Middle East Energy Prospects: Will there be a “Golden Age of Gas”?

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Introduction
“A Golden Age of Gas”

Golden Age of Gas

“A future in which natural gas plays a more prominent role in meeting the world’s energy needs to 2035”, International Energy Agency (IEA) – World Energy Outlook (WEO) 2011, Special Report - June 2011

■ Key assumptions:
  - Ambitious projected gas demand growth in China
  - Increased gas use in the road transportation sector
  - Slower growth in global nuclear power capacity
  - Optimistic gas supply outlook (unconventional gas & lower gas prices)

■ GAS Scenario
  - Share of gas in global energy mix increases from 21% to 25% by 2035
Golden Rules for a Golden Age of Gas

“Natural gas is poised to enter a golden age, but this future hinges critically on the successful development of the world’s vast unconventional gas resources…” IEA – World Energy Outlook 2012, Special Report on Unconventional Gas – May 2012

- Seven Golden rules to ensure that a significant proportion of the reported world’s vast resources of unconventional gas can be developed profitably and in an environmentally acceptable manner

- Global gas production projected to increase by 55% during 2010 – 2035 with unconventional gas assumed to account for about two-thirds of the growth...but outside North America formidable challenges will need to be addressed

- Middle East expected to continue to be one of the largest producers of gas

- 80% of gas growth use comes from Non-OECD. Mainly in Asia & the Middle East
The Middle East region - definition

Middle Eastern countries

Different and sometimes confusing definitions of what countries form the Middle East

- The IEA’s Middle East region includes the following twelve countries:
  - Gulf Cooperation Council: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and UAE
  - Iraq, Iran and Yemen
  - East Mediterranean: Jordan, Lebanon and Syria

- There are obviously quite distinct differences among the above-mentioned Middle Eastern countries in terms of GDP, population, climate and hydrocarbon endowment
Global Energy Prospects
Global Energy Demand

Global Primary Energy Demand - New Policies Scenario (IEA 2012)
(% of Total Primary Energy Demand)

- **Fossil fuels share**: 81%
- **Fossil fuels share**: 75%
Energy Demand by Selected Region/Country

Selected Primary Energy Demand - New Policies Scenario (IEA 2012)

- India: 3.2%
- China: 1.9%
- Middle East: 1.9%
- Latin America: 1.8%
- Africa: 1.4%
- Russia: 0.8%
- USA: 0.0%
- OECD Europe: 0.0%
- Japan: -0.4%

Compound Average Annual Growth Rate 2010 - 2035
Middle East Gas Endowment
Proven Gas Reserves by Region (source: bp, 2012)

2011 Total World = 208 trillion cubic meters
A scene dominated by few players

Iraq not shown on this graph. Because of its relatively large gas reserves and most of its gross production being presently flared, the resulting life of reserves is a distorted figure of over 500 years. But, Iraq expected to play a key role in future Middle East gas scene.
Gas production and demand scenarios in the Middle East show significant increases by 2035. The biggest production increases are assumed to come from Iraq, Qatar, and Iran. Gas production increases are largely from conventional sources.
Challenging Supply Developments

- Associated gas depends on crude oil production levels
- Gas quality cost constraints (e.g. multi-billion $ projects to treat sour gas)
- Increased reliance on non-associated gas in complex formations (high costs)
- Large volumes of gas needed for injection in oil fields (Iran and the UAE)
- Regional gas infrastructure remains very limited compared to other regions of world
- Geopolitical & commercial considerations have constrained intra-regional trade

Being endowed with large gas reserves does not necessarily mean that all the gas can be made available where when needed.
Middle East (*) Gas Trade Infrastructure (**)  

(*): As defined by the IEA  
(**): Map boundaries not precise.  
For illustration only.

- LNG export plants  
- Existing LNG Import Terminal  
- Planned LNG Import Terminal  

Gas lines between Iran, and Turkey, Armenia & Azerbaijan

East Med Gas Pipeline

Arab Gas Pipeline

Dolphin Gas Pipeline
Middle East Gas Markets
Middle East - 2011 Domestic Gas Use & Exports (source: bp, 2012)
Middle East Galloping Gas Demand

- Region’s present domestic gas use of 400 billion cubic meters is equivalent to 70% of Asia’s current gas demand and accounts for 13% of total world gas demand.

- IEA’s latest World Energy Outlook, under central case scenario (New Policies Scenario), shows Middle East domestic gas demand increasing considerably between 2010 and 2035 (376 bcm to 640 bcm).

- Middle East - among the world’s highest gas users per capita.

- Significant gas reinjection needs (Iran and UAE).

- Main gas demand sectors (fuel and feedstock uses):
  - Power & water desalination
  - Industries (petrochemicals, aluminium, steel, others)

- Driven by young populations and rapidly growing economies with large industrialisation programs fuelled by so-called “cheap” gas supplies.
Unsustainable Domestic Pricing Policies

- Policy of heavily subsidizing domestic gas prices continues without discrimination. Some partial price reforms were planned, but political turbulence in the region has stopped or frozen such efforts.

- Iran initiated wider reform (although details not clear) with significant cuts in energy price subsidies (incl. a substantial increase in gas price), but economic impact of current international political isolation has halted such reform.

- A dangerous illusion to think that unlimited gas supplies would continue to be made available at the prevailing low to very low gas prices. Serious short to medium term tightening of gas supply availability at current subsidized domestic prices.

- New sources of gas supplies whether domestic or imported are/will be much more expensive to bring to markets (non ass. gas, deep gas, sour gas, LNG imports).

- Funding of future domestic (and import where needed) gas infrastructure requires urgent and sustainable pricing reforms.

- Intra-Middle East gas trade and more gas use will remain very limited if such reforms don’t take place, also impact of adverse regional politics not a negligible factor.
Nuclear & Renewables
Nuclear & Renewables - Alternative or complementary sources of energy?

- Apart from Iran, the UAE – region’s most advanced nuclear power program
  - Four units of 1 400 MW each between 2017 and 2020
  - Construction of first unit launched in July 2012

- Middle East renewables developments focused on solar energy – main projects in:
  - UAE (Masdar on-going) and Saudi Arabia (KA Care plan 17 000 MW by 2032)
  - Plans in Kuwait and Iraq (to cover both solar & wind)
  - Qatar – announced plan for 1 800 MW by 2018

- IEA New Policies Scenario: Renewables for the whole Middle East region to account for only 12% of total electricity generation by 2035

- Share of gas in generation of electricity to increase from 62% in 2010 to 70% by 2035
Middle Energy Demand
**Middle East Energy Demand**

Middle East Primary Energy Demand - New Policies Scenario (IEA 2012)

- Gas: 53%
- Oil: 42%
- Nuclear: 2%
- Bioenergy: 1%
- Other Renew: 2%

**Legend:**
- Coal
- Oil
- Gas
- Nuclear
- Hydro
- Bioenergy
- Other renewables

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Conclusions
Conclusions

- Middle East region far from being a homogeneous area – so, energy prospects will differ from one country to another depending on their gas endowments (and how fast gas reserves are/will be depleted) and affordability considerations.

- Increased gas output over the next two decades to be dominated by Iraq, Qatar and Iran and by conventional sources of gas supplies.

- In some countries, it is not a question of reserves, but cost of developing additional supplies and prices local markets are ready to pay – issue of domestic gas price subsidies.

- Intra-Middle East gas trade constrained by geopolitical and commercial barriers.

- Nuclear and renewables not a cheap and a quick fix.

- “Golden Age of Gas” possible for some Middle Eastern countries that are well endowed with gas resources and that can “afford” to develop new supplies, but challenging times ahead for others if comprehensive energy policy reforms continue to be resisted.