

Enhancements to Energy Trends gas tables

Background

This paper describes methodological changes to the UK's gas import volumes and energy industry use of gas (upstream gas) and the sectoral breakdown of gas consumed in the UK (downstream gas).

Changes to gas import volumes.

Previous methodology

DECC publishes three gas tables each month along with a further quarterly table ([Energy Trends table 4.1](#)) at the end of each quarter.

[Energy Trends table 4.2](#) contains data relating to natural gas production, overall balances and supply and demand. [Energy Trends table 4.3](#) contains trade figures and [Energy Trends table 4.4](#) contains a more detailed breakdown of natural gas imports. Energy Trends table 4.1 uses information from tables 4.2 to 4.4 alongside a breakdown of gas use.

Revised methodology

Our current methodology does not capture 'gas own use' in liquefied natural gas (LNG) terminals or in the UK's storage facilities. With the substantial increase of LNG imports into the UK, this means that both imports and the gas industry use of gas were underestimated. Therefore from this edition of Energy Trends we have introduced a number of changes, most notably to table 4.2, to reflect this. The new version of table 4.2, highlighting additional columns is presented in Annex A.

Gas own use at LNG terminals

1. Table 4.2 now includes an estimate of gas own use at the LNG terminals from January 2008. The terminal's use of gas is estimated to be 1.5% of gas entering the National Transmission System (NTS) from the LNG terminals. This estimate has been agreed with the LNG terminals.
2. In order to properly balance this increased use of gas in the gas industry, the supply of gas into the UK needs to increase. Given that the NTS is an accurate estimate of the gas exiting the LNG terminal, we need to add the LNG terminals use – for regasification - to the entry figures at the NTS to accurately capture the gas imported into the UK. As a result of doing that, net imports and gas available at terminals increase and balance supply and demand.
3. With respect to the gas output from the transmission system, the LNG terminal own use is then subtracted from gas input into transmission thus leaving gas output from transmission systems unchanged from previously published data.

Gas own use at gas storage

1. Table 4.2 now includes an estimate for gas use for the UK's storage. This is based on energy consumption from the *Rough* Storage facility, a depleted gas field that is the UK's largest gas storage facility. In time, we hope to extend gas use for storage to other facilities.
2. The addition of a new column on storage own use has led to some small scale revisions to our data on stock changes. Data on stock changes are provided by National Grid but the figures represent National Grid's input and output from storage and do not take account of gas own use after delivery and before receipt. The stock changes reported in table 4.2 have been adjusted to reflect this use and therefore differ slightly from National Grid's stock change data.

Impact of revisions

The impact of the revisions are relatively small and chiefly affects the data on imports, net imports, gas available at terminals and gas input into the transmission system.

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Overall the data on imports has increased by around 0.4 per cent between January 2008 and December 2013. In line with this net imports, gas available at terminals and gas input into transmission have all increased by the same magnitude. Changes in import figures are shown in the table below.

Changes in import figures (GWh)

	2008	2009	2010	2011	2012	2013
Previous	407,054	455,789	589,497	584,414	547,300	533,589
Revised	407,188	457,447	592,554	588,475	549,518	535,105

Tables 41, 4.3 and 4.4 remain unchanged apart from increases to LNG imports and thus total imports and net imports following in the inclusion of gas own use at LNG terminals mentioned above. As with the previous methodology the overall net trade between table 4.2 and 4.3 remains the same.

Changes to sectoral consumption of gas

We have amended both the data collection methodology and data analysis for downstream gas:

Previous methodology

DECC publishes one gas table focussing on downstream gas each quarter within Energy Trends: [Energy Trends 4.1](#).

Revised data collection methodology

1. Data collection has been revised for the 2013 annual gas data and for quarterly data from 2014 onwards.
2. For companies supplying more than 1,750GWh to final consumers, both quarterly and detailed annual gas returns are required, which make up the main constituent of the data feeding into DECC's downstream gas data. These questionnaires, known as AG1 (Annual Gas 1) and QG1 to 4 (Quarterly Gas 1 to 4), have been amended this year. The majority of these changes were minor and were done to remove redundant data and improve ease of use.
3. There were two more significant changes to AG1 and QG data: firstly, an additional category was added for gas transfers to parent/sister companies for electricity generation. Previous data had significantly under-reported these sales of gas for electricity generation. One of the causes of this is that transfers of gas to a 'parent/sister' company have not counted as sales. We have amended this in the new quarterly and annual forms. Secondly, granularity of the quarterly data has been improved. Previously, the divisions for quarterly gas sales were broad and did not meet the current requirements for DECC analysis of within-year gas trends. We have amended this in the 2014 quarterly forms.
4. Annual data are also collected for companies supplying less than 1,750GWh to final consumers in the Annual Gas 2 (AG2) questionnaire. Prior to 2013 data collection, supply was required as a single total. For 2013 data onwards we now request these data broken down into the broad consumption categories shown in Energy Trends Table 4.1.

Revised data analysis

1. Data for 2008 to 2013 (annual and quarterly) have been revised this year. Prior to 2013, there was historically a shortfall between gas demand reported by companies supplying gas and the gas supply. Demand then had to be increased to meet supply using estimates based on a number of sources including the Index of Production and Services (IOP and IOS) data, along with EU Emissions Trading Scheme (EU-ETS) data.
2. With the change in data collection for 2013 annual data, this shortfall was greatly reduced (due to improved reporting by companies and inclusion of companies who previously were

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not reporting data). As such, we can now use 2013 annual data as an accurate baseline to cross-check the historical data.

3. Using the 2013 data set we re-ran our analysis on 2008 to 2012 data. To ensure accurate representations of annual and quarterly data, we cross-checked the analysis of 2008 to 2012 data using the sources listed below. We attempted to minimise the difference between these other sources and the annual and quarterly gas data.

Downstream Gas Cross-Checking Data Sources

Produce Price Index (PPI) Survey (ONS)	www.ons.gov.uk/ons/taxonomy/index.html?nscl=Producer+Price+Indices
Price Transparency Survey (DECC)	www.gov.uk/government/publications/statistical-surveys
EU-ETS Data	http://ec.europa.eu/clima/policies/ets/index_en.htm
IOP Data (ONS)	www.ons.gov.uk/ons/rel/iop/index-of-production/index.html
IOS Data (ONS)	www.ons.gov.uk/ons/rel/ios/index-of-services/index.html
ONS Purchases Inquiry 2007 (Table 4.13)	www.gov.uk/government/uploads/system/uploads/attachment_data/file/238798/industry.xls
Temperature Data (DECC)	www.gov.uk/government/publications/energy-trends-section-7-weather

Impact of revisions

The revised data collection and analysis has had an impact on other industries and other final users, with a minimal impact on all other sectors. The 2013 data collection showed too much of gas demand had been attributed to industry use. After amendments, approximately 20TWh was transferred out of industry use and into other final use. Within other final users, gas demand in the commercial sector increased the most, suggesting gas demand had previously been underestimated in this category. These amendments were then used to adjust data back to 2008.

Further developments

As ever, DECC welcome comments on the methodology and suggestions for its improvement.

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Michael Williams

Upstream gas
Oil and Gas Statistics Team
Tel. 0300 068 6865
E-mail: Michael.Williams2@decc.gsi.gov.uk

Jack Forster

Downstream gas
Oil and Gas Statistics Team
Tel. 0300 068 5052
E-mail: Jack.Forster@decc.gsi.gov.uk

Annex A: Energy Trends Table 4.2 under the new methodology

GAS

TABLE 4.2 Natural gas production and supply

GWh

	Upstream gas industry					Gas available at terminals ⁵	Downstream gas industry					Gas output from transmission systems ¹²	
	Gross gas production ¹	Less Producers' own use ²	Plus Exports ³	Imports	Net imports ⁴		Gas input into transmission systems ⁶	Less Operators' own use ⁷	LNG Terminals' Own Use ⁸	Storage Own Use ⁹	Stock changes ¹⁰		Metering differences ¹¹
2009	693,965	61,110	137,100	457,447	+320,348	953,203	954,375	2,810	1,659	682	+4,194	9,111	935,920
2010	664,353	61,124	176,399	592,554	+416,155	1,019,384	1,019,316	3,211	3,057	665	-15,936	10,848	1,017,471
2011	526,030	53,163	183,689	588,475	+404,786	877,653	878,316	1,791	4,061	652	+21,971	8,037	841,804
2012	452,094	48,461	144,023	549,518	+405,495	809,129	809,460	1,682	2,218	595	-326	6,099	799,191
2013	424,153	46,556	109,664	535,105	+425,441	803,038	803,478	2,017	1,517	644	-1,265	5,697	794,869
Percentage change	-6.2	-3.9	-23.9	-2.6	+4.9	-0.8	-0.7	+19.9	-31.6	+8.3			-0.5
2013 January - April	151,065	16,753	30,814	234,973	+204,159	338,471	338,338	1,079	428	37	-35,178	1,949	370,023
2014 January - April	150,396	14,270	32,596	179,028	+146,432	282,558	282,817	687	378	30	-12,103	1,778	292,047
Percentage change	-0.4	-14.8	+5.8	-23.8	-28.3	-16.5	-16.4	-36.3	-11.8	-19.9			-21.1
2013 February	35,323	3,892	6,633	53,665	+47,033	78,463	78,499	305	71	13	-17,685	426	95,370
March	38,209	4,441	6,903	68,101	+61,198	94,966	94,986	312	64	9	-8,352	423	102,531
April	37,595	4,089	9,122	53,001	+43,879	77,385	77,346	172	189	0	+5,239	586	71,161
Total	111,126	12,422	22,657	174,768	+152,110	250,814	250,832	789	323	22	-20,798	1,435	269,061
2014 February	35,906	3,319	5,851	45,271	+39,420	72,007	72,042	222	56	13	-7,825	444	79,131
March	38,126	3,762	9,276	45,761	+36,484	70,848	71,090	143	82	-	-947	455	71,357
April p	37,139	3,633	10,979	35,816	+24,837	58,344	58,330	83	187	-	+4,919	396	52,745
Total	111,171	10,714	26,106	126,847	+100,742	201,199	201,461	448	325	13	-3,853	1,295	203,233
Percentage change ¹³	-	-13.8	+15.2	-27.4	-33.8	-19.8	-19.7	-43.2	+0.7	-39.0			-24.5

- Includes waste and producers own use, but excludes gas flared.
- Gas used for drilling, production and pumping operations.
- Includes exports direct from UKCS as well as others carried out by the downstream gas industry from the national transmission system.
- A negative figure means the UK was a net exporter of gas.
- Gas available at terminals for consumption in the UK as recorded by the terminal operators.
- Gas received as reported by the pipeline operators. This differs from gas available at terminals due to different methods for calculating the volumes of gas involved being used by the terminal and pipeline operators. Pipeline operators include Transco, who run the national pipeline network, and other pipelines that take North Sea gas supplies direct to consumers.
- Gas consumed by pipeline operators in pumping operations etc.
- Estimated at 1.5 per cent of gas from LNG terminals entering the National Transmission Systems.
- Gas used in the Rough Storage facility.
- Stocks of gas held in specific storage sites, either as liquefied natural gas, pumped into salt cavities or stored by pumping the gas back into fields.
- The National Transmission System (NTS) consists of 276 discrete metering points with a degree of measuring uncertainty associated with each individual meter. The complexity of the system makes it difficult to ensure that all meters are accurate so that errors or bias in the flow calculations may occur. These errors/biases may occur for a number of reasons such as liquid contamination in the meter tube or on the plate itself, plate installation issues, dull plate edge, damage to plate edge, warped plate, grease on plate and incorrect parameters within the flow computer configuration.
- Including public gas supply, direct supplies by North Sea producers, third party supplies and stock changes. These figures differ from those for total consumption in Table 1.2 which include producers and operators own use of gas excluded in this table.
- Percentage change from the most recent 3 months compared with the same period a year earlier.