



Our annual energy update: a reality check

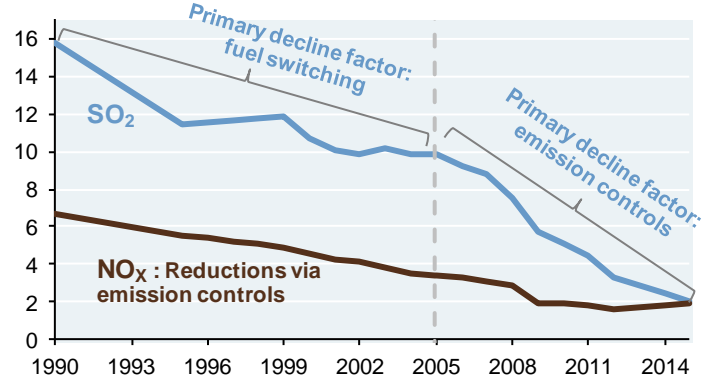
October 28, 2013

Don't look now, but coal usage is actually rising, despite its environmental and health impacts

Here are some environmental consequences from coal in the US, courtesy of the Union of Concerned Scientists, Harvard's Public School of Health and the Clean Air Task Force:

- Coal-fired power plants are a top source of **carbon dioxide**, **smog**, **acid rain** and **heavy metals** emissions. Sulfur dioxide (SO₂) and nitrogen oxides (NO_x) are two of the worst: in the atmosphere, they are converted into sulfates and nitrates, acidic particles that penetrate into human lungs and can be absorbed into the bloodstream. Since the 2005 Clean Air Interstate Rule, coal plant SO₂ and NO_x emissions have fallen sharply¹. However, a coal plant with emissions controls can still emit several thousand tons of SO₂ and NO_x per year, as controls are only 70%-85% effective. The industry-wide projection by the Environmental Protection Agency of a combined 4 million tons per year in 2014 still creates substantial and widespread health and environmental damage.
- Coal plants also create more than half of anthropogenic emissions of **mercury**, which causes brain damage and heart problems, particularly in children exposed in utero from fish consumed by their mothers. Over 40 states have consumption advisories on fish due to mercury poisoning. Activated carbon injection technology can reduce mercury emissions by up to 90% when combined with baghouse filters and controls like sulfur scrubbers. The Mercury Air Toxics Standards rule was promulgated by the EPA in 2010, but utilities have until 2015 to comply, and the rule is currently under court challenge by the coal industry and some US states.
- **Mountain top removal:** 500 Appalachian summits have been removed, impacting 1.4 million acres. Over 2,000 miles of streams have been buried, and there are 2,500 miles of polluted streams in Kentucky alone. The deforestation and landscape changes associated with mountain top removal also impact carbon storage and water cycles.
- **Sludge, slurry and "fly ash" ponds:** Thousands of sludge and slurry ponds lie near coal mines and processing plants. Roughly 1,300 impoundments adjacent to coal-fired power plants store fly ash captured from combustion gases, and receive 130 million tons of waste annually which is known to contain radioactive elements and toxins. There are waste heaps near abandoned coal mines and persistent underground fires in some coal seams.

US declines in coal-fired SO₂ and NO_x emissions
Million tons



Source: US Environmental Protection Agency. December 2012.

¹ SO₂ emissions were first reduced in the 1990's through fuel switching to lower-sulfur coal, and then by fuel switching and emissions control technology. The 1990 Acid Rain law capped SO₂ emissions and resulted in the use of flue gas desulfurization ("scrubbers"), and controls for all but carbon dioxide emissions are mandatory through federal and state regulations.



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Sources

Energy databases

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Coal research

- “Environmental impacts of coal power”, Union of Concerned Scientists, 2012
- “Explore the True Costs of Coal”, Harvard School of Public Health, 2012
- “Full cost accounting for the life cycle of coal”, New York Academy of Sciences, Ecological Economics Reviews, February 2011
- “Growth in China Wind Energy Production Exceeds Coal for First Time Ever”, Greenpeace East Asia, March 2013
- “Could fracking make the Persian Gulf irrelevant?”, CNBC, May 31, 2013

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