



COAL - The Roundup

Posted by [Chris Vernon](#) on July 12, 2007 - 1:45am in [The Oil Drum: Europe](#)

Topic: [Geology/Exploration](#)

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Below the fold there is a roundup of the five reports published in the first half of 2007 on the global coal situation. They are all broadly in agreement saying that there is likely to be less coal available than traditionally thought.



Photo by [Tim Ellis \(cc\)](#)

Thanks to Douglas Low of The Oil Depletion Analysis Centre ([ODAC](#)) for his assistance compiling this roundup.

1. Energy Watch Group

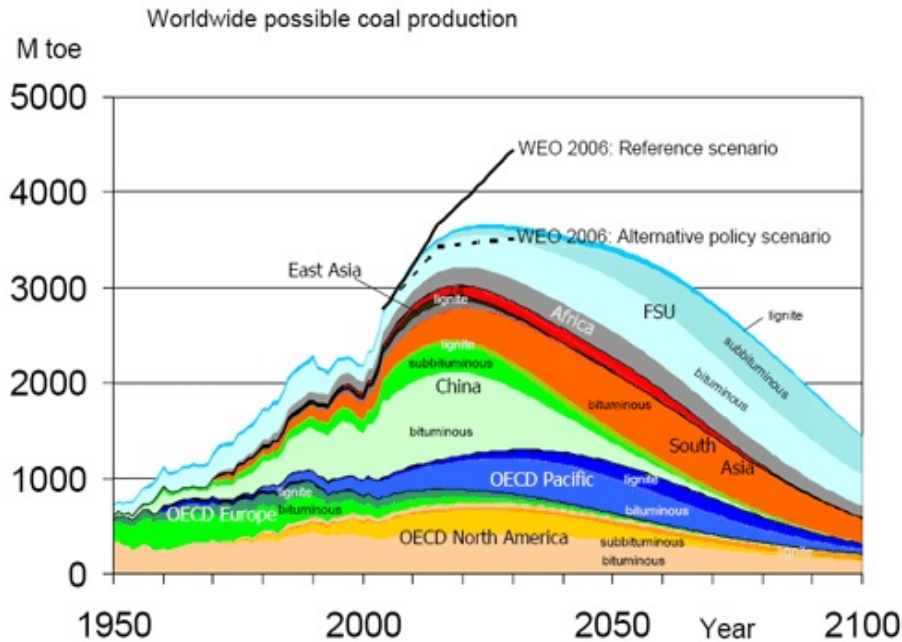
[Read the report](#) (PDF, 630 KB, 47 pp).

A report released by the Energy Watch Group concludes that global coal production will peak about 2025. From the report's executive summary, conclusion and recommendation:

Global coal reserve data are of poor quality, but seem to be biased towards the high side. Production profile projections suggest the global peak of coal production to occur around 2025 at 30 percent above current production in the best case. There should be a wide discussion on this subject leading to better data in order to provide a reliable and transparent basis for long term decisions regarding the future structure of our energy system. Also the repercussions for the climate models on global warming are an important issue.

Some of the report's conclusions: Data are of poor quality; Six countries dominate coal globally USA, Russia, India, China, Australia, South Africa; Fastest reserve depletion in China, USA beyond peak production.

If the report conclusions are correct, this is good news for climate change and bad news for the global economy. The implication is that as natural gas supplies get tight over the next two decades, coal will be unable to replace gas for producing electricity. It also implies that there is no long-term future for producing liquid fuel from coal (see [Fischer-Tropsch](#), better known as coal-to-liquids).



(Source: Energy Watch Group)

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This report has been discussed and summarized by Richard Heinberg: [Burning the Furniture](#)
And by Shaun Chamberlin on The Oil Drum: [Peak Coal - Coming Soon?](#)

2. The Future of Coal, a study by B. Kavalov and S. D. Peteves of the Institute for Energy (IFE), prepared for European Commission Joint Research Centre

[Read the report](#) (PDF, 1.7 MB, 52 pp).

The report identifies three trends:

- Proved reserves are decreasing fast – unlike oil and gas.
- Bulk of coal production is concentrated within a few countries.
- Coal production cost are rising all over the world.

The following observations are also made:

- Hard coal in the EU is largely depleted.
- Six countries (USA, China, India, Russia, South Africa, Australia) hold 84% of world hard coal reserves. Four out of these six (USA, Russia, China, Australia) also account for 78% of world brown coal reserves.
- Growth in consumption has not been matched by increasing reserves leading to falling R/P

ratios.

- Poor investment over the past 10-15 years.
- The USA and China — former large net exporters — are gradually turning into large net importers with an enormous potential demand, leaving Australia as the “ultimate global supplier of coal”. However all of Australia’s steam coal exports equal to only 5% of Chinese steam coal consumption.

The report was discussed by Richard Heinberg: [Coal’s Future in Doubt](#)
Richard Heinberg, Global Public Media [MuseLetter], 09 May 2007:

The EWG [Energy Watch Group] report has enormous implications for climate change, global energy, and particularly for future electricity supply and steel production in the US and China. Previously, virtually everyone in the fields of energy policy and energy analysis—as well as nearly everyone involved in discussions about climate change—had assumed that the world’s coal endowment was so enormous that no limits would be encountered anytime this century. The EWG’s conclusions turn this assumption on its head... Therefore any new analysis of global coal supplies, following on the heels of the EWG report, warrants considerable interest... We have not had to wait long. “The Future of Coal,” a study by B. Kavalov and S. D. Peteves of the Institute for Energy (IFE), prepared for European Commission Joint Research Centre, is ready in final draft and will be published within days... Early in their paper the authors ask, “Will coal be a fuel of the future?” Their disturbing conclusion, many pages later, is that “The analysis in the preceding chapters indicates that coal might not be so abundant, widely available and reliable as an energy source in the future.” Along the way, they state “the world could run out of economically recoverable (at current economic and operating conditions) reserves of coal much earlier than widely anticipated.”... In summary, we now have two authoritative studies reaching largely consistent conclusions with devastating implications for the global economy... For China and the United States, the world’s two most coal-dependent countries, the message could not be clearer: whether or not global climate concerns are taken seriously, it is time to fundamentally revise the current energy paradigm.

3. Coal of the Future, a study by B. Kavalov of the Institute for Energy (IFE), prepared for European Commission Joint Research Centre

[Read the report](#) (PDF, 2.0 MB, 64 pp).

Similarly titled, B. Kavalov has prepared a second report for the European Commission: Coal of the Future. This time focussing on the technologies of the coal industry. The last section of the report covers long term market outlooks where the following observations are made:

China

We calculate that China has 30 years of life in hard coal reserves and it is difficult to see if production can be maintained at over 2 Btpa past 2030 or 2040, which will focus attention on technological change, including nuclear and use of low quality, expensive-to-mine coal deposits.

Europe

Consistent demand coupled with declining production could produce a potentially significant shortfall in supply and demand profiles by 2015. UK will be producing below 10 Mtpa, Germany will produce about 10 Mtpa of hard coal and Poland will at best be meeting its needs but is more likely to be importing coal. Between 2015 and 2020,

South Africa may well have declined as an exporter to a level below 60 Mtpa.

This would suggest a total deficit of nearly 50 Mt by 2015, if demand is consistent with today's levels, and by 2020 this could be 80Mt, as South Africa slows its export production. Post 2020, we believe South African exports could decline quickly to a level of 40-50 Mtpa, which could have a dramatic effect on coal supply if customers do not plan adequately.

Asia

China will decline as an exporter slowly (some would disagree and believe the country will exit the export market as quickly as they entered it) and create a shortfall in tonnage. South Africa, as the swing supplier, will have limited flexibility after 2015 and from 2020 may decline rapidly. Indonesia will probably see exports decline from 2010 onwards as existing operations come to the end of their lives.

4. Dave Rutledge, California Institute of Technology

[Read the slides](#) (PPT, 2.12 MB, 69 pp).

Dave Rutledge is an American researcher, based at the California Institute of Technology, who thinks that global coal reserves may be less than currently thought. He starts his presentation with a discussion of oil production / depletion, moves on to coal reserves, climate change modelling and finishes with some alternative energy solutions. [Dave's research page](#) contains a PowerPoint presentation, and roughly the same slides are in the video version which you can watch on YouTube. As an example of a country that got its coal reserves wrong, Dave analyses what happened to the UK coal industry. Dave states:

“There is also a spreadsheet file there with the raw data and extra plots that do not fit in a presentation, together with a link to an archive webcast from a talk I gave at the University of California at San Diego on May 11. I was an undergraduate at Cambridge in the early 70's when the coal miners brought down the Heath government. The critical part of this discussion is the British experience with coal, because it is the outstanding example of a country with major coal reserves that has gone through the complete rise and fall. The American examples for Pennsylvania anthracite and Virginia are much smaller amounts of coal.”

Dave sent ODAC a more up-to-date copy of his PowerPoint presentation [Hubbert's Peak, The Question of Coal, and Climate Change](#) (2.12 Mb).

This report has been summarized and discussed in some detail on The Oil Drum website: [The Coal Question and Climate Change](#) Dave Rutledge, The Oil Drum, 25 June 2007.

If you have a spare hour, it is worth watching Dave's [video presentation](#).

5. US National Academy of Sciences

[Read the report brief](#) (PDF, 2.46 MB, 4 pp).

The US National Academy of Sciences have just released a report on coal, the fifth report in as many months suggesting global coal reserves may be considerably less than commonly believed. Except that this report suggests taking up to 10 years to determine an accurate estimate of US coal reserves. The report questions the myth of enough coal for 250 years, indeed, is certain there is enough coal only to 2030, and that is at current rates of production. The [full report](#) costs \$US36-42.30, depending on version, but the crux of the report is available free, in the [Report Brief](#) (PDF, 2.46 Mb, 4 pages). All emphasis in bold is ODAC's:

Accurate and comprehensive estimates of national coal reserves are essential for a coherent national energy strategy, particularly for community, workforce, and infrastructure planning. Although the United States is endowed with a vast amount of coal, coal reserves (i.e., the coal that can be economically mined using current mining practices) are a small proportion of total coal resources.

Present estimates of coal reserves— which take into account location, quality, recoverability, and transportation issues—are based upon methods that have not been updated since their inception in 1974, and much of the input data were compiled in the early 1970s. **Recent programs to assess coal recoverability in limited areas using updated methods indicate that only a small fraction of previously estimated reserves are actually recoverable.** Such findings emphasize the need for a reinvigorated coal reserve assessment program using modern methods and technologies.

A coordinated federal-state-industry initiative to determine the magnitude and characteristics of the nation's recoverable coal reserves, using modern mapping, coal characterization, and database technologies, should be instituted with the goal of providing policy makers with a comprehensive accounting of national coal reserves **within 10 years.** The report estimates that such an initiative, which should be lead by the U.S. Geological Survey and involve participation by the Energy Information Administration at DOE, states, and industry, will require additional funding of approximately \$10 million per year.

From the [News Release](#):

To formulate national energy policies, federal policymakers need accurate estimates of the amount, location, and quality of mineable coal. Such estimates are particularly important for community, workforce, and infrastructure planning. **It is clear that there is enough coal at current rates of production to meet anticipated needs through 2030, and probably enough for 100 years**, the committee said. However, it is not possible to confirm the often-quoted assertion that there is a sufficient supply for the next 250 years.

Previously on The Oil Drum

These articles from [Heading Out](#):

[Some history on Coal EROI and UK coal numbers](#)

[Another thought on coal supply](#)

[Coal Mining Reserves - a cautious note](#)

[So will it be the Emperor Coal?](#)



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