

Energy Market Uncertainties Summary of Responses

As part of the Transporting Britain's Energy consultation process we issue a number of targeted questionnaires. These are designed to gather data related to our current forecasts of gas supply and demand on our network and assist us with the process of evaluating network capacity requirements.

Along with the consultation meetings with industry stakeholders, the information received through these questionnaires assists us in supporting the development of many of the core assumptions within our forecast. Tailored questionnaires are sent to the following industry groups:

- Shippers
- Producers
- Consumers
- Terminal Operators
- Storage Operators
- Gas Importers
- Transporters

Each questionnaire is presented in two parts:

- Section 1, relating to the activities of the recipient; and
- Section 2, relating to specific uncertainties surrounding gas supply and demand.

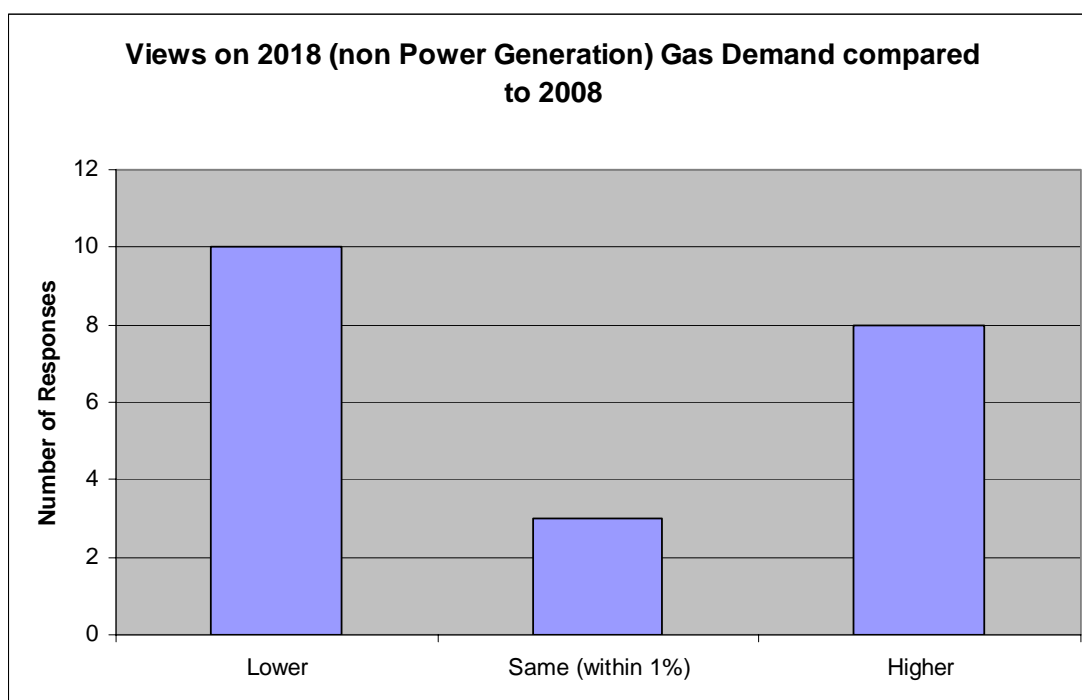
The data that is provided by respondents to the questionnaires is dealt with in strictest confidence and does not get used by us for any other purpose other than volume forecasting and capacity planning without specific written permission from the parties concerned. The information in this document is presented in an aggregated format.

The Market Uncertainties section of the targeted questionnaire, received by all parties, is intended to collect industry views on specific uncertainties that could influence the development of the UK gas market. It is used to validate the planning assumptions that underpin our supply and demand forecasts. This document provides an overview of the responses to this year's Market Uncertainties questionnaire.

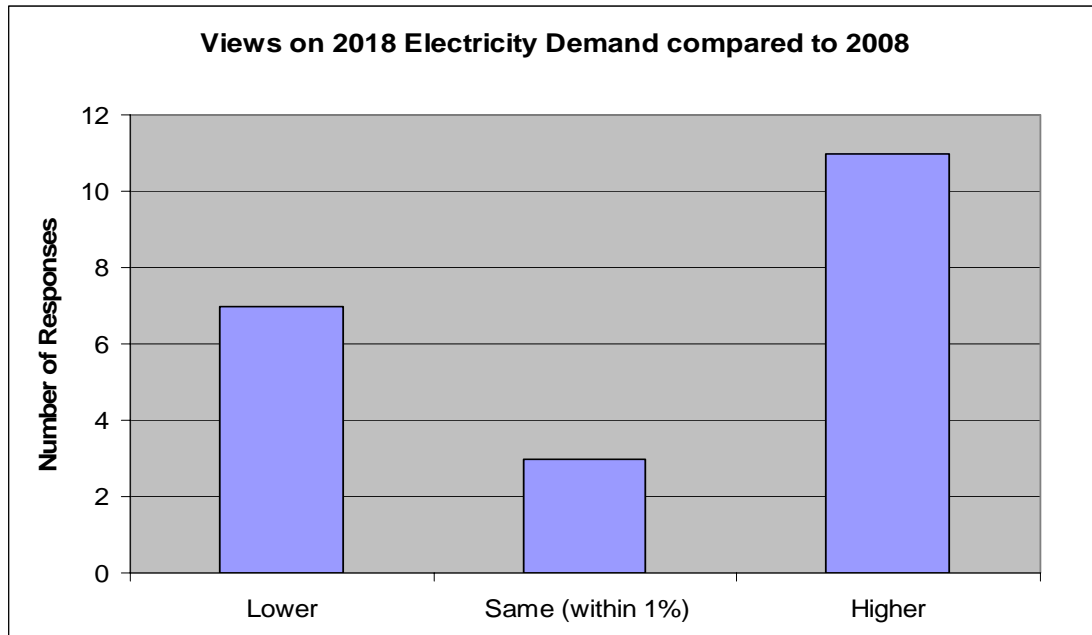
2.1 Energy Demand

Electricity demand and non-power generation gas demand have both fallen in the last three and four years respectively. Views were sought as to whether the demand in 2018 be higher or lower than in 2008 or about the same. The responses were:

2018 demand (compared to 2008)	Higher	Same (within 1%)	Lower
Gas Demand (Non Power Generation)	8	3	10
Electricity demand	11	3	7



Few respondents thought gas demand (non power generation) would be the same in 2018 as 2008, however the views were relatively evenly split, with slightly more thinking there would be a drop in 2018.

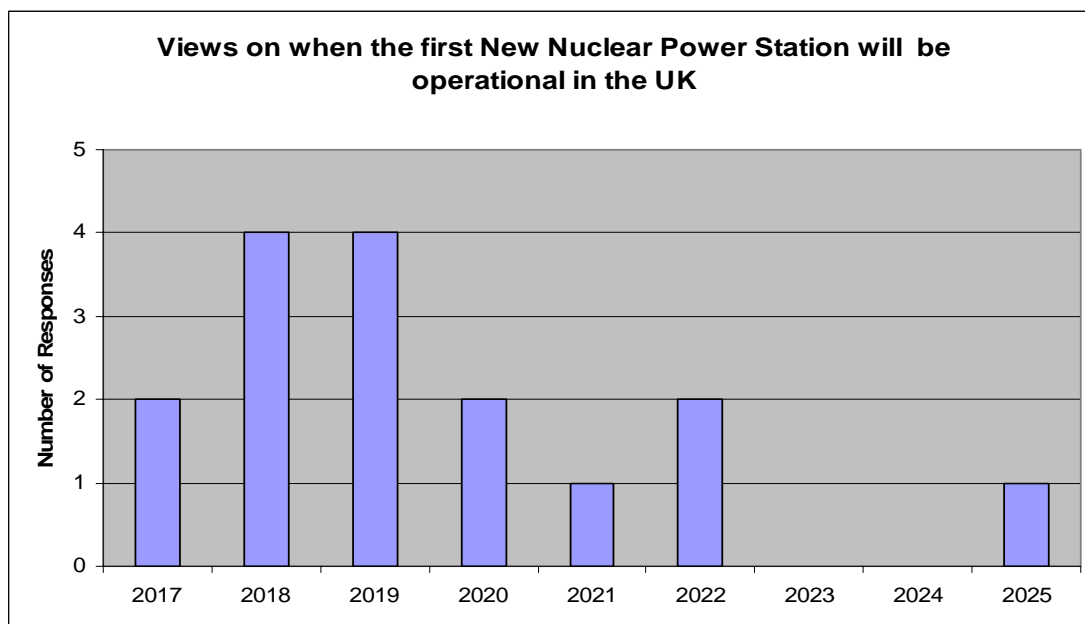


Again, few thought electricity demand would be the same, but there was more of a consensus with electricity demand, with most people thinking electricity demand would increase.

2.2 Power Generation

A number of new gas-fired power stations are currently under construction, however different types of plant are likely to be built in the UK as the plant mix changes in the future.

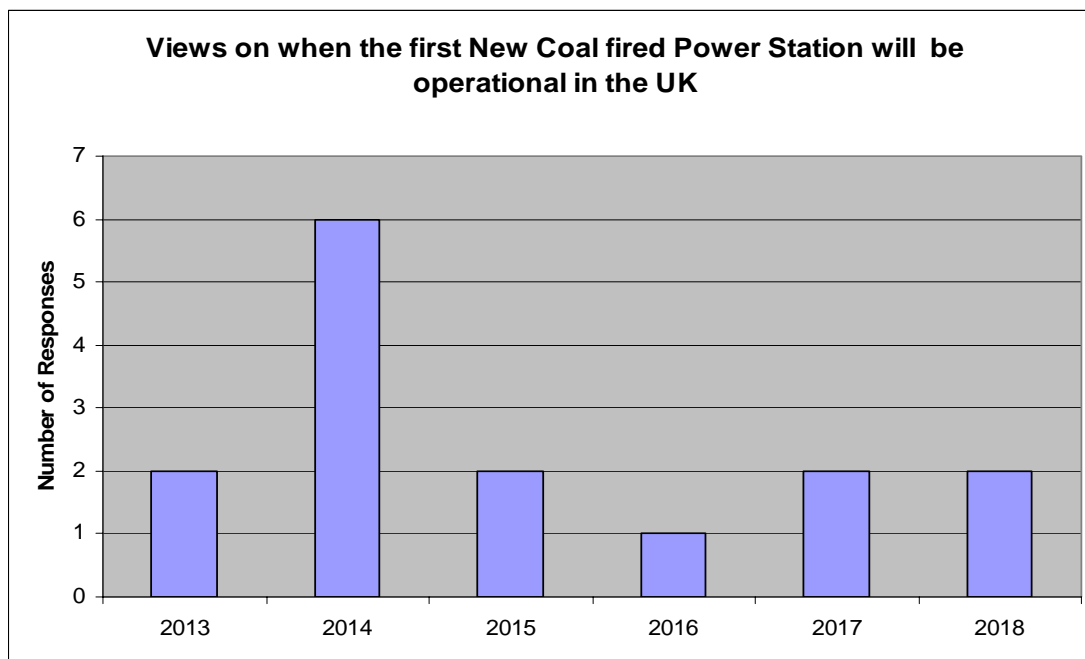
	Min	Average	Max
In what year will the first new nuclear power station in the UK become operational?	2017	2019	2022



There is a relatively good consensus, with three quarters of respondents thinking the first new Nuclear power station would be operational between 2017 and 2020.

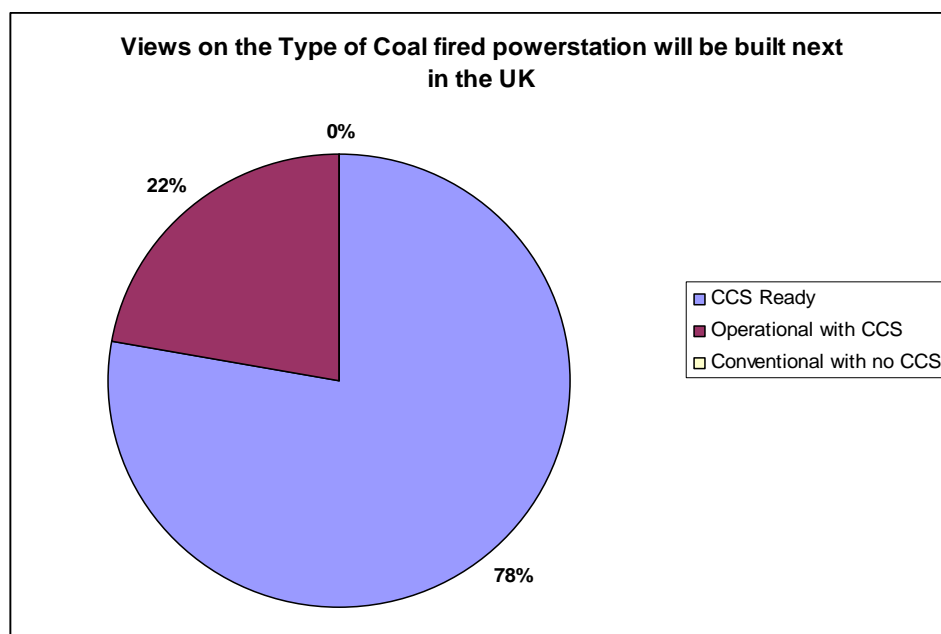
With the decision on which plants will receive government funding for the Carbon Capture and Storage (CCS) demonstration plant imminent we may see new coal plant being built in the UK.

	Min	Average	Max
In what year will the first new coal power station in the UK become operational?	2013	2015	2018



The majority view is that the first coal fired power station would be operational in 2014, with two thirds of respondents thinking it would be between 2013 and 2015.

Will this plant be?	Percent
Operational with CCS	22 %
CCS Ready (with the CCS element available at a later date)	78%
Conventional with no CCS	0 %



Over 3 quarters of respondents think any new coal fired powerstation will be CCS ready, with just under a quarter thinking that it will have CCS fitted. No one thought that it would be conventional without CCS. This question was answered before the government's post budget announcement that no new powerstation would be permitted in the UK without CCS.

Renewables and 2020

Respondents were given a list of technologies that could help achieve renewable targets and asked 2 questions:

- To rate each technology 1 to 5 to show how much they thought each would contribute towards renewable energy targets. 1 indicates a technology has almost no impact on renewable energy targets. 5 indicates a very high impact.
- To indicate any technologies that particularly interest respondents. Respondents could choose more than one.

Technologies anticipated to have most contribution to renewables targets.

Ranking order	Technology	Average Rating of importance (1-5, 5 being the most important)
1	Energy efficiency	3.8
2	Wind generation	3.7
3	Nuclear	3.5
4	Smart technologies	3.3
5	Biomass generation	3.1
6	Carbon Capture & Storage	2.9
7	Biogas/waste generation	2.7
8	Biogas/waste heat	2.6
9	Tidal & Wave	2.6
10	Biomass heat	2.6
11	Heat pumps	2.4
12	Electric cars	2.4
13	Biofuels for transport	2.1
14	Solar thermal	2.1
15	Solar PV	1.9

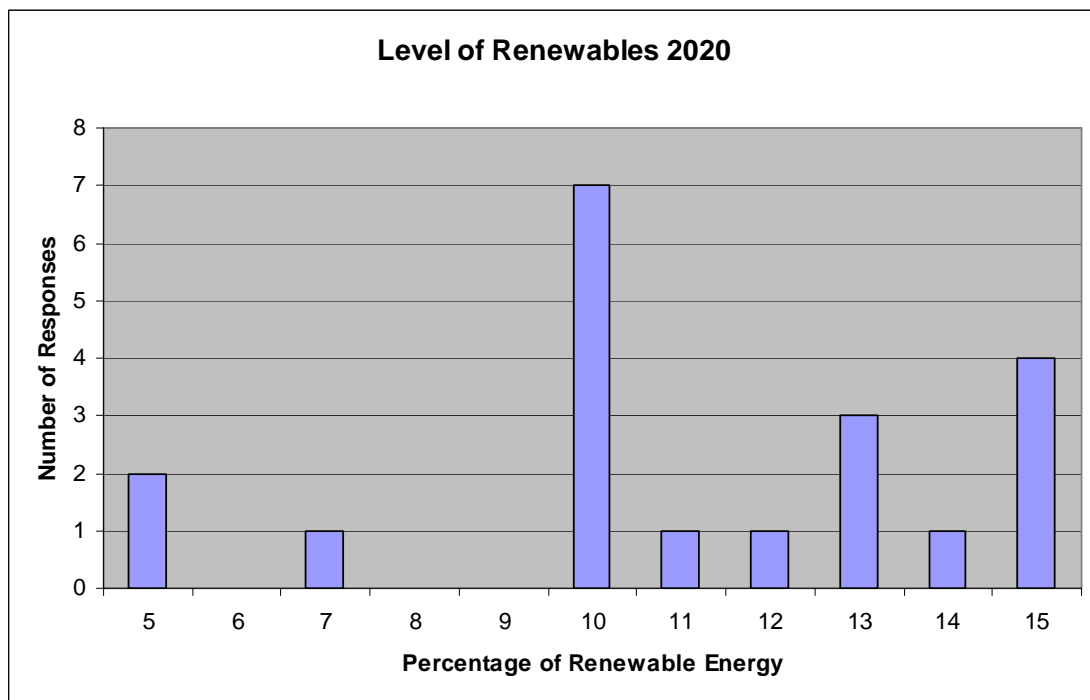
The technology thought have the greatest contribution to renewables target is energy efficiency. This is followed closely by wind and nuclear generation and smart technologies. It is interesting to note that all the technologies thought to have the least contribution are the microgeneration and transport technologies, which are also the technologies that require more end consumer involvement.

Technologies that most interest respondents

Ranking order	Technology	Number of respondents that said this technology was of particular interest to them.
1	Energy efficiency	13
2	Wind generation	8
3	Nuclear	7
4	Carbon Capture & Storage	7
5	Smart technologies	6
6	Biomass generation	5
7	Biogas / waste generation	4
8	Biomass heat	4
9	Biofuels for transport	4
10	Biogas/waste heat	3
11	Solar thermal	3
12	Heat pumps	3
13	Electric cars	2
14	Tidal & Wave	1
15	Solar PV	1

The ranking is very similar to the previous question. Energy Efficiency is top followed again by Wind and Nuclear Generation. There is the same top 6 for both questions. The technologies that least interest respondents again coincide well with the technologies that are thought to have least impact on renewables targets.

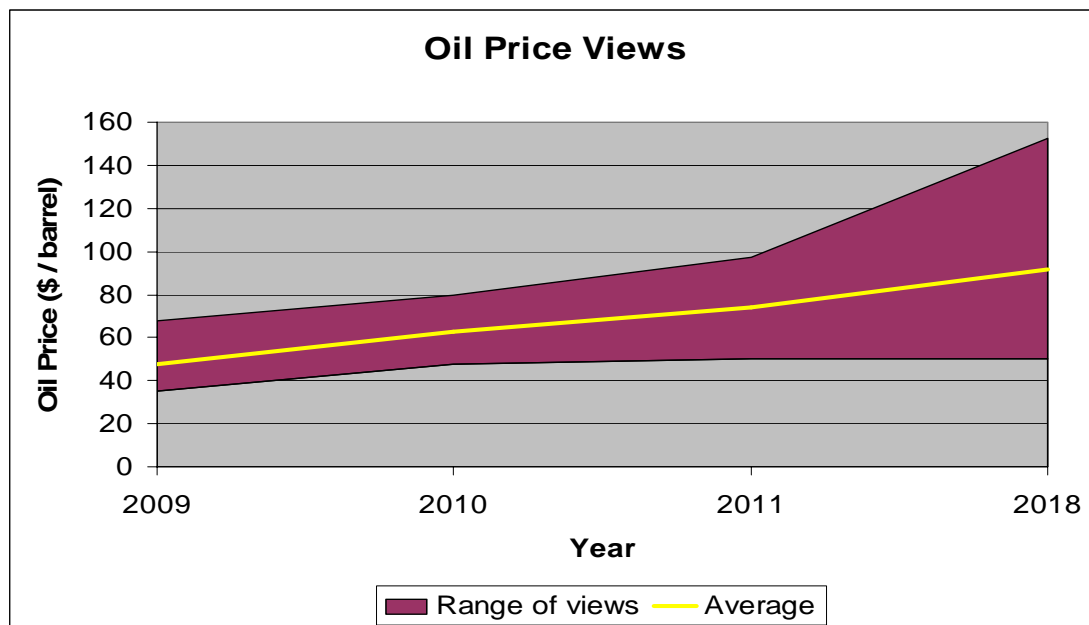
	Min	Level in 2020 (average)	Max
What level of renewable energy as a percentage of final energy demand do you believe will be achieved by 2020? (Currently in the UK 2% of final energy demand is provided by renewable sources and the target for 2020 is 15%)	5%	10.7%	15%



The majority view is that the UK would reach 10% renewables by 2020. Some respondents thought the 15% target would be achieved with none thinking it would be exceeded. 85% of responses indicated a level of renewables between 10 and 15%.

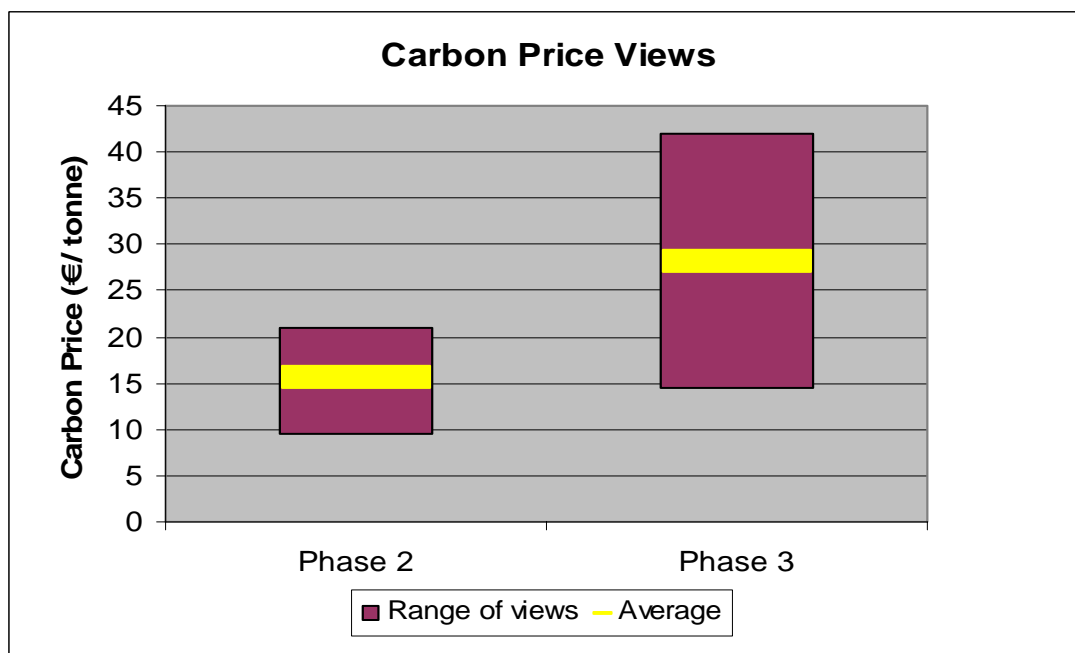
2.3 Energy Prices

What do you think the average price oil will be in years below (in today's prices)



The view from all participants is of a rising oil price. Where it starts and how much it rises varies. The range of oil price views starts at just over \$30 / barrel in 2009 to over \$100 / barrel in 2018. The average price reaches \$90 by 2018

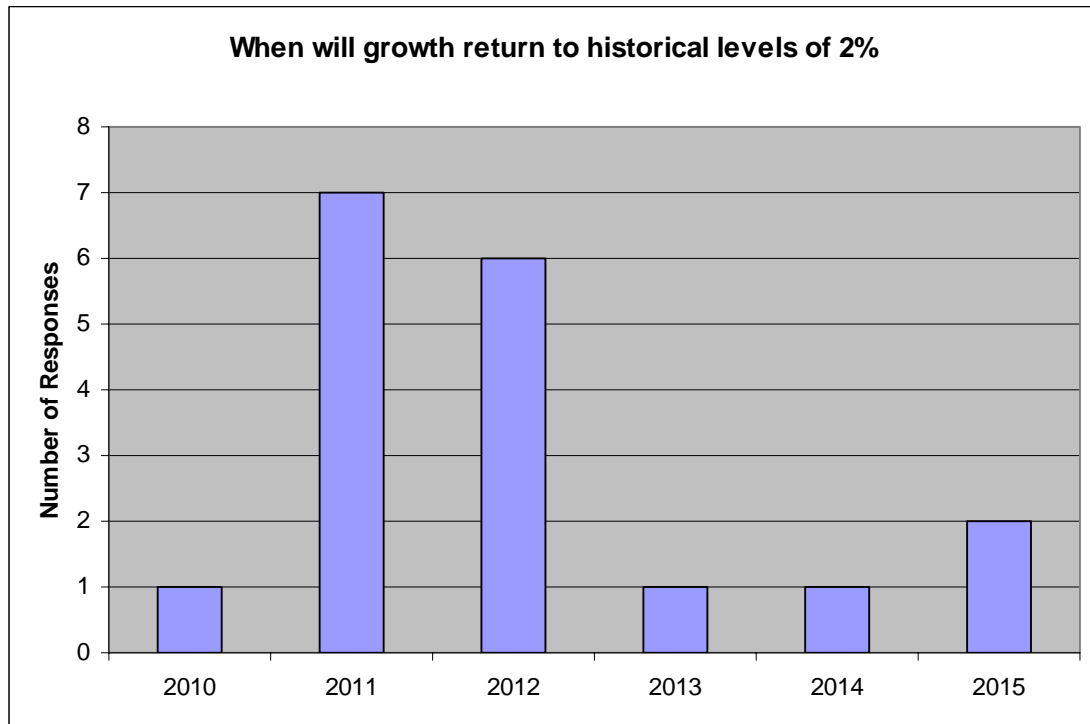
What do you think the average price of carbon will be in the current and next phase of the EU ETS?



As with oil, the views are that prices will rise. The average price in phase 3 is expected to be roughly double the phase 2 according to the responses received.

2.4 Economy

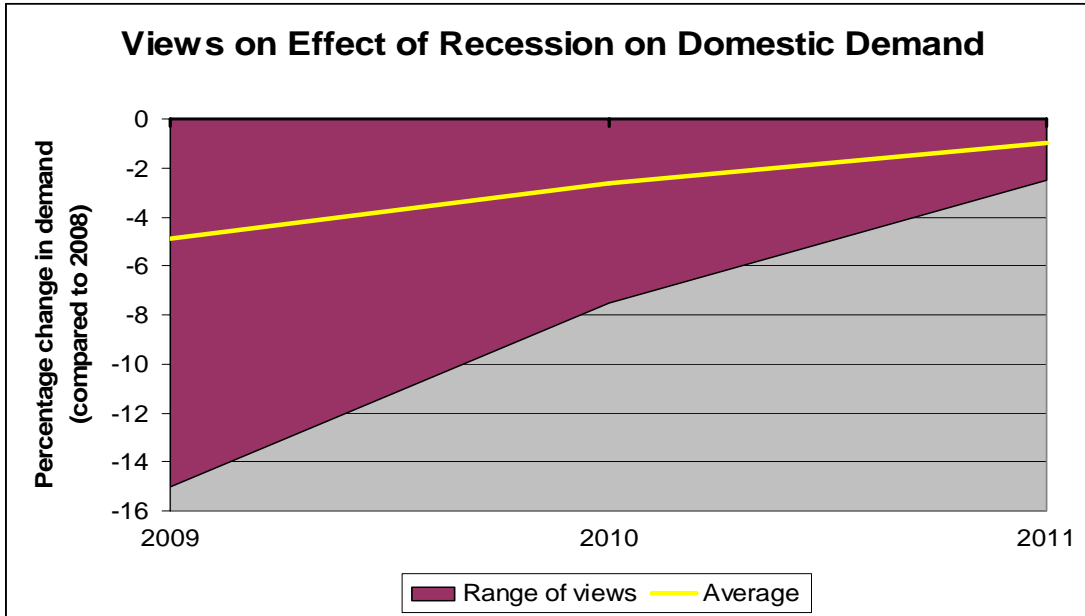
	Low	Average	High
When do you think economic growth levels will return to pre slowdown historic rates of around 2.5%?	2010	2012	2015



2011 and 2012 are the by far most popular response to this question.

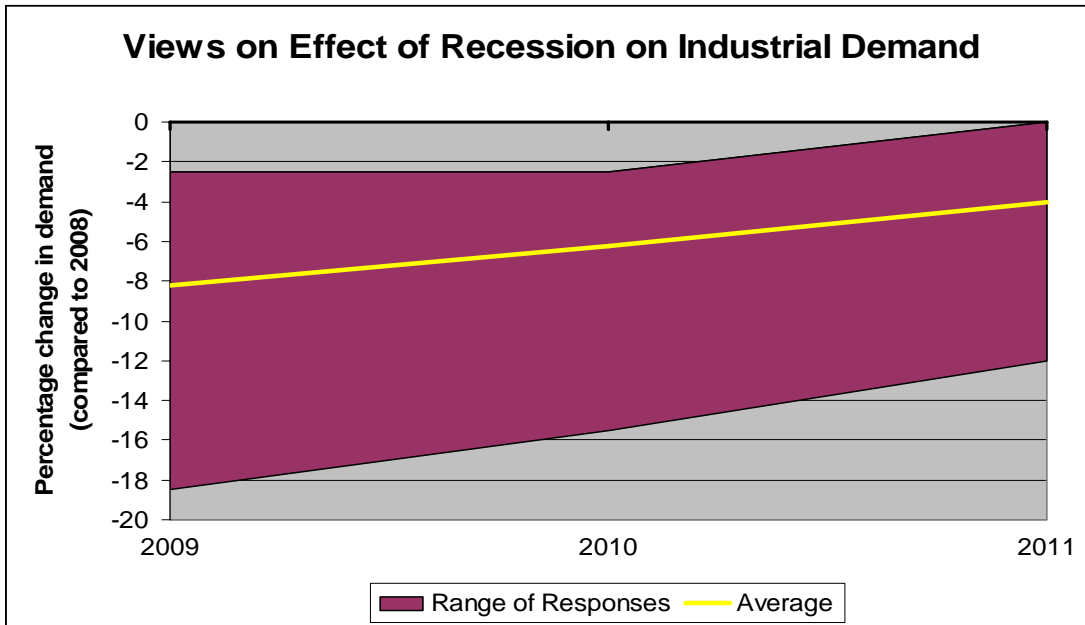
What effect do you think the economic downturn will have on non-Power generation gas demand?

Economic downturn effect on domestic gas demand.



This shows that all respondents expect the recession to either cause a reduction have no effect on domestic demand. The general consensus is for an increase in domestic demand for the two years after 2009, but it is not anticipated to reach 2008 levels by 2011.

Economic downturn effect on industrial gas demand

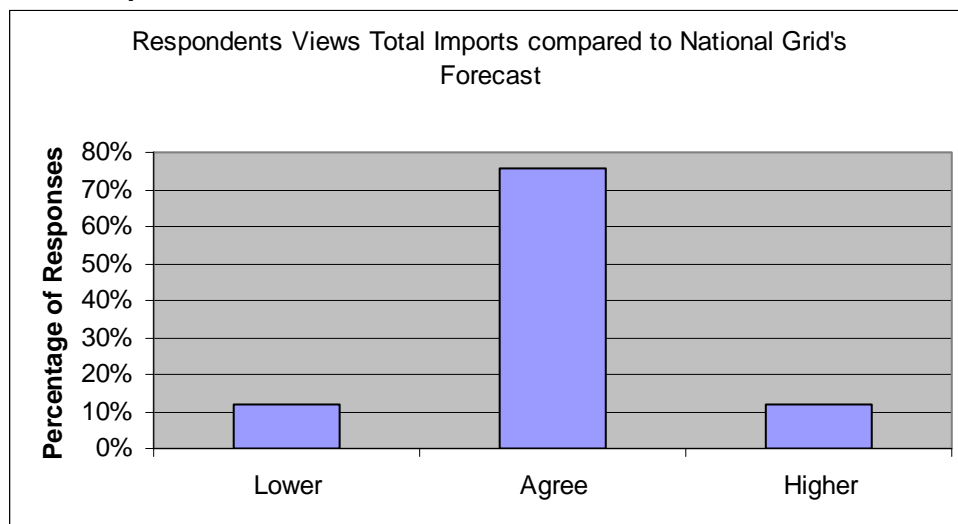


This shows that compared to 2008 all respondents expect the recession to cause a reduction in industrial demand in 2009 and 2010, with some expecting levels to return to 2008 demands by 2011. As with domestic demand, the general consensus is for an increase in industrial demand for the two years after 2009, but it is not generally anticipated to reach 2008 levels by 2011. The demand reductions are anticipated to be higher for industrial than domestic demand.

2.5 Gas Supplies

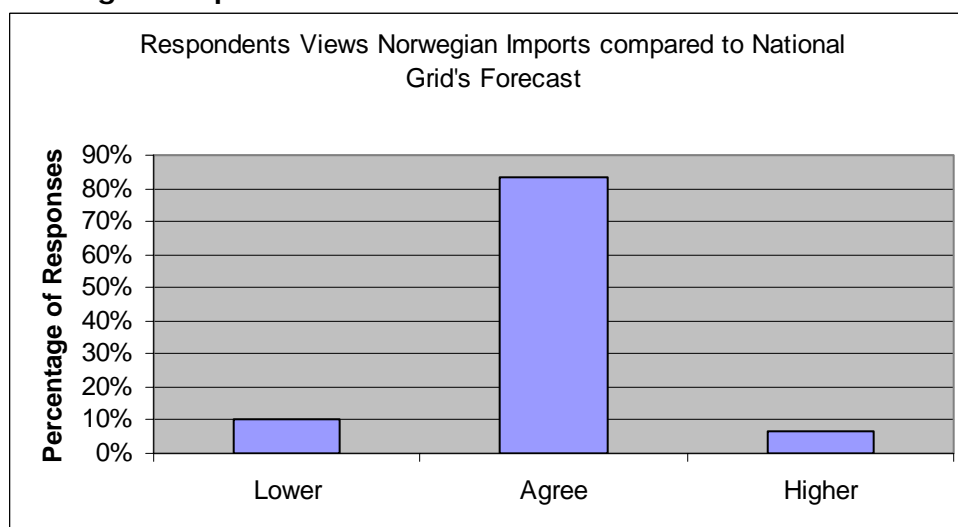
We asked for views of our forecast of various imports to the UK in the short, medium and longer term to indicate whether people agreed with our forecast or believed flows would be higher or lower. These were the results. Short medium and longer term responses were aggregated as, they generally showed the same trend. In the charts 'Higher' refers to respondents thinking National Grid's forecasts should be higher, and conversely lower means they believed National Grid's Forecasts should be lower than they are.

Total Imports



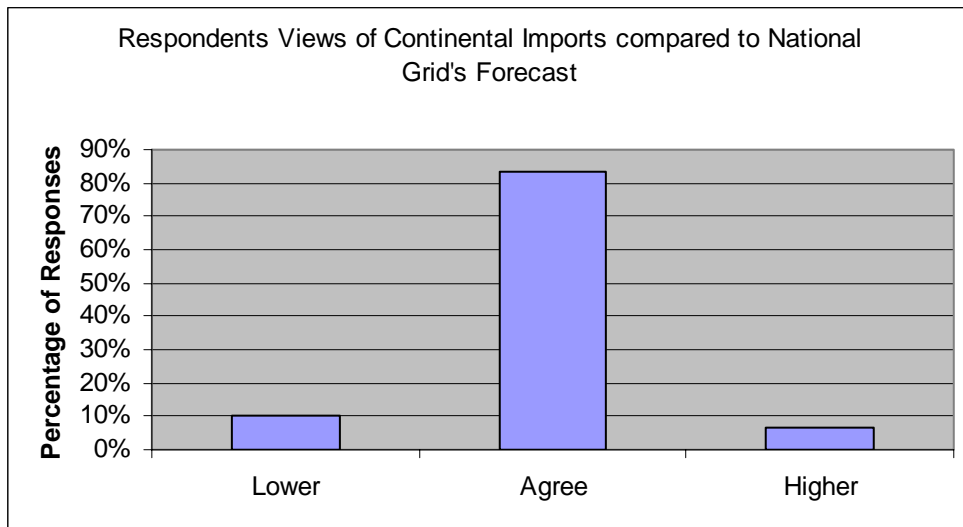
Over 70% of respondents agreed with National Grid's forecasts for total imports. Less than 25% disagreed. Those that disagreed were evenly split between thinking National Grid's forecasts were too low or too high.

Norwegian Imports



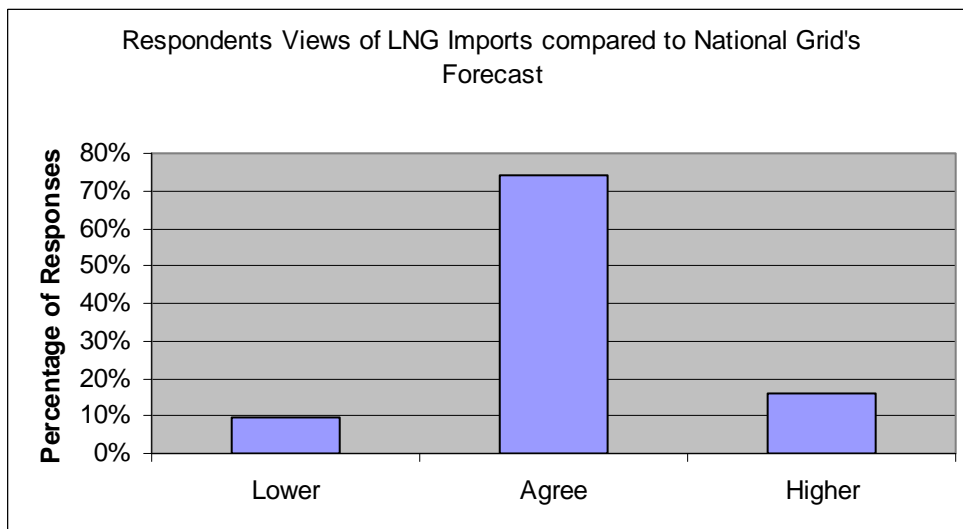
Over 80% of respondents agreed with National Grid's forecasts for Norwegian Imports. Less than 20% disagreed. Those that disagreed were relatively evenly split between thinking National Grid's forecasts were too low or too high.

Continental Imports



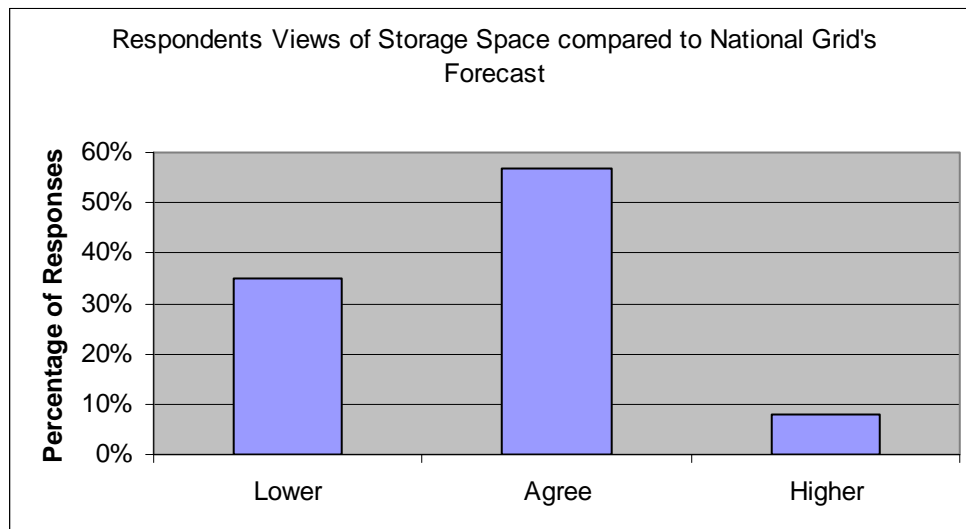
Over 80% of respondents agreed with National Grid's forecasts for Continental Imports. Less than 20% disagreed. Those that disagreed were relatively evenly split between thinking National Grid's forecasts were too low or too high. This is exactly the same result as Norwegian Imports

LNG imports



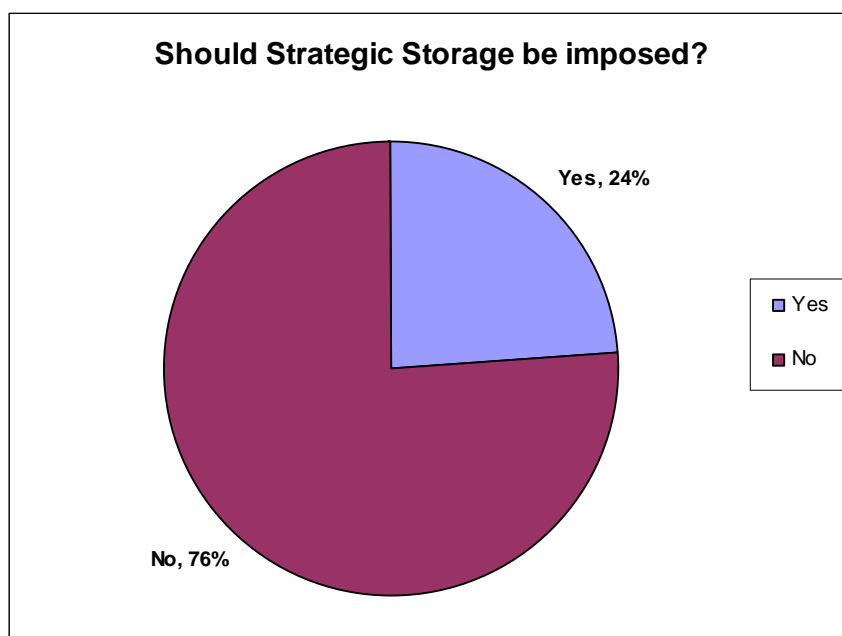
Over 70% of respondents agreed with National Grid's forecasts for total imports. 26% disagreed. Most of those that disagreed thought National Grid's forecasts should be higher.

Storage Space



This is the forecast that was least agreed with. Most respondents still thought National Grid's forecast to be correct but just over a third thought National Grid's forecast should be lower for Storage space.

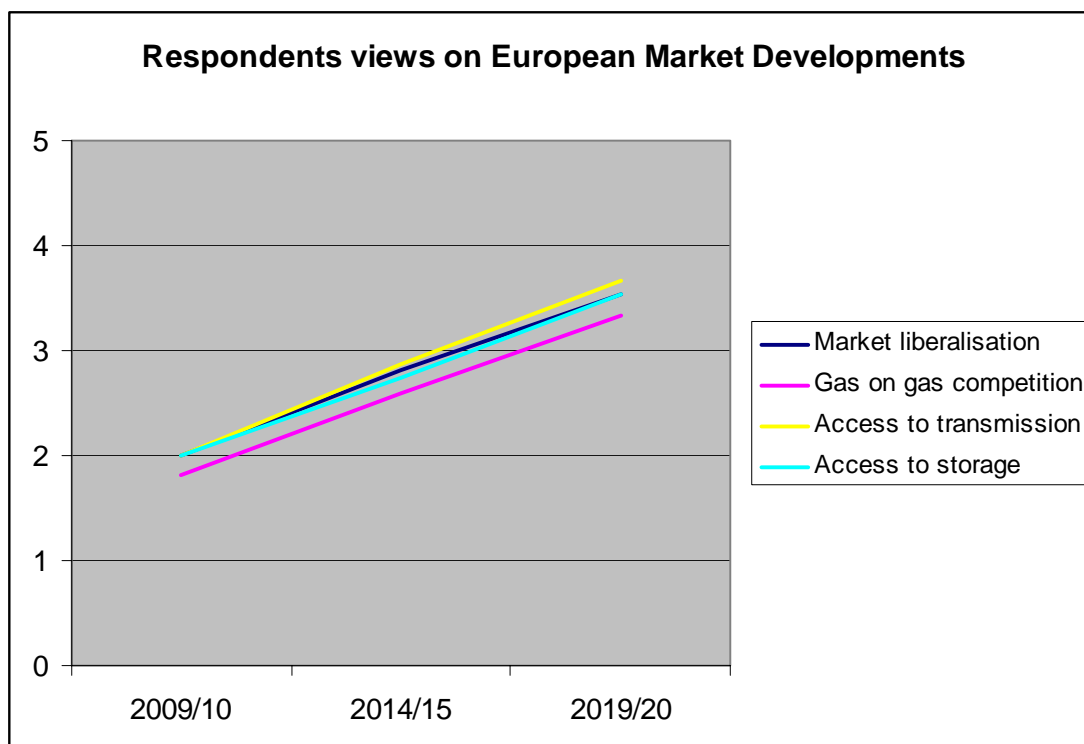
Following the 2009 Ukraine dispute, do you believe there should be mandatory levels of strategic storage imposed on European countries?	Yes	No
Should Strategic Storage be imposed?	24%	76%



Over three quarters of respondents said strategic storage should not be imposed, mainly stating that this would adversely affect markets.

We sought your views on the progress of European market developments. We asked you to consider the following parameters and rate their expected progress from 1 to 5 (where 1 represents 'limited progress' and 5 represents 'fully implemented'). The average of the responses is shown.

	Progress Rating (1-5)		
	2009/10	2014/15	2019/20
Market liberalisation	2.0	2.8	3.5
Gas on gas competition	1.8	2.6	3.3
Access to transmission	2.0	2.9	3.7
Access to storage	2.0	2.7	3.5



This chart shows views for all areas are very similar. They are all some way towards implementation with further progress required. Even by 2019/20 respondents generally thought that the market developments would still require progress.