



Can king coal clean up?

By Jon Entine

Under pressure from environmentalists, the coal industry and its supporters are claiming that their fuel can be clean. But do their claims stack up?

Environmentalists call it the “armpit of Washington”. The Capitol Power Plant generates the energy that steams and chills the water that circulates through a web of tunnels to heat and cool the Capitol, the Supreme Court, the Library of Congress and 19 other US government institutions. Its four smokestacks tower over densely populated and mostly poor neighbourhoods, belching sulphur dioxide, mercury, carbon monoxide and nitrogen oxide in a city that has repeatedly been found in violation of the Clean Air Act.

Half the energy generated by this century-old plant comes from coal, and it has been updated with advanced scrubbing technology. Still, other less polluting sources are available. Yet it is unlikely to be reconfigured any time soon. Its supporters – coal state politicians, many economists, and even some environmentalists – see the issue far differently.

“As we break the chains of foreign oil, our reliance on resources that we have here at home will only expand,” says a spokesman for Robert Byrd, a Democrat and chairman of the Senate Appropriations Committee, who was raised in the hardscrabble coal-fields of southern West Virginia and helped block a proposal to phase out coal at the district’s only coal-fired plant. “Technologies are available today that can burn coal more cleanly and more efficiently.”

The statement is a nod to the debate now raging on Capitol Hill over what is known as “clean coal”. The Capitol Power Plant is a reminder of the dirty past and a symbol of the hopes for a clean coal future in a country in which more than half of the electricity comes from coal.

Costs and benefits

It is also a reminder of how the world’s new economic reality may reshape efforts to address global warming. Byrd and other coal industry supporters managed to direct billions of tax dollars in both last year’s bailout bill and the new stimulus package towards revamping coal-fuelled generating stations and researching ways to capture carbon-dioxide emissions when coal is burned and bury the gas underground, a process known as carbon capture and storage, or CCS. The European Union is moving more gingerly, but in February approved an injection of €1.25bn for CCS research.

Those announced outlays have a coalition of environmental groups, led by Greenpeace and Al Gore’s Alliance for

Climate Protection, steaming. If all goes as planned, environmentalists will come together in Washington DC in March to stage what they hope to be a huge protest – a day of civil disobedience, they label it – in front of the Capitol Power Plant to make the case that clean coal is a sham.

In the long term they are pressing for an end to all subsidies for coal – for both conventional production and investments in CCS – while backing government support for alternative energy research.

In December, toxic sludge created from fly ash collected during the coal burning process burst through a retention well at an eastern Tennessee storage pond, spilling heavy metals including arsenic, lead, mercury and selenium across 300 acres. Homes were destroyed and aquifers are threatened.

Fly ash ponds – there are more than 1,300 of them across the US and many thousands more around the world – are actually considered a sign of progress in the coal industry. The amount of coal ash sludge has

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ballooned in part because air pollution controls have improved. Contaminants and waste products that once spewed through the coal plants’ smokestacks are increasingly captured in the form of solid waste.

This good news/bad news story underscores the dilemma faced by the coal industry and a society hoping to change its energy habits. According to government data, since 1963 when the US passed its first Clean Air Act, utilities have gradually cut coal pollutants by more than 70% as measured by the regulated hazardous emissions. Particulates – soot – are down 90% even as coal use has tripled. Europe and other developed countries followed in kind, clamping down on coal plants asphyxiating urban centres.

Still, coal mining remains as environmentally destructive and dangerous an enterprise as one could imagine. It damages towns, landscapes and drinking water sources as well as the health of miners. In the lexicon of economists, coal extraction and burning creates “externalities”, most of which are passed off on the public. Considering the projected economic costs of global

warming damage caused by the production of greenhouse gases, those externalities will only rise.

Coal does have enormous virtues, however: it’s cheap and abundant. That’s why we have become so reliant on it. According to the World Energy Council, while petroleum is the world’s primary energy source, accounting for about 37% of consumption, coal is second at more than 25% and its share is growing. Reserves estimated at 850bn tonnes are recoverable in more than 70 countries – and there is far more if scientists can overcome modest geological challenges. Much to the chagrin of many environmentalists, coal will be with us well into the 22nd century, and probably far beyond.

Making the issue even more prickly, coal is most plentiful in the least regulated countries, all of which are already among the world’s leading energy consumers. China, which energy experts say derives 80% of its electricity from unregulated coal-fired power plants, is home to six of the world’s cities with the most polluted air. Russia’s use of coal will increase as its natural gas reserves dwindle. And India, now the world’s fastest growing economy, will exploit its coal reserves to satisfy increasing power demand. But the terms of the controversy are being defined in the US, the world’s second biggest producer and leading coal consumer.

Washington coal wars

The world economy may be in tatters, but you would never know it considering the millions of dollars being spent in the advertising coal wars. It is a shoot-out at the Madison Avenue corral and it turns on the ambiguous term “clean coal”. As one environmentalist has quipped, whoever invented the phrase should win an Oscar for creativity, if not outright deception.

In fact, clean coal is a shortening of “clean coal technology”, coined when regulations were first drafted and coal plants introduced scrubbers, which remove or neutralise many particulates and gases, and other technologies. Recognising the marketing value of the phrase, the industry leveraged the lessons learned from the abortion wars: “anti-abortion” and “pro-life” may mean the same thing but they strike very different emotional heartstrings.

The coal industry now fudges in its use of clean coal to refer to both long-practised pollution reduction processes, where it has made considerable progress, and to



No magic alternative

futuristic and unproven technologies to reduce greenhouse gases. At issue is money: billions of dollars.

The coal industry would have everyone believe that carbon capture and storage is the magic technology to address the CO₂ challenge – and that the era of clean coal is achievable if only the government would heed the sirens of progress and fund the research.

Over the winter holidays, as the details of the incoming administration's rescue package were being debated, coal advocates were biting their nails about just what would be in their Christmas stockings. They pressed their case in newspapers and on the web, running ads with coal lumps wearing designer sunglasses and singing Christmas carols.

All told, the American Coalition of Clean Coal Electricity (ACCCE), funded by 48 coal producers, related manufacturers and even financial companies that have lent money to the industry, backed a \$35m advertising and lobbying campaign, lauding CCS. Its most galvanising spot features ordinary-looking people of varying hues saying "I believe" in a support of a variety of gauzy goals – the future, new technologies, protecting the environment and energy independence. It

ends with the announcer endorsing "clean coal, America's power".

The environmentalists' coalition, apart from some groups that support investing in clean coal technology, such as WWF in Australia, fired back with its own lavishly funded "This is Reality" campaign. Its ad opens with a man saying he is in a "state of the art" clean coal plant. He dons a hard hat, opens a door and enters a barren landscape of sand and rocks. "This is today's clean-

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coal technology," he says with feigned enthusiasm. Seconds later, the words "In reality, there is no such thing as clean coal" scroll across the screen.

CCS has been used since the early 1970s by oil companies, which have flooded ageing underground reservoirs with carbon dioxide, often brought in from coal plants, to coax out stubborn deposits of crude. But the amount of CO₂ used is relatively miniscule. Small demonstration CCS plants in

Australia and Germany, funded by government subsidies, have opened and others are on the drawing boards, but costs are prohibitive. Even the coal-friendly Bush administration was moved in 2008 to cut off funding of a demonstration plant in Illinois as the costs ran amok.

More daunting, storing massive amounts of carbon dioxide safely for many centuries, which is necessary to make this technology feasible, defies what we know about geology. Even coal industry scientists agree with a recent MIT study projecting that even if engineers came up with dramatic, yet unforeseen, breakthroughs, the first large-scale working CCS plants would not come online until the 2030s at the earliest.

Hard choices

Green energy acolytes say alternative energy will simultaneously protect the planet from environmental degradation and revive our economy. "It is insanity verging on criminal negligence to pass over clean [alternative] energy and pin hopes on an unproven technology," says Emily Rochon, author of *False Hopes*, an anti-coal polemic widely distributed by Greenpeace.

In other words, it's a "no brainer". But that argument runs up against a hard

reality: considering how inexpensive coal is to extract, switching from coal to alternative energy would seriously damage the economy.

Everyone now acknowledges the hidden cost of externalities. But that is not in itself an argument for transitioning quickly away from coal to alternative energy. The consequences of coal mining and burning have been evident for more than a century, yet country after country has made a cost/benefit analysis that the damage caused by coal is worth paying because of the economic benefits it yields. At least until recent years, we as a society have made a collective judgment that dirty but cheap energy is worth the costs.

Alternative energy and climate change advocates see the world differently. They believe that greenhouse gas emissions court catastrophic and irreversible damage. At present US businesses face no costs for generating CO₂. The Obama administration has made it clear that is going to change. A cap-and-trade system, a carbon tax, or a combination of the two is inevitable. That would set a cost for greenhouse gas emissions, which would create a financial incentive for coal (and oil) companies to fund carbon reduction research.

The greens' goal is admirable. Who would not want a world humming along on windmills and solar panels?

The rub

But is it feasible? Here's where their argument goes fuzzy. The unspoken green myth is that the world can make an orderly and relatively rapid transition from a fossil fuel present to a green energy future. But there are huge technical and economic hurdles.

The only way to make greener energy more competitive in the marketplace as currently exists is through massive subsidies. "Let's assume the government injects money into green energy projects in the hopes of creating green jobs and phasing out dirty energy, and raises the cost of fossil fuels," says Kenneth Green, an environmental researcher with the American Enterprise Institute in Washington DC. "The price of green energy would become competitive with fossil fuels, but at what price-point?"

Basic economics kick in. Without factoring in externalities, alternative energy remains way more expensive to produce. (Let's put aside the thorny problem that solar and wind energy have technological



\$35m ad campaign, but no carbon captured

hurdles to jump and externality issues of their own to confront to become viable on a mass scale.) The gap would be reduced if carbon-based energy rises under cap-and-trade or energy tax schemes, but only partially.

People would use less electricity, especially that produced by coal and oil. High-paying jobs would be displaced in those industries, although as dirty sources of electricity become more expensive under cap-and-trade, retrofitting will become attractive for investment, and could drive

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the growth of some green collar jobs, as Obama has argued. How well paid and how many these jobs would be is anyone's guess.

But that is just the tip of the iceberg. The current relatively low cost of energy allows other companies – manufacturers, including carmakers, the airplane industry, retailers, and even service industries and white collar businesses – to sell their wares and make a profit. Raising that cost would raise the cost of literally everything. The economy is tanking with cheap coal and oil under \$50 a barrel. Imagine the future with the cost of all energy at much higher levels.

The problem with the push for green energy is that most of the benefits will come in many years, if not decades, but the costs, and in our current economic straits, the pain, will be experienced immediately.

"Even starry-eyed green techno-optimists would acknowledge that it would still

be many decades before alternative energy can provide a sizable slice of the world's energy needs, let alone replace cheap fossil fuel," Green says. "You look at the potential numbers of wind and solar projects and you come out with an energy-limited world. If we listen to the environmental movement, we'd have to radically cut back on flying, driving, energy use in the home, industrial uses, what-have-you. It's just not going to happen."

Both sides are being less than honest in this debate. Coal is not as cheap as it seems and it is certainly not as clean as its proponents would have us believe. And despite the current hype, it is doubtful we will ever see the magic bullet of next generation clean coal plants producing zero greenhouse gases, at least not on any scale that would have much impact on global warming.

But coal is plentiful and inexpensive to extract, which in these times and for decades to come makes it an essential part of the world's energy mix. That's doubly true in developing countries, which are not about to turn away from their most economically efficient natural resource even if they must bear hefty environmental costs as a consequence.

Alternative energy proselytisers maintain that green energy and green jobs are key to a system-wide, long-term response to both our energy and economic crises. In this economy and considering current technology challenges, that belief requires a leap of faith that few policymakers are willing to take. ■

Jon Entine is a visiting scholar at the American Enterprise Institute and a consultant on corporate responsibility and sustainability.
jon@jonentine.com