



24<sup>th</sup> World Gas Conference  
ARGENTINA | 2009  
5-9 October

The Global Energy Challenge:  
Reviewing the Strategies  
for Natural Gas



24<sup>th</sup> World Gas Conference

## Long Term Prospects of World Gas Markets and the increasing role of LNG

*Antonio Brufau*

Chief Executive Officer Repsol

Buenos Aires, October 6, 2009

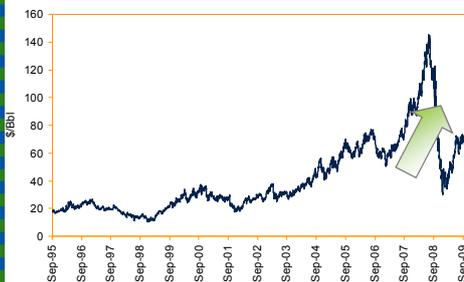
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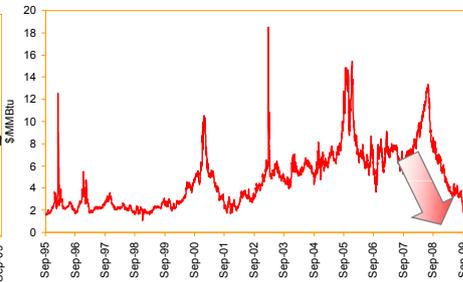
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The Global Energy Challenge:  
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### Crude Oil. WTI Price Evolution



### Natural Gas. Henry Hub Price Evolution





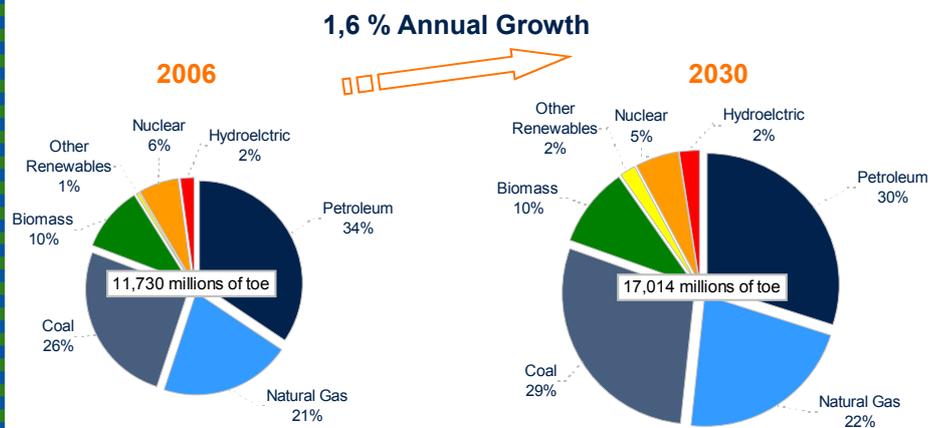
## Index

- Long term trends
- Two unexpected events: the role of unconventional gas in the US and the economic crisis
- How these events change the long-term outlook

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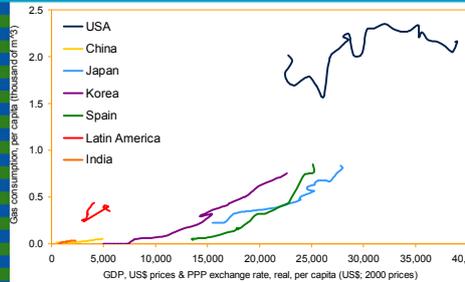


## Primary Energy Mix by Sources (2006 - 2030)



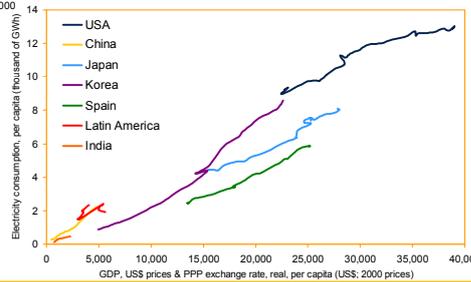
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Source: World Energy Outlook 2008, International Energy Agency (IEA) and Repsol YPF Economic Research Department



Long Term Dynamic of  
Natural Gas Consumption  
(1971-2008)

Long Term Dynamic of  
Electricity Consumption  
(1971-2008)

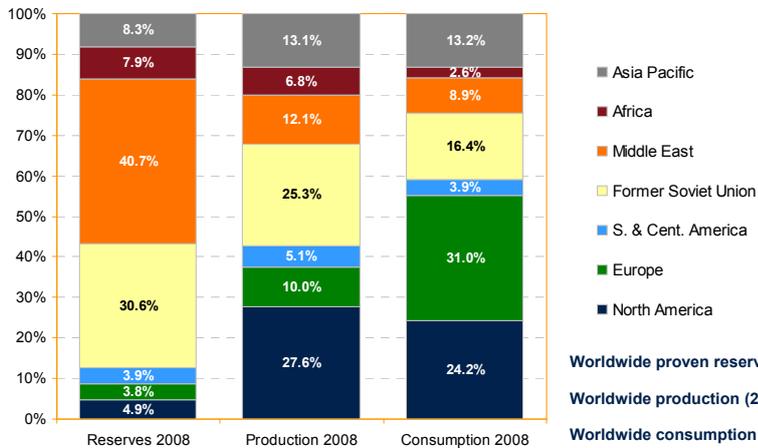


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Source: Enerdata, Oxford Economics and Repsol YPF Economic Research Department



Natural Gas Interdependence



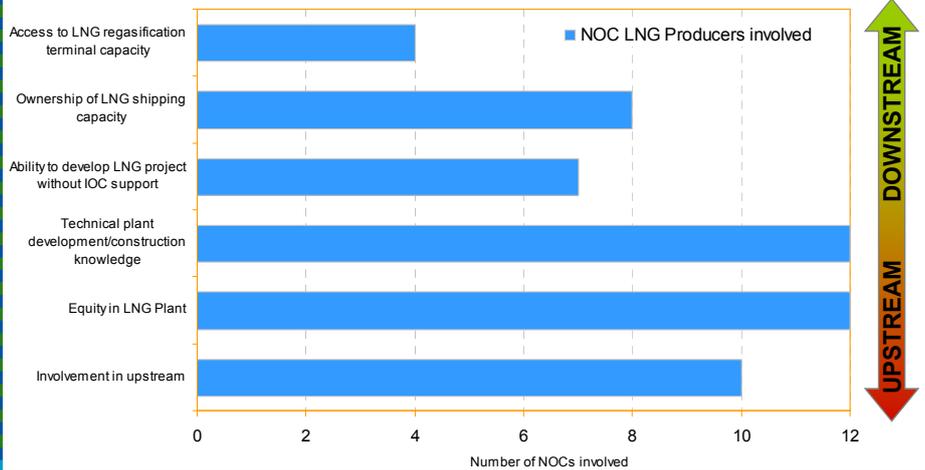
Worldwide proven reserves (2008): 185 Tcm  
Worldwide production (2008): 3066 Bcm  
Worldwide consumption (2008): 3019 Bcm

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Source: Oil & Gas Journal and Repsol YPF Economic Research Department



### NOC's involvement in the LNG value chain



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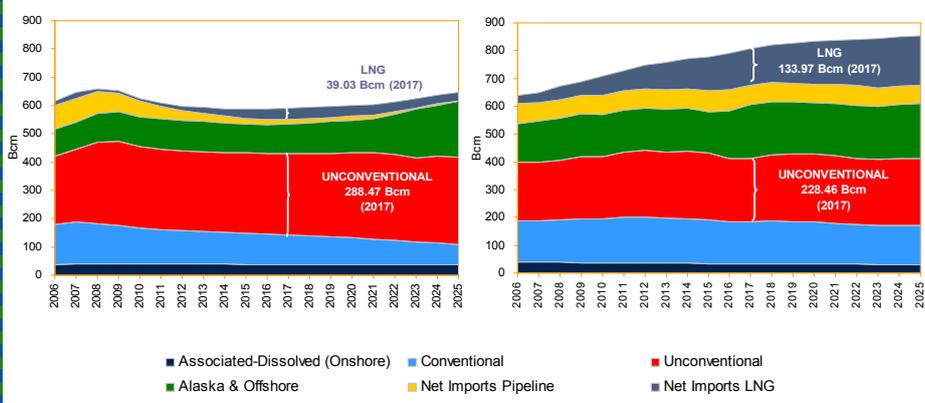
Source: David Ledesma and Repsol YPF Economic Research Department



### Long Term Demand Forecast

#### 2009 Forecast

#### 2005 Forecast

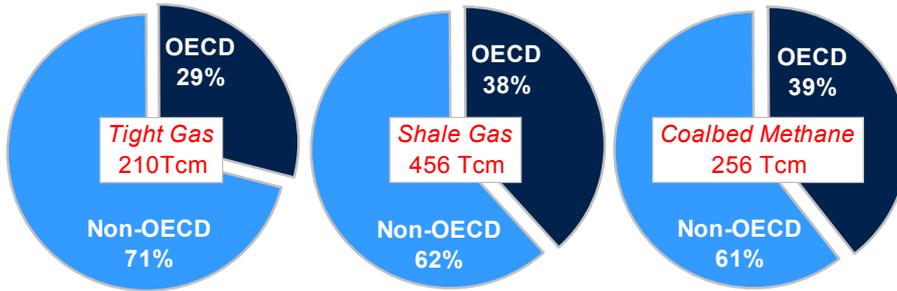


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Source: U.S. Energy Information Administration (EIA) and Repsol YPF Economic Research Department

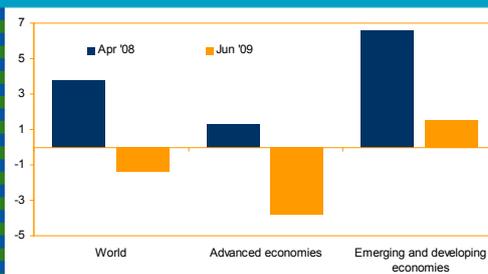


### Unconventional Gas Resources, Regional Breakdown



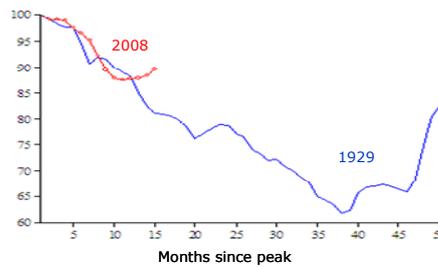
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Source: IHS, BGR and Repsol YPF Economic Research Department



Changes in World Economic Outlook for 2009

World Industrial Output  
(06/1929=100; 04/2008=100)

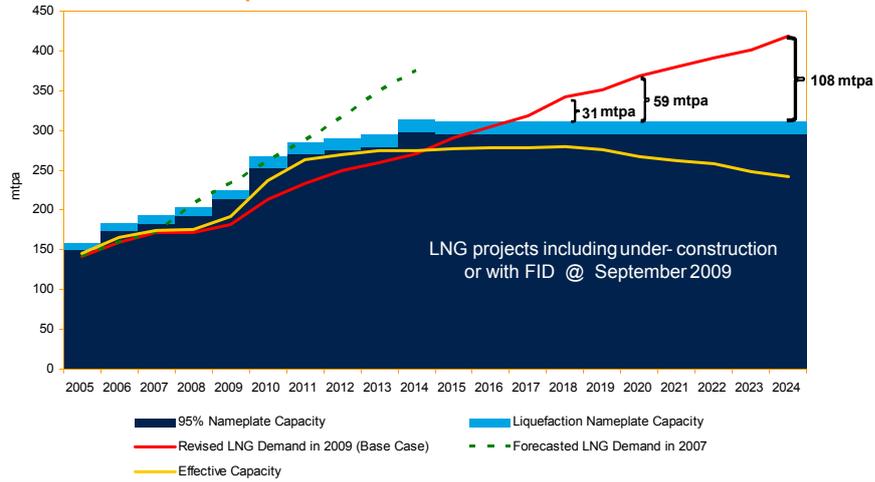


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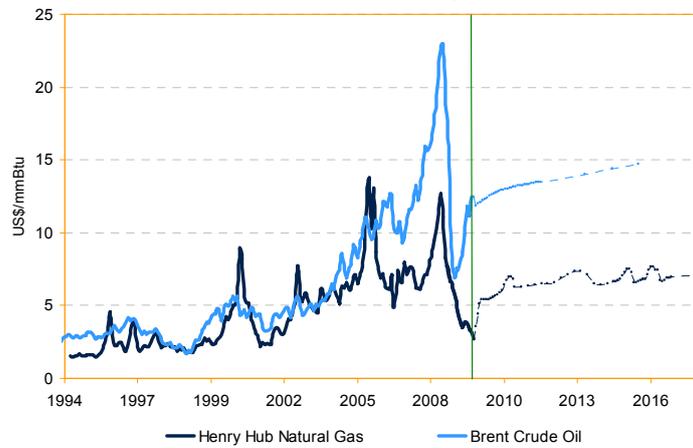
Source: International Monetary Fund (IMF), Voxeu.org and Repsol YPF Economic Research Department



### Impacts on world LNG balance

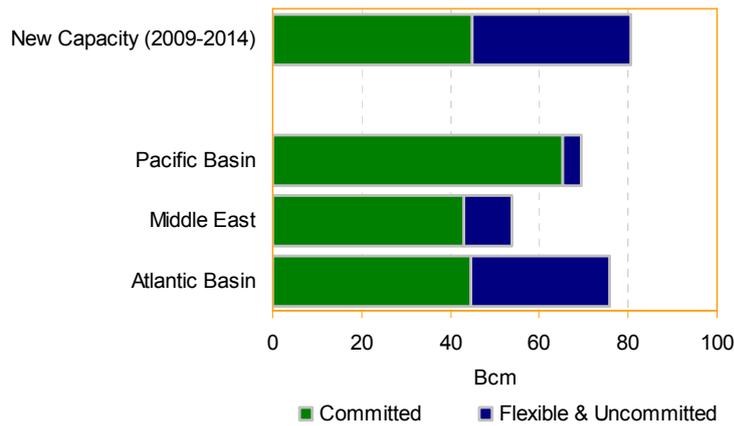


### Henry Hub and Brent Future Market Prices: An Expected Decoupling of Prices





### Breakdown of Export Contracts: 2008 and Outlook for 2009-2014

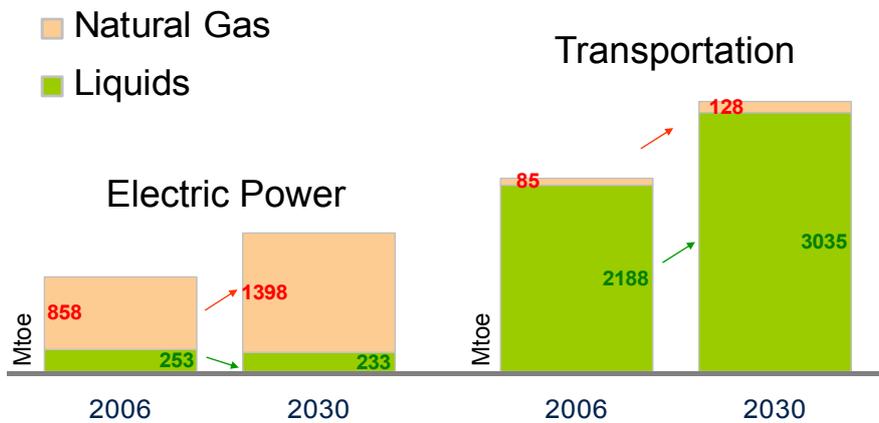


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Source: Jensen Associates and Repsol YPF Economic Research Department



### World Oil and Gas Consumption in Two Final Sectors (2006 - 2030)



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Source: International Energy Outlook 2009 / Energy Information Administration (EIA) and Repsol Economic Research Department



## Conclusions

- Stable participation of natural gas in the primary energy mix
- Per capita income and population explain long term demand
- Energy policies have an impact but there are open questions
- Growing role of LNG in the international gas trade
- Growing participation of NOCs in the LNG value chain
- Bias towards growth in emerging countries versus industrial ones
- The unconventional gas resources have changed the natural gas supply outlook
- Demand reduction, due to the crisis but great uncertainty on the long term LNG outlook
- New scenario of relative prices of natural gas and oil: more globalization, more arbitrage and more pressure for "gas to gas" prices versus oil linked prices
- Competition in the primary energy mix will depend on the transformation efficiency of the different energy sources, factoring in technology evolution and CO<sub>2</sub> prices

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