

“Ensuring availability, driving sustainability and maximising opportunities for gas development in Asia ”

Examining regional market outlooks and developments - Challenges & Opportunities

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- 2. Global Energy Scenario until 2030**
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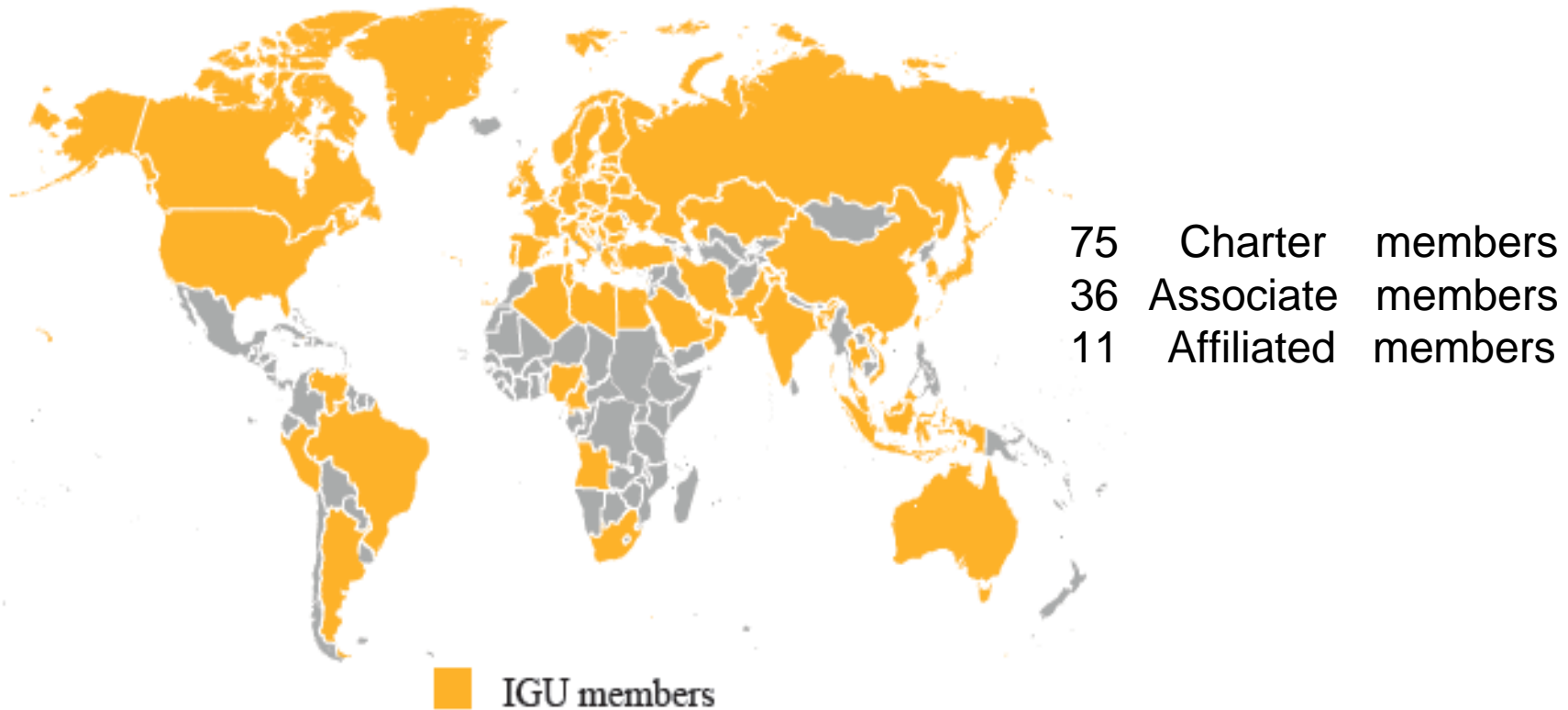


IGU as **THE** spokesman for the gas industry

- Worldwide and non–profit organisation established in 1931
- Promotes technical and economic progress of the gas industry
- Emphasising sound environmental performance worldwide
- 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



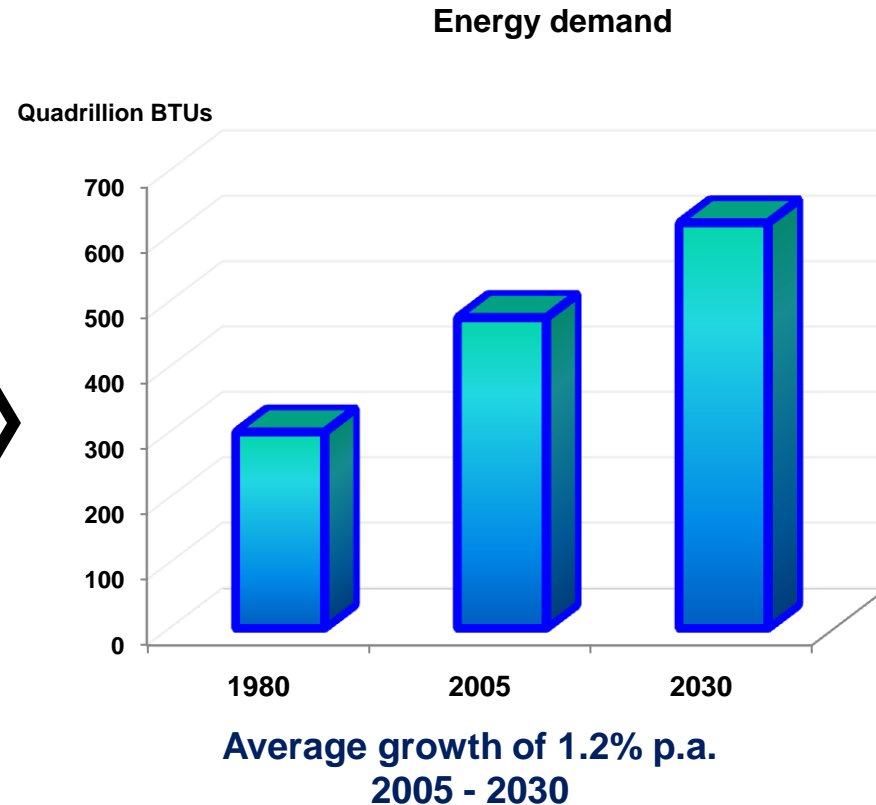
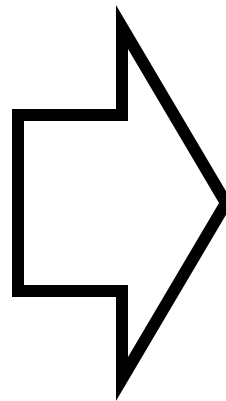
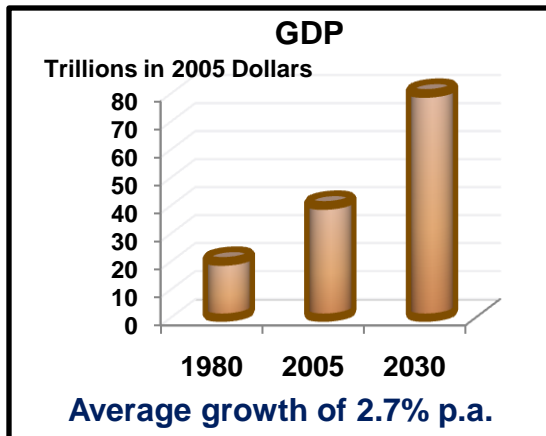
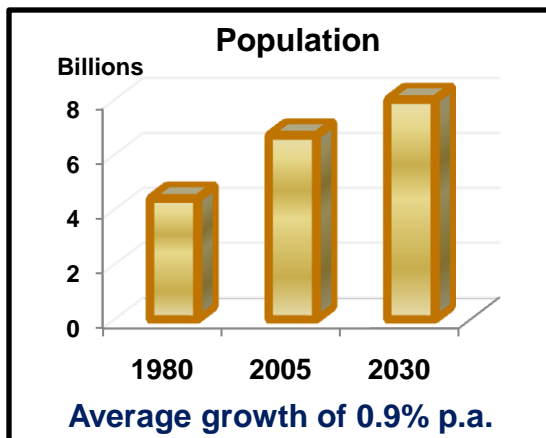
As of October 2010



IGU Organisation Chart for the 2009 – 2012 Malaysian Triennium



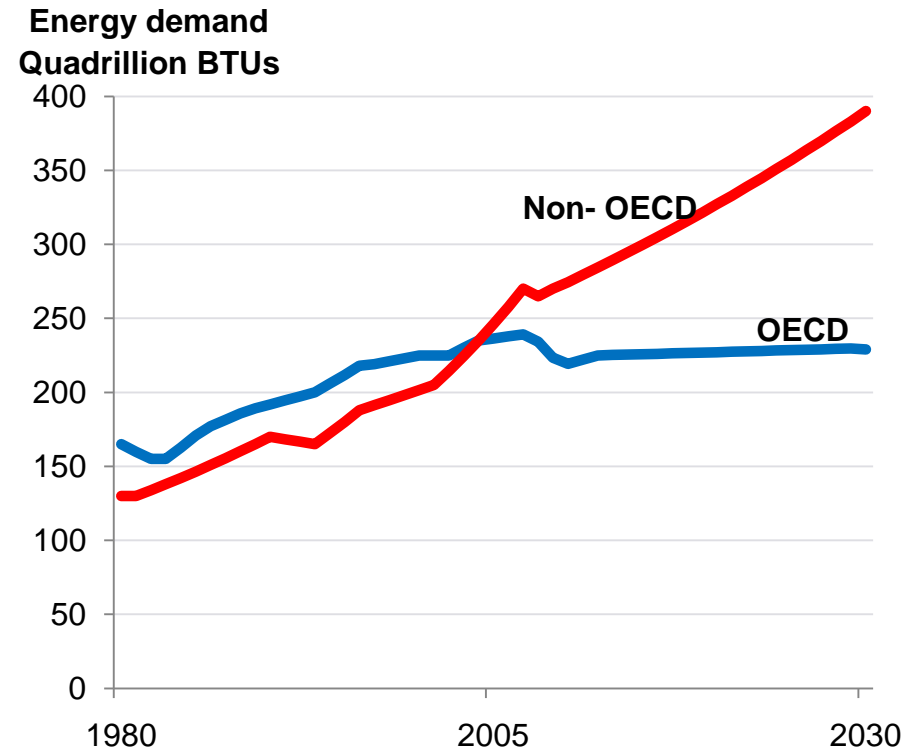
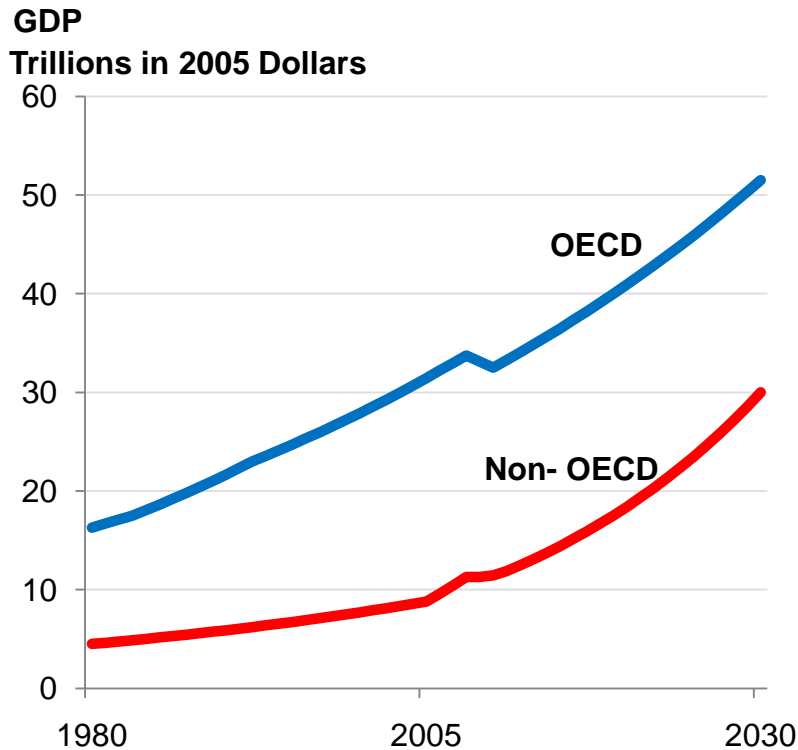
Energy demand is expected to grow in the foreseeable future



- World's population to increase from 6.7 billion today to 8.0 billion by 2030
- GDP to expand from USD 20 Trillion in 1980 to USD 80 Trillion by 2030
- The world will use 35% more energy by 2030 than in 2005 level!



The leading growth of energy demand is likely to be spearheaded by Non-OECD countries

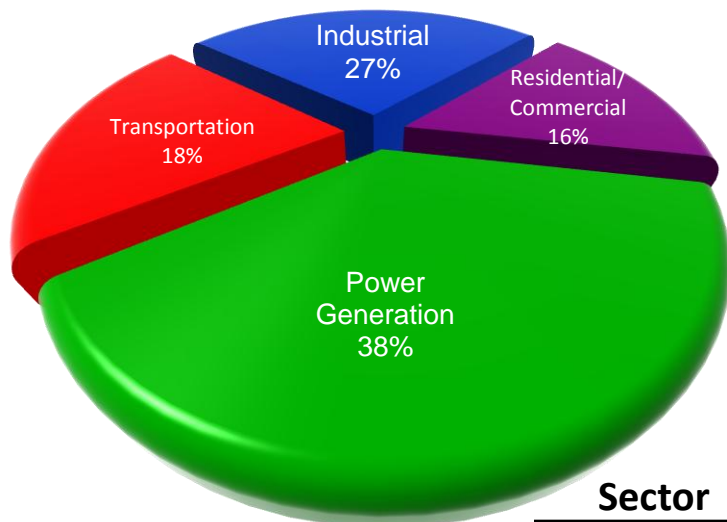


- Non-OECD energy will grow about 65% of total energy demand notably driven by emerging markets e.g. China & India. Per-capita energy demand will remain lower.
- OECD energy demand slightly lower in 2030 versus 2005 due to substantial gains in efficiency.

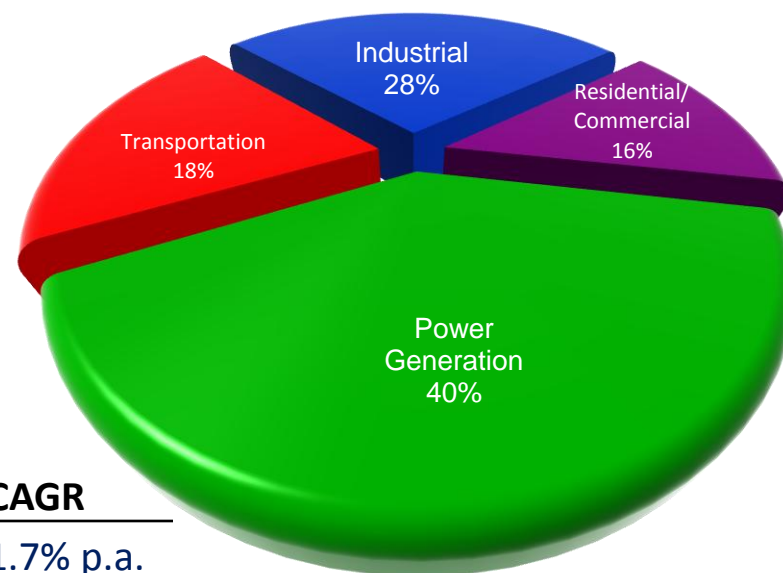


Power generation represents the largest and fastest-growing sector

Gas End Use by Sector 2009



Gas End Use by Sector 2030

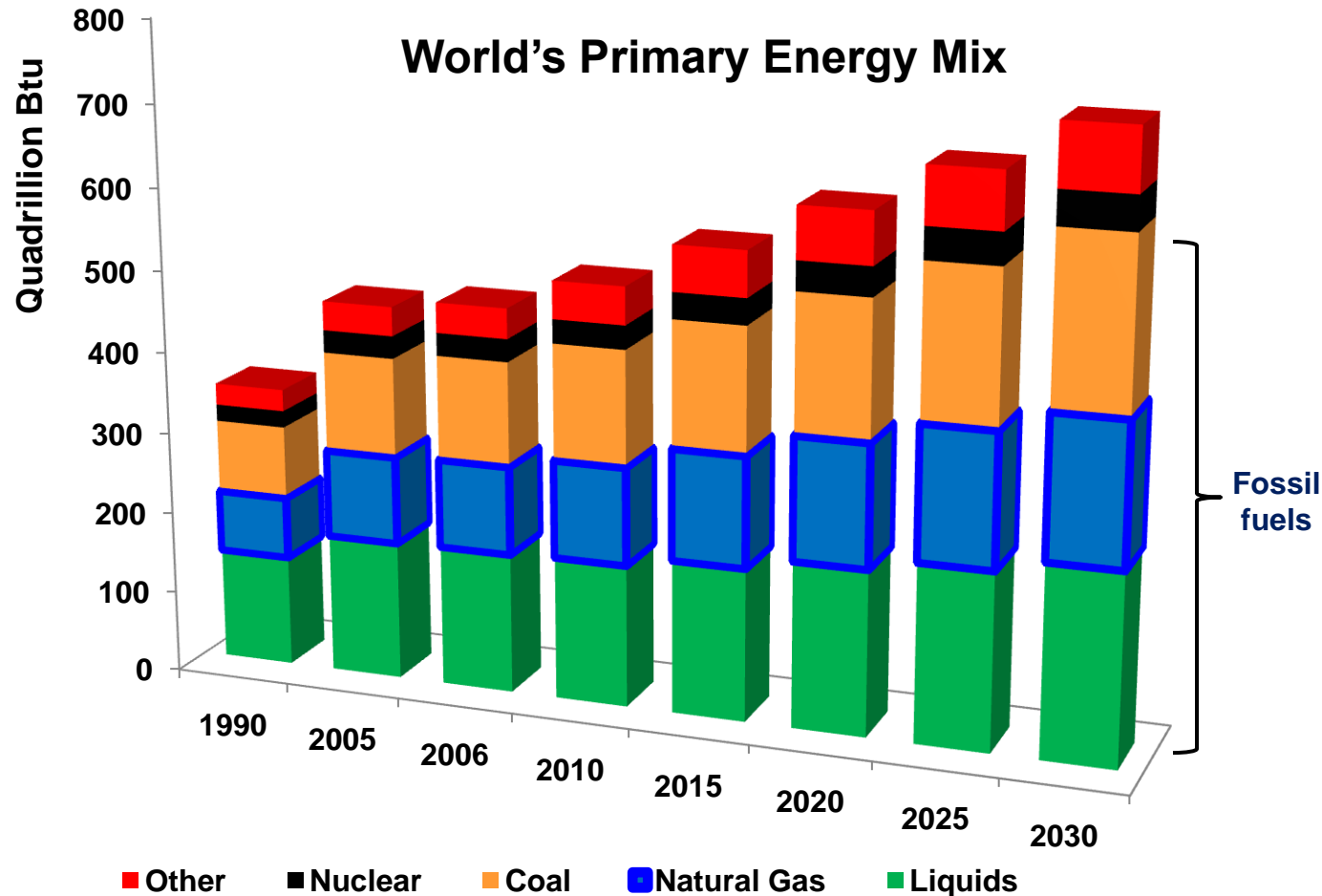


Sector	CAGR
1) Power Generation	1.7% p.a.
2) Industrial	1.5% p.a.
3) Transportation	1.2% p.a.
4) Residential / Commercial	0.8% p.a.

- This is due to a radical shift to use less-carbon-intensive fuels such as natural gas to generate electricity
- By 2030, it will account for 40% of all energy demand, representing 55% of the total growth in energy demand



Fossil fuels will still dominate the 2030 energy mix



CAGR Total World Fuel Consumption, 2010-2030

Liquids	1.3%
Natural Gas	2.0%
Coal	2.1%
Nuclear	1.7%
Other	3.0%

% of natural gas from total energy mix 1990-2030

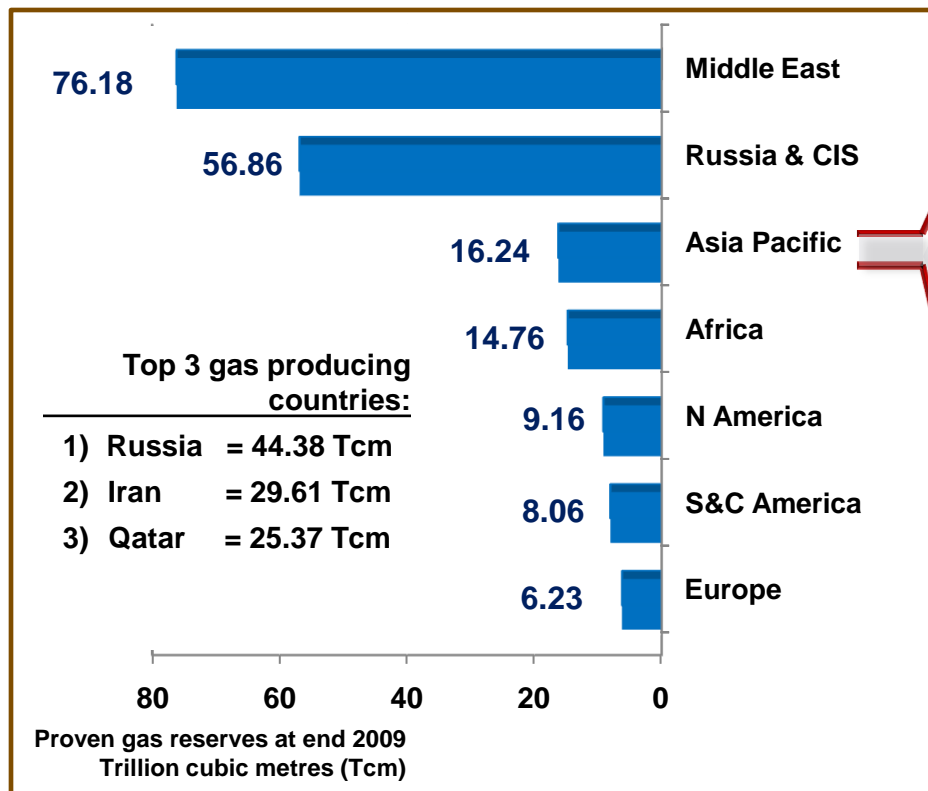
1990	22%
2005	23%
2010	23%
2030	24%

- Natural gas is the fastest growing energy source.
- By 2030, global natural gas demand will be 55% higher than it was in 2005!



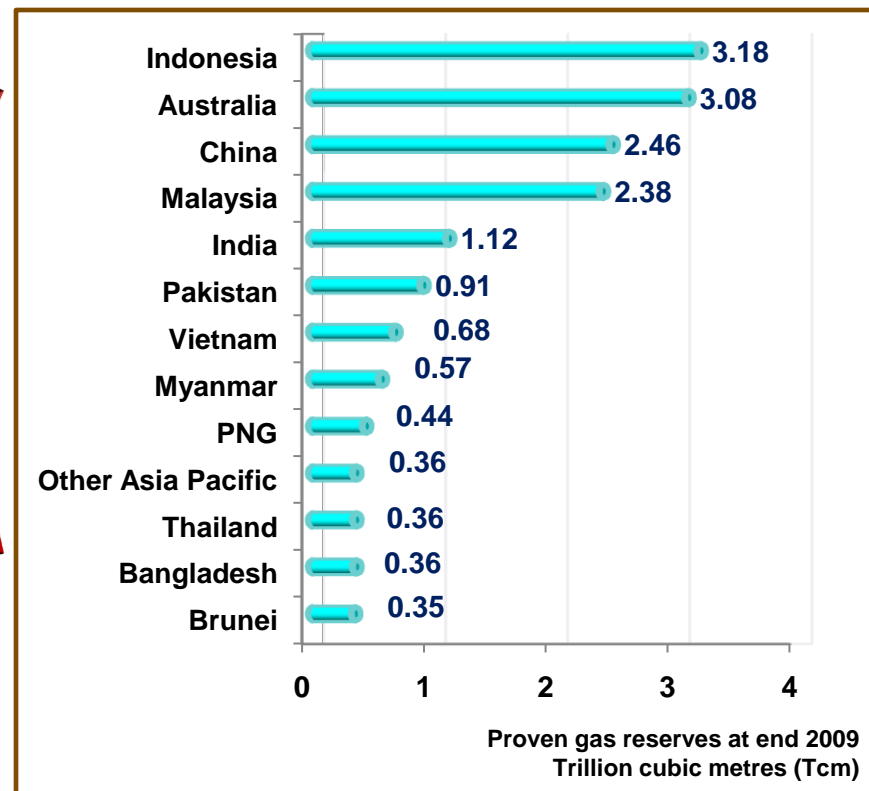
The comparison outlook of proven natural gas reserves

World's natural gas proved reserves



- Total 2009 world's proven natural gas = 188 Tcm (~6,620Tcf).
- It represents more than 60 years of consumption at today's rate.

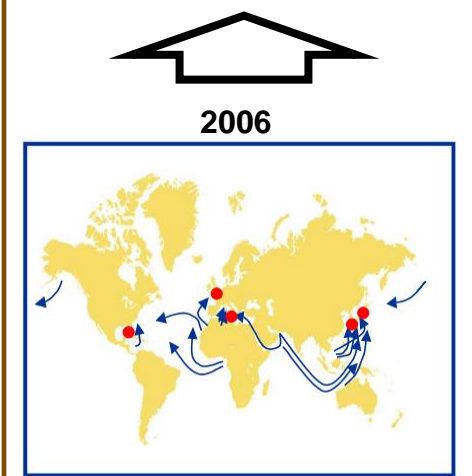
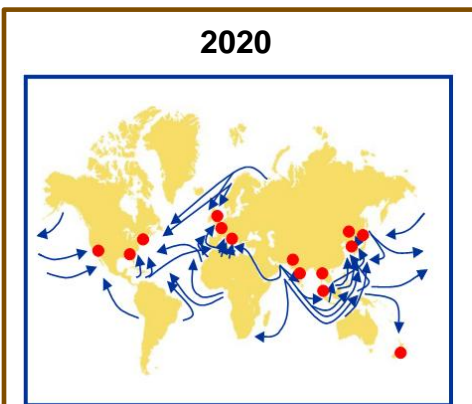
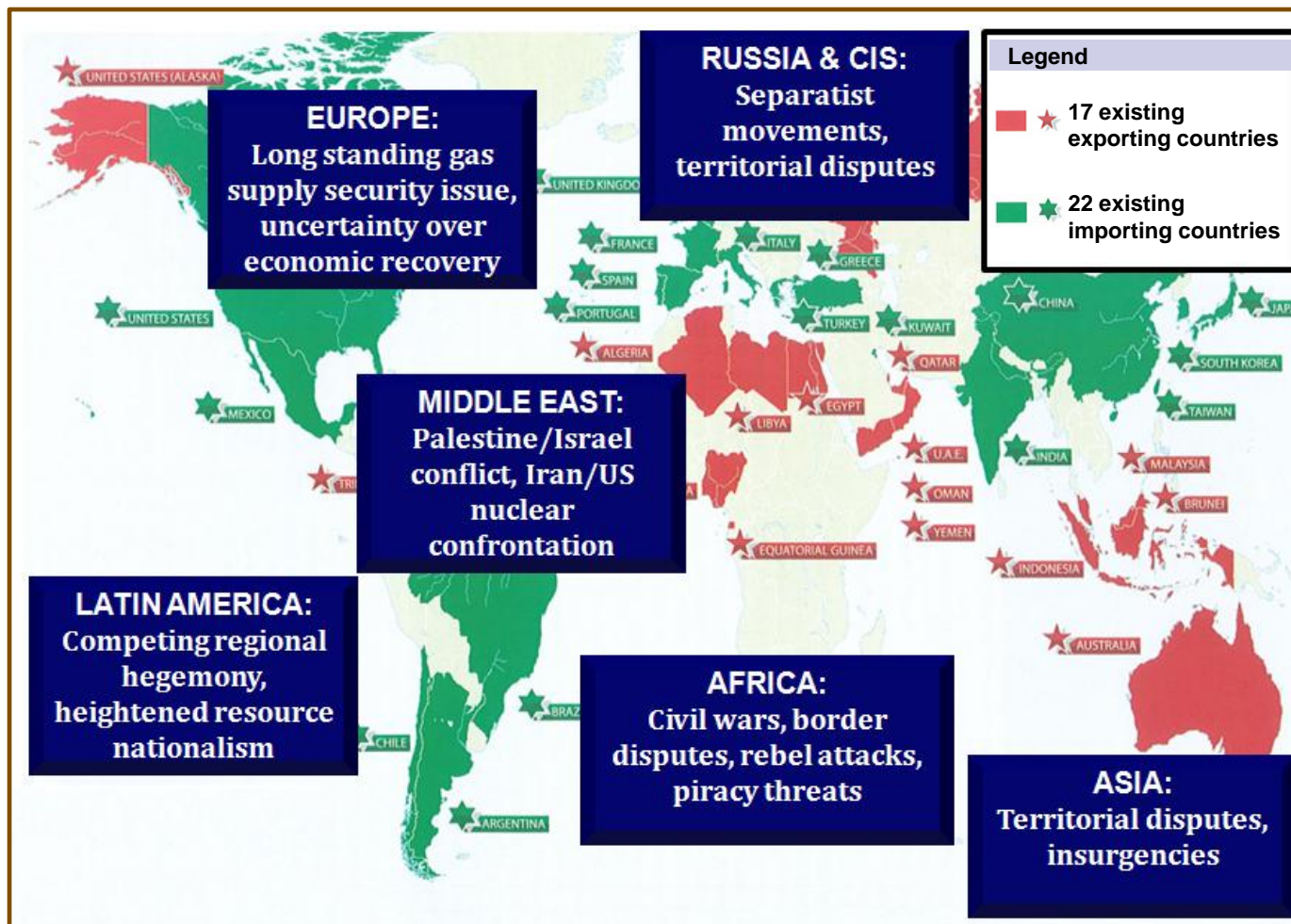
Asia Pacific's natural gas proved reserves



- Total 2009 Asia Pacific proven natural gas = 16.24 Tcm (~574 Tcf).
- It represents more than 35 years of consumption at today's rate.



Significant interplay between geo-politics and globalisation to sustain gas supply and trade



- Some of these regional conflicts may escalate and cause gas security threat.
- The emergence of unconventional gas development as future “game changer”.

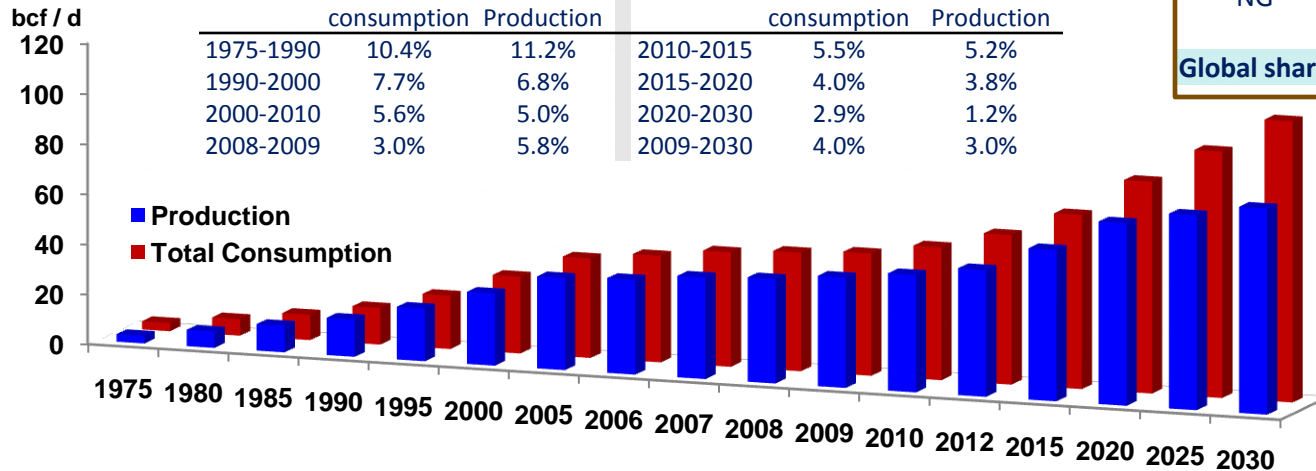
- With the advent of LNG, natural gas has become a global commodity.
- Wider access to worldwide gas markets through LNG established.

The outlook of Asia Pacific's natural gas balance

Asia Pacific's natural gas production vs. total consumption

Average Annual Growth Rate (AAGR):

	Total consumption		Total Production	
1975-1990	10.4%	11.2%	10.4%	11.2%
1990-2000	7.7%	6.8%	7.7%	6.8%
2000-2010	5.6%	5.0%	5.6%	5.0%
2008-2009	3.0%	5.8%	3.0%	5.8%
2010-2015	5.5%	5.2%	5.5%	5.2%
2015-2020	4.0%	3.8%	4.0%	3.8%
2020-2030	2.9%	1.2%	2.9%	1.2%
2009-2030	4.0%	3.0%	4.0%	3.0%



Asia Pacific Region's Global Share of Fossil Fuel Energy, 2009

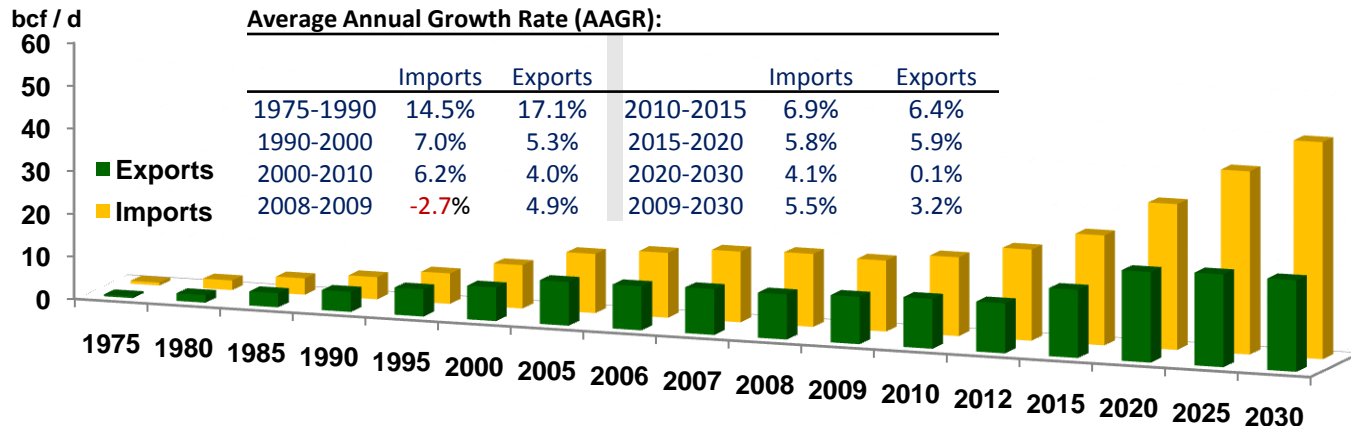
NG	Reserves	Production	Consumption
	16.24 Tcm (~574 Tcf)	438.4 Bcm (~ 15.5 Tcf)	496.6 Bcm (~17.5 Tcf)
Global share	8.7%	14.6%	16.8%

- Aggregate gas consumption is forecast to post a robust AAGR of 4% from 2009 – 2030.

Asia Pacific's natural gas exports vs. imports

Average Annual Growth Rate (AAGR):

	Imports	Exports	Imports	Exports
1975-1990	14.5%	17.1%	14.5%	17.1%
1990-2000	7.0%	5.3%	7.0%	5.3%
2000-2010	6.2%	4.0%	6.2%	4.0%
2008-2009	-2.7%	4.9%	-2.7%	4.9%
2010-2015	6.9%	6.4%	6.9%	6.4%
2015-2020	5.8%	5.9%	5.8%	5.9%
2020-2030	4.1%	0.1%	4.1%	0.1%
2009-2030	5.5%	3.2%	5.5%	3.2%

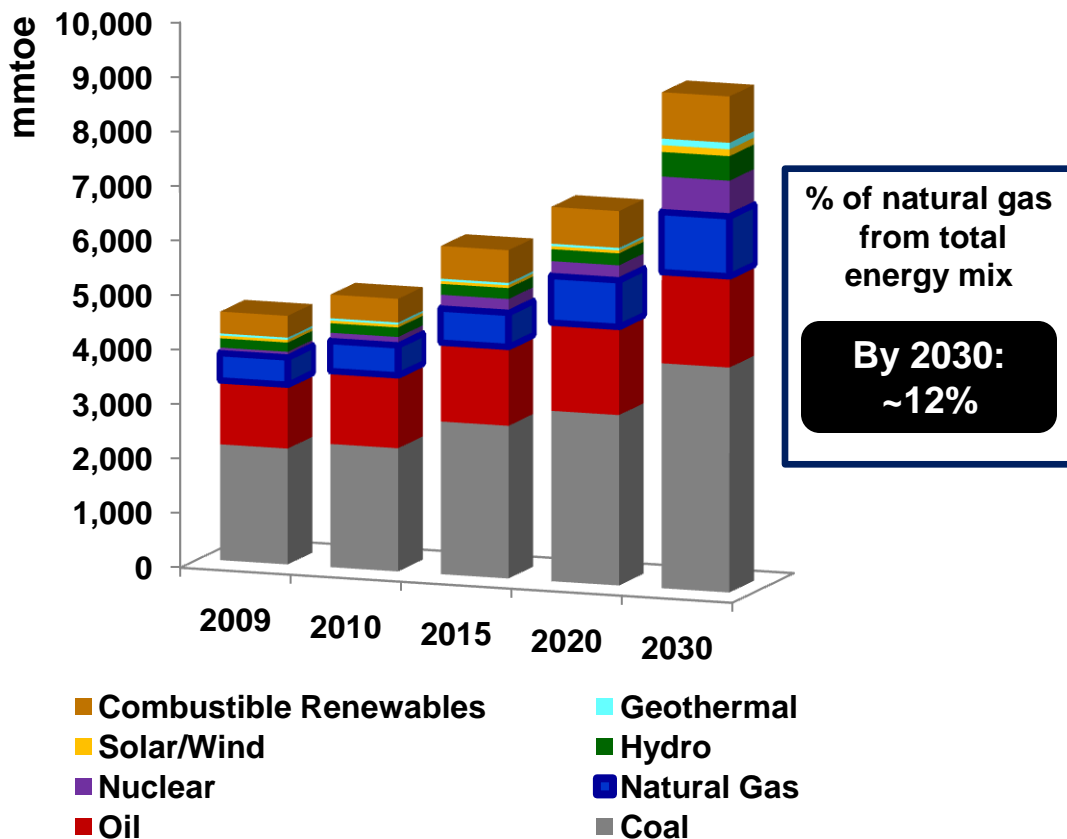


- The region will marginally become a net importer of natural gas by 2015.
- By 2030, LNG imports will comprise almost 32% of Asia Pacific's total gas supplies.



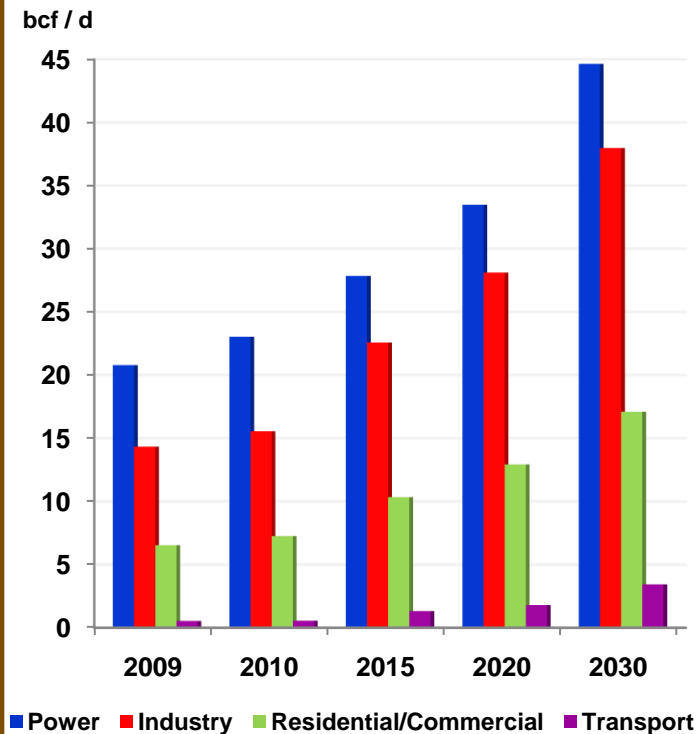
The potential growth of natural gas demand will be gradually increasing in Asia Pacific

Primary Energy Consumption (PEC)



Natural Gas Demand by sector

* The chart considers only conventional gas production



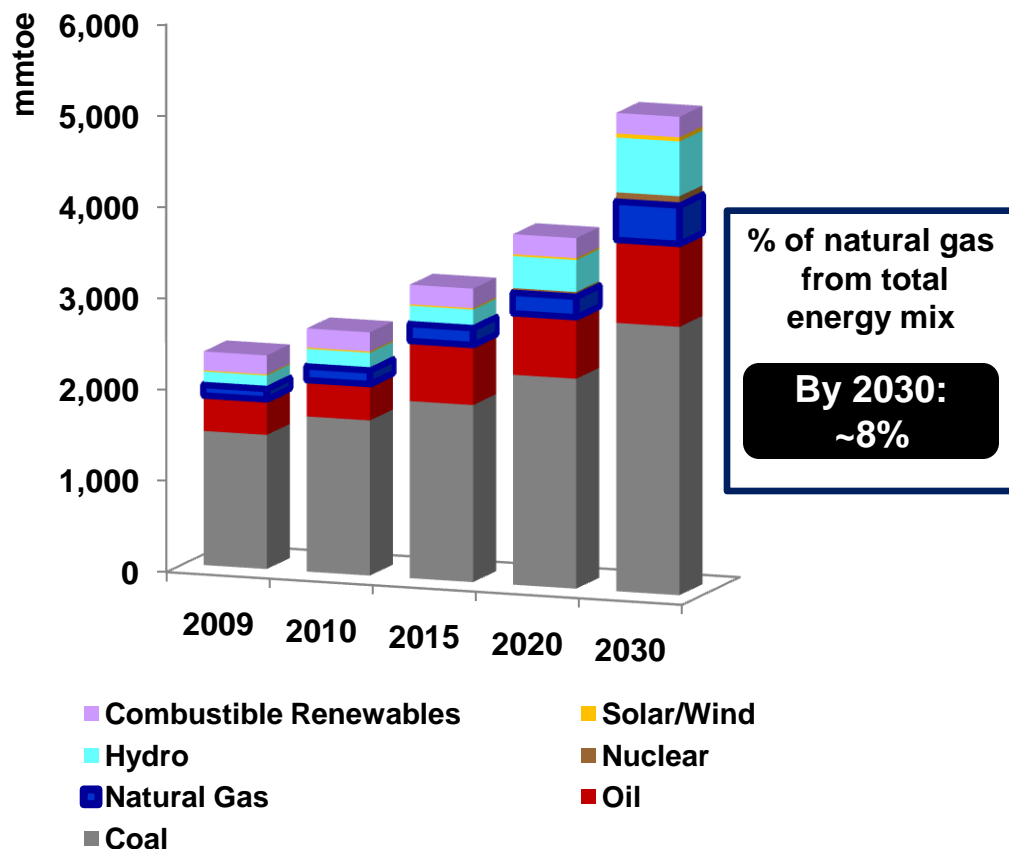
- As the countries' economies mature e.g. India, Pakistan and Vietnam, the role of fossil fuels will definitely grow.
- Natural gas, the fastest growing fuel, is well suited to meet the incremental demand.

- Power generation sector will retain its dominance over the Asia Pacific's gas consumption.



Brief overview of China's natural gas scenarios

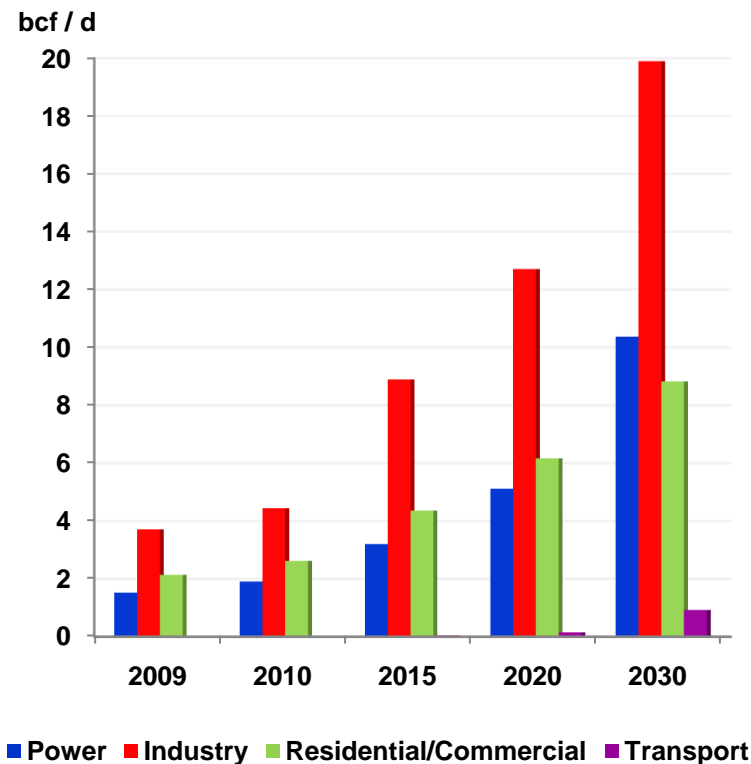
Primary Energy Consumption (PEC)



- Coal remains as the primary fuel in the overall energy mix.
- By 2030, natural gas will account for about 8% of the overall energy mix.

Natural Gas Demand by sector

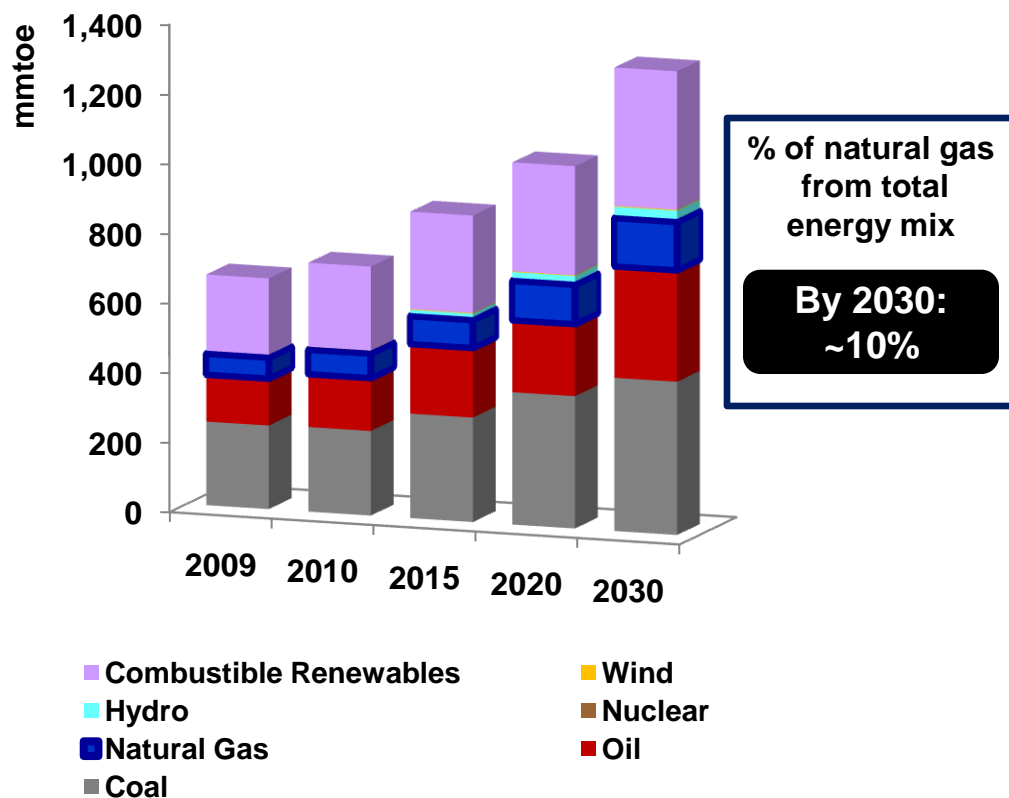
* The chart considers only conventional gas production



- The industrial sector accounts for the biggest share of local gas consumption.
- Limited use of gas for power generation due to high prices and gas availability.

Brief overview of India's natural gas scenarios

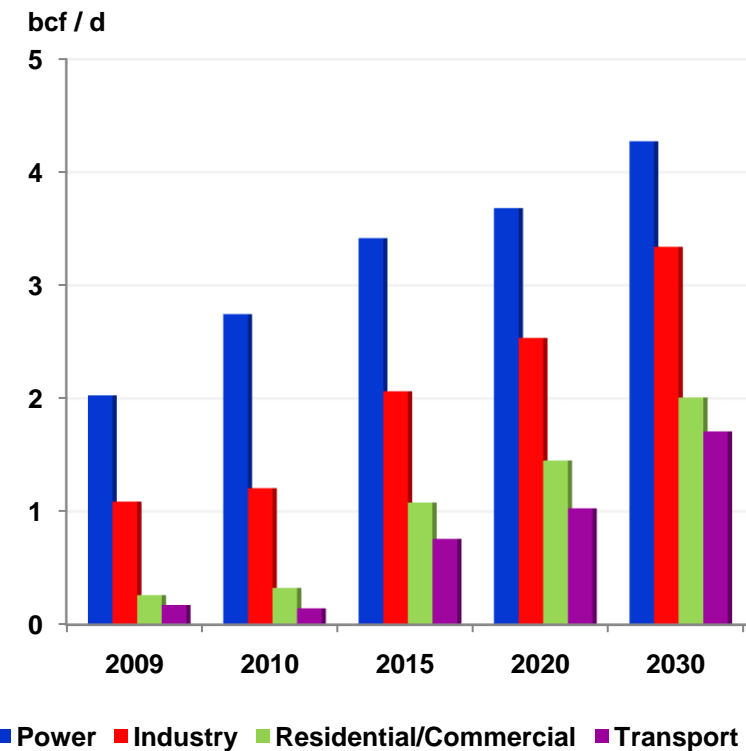
Primary Energy Consumption (PEC)



- Coal and combustible renewable & wastes will continue to play their crucial roles in the overall energy mix.
- By 2030, natural gas will represent about 10% of the overall energy mix.

Natural Gas Demand by sector

* The chart considers only conventional gas production

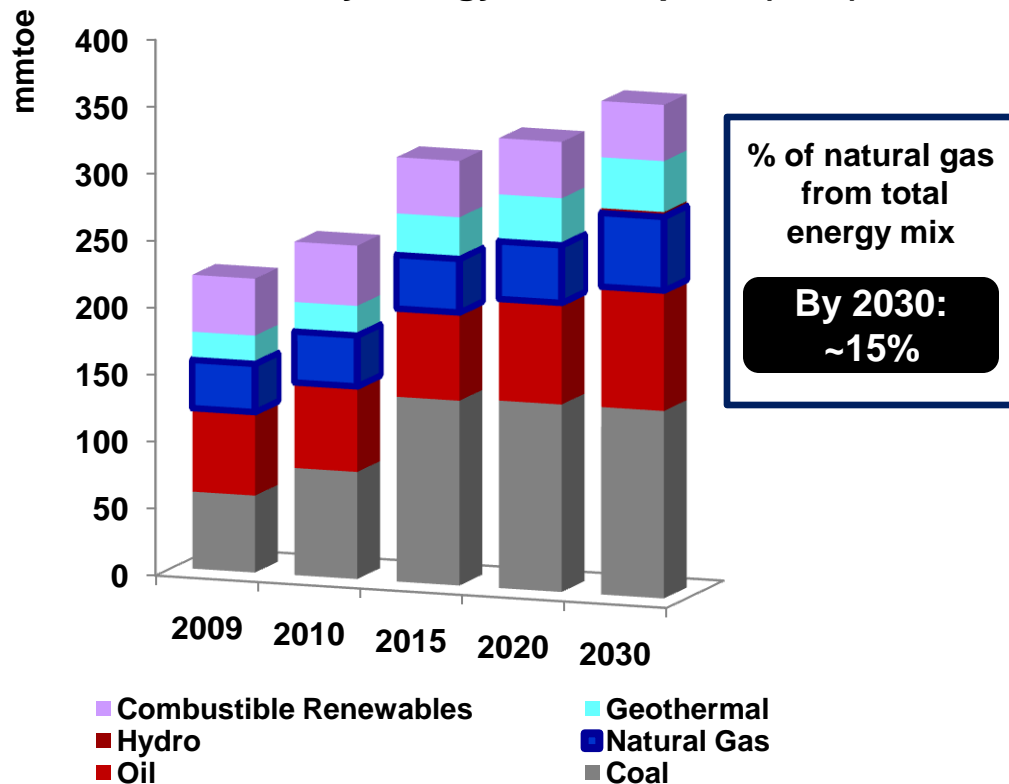


- Power generation sector accounts for the biggest share of local gas consumption.
- Gas use by power generation sector will be heavily influenced by price.



Brief overview of Indonesia's natural gas scenarios

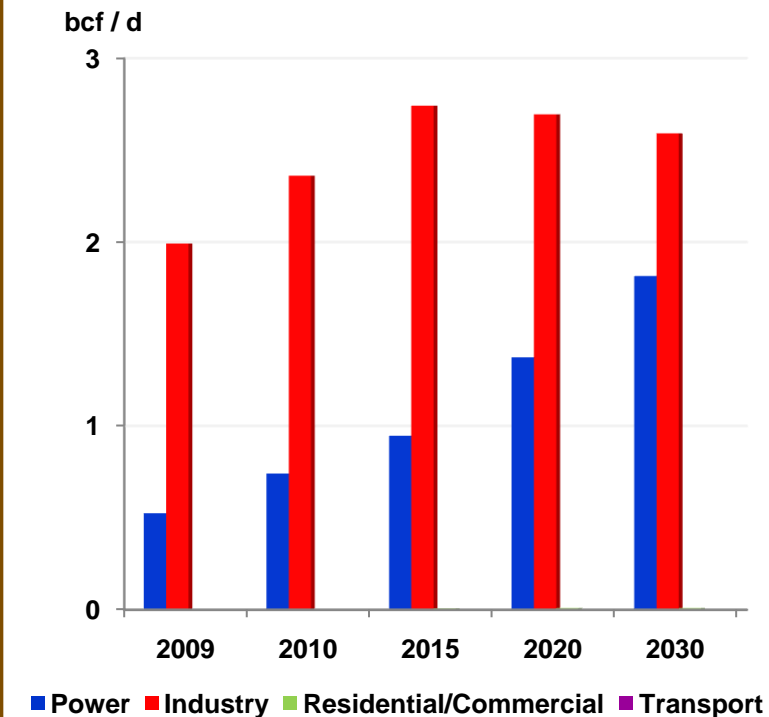
Primary Energy Consumption (PEC)



- Coal and oil remain the primary fuels in the overall energy mix.
- By 2030, the forecasted share of natural gas in the overall energy mix is still below than the Indonesian government's stated goal of 30%.

Natural Gas Demand by Sector

* The chart considers only conventional gas production



- Gas use by power sector is forecasted to slowly decline after 2012 due to the lack of available and contracted supply.
- The industrial sector accounts for the biggest share of domestic gas consumption.



Challenges and implications

- Unprecedented growth in energy demand and energy import needs could be greater than expected.
- Increased living standards, continued economic growth and dependency on coal and oil may indicate that the emissions to escalate significantly.
- Lack of good infrastructure in-place and in dire need for substantial investments to bolster the local natural gas development.



Harnessing potential opportunities

- To consider policies that will promote the greater use of natural gas and its derivatives for transport sector, such as compressed natural gas (CNG).
- To generate significant potential for energy savings through efficiency improvements.
- To coordinate concerted efforts to reduce the reliance on coal and oil besides starting to utilise more less-carbon-intensive fuels such as natural gas and renewable sources.



IGU Messages on Natural Gas

- It is abundant, affordable and acceptable
- Clean, efficient, versatile and environmental friendly fuel
- 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



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