

Communication on DTI Fossil Fuel Price Assumptions and call for evidence - URN06/2020

The DTI uses assumptions for fossil fuel prices in its CO2 emissions projections modeling (UEP). The latest set of these assumptions was published in July 2006 as part of the analytical work accompanying the Energy Review [<http://www.dti.gov.uk/files/file31861.pdf>]. As energy markets move on, and especially in a period of price volatility, it is important to keep such assumptions under review.

Work on UK energy and emission projections is currently underway to help inform the forthcoming Energy White Paper. Within this work in progress, current assumptions for fossil fuel prices to 2020 are set out in Table 1 below.

These are on 4 different illustrative scenarios for levels of energy prices.

In addition to the figures themselves, there is a description of the scenario presented in Annex A that supports the price assumptions in the high, central (favourable to coal), central (favourable to gas) and low cases. Of note is that the DTI focus is on long-term sustainability of fossil fuel prices rather than year-to-year fluctuations.

For the purposes of the White Paper, scenario assumptions will be revised and finalised in late Autumn, taking account any changes in market trends in the last few months. We are publishing these figures to allow for expression of views before that finalisation of assumptions. There may also be a case for reverting to a single central scenario, rather than two, for easier interpretation of the modeling results. We are publishing these figures to allow for expression of views before that finalisation of assumptions. In particular, we would like to seek views on the following questions:

Q1: Do you think that the current DTI fossil fuel price assumptions as described below are appropriate?

Q2: If you believe they should be revised, what fossil fuel price assumptions would you suggest and why?

Q3: Do you think that using three scenarios is sufficient to illustrate the uncertainty around these assumptions? Or do you prefer the current approach of using four scenarios?

In addition, we currently use a range of carbon prices from 10 – 40 euros/tCO₂ to estimate the UK response to carbon prices. We are looking to improve the way we model the impact of the EU Emissions Trading Scheme on the projected emissions of CO₂. We are considering using a similar methodology to that used for the fossil fuel price assumptions to incorporate uncertainty around the carbon price. Hence, we would use three or four carbon price scenarios that are consistent with the fossil fuel prices. We would like to seek views on the appropriate carbon price assumptions, and in particular:

Q4: What range or central value for carbon prices would you consider appropriate for 2010, 2015 and 2020 and why?

Comments should be submitted by 15th November 2006 and may be sent to:
emissionsprojections@dti.gsi.gov.uk

Table 1: Fossil fuel price assumption used in UEP 26 and the Energy White Paper

Real 2005 prices	Central Scenario favourable to coal			Central Scenario favourable to gas		
	Crude Oil	Natural Gas	ARA Coal	Crude Oil	Natural Gas	ARA Coal
	\$/bbl	NBP p/therm	£/tonne	\$/bbl	NBP p/therm	£/tonne
2005	55.0	41.0	33.6	55.0	41.0	33.6
2006	60.0	45.7	33.0	60.0	41.0	33.0
2007	55.0	42.6	31.5	55.0	37.2	31.5
2008	50.0	39.6	30.1	50.0	33.4	30.1
2009	45.0	36.5	28.6	45.0	29.6	28.6
2010	40.0	33.5	27.2	40.0	25.8	27.2
2011	40.5	33.8	26.9	40.5	26.1	26.9
2012	41.0	34.1	26.7	41.0	26.4	26.7
2013	41.5	34.4	26.5	41.5	26.7	26.5
2014	42.0	34.7	26.3	42.0	27.0	26.3
2015	42.5	35.0	26.1	42.5	27.3	26.1
2016	43.0	35.3	25.9	43.0	27.6	25.9
2017	43.5	35.6	25.6	43.5	27.9	25.6
2018	44.0	35.9	25.4	44.0	28.2	25.4
2019	44.5	36.2	25.2	44.5	28.5	25.2
2020	45.0	36.5	25.0	45.0	28.8	25.0

Real 2005 prices	High Scenario			Low Scenario		
	Crude Oil	Natural Gas	ARA Coal	Crude Oil	Natural Gas	ARA Coal
	\$/bbl	NBP p/therm	£/tonne	\$/bbl	NBP p/therm	£/tonne
2005	55.0	41.0	33.6	55.0	41.0	33.6
2006	65.0	48.7	35.0	55.0	36.4	31.8
2007	65.5	49.0	35.6	46.3	31.8	28.7
2008	66.0	49.3	36.2	37.5	27.2	25.4
2009	66.5	49.6	36.7	28.8	22.6	22.2
2010	67.0	49.9	36.5	20.0	18.0	19.0
2011	67.5	50.2	36.5	20.0	18.3	18.6
2012	68.0	50.5	36.5	20.0	18.6	18.2
2013	68.5	50.8	36.5	20.0	18.9	17.6
2014	69.0	51.1	36.5	20.0	19.2	17.2
2015	69.5	51.4	36.5	20.0	19.5	16.8
2016	70.0	51.7	36.5	20.0	19.8	16.3
2017	70.5	52.0	36.5	20.0	20.1	15.9
2018	71.0	52.3	36.5	20.0	20.4	15.5
2019	71.5	52.6	36.5	20.0	20.7	15.0
2020	72.0	53.0	36.5	20.0	21.0	14.6

Annex A: Rationale behind future fossil fuel price assumptions in UEP26

The future fossil fuel price assumptions used in the Updated Emissions modelling are illustrative scenarios used to reflect uncertainty over the outturn of future prices in the modeling. They are not detailed forecasts or predictions of future prices.

Central scenario favourable to coal

In the Central price scenarios, it is assumed that oil prices ease post 2007-2008 as new production capacity comes on-stream and demand growth moderates, leading to a slight increase in spare production capacity. However, as oil is increasingly produced from more expensive sources and spare capacity remains relatively tight, prices are assumed to remain higher than the historic average. The gas price in Europe and the US is assumed to remain oil linked and UK gas prices are assumed to be similar to continental prices plus the transport cost differential. Additional investment in coal production capacity, as a result of recent high prices, is assumed to lead to coal prices falling closer to long-run marginal costs.

Central scenario favourable to gas

The purpose of this scenario is to test the impact different price differentials between coal and gas would have on the generation mix and consequently CO₂ emissions. The Central scenario sensitivity therefore assumes the same oil and coal prices as in the central scenario, but assumes that the gas prices outturn between the central and low scenario (i.e. the gas prices for each year are the midpoint between the gas prices in the central and low scenario for that year).

High Scenario

In the High price scenario, global economic growth is assumed to remain strong, and demand elasticity for oil remains low. Spare capacity is assumed to remain scarce and production costs remain inflated. It is again assumed that gas prices remain oil-linked. The UK gas supply/demand balance is assumed to remain tight for the next year or so, leading to higher storage prices and so a higher winter spot price. It is also assumed that, despite EU market liberalisation, increased competition in gas markets is limited. Coal demand is assumed to remain strong, especially in developing countries. High gas prices may mean that there is sufficient space for a price rise without coal losing much of its competitiveness relative to gas. New technology in the power generation industries may also boost coal competitiveness.

Low Scenario

In the Low price scenario, it is assumed that oil producers invest in new production capacity and technological development minimises the costs of oil production. A slowdown in economic growth and/or substitution away from oil may reduce demand. In the gas market, there could be increased competition due to European liberalisation and significant global liquefied natural gas and pipeline build. As a result, gas prices may be driven down closer to long run marginal costs. Coal demand is assumed to continue to decline due to the competitiveness of gas. Technological advances and increasingly competitive global coal production may drive prices down to marginal costs.