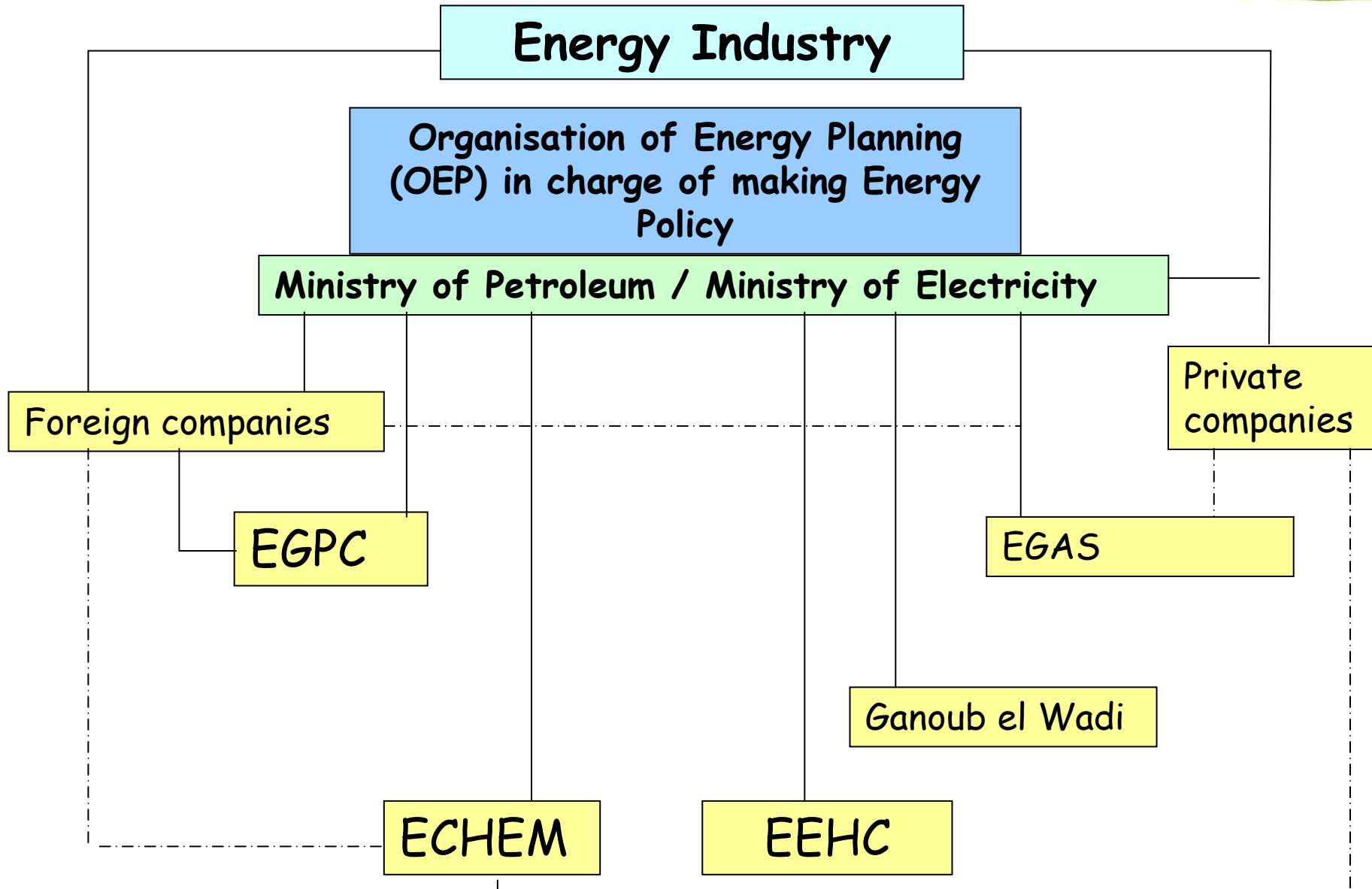
COUNTRY CASE : EGYPT



-1- The energy sector restructuring started few years ago; State-owned firms, however, still control key elements of the sector ; **The Egyptian Electricity Holding Company (EEHC) (formerly the Egyptian Electricity Authority)** owns the country's power generation, transmission and distribution companies, while **the Egyptian General Petroleum Company (EGPC)** controls the petroleum sector. And a newly established **Egyptian Natural Gas Holding Company (EGAS)** is responsible for the production, transport and distribution assets of natural gas.



COUNTRY CASE : EGYPT ORGANISATION SECTORS.





COUNTRY CASE : EGYPT



-2- Egypt is trying to meet its surging energy demand without increasing public debt. The Government is looking increasingly to the private sector for assistance in developing the country's energy resources to spur economic growth and job creation, as the country has a high rate of unemployment. Several joint ventures between the Government and foreign energy companies have been formed to locate and develop oil and gas reserves.

-3- Egypt sees natural gas as its energy source for the future. Important discoveries of natural gas have come at a time when production from maturing oil fields is declining and the country is trying to cope with surging energy demand. Furthermore, the Government is trying to discourage domestic consumption of petroleum to free up oil to generate export revenues.



COUNTRY CASE : EGYPT



-4- Oil-fired power plants have been converted to run on natural gas, and private companies are working to expand the availability of gas to residential customers. Public buses, taxis and private cars are also encouraged to run on compressed natural gas (CNG).

-5- At the same time, Egypt is starting to export natural gas and is trying to make its presence felt in a very competitive marketplace.

A number of export schemes are currently being developed. EGYPT became a gas exporter in 2003, and the further development of its abundant gas resources will make a major contribution to Egypt's economic growth in the future through exports revenues that will exceed those for crude oil and refined products within a few years.



COUNTRY CASE : EGYPT



-6- Under the policy of privatisation, **three Build-Own-Operate-Transfer (BOOT) projects have been recently employed** in the electricity sector. Lessons learned are being taken into consideration while looking to finance, through BOOT, of other large-scale infrastructure projects, without draining locally available hard currency.

-7- **Egypt is endowed with renewable energy resources that can provide a realistic complement to fossil fuels in the energy mix.** Large-scale wind farms have now been in operation for many years and others are in the construction phase. An integrated solar thermal power plant, among one of the first in the world, is being implemented in the southern part of Egypt.

-8- To ensure the development of the rural areas, supplying electricity to all of Egypt's villages was one of the priorities of the Egyptian electricity sector. **Currently, more than 98 percent of rural areas have been electrified.**



CONCLUSIONS & LESSONS.



With the growth of future Energy needs, especially for natural gas, Egypt have to face some challenges, which can be summarised as strategic goals of the Energy/Gas Policy :

- ➡ Regulation of the gas sector and security of energy and gas supply to meet domestic fast growing demand;
- ➡ Maximise oil and gas reserves through new licensing bid rounds of new blocks as frontier exploration in offshore and onshore areas;
- ➡ Maximise Gas added value through natural gas and derivatives utilisation with job creations, and sustainable development /environmental issues;



CONCLUSIONS & LESSONS.



➡ Expand gas exports? Egypt faces many scenarios combining the level of oil exports, the plans to export natural gas, and the lifetime of its share of oil and gas reserves.

As the hydrocarbon reserves are dynamic phenomena, and the Reserve/Production Ratio has been a constant element, the delicate size of Egyptian oil and gas reserves should deserve great attention;

➡ The exceptionally low prices of energy in Egypt were a key factor in the booming energy consumption. Egyptian economy cannot support for a long time subsidies for energy consumption.

All these challenges are the basis of the Energy Policy and the Energy Regulation.



S.W.O.T. Analysis

| | |
|--|---|
| <p style="text-align: center;"><u>Strengths</u></p> <ul style="list-style-type: none">-Large reserves potential;-Energy Policy: Gas as fuel of Choice;-Gas-fired Power Plants (converted/new builds);-Established Partnership with IOCV's;-Developed Gas Infrastructure;-New market segments; | <p style="text-align: center;"><u>Weakness</u></p> <ul style="list-style-type: none">-Low domestic gas prices (and energy prices);-Strong internal demand to replace oil;-Financing;-Slow Liberalisation & Privatisation process;-Changing institutional structures and many parties involved; |
| <p style="text-align: center;"><u>Opportunities</u></p> <ul style="list-style-type: none">- Improve state income and economy;-Future domestic demand growth;-Proximity to European markets/and Middle East- Establish strong energy sector;-Decrease air pollution in cities;-Independent of other energy sources; | <p style="text-align: center;"><u>Threats</u></p> <ul style="list-style-type: none">-Reform Regulation for domestic market;-Legislative framework-Strategic reserves-Pricing reform-Public service (security of supply)-Volatile international prices; |



KEY EMERGING MESSAGES.



1-Egypt, already a major although young gas market, is emerging as a supplier of natural gas to the Mediterranean region. Extensive exploration for natural gas, following the decline of domestic oil reserves, resulted in large additions to gas reserves, that rose to over 76 TJ (2,000 109 m³) in 2005, allowing for massive substitution of oil consumption in power generation, industry and commercial/residential uses. Besides, Egypt implemented gas-export projects both via pipeline (to neighbouring countries of the Middle East: Jordan, possibly Lebanon and Syria) and via LNG to Southern Europe.

- **2-This development was the result of strategically oriented political measures,** including a major restructuring of the energy sector, the deep involvement of private companies in developing energy resources, and a pricing policy that made natural gas competitive versus other fuels, also through subsidisation mechanisms.

•



KEY EMERGING MESSAGES.



3-The further development of natural gas market in Egypt will depend largely on energy policy issues:

- a. regulation of the sector, with special attention to guarantee security of supply;
- b. preserve and increase oil and gas reserves through licensing bids, adequately regulated;
- c. possibly, expand gas exports to maximise the added value of domestic gas production (without jeopardising the lifetime of reserves);
- d. define a level of gas (and energy) prices that is both sustainable for the market and rewarding for the industry.

The pricing issue is, perhaps, the key to the next stage of development. Since the national economy cannot support for a long time price subsidies to energy products.

An aerial photograph of a desert landscape. In the foreground, there is a large, lush green oasis consisting of many palm trees and other vegetation, situated in a valley. The surrounding area is a vast, flat, sandy desert extending to the horizon under a clear blue sky. The text "Thank You For Your Attention" is overlaid in the center of the image in a bold, red, sans-serif font.

**Thank You
For
Your Attention**