Organization of Arab Petroleum Exporting Countries
(OAPEC)

Natural Gas Role in Sustainable Development

Arab Countries Case

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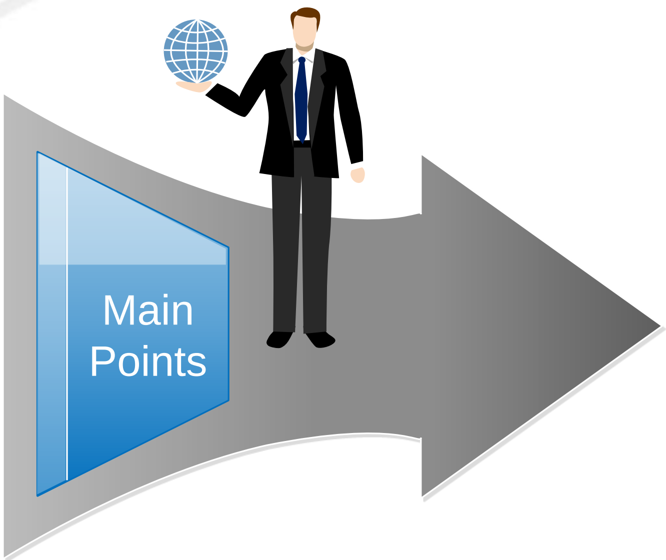
Gas Industries Expert

The Third Session of the UNECE
Group of Experts on Natural Gas
Geneva, 21-22 April 2016

Agenda



1 Title

Natural Gas in the Arab Countries: Key Figures

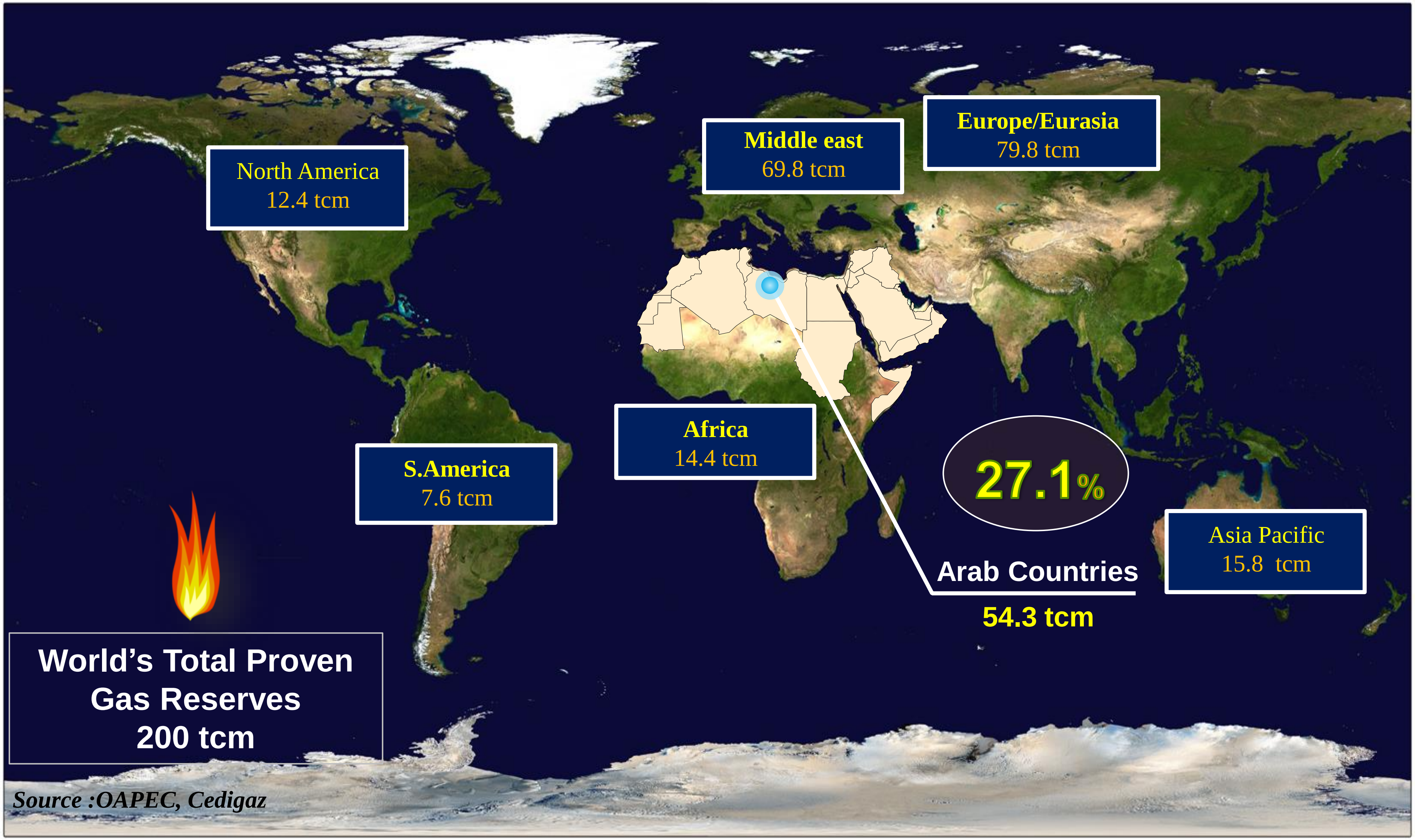
2 Title

Natural Gas Role in Achieving Sustainable Development in different Sectoral Areas

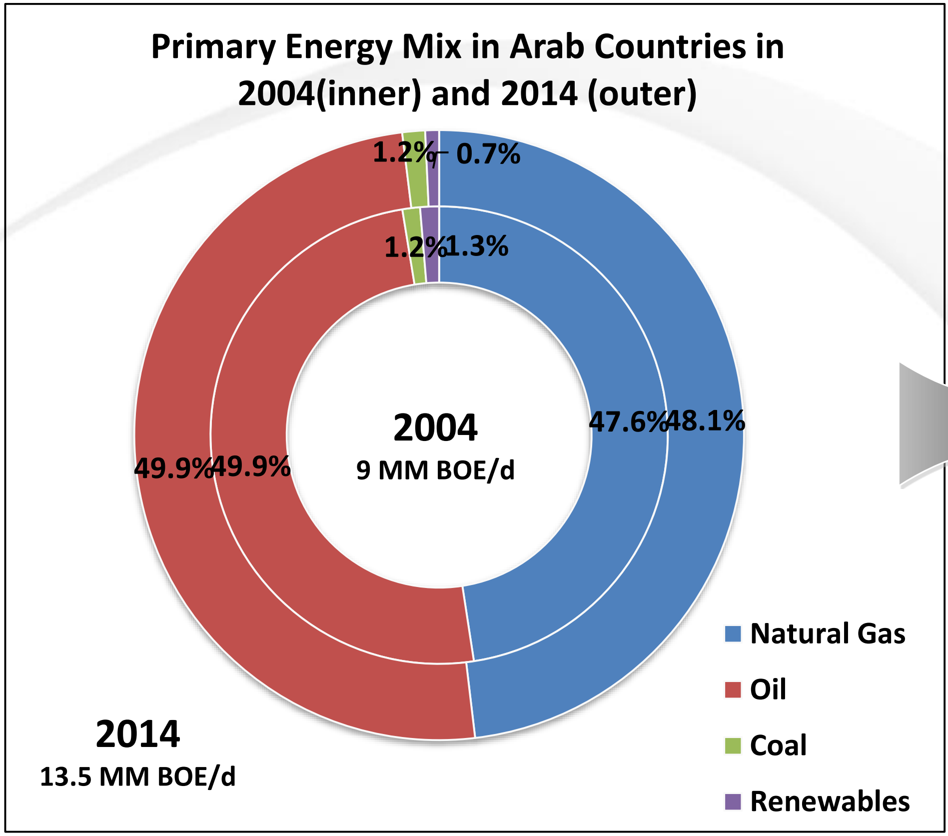
3 Title

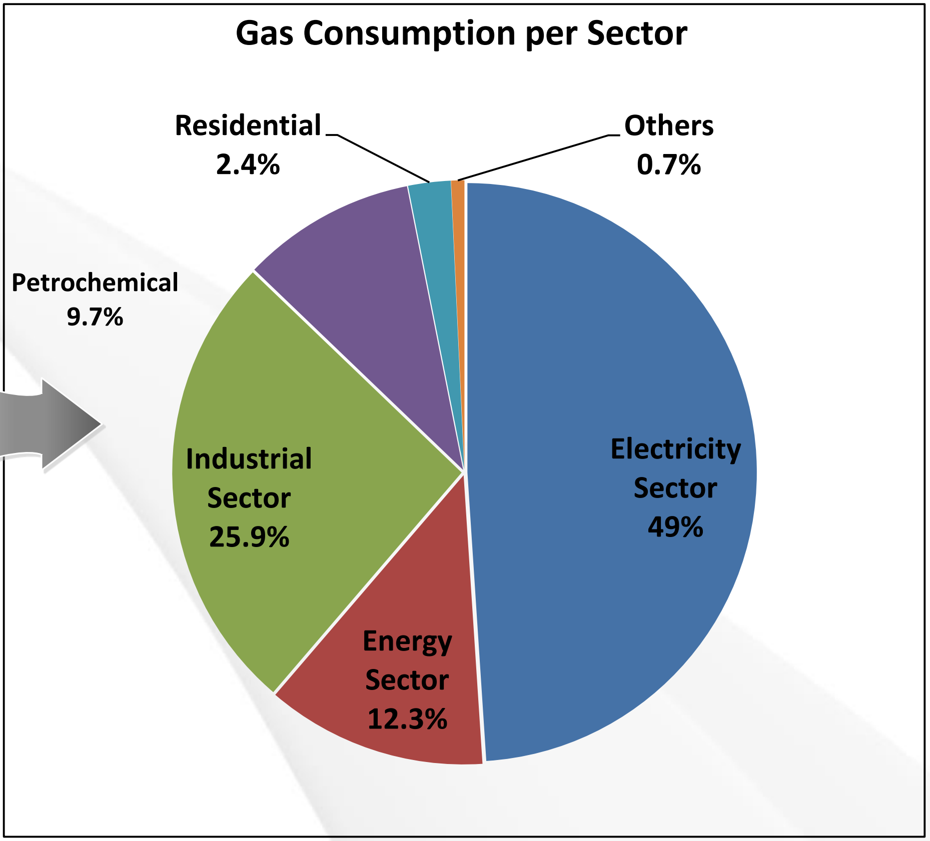
Prospects of Natural Gas industry (Short and Medium Term)

1-Natural Gas in the Arab Countries:
Proven Gas Reserves at 1st January 2015



1-Natural Gas in the Arab Countries:
Gas share in the energy mix





Source :OAPEC

Gas **48%** in Primary Energy mix

Electricity **49%** of total gas consumption

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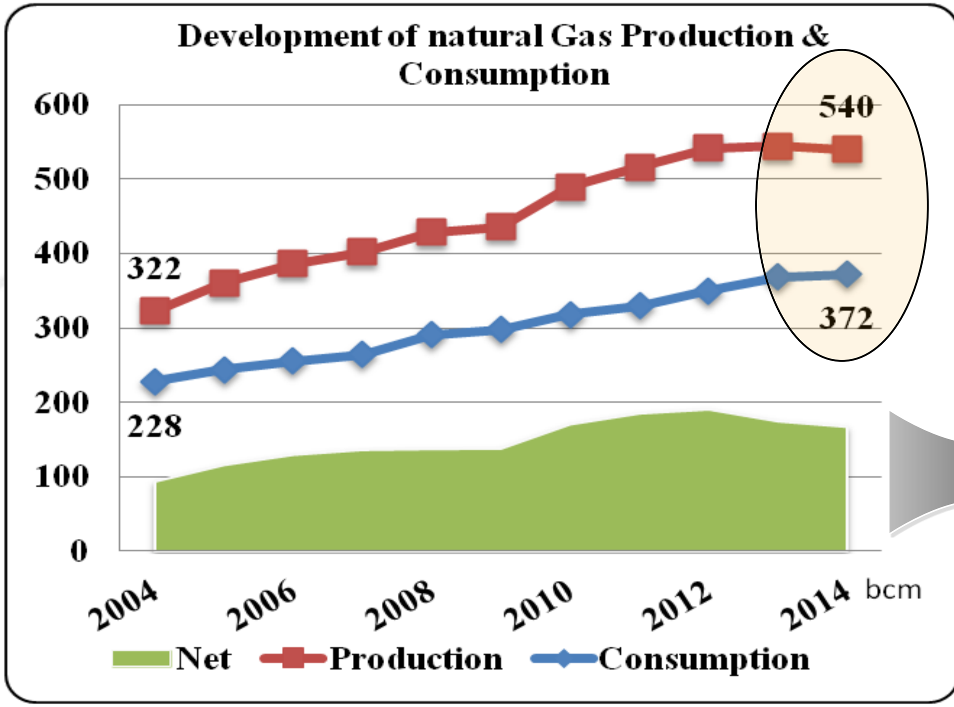
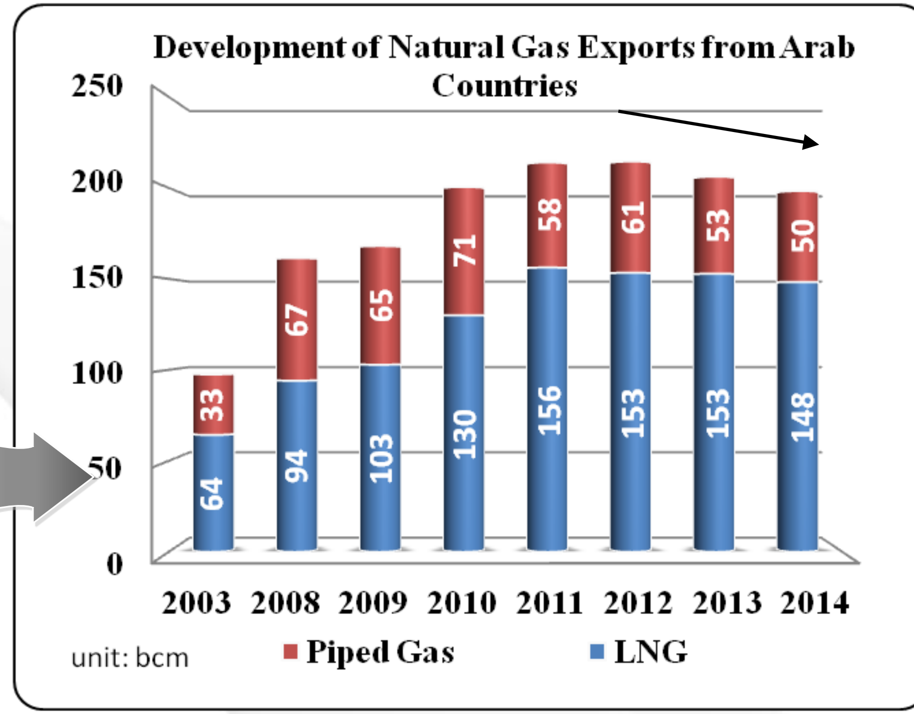
1-Natural Gas in the Arab Countries:
Gas Production/Consumption Figures





Source :OAPEC

Source :OAPEC

5.3% **Gas Production CAGR (2004-2014)**

15.7% of the world's total gas production

5% **Gas Consumption CAGR (2004-2014)**

10.8% of the world's total gas consumption

75% **Share of LNG Exports**

148 bcm, ~ 45% of the global LNG trade

25% **Share of Gas Exports by Pipelines**

50 bcm, ~ 8% of the global gas trade by pipelines

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II-Natural Gas Role in Achieving Sustainable Development in different Sectoral Areas

SUSTAINABLE ENERGY FOR ALL

- Providing universal access to modern energy services.
- Doubling the global rate of improvement in energy efficiency.
- Doubling the share of renewable energy in the global energy mix.

Global Action Agenda of "Sustainable Energy for All Initiative"

Enabling Action Areas

- Energy planning and policies
- Business model and technology innovation
- Finance and risk management
- Capacity building and knowledge sharing

Sectoral Action Areas

- Industrial and agriculture process
- Distributed electricity Solutions
- Grid infrastructure and Supply Efficiency
- large scale renewable power
- Modern cooking appliances and fuels
- Buildings and appliances
- Transportation

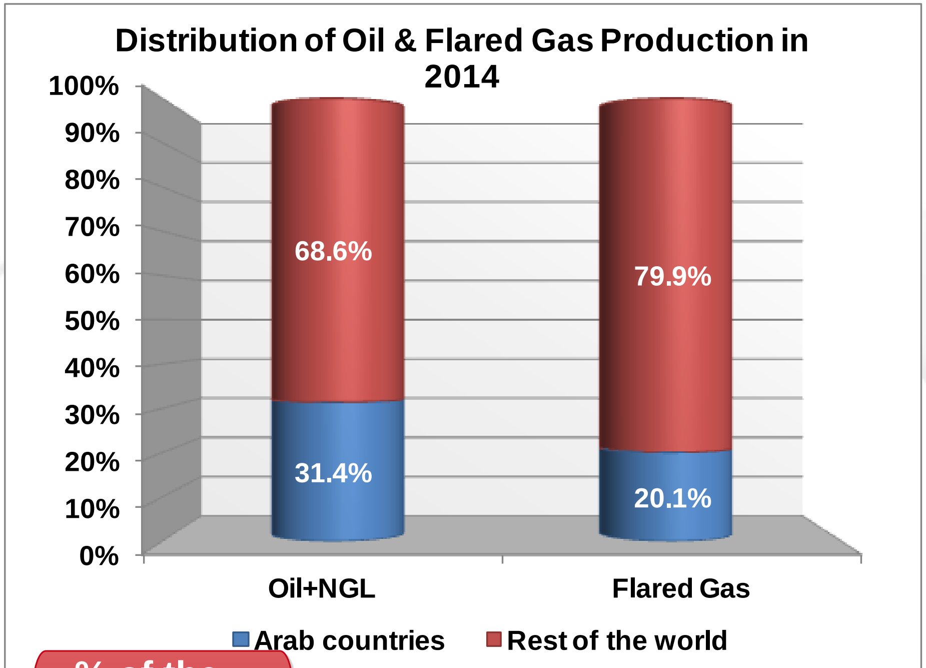
I — Industrial Sector
Gas flaring reduction

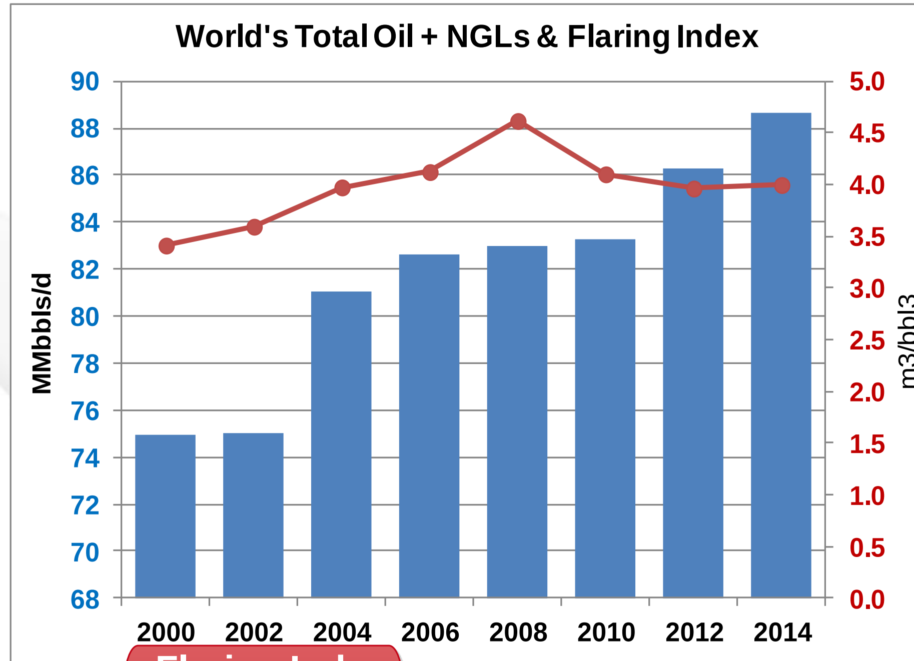
II — Electricity Sector:
The use of CCGT (efficiency 55%)

III — Residential Sector
Natural gas as domestic fuel

IV — Transportation Sector
CNG vehicles

Natural Gas Role in Sustainable Development:
I-Gas flaring reduction





% of the world

In 2014, Arab Countries produced **31.4**% of the total word's oil &NGLs production while flared **20**% of the global gas flaring volume!

Flaring Index
Sm3/bbl

- World Average : 4 Sm3/bbl
- Arab Countries : 2.5 Sm3/bbl
- Iraq standalone : 10.7 Sm3/bbl

Kuwait **Iraq** **Qatar** **Algeria**

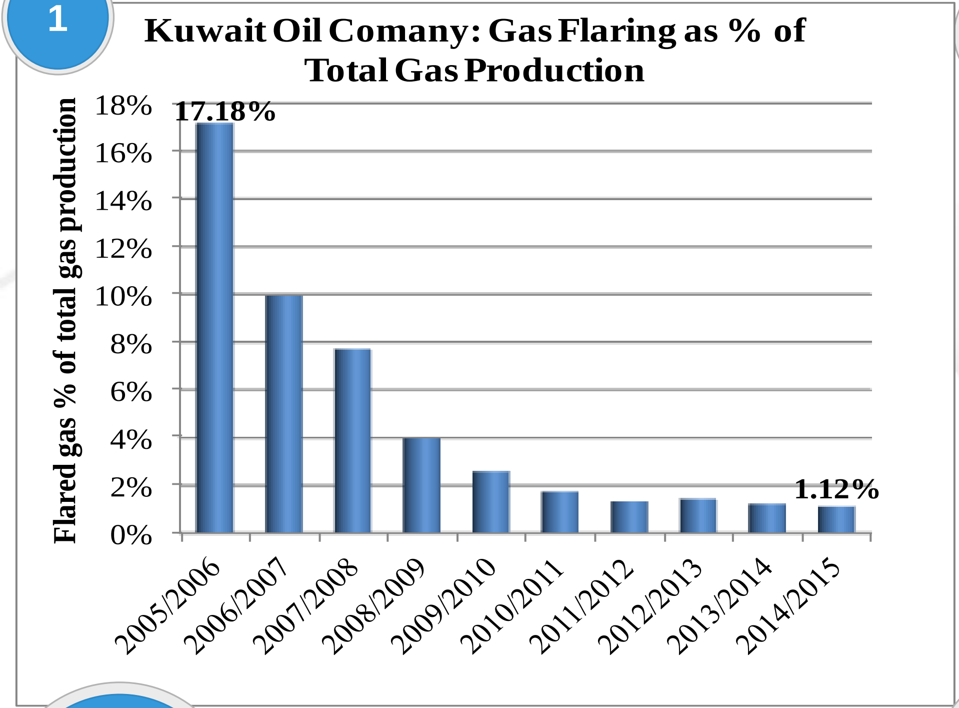
GGFR
Global Gas Flaring Reduction
A Public-Private Partnership

-Four Arab countries are members in the world bank-led Global Gas Flaring Reduction Partnership

2-Natural Gas Role in Sustainable Development:

I-Gas flaring reduction: Examples in Arab Countries

1



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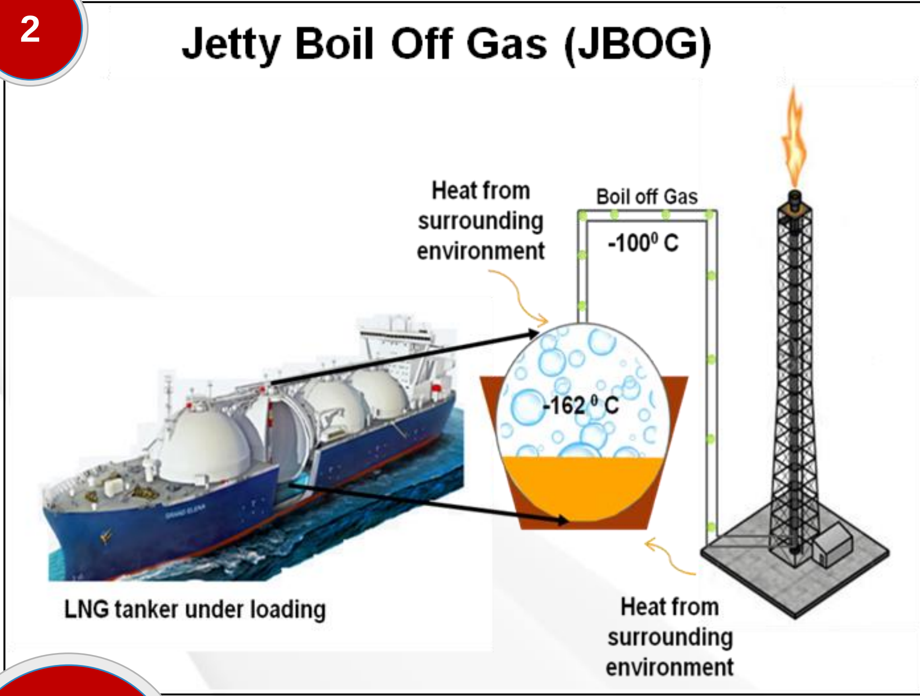

Kuwait Oil Company

- Gas flared amounted o 1.12% of total production in 2014/2015.
- Total incurred investments: $3.6 billion
- Planned investments : $4.1 Billion

Qatar Gas Company

- Inaugurated in April 2015.
- Recovers of 100 MMSCFD of boil off gas (BOG) during tankers loading (600,000 tons of LNG)
- Project investments $1 billion.

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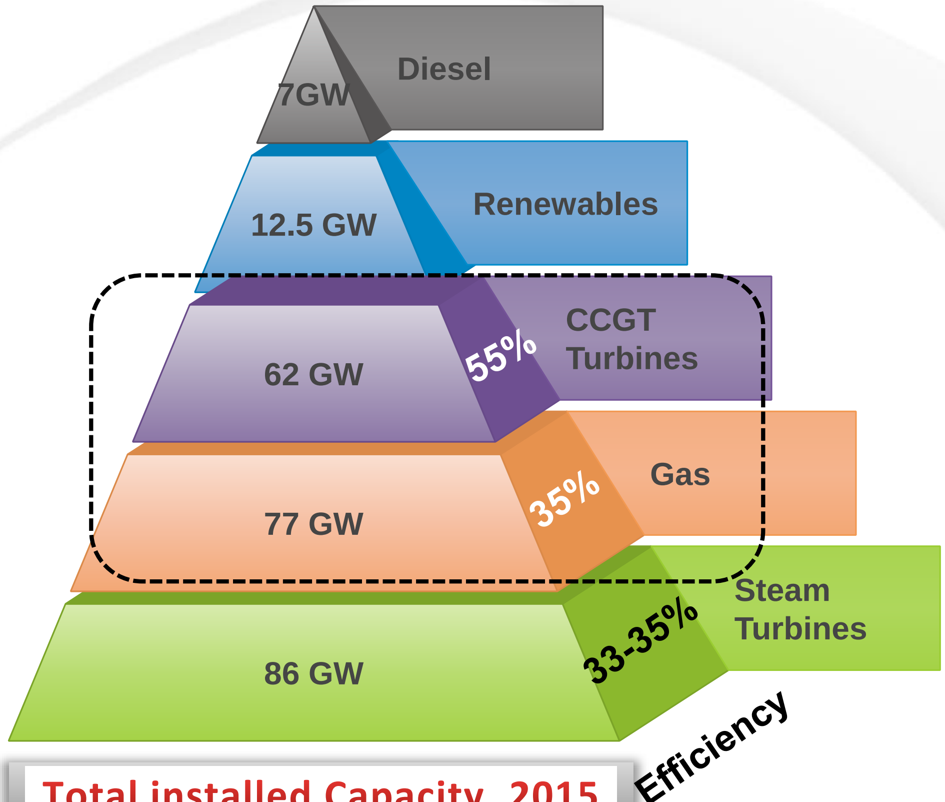
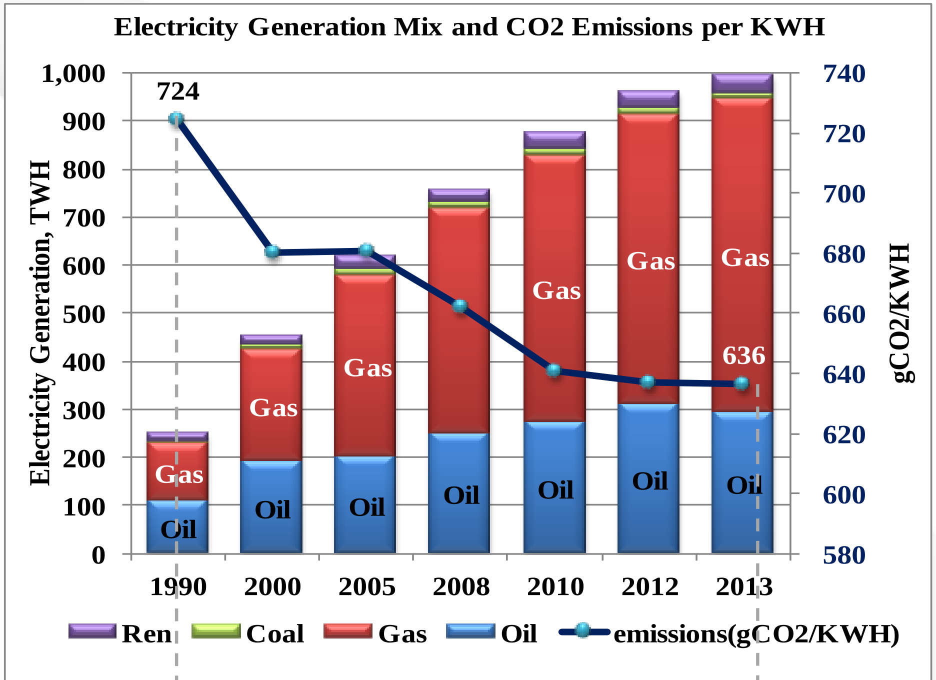
Installed Capacities of Power plants in Arab Countries



Total installed Capacity, 2015
244 GW

Source :OAPEC

Gas accounted for ~ **66**% of the total electricity produced in 2013, while Oil share 29.4%, compared to **48**% and 43% respectively in 1990.



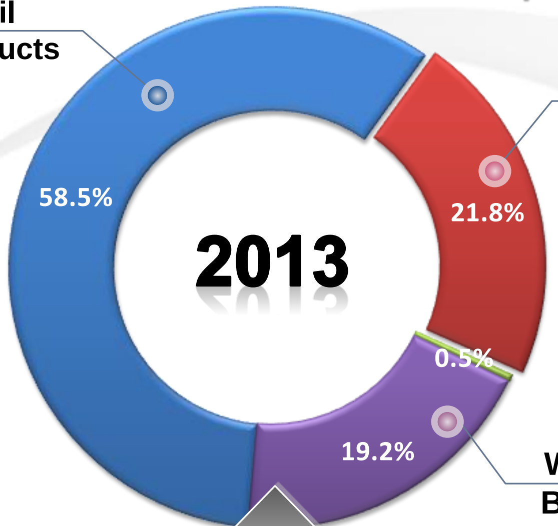
724

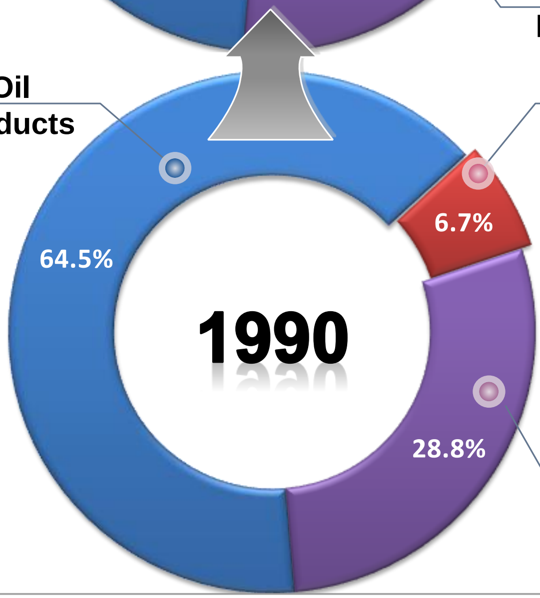
CO_2 emissions (g) per kilowatt hour of electricity produced

636

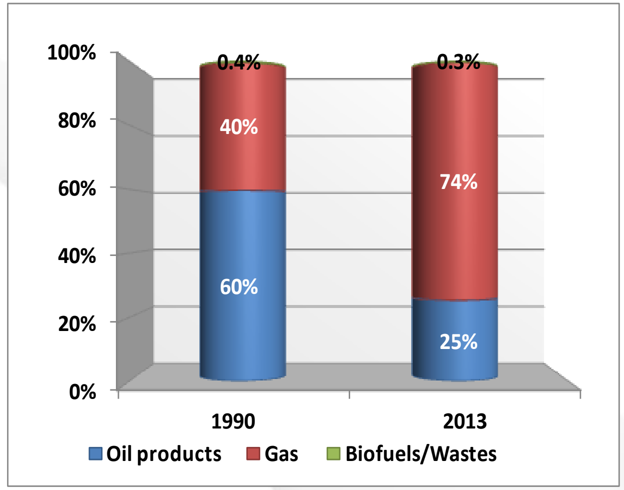
2-Natural Gas Role in Sustainable Development:
III-Residential Sector in Arab Countries

Fuels % in residential sector consumption



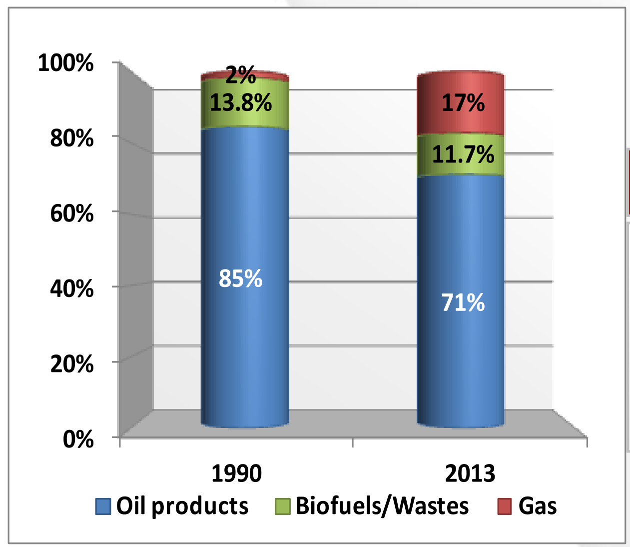


Algeria & Egypt: The earliest programs in the region



Algeria

- Started in early 1960’s
- Gas access rate 52%
- 7 million households by 2022



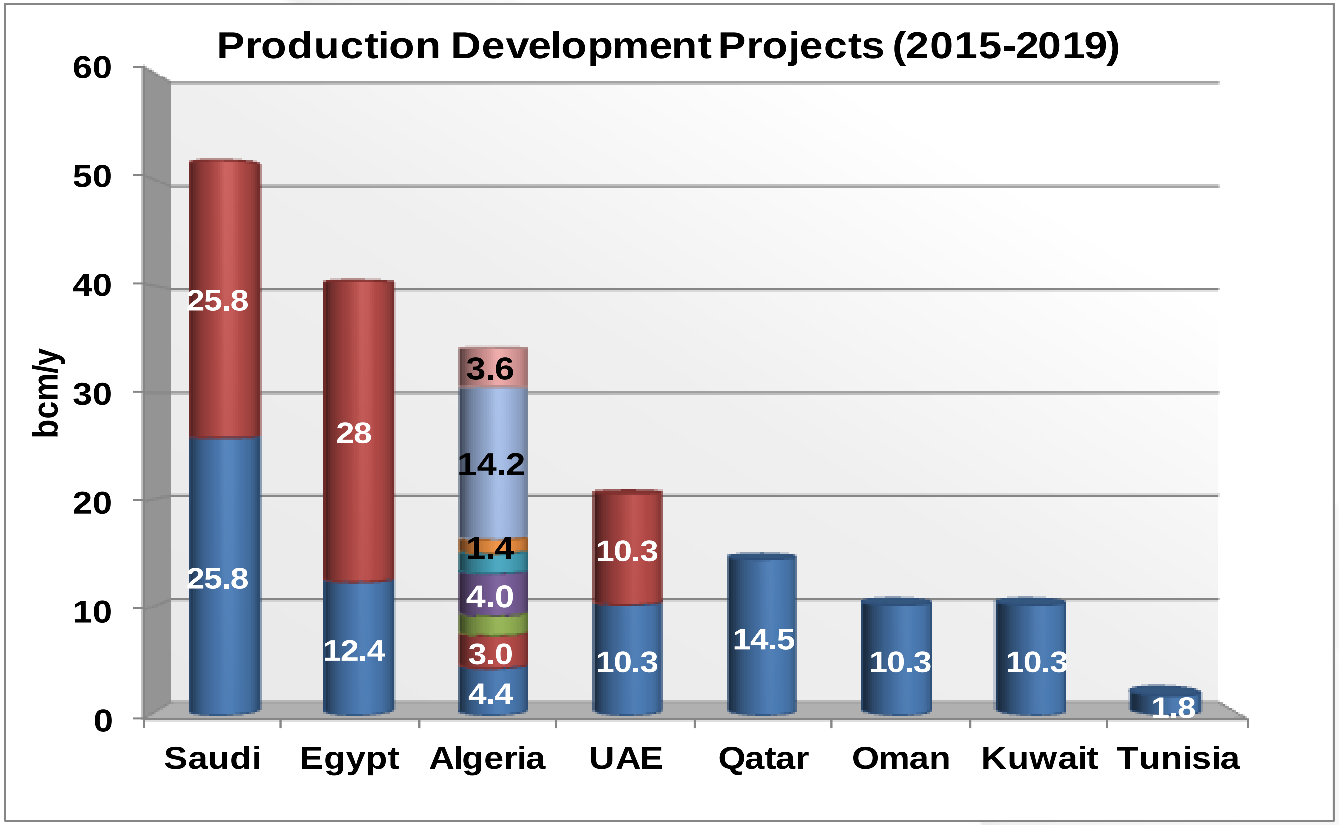
Egypt

- Started in early 1980’s
- 1 unit connected/ minute
- Target: 30 million households .

3-Prospects of Natural Gas industry
Production Development Projects

Production Development Projects

The ongoing and planned development projects in some Arab countries in the period (2015-2019) will provide ±180 bcm/y



To support declining production from mature fields

To meet the rapidly growing demand

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3-Prospects of Natural Gas industry
Gas Import Projects

Despite being a major oil and gas supplier to the world, the Arab region is set to be emerging market for natural gas exports (LNG+ Piped Gas) due to growing demand that exceeds domestic supply in many countries

Gas import projects

Egypt	Iraq	Jordan	Lebanon	Bahrain	Oman	UAE	Kuwait	Morocco
LNG 3rd floating terminal	Gas import pipeline from Iran	Gas pipeline to import gas from tamar	LNG floating terminal	LNG floating terminal	Gas pipeline to import gas from Iran	LNG fixed terminal at Al fujairah	LNG fixed terminal Southern Kuwait	LNG fixed terminal at Jorf Asfar
5.2 bcm/y	8.8 bcm/y	0.1 bcm/y	5.2 bcm/y	4.1 bcm/y	10 bcm/y	12.3 bcm/y	15.5 bcm/y	7 bcm/y
2016	2016	2016	2017	2017	2017	2018	2020	2025

3 Pipelines projects

6 LNG receiving terminals

Total import capacity

68 Bcm/y

Conclusions

Conclusions

The Arab region hold 27.1 % of the world's total proven gas reserves, 15.7% of the world's total gas production.

Primary energy mix is dominated by fossil fuels (50% oil, 48% gas , 1.2% Coal)

There are many sectoral action areas in which natural gas can effectively contribute to sustainable development objectives.

In 2014, Arab Countries produced 31.4% of the total word's oil &NGLs production while flared 20% of the global gas flaring volume!

Today, millions of households in Algeria, Egypt and Tunisia have an access to gas networks for cooking and heating purposes

Arab region is set to be emerging market for natural gas exports (LNG+ Piped Gas) due to growing demand that exceeds domestic supply in many countries.