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China's green gift to the world

Environmentalists who want to ban China's coal imports are 100% wrong: driving up the price of coal cuts carbon emissions

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A power plant in

Zhangjiakou, northeast China's Hebei province. Despite having large coal reserves, China is importing record amounts of coal, driving up the price on international markets. Photograph: STR/AFP

In a mostly dismal year for US and international climate policy, China's coal imports are skyrocketing to record levels. The environmental community and policy pundits have rushed to decry this new development, arguing that China's expanding imports undermine global climate efforts, and even that countries should block coal exports to China.

But the conventional wisdom has it backwards. In reality, record Chinese coal imports are better for global CO₂ emissions than any climate policy to come out of Washington or the United Nations this year – because they strengthen incentives for the rest of the world to switch to less polluting fuels.

Burning coal is the largest single source of global CO₂ emissions, and at over 3bn tons annually, China's coal consumption dwarfs that of all other countries. But in 2009, something counterintuitive happened: the world's largest coal producer became one of the world's largest coal importers. As a result, the entire globe is now rushing to figure out how to sell more coal to China. Environmentalists have balked, suggesting that coal sales to China should be blocked and that China's imports are evidence that it isn't taking real steps to fight global warming.

But the reality is that the climate is directly benefitting from China's coal buying spree. When China imports coal, its own coal consumption and emissions stay constant, while the rest of the world's emissions should decrease. The logic works as follows: China isn't importing coal because it doesn't have enough to burn. It has plenty, and imports only replace domestic coal that would have been burned otherwise. (Despite the fact that "peak coal" theorists are the latest fashion, as the IEA has recently highlighted, vast regions of Chinese coal reserves still sit largely untapped.) China's domestic coal prices are now the highest in the world, which allows Chinese companies to save money by purchasing coal from overseas.

Quite simply, China is optimising the economics of its coal supply by arbitraging prices in its domestic markets against those in the international market. (We issued a study on that subject at Stanford earlier this year.) This buying behaviour matters because it shows that China's increased imports have almost no impact on how much coal China uses (and thus its emissions from coal) – only on where it comes from.

China's coal imports don't impact the country's own total coal use, but they do directly impact how much coal the rest of the world uses. Unlike China, major coal consuming regions like the US and Europe have near term alternatives to burning coal. While nearly 80% of China's electricity is produced from coal and less than 4% from natural gas, the United States produces roughly a quarter of its electricity from natural gas and approximately half from coal. For Europe, these numbers are around 35% and 50%, respectively. Because burning natural gas emits roughly half the CO₂ per megawatt-hour (MWh) of electricity compared to coal, the possibility of switching to natural gas generation when coal becomes expensive is one of the most significant opportunities to reduce emissions globally.

China is giving the rest of the world a huge push to use cleaner energy by bidding up the global price of coal and making it less competitive with greener alternatives. Last year, China's imports accounted for nearly 15% of all globally traded coal. This year, rapidly increasing imports are set to account for an even larger share of the entire global coal

market. China's substantial purchases on the global coal market have driven the world price of coal up relative to natural gas. Real natural prices in the US and Europe are near record lows because of low levels of economic activity in these regions and increased gas supplies from unconventional sources. The global coal price increase caused by China's actions means that major coal-consuming regions with the ability to run more natural gas-fired generation capacity and less coal-fired capacity will do so.

To get a rough idea of the scale of these CO₂ reductions, note that the European Union and the US consume roughly 7bn MWh of electricity annually. Approximately 1 ton of CO₂ emission is produced per MWh of electricity from a typical coal-fired generation unit, while burning natural gas emits only half as much. If 5% of these MWhs were produced using natural gas instead of coal due to China raising the international coal price, a 175m ton drop in CO₂ emissions is the result. This is equivalent to taking 32 million cars off the road in the US and Europe.

The more expensive China makes global coal supplies, the more competitive cleaner energy becomes in the developed world and the lower will be CO₂ emissions. In a world without a price on carbon, we can only hope that China takes all of the rest of the world's coal it can get.

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