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biofuelwatch

Wind and solar, not biomass, have been key to the UK's partial coal phaseout so far

Coal burning in the UK has declined by 64% since 2011 overall – and by 72% in the electricity sector.

The bioenergy industry has used the occasion of the UK's first coal-free day (for electricity) to present biomass burning as key to the UK's gradual coal phase-out. However, statistics show that the expansion in biomass (mainly wood) burning in the UK compensated for just 21% of the reduction in coal. Those 21% were achieved by burning more than 1.5 times as much wood in 2016 as the UK produces in total every year.

The trebling of electricity generation from wind and solar power between 2011 and 2016, on the other hand, replaced 41% of the drop in coal electricity. It was followed by a fall in electricity demand – accounting for 22% in the reduction of coal power. Bioenergy expansion only comes in third place.

Sadly, the positive trends – i.e. the major expansion in wind and solar power as well as greater energy efficiency and conservation – which are behind most of the UK's partial coal phase-out will end unless Government policies which penalise onshore wind and solar power and which cut support for efficiency and energy conservation are reversed.

21st April 2017 was the first day since the 1880s on which no UK electricity was generated from coal. It was a widely reported symbolic occasion: coal power generation in the UK has not yet ended entirely, but it continues to decline, having dropped by 72% between 2011 and 2016. This is unequivocally good news, not just for the climate, but also for the many communities worldwide whose lands, health, clean air and water are being sacrificed by coal mining companies.

The news of the UK's first coal-free day[1] was marred by a biomass industry magazine boasting: "*Biomass helps UK have coal-free day*"[2]. The conversion of 2 gigawatts of the UK's coal power capacity to biomass by Drax Plc has replaced one destructive and high-carbon fuel with another. It has replaced some of Drax's need for harmful opencast coal mining with more clearcutting of biodiverse forests, especially in the southern US[3]. An article published by Forbes went as far as saying: "*Britain has first coalless day since 1880 – by burning even more polluting biomass instead*"[4].

Biofuelwatch has long been calling for Drax power station to be forced to shut down and to stop burning coal and biomass alike – something the government could easily make happen by axing or at least cutting Drax's £1.5 million daily subsidies. Drax, however, is just one of the UK's coal power stations – albeit one of the two which are burning the most coal at present[5]. We therefore decided to look more closely at how important biomass has really been to the major decline in UK coal burning.

How much less coal is the UK burning?

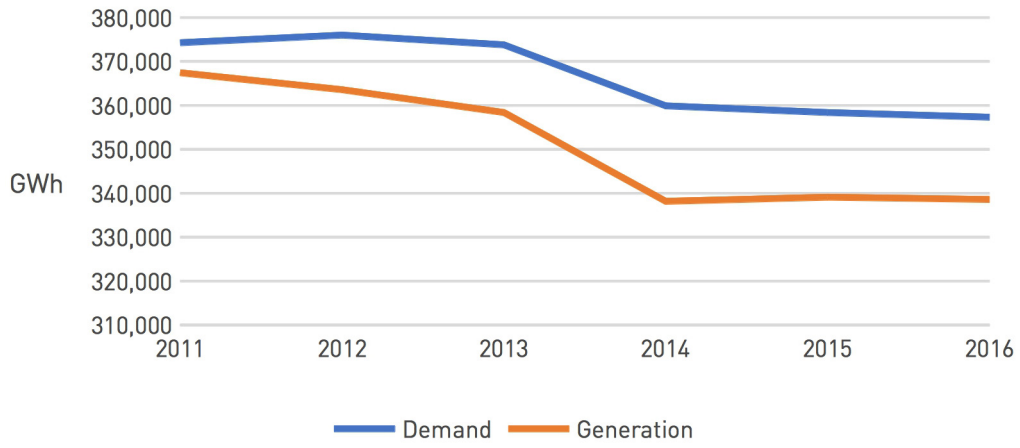
Between 2011 and 2016, the UK's use of coal declined by 64% in total. Most coal is being used in power stations, and in that sector, coal use has dropped by full 72%. The second biggest use is in coke ovens, which are part of steel production. That use has declined, too because the UK is producing less steel and importing more (which is not such good news as the much bigger drop in coal burning for electricity).

The fall in coal burning between 2012 and 2016 looks even more dramatic, but this is because some coal power stations had to close down at the end of 2012 and the companies operating them burned more than usual during that year. Looking at the 2011-2016 period shows the overall trends much better.

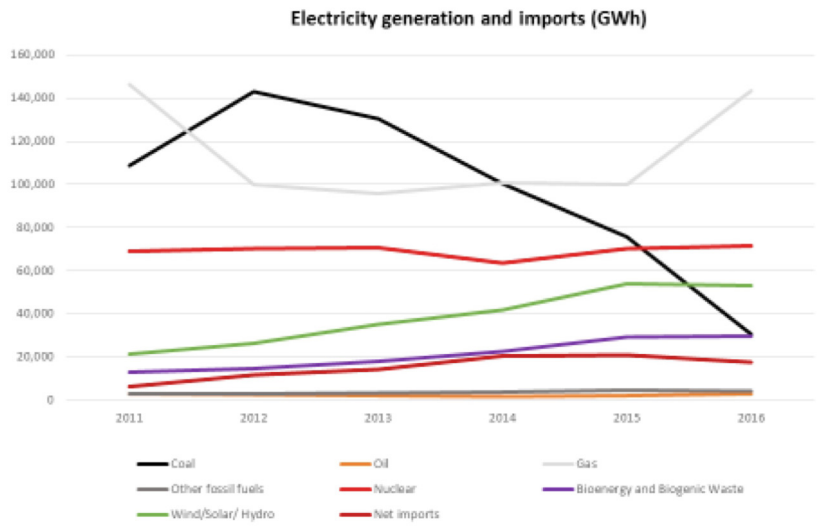
What has compensated for the fall in coal-generated electricity?

The decline in coal burning has been the single biggest change in the UK's electricity system since 2011. The total changes are illustrated in the following two graphs[6]:

UK electricity demand and generation



Changes in electricity generation since 2012



Here is what those trends between 2011 and 2016 look like in real figures:

1. Electricity generation from coal fell by 77,871 gigawatt hours (GWh);
2. Electricity generation from non-burn renewables, i.e. from wind/solar/hydro increased by 31,594 GWh;
3. Electricity demand fell by 16,961 GWh;
4. Electricity generation from bioenergy (mainly wood burning) increased by 16,637 GWh;
5. Net electricity imports increased by 11,328 GWh

Electricity generation from gas dropped in 2012 and then recovered in 2016 – but it was still slightly below the 2011 level. Electricity generation from oil slightly declined, too. Overall, the contribution of fossil fuels to UK electricity fell by 82,288 GWh.

The single biggest increase in electricity generation came from wind power: Electricity from wind increased by 21,853 GWh between 2011 and 2016 – even though 2016 was a far less windy year than 2015 had been.

Solar power saw the biggest leap in relative terms: Electricity generation from solar PV increased more than 42 times, by a total of 10,084 GWh.

Analysis of the trends

The decline in electricity generation from coal burning has been compensated for by:

1) An increase in wind and solar power – which has compensated for 41% of the decline in coal power;
2) Reduced electricity demand – which has compensated for 22% of the drop in coal electricity
3) Increased electricity from burning bioenergy and waste, the bulk of which comes from burning wood – which has compensated for 21% of reduced coal burning.

Bioenergy is thus only the third most important factor which has facilitated the partial coal phase-out so far – despite the fact that Drax alone burned pellets made from over 13 million tonnes of wood in 2016 – 22% more than all of the wood that the UK produces every year. At least another 3 million tonnes of virgin wood from the UK are also being burned in power stations[7].

Despite the growth in bioenergy – funded through generous subsidies (£1.5 million every day just for Drax), power generation from burning carbon – i.e. from fossil fuels and bioenergy and waste combined – fell by 23% between 2011 and 2016.

Conclusion

Coal burning in the UK has declined dramatically in recent years – by 64% between 2011 and 2016 - especially in the electricity sector, where it has fallen by 72%.

Wind and solar power generation trebled during the same period. Wind and solar electricity together have made the single biggest contribution to replacing electricity from coal.

63% of the coal phaseout has been compensated for by increased wind and solar power and reduced electricity demand combined. This confirms that greater support to low-carbon, no-burn renewable energy and for energy efficiency and conservation together are viable and sustainable options for phasing out coal and indeed fossil fuels overall.

Bioenergy has expanded substantially, and by 2016, over 50% more wood was burned in UK power stations than the UK produces annually. Yet the expansion in bioenergy still only replaced 21% of the coal burned for electricity in the UK in 2011.

Sadly, under current Government policies, the positive trends in UK electricity are coming to an end: Subsidies for new

onshore wind and solar PV projects have been abolished (except for a limited amount of micro-generation)[8], new tax changes are penalising solar roofs on non-domestic properties[9], and new planning rules in England have made it very difficult for anyone to obtain planning permission for wind turbines[10]. At the same time, funding for home insulation and other energy efficiency measures has been slashed[11]. Subsidies for offshore wind are still available, however investment in that sector is particularly vulnerable to the consequences of Brexit[12].

Coal power and biomass power are both highly carbon polluting and biomass has the additional impact of degrading the world's forest biodiversity. Both could be phased out rapidly by cutting subsidies for biomass, and renewing and increasing support for onshore wind and solar power and for energy efficiency and conservation.

Notes

1. Note that the 'coal-free' announcement only refers to electricity. In 2016, 63% of the UK's coal use was for electricity.
2. www.bioenergy-news.com/display_news/12209/biomass_helps_uk_have_coalfree_day/
3. See www.biofuelwatch.org.uk/axedrax-campaign/
4. https://www.forbes.com/sites/timworstall/2017/04/22/britain-has-first-coalless-day-since-1880-by-burning-even-more-polluting-biomass-instead/#6a44f7cf6fdc
5. Aberthaw and Drax generated the most coal-based electricity in the UK in 2016.
6. The figures are based on statistics contained in https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/577712/DUKES_2016_FINAL.pdf , https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/604040/Total_Energy.pdf, and https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/612492/Energy_Trends_March_2017.pdf
7. For domestic sourcing of virgin wood for biomass electricity see the 2014/15 data published by Ofgem: https://www.ofgem.gov.uk/publications-and-updates/renewables-obligation-ro-annual-report-2014-15 . This figure has likely increased since then.
8. https://www.publications.parliament.uk/pa/cm201617/cmselect/cmscotaf/83/83.pdf
9. http://energydesk.greenpeace.org/2016/12/15/uk-solar-power-tax-explainer/
10. http://researchbriefings.files.parliament.uk/documents/SN04370/SN04370.pdf
11. https://www.theguardian.com/environment/2016/mar/21/household-efficiency-installations-uk-plummet-cuts-heating-energy
12. http://www.nortonrosefulbright.com/knowledge/publications/141735/uk-offshore-wind-what-impact-is-brexit-likely-to-have-on-the-uks-offshore-wind-industry#section2

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biofuelwatch.org.uk · biofuelwatch@ymail.com