



# An Overview of Energy Prices

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# Energy in 2012

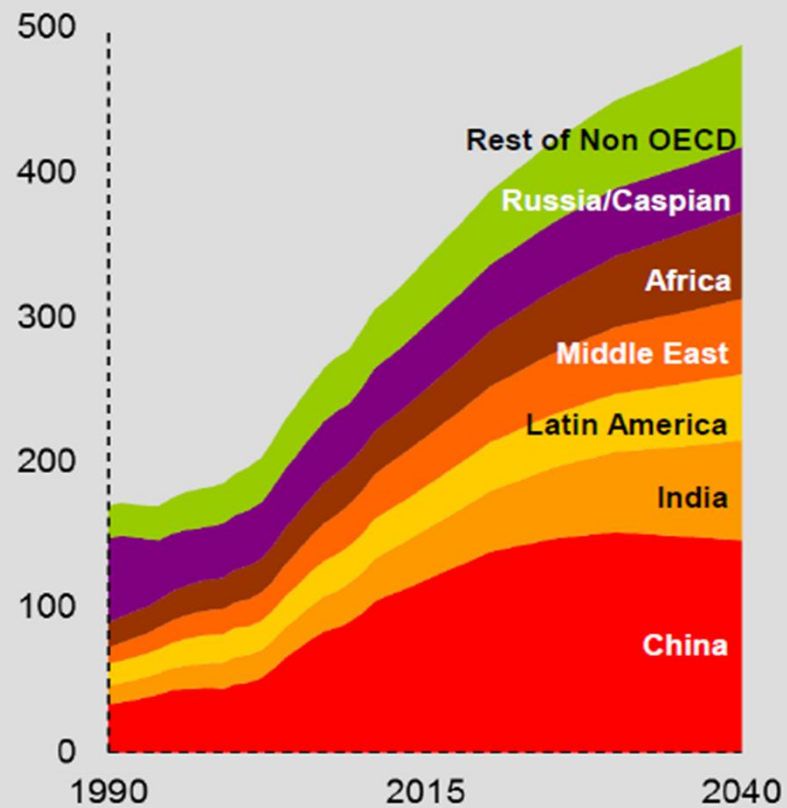


- In 2012, the growth in Energy consumption slowed in 2012
- 90% of this growth came from China & India
- Consumption & production of oil, gas and coal reached record levels
- Oil remains the world's leading fuel
- One of the most notable features in 2012 has been the American Shale Revolution
- In consumption terms, the fast growing fossil fuel is:
  - **coal**
- The only fossil fuel to see an acceleration in consumption:
  - **gas**
- In 2012, global nuclear power output had the largest decline ever
- Share of global power generation met by renewable:
  - **4.7%**

# Global Energy Demand

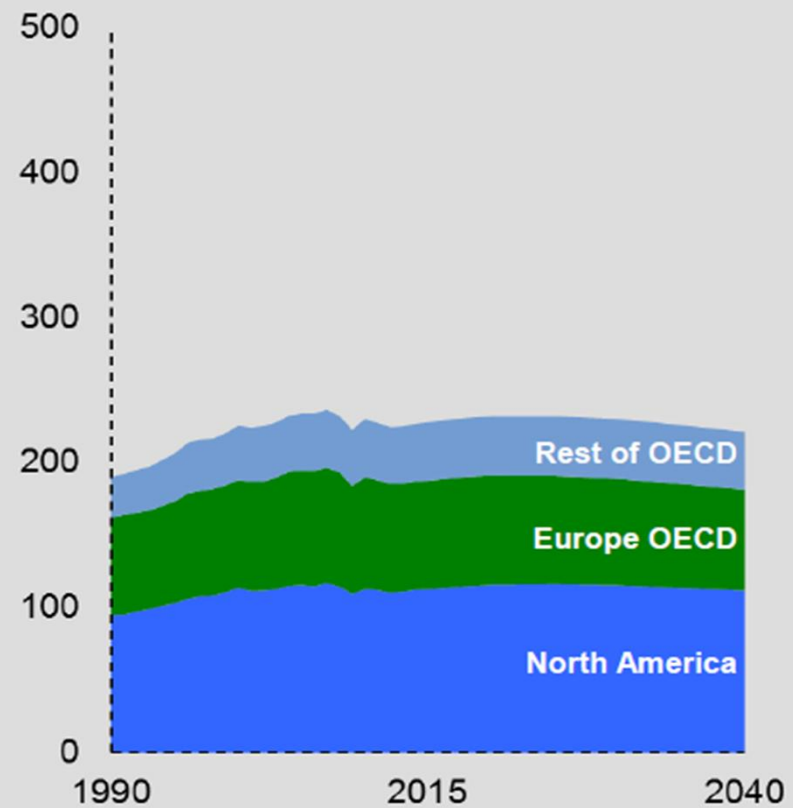
## Non OECD Demand

Quadrillion BTUs



## OECD Demand

Quadrillion BTUs



- Struggling to compete with the rest of the world because of the disparity in energy costs:

2005 - 2012	US	Europe
Industrial Gas Prices	-66%	+35%
Industrial Power Prices	-4%	+38%

- EU President – “we have no major game changer on the horizon”
- EU Commission President – “the landscape is changing, and not in Europe’s favour”
- Solutions:
  - Energy efficiency
  - Complete the internal market
  - Tap all resources
  - Europe to become a free-trade-agreement partner

# US Tight Oil



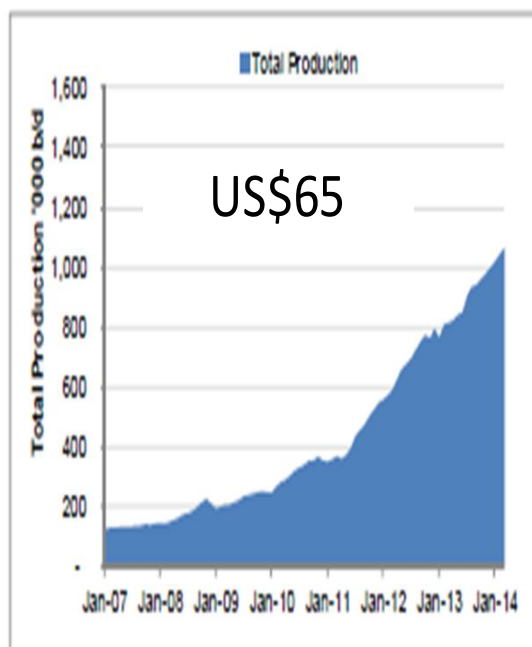
- From “**Peak Oil**” to “**Post Peak Oil**”
- “It’s only the beginning”
- The US is “drowning in oil”
- US producing 8.35 m b/d in May. This is a 26 year high
- Providing an extra 1 m b/d this year...again
- If you add in NGLs (natural-gas liquids) & bio-fuels the US is the world’s number 1 producer (total oil + liquid fuels)
- The US could be exporting crude oil this year. Already exporting about 3 m b/d of “product”
- Tight oil and gas is giving the US a significant competitive advantage

- The US Energy Revolution:
  - Supporting 1.7m jobs
  - \$62 billion in 2012
  - A renaissance in manufacturing
  - Reduced carbon emissions

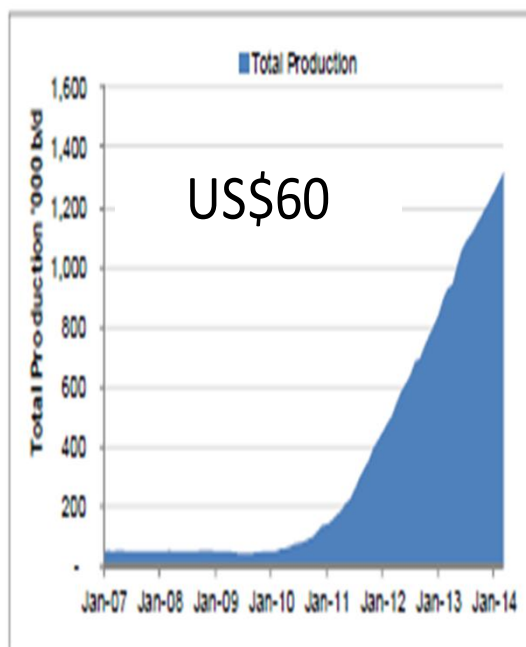
# The Big Three



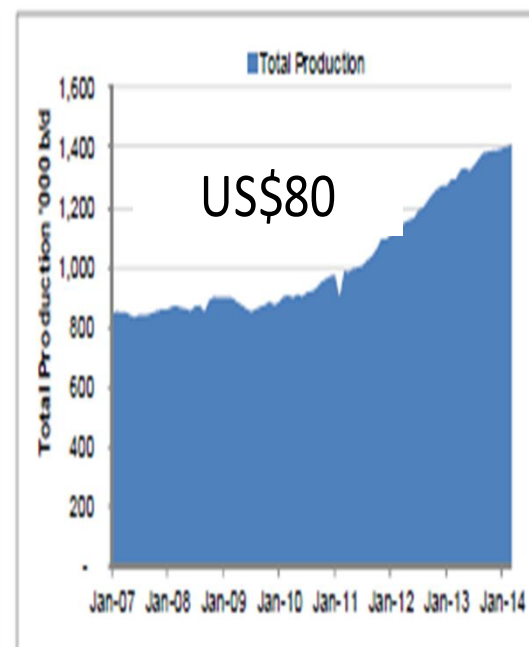
Bakken



Eagle Ford



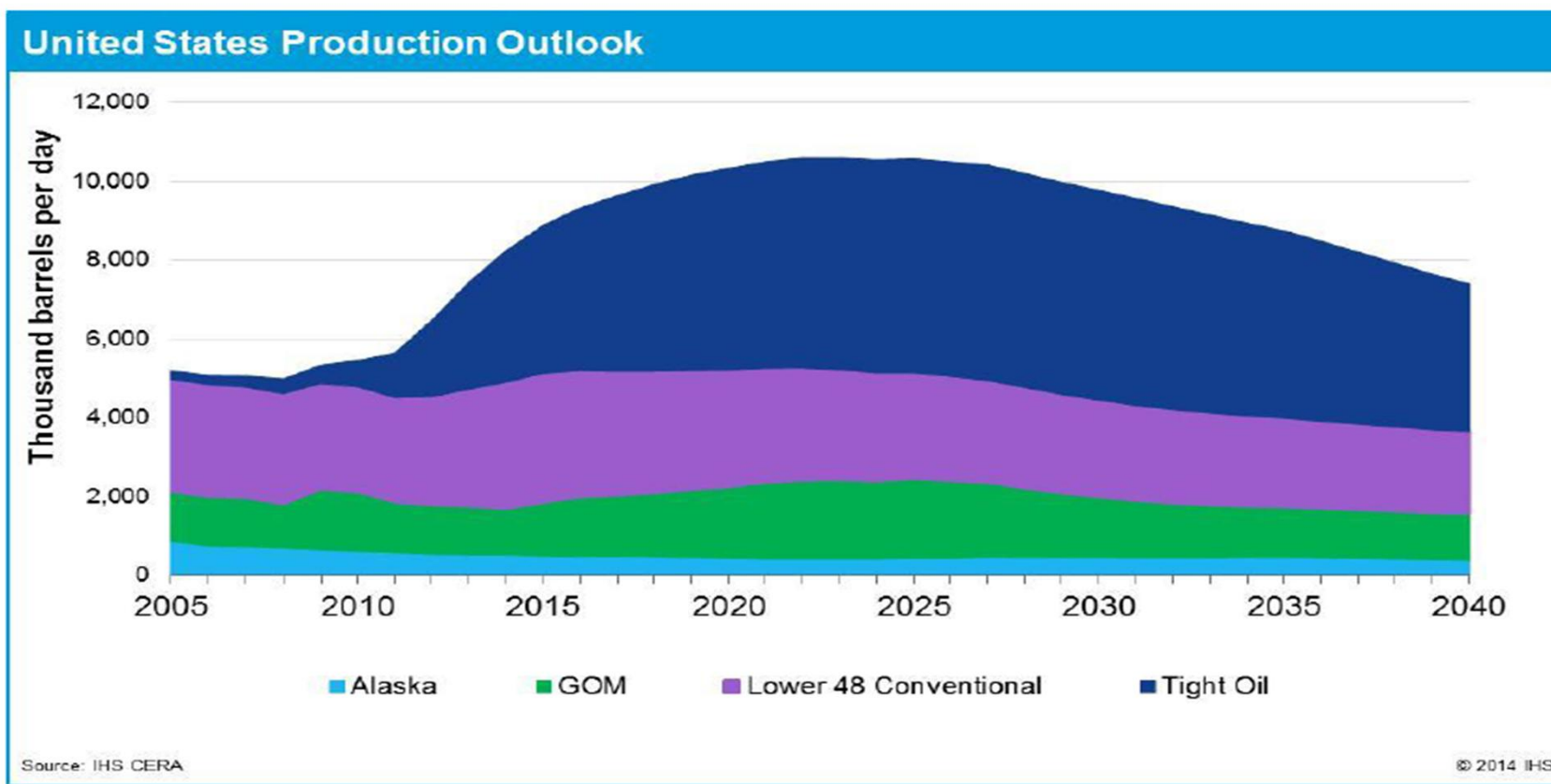
Permian Basin



# US Production Outlook



**US crude production will surpass its 1970 peak this decade, reach 10.6 million bd by 2020s**



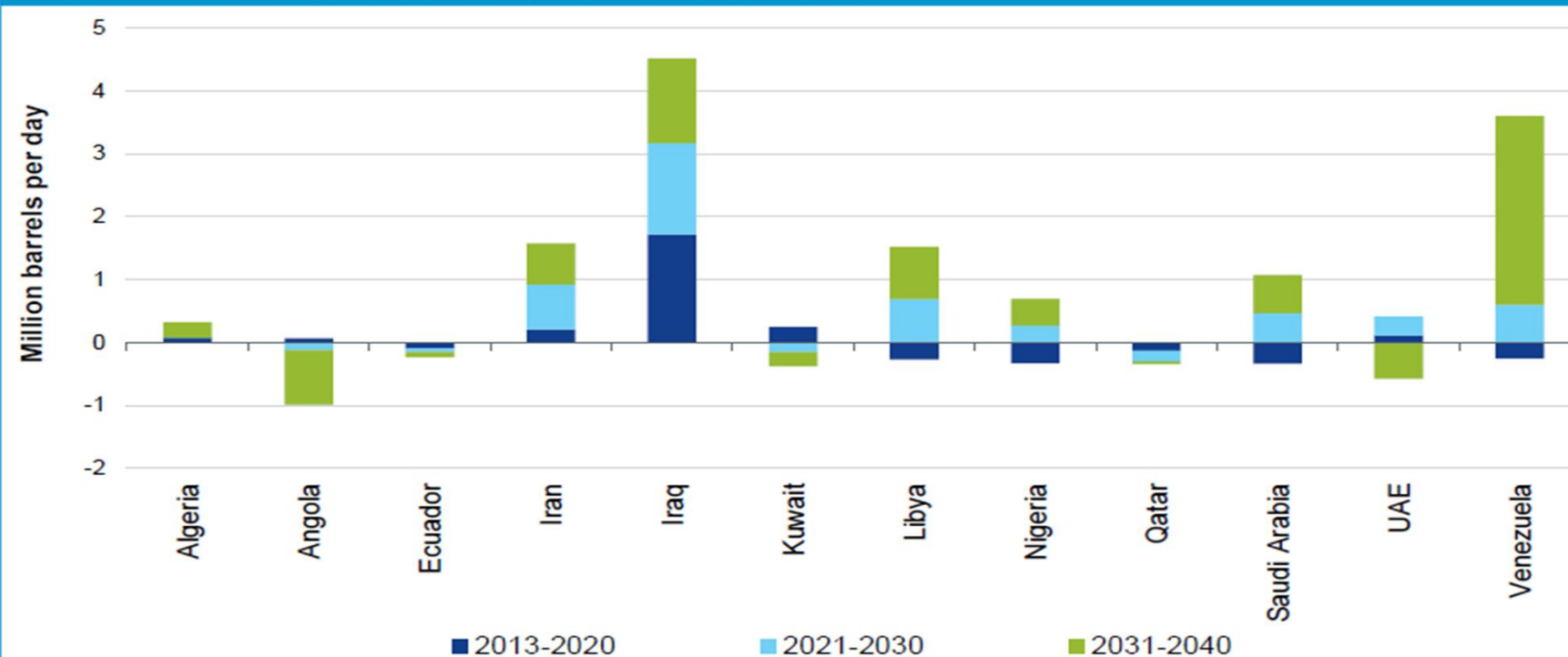


# The world needs OPEC oil - unfortunately



Long-term call on OPEC crude requires increases from producers who face aboveground challenges today

OPEC crude oil production growth by country



Source: IHS Energy

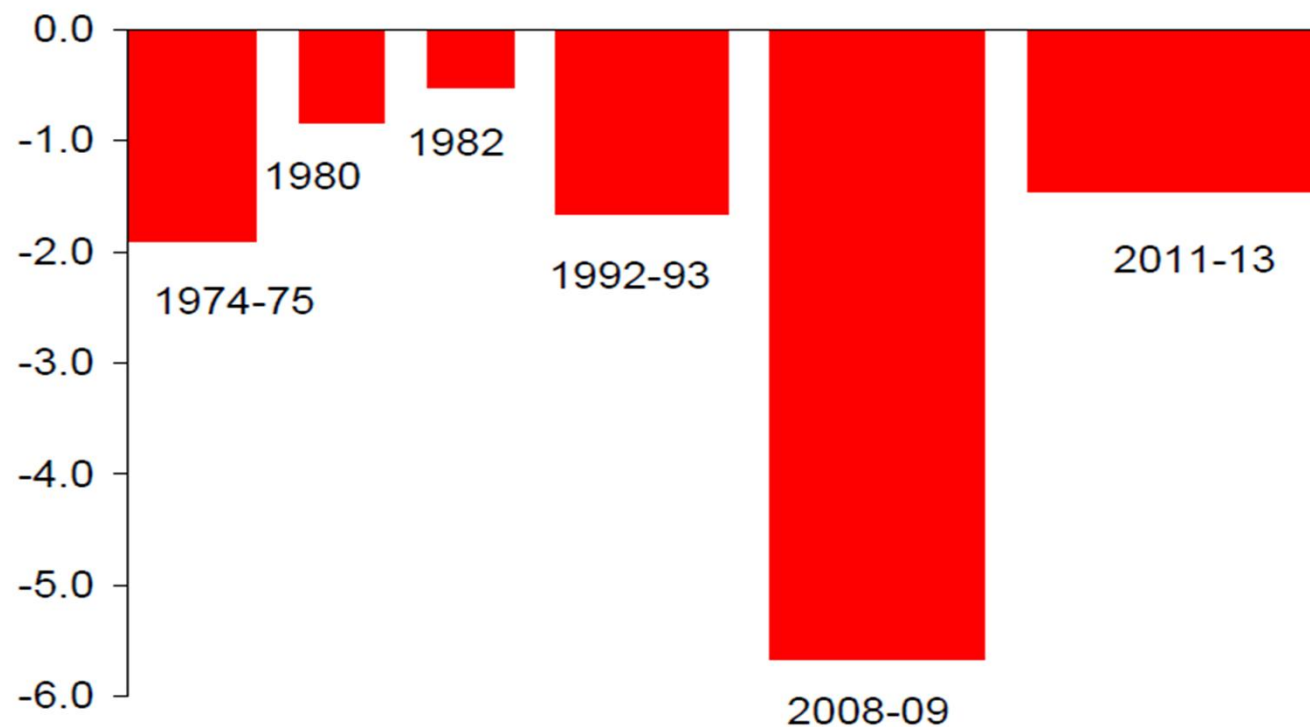
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## Eurozone: The Longest Recession In 40 Years

### Eurozone recessions

% fall in GDP, peak to trough

Width denotes length of recession



# Was the Recession Reduced UK Prices?



Rolling Winter Contract



## What's Driving China's Growth Story?

Investments/Capital	50%
Adding Workers	15%
Urbanization	12%
Imitation	7%

<b>Innovation</b>	<b>5%</b>
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<b>Workforce Skills</b>	<b>11%</b>
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- Starting to slow (WB: 2013 @ 7.7%, down from 8.4%). PMIs have been softening
- Avg GDP since reforms started in 1979...9.6%
- WB: “the main risk..remains the possibility that high investment rates prove unsustainable, provoking a disorderly unwinding and sharp economic slowdown”
- Consumption as a % of GDP at about 35% and flat!!!
- China is consumed 10.2 m b/d in 2013 & is the world’s number 1 importer of oil
- Future growth depends on:
  - Economic growth
  - Power generation
  - Transport
  - Refining capabilities

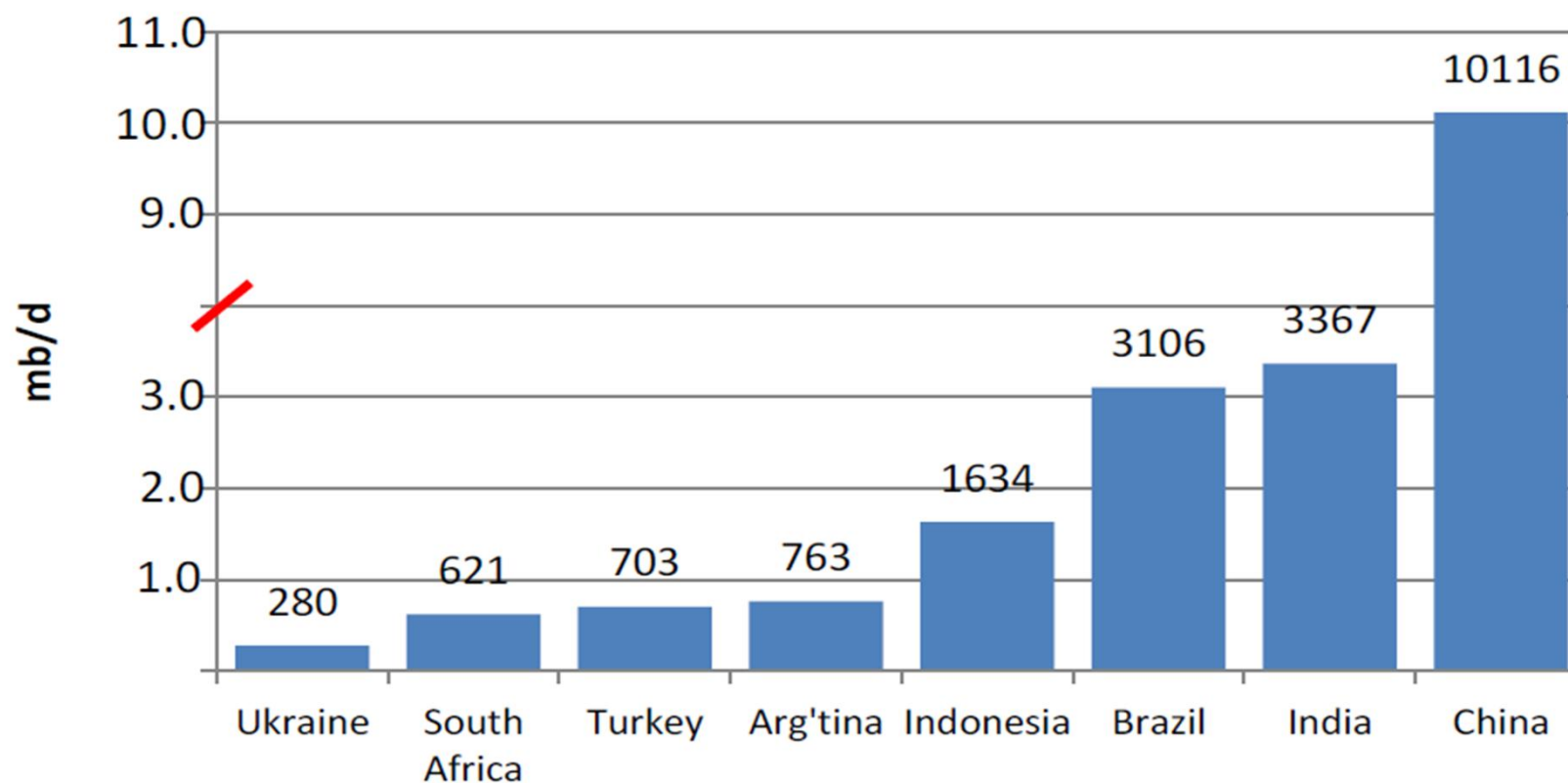
# Background



- The world is consuming 91 million b/d and demand is expected to increase by +1 m b/d in 2014
- Growth will be driven by Asia
- Non-OPEC supply growth from N. America will meet this (US +1 million & Canada +0.5 million)
- 30 million b/d from OPEC
- OPEC can produce an additional +3 m b/d if required
- Non-OPEC is supplying 56 m b/d
- Since 2000 the world is consuming an additional 15 m b/d
- Unplanned production cuts are at 3 m b/d
- The market is less concerned about downside risks

# Oil Demand in Markets at Risk

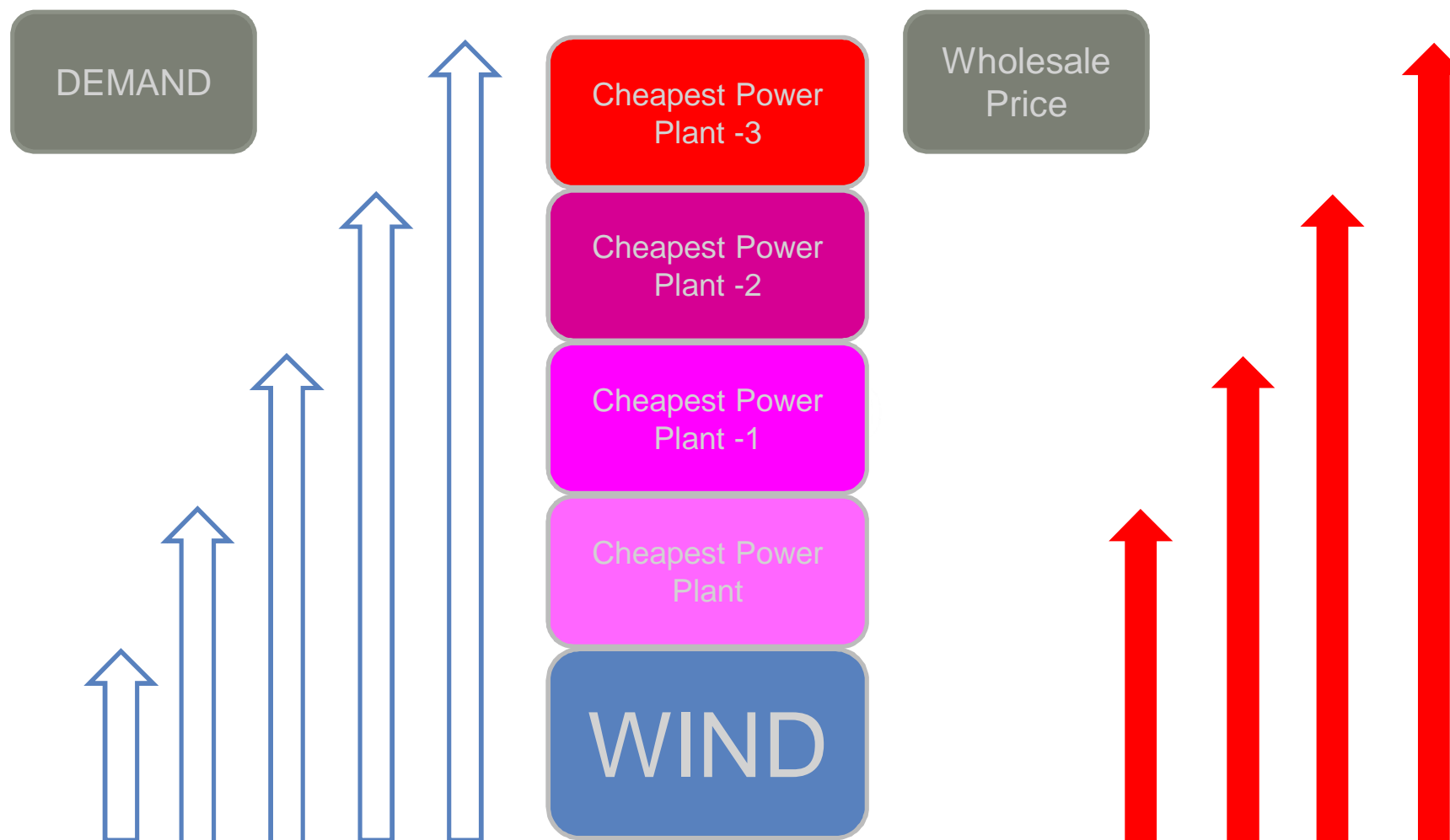
## 2013 oil demand in markets 'at risk'



# Spot the Difference?



# Wholesale Price per half-hour





# From Gas to Elec



- Day-ahead Gas Price = 63.87p
- FX = .84
- Day-ahead Gas Price = 76.04 cent
- 1 MWh = 69.45 therms
- **1 MWh = €52.81 – GAS (79%)**
- 1 MWh requires .377 tonnes of carbon
- Carbon costs €5.25 per tonne
- **1 MWh = €1.98 – CARBON (3%)**
- The System Operator says 1MWh = €66.57
- **1 MWh has a spark of €11.78 (18%)**

# Average Wholesale Electricity Price



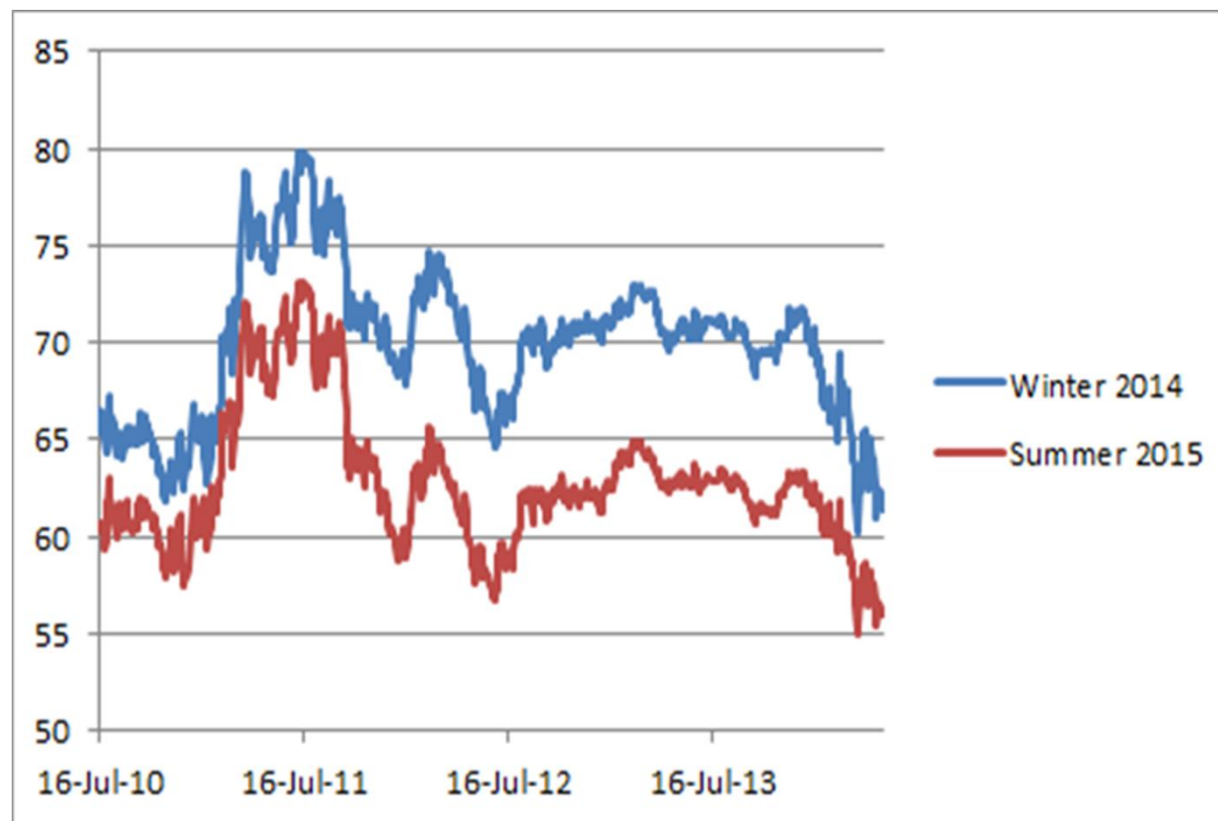
	2009	2010	2011	2012	Wholesale Elec Price 2013
Oct	€39.43	€55.42	€58.75	€66.93	€62.51
Nov	€39.26	€57.06	€61.27	€68.03	€68.06
Dec	€44.23	€71.35	€59.27	€64.10	€64.41
Jan	€51.99	€63.49	€59.35	€64.60	€70.64
Feb	€46.89	€59.70	€64.37	€63.56	€58.78
Mar	€42.98	€67.22	€61.19	€86.42	€63.60
Apl	€46.34	€67.35	€65.40	€70.41	€55.92

# Average Wholesale Electricity Price



	Gas	Carbon	Spark	Wholesale Elec Price
Oct	€53.11	€1.86	€7.54	€62.51
Nov	€55.98	€1.71	€10.38	€68.06
Dec	€57.24	€1.80	€5.37	€64.41
Jan	€54.72	€1.87	€14.06	€70.64
Feb	€49.55	€2.45	€6.79	€58.78
Mar	€47.19	€2.35	€14.05	€63.60
Apl	€41.94	€1.94	€12.05	€55.92

# Winter 14 – Summer 15



# From pence per therm to c/kWh



		69.45 therms			Carbon Price		Carbon Emitted		Commodity Offer		
	Winter 14	Gas Price	per Mwh	FX	Carbon	0.377	Spark	Offer	c/kWh		
14/07/2011	Max	£0.7984	£55.45	0.87	€63.73	€15.00	€5.66	€10.00	€79.39	7.94	24%
02/04/2014	Min	£0.6025	£41.84	0.83	€50.41	€5.00	€1.89	€10.00	€62.30	6.23	-3%
	Current	£0.6115	£42.47	0.81	€52.43	€4.75	€1.79	€10.00	€64.22	6.42	
	Summer 15										
14/07/2011	Max	£0.7308	£50.75	0.87	€58.34	€15.00	€5.66	€10.00	€73.99	7.40	24%
02/04/2014	Min	£0.5500	£38.20	0.83	€46.02	€5.00	€1.89	€10.00	€57.91	5.79	-3%
	Current	£0.5590	£38.82	0.81	€47.93	€4.75	€1.79	€10.00	€59.72	5.97	

# From pence per therm to c/kWh



		Non Commodity				
		Charges	Unit Price	kWh		
Winter 14	c/kWh	c/kWh	c/kWh	Vol		
Max	7.94	3.5	11.44	10,000,000	€1,144,000	€152,000
Min	6.23	3.5	9.73	10,000,000	€973,000	-€19,000
Current	6.42	3.5	9.92	10,000,000	€992,000	
Summer 15						
Max	7.4	3.5	10.9	10,000,000	€1,090,000	€143,000
Min	5.79	3.5	9.29	10,000,000	€929,000	-€18,000
Current	5.97	3.5	9.47	10,000,000	€947,000	

# Impact of future movements?



	Gas Price	c/kWh	BILL	
Winter 14	£0.6115	6.42	€992,000	
Summer 15	£0.5590	5.97	€947,000	
			€1,939,000	
Winter 14	£0.7115	7.28	€1,078,000	
Summer 15	£0.6590	6.83	€1,033,000	
			€2,111,000	€172,000
Winter 14	£0.5115	5.56	€906,000	
Summer 15	£0.4590	5.11	€861,000	
			€1,767,000	-€172,000



# How do we compare?



- Wholesale price is enough to cover:
- Gas
- Carbon
- The rest = 'Spark'



Cal 2015	Wholesale Price MWh
Irish Wholesale Electricity Price	61
CCGT Breakeven	52
Czech	33.5
Germany	34.25
Poland	39.4
France	41.8
Hungary	42.35
Dutch	43.05
Spain	48.1
Belgium	49
Italy	52.65
UK	62.7