“World Energy Security and Safety: Challenges and Opportunities”

By:
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1. Introduction – Brief on IGU

2. Global Natural Gas & LNG Industry

3. World Energy Security & Safety

4. Key Challenges & Opportunities

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IGU as **THE** spokesman for the gas industry

- Worldwide and non-profit organisation established in 1931
- Promotes technical and economic progress of the gas industry
- Emphasising sound environmental performance
- Increased focus on strategic and policy issues
- Cooperation with IEA, United Nations, World Bank, IEF and others
IGU Members responsible for 95% of Global Gas Sales

1. Introduction – Brief on IGU

- **74** Charter members
- **33** Associate members
- **11** Affiliated members

*N.B.: As of April 2010*
1. Introduction – Brief on IGU

IGU Organisation Chart for Malaysian 2009 – 2012 Triennium

**IGU MANAGEMENT TEAM**
- President, Vice President
- Immediate Past President
- CC Chairman, CC Vice Chairman
- Secretary General

**EXECUTIVE COMMITTEE**
- Secretary General

**COORDINATION COMMITTEE**
- Chairman

**IGU SECRETARIAT**
- Senior Advisor
- Advisor
IGU World Gas Conferences (WGCs)

- 25th WGC - Kuala Lumpur, Malaysia, 4-8 June, 2012
- 26th WGC - Paris, France, 2015

Co-sponsor of LNG Conferences
LNG 16 in Oran, Algeria, April 2010

Ministerial Gas Forums
1st IEF – IGU Ministerial Gas Forum 2008, Vienna
2nd IEF – IGU Ministerial Gas Forum, Doha, November 2010

The IGU Research Conference
IGRC 2011 in Seoul, Korea, October 2011
2. Global Natural Gas and LNG Industry

The world’s proven gas reserves amounted to 185 Tcm

Proven gas reserves at end 2008

Trillion cubic metres (Tcm)

Top 3 gas reserves holders:

- Russia = 43.30 Tcm
- Iran = 29.61 Tcm
- Qatar = 25.46 Tcm

Total volume represents more than 60 years of consumption at today’s rate

Middle East, Russia & CIS and Africa emerge as key gas exporters
Europe remains the largest net gas importer
Asia – Pacific and Latin America are net gas importers
North America has transformed itself to become a self-sufficient gas market

Russia Federation is at the 7th rank in term of world’s proven oil reserves

- **Saudi Arabia**: 264.1 Thousand million barrels
- **Iran**: 137.6 Thousand million barrels
- **Iraq**: 115.0 Thousand million barrels
- **Kuwait**: 101.5 Thousand million barrels
- **Venezuela**: 99.4 Thousand million barrels
- **United Arab Emirates**: 97.8 Thousand million barrels
- **Russian Federation**: 79.0 Thousand million barrels
- **Libya**: 43.7 Thousand million barrels
- **Kazakhstan**: 39.8 Thousand million barrels
- **Nigeria**: 36.2 Thousand million barrels

Major gas trade movements worldwide (billion cubic metres)

Fossil fuels, i.e. oil, gas and coal, will continue to dominate the global energy mix during next few decades.

Penetration of renewable energy into the global energy market has thus far been relatively small and gradual.

Increasing competition for energy security particularly to secure the long-term supply of oil and natural gas.

- Population growth from 6.7 billion in 2010 to about 9 billion by 2050
- Urbanisation continues
- Increased level of global prosperity
- Fossil fuels will dominate next decades

3. World Energy Security and Safety

Security of oil supply and safety aspect

- Offshore rig/platform accident e.g. in the Gulf of Mexico
- One of the worst offshore crude oil spill in the United States history

Tragic news

- Transocean's Deepwater Horizon drilling rig explosion on April 20, 2010
- The sinking of the Deepwater Horizon rig to about 5,000 feet below the ocean’s surface on April 22, 2010
- The situation created serious implications:
  1) the loss of 11 crew members
  2) extensive damage to:
      - environment;
      - nearby wildlife;
      - marine life; and
      - well-being of the nearby local population that dependent on local marine related industry

Source: www.rigzone.com
### Security of coal supply and safety aspect

- **Even worst, numerous records of accidents from the explosion of coal mines:**

1. Russia’s largest Raspadskaya coal mine exploded on 8 May 2010
   - Death of 60 coal workers
   - 30 being trapped and missing (13 May 2010)

2. A total of 198 death from other coal mines accidents in the United States from 1970 to 2010 includes:
   - Upper Big Branch Mine, located in West Virginia exploded in April 2010
     - 29 coal miners were reported dead

3. China registered with the highest death records:
   - March 2010: 153 miners were trapped in the northern province of Shanxi
   - Nov 2009: 104 miners were killed from the explosion in northeastern province of Heilongjiang
   - Sept 2008: series of coal mines accidents that killed 254 miners in northern China
   - Sept 2007: series of coal mines accidents that killed 181 miners in the eastern province of Shandong
The enhancements of world energy security and safety being shifted to promoting continued growth of the global gas industry due to:

a) Awareness on mitigating climate change
b) The penetration of new gas markets via LNG business

No record of environmental damage relating to natural gas industry
Discoveries are widespread across the U.S. - 32 of 50 States produce Natural Gas

- Emphasis on commercially develop unconventional gas e.g. shale gas, coal-bed methane & tight gas.

- This leads to the creation of new dynamics in the global gas and LNG landscape.

- LNG imports are reduced from Middle East, Africa and Russia. LNG movements redirected into Europe and Asia.

- It is believed could in the future contribute to the global natural gas balance.

Source: EIA 2009
The United States gas market’s revolution gave impetus to other countries to monetise unconventional gas

3. World Energy Security and Safety

Global Unconventional Gas Activity

Countries where commercial production exists or will soon exist:
- Australia - CBM
- China – CBM, Tight Gas
- India – CBM
- United Kingdom - CBM

Countries where unconventional gas is still an early play:
- Austria & Slovakia – Shale gas
- Chile – CBM
- Columbia – CBM & Tight Gas
- Libya – Tight gas

Countries with acreage allocation and test-well activity:
- Algeria – Tight Gas
- Argentina – Tight & Shale Gas
- France – CBM, Tight & Shale gas
- Germany – Tight Gas
- Hungary – Tight Gas
- Indonesia – CBM
- Oman – Tight Gas
- Pakistan – Tight Gas
- Poland – CBM, Shale & Tight gas
- Romania – Tight gas & CBM

4. Key Challenges and Opportunities

Issues relating to world energy security and safety

Key challenges

- Geo-politics of natural gas
- The dependency on coal and oil causes not only pollution but also disasters
- The deployment and leveraging of science, technology and engineering
- The invasion of Iraq in 2003
- Gas industry requires huge upfront capital investment
- Building Strategic Human Capital
- Sufferings & even deaths from the use of “political and military might”
- Nurturing Future Generations

Key deliverables at the 25th World Gas Conference (WGC), Kuala Lumpur in 2012
4. Key Challenges and Opportunities

**Issues relating to world energy security and safety**

- **Harnessing opportunities**
  - Multi-lateral agreement based on legally binding agreement
  - To reduce dependency on imports of non-renewable energy
  - "Energy-diplomacy" approach to establish a strong partnership
  - Natural gas to compete with other competing fuels. Natural gas as the fuel of choice.
  - Long-term contracts to help financing activities
  - The advent of technology and innovation
  - Crucial roles played by world leaders and policy makers
  - To promote wider utilisation of gas in the energy mix

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- Crucial roles played by world leaders and policy makers
- To promote wider utilisation of gas in the energy mix
- Clean, efficient, versatile and environmental friendly
- Available and abundant
- Continue to play a substantial role in global energy demand
- Basis for sustainable economic growth

Natural gas – *major part of the long term energy solution*
5. Closing remarks

25th World Gas Conference

“GAS : SUSTAINING FUTURE GLOBAL GROWTH”

Kuala Lumpur Convention Centre
4 to 8 June, 2012

CHARMING COUNTRY, COLOURFUL CITY
Welcome to

25th World Gas Conference and Exhibition

4-8 June 2012
Kuala Lumpur, Malaysia

http://wgc2012.com