

# Hub-based Pricing: European Lessons for Asia

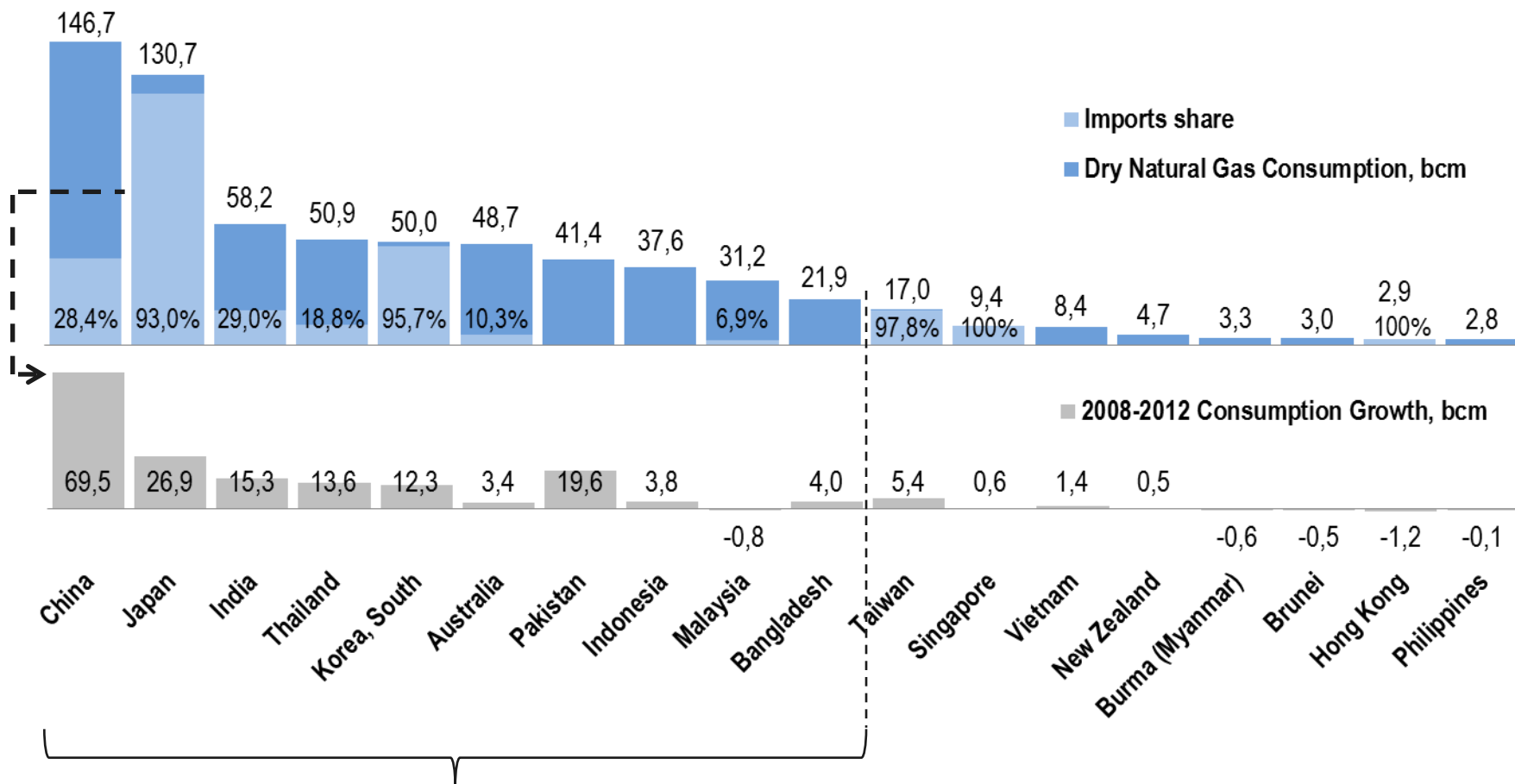
**Alexander Medvedev**

Deputy Chairman  
of Gazprom Management Committee,  
Director General of Gazprom Export

**GASTECH**  
North East Asia Gas Pricing Gathering

Seoul, March 23

# Asia: Strong Demand for Gas



Top-10 Asian nations accounted for 18.2% of global natural gas consumption in 2012 vs. 14.6% in 2008

Sources: IEA, Cedigaz, Gazprom Export estimates

## ...and pays Price Premium

- The price for exchange traded commodities has grown 3 times on average over the last decade
- Oil-indexed gas (BAFA) has grown in Europe in line with other commodities
- Henry-Hub linked gas is clearly a price abnormality that cannot last forever
- Prices in Asia have grown more than other commodities on average but at a lower pace than oil
- Asian premium is price for security of supply that consumers have to pay to attract LNG volumes from all over the world

Source: Bloomberg, Gazprom Export Estimates

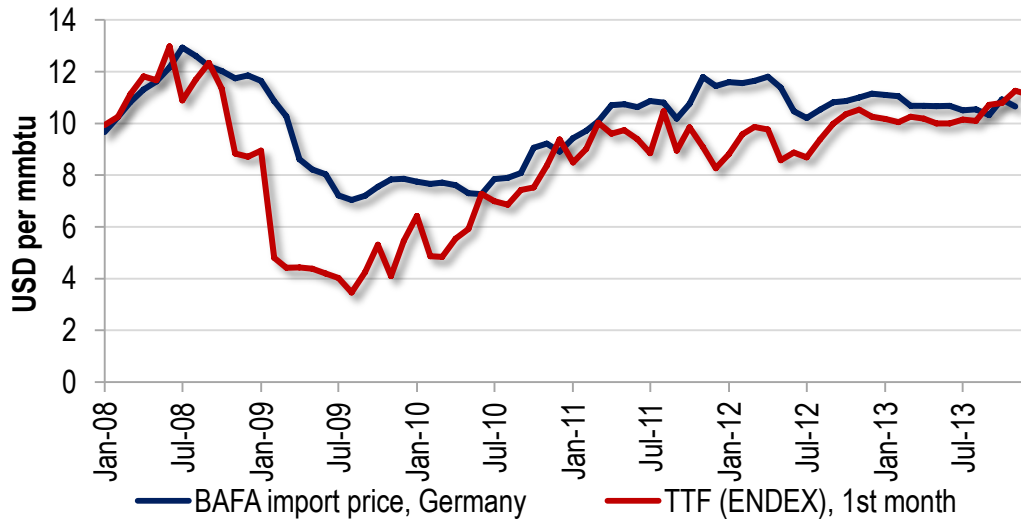
	Average prices, ratio to 2001:			
	in 2010	in 2011	in 2012	in 2013
<b>Metals:</b>	<b>2,9</b>	<b>3,2</b>	<b>2,8</b>	<b>2,4</b>
Zinc	2,4	2,4	2,2	2,2
Steel	2,4	2,6	2,4	1,2
Aluminum	1,5	1,7	1,4	1,3
Nickel	3,3	3,6	2,9	2,5
Tin	4,7	5,6	4,9	5,0
<b>Agricultural crops</b>	<b>2,2</b>	<b>2,7</b>	<b>2,3</b>	<b>2,2</b>
Wheat	2,2	2,6	2,7	2,5
Corn	2,0	3,0	3,0	2,8
Cotton	2,0	2,8	1,8	1,8
Cocoa	2,9	2,8	2,3	2,3
Orange juice concentrate	1,7	2,0	1,6	1,6
<b>Chemicals</b>	<b>2,5</b>	<b>3,2</b>	<b>3,3</b>	<b>3,1</b>
Ammonium nitrate	2,7	3,9	4,6	4,1
Potassium Chloride	2,8	3,7	3,9	3,2
Methanol	1,8	2,2	2,2	2,6
Rubber	2,6	3,2	2,5	2,5
<b>Oil and oil products</b>	<b>3,1</b>	<b>4,3</b>	<b>4,5</b>	<b>4,3</b>
Brent	2,9	4,0	4,1	4,0
Gas oil	3,2	4,5	4,7	4,5
Fuel oil	3,0	4,0	4,2	3,9
Diesel	3,4	4,6	4,8	4,8
<b>Natural gas:</b>	<b>2,0</b>	<b>2,6</b>	<b>2,6</b>	<b>2,7</b>
Henry Hub, USA	1,1	1,0	0,7	0,9
NBP, UK	2,0	2,9	3,0	3,4
LNG, import in Japan	2,6	3,5	3,9	3,7
BAFA	2,2	2,8	2,9	2,8
<b>Coal</b>	<b>1,6</b>	<b>2,0</b>	<b>1,8</b>	<b>1,8</b>

## Asian Hubs could Replicate European Hubs but on a Limited Scale

- Despite enormous efforts by European reformists to change pricing mechanism, oil-indexation remains the dominant pricing mode here
- Prices of the long-term oil indexed contracts still set a base-line trend for hub prices in Europe
- Supply and demand only modulate hub-based price movements
- Hub's liquidity originates from resale of volumes that come from the long-term contracts
- European hubs are an important instrument of balancing, arbitrage and portfolio optimization
- Developed pipeline system makes hub prices reasonably aligned as a result of the arbitrage operations

# European Hub Prices are Derivatives of LT Contract Prices

Integration of Contract Prices and Hub prices



- In 2013 75% of gas exported to Europe was oil-indexed
- Gas hub prices are not independent from oil-indexed contract prices. The correlation coefficient between hub prices and oil prices moving average equals 0.85
- ACER November 2013 Market Monitoring Report states that “Oil prices is still the main determinant of wholesale gas prices in Europe...”(p.180).

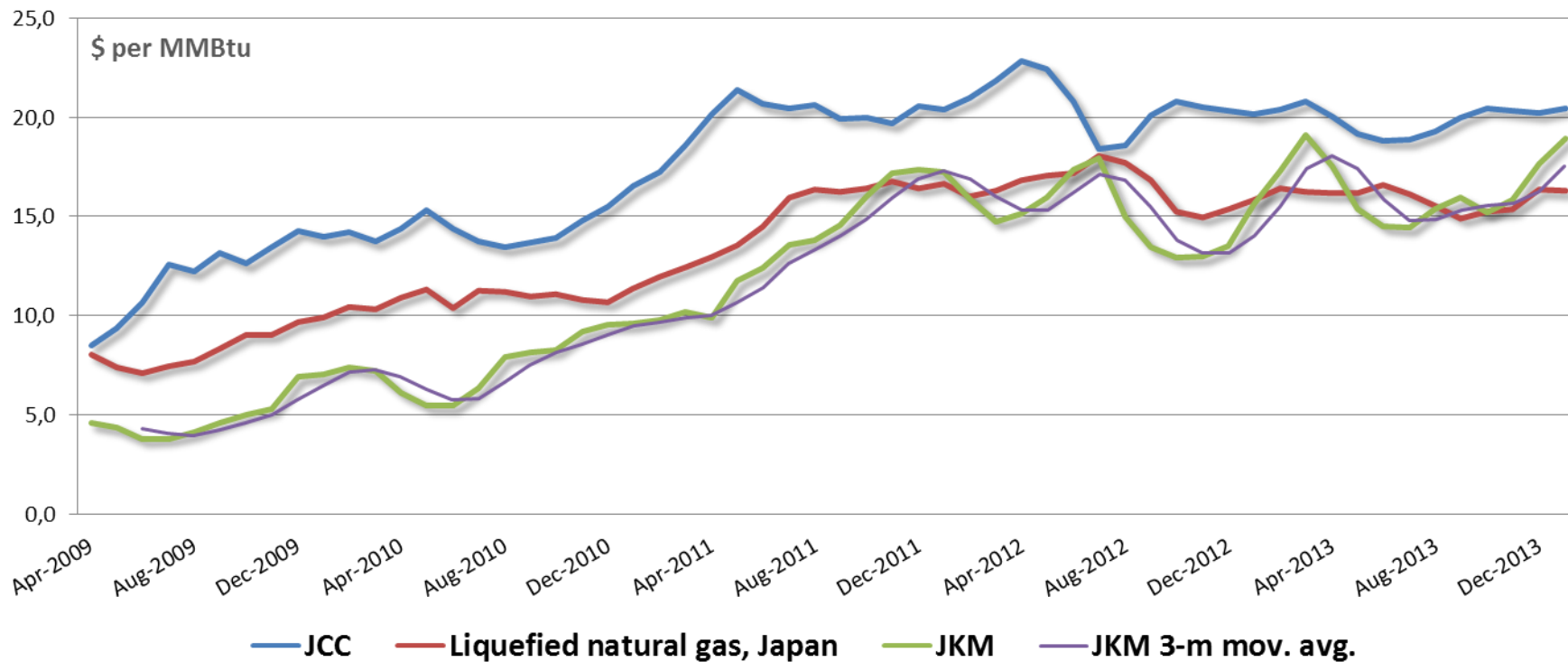
Sources: BMWi, Bloomberg

## Gas Hub and Oil-indexed Prices – Still Bound Together

The correlation coefficient proves dependence

Correlation coefficient (r) from January 2010 to December 2013 versus:	NBP	TTF
Brent 1st month futures	0.69	0.69
Brent 1st month futures - 3 months moving average	0.79	0.80
Brent 1st month futures - 6 months moving average	0.84	0.86
Brent 1st month futures - 9 months moving average	0.83	0.85

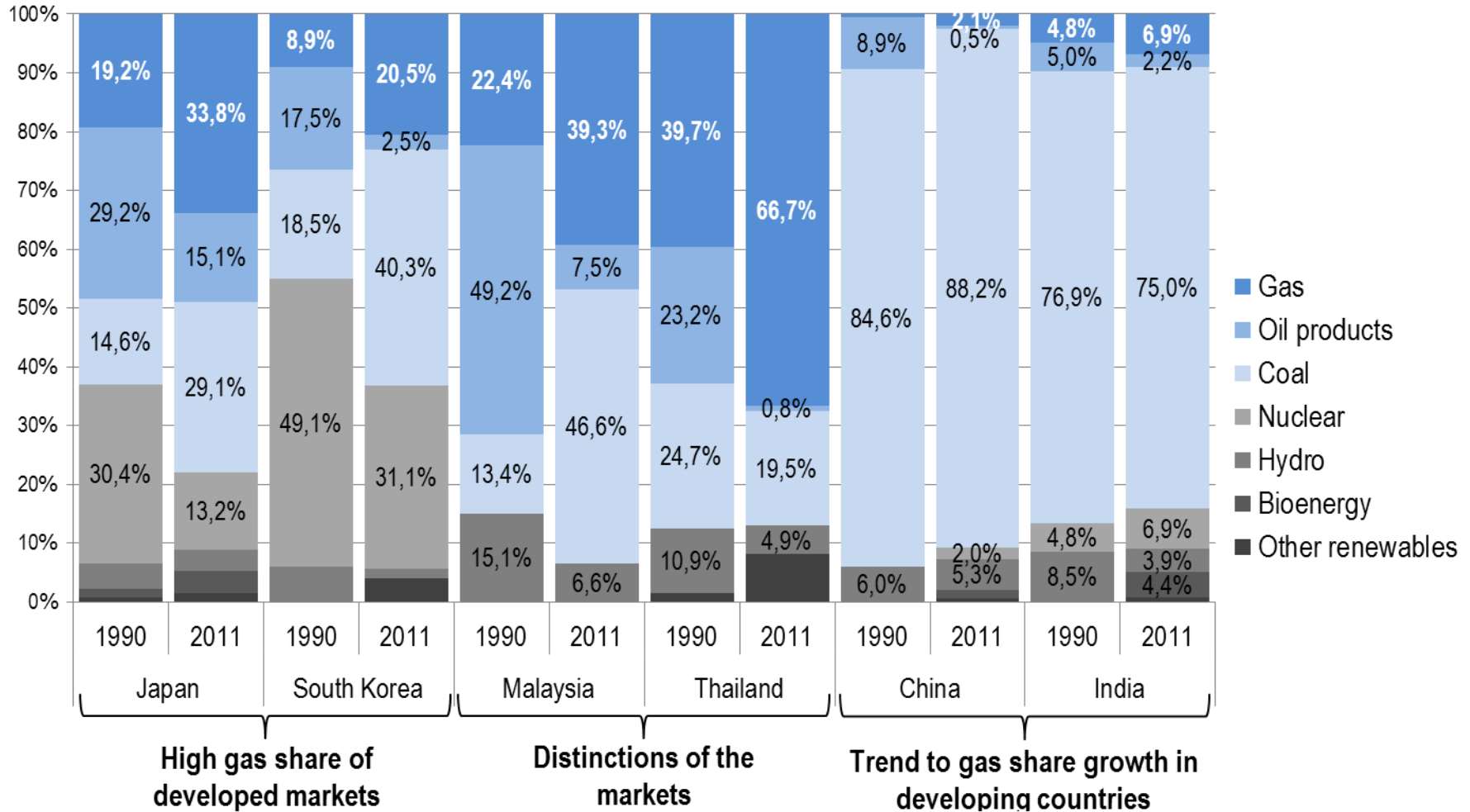
# Gas Spot Prices as Measured by JKM are Function of JCC



JKM from Apr 2009 to Jan 2014 versus:	r
JCC	0.89
JCC 3-month moving-average	0.98
LNG Japan	0.95

Source: Bloomberg, Platts, World Bank, Gazprom export estimates

# Gas Gradually Takes Over Oil in Power Generation but Inter-fuel Competition remains Strong in Japan



Sources: IEA, KEEL, Ministry of Energy of Thailand, Ministry of Energy, Green Technology and Water of Malaysia, Gazprom Export

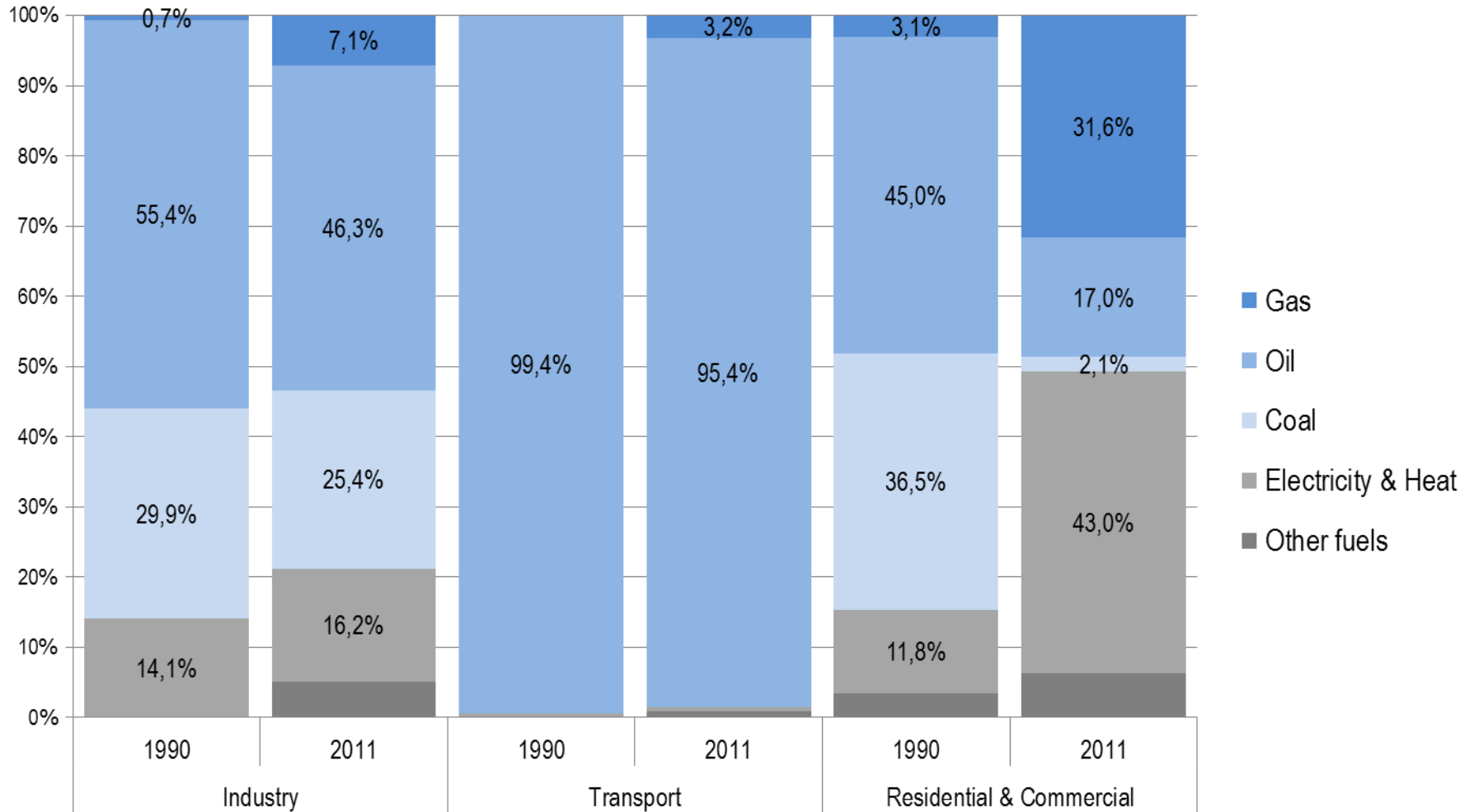
## When LNG Prices are Higher than Oil It Triggers Fuel Substitution in Japan

“Spot LNG prices reached their parity with oil prices in December 2013 causing northwest Asian buyers to step back from the market and consider substituting oil for gas. Argus assessed deliveries in the second half of December at \$19.18/mn Btu ...The 11 December Ice Brent settlement price of \$109.38/bl was equivalent to \$18.85/mn Btu while low-sulfur fuel oil on a delivered Japan basis cost \$17.35/mn. Japanese power companies lifted their purchases of fuel oil in November although they reduced their crude buying”

– extract from Argus “Asia Gas & Power Report, Dec. 2013



# Gas and Oil Compete in all the Sectors of South Korean Energy



Sources: IEA, Korean Energy Economics Institute (KEEI), Gazprom Export estimation

**Thank you for your attention!**