

# Oil & Gas

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# Agenda

- **Market Overview**
  - Gas market fundamentals
  - Review of Gas Prices and current key events
  - Oil Market
  - Outlook for prices



# Ireland: Gas Market

- **Historically, the majority of Gas Supplies come from UK via Moffat Interconnector**

- **Limited Supplies from Kinsale (and declining)**

- **Corrib has come online but will peak within 2/3 years**

- **Ireland – 5bcm market**

- **UK – 75bcm**

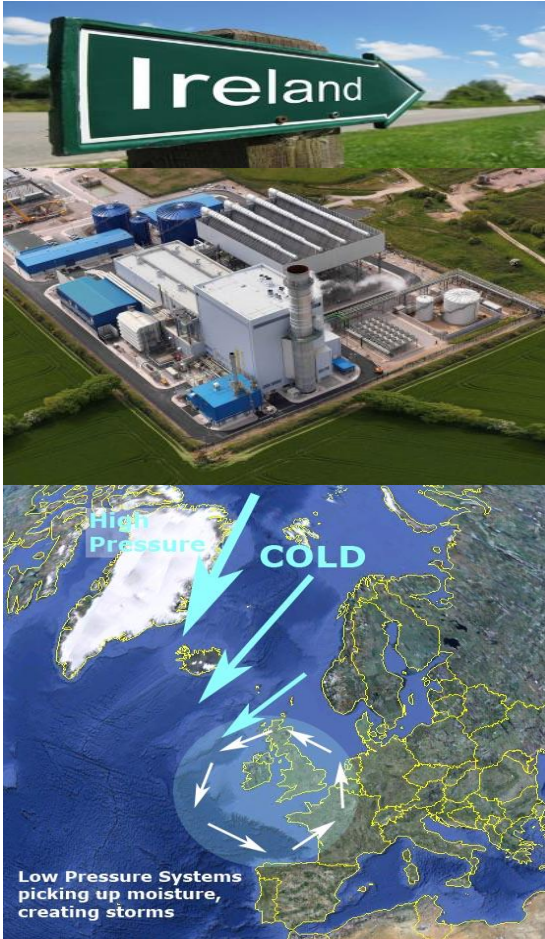
- **Small Player in the largest gas market in Europe (NBP)**



## Market Fundamentals

# Demand vs. Supply

Demand



Supply

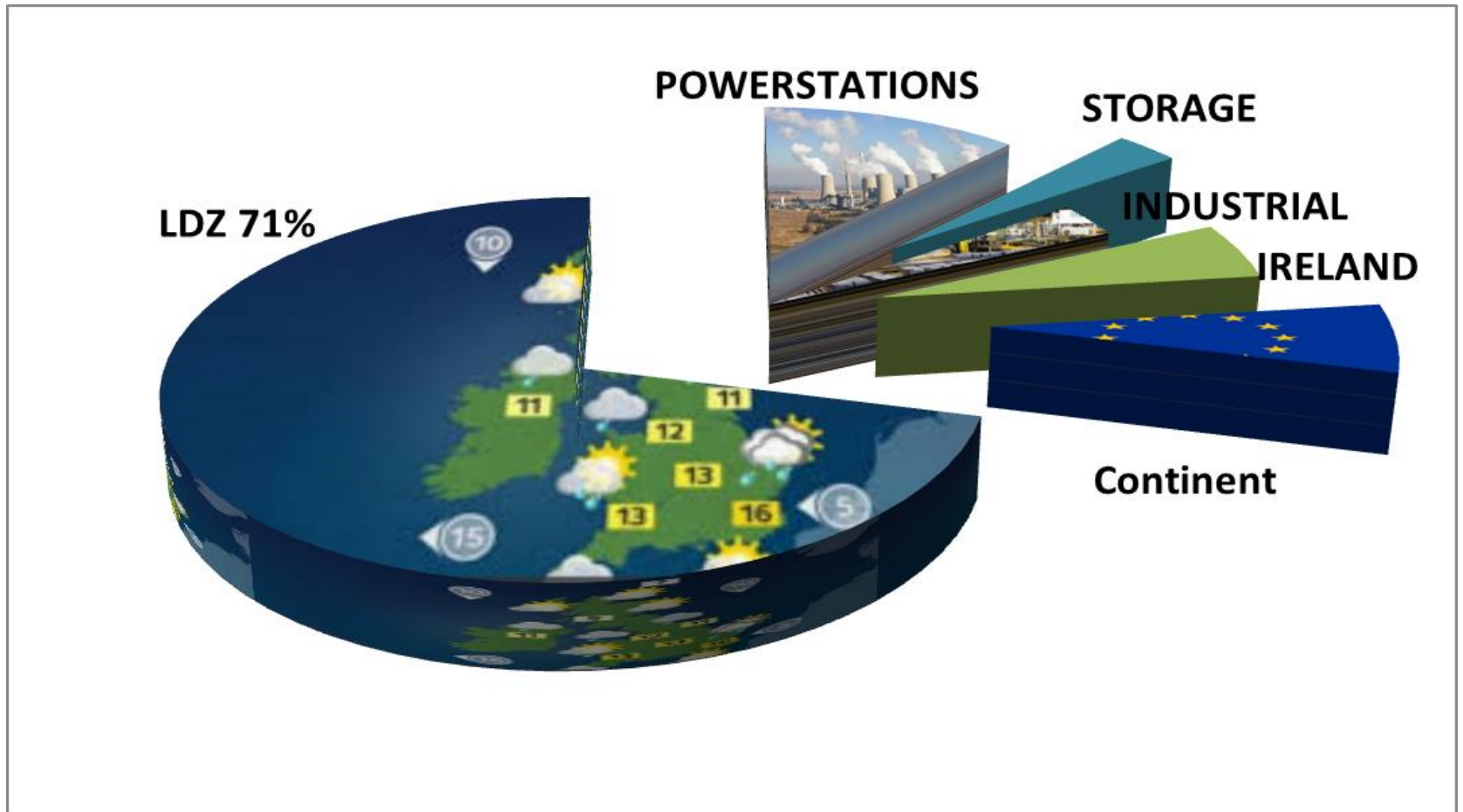


Vs.



## Market Fundamentals

# UK Gas Demand – it's the Weather!

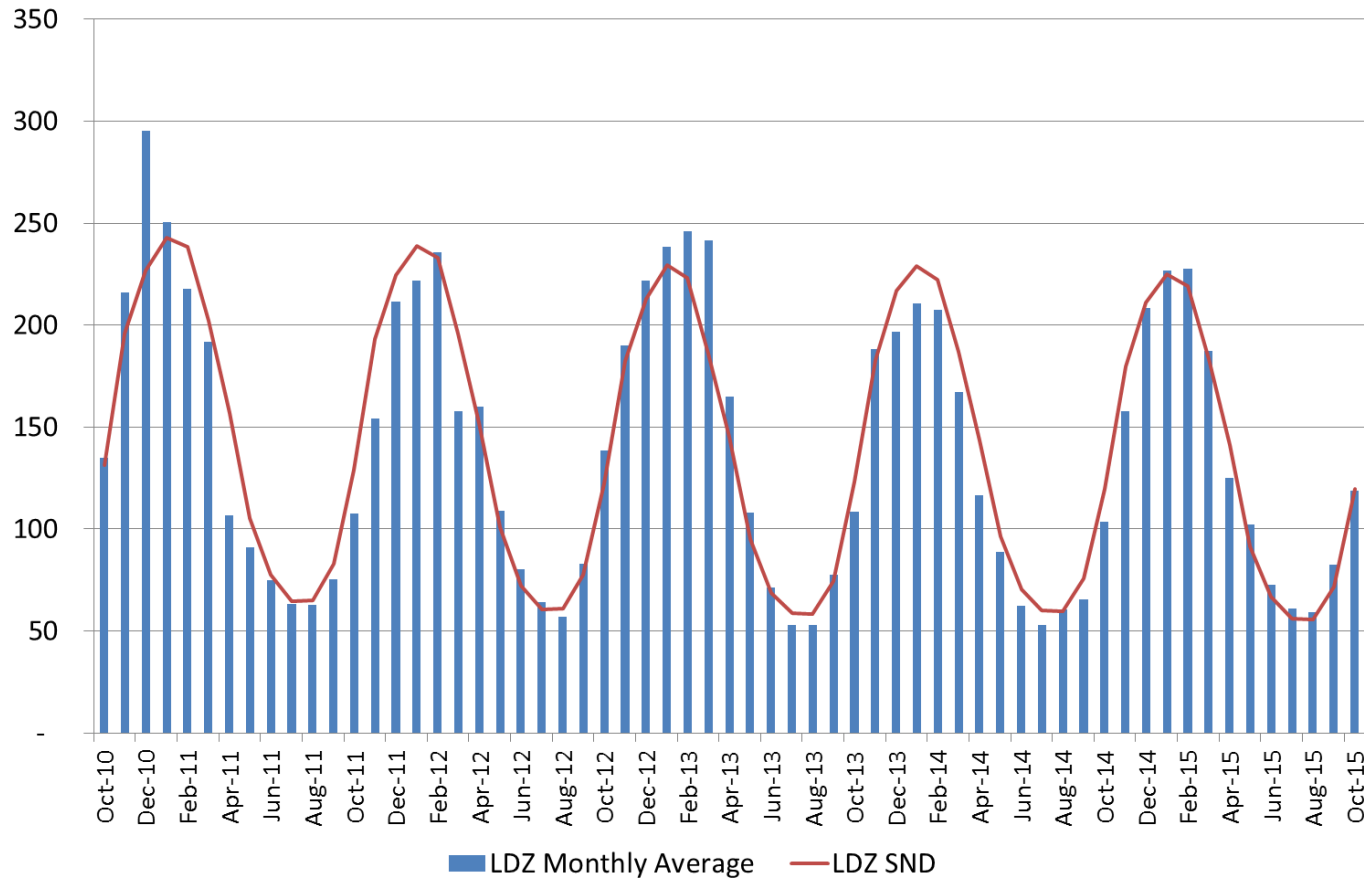


Demand based on average over the past 5 years



## Market Fundamentals

# LDZ / Heating Demand

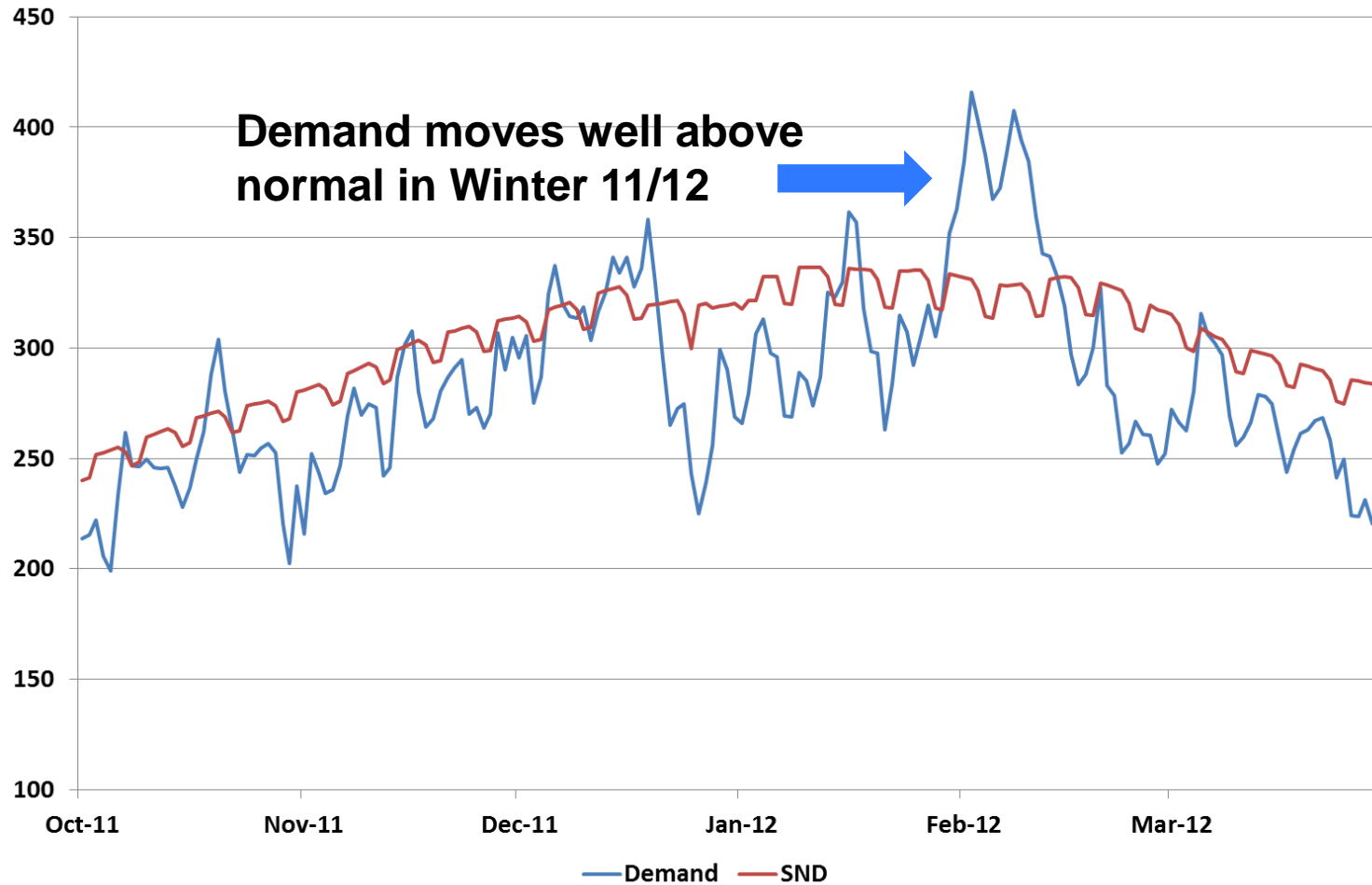


LDZ / Heating demand is the largest component of UK demand and it is the most variable as it depends very much on the weather.



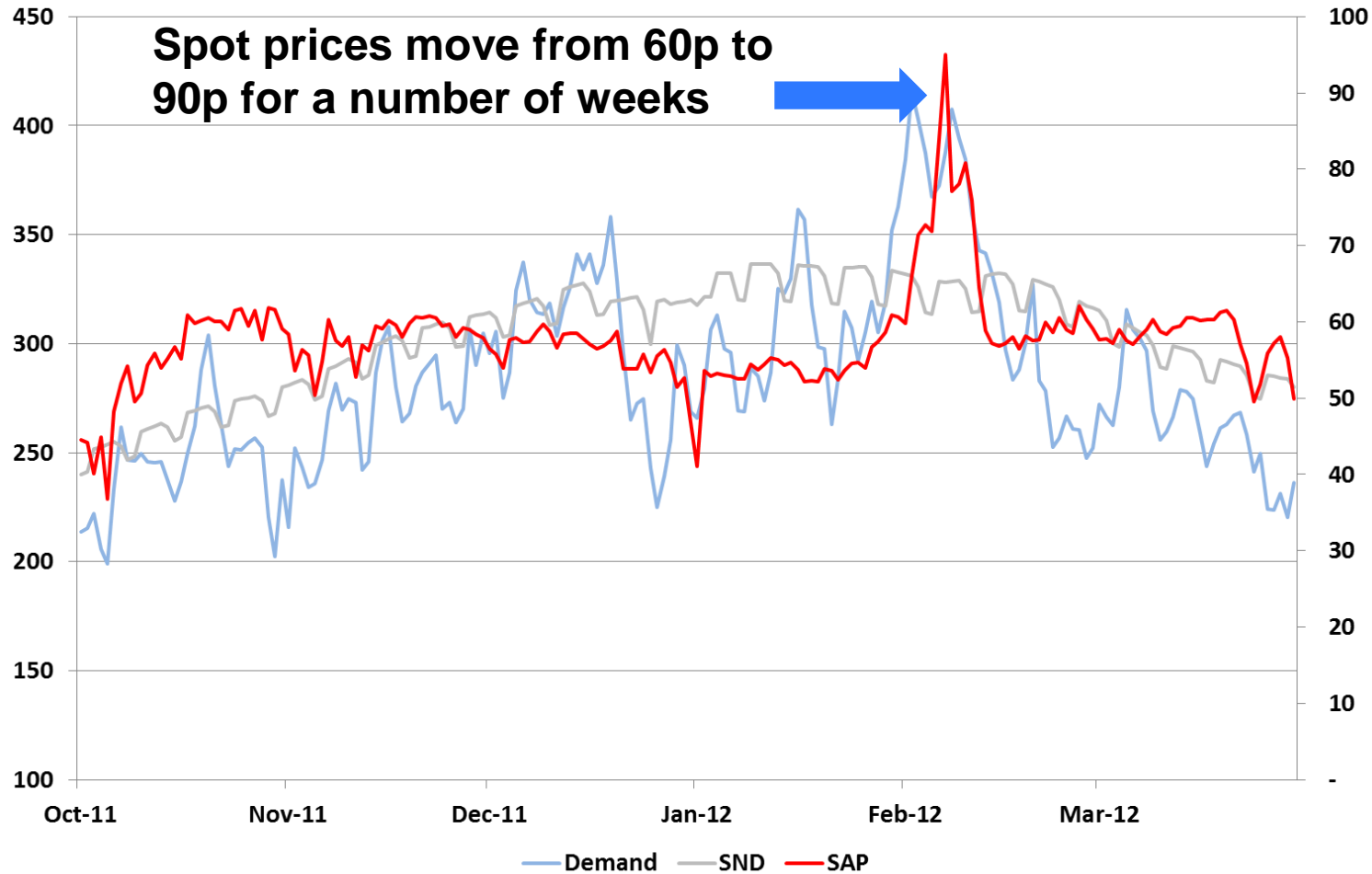
## Market Fundamentals

# Variability – So What!



## Market Fundamentals

# Impact on Prices Winter 2011/12





## Market Fundamentals

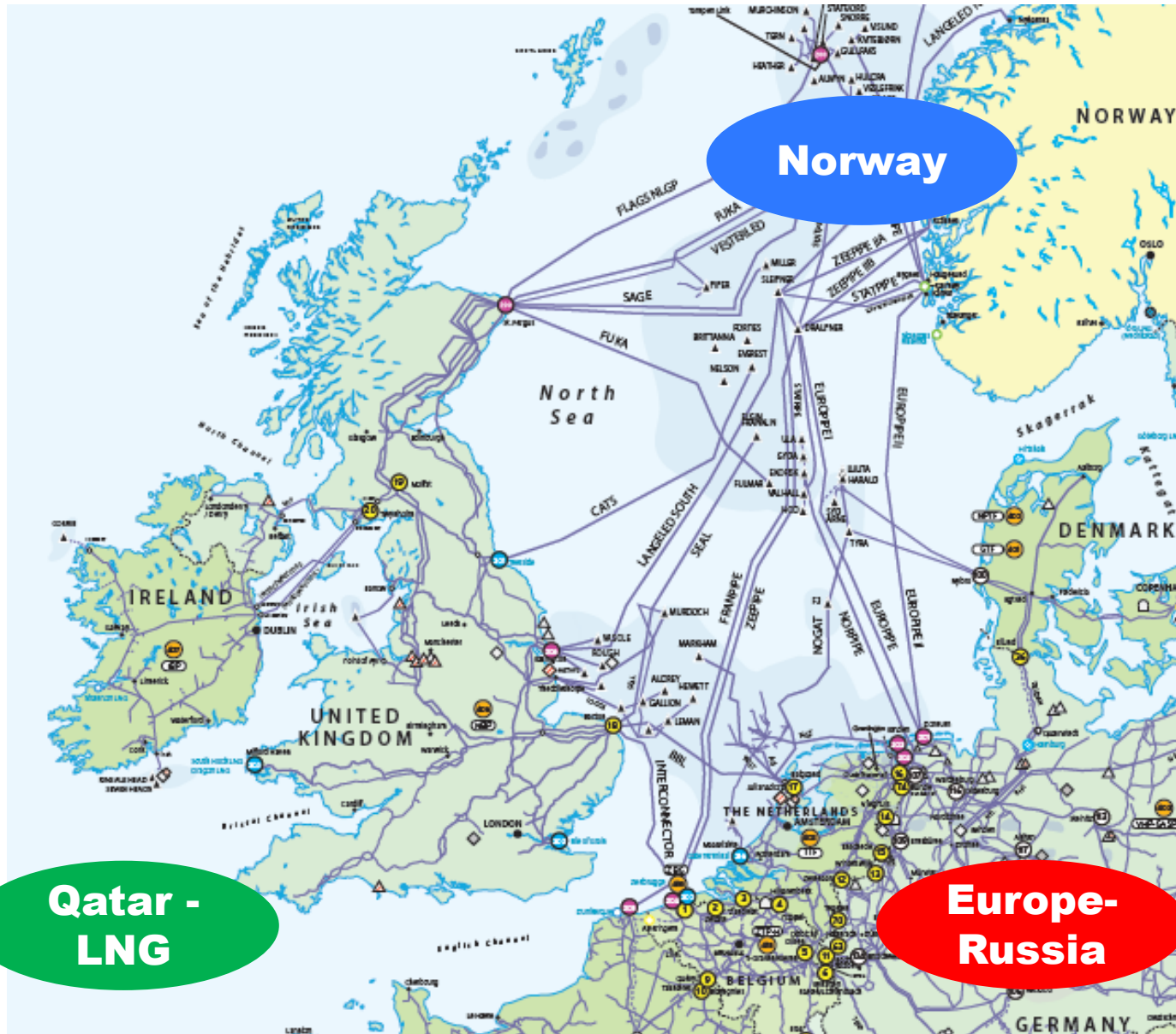
# Powergen (CCGT) Demand

## Gas fired power stations

- Gas fired power stations are the next most important element to the UK demand picture
- The UK relies on CCGT's for up to 50% of its power requirements at some times of the year
- Coal and gas power plants compete with each other to get dispatched so coal prices can affect gas demand and prices directly



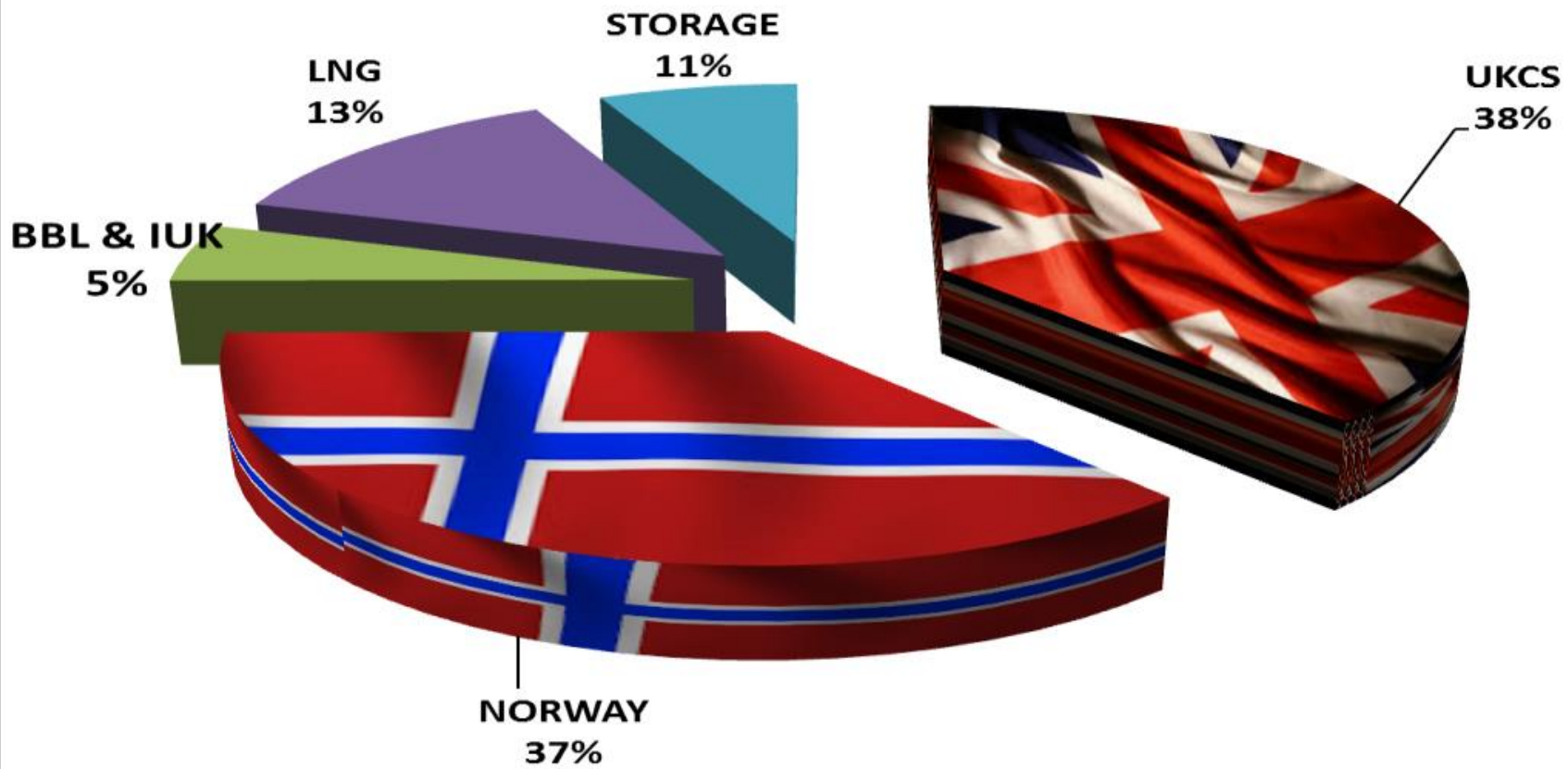
# UK Gas Market Supply Infrastructure



**Qatar - LNG**

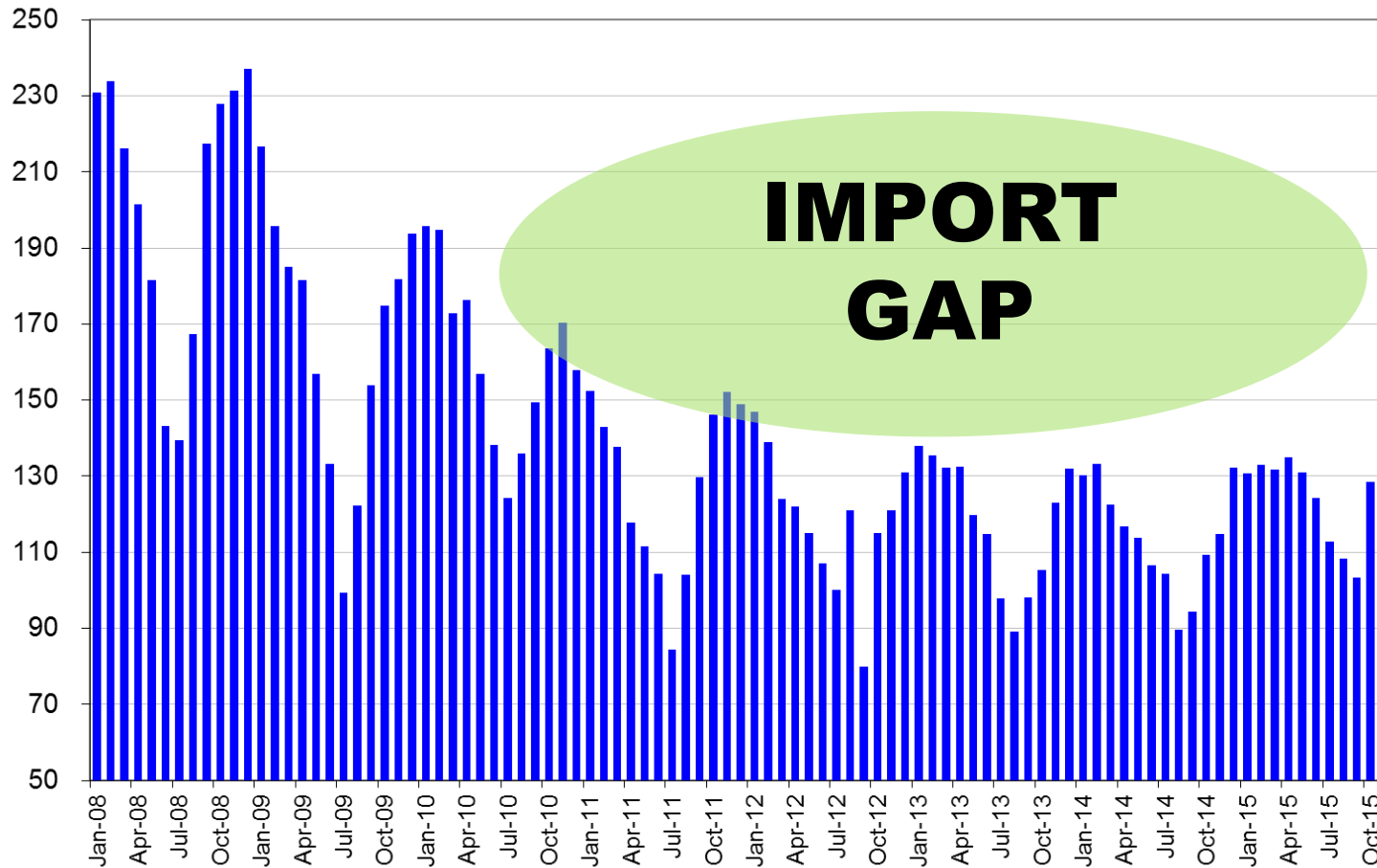
**Europe- Russia**





## Market Fundamentals

# UKCS – Indigenous Supply





## Market Fundamentals

# UK Supply - LNG

**Gas produced in Qatar**



**Super-cooled and  
liquefied for transport**

**Delivered to the UK**



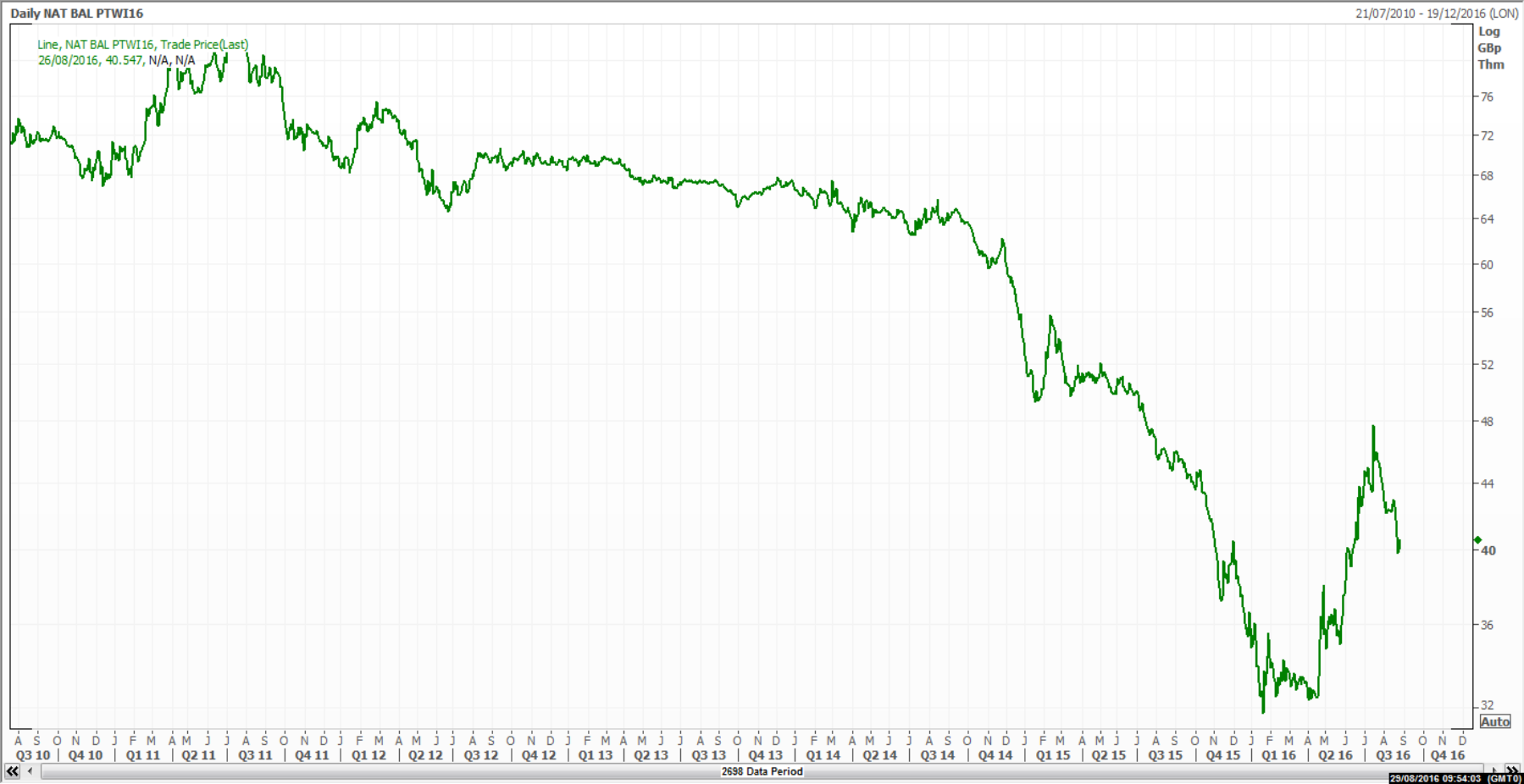
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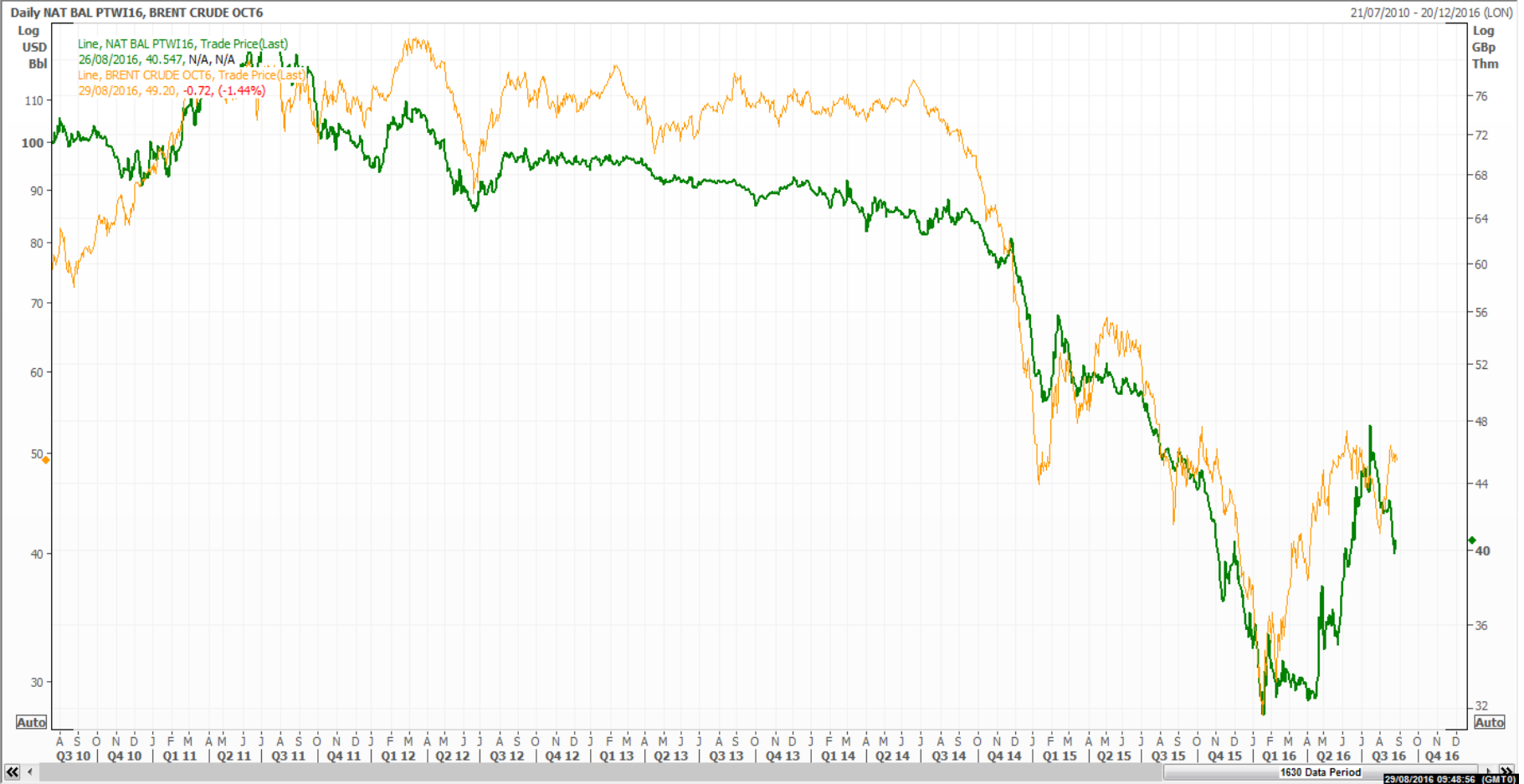
# Gas Prices

# Winter 2016 Contract



## Gas Prices

# Winter 2016 & Oil Overlay

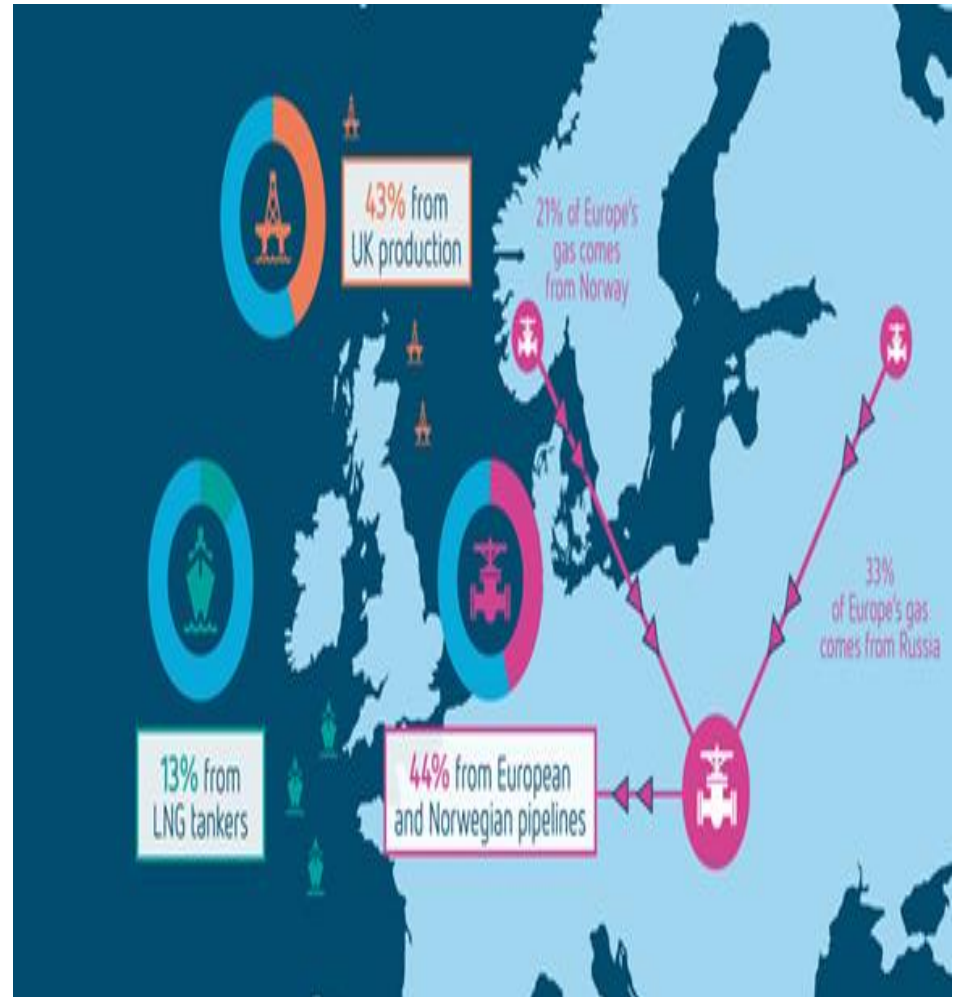




## Gas Prices

# Why do we care about oil?

- ❑ **LNG & some European gas contracts are linked to the price of oil.**
- ❑ **Oil indexed prices in Europe & Asia have dropped as oil prices fell.**
- ❑ **If NBP prices remain above European & Asian prices. Gas flows (LNG cargoes and pipelines) will be attracted to UK by higher prices.**
- ❑ **This increased supply will push NBP prices lower as gas Supply exceeds gas Demand.**



## Key Events

# Recent Events – Rough Storage

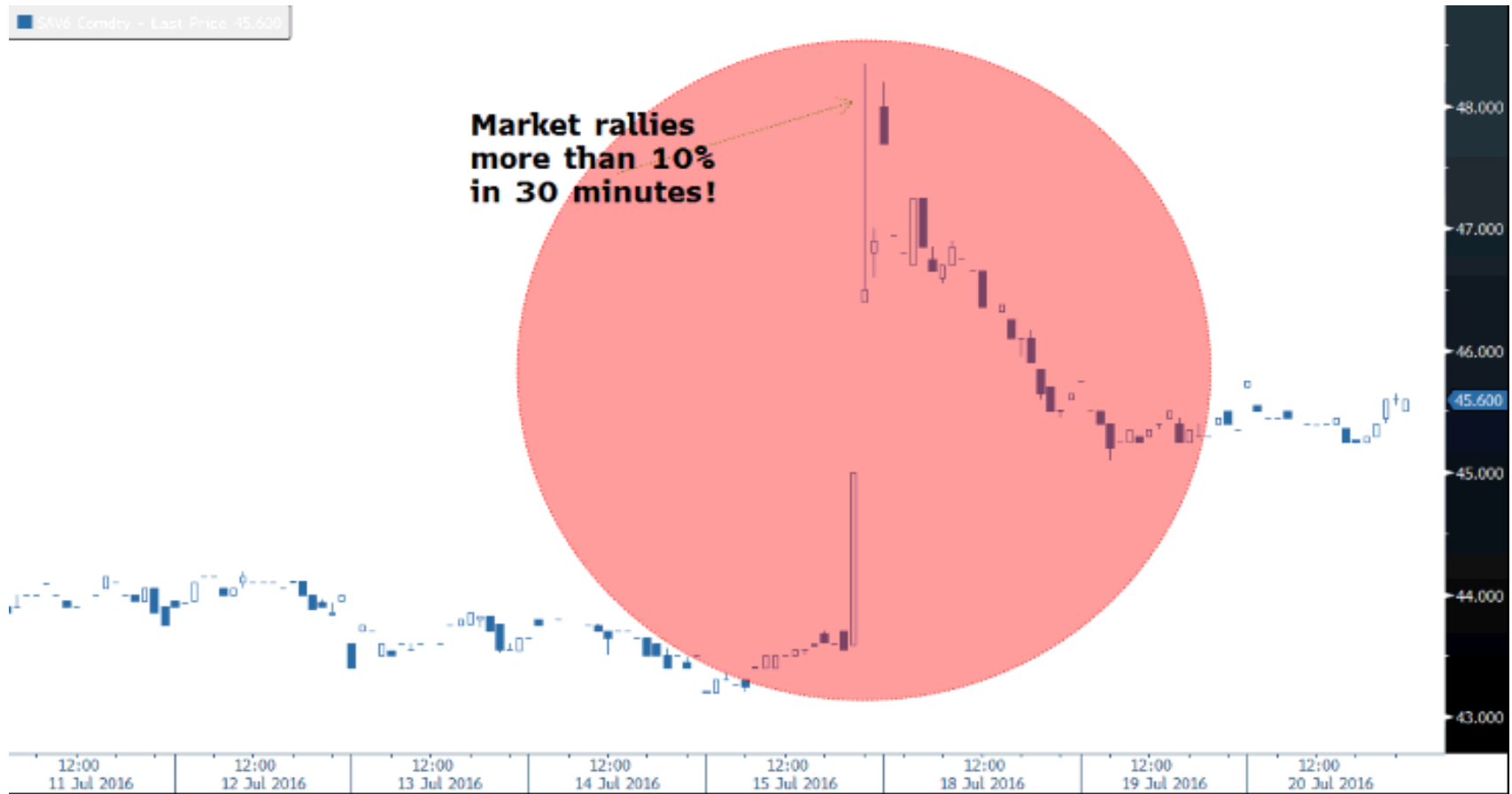
- **July 15<sup>th</sup> Centrica (Bord Gais Energy's parent company) announced problems at Rough storage facility which halted injections & withdrawals until March 2017.**
- **August 22<sup>nd</sup> announced that 20 of the 30 available for withdrawals from November 1**



# Key Events

## So what?

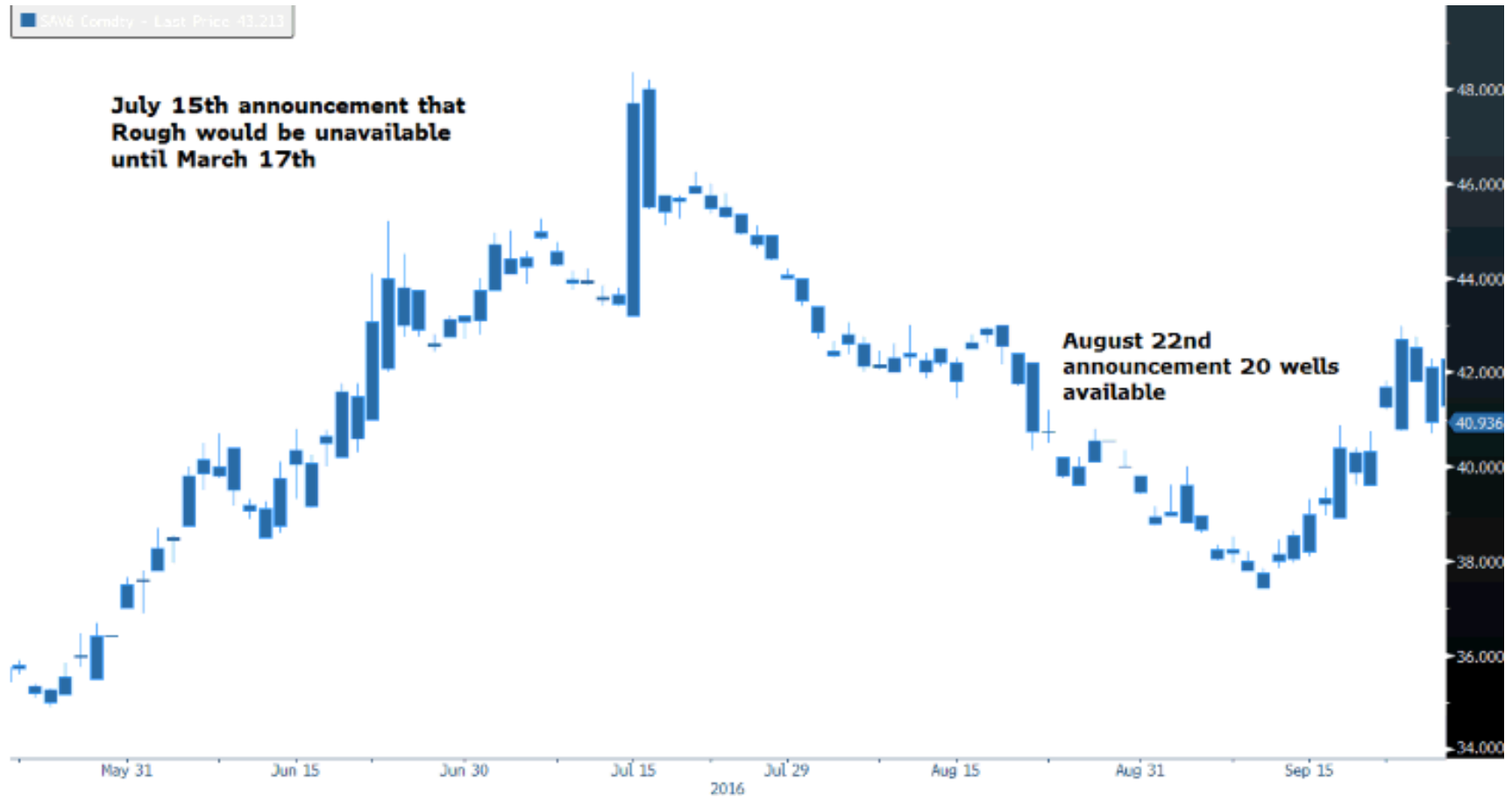
SAW Comdty - Last Price 45.600



## Key Events

# Market doesn't care anymore

■ WME Comdty - Last Price 43.213



**July 15th announcement that Rough would be unavailable until March 17th**

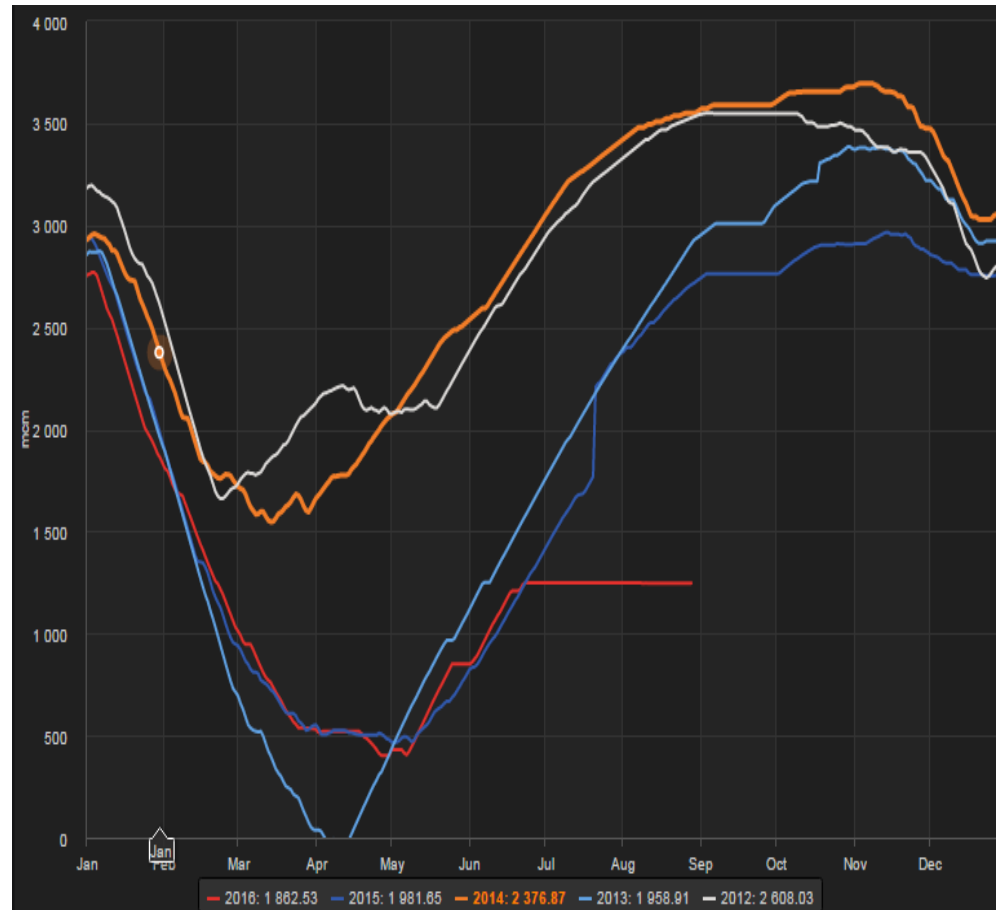
**August 22nd announcement 20 wells available**



## Key Events

# Rough Deliverability

- **Rough Capacity around 3.5bcm. Accounts for over 70% of UK's storage capacity.**
- **Currently 1.3bcm in storage and no ability to inject any more gas into storage.**
- **Deliverability was 45mcm per day in the past.**
- **Deliverability, given current reduced capacity this winter, will be 35mcm per day.**
- **And this can be delivered for half as many days!**



## Key Events

# Impact of Brexit - inflationary

- **Following Brexit:  
GBP is ~ 17% lower vs  
EUR**
- **UK needs to attract  
imports to balance its  
system**
- **NBP prices (GBP)  
increase to compensate  
international suppliers for  
lower sterling**
- **Offset for Eur based  
buyers**



## Key Events

# Winter 17 up 8% since Brexit



## Key Events

# BUT! Price are flat in euro terms

■ MW7 Comdty (EUR) - Last Price: 0.54001





## Key Events

# Leftfield – French Nuclear, who knew?!



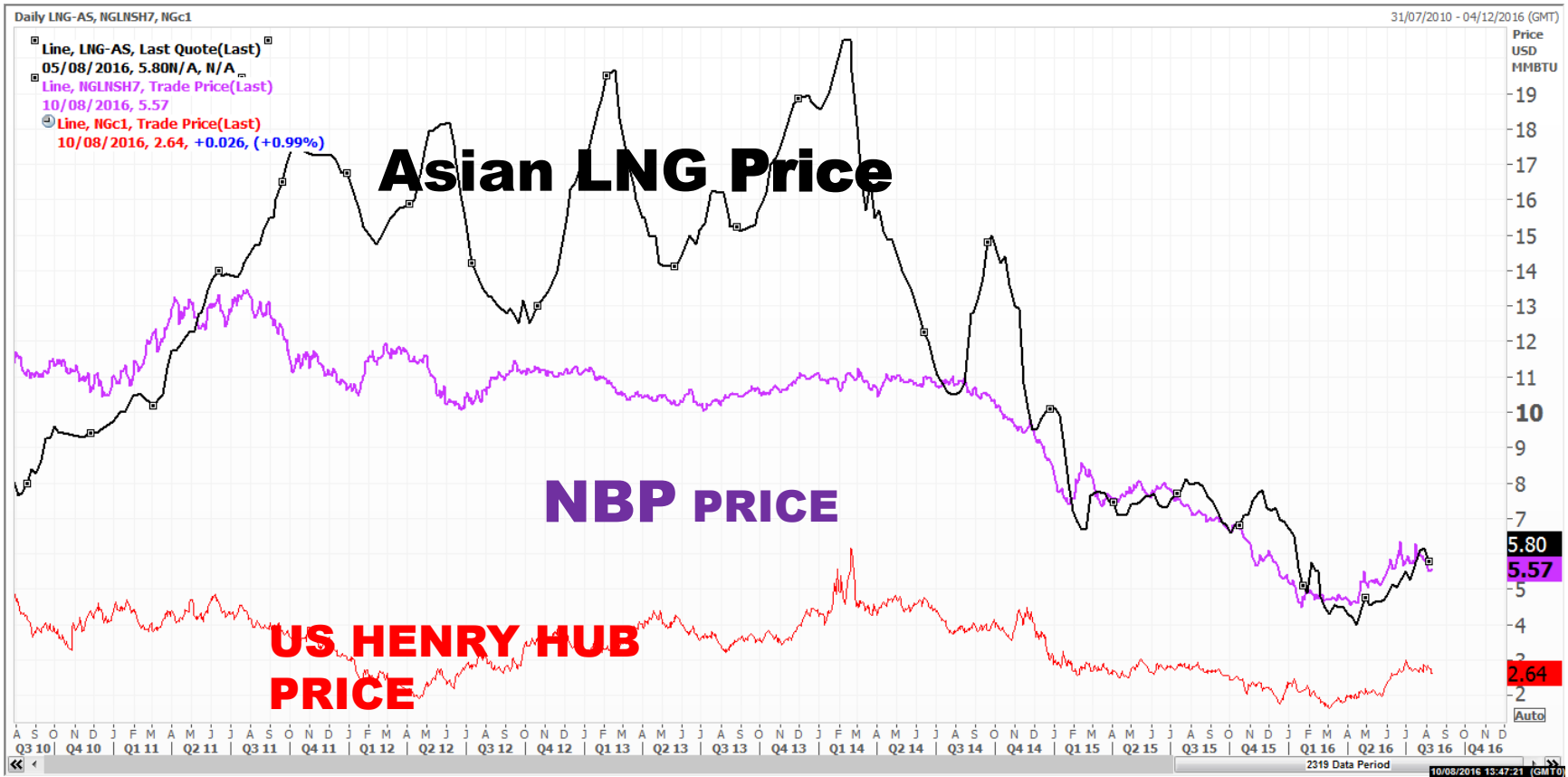
## Key Events

# Has been influencing UK gas prices of late, Why?



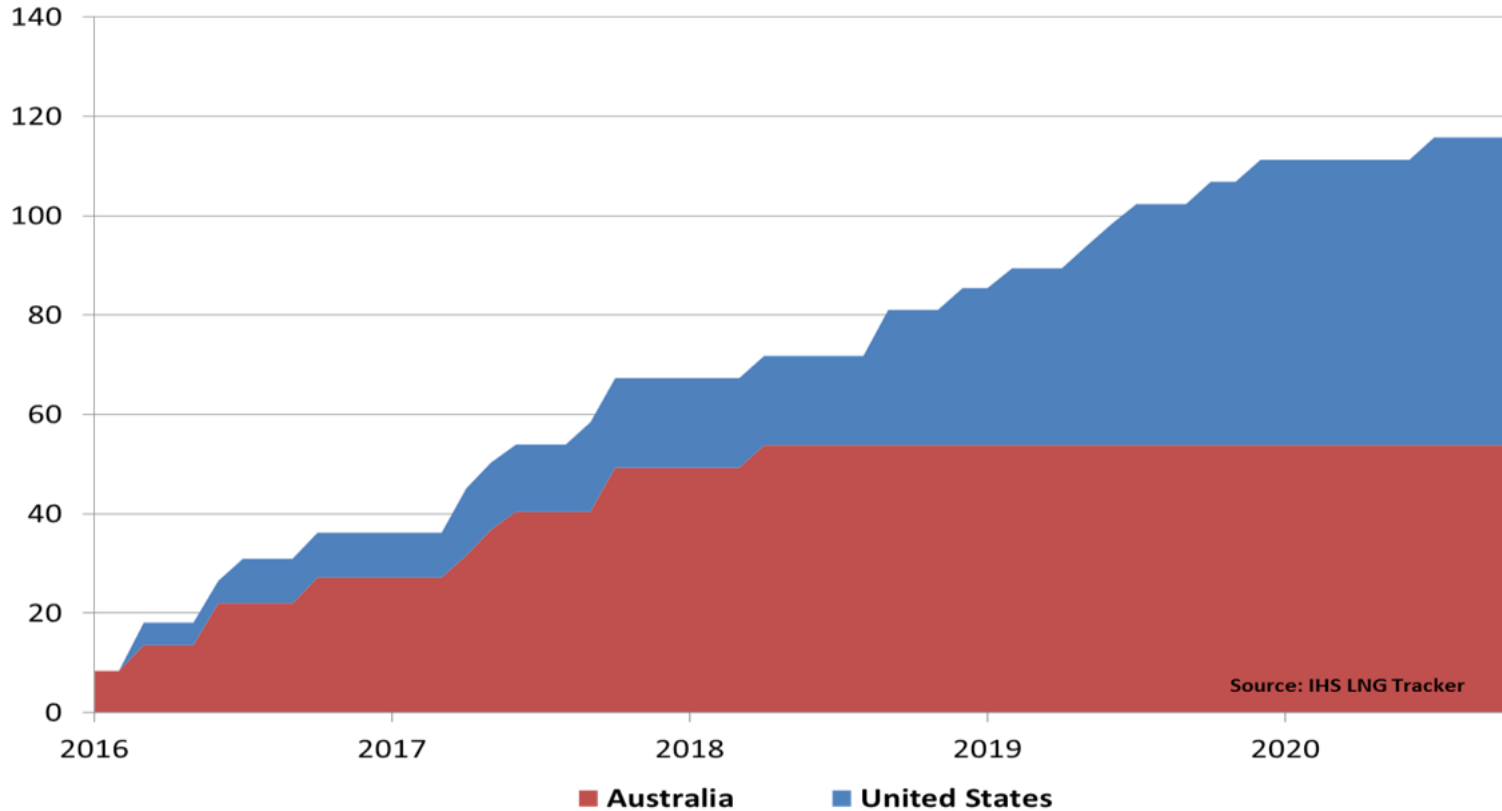
## Key Events

# LNG – Will lead to price convergence



## Key Events

# LNG – You reap what you sow!



## Key Events

# The New Cold (Gas) War



## Key Events

# How will this impact the Gas Market?

- ❑ **Where will LNG flow?**
  - We expect excess LNG to arrive in Europe
  - Europe has substantial spare LNG Capacity
  - Weak Asian demand - Japan nuclear restart
    - Asian Slowdown
  
- ❑ **How will Russia and other existing suppliers react?**
  - Russia will likely defend its pipeline market in Europe from US LNG
  - Current Largest LNG supplier Qatar will also defend its market share
  
- ❑ **Expect incumbents to defend market share**
  - Russia has significant spare capacity
  - Russia has cost advantage on the US
  
- ❑ **May well be in long term interest to keep prices low.**



## Key Events

# Gas Market Outlook - Summary

### ❑ **LNG is coming**

- US LNG
- Australian LNG

### ❑ **Incumbents response key**

- Norwegian & Russian flows

### ❑ **UK market vulnerable to Demand/Supply shocks**

- Rough unavailability increases risks

### ❑ **Weather as always the key unknown**

- Three benign years, 2015 again warmest on record.

### ❑ **Watch Oil Prices!**



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# **Oil Market Trends & Outlook**

## **□ What drove prices lower?**

- Are these drivers still in place?

## **□ What's going on with OPEC?**

- Will they be able to solidify their agreement to cut production

## **□ Oil Markets**

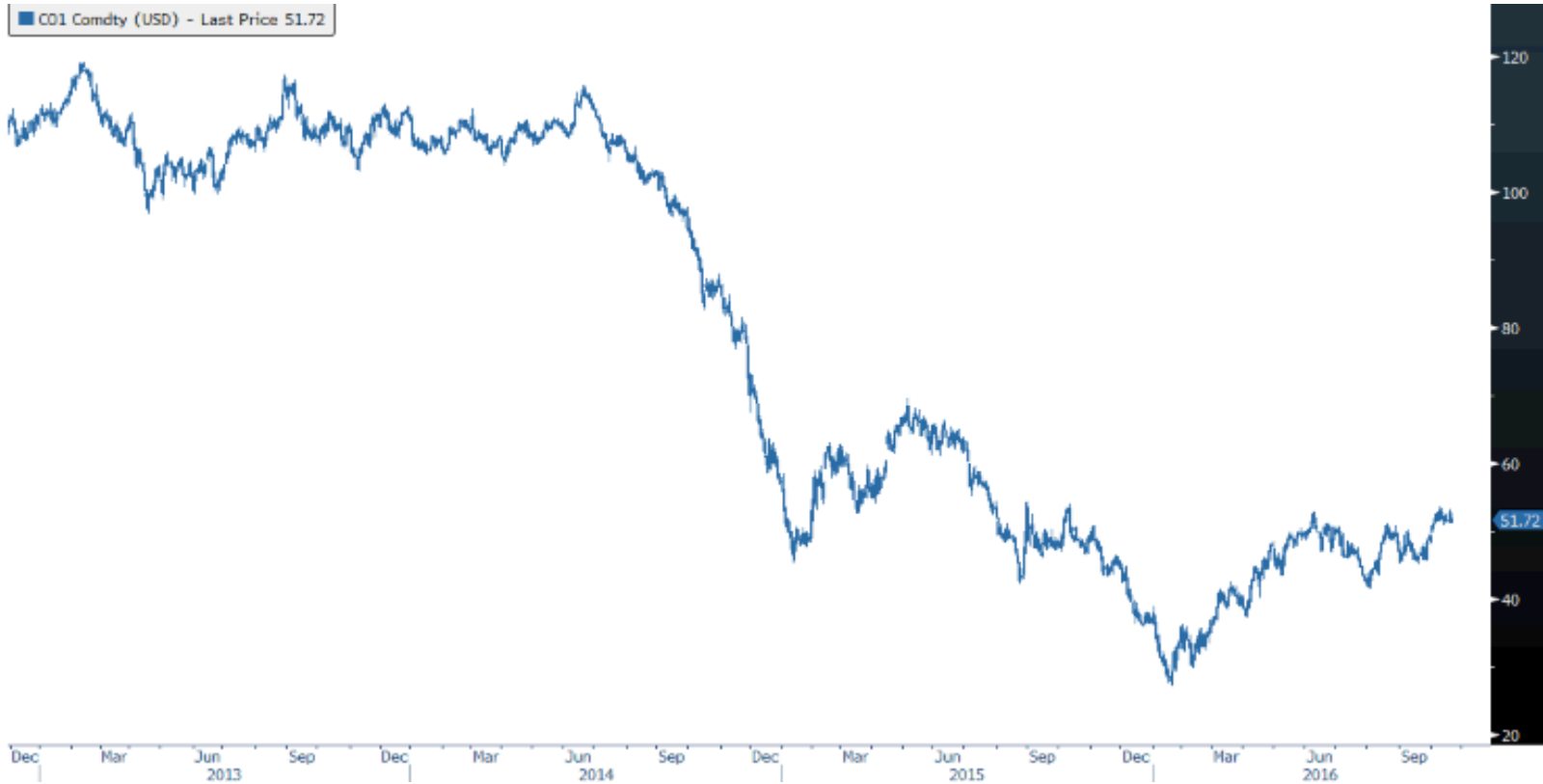
- Importance of Asia
- US Inventories
- Production Freeze

## **□ Outlook For Oil over next year**



## Oil Market

# Oil collapse and recovery



**Oil Market**

# **Sheiks Vs. Shale**

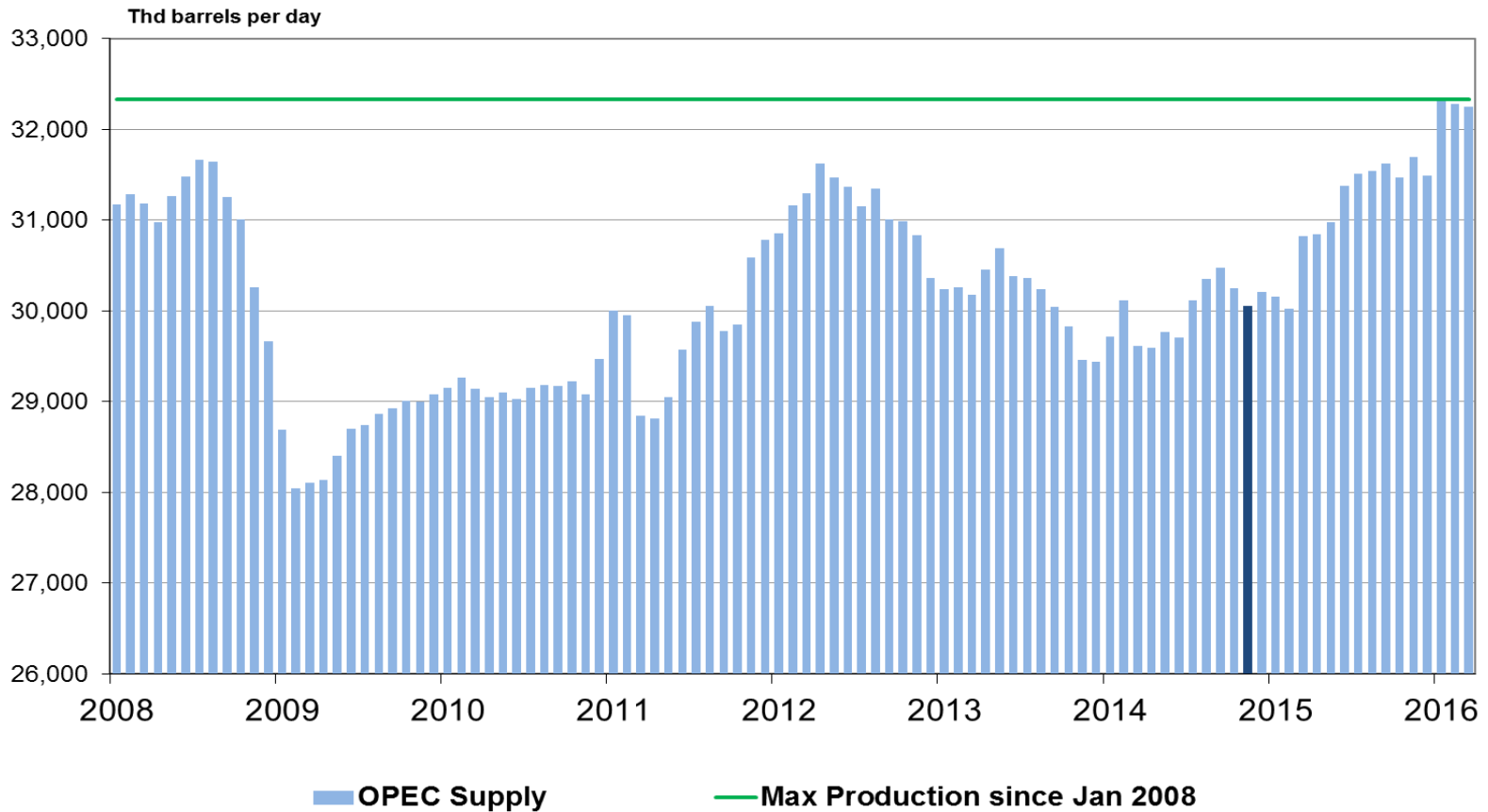


Saudi Arabia increased production to try to squeeze US Shale and any high cost producers out of the market



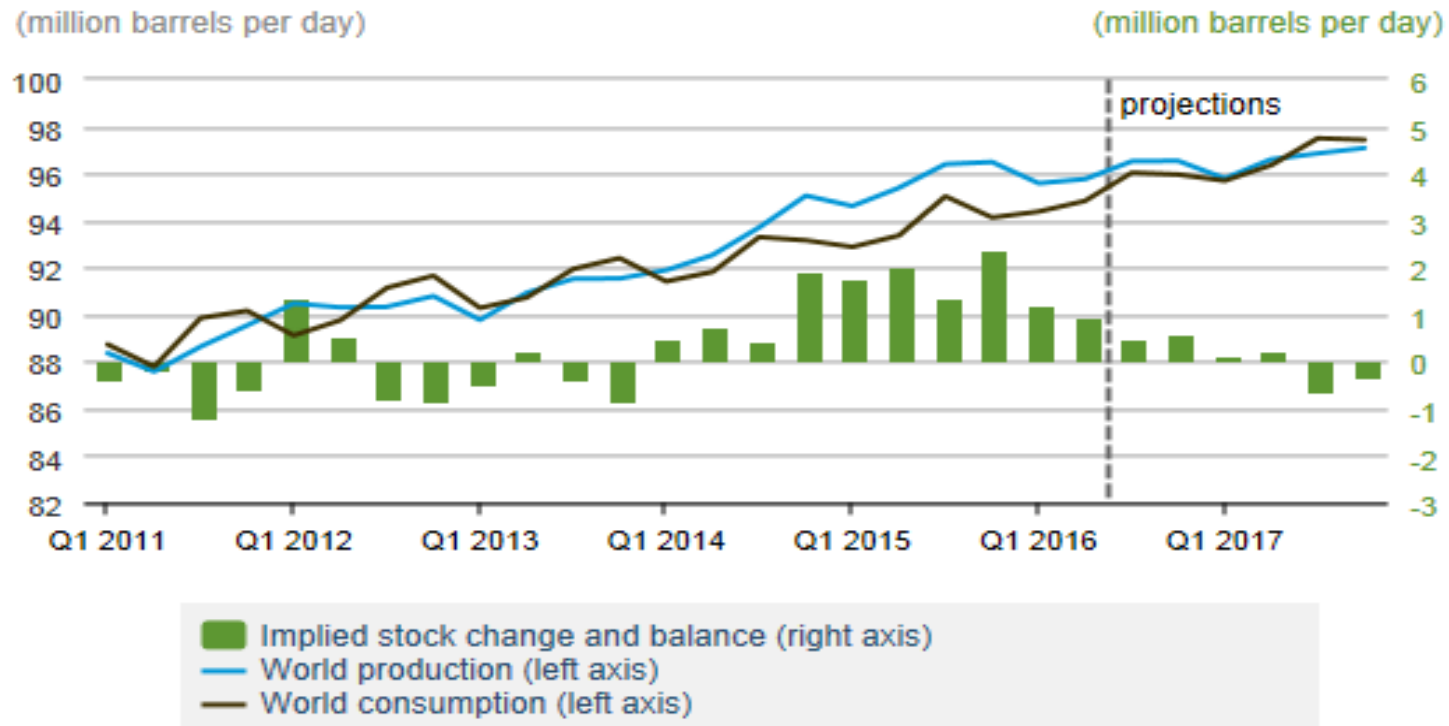
## Oil Market

# OPEC has pumped flat out since 2014



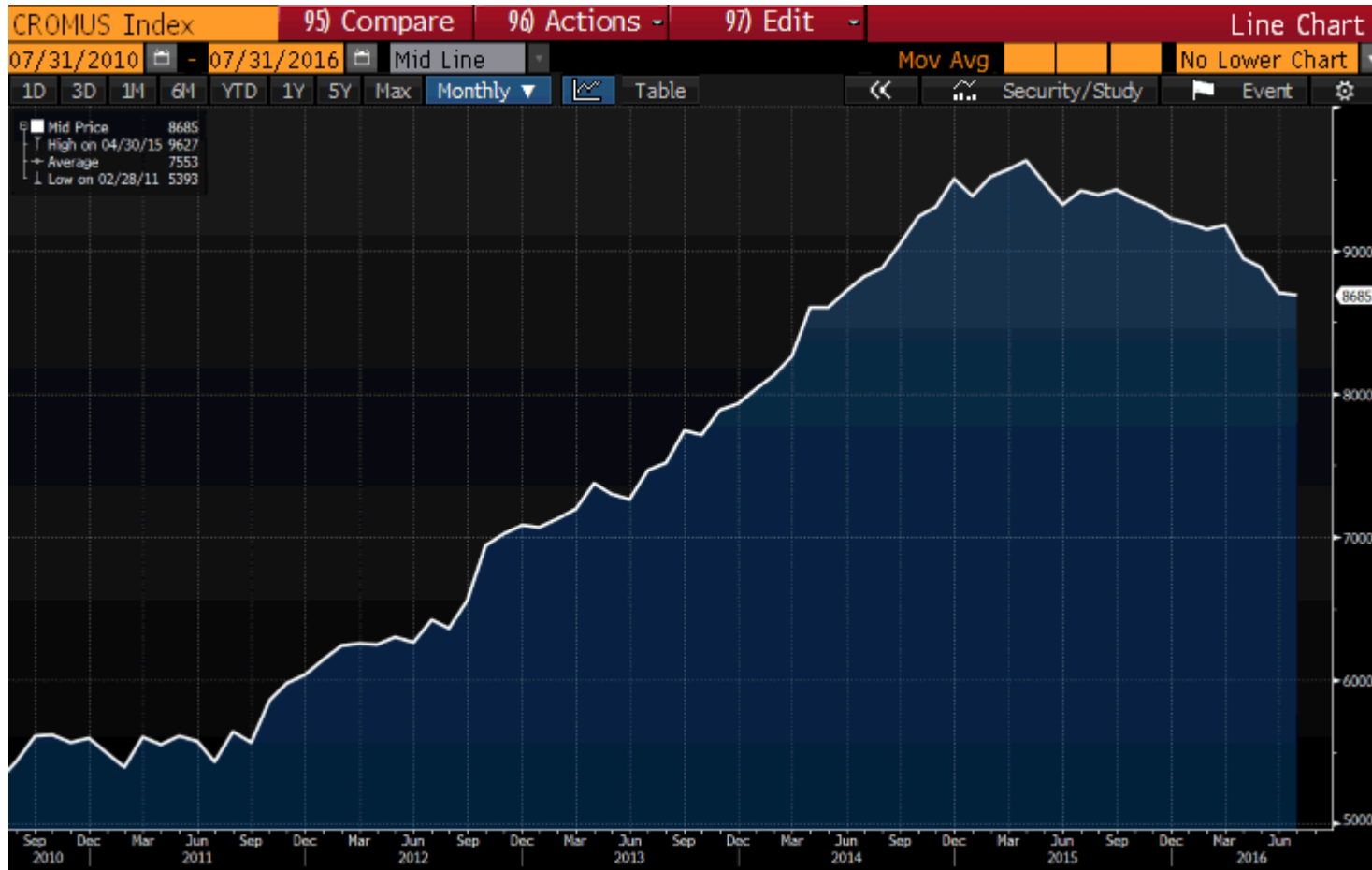
## Oil Market

# Supply > Demand = Lower Prices



## Oil Market

# Saudi Strategy has not worked



**Oil Market**

**But on Sep 28<sup>th</sup> OPEC(Saudi) threw in the towel and cut production**



# **The devil is in the detail**

- **Plan to cut production to 32.5-33m bpd, OPEC pumped a record 33.8m bpd in Sep**
- **What about Iran?**
- **Saudi public finances have been battered...IPO of Aramco, public sector paycuts**
- **Who is going to cut and by how much?**
- **Next meeting in Vienna at the end of Nov is crucial**





**Oil Market**

# **From Russia with love?**



**Oil Market**

**And the winner is!**



**DRILL**

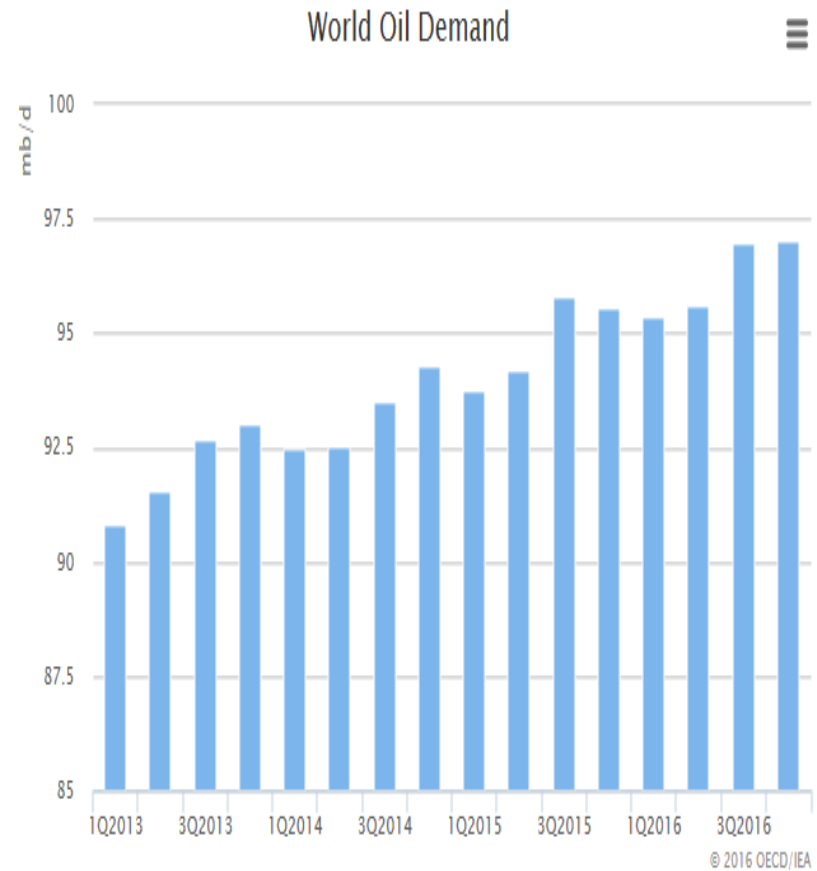
**BABY**

**DRILL**



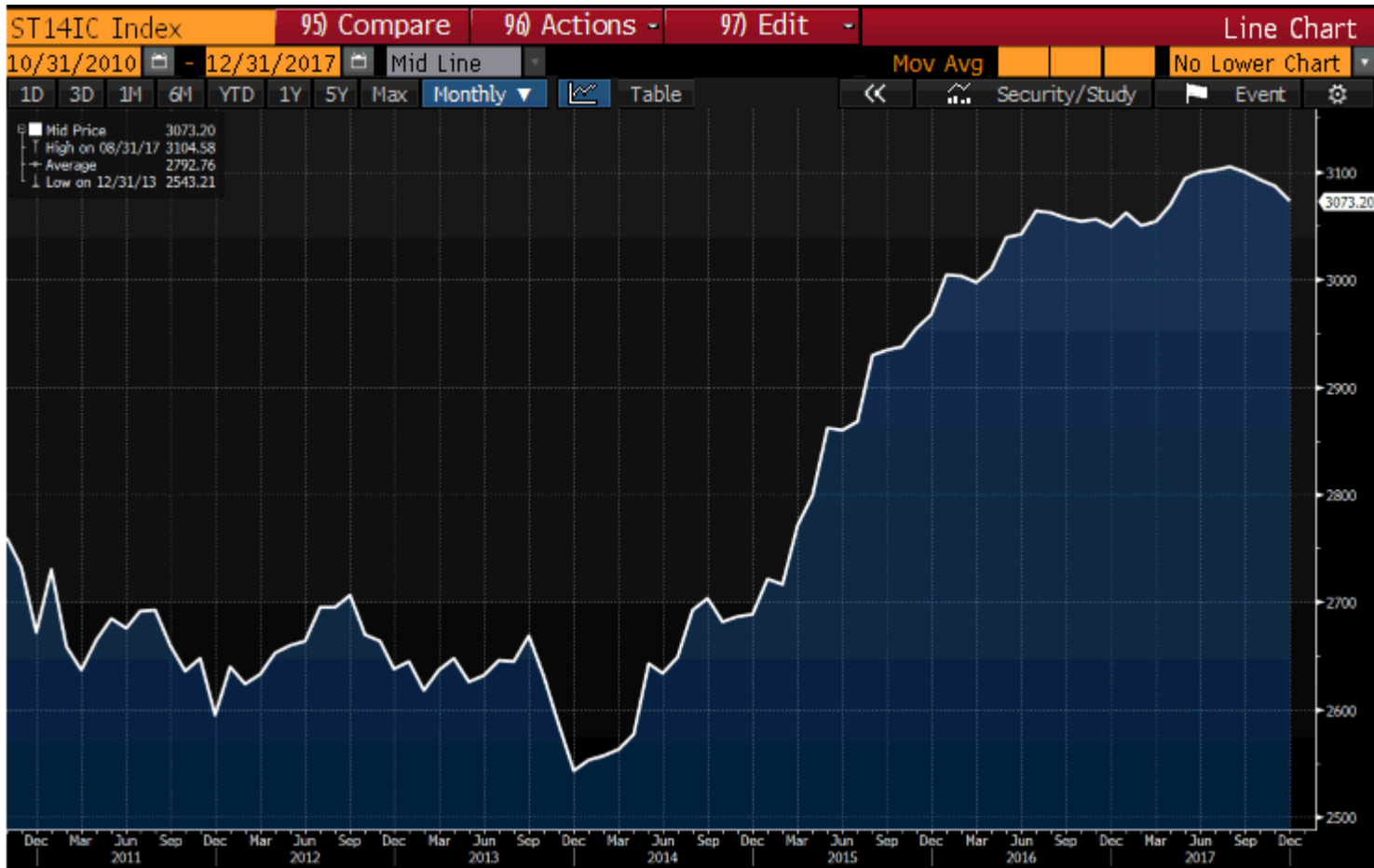
## Oil Market

# What about demand? Increasing



## Oil Market

# Inventories – Large overhang – nearly 3 billion barrels



## Oil Market

# Cure for low prices is low prices!

- ❑ Lower prices impact Investment.
  - Unprecedented Cuts to Investment (\$1 trillion plus)
  
- ❑ Global Demand continues to Grow
  
- ❑ Current low prices set the scene for Lower supplies in the Future
  - Projects with long lead times, continue to produce...for now!
    - Canadian oil sands
    - Deep-water
    - Artic exploration



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## Prices

# Near Term Oil Market Outlook

- ❑ Its all about OPEC
- ❑ Global Demand Growth will continue
- ❑ Inventory Overhang
  - Inventory levels at historic Highs but will be worked through
- ❑ **Risk of the Fragile Five**
  - **Libya Iraq Nigeria Venezuela Algeria**
- ❑ *Don't see \$100 oil anytime soon but there is room to the upside*
  - We see oil between \$45/\$65 for next 12 months



## Prices

# Near Term Gas Market Update

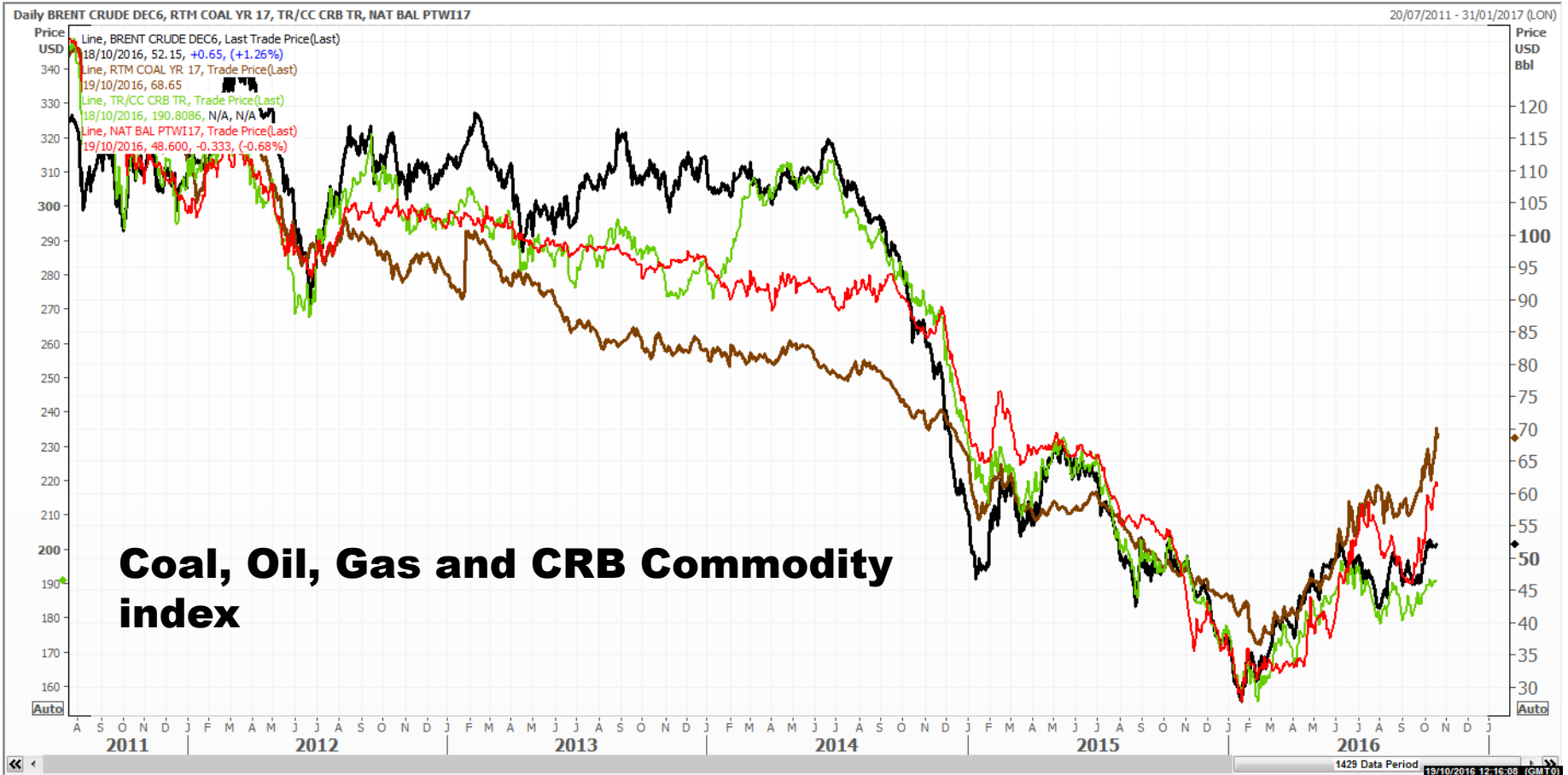
- ❑ **Expect Oil to Remain in \$45-\$65 range**
  - **Should Help anchor gas prices**
  
- ❑ **Well Supplied Market**
  - **Increased LNG Flows**
  - **Increased Norwegian & Russian flows**
  - **Fundamentals suggest gas prices will remain low**
  
- ❑ **Expect the Unexpected (French nukes!)**
  
- ❑ **UK Market Vulnerable to Demand/Supply shocks**
  - **Weather as always the key unknown**
  - **Rough Storage issues increase risks of price spikes**





## Prices

# Finally - Always keep an eye on wider market – upward pressure



## Prices

**Thank you and to keep an eye  
on monthly price trends please  
see the Bord Gais Energy Index  
at**

**[www.bordgais.ie/energyindex](http://www.bordgais.ie/energyindex)**



# Wholesale Power Prices

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**October 27th 2016**

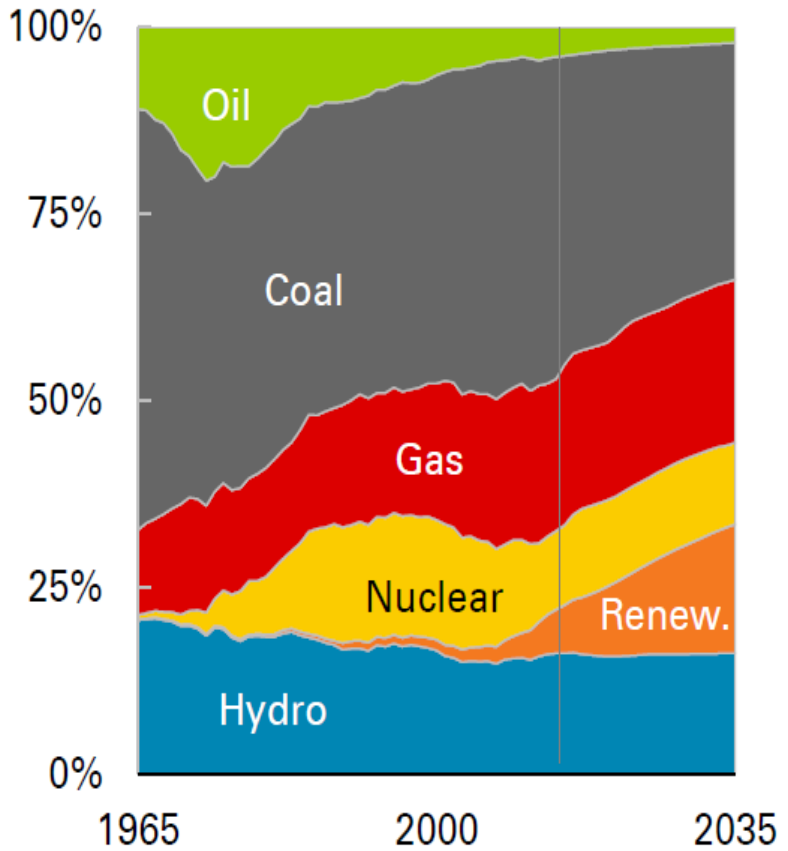
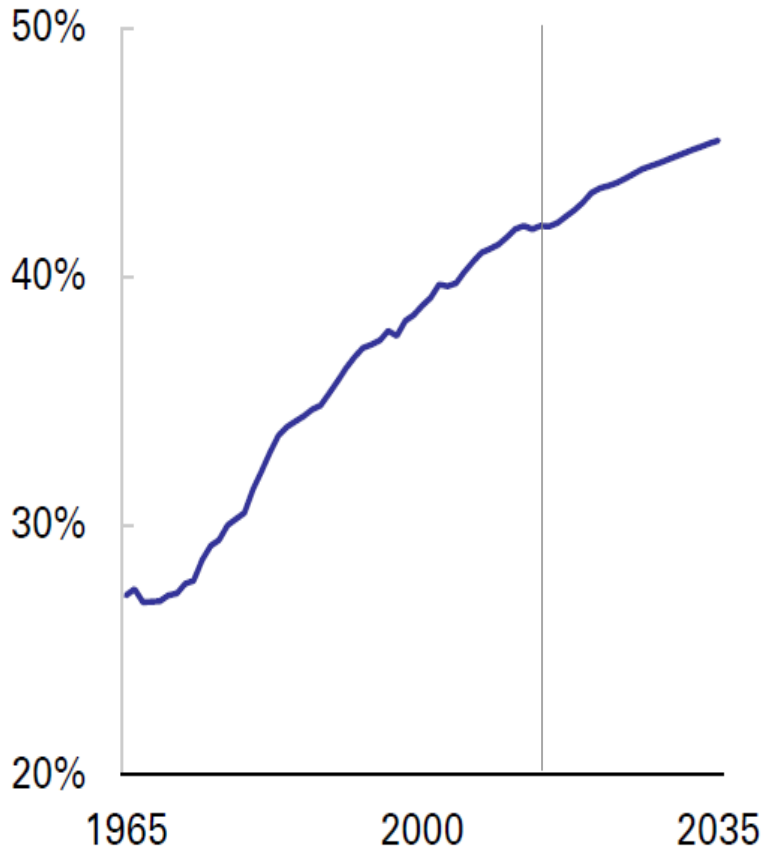


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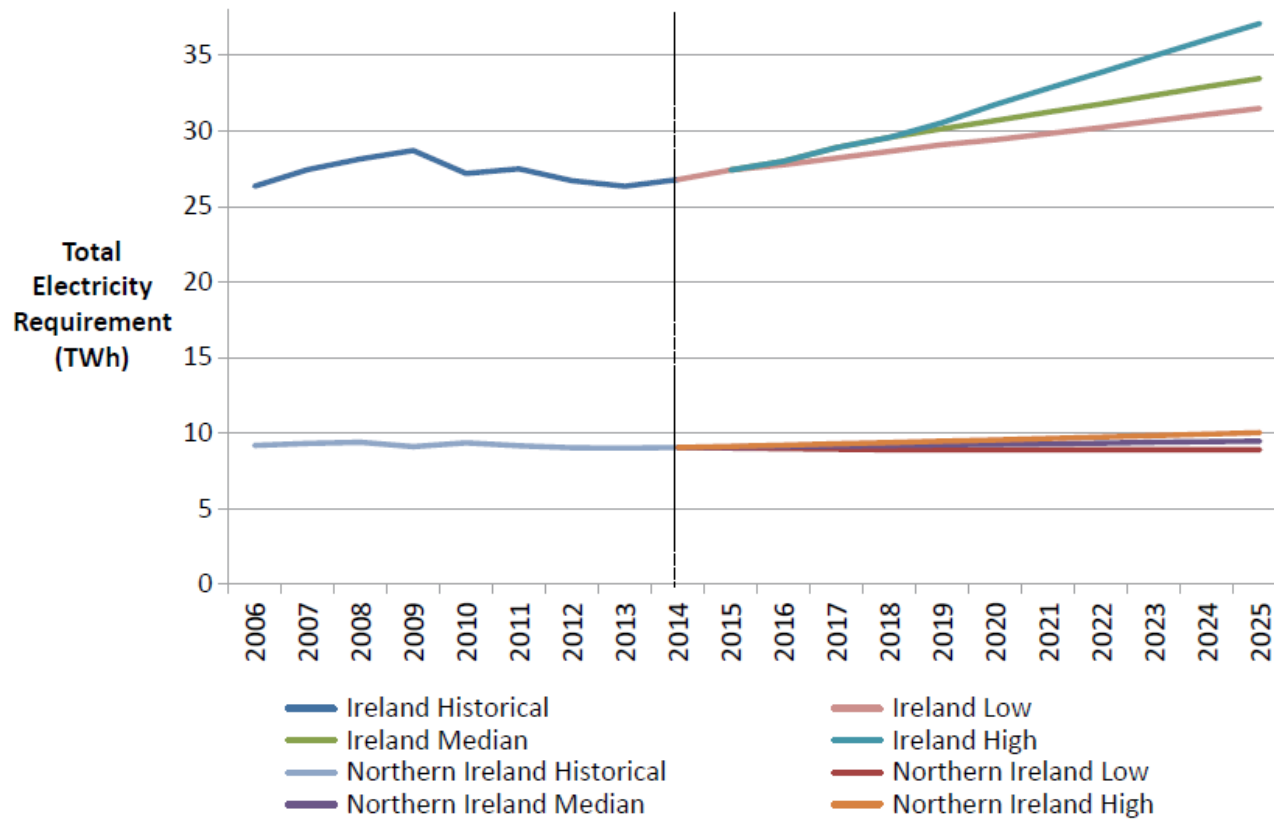
- **Wholesale power prices**
- **GB –SEM Arbitrage**
- **Fuel mix in SEM**
- **Power quote components**
- **ISEM**



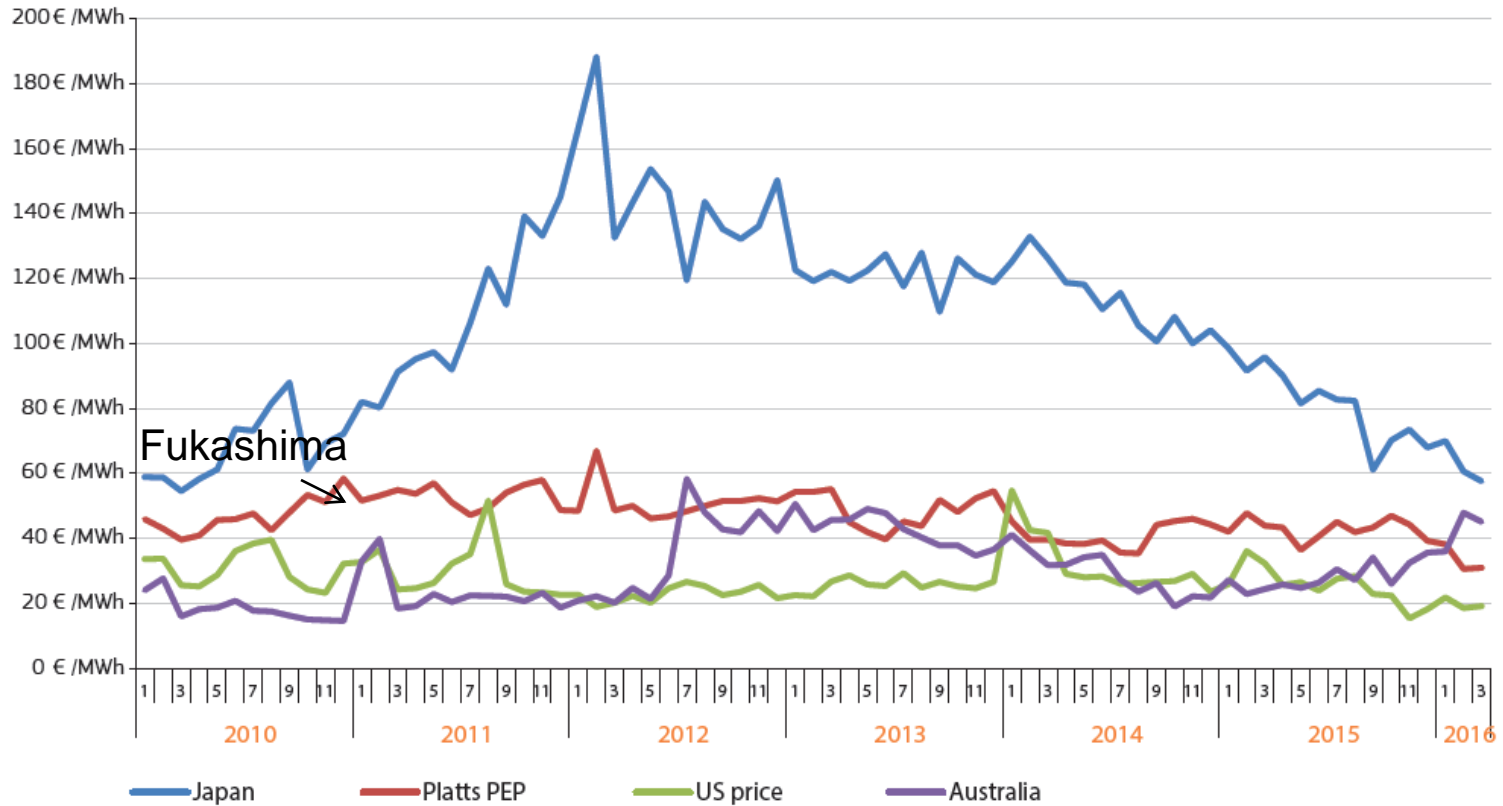
# Increased amount of energy used in Power Gen Worldwide



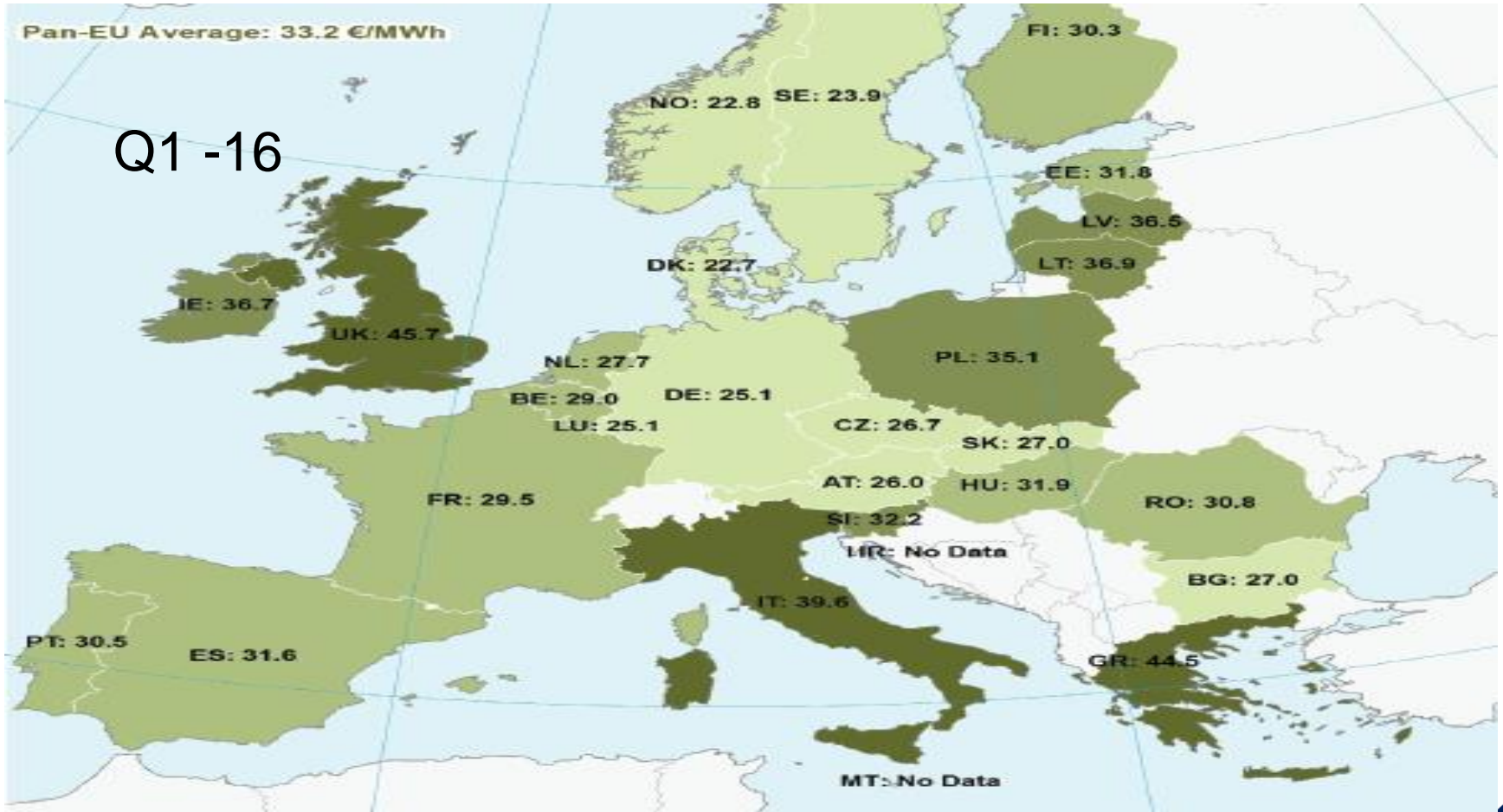
# Demand Forecast ROI & NI



# Europe's Competitive Position Power



# Wholesale Electricity Prices

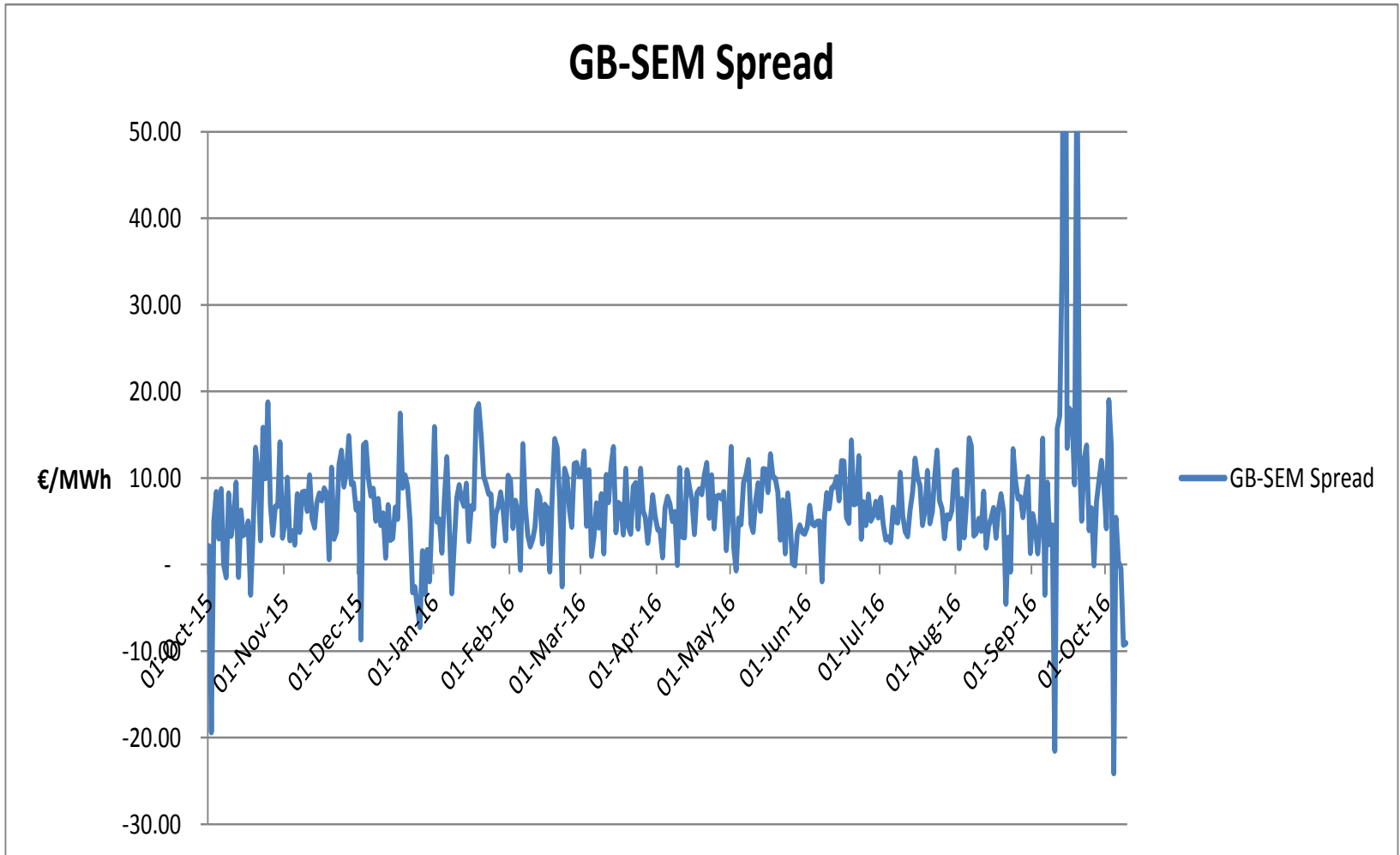




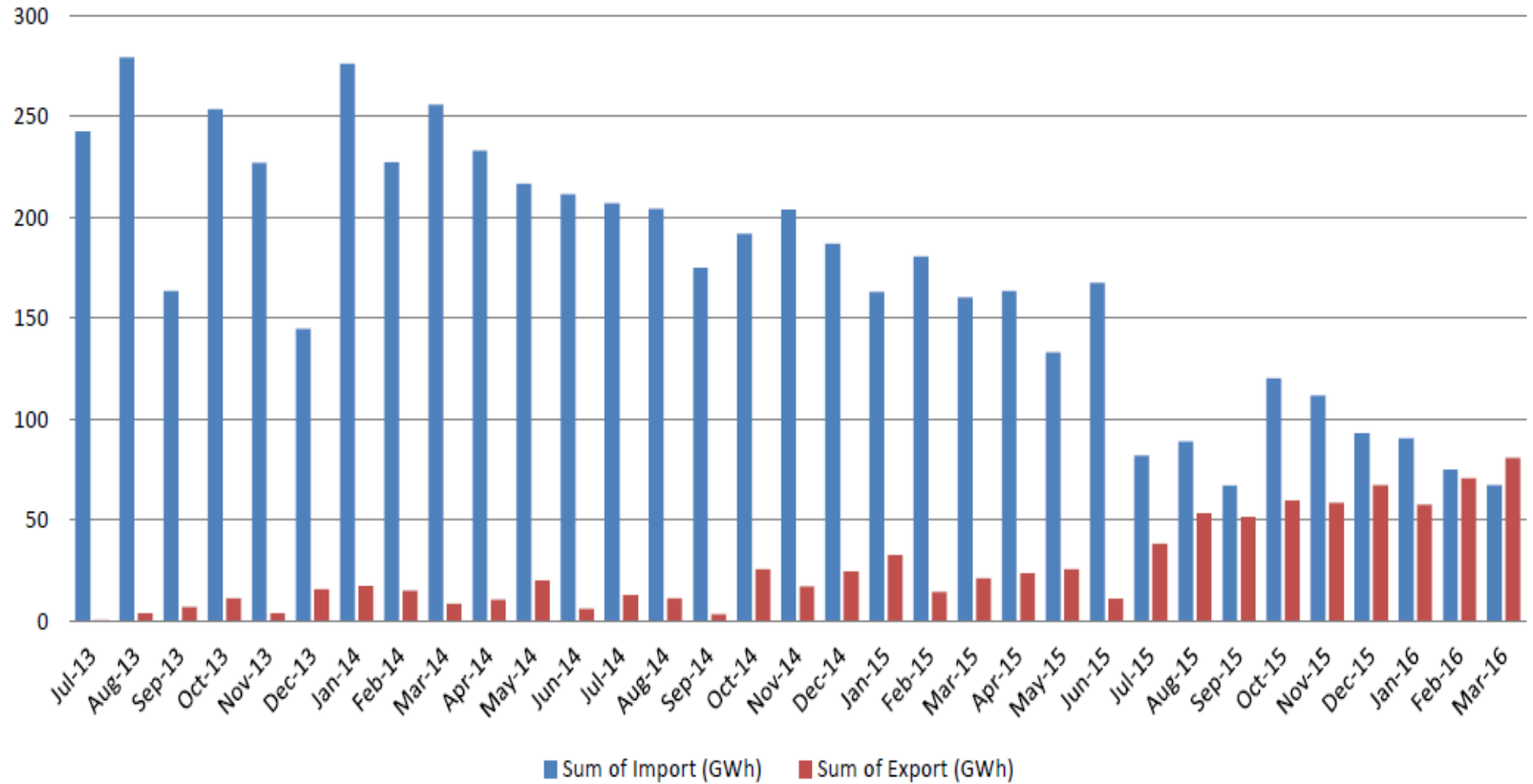
# GB & Ireland(SEM) wholesale power prices



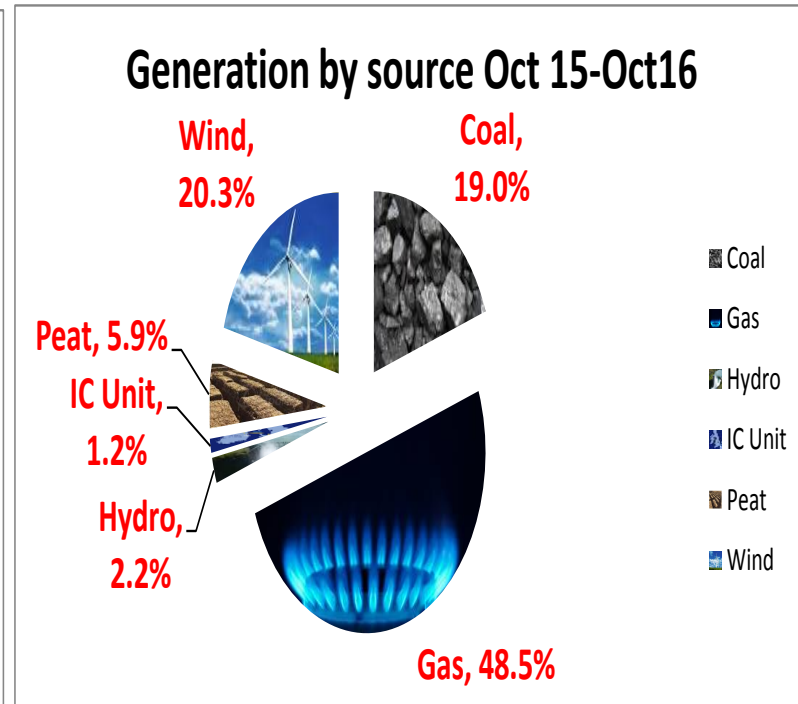
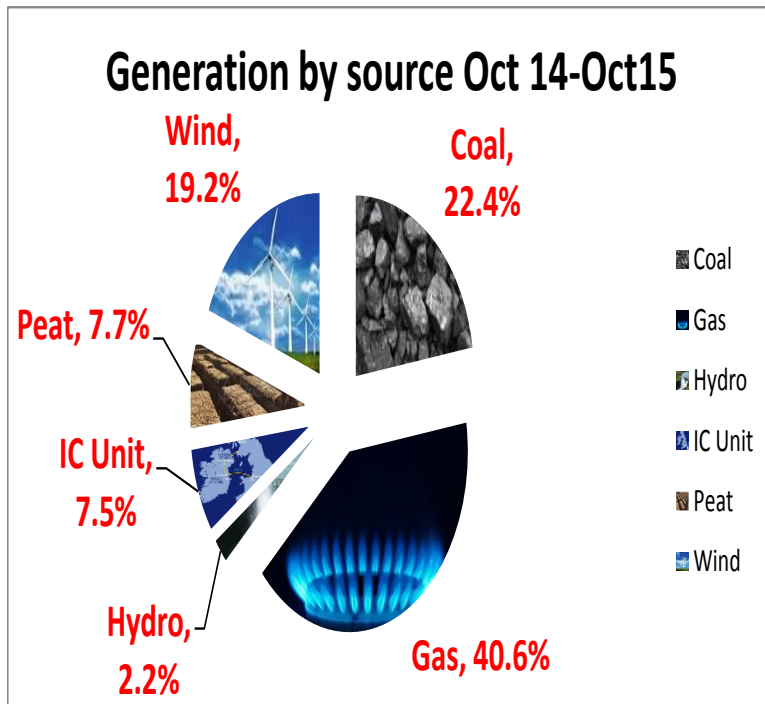
# GB-SEM Spread



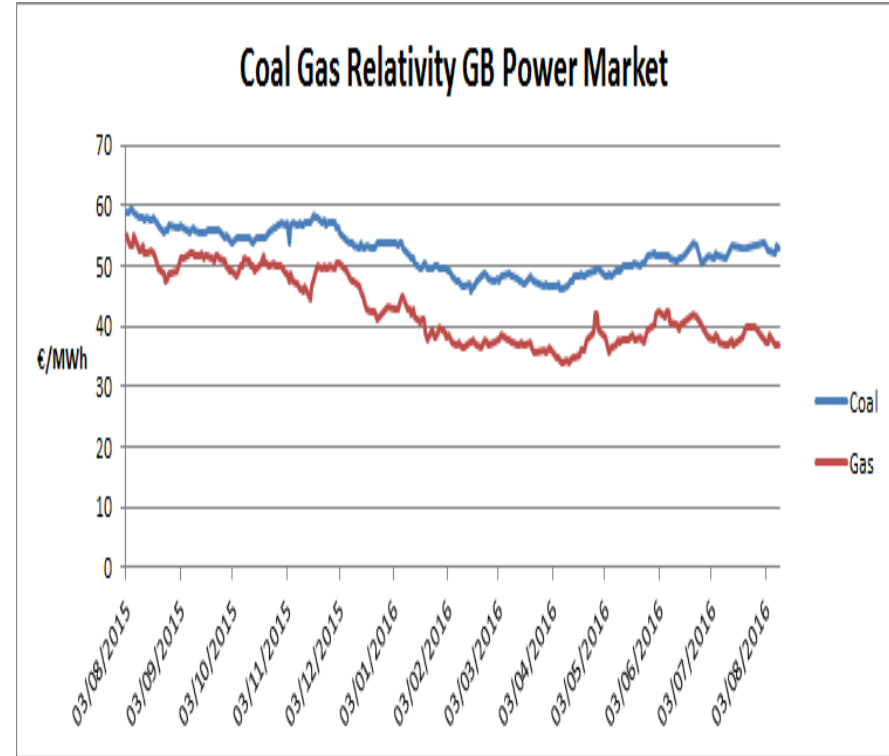
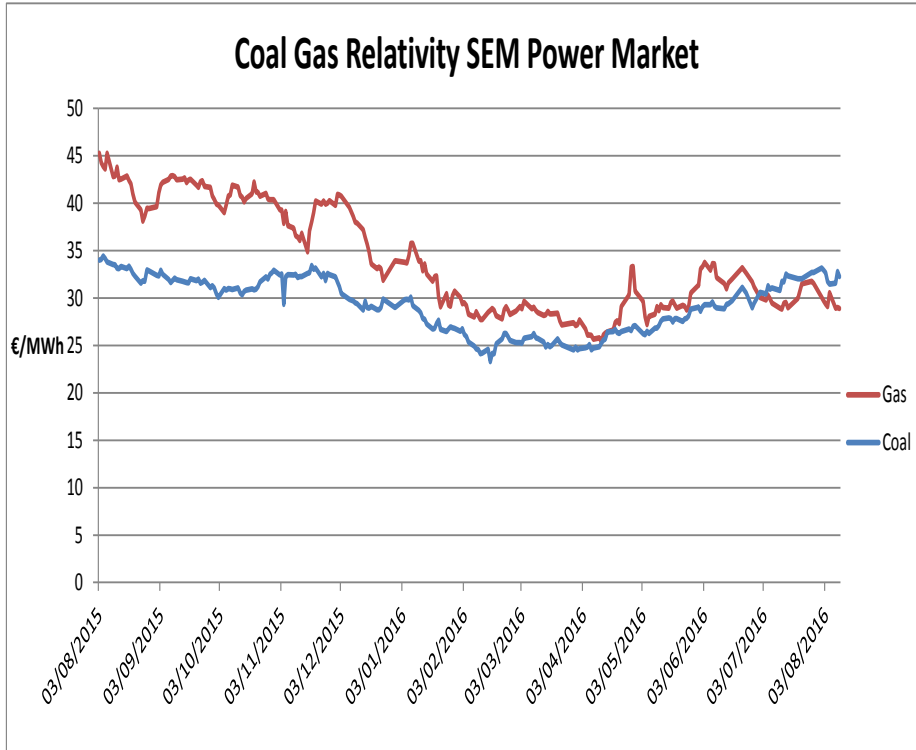
# EWIC Power IC Flows from Ireland-GB



# Gas is increasing due to decreased I/C imports



# Coal Gas Relativity

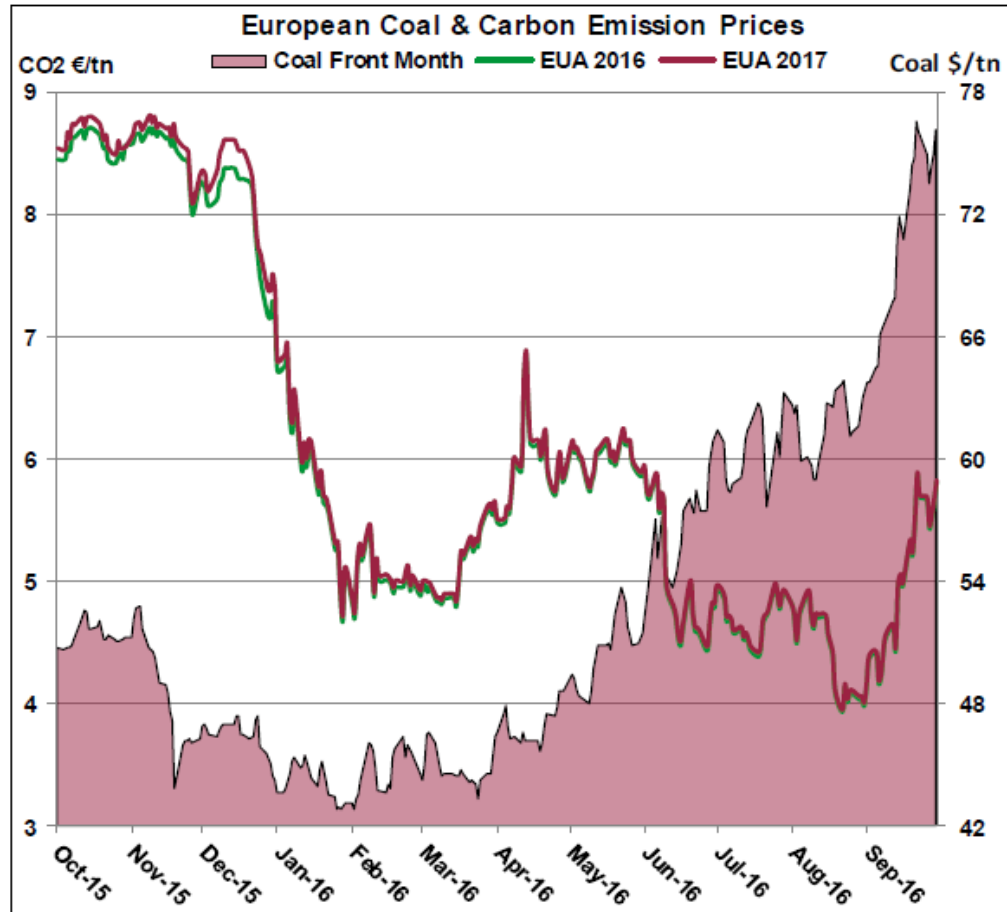


# Coal generation losing market share in GB

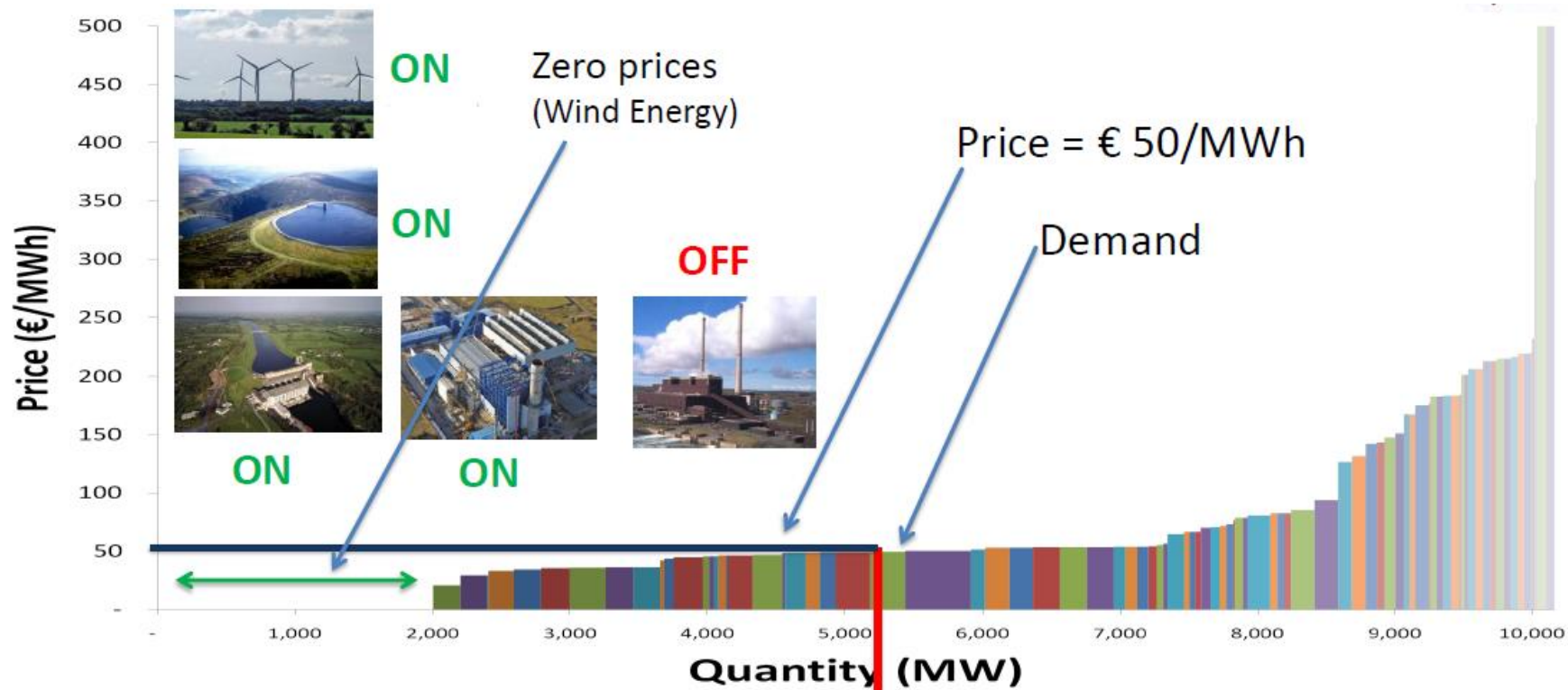


Follow

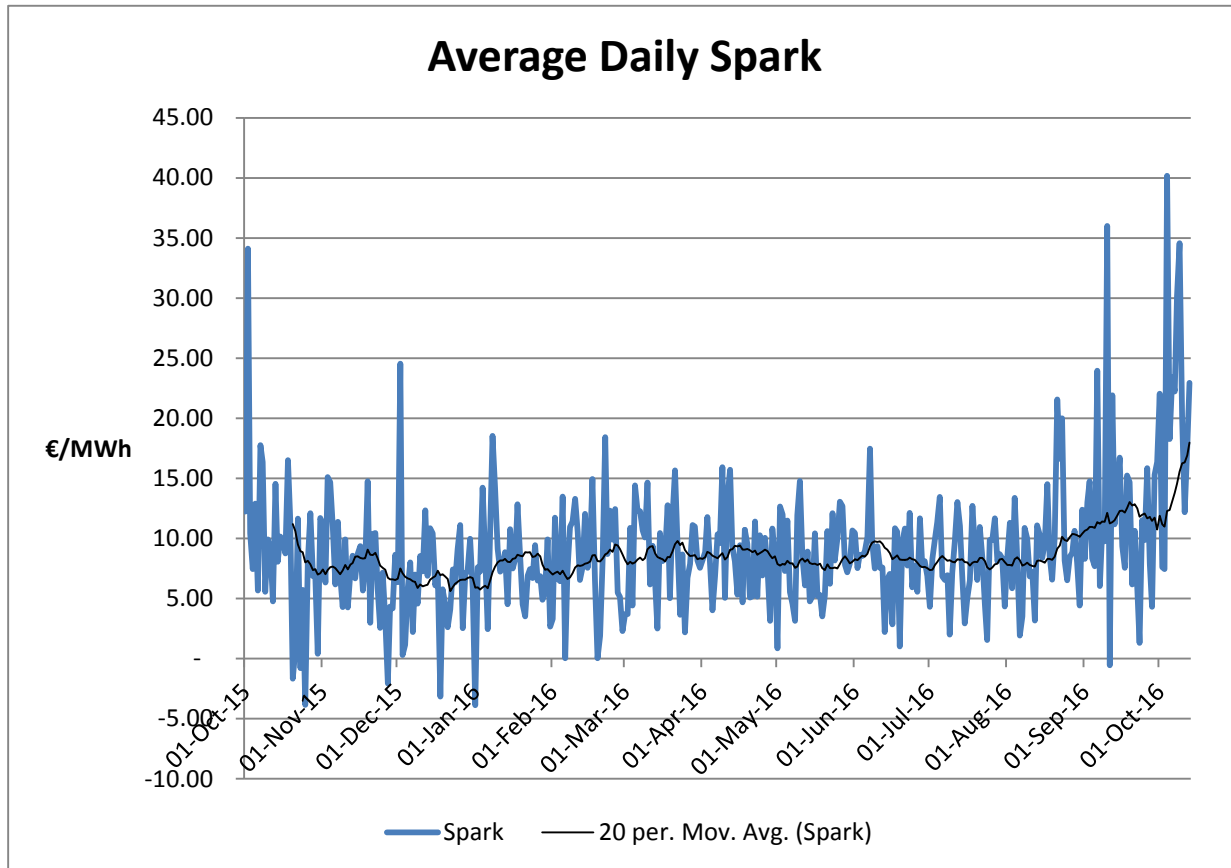
Between 11pm last night - 3am this morning, no coal was burned to generate electricity in the UK!



# How are wholesale power prices determined in SEM market.



# Spark increasing in due to tightening supply margin recently

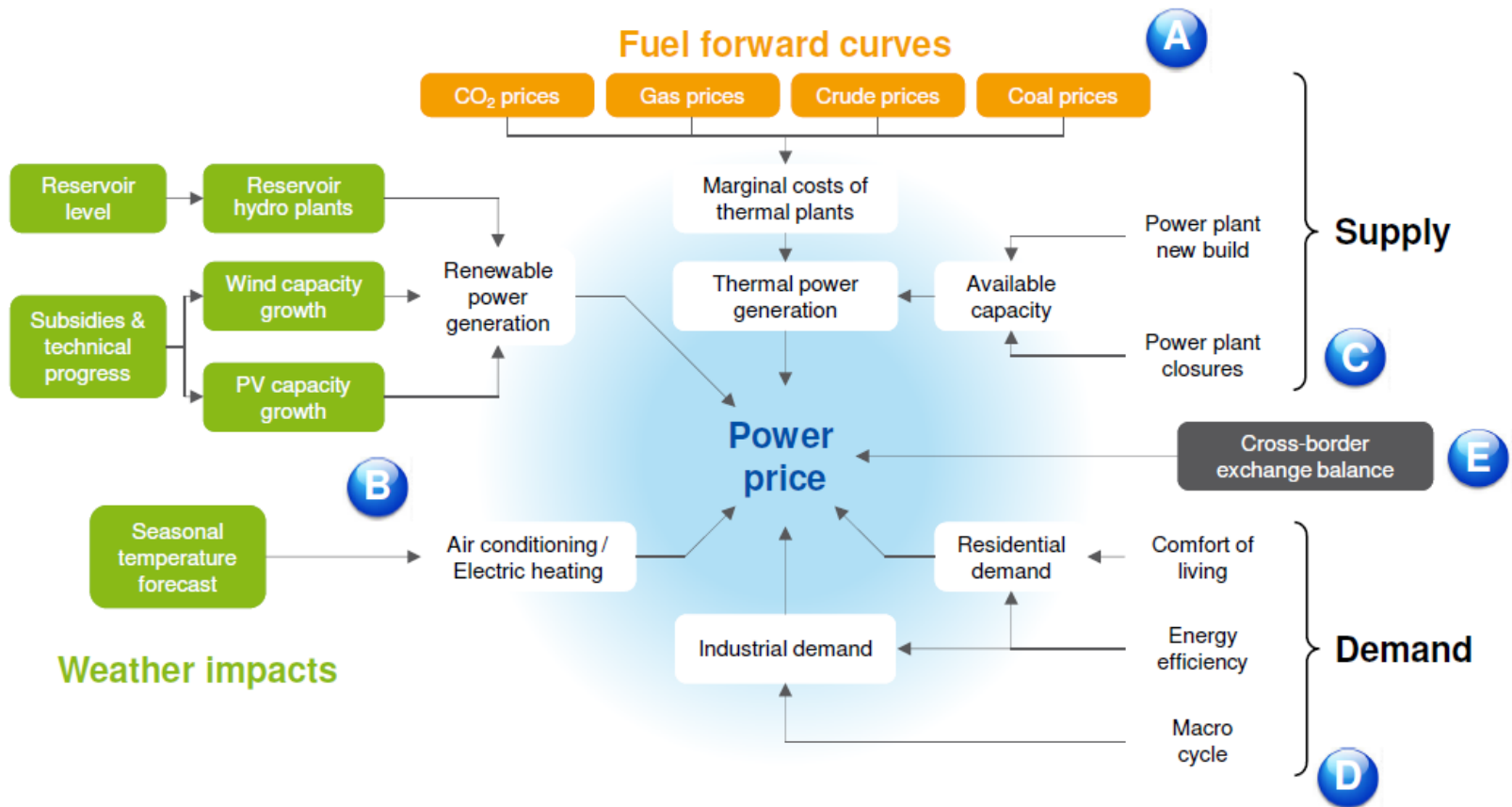


**The Spark is defined as the difference between the electricity wholesale price and the underlying gas and carbon costs**





# Long Term Power price influencers



# From Gas To Electricity

**Win 17 Gas Price = 48p/therm**

**FX = .9**

**1 MWh = 69.45 therms (Generic Gas plant eff %)**

**1 MWh = €37 – GAS (72%)**

**1 MWh requires .377 tonnes of carbon**

**Carbon costs €5.91 per tonne**

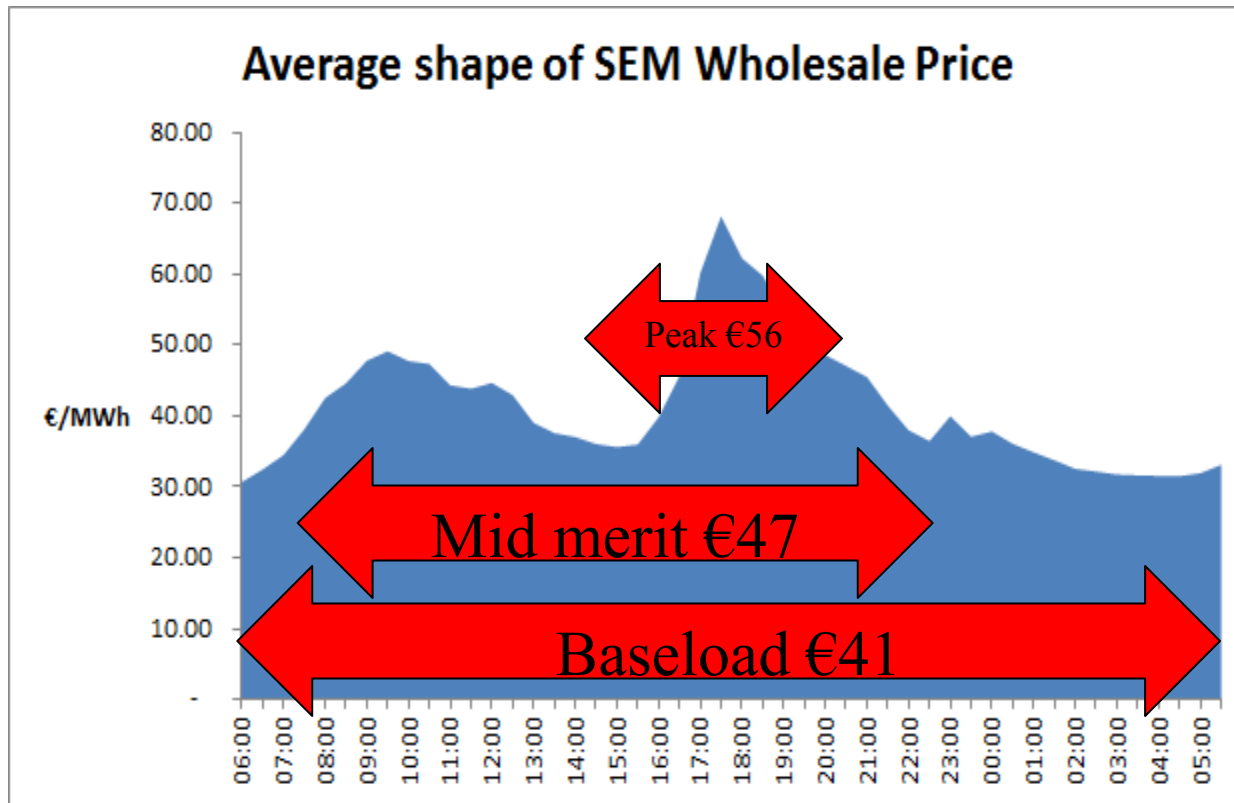
**1 MWh = €2.22 – CARBON (4%)**

**Win 17 has a spark of €12 (24%)**

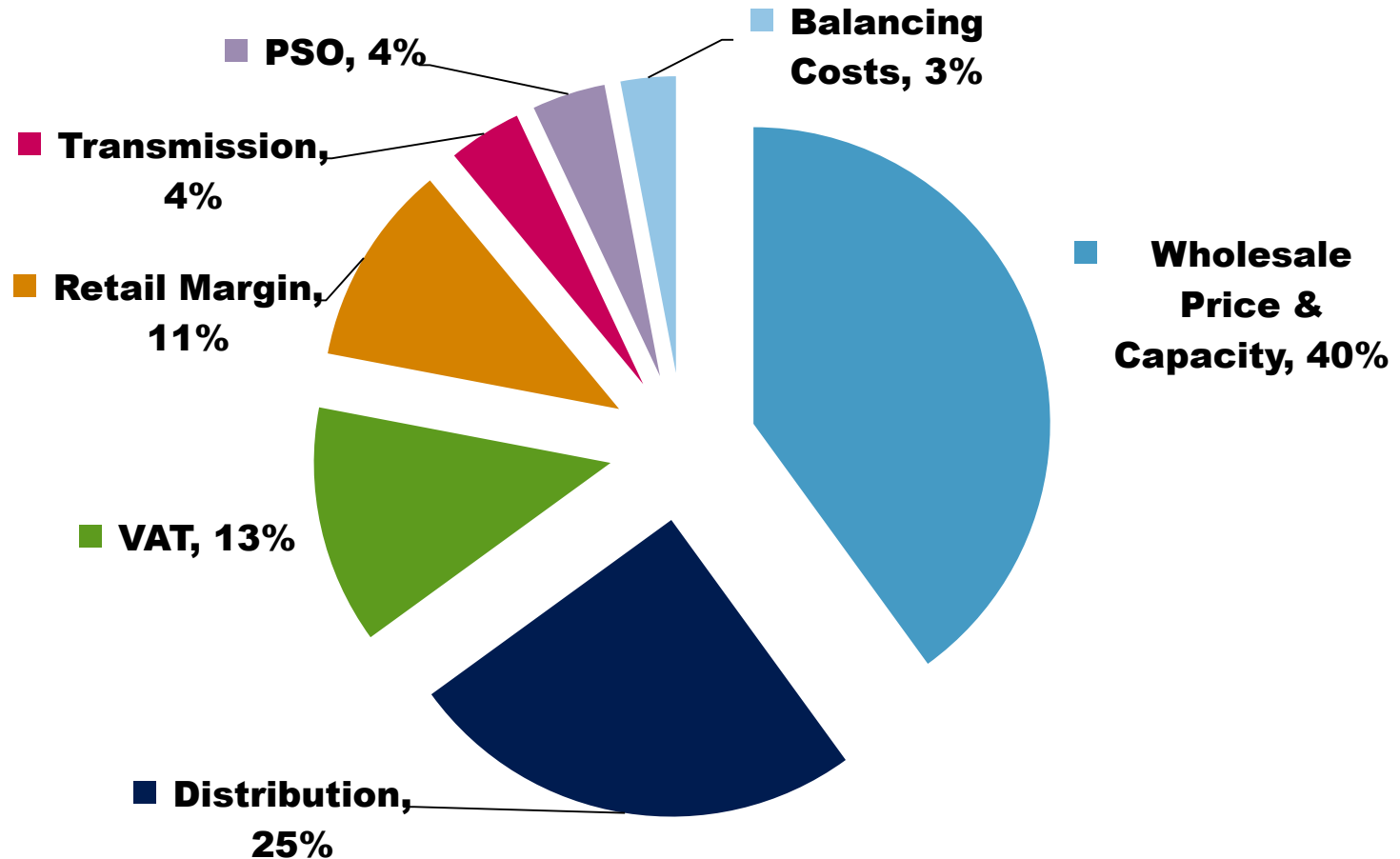
**Arrive at a wholesale price of €51.22/MWh**



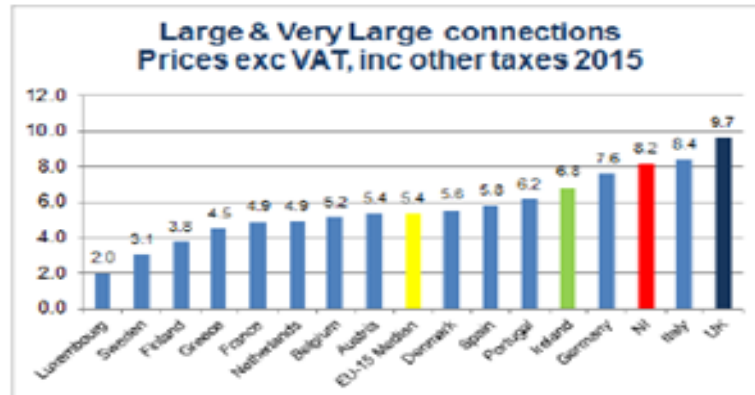
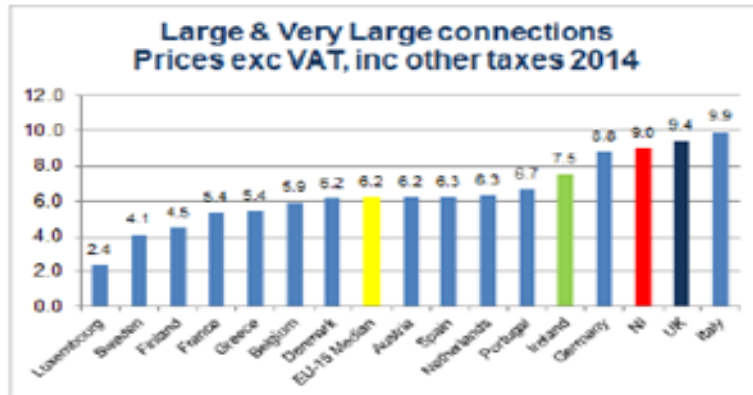
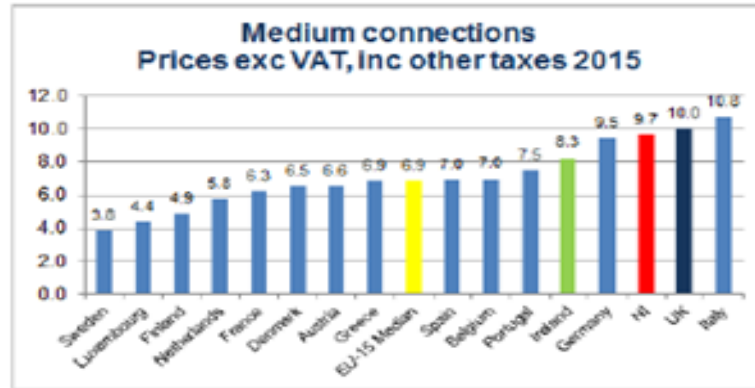
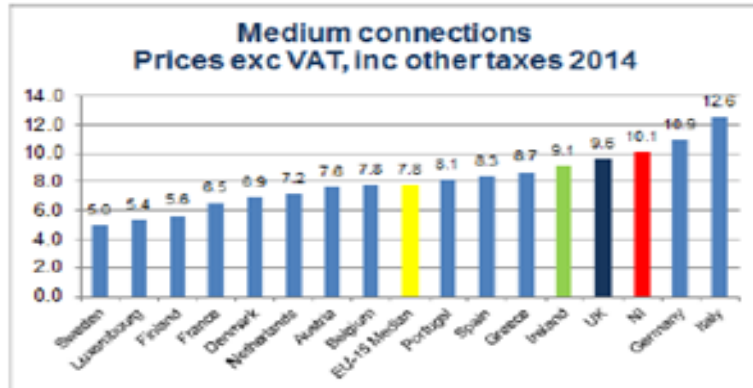
# Time of Consumption Pattern Important



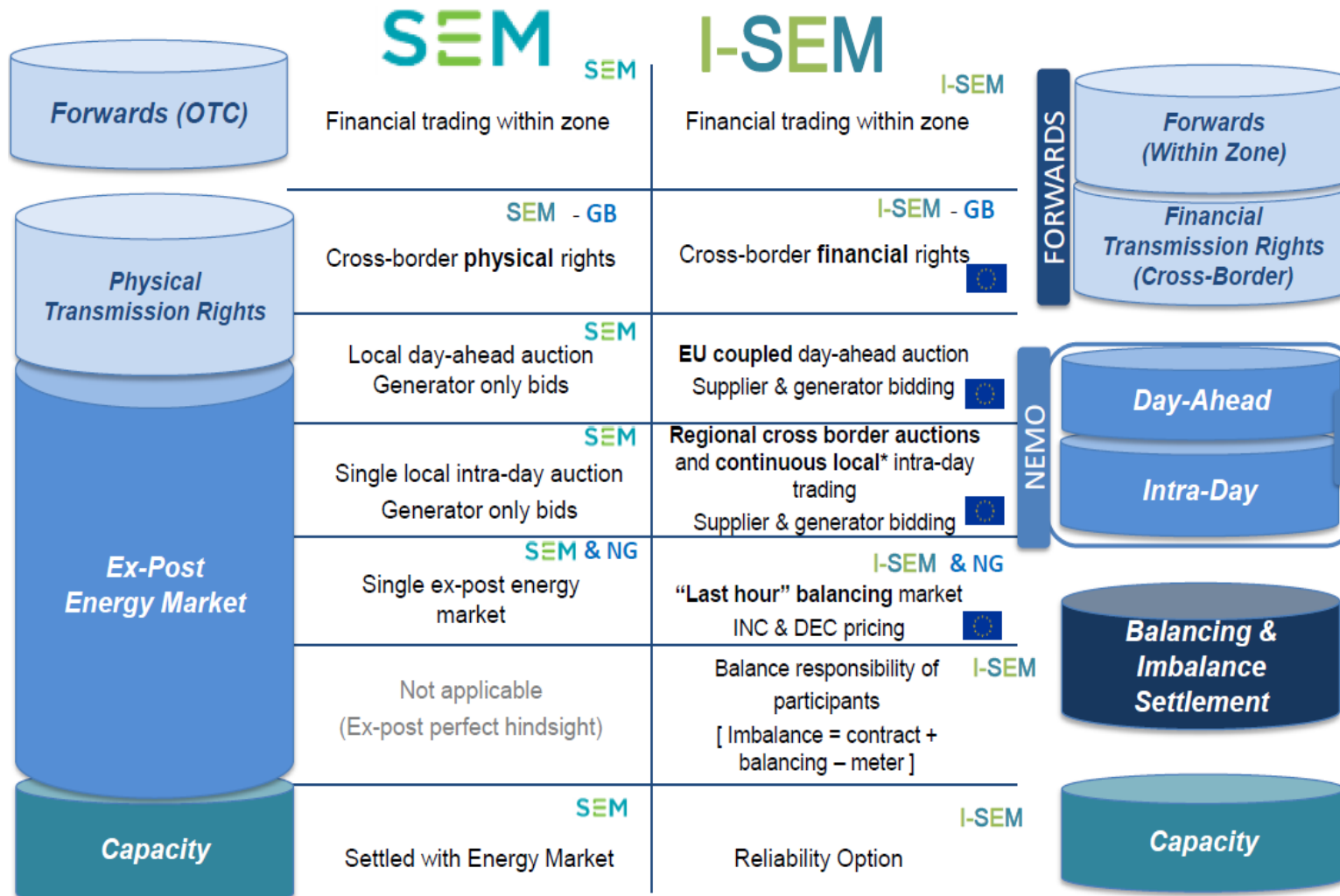
# Elements of the final Consumer Price



# Power Price comparison across Europe



# From SEM to ISEM



# **Brexit should not impact planned ISEM launch Oct 2017**



## **Energy Market Following Brexit**

- **UK has been a strong advocate of liberalised power markets across EU**
- **EU Target Model already allows for non EU markets to be connected with EU power markets but if GB moves away from wholesale power market coupling the island of Ireland is effectively uncoupled. (Unless IE-FR I/C is built)**
- **Membership of EU is not mandatory for participation in the EU Emission Trading Scheme**
  - **UK could drop some EU directives such as the “European Industrial Emission Directive”**
- **All Island ISEM market should continue as planned despite Brexit.**



# Conclusions

**Gas remains the dominant driver of wholesale power prices in the Single Energy Market.**

**GB prices because of carbon price floor and supply shortages expected to retain premium over SEM leading to increased exports over the I/Cs**

**Timing of commodity lock in and consumption pattern important in determining electricity quote.**

**I-SEM wholesale market replacing the current SEM market in Ireland in October 2017.**

