

TOWARDS CLIMATE CATASTROPHE

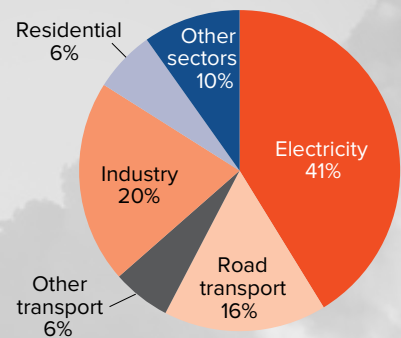
The Contribution of Coal to Climate Change

Coal is the single biggest contributor to human-caused climate change. Coal-fired power stations are responsible for 37% of carbon dioxide emissions worldwide¹ and 72% of greenhouse gas (GHG) emissions from the electricity sector, with the energy sector contributing to 41% of overall GHG emissions worldwide.² If the global demand for coal increases, and 1200 new coal plants currently planned around the world are built³, the GHG emissions would put us on a path to a six degrees Celsius increase in global temperatures by 2100. The globally accepted limit is 2°C beyond pre-industrial levels. Any increase in temperature beyond two degrees would push us towards climate catastrophe, causing massive extinctions and making human life unbearable.

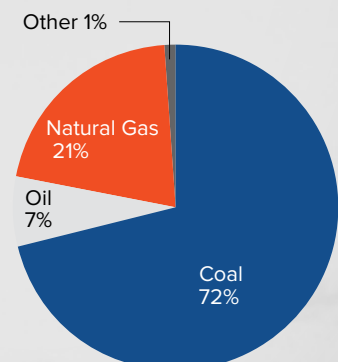
But there is hope. Some governments and multilateral banks are beginning to recognise that the cost of coal generation is unacceptable and are rejecting financing for new coal projects. Citizens around the world are uniting to oppose new coal plants and propose better solutions for meeting energy needs. A lot more work, action and pressure is required to stop proposed coal projects from going ahead, and for governments to adopt a binding international climate deal that mitigates climate change. One thing is clear: if we are to avoid runaway climate change, we must end coal.

Graph 1
CO₂ EMISSIONS BY SECTOR, ELECTRICITY RELATED CO₂ EMISSIONS BY FUEL⁴

CO₂ EMISSIONS BY SECTOR



ELECTRICITY-RELATED CO₂ EMISSIONS BY FUEL





THE GOLDEN DECADE OF COAL AND RECORD BREAKING GLOBAL TEMPERATURES

In its latest report, the Intergovernmental Panel on Climate Change (IPCC), the world's most authoritative scientific body on climate change, states that total human-caused GHG emissions were the highest in human history from 2000 to 2010 and reached 49 (±4.5) gigatonnes of carbon dioxide equivalent per year in 2010. The IPCC also states that annual GHG emissions grew on average by one gigatonne carbon dioxide equivalent (GtCO₂eq) (2.2%) per year from 2000 to 2010 compared to 0.4 GtCO₂eq (1.3%) per year from 1970 to 2000. The global economic crisis in 2007/2008 only temporarily reduced emissions.⁵

This dramatic increase in GHG emissions is largely attributed to an increase in fossil fuel use – and most notably coal consumption worldwide. Cumulative CO₂ emissions from fossil fuel combustion, cement production and flaring from 1750 to 1970 were 420 (±35) GtCO₂; in 2010, that total had tripled to 1300 (±110) GtCO₂.⁶

Coal has been the fastest-growing primary energy source in the world in the past decade: between 2001 and 2010, world consumption of coal increased by 45%.⁷

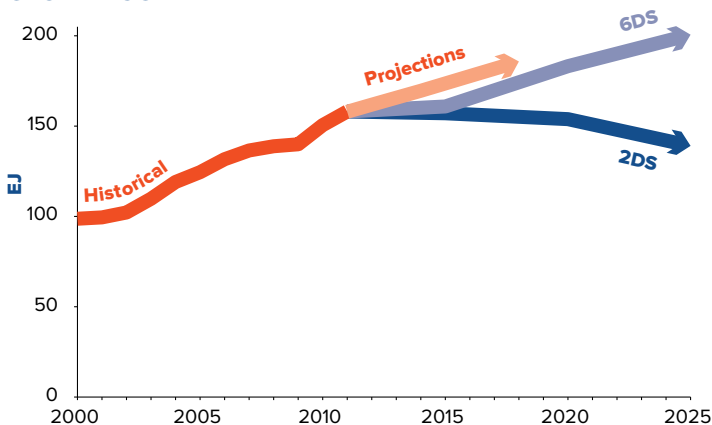
It was coal that fueled the industrial revolution in Western Europe and then in the US, which led to the rise of the modern economy, and the associated increase in GHG emissions. However, during the first decade of this century, the demand shifted from the Atlantic to the Pacific market, notably Asia, exacerbating the problem of energy-related GHG emissions because the Pacific market doubled its coal consumption.⁸ China and India accounted for almost 95% of global coal demand growth between 2000 and 2011.⁹

China's coal consumption, in particular, has reached four billion tonnes and represents 50% of the global total.¹⁰ China now accounts for 25% of global CO₂ emissions. A considerable amount of Chinese and other middle income country emissions are embedded in locally manufactured products that are exported (i.e. consumed) in the developed world: in effect, emissions have been shifted from the developed world to the developing world through global manufacturing shifts.



COAL EXPANSION INCREASES TEMPERATURES BY 4-6°C

GLOBAL COAL DEMAND



Graph 2: Increase in global coal demand in relation to increase in temperatures¹⁴

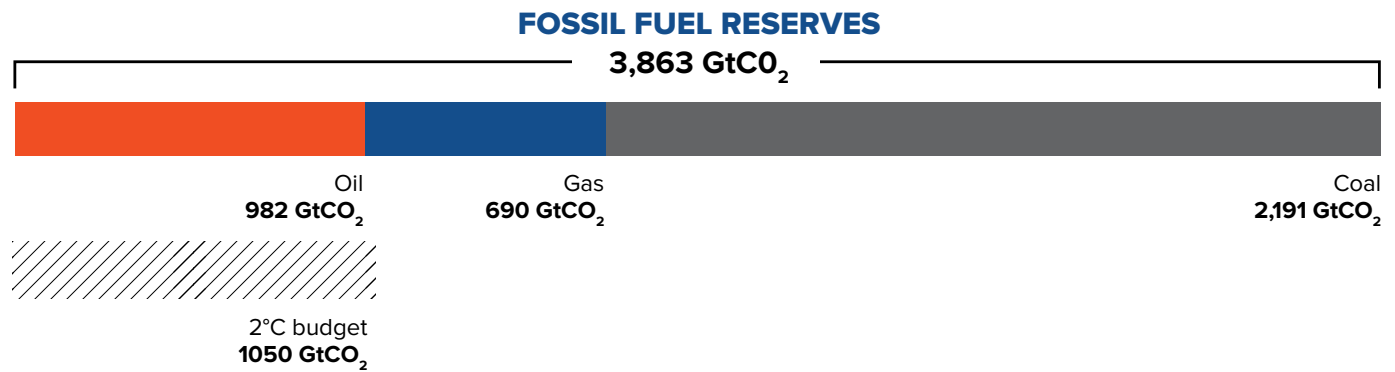
If all 1200 planned coal plants are built, this expansion would see global temperatures rise by at least 4°C and eventually to over 6°C by 2100¹¹ (see graph 2). A rise of 4°C would trigger extreme heat waves, declining global food stocks and a sea-level rise affecting hundreds of millions of people.¹² Eminent climate scientist, Professor Kevin Anderson, says that “a 4 degrees C future is incompatible with an organized global community, is likely to be beyond ‘adaptation’, is devastating to the majority of ecosystems, and has a high probability of not being stable.”¹³ In other words, the effect will be catastrophic.

Reaching 400 ppm – Early in 2013, we reached CO₂ levels of 400 parts per million in the atmosphere which is a level unseen for three million years.¹⁵ Given the devastating effects of climate change that we are already seeing in the form of extreme weather events, melting ice caps, and sea level rise, passing 400 ppm is ominous. The goal of stabilising at 450 ppm – still well above the ‘safe’ limit of 350 ppm – now looks impossible.



MOST FOSSIL FUEL RESERVES MUST REMAIN UNDERGROUND

In December 2010, 167 countries agreed at the United Nations' Climate Change Convention in Cancun, Mexico, to limit the increase in average global temperatures to below 2°C from pre-industrial levels. To achieve this, scientists say that between 50-80% of global fossil fuel reserves must remain underground.¹⁶ This means that the vast majority of coal reserves cannot be exploited (see Graph 3 below). Switching away from coal as an electricity source globally is therefore an essential step to achieve the level of required emissions reductions.¹⁷



Graph 3: Fossil fuel reserves and 2 degrees Celsius ¹⁸

Building new coal plants would lock in decades of CO₂ emissions. The average coal plant operates for roughly 40-60 years. Once emitted, CO₂ persists in the atmosphere for hundreds of years.¹⁹ To avoid catastrophic climate change, we must immediately stop building new coal plants, shut down existing coal plants, and massively invest in renewable energy.



SHIFTING FROM COAL

Over the last few years, governments have begun taking steps to halt financing for new coal plants, more tightly regulate pollution from existing plants and shut down old plants. In 2013, the governments of the United States, United Kingdom and five Nordic countries announced that they would end the public financing of new overseas coal plants, except in rare cases. The World Bank, European Investment Bank and European Bank for Reconstruction and Development made similar announcements. The Chinese government has enacted measures to restrict coal use in 12 of China's 34 provinces. President Obama has announced new regulations that have effectively ruled out any new coal plants in the US and will likely require the retirement of a significant proportion of the US's coal fleet. Grassroots activists have also started a movement to pressure universities and institutional investors to divest from fossil fuels and communities from all over the world are resisting the expansion.

DELAYING CHANGE ONLY COSTS MORE

Early action is needed to avoid costly and wasted expenditure in coal infrastructure. The Fifth Assessment report from the IPCC estimates that annual investments in fossil fuel power plants over 2010-2029 have to decline by an average of US\$30 billion and annual investments in extraction of fossil fuels have to decline by an average of US\$110 billion.²⁰ The report also states that the economic cost of taking strong mitigation measures now, as compared to inaction, would equate to a reduction in consumer spending globally of 1-4 percent in 2030 and 2-6 percent in 2050.²¹ Meanwhile, the US Council of Economic Advisors released a report in July 2014 saying that delaying climate policies to the point where average global temperatures rise 3°C above pre-industrial levels could increase economic damages by approximately 0.9% of global output. For the US, 0.9% of GDP in 2014 amounts to US\$150 billion. On the other hand, new regulations on coal plants in the US are estimated to have a public health benefit of between US\$55-93 billion.²²

To end our dependence on coal, it is critical to invest in energy options that are not carbon intensive or polluting. Renewable energy options such as solar, wind, micro hydro and geothermal energy are superior to coal in meeting the world's energy needs as they emit little or no carbon dioxide. The price of renewable energy has dropped dramatically over the past decade and in many places is cost-competitive with coal and other traditional energy sources. In 2012, 42% of new generating capacity worldwide came from renewable sources (excluding large hydro). New technologies such as carbon capture and storage only further perpetuate our dependence on coal, and are expensive and unviable.

Coal dependence is dangerous, polluting and pushing us all on a path from which there may be no easy return.

RESOURCES

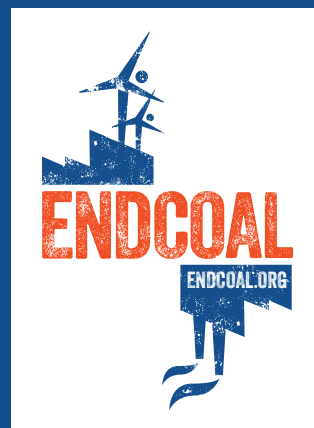
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ENDNOTES

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