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# Coal - Problem, not solution

The World Coal Association is celebrating its 30<sup>th</sup> anniversary as global leaders prepare for the UN Climate Conference in Paris. It is time to expose coal industry's deceitful proposals for mitigating the climate, environmental and social impacts of this most polluting of energy sources.

Coal is not a solution to global energy needs; it's continuing use blocks our path to a sustainable, clean energy future.

Coal is the dirtiest of energy sources and one of the leading causes of the greenhouse gases that drive climate change. Globally, around 40% of all electricity comes from coal; however, it is responsible for 70% of the CO<sub>2</sub> emissions in the sector.<sup>i</sup> This makes it one of the greatest threats to our environment and to all life on our planet. Coal mining destroys land, pollutes thousands of kilometres of streams and causes massive environmental damage to communities.

Pollution from coal plants causes dirty air, acid rain and contaminated land and water. Health problems associated with coal pollution include childhood asthma, birth defects and respiratory conditions. Around 3.5 million people die annually as a result of air pollution, much of which is caused by dirty coal.<sup>ii</sup>

Economists at the International Monetary Fund (IMF) recently calculated that annually, worldwide coal pollution costs society the equivalent of 4% of global GDP.<sup>iii</sup> At around €3 trillion, this is equal to the combined economic output of Italy, Denmark and Austria.

## MISLEADING NARRATIVES OF THE COAL INDUSTRY

**Despite coal’s massive downsides, the industry continues to pursue several arguments designed to convince both the public and policymakers to support continued coal use. Their arguments range from the misleading to the downright false.**

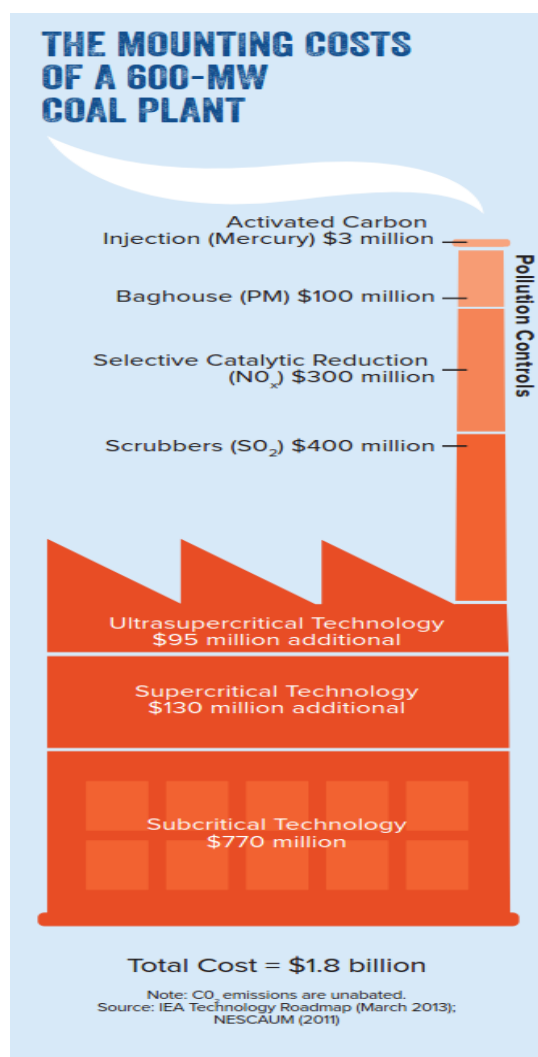
### Clean Coal

When the industry talks about “clean coal”, it is referring to technologies that can burn coal more efficiently and to anti-pollution systems that may remove some pollutants from the chimney. Yet even the most modern coal-fired power plants only operate at around 44% efficiency, meaning that 56% of the energy content of the coal is lost. These plants still emit twice as much CO<sub>2</sub> as gas-fired power plants.<sup>iv</sup>

Modern coal technology can remove some of the sulphur dioxide, nitrous oxides, fine particulate matter (PM<sub>2.5</sub>) and mercury from the chimneys. However, these installations add millions to the cost of a new coal plant, rendering them more expensive than renewable options, and discouraging their wider use.<sup>v</sup>

Finally, it is impossible to consider coal as “clean” after factoring in the air and water pollution generated by coal mining, preparation, transport and combustion.

Clean coal does not exist. Pollution from the coal life cycle harms humans and the environment.



Source: End Coal <http://endcoal.org/coal-myths/myth-2-coal-is-clean>

### Coal health impact in Europe

Pollution from burning coal can significantly harm human health and the environment. Cardiovascular disease and respiratory conditions are among the commonest chronic diseases in Europe. They generate substantial healthcare costs and cause losses in productivity. Each of these disease groups is closely linked to air pollution, especially particulate matter.

The health damage caused by pollutants such as nitrogen oxides and sulphur dioxide cost society an estimated €26 - 71 billion per year.<sup>vi vii</sup>

According to 2009 emissions data and using the methodology used by the European Environment Agency (EEA), the operation of coal power plants results in 196,200 life years lost (equivalent to 18,200 premature deaths annually), around 8,500 new cases of chronic

bronchitis and over 4 million lost working days each year in the EU 27.<sup>viii</sup>

Coal-fired power plants are also the largest source of mercury emissions. More than 1.8 million children in the EU are born with mercury levels above the safe threshold.<sup>ix</sup> Some 200,000 babies are born with mercury levels known to be harmful to mental and neurological development.<sup>x</sup>

The US Department of Energy (DOE) projects that mercury emissions will continue to rise. This mercury quickly enters the aquatic food chain, transforming into methylmercury, a known biotoxin blamed for a litany of neurological impacts in infants and young children during their most vulnerable periods of brain and nervous system development.<sup>xi</sup>

### **CO<sub>2</sub> emissions reduction**

Coal industry claims that it is developing technology that will capture coal's carbon emissions via Carbon Capture and Storage (CCS) and bury them underground.

In reality, the coal industry has invested almost nothing into CCS. The industry requests CCS subsidies from the taxpayer while still questioning climate change science. This is a hypocritical approach.

As of today, despite CCS being a feature of climate mitigation discussions for 15 years, independently verified emissions reductions from CCS have only saved 5.6 m tonnes of CO<sub>2</sub>.<sup>xii</sup> The International Energy Agency (IEA) has proposed that CCS in the power sector will be able to help power generators avoid up to 1 billion tonnes of CO<sub>2</sub> by 2030<sup>xiii</sup>. To do so, CCS reductions of coal's carbon emissions would have to be hundreds of times greater in the next 15 years than in the last 15 years. This seems unlikely.

CCS technology is also extremely expensive. For example, the first large-scale CCS project, the 2014 retrofit of the "Sask Power" coal plant in Canada, cost around €5,500 per kilowatt capacity. This excludes costs of the original coal plant investments, as well as operational, transport and storage costs. According to the Intergovernmental Panel on Climate

Change (IPCC), CCS may add up to 30% on to coal power plant costs. In addition, this flagship CCS plant doesn't work as planned, is losing a great deal of money and publicly-owned utility Sask Power is mired in legal claims and counter-claims.<sup>xiv</sup>

Similarly, according to the same IEA source, the inaugural large CCS-equipped new coal plant in the US - the "Kemper Project" - is estimated to cost €8,800 per kilowatt. The IEA assumes that "strong deployment of CCS" from now on will bring costs down to €3,700 per kilowatt by 2040.<sup>xv</sup>

In comparison with current renewable energy costs (not even 2040), this is hugely expensive. In South India, the new utility scale solar plant in Cochin is estimated to cost €740 per kilowatt capacity,<sup>xvi</sup> less than one-tenth the cost of Kemper. In the US, existing solar and onshore wind power costs around €1,400 per kilowatt<sup>xvii</sup>, around 15% of the Kemper CCS coal project's costs.

Earlier this year, the International Renewable Energy Agency (IRENA) showed that in an increasing number of regions of the world, the costs of solar and wind power over the lifetime of projects are already in the middle to the lower end of the basic (non-CCS) fossil fuel electricity costs<sup>xviii</sup>. The think tank Bloomberg New Energy Finance (BNEF) projects that by 2030 new coal power will be significantly more expensive than solar and wind in all major regions of the world.<sup>xix</sup> This explains why global clean energy developers and financiers choose renewables much more frequently than coal with CCS as a perceived "low carbon" solution.

The funds spent on CCS will divert investments away from other renewable energy sources or other solutions to climate change. CCS for coal power is a desperate industry tactic to guarantee ongoing government financial support for the coal industry. The EU, national governments and businesses need to reduce their emissions, not search for excuses to keep burning coal.

## Climate change and the threat from coal is real - what needs to change?

With the countdown to the World Climate Conference in Paris, it is abundantly clearer that coal has no part to play in the solution for a future-oriented and progressive energy transformation.

WWF has been working on renewable energy for many years and promotes a future with 100% renewable energy.

We demand that coal be completely phased out of the global energy system by 2050 at the latest. In order to prevent dangerous climate change, the world's coal consumption needs to peak before 2020 and then decline to full phase out.

The journey to a coal-free future must be led by the rich and industrialised world. EU Member States make up almost two-thirds of OECD membership. These countries have historically caused the largest carbon emissions into the atmosphere, and have the greatest capacity to take coal out of the energy mix. WWF urges this to take place within the next 20 years.

Governments must develop Emission Performance Standards (EPS) or total carbon emissions budgets for power generation plants.

## THE COST OF COAL

### “Coal is cheap”

Coal is only considered cheap because coal plants do not have to bear the full cost of their social and environmental impact on people's health and the environment. Allowing pollution from coal-burning without paying a tax on carbon or other toxins is a hidden subsidy worth trillions of dollars, as the healthcare costs and ecosystem damage are borne by individuals, insurance companies and others. These costs, known as “externalities”, would double or triple the price of electricity from coal, according to a Harvard University study<sup>xx</sup>. This in turn would make renewables much cheaper by

comparison. Coal is an expensive long-term risk.

## THE PRICE OF COAL

### Coal is a solution to energy poverty

As countries introduce stricter environmental and emissions policies, financial institutions and investors have grown increasingly worried about coal assets. To address this, the coal industry has started a cynical global campaign entitled ‘Advanced Energy for Life’.<sup>xxi</sup> This promotes coal as the solution to energy poverty in a series of newspaper advertisements, including in the Financial Times. These were ruled misleading by the UK authorities.<sup>xxii</sup> This attempt at public relations is predicated on the notion that coal is the cheapest way of providing electricity to the one-fifth of the world's population in poor countries that lack access to any electricity. The price of coal would increase dramatically if it reflected the true cost borne by society of the pollution that causes hundreds of thousands of premature deaths each year in coal-dependent countries.<sup>xxiii</sup>

The coal industry is highly vocal in addressing energy poverty and pushing coal as a potential solution. However, coal companies are not major contributors to efforts to alleviate energy poverty. Economic data does not support the claims that coal use is vital for financial growth and quality of life.<sup>xxiv</sup> These claims should be dismissed as coal industry spin rather than a genuine contribution to alleviating energy poverty. The IEA has demonstrated that the majority of electricity access for the poor in rural regions of developing countries should ideally be delivered by mini- and off-grid solutions from renewable energy sources. These are not only cleaner, but also cheaper, than coal.<sup>xxv</sup> Coal is not a solution to energy poverty.

## DIRTY BUSINESS

### “Coal creates jobs”

Despite industry claims that coal creates employment, the reality is that mining jobs have been in decline for decades, due to increased use of machinery instead of manpower.<sup>xxvi xxvii xxviii</sup> The U.S. economy has grown faster than most of the industrialised world even as coal use and carbon emissions have fallen. Jobs in clean power have boomed, and today in the US there are two people working in the solar industry for every one employed by coal.<sup>xxix</sup>

Worldwide, renewables now provide about 9.2 million jobs while generating 10% of all energy.<sup>xxx</sup> Solar energy is now competitive with fossil fuels even without subsidy or tax credits.<sup>xxxi</sup> Renewables undoubtedly create more jobs than coal.

### Could coal help fight Ebola?

As part of a PR offensive to rebrand coal as a “21st-century fuel” that can help solve global poverty, it emerged that at the height of Ebola’s impact in Africa, Peabody Energy promoted coal as an answer to Africa’s devastating public health crisis.

Peabody included a slide on Ebola and energy in a presentation to a coal industry conference in October last year. This suggested that more energy would have spurred the distribution of a hypothetical Ebola vaccine. It cited a University of Pennsylvania infectious disease expert as supporting evidence.

Public health experts involved in the response to the Ebola crisis have condemned this, describing it as a ludicrous, insulting and opportunistic attempt by the world’s largest privately-held coal company to exploit a major health disaster for corporate gain.<sup>xxxii</sup>

Source: G. Boyce presentation 34 Coaltrans, World Coal Conference, Copenhagen: 21st Century Coal: An Essential Role in the Future of Energy

Lack of Electricity Impairs  
Ability to Fight Crises Like Ebola

Peabody  
ENERGY

34th  
**Coaltrans**  
Copenhagen  
World Coal Conference 2014  
Bella Center, Copenhagen, Denmark | 12-14 October 2014

Source: G. Boyce presentation 34 Coaltrans, World Coal Conference, Copenhagen: 21st Century Coal: An Essential Role in the Future of Energy

## RESPONSIBILITIES GROW IN LINE WITH CARBON EMISSIONS

### WWF Asks:

- For developing countries, WWF urges that, by 2030 at the latest, there should be no more new coal. This implies that existing coal plants need to be retired by mid-century.
- Governments must urgently introduce legislation ensuring an immediate halt to construction of new coal plants. The immediate phase-out of highly inefficient (so-called ‘sub-critical’) coal plants must also happen as part of a rapid downturn and eventual phase-out of coal use.

### Misleading investors

Peabody, one of the largest global coal producers, has misled the public and investors about its financial risks associated with climate change. As a result, the company will have to submit revised disclosures with the Securities and Exchange Commission (SEC). These must accurately and objectively represent climate change risks, including concerns “about the environmental impacts of coal combustion ... [that] could significantly affect demand for our products or our securities”, according to the New York state attorney-general’s (NYAG) office.<sup>xxxiii</sup> Peabody repeatedly denied in SEC filings that it could predict the effect of potential climate change regulation on its business, although the company and its consultants

made projections that such rules would have severe effects on Peabody.

The settlement followed a two-year investigation by the NYAG concerning Peabody's failure to disclose financial risks associated with climate change policies in filings to the SEC. The NYAG found that Peabody had repeatedly denied its ability to reasonably predict the potential impacts of climate change policies and on future operations, financial conditions and cash flows. At the same time, Peabody had made market projections about the impact of future climate change policies, some of which concluded that regulatory actions could have a severe negative impact on Peabody's future financial condition.<sup>xxxiv</sup>

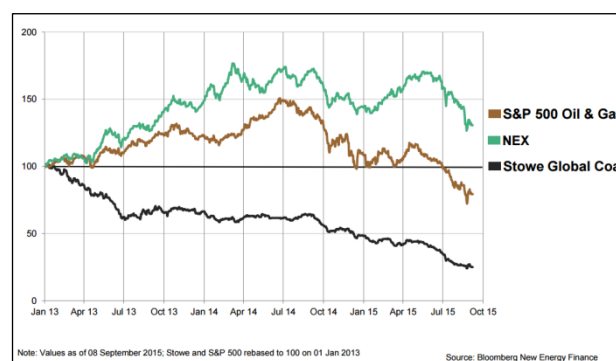
The NYAG also found that Peabody misrepresented the findings and projections of the IEA by describing the IEA's highest projections for global coal demand and omitting any discussion of the IEA's less favourable coal demand projections (including the IEA's central scenario, the New Policies Scenario). The NYAG noted that Peabody's representations regarding the IEA were not limited to SEC filings, but were also widespread in other communications to the investment community and general public.

In November 2015, Coal Industry Advisory Board (CIAB)<sup>xxxv</sup> planned to publish a report on the "Socioeconomic Impacts of Advanced Technology Coal-Fuelled Power Stations."<sup>xxxvi</sup> According to The Guardian, the report fails to mention climate change. "Coal itself is not the cause of China's air quality problem" the report states. The paper pays scant attention to the health and social costs associated with coal mining and coal burning. The quality and quantity of analysis of the negative effects associated with coal mining and burning is fundamentally inadequate. The report is deeply misleading, ultimately written as a disinformation tool, according to two financial experts.<sup>xxxvii xxxviii</sup>

These are all desperate moves by a dirty industry. It has lost its social license to operate and is plagued with large financial institutions wishing to divest from coal.<sup>xxxix xl</sup> Industry shares are subject to continued large financial losses<sup>xli</sup> as shown below.

## Public companies and carbon emissions

WWF believes that any publicly traded company whose core business generates substantial amounts of carbon emissions has a duty to be honest with its investors and the public about the risks posed by climate change. We believe that full and fair disclosures by fossil fuel companies will allow investors to take appropriate and informed decisions about the damage these companies are doing to our planet.



## WWF Asks:

- Technology and finance cooperation mechanisms between nations must be part of the shift from coal to renewable energy sources. These must be integrated into any future international climate treaty to hasten the transition.
- The European Commission and EU Member States should immediately end all subsidies for coal including funding, tax breaks and State contributions for mining, production, infrastructure and coal use for generating energy and heat.
- Globally, governments must stop all public multilateral and bilateral funding, as well as public financial support from Export Credit Agencies for any coal project, upstream or downstream.
- The UN Green Climate Fund (GCF) must explicitly ban any fossil fuel funding, including coal-fired power generation. It should focus on renewable and energy efficiency projects helping developing countries fight climate change.

In order to protect human health, our environment and to tackle climate change, coal power needs to be phased out as part of plans to put the world on a pathway towards a fully decarbonised energy sector.

The coal industry spends enormous amounts of money and develops PR campaigns to convince policymakers that coal is clean, cheap, helps to alleviate poverty and create jobs. Facing slowdown and bankruptcies while other power sources are becoming more competitive, the industry also attempts to convince investors and financial institutions that continued reliance on coal power is inevitable. Yet, these efforts are nothing but misleading PR campaigns preventing the development of truly clean and renewable energy. There is no 'clean coal'. Coal power causes serious health problems, aggravates poverty, and damages our environment.

WWF demands that coal be completely phased out of the global energy system by 2050 at the latest.

## Endnotes:

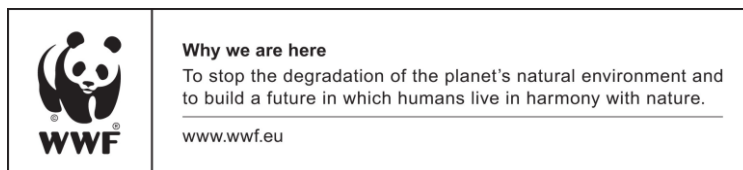
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# Coal - Problem, not solution

## PHASE-OUT COAL BY 2050

To prevent climate change, the world's coal consumption needs to peak and then start to decline before 2020, and be completely phased out of the global energy system by 2050, or earlier.

### 40% & 70%

Coal has the highest carbon intensity of any fossil fuel when combusted -it accounts for just 40% global electricity production, but is responsible for more than 70% of its emissions.



### 2030

By 2030 at the latest there should be no new coal in developing countries.

## STOP CONSTRUCTION OF NEW COAL PLANTS IMMEDIATELY

The OECD must immediately halt construction of new coal plants and phase out coal from their energy systems by 2035.

## INTRODUCE CO2 EMISSION PERFORMANCE STANDARD

for coal power plants as it will prevent lock-in to the worst-polluting infrastructure.