

2nd International Seminar **“Energy and Shipping”**

International Oil & Gas Markets: Price and Energy Security Considerations

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INSTITUTE OF ENERGY

FOR SOUTH EAST EUROPE



Presentation Outline

1. Oil and gas matters
2. Global oil demand and supply
3. Global gas demand and supply
4. The rise of LNG
5. Oil and gas prices in perspective
6. Factors affecting oil price formation
7. Energy security considerations and factoring in geopolitical risk
8. Concluding remarks

Oil and Gas Matters

- (a) High oil prices over last two years, i.e. above \$100 per barrel, and high diversity of gas prices between different geographical areas, characterize international energy markets
- (b) Gas continues to take slice of oil markets worldwide with LNG trade developing much faster than piped gas
- (c) Gas is facing increased competition from cheap coal exports directed to Europe and China

Oil and Gas Matters

- (d) Strong global oil demand in conjunction with increased geopolitical risk in MENA countries continue to drive prices upwards
- (e) There is a strong tendency for the decoupling of gas prices from oil indexation with USA gas prices already following an independent trajectory

Global Oil Demand (2009 – 2013)

(million barrels per day)

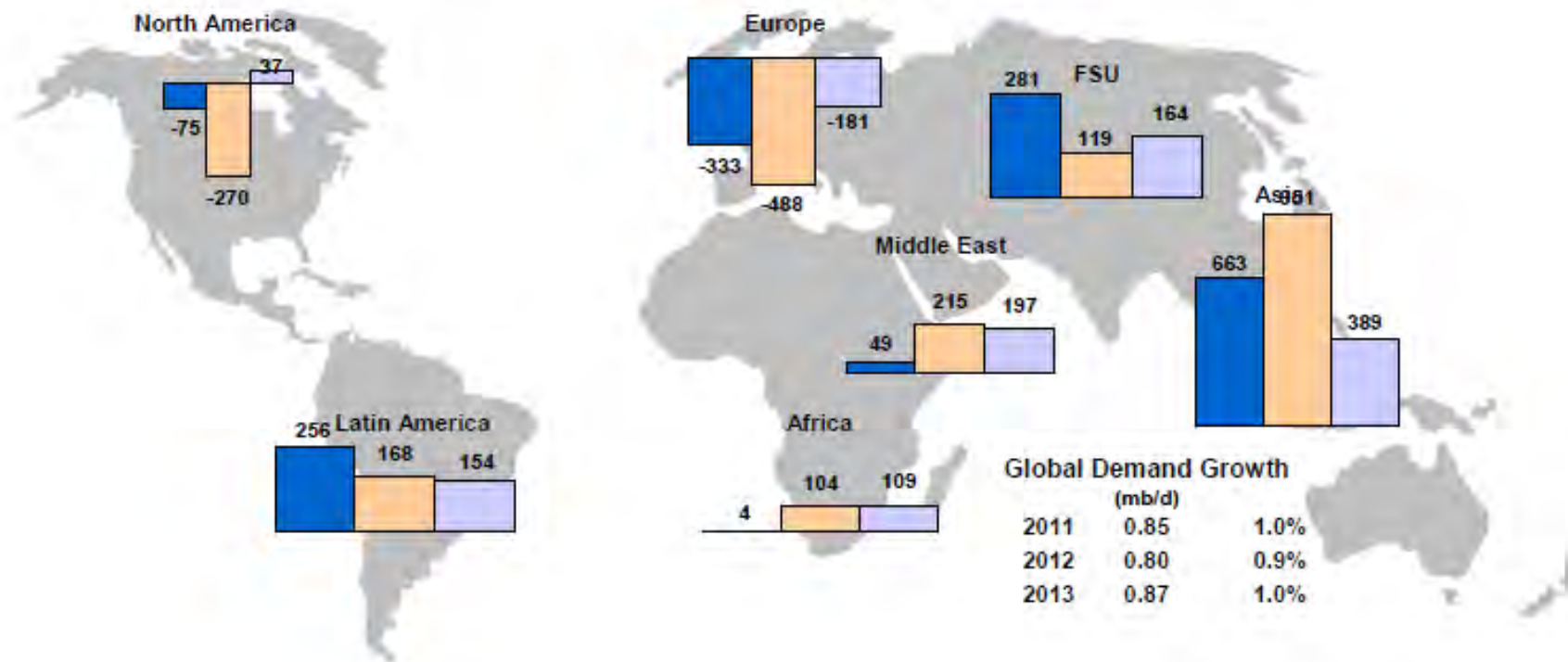


	2009	2010	2011	2012	2013
Africa	3.3	3.4	3.3	3.4	3.5
Americas	29.5	30.1	30.3	30.3	30.4
Asia/ Pacific	27.5	27.3	28.4	29.5	29.9
Europe	15.0	15.3	15.0	14.5	14.2
FSU	4.4	4.5	4.4	4.6	4.7
Middle East	7.4	7.8	7.4	7.6	7.8
World	86.8	88.3	88.8	89.8	90.7
Annual Chg (%)	2.6	3.2	0.9	1.1	0.9
Annual Chg (mb/d)	2.2	2.7	0.8	1.0	0.8
Changes from last OMR (mb/d)	0.01	0.01	-0.04	0.00	-0.09

Source: IEA

Global Oil Demand Growth 2011/2012/2013

thousand barrels per day



Source: IEA



Top-10 Oil Consumers (thousand barrels per day)

	Demand			Annual Chg (kb/d)			Annual Chg (%)		
	Nov-12	2012	2013	Nov-12	2012	2013	Nov-12	2012	2013
US50	18,625	18,651	18,651	-455	-299	0	-2.4	-1.6	0.0
China	10,270	9,600	9,984	836	367	385	8.9	4.0	4.0
Japan	4,641	4,723	4,550	39	259	-173	0.8	5.8	-3.7
India	3,765	3,652	3,750	48	137	98	1.3	3.9	2.7
Russia	3,530	3,366	3,516	71	114	150	2.1	3.5	4.4
Brazil	3,171	3,016	3,093	203	123	77	6.8	4.2	2.6
Saudi Arabia	2,808	3,009	3,128	-122	135	119	-4.2	4.7	3.9
Germany	2,496	2,351	2,324	49	-49	-27	2.0	-2.0	-1.2
Korea	2,423	2,268	2,268	171	38	0	7.6	1.7	0.0
Canada	2,345	2,311	2,308	69	22	-3	3.0	0.9	-0.1
% global demand	60%	59%	59%						

China: Demand by Product (thousand barrels per day)

	Demand			Annual Chg (kb/d)		Annual Chg (%)	
	2011	2012	2013	2012	2013	2012	2013
LPG & Ethane	720	733	747	14	14	1.9	1.9
Naphtha	1,113	1,123	1,197	10	74	0.9	6.6
Motor Gasoline	1,767	1,918	2,016	152	97	8.6	5.1
Jet Fuel & Kerosene	422	442	463	20	21	4.8	4.7
Gas/Diesel Oil	3,166	3,224	3,320	58	96	1.8	3.0
Residual Fuel Oil	507	522	538	14	17	2.8	3.2
Other Products	1,538	1,638	1,702	99	65	6.5	4.0
Total Products	9,232	9,600	9,984	367	385	4.0	4.0

mb/d


China: Apparent Oil Demand


10.5

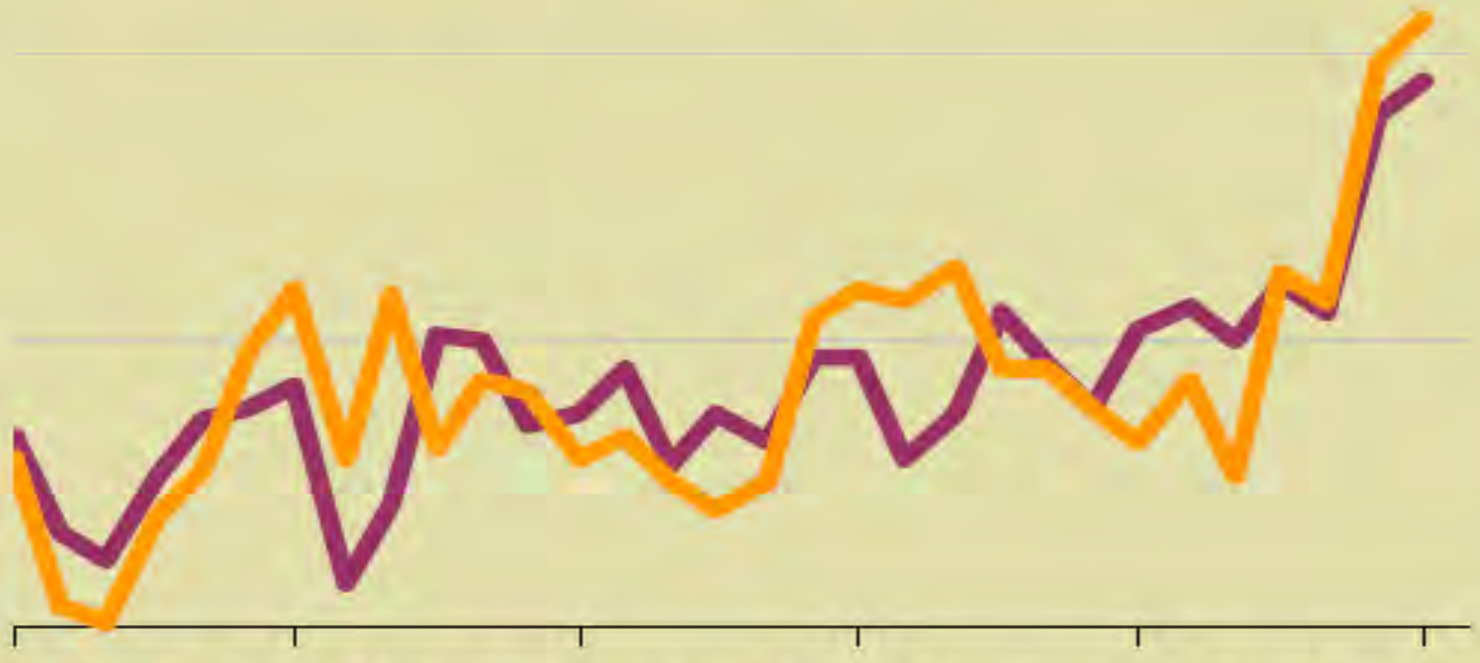
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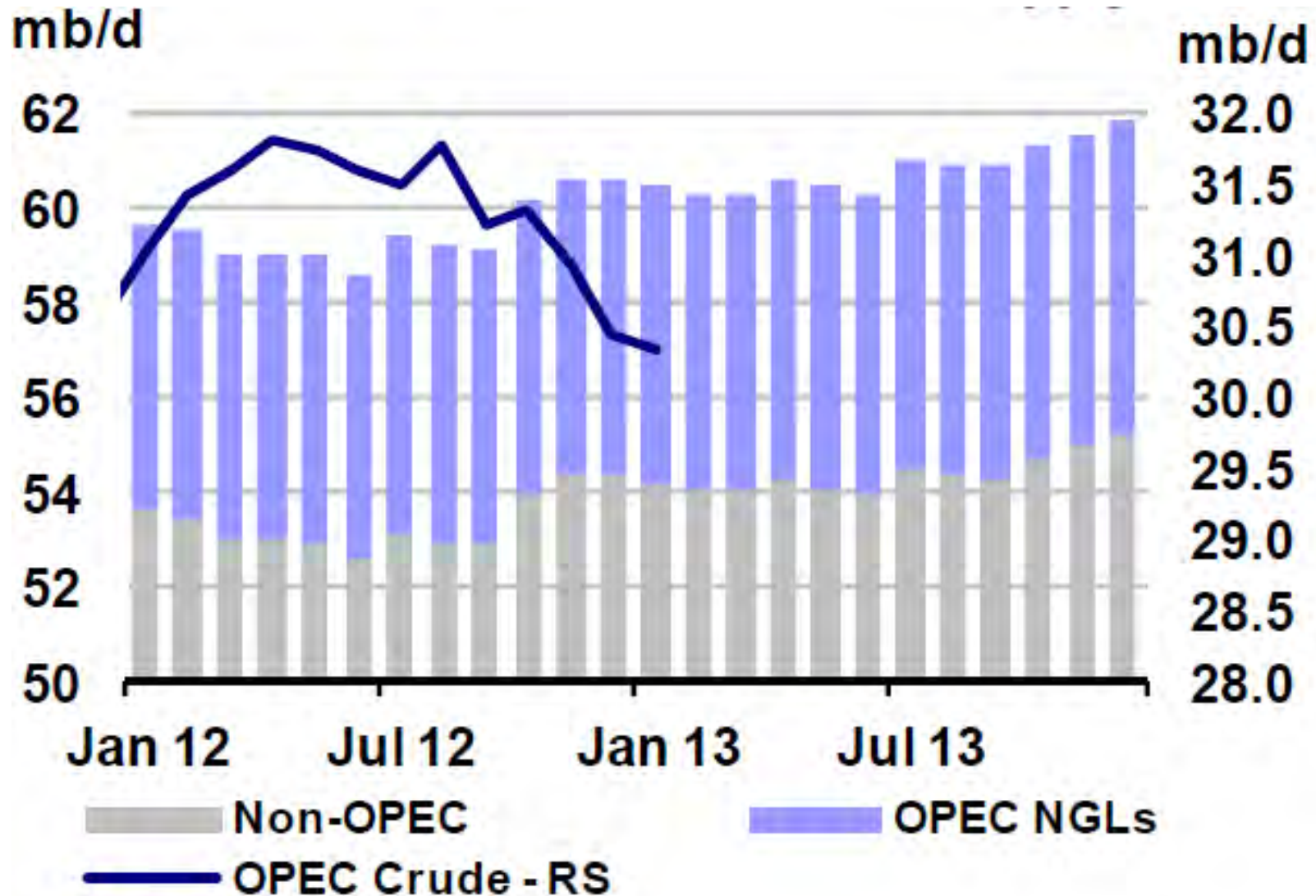
 New Method, Adjusted for Product Stocks

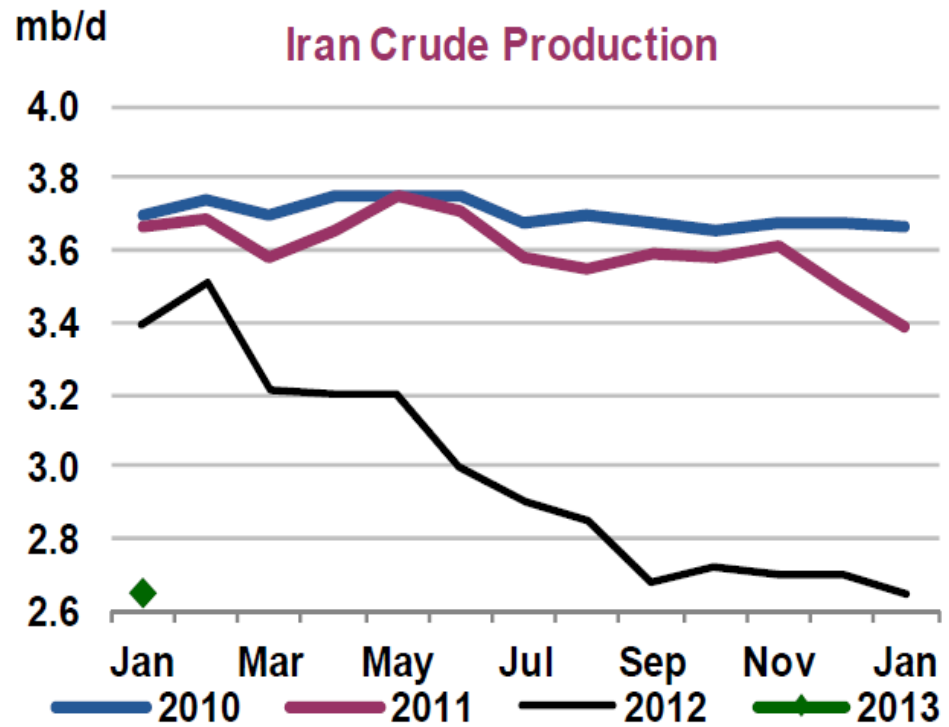
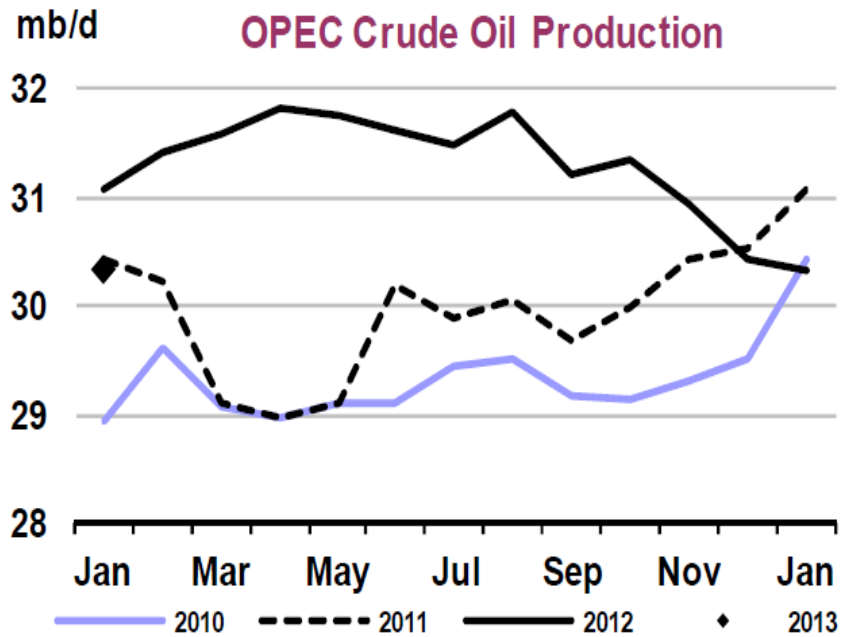
 Old Method





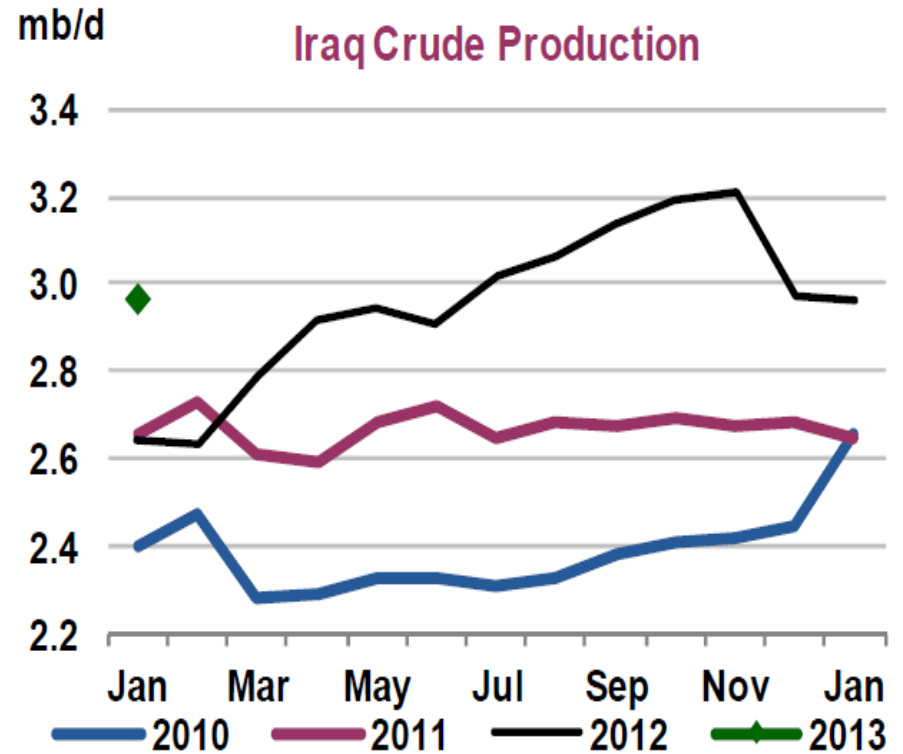
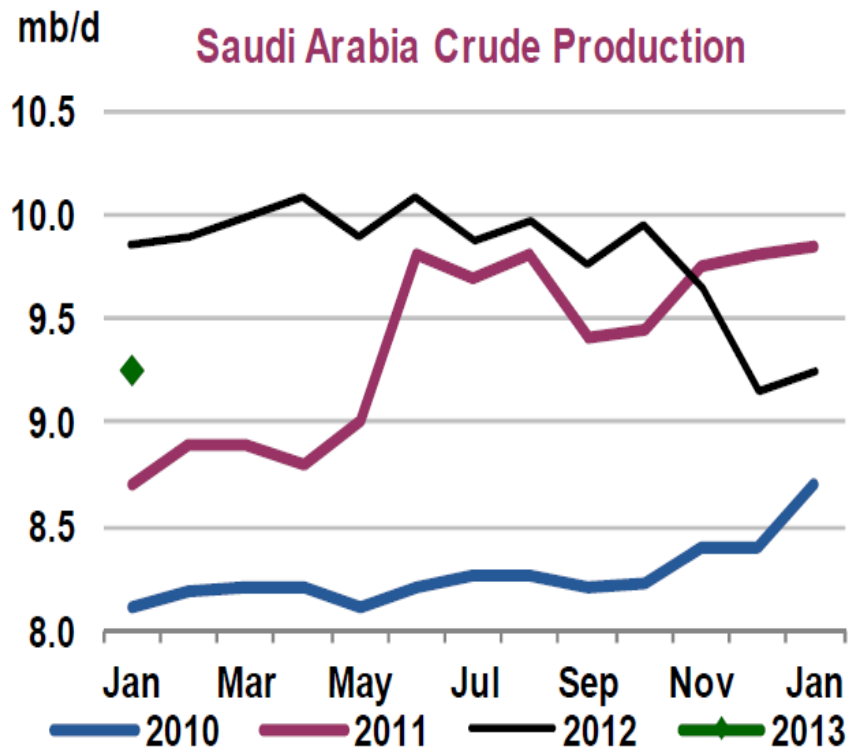
OPEC and Non-OPEC Oil Supply





Entire series based on OPEC Composition as of January 2009 onwards (including Angola & Ecuador & excluding Indonesia)

Source: IEA



Source: IEA



OPEC Crude Production (million barrels per day)

	Nov 2012 Supply	Dec 2012 Supply	Jan 2013 Supply	Sustainable Production Capacity ¹	Spare Capacity vs Jan 2013 Supply	2012 Annual Production Average	Volume Chg 2012 vs 2011
Algeria	1.18	1.18	1.18	1.19	0.01	1.17	-0.02
Angola	1.80	1.78	1.77	1.82	0.05	1.78	0.19
Ecuador	0.50	0.50	0.50	0.51	0.01	0.50	0.00
Iran	2.70	2.70	2.65	3.01	0.36	3.00	-0.08
Iraq	3.21	2.97	2.97	3.28	0.31	2.95	0.29
Kuwait ²	2.74	2.78	2.82	2.86	0.04	2.74	0.16
Libya	1.45	1.40	1.38	1.58	0.20	1.39	0.01
Nigeria ³	1.88	2.10	2.00	2.49	0.49	2.10	-0.18
Qatar	0.73	0.70	0.72	0.75	0.03	0.74	0.05
Saudi Arabia ²	9.65	9.15	9.25	11.90	2.65	9.85	0.43
UAE	2.65	2.68	2.60	3.01	0.41	2.65	0.06
Venezuela ⁴	2.47	2.50	2.50	2.63	0.13	2.50	0.04
Total OPEC	30.95	30.44	30.34	35.01	4.67	31.37	0.94

(excluding Iraq, Nigeria, Libya and Iran)

3.63)

1 Capacity levels can be reached within 30 days and sustained for 90 days.

2 Includes half of Neutral Zone production.

3 Nigeria's current capacity estimate excludes some 200 kb/d of shut-in capacity.

4 Includes upgraded Orinoco extra-heavy oil assumed at 390 kb/d in January.



World Gas Demand Reaches New Highs

- Global gas demand is projected to grow relatively fast over 2011 – 2017, at 2.7% per year
- Gas demand in 2017 is 3.937 bcm, 576 bcm higher than 2011 levels
- Non – OECD countries will represent 69% of the incremental growth
- The fastest growing country is by far China, where natural gas consumption doubles over 2011 – 2017

World Gas Demand Reaches New Highs



- Africa is the second fastest growing region, with an annual growth rate of 5% per year
- Natural gas consumption in the former Soviet Union and non-OECD Europe region grows very slowly at 0.7% per year, given the maturity of the market
- Europe is also underperforming, with an average annual growth of 1.3% per year, due to the combination of high gas prices, low economic growth and significant growth of renewable energy sources

Gas Demand by OECD Country, 2011 and 2010 (bcm)

	2010	2011*		2010	2011*
Europe	570.4	519.5	<i>Slovakia</i>	6.1	6.2
<i>Austria</i>	9.5	9.0	<i>Slovenia</i>	1.1	0.9
<i>Belgium</i>	19.8	16.9	<i>Spain</i>	35.8	33.6
<i>Czech Republic</i>	9.3	8.9	<i>Sweden</i>	1.5	1.2
<i>Denmark</i>	5.0	4.2	<i>Switzerland</i>	3.7	3.2
<i>Estonia</i>	0.7	0.6	<i>Turkey</i>	38.1	44.7
<i>Finland</i>	4.7	4.0	<i>United Kingdom</i>	98.9	82.7
<i>France</i>	49.1	42.1	Asia Oceania	195.4	211.9
<i>Germany**</i>	97.9	85.3	<i>Australia</i>	33.4	34.8
<i>Greece</i>	3.9	4.8	<i>Israel***</i>	5.3	5.0
<i>Hungary</i>	12.1	11.3	<i>Japan</i>	109.0	121.3
<i>Iceland</i>	0.0	0.0	<i>Korea</i>	43.2	46.4
<i>Ireland</i>	5.5	4.9	<i>New Zealand</i>	4.5	4.2
<i>Italy</i>	83.1	77.9	Americas	839.9	861.6
<i>Luxembourg</i>	1.4	1.2	<i>Canada</i>	96.8	104.0
<i>Netherlands</i>	54.8	47.9	<i>Chile</i>	5.3	6.2
<i>Norway</i>	6.1	5.8	<i>Mexico</i>	64.7	61.4
<i>Poland</i>	17.2	17.2	<i>United States</i>	673.1	690.0
<i>Portugal</i>	5.1	5.2	OECD	1605.7	1593.0

* 2011 data are estimates as of April 2012.

** Due to revisions by the German government, Germany's data for 2010 and 2011 are estimated based on historical data.

*** The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Gas Demand 2000-17 (bcm)

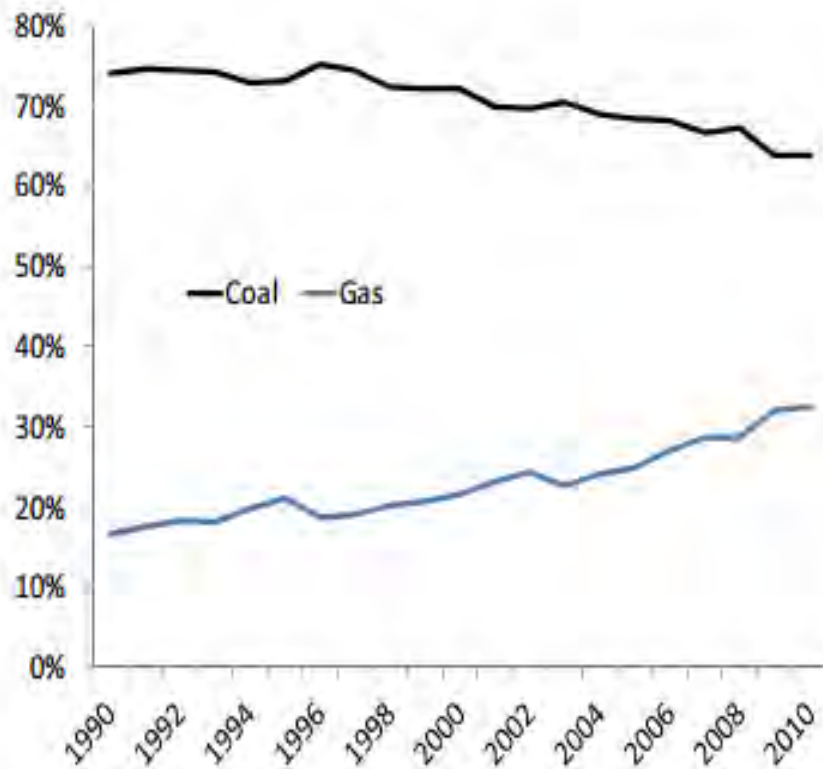
	2000	2010	2011	2013	2015	2017
Europe	474	570	520	529	547	561
G4*	300	329	288	296	302	303
Americas	794	840	862	909	941	969
United States	661	673	690	728	754	779
Asia Oceania	131	195	212	211	227	241
Japan	83	109	121	121	126	129
Latin America	95	136	139	152	163	179
Africa	59	103	111	125	139	149
Middle East	179	369	389	427	444	468
FSU/Non-OECD Europe	597	690	705	722	731	735
Russia	391	473	483	493	499	501
Asia	180	399	424	489	564	634
China**	28	110	132	176	226	276
OECD	1 400	1 606	1 593	1 649	1 715	1 771
Non OECD	1 111	1 698	1 768	1 915	2 041	2 166
EU-27	477	545	489	497	508	515
Total	2 510	3 303	3 361	3 564	3 757	3 937

Note: detailed demand by country and by sector are available in Table 28 and 29 in the chapter "The Essentials" at the end of this publication.

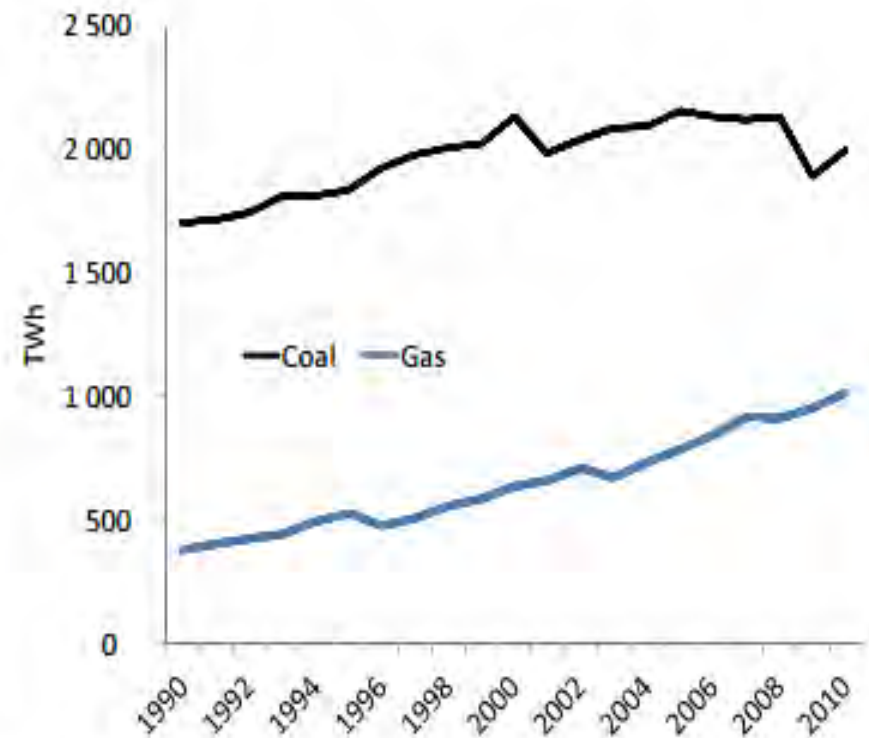
* G4: France, Germany, Italy and the United Kingdom.

** China includes Hong Kong.

Coal & gas shares in thermal generation



US coal and gas generation





Regional production, 2010 and 2011* (bcm)

	2010	2011*	Growth rate (%)
OECD**	1 178	1 197	1.6
<i>Americas</i>	816	863	5.7
<i>Europe</i>	301	273	-9.3
<i>Asia Oceania</i>	61	61	0.3
Non OECD***	2 103	2 178	3.6
<i>Africa</i>	209	204	-2.4
<i>Asia</i>	432	431	-0.1
<i>FSU/Non-OECD Europe</i>	826	863	4.5
<i>Latin America</i>	161	164	1.8
<i>Middle East</i>	475	516	8.7
World	3 281	3 375	2.9

* 2011 data are estimates.

** 2010 data for OECD countries are based on revisions provided by OECD countries early 2012.

*** 2010 data for non-OECD countries are based on IEA *Natural Gas Information 2011*, with the exception of Iraq which has been revised.



The Rise of LNG

The global LNG industry is facing numerous challenges as LNG is rapidly growing and evolving representing a huge competitive arena for all major players.

The top 5 challenges affecting the sector are considered to be:

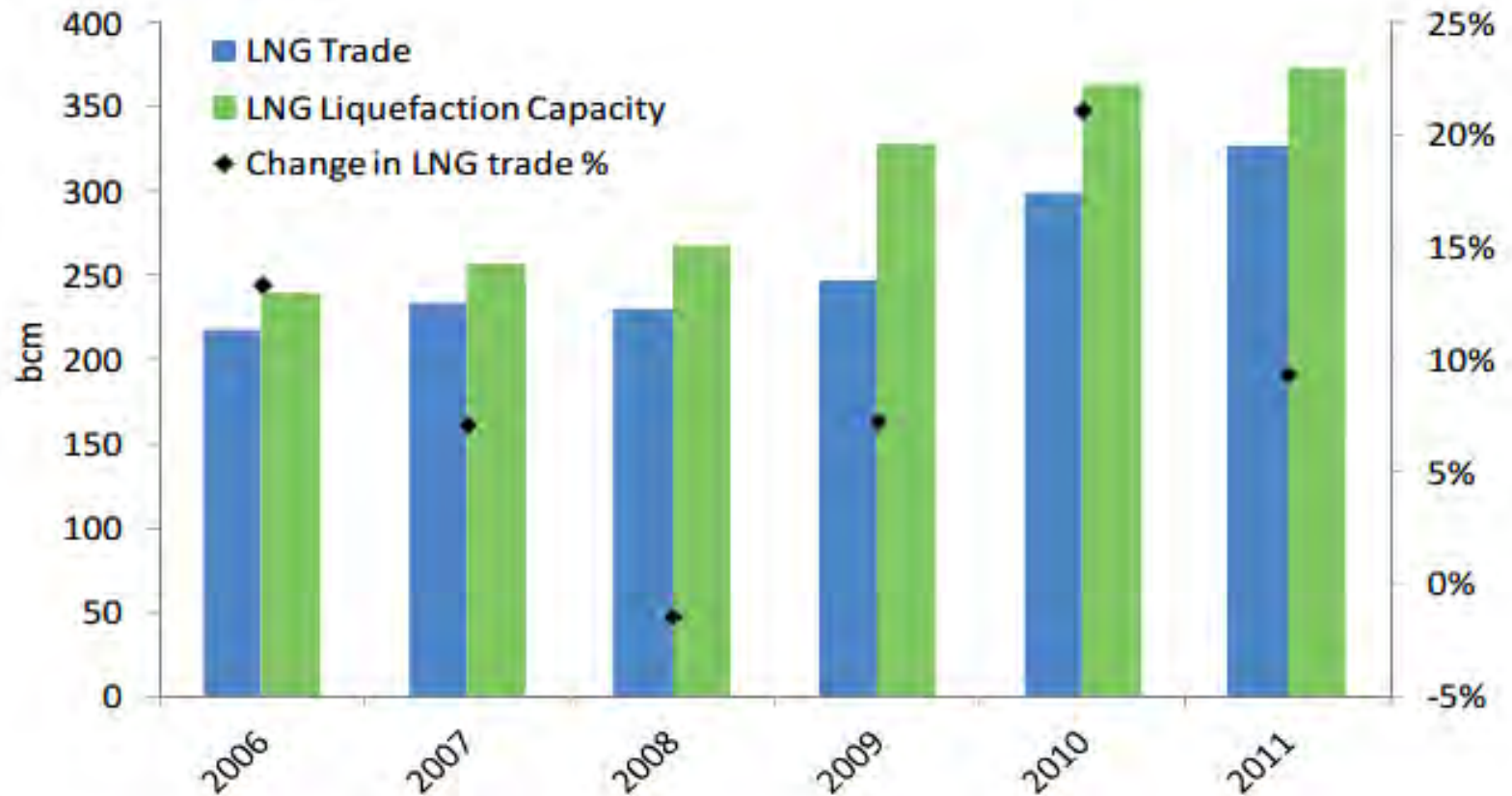
1. Capital investments in the infrastructure required for the production, transportation and re-gasification of LNG



The Rise of LNG

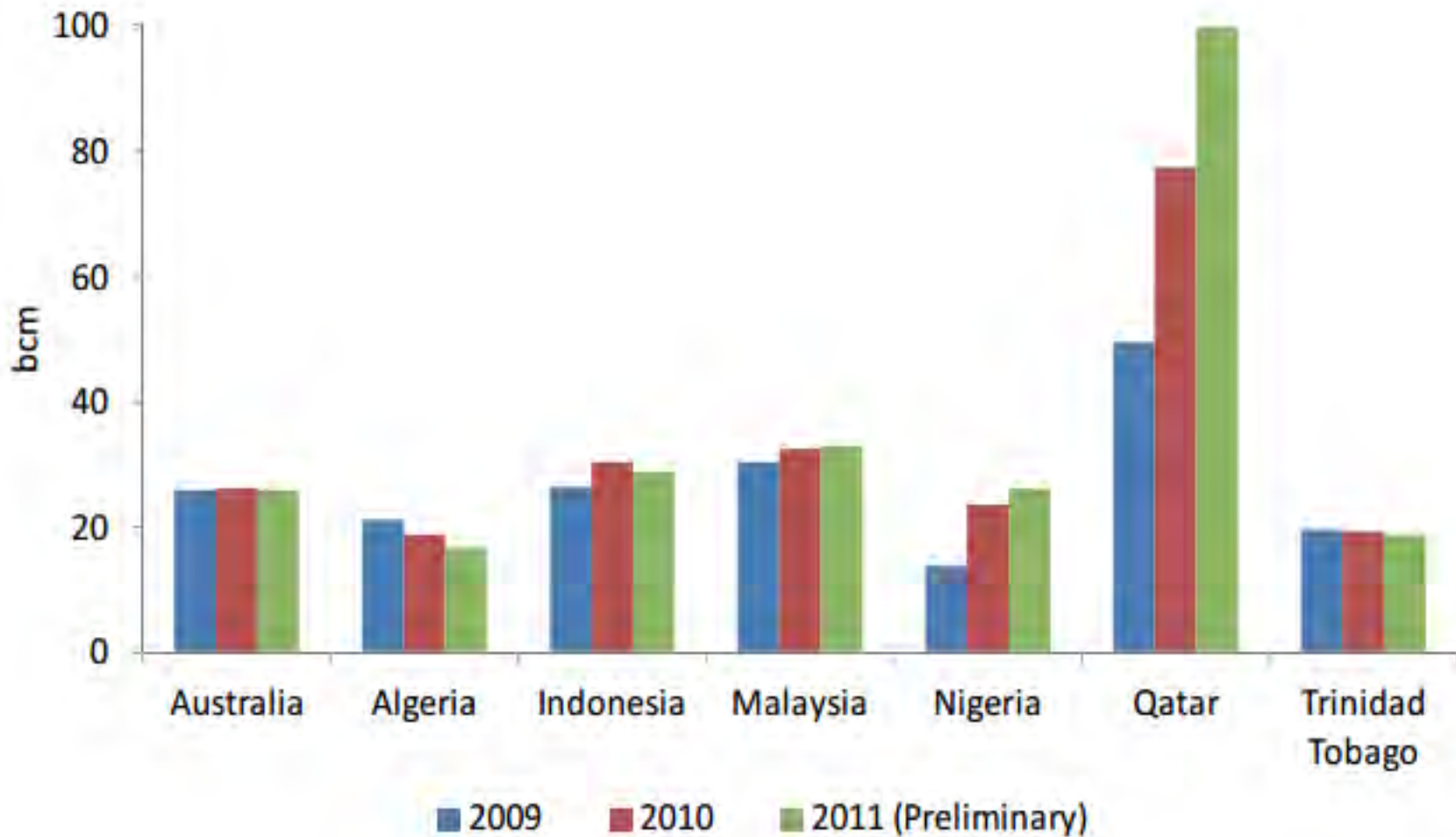
2. Number of new LNG buyers and sellers and which side is now driving the market
3. Asia to drive LNG demand growth causing plenty of competition worldwide
4. LNG Trading and LNG spot Price Assessments
5. Contract Negotiation as a lot of long-term contracts in operation have commenced mid-term as they no longer reflect the true hub price

LNG trade growth, 2006-11



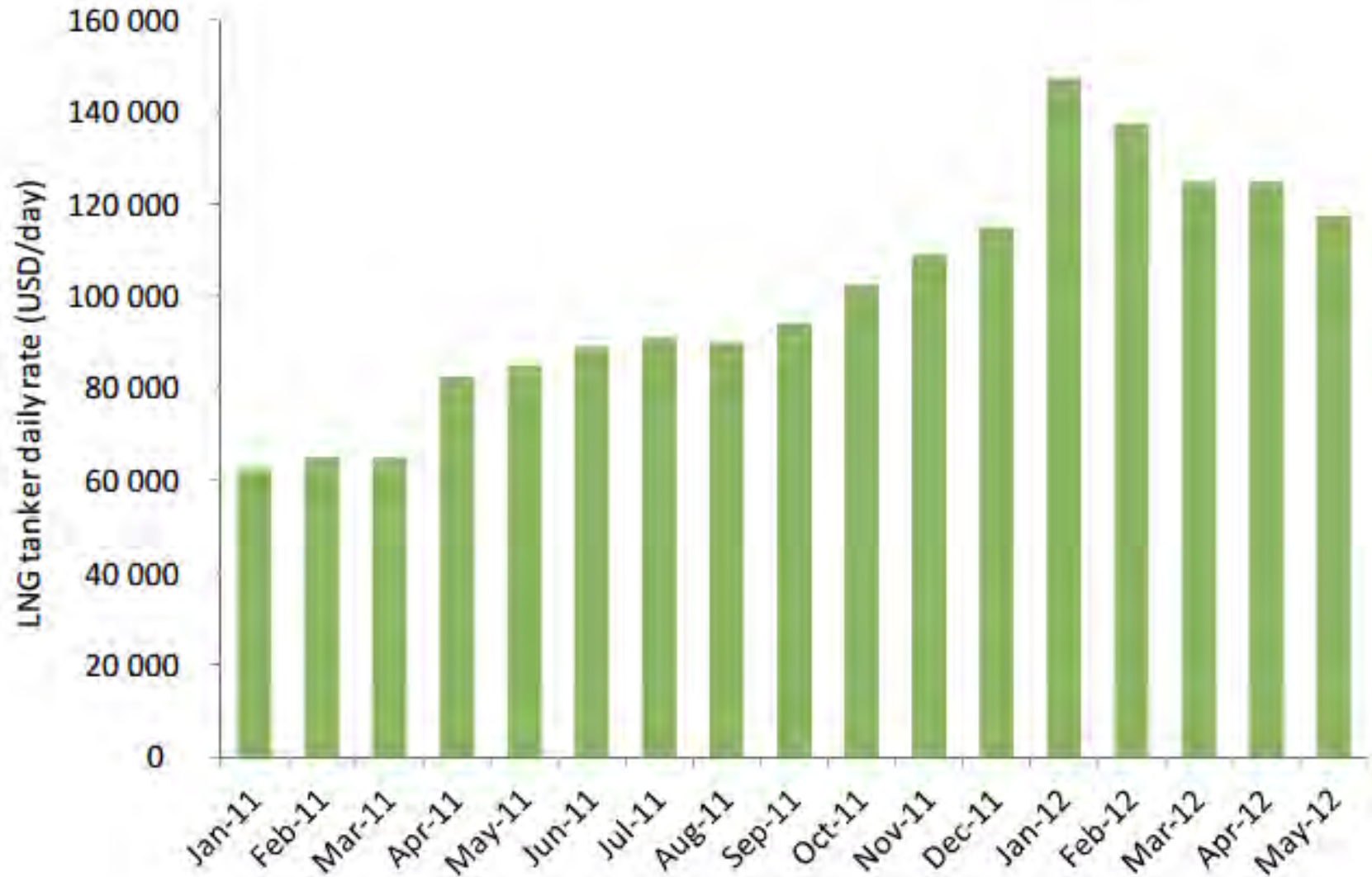
Note: LNG liquefaction capacity at the end of the year.

LNG exports of the top seven LNG producers from, 2009 to 2011

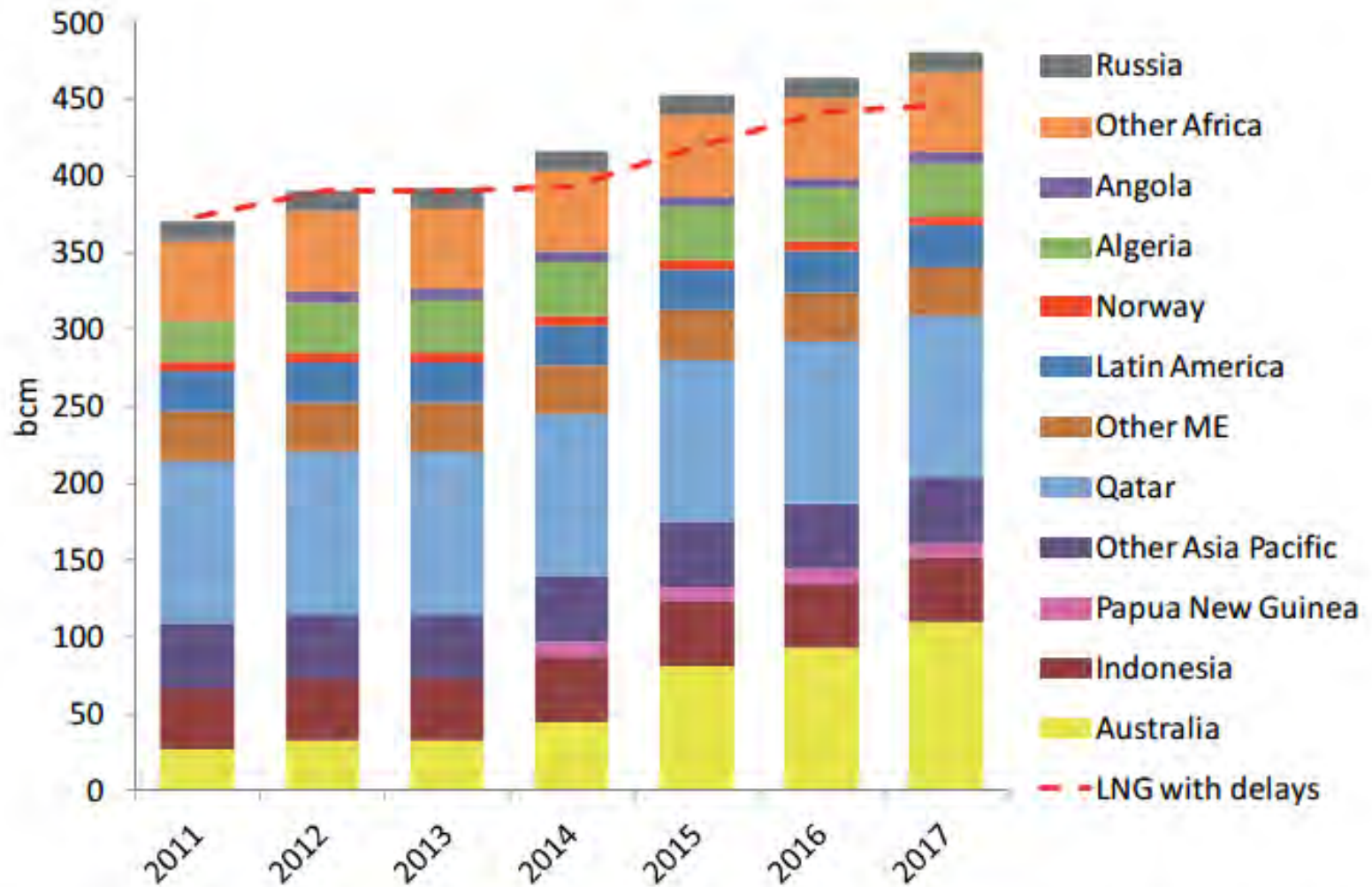




LNG tanker daily rate January, 2011 – May 2012



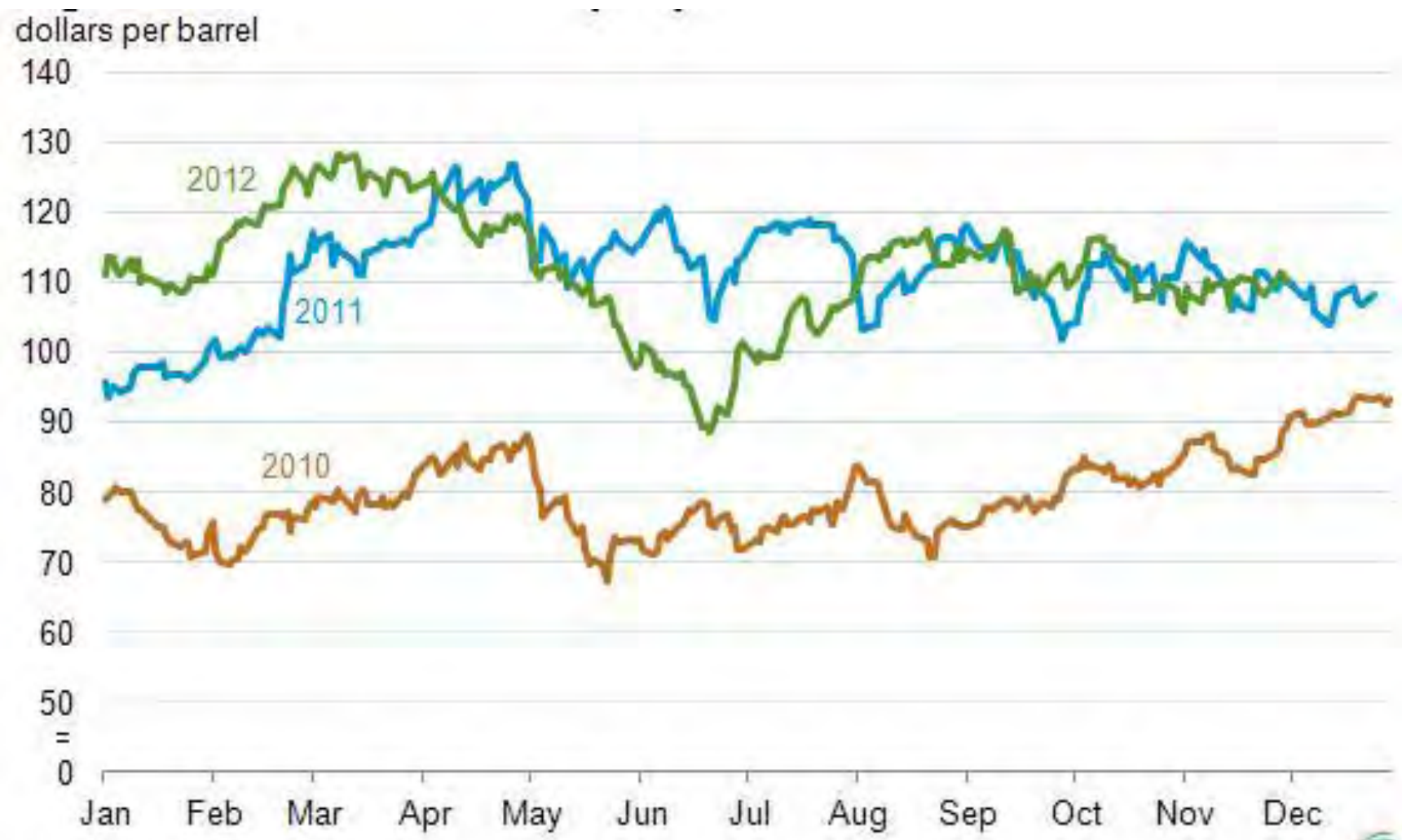
LNG projects under construction (as of May 2012)



Notes: This figure represents LNG export capacity, not LNG trade. The starting dates reflect companies' data, but not the IEA's views.



Brent Crude Oil Spot Prices (2010 – 2011 – 2012)



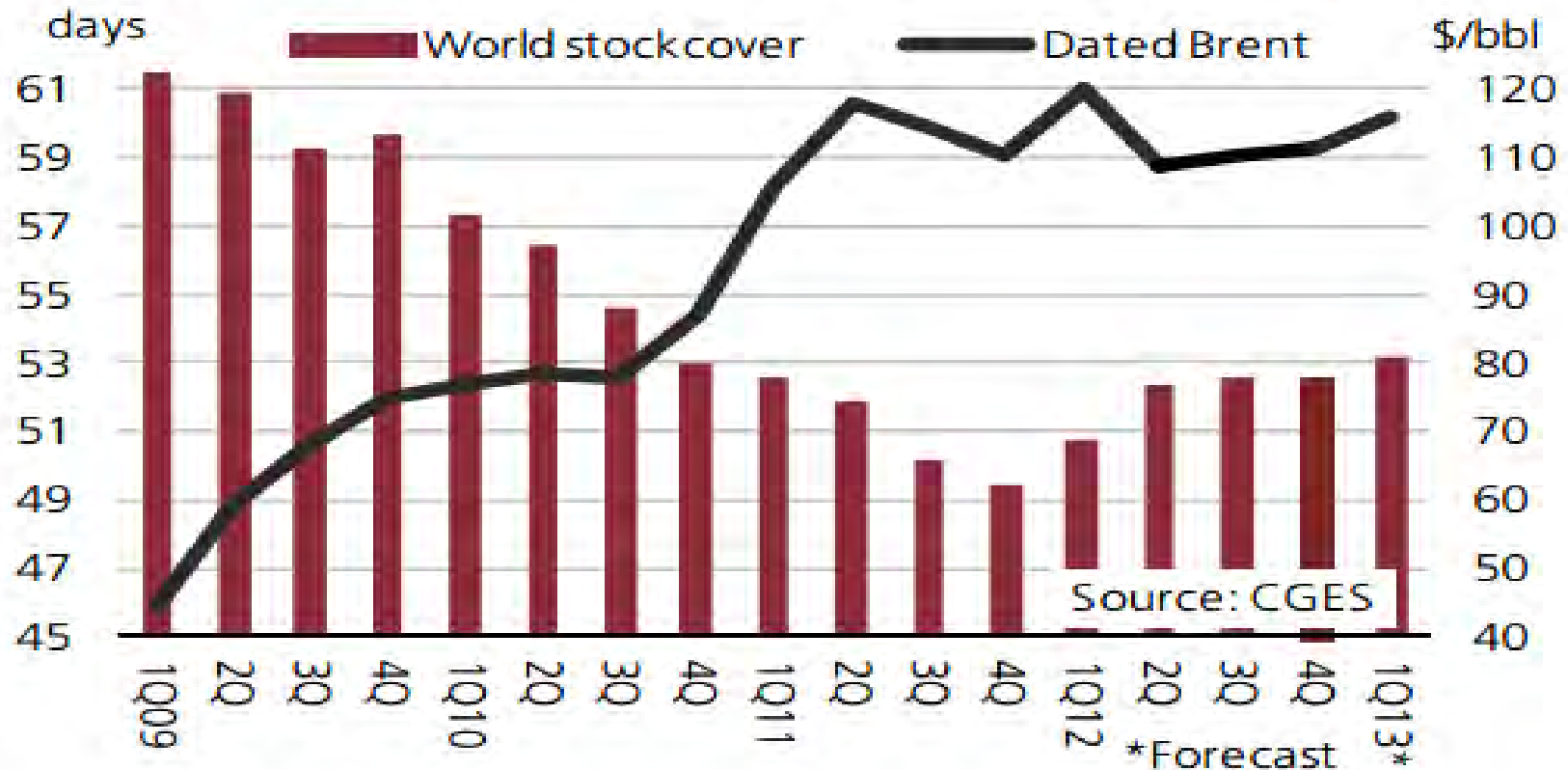
Source: Thomson Reuters.



Oil Prices Trends

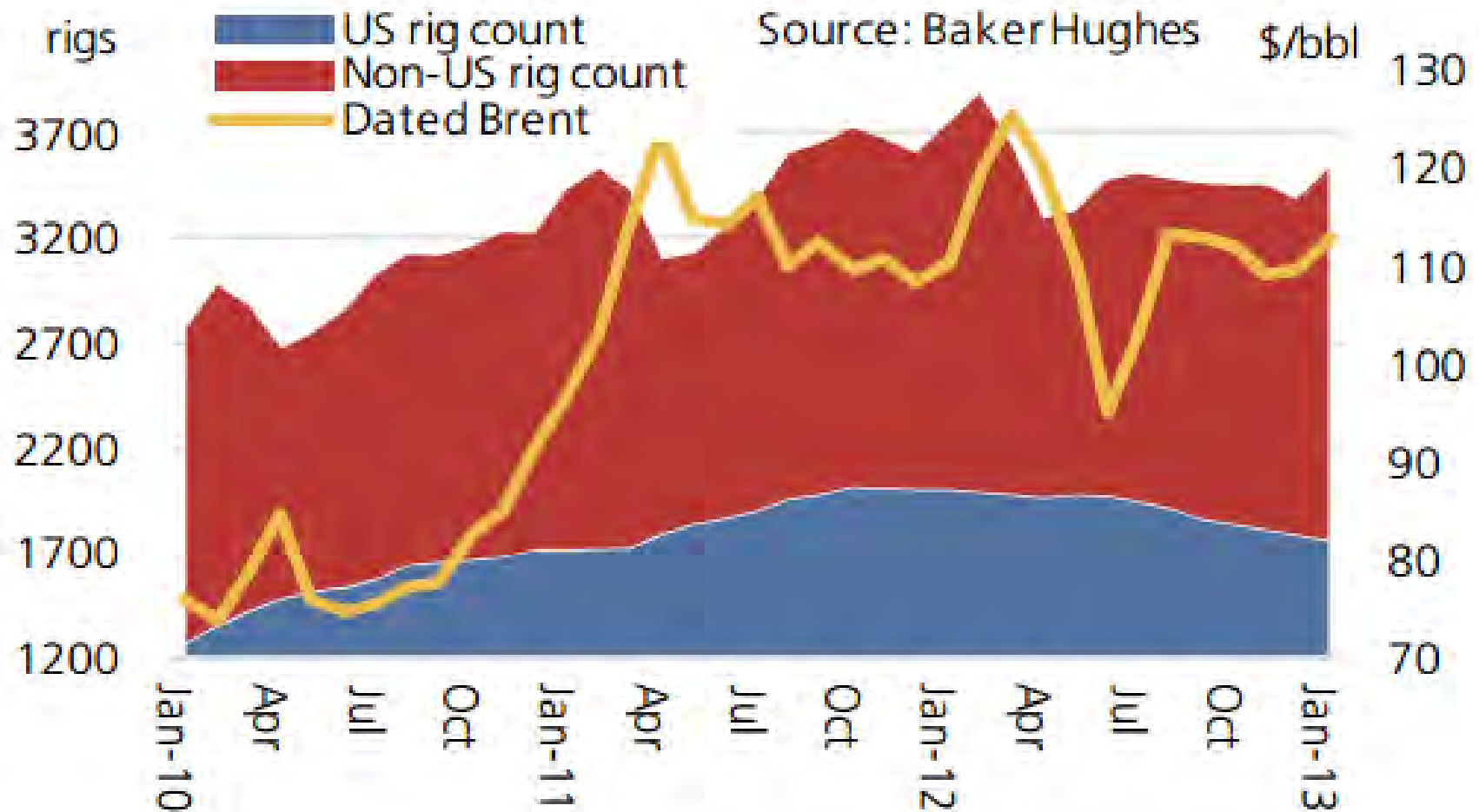


Global commercial stock cover vs Brent prices

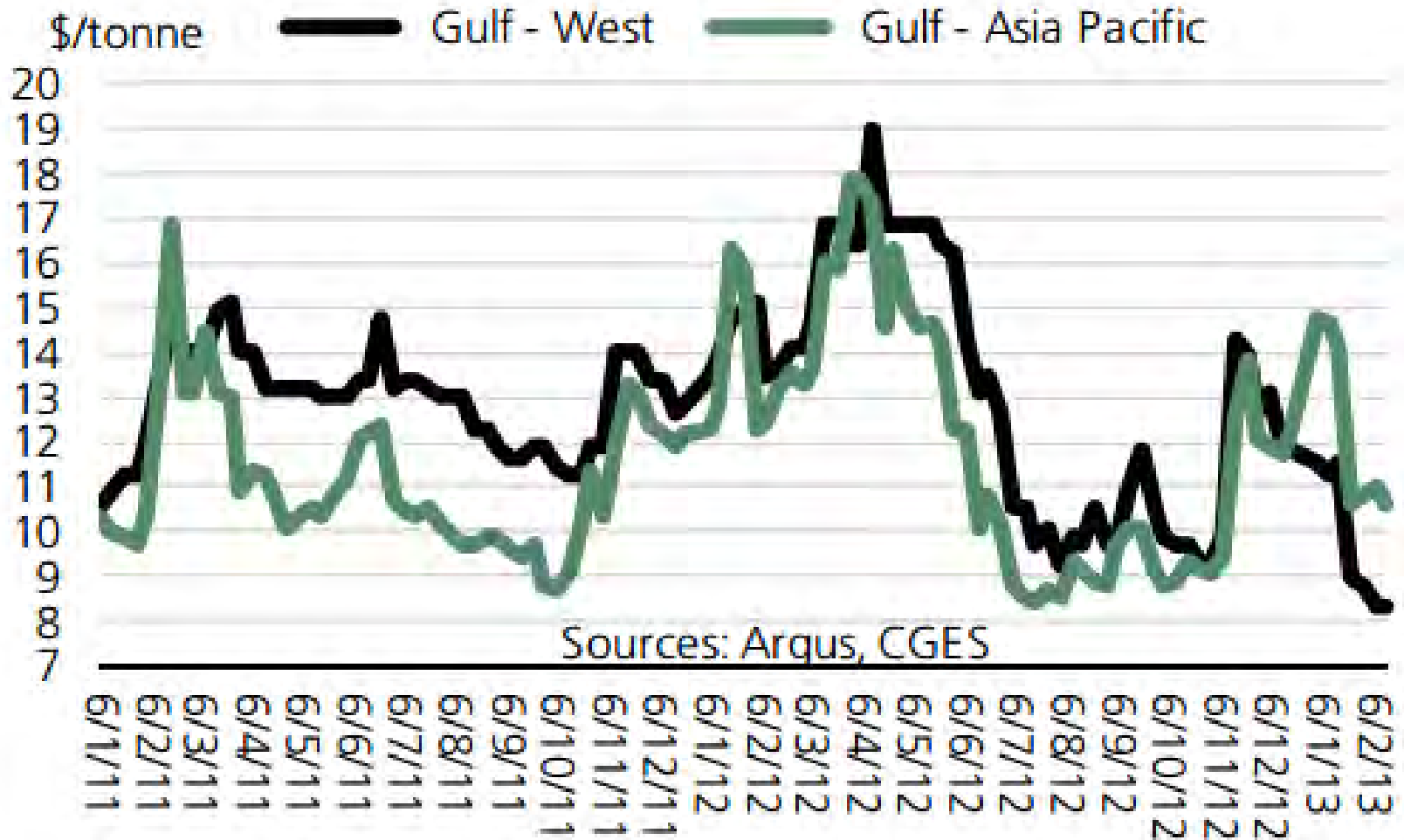


Source: CGES

The global rig count vs Dated Brent prices

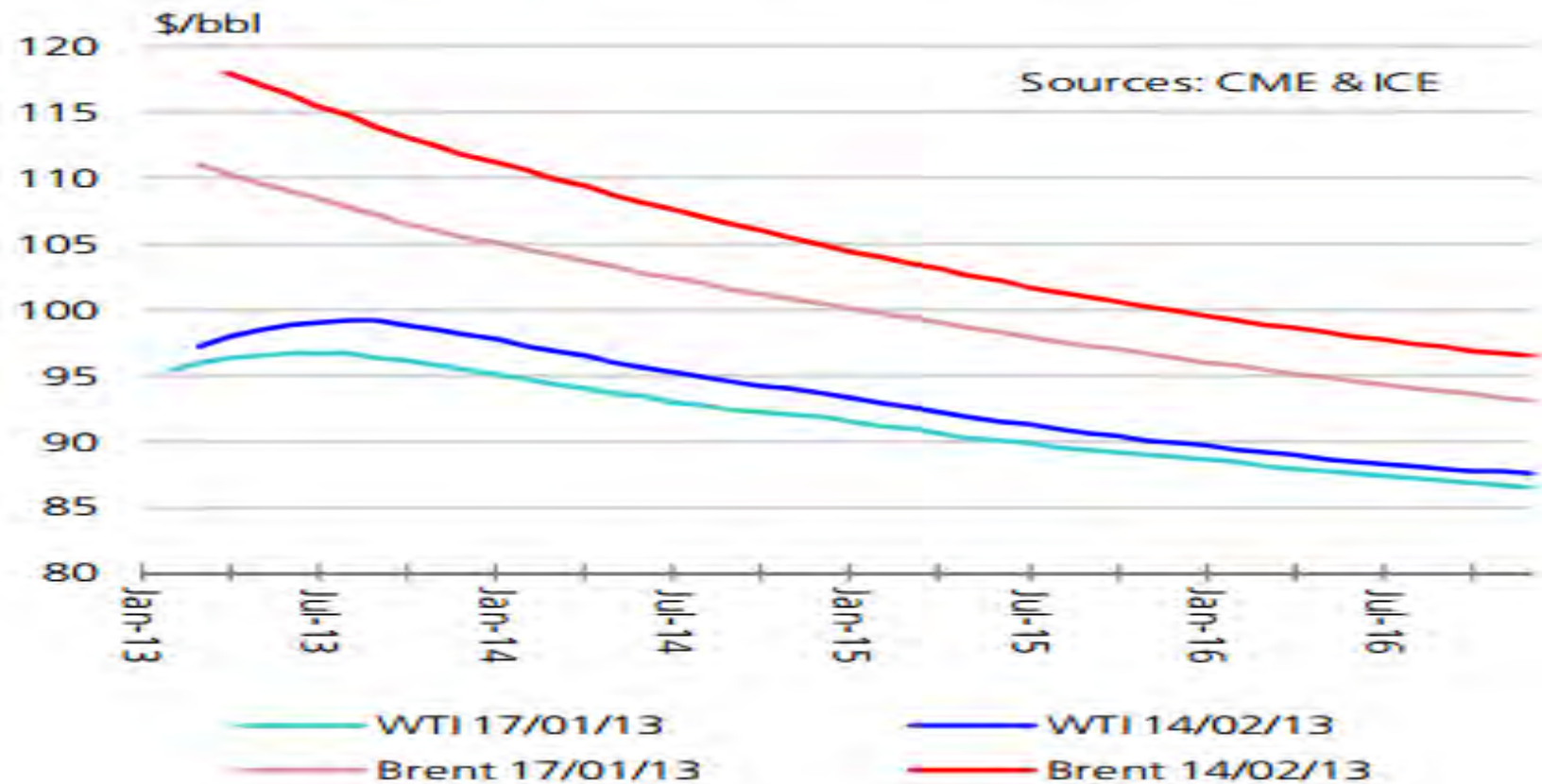


Weekly VLCC freight rates



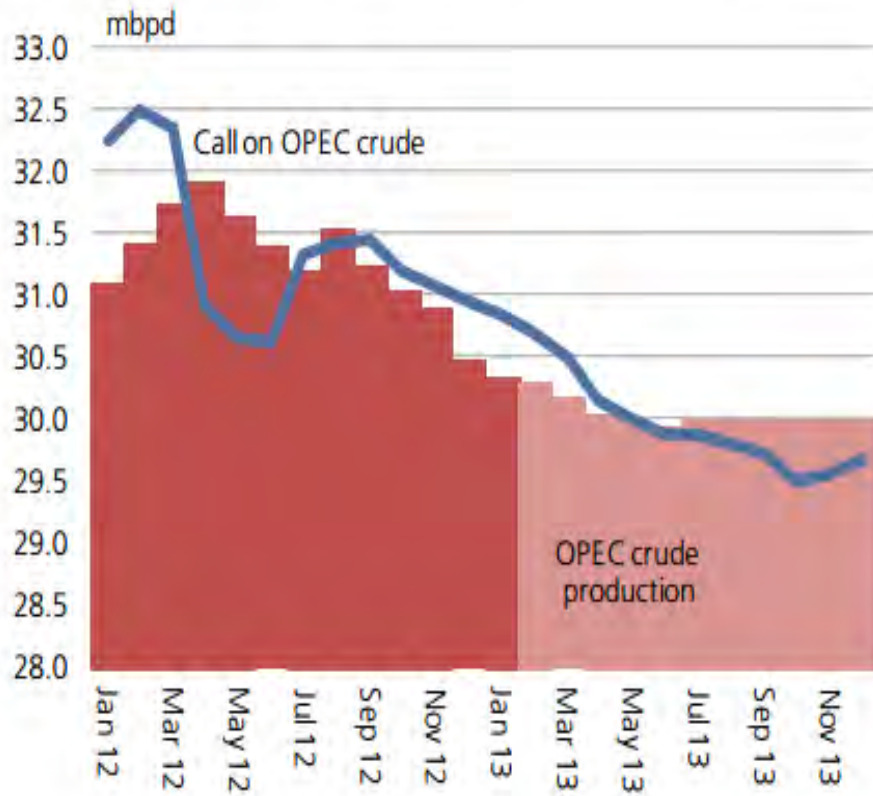


WTI and Brent forward price curves

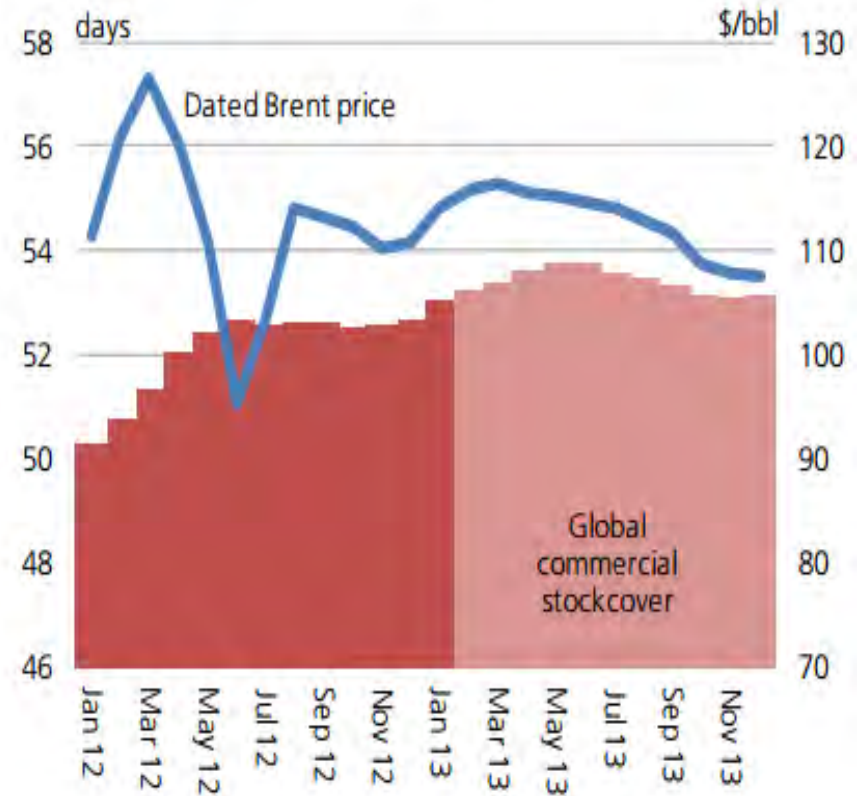


Source: CGES

call on OPEC crude needed to attain desired stockcover levels.

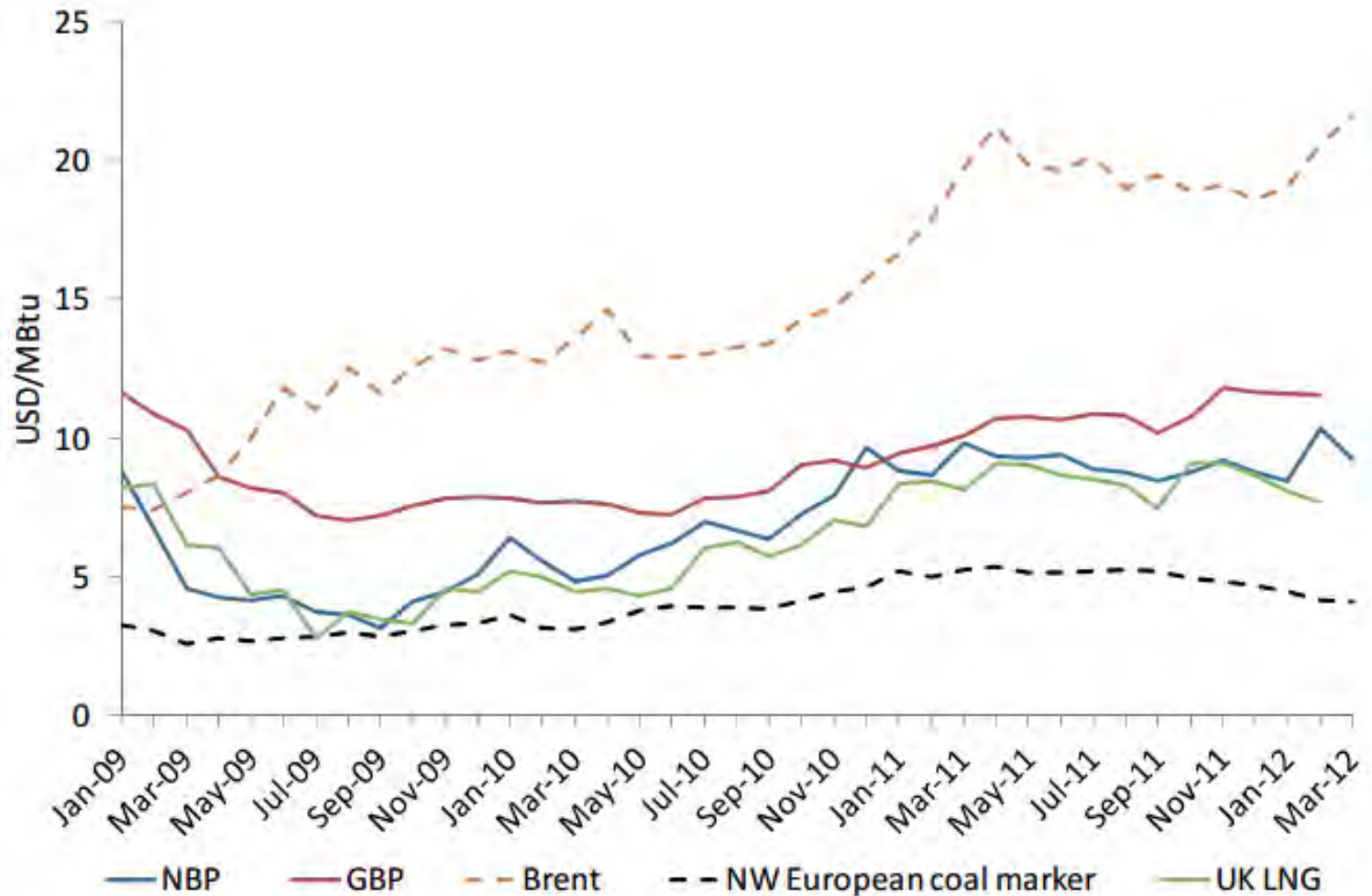


World excluding FSU, China and Eastern Europe.

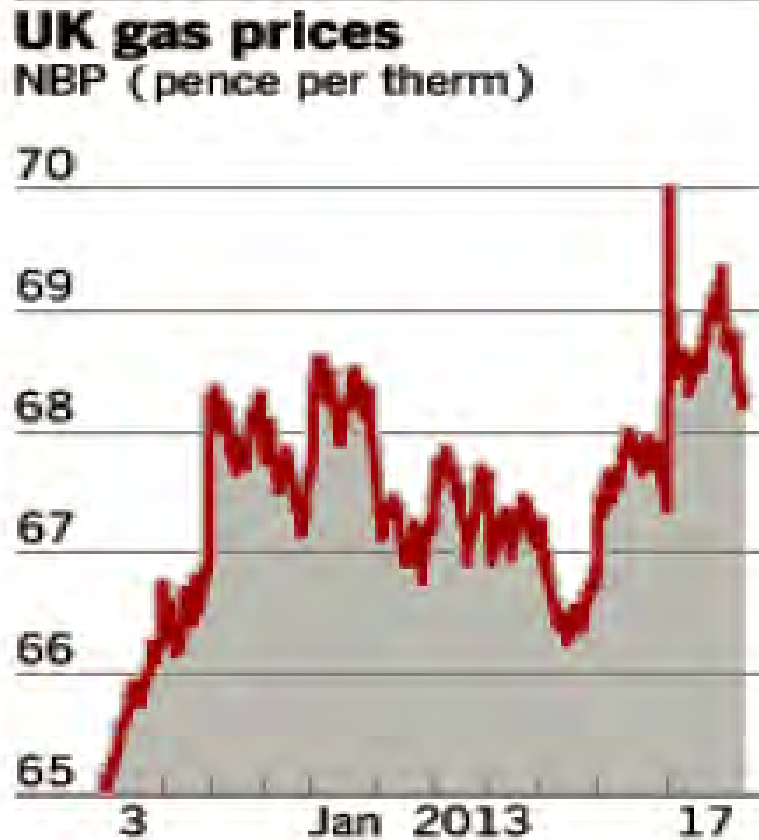


Source: CGES

Northwest European Gas Prices and Brent, 2009-2012

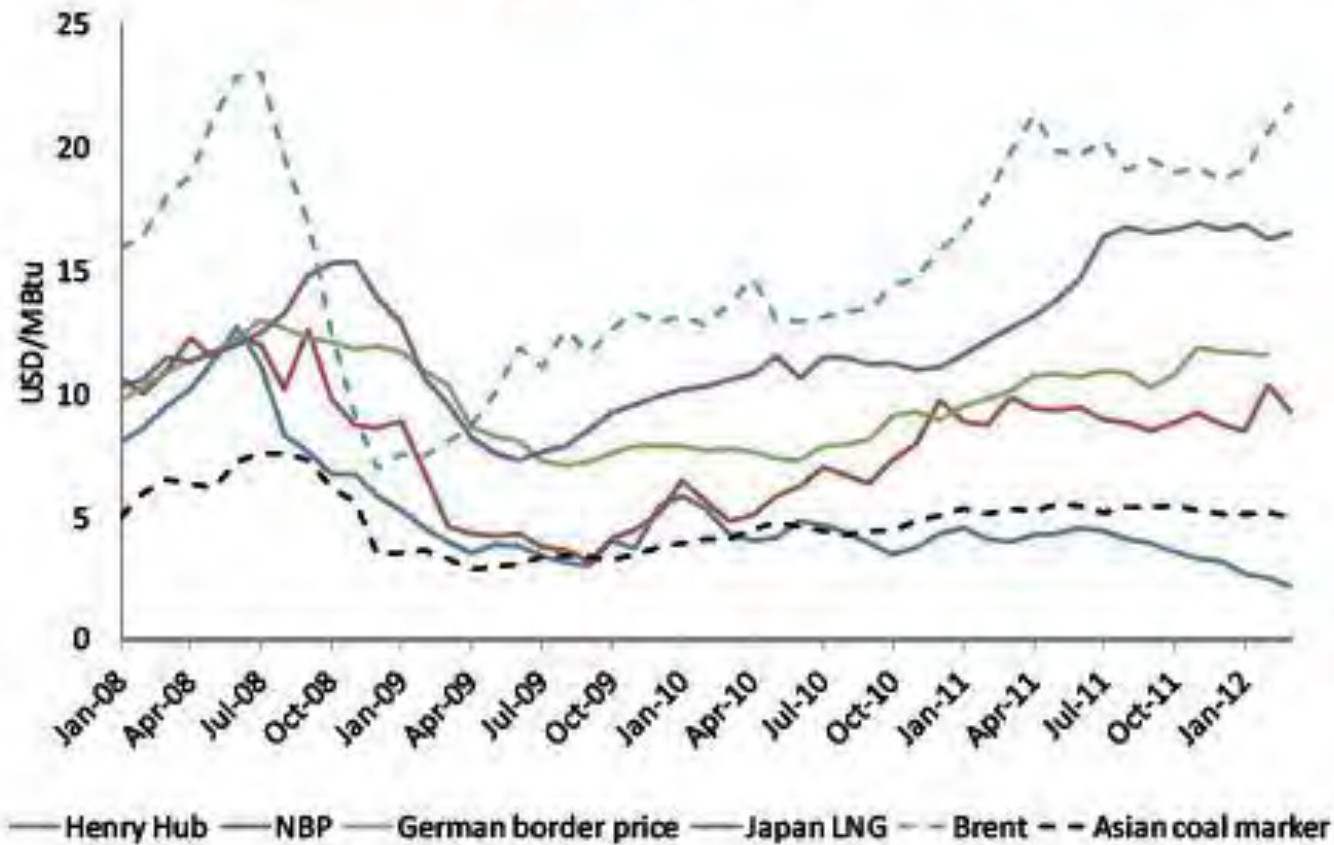


UK Gas Prices (3 – 17 January)



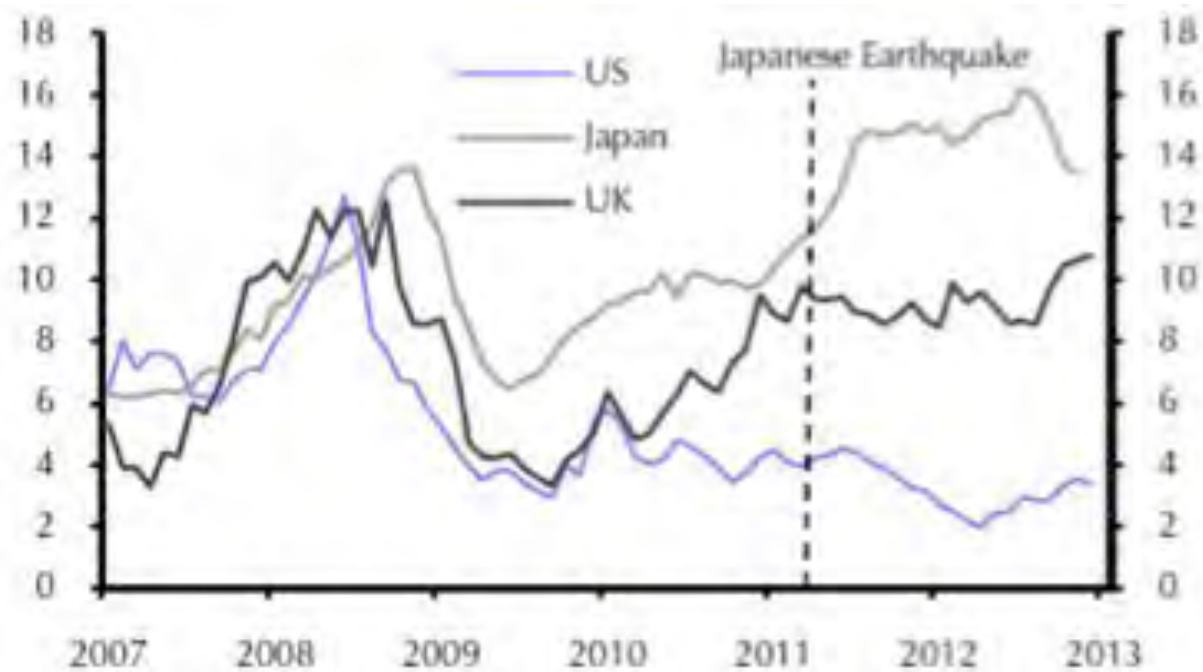
Source: Thomson Reuters

International gas prices, Asian coal and Brent, 2008-12



Source: ICE, Japanese Customs, and the German customs.

Natural Gas Prices (US\$ per MMBtu)



Source: I-Net Bridge



Factors Affecting Oil Price Formation

Upward Pressures

- Reduction in OPEC oil supply
- Syria's civil war and spill over danger
- Continuing Arab Spring unrest
- Resurgence of terrorist attacks against oil and gas installations following latest incidents in Algeria
- Mounting fears of Israeli strike against Iranian nuclear facilities
- Fears of Gulf oil and gas supply disruptions
- Decline in US and global oil inventories
- Fears of disruption of Russian gas exports to Europe
- Weakening of US dollar relative to Euro
- Adverse weather pattern in northern hemisphere



Factors Affecting Oil Price Formation

Downward Pressures

- Eurozone crisis and continuing decline of EU economies
- Disappointing German manufacturing output
- Strengthening of Euro relative to US dollar
- Reduced estimates for global economic growth
- Increased USA oil and gas production and possible new legislation by US congress allowing oil and gas exports
- Warm winter in northern hemisphere



Energy Security Considerations

- Increased geopolitical risk from military tension in the Gulf and renewed terrorist activity in MENA countries
- Eurozone crisis persists
- EU economy contraction continues
- Irregular weather patterns
- Natural disasters



Factoring in Geopolitical Risk

1. Iran continues with uranium enrichment – USA increases diplomatic pressure
2. Israel renews bombardment threats
3. Military and naval built up in Persian Gulf follows
4. In response Iran enforces periodic onboard checks which results in delays of ship traffic and causes oil supply disruptions
5. Renewed terrorist attacks in North Africa (i.e. Libya and Algeria) lead to the slowing down, or even disruption, of gas exports to Europe



Concluding Remarks

1. In spite of persistent high oil prices over the last 2 years global demand and markets continue to expand
2. High oil prices are not affecting as they used to global economic growth as oil contributes less to the average economic output
3. Geopolitical risk factors are already largely discounted in today's prices – although there is ground for further rises should an unstable situation arise (e.g. natural disaster, terrorist attack, military conflict)
4. There is a growing trend to diversify natural gas supply with continuing strong inroads by LNG
5. Natural gas will continue to substitute oil for several applications but without affecting much global oil consumption, which will continue to rise for the foreseeable future, mostly due to strong demand by emerging economies



**Thank you for
your attention**

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