MACKENZIE Investments

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Sustainability Center of Excellence

Passing the 'tipping point' for thermal coal

Global energy demand and US deregulation may slow its decline, but in most markets the tipping point for exiting thermal coal is well past.

Executive summary

The negative climate and health implications of continued thermal coal use are well established, and as an energy source, thermal coal has passed its 'best before' date in most developed markets. To both limit the negative environmental effects of thermal coal emissions and take advantage of more economically feasible energy sources, many countries representing half of the world's GDP are expected to cease the burning of coal for energy in just over five years. In Canada, there has been a 58% drop in energy generated from thermal coal since 2010 (with Alberta exiting coal six years ahead of schedule) and almost all of Canada's energy is now coal free.

Financial institutions globally are also moving away from the financing of, and investment in, coal as the improved viability and accessibility of clean energy technologies is helping facilitate the shift towards renewable energy sources. However, coal remains a relevant and vital energy source in several parts of the world, notably China and India, and must be viewed globally through the lens of access to energy as essential for human development. Coal is also poised for a possible, albeit likely short-lived resurgence in the US, fueled by changes to environmental regulations and sharp, AI-driven increases in energy demand.

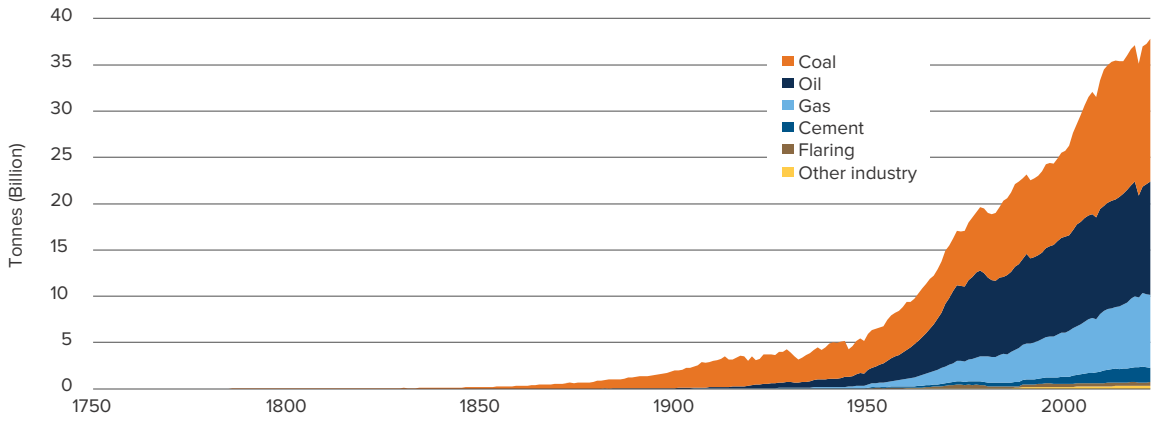
While the pace of coal's decline may slow overall, occurring at different rates in different markets, longer-term use of coal is likely to continue its slide based on climate-based divestment movements, the growing momentum of renewable energy, and more economically favourable fossil fuels like natural gas. Mackenzie Investments is helping to facilitate the energy transition away from coal through investment policy, company engagements and investment decisions aimed at mitigating the investment risks of coal and leveraging the significant growth opportunities of the energy transition.

Coal's role in global carbon output

The word 'coal' conjures images of a different, much earlier time of the world's industrialization. A time of smokestacks and soot, of heavy air pollution and chronic health issues. The significant negative impacts of coal have not abated in the almost 150 years since it has been used as an industrial energy source.

Although use of thermal coal, the coal burned in power plants to produce steam energy, peaked in the mid-2000s, it remains the largest contributor to carbon emissions among fossil fuels, producing over 40% more greenhouse gas than the more economical natural gas, while all coal use – thermal and metallurgical (the coal used to produce steel) –accounts for one third of the world's carbon emissions.[1]

FIGURE 1: CO_2 emissions by fuel or industry type, world



Source: Global Carbon Budget (2024) – with major processing by Our World in Data

Half the world's GDP expected to stop burning thermal coal in five years

As cleaner and more cost-effective energy alternatives have become increasingly available, thermal coal has seen its use decline precipitously the past 15 years, a trend accelerated by a global commitment from OECD member states in general, and among the G7 countries in particular, to transition away from coal use as part of the Paris Agreement pledge to limit global warming to 1.5 degrees Celsius. For climate conscious nations, consumers and investors, and those seeking energy sources with greater long-term economic viability, coal is anathema.

Many countries, including Canada, remain firmly on track to meet that target, and half the world's GDP is expected to cease the burning of coal for energy in just over five years. In Canada, there has been a 58% drop in energy generated from thermal coal since 2010, with Alberta exiting thermal coal in 2024, six years ahead of schedule. Today, almost all Canadian energy is now produced coal free. And on the export side of the equation, Japan, the biggest importer of Canadian coal, plans to dramatically reduce its coal appetite through nuclear power expansion.[3]

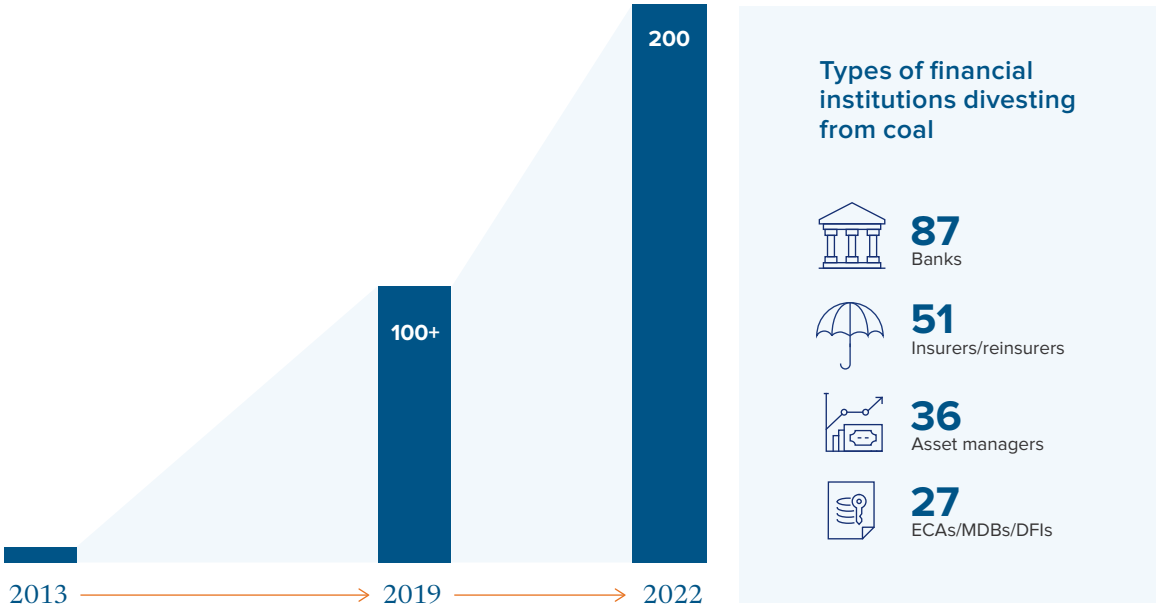
> To limit planetary warming to 1.5°C, global thermal coal emissions must drop 80% by 2030 from 2010 levels.[2]

We are clearly well past the tipping point on the long-term decline of coal use among the G7 nations, which collectively represent 43% of global GDP.[4] Most G7 countries have plans to completely exit the use of coal by the mid-2030s, in line with or ahead of stated targets. That represents a significant portion of high energy users scheduled to be completely off the coal grid within the next decade.

Financial institutions worldwide moving away from coal financing, investments

Financial institutions are divesting from coal recognizing both the economic risks of climate change and the improving economic viability of clean energy technologies (in addition to the relative cost benefits of transitioning to natural gas as an interim step).

FIGURE 2: Divestment from coal is accelerating



Source: The Institute for Energy Economics and Financial Analysis

Financial companies today understand climate-related risks carry an enormous price tag, estimated at $38 trillion per year globally by 2050[5] and that, conversely, growth opportunities associated with helping mitigate climate impacts are also massive, requiring over the next five years alone an investment of over $20 trillion to stay on track to achieve 2050 net zero targets.[6] The response to both the risks and opportunities of climate change has been a diversification away from coal, and the development of policies to reduce or eliminate coal exposure to meet stated climate commitments.

The world's biggest coal users – China and India – also plan to cut back

Despite this global shift, coal remains a relevant and vital energy source in several parts of the world, most notably China and India. China alone produces and consumes about half the world's supply of thermal coal, most of it domestically supplied.[7] India is the world's second-largest coal consumer with thermal coal accounting for almost three quarters of the country's total power generation over the past decade.[8] And while the two countries are the core drivers behind the world's continued reliance on coal, both have plans to reduce its use. China has a clear roadmap for diversifying its energy sources, focusing on hydro and nuclear, with wind and especially solar generation accelerating rapidly.[9] And India, while less advanced on the transition to cleaner energy, nonetheless anticipates a reduction in the percentage of electricity generation from coal from its current 74%, as power generation from renewable sources is expected to increase by 16% annually.[10]

Is coal poised for a US revival?

One nation, a G7 country with a longstanding goal to exit coal may be moving in the opposite direction. Coal may actually be poised to stage a revival in the US, casting a dark cloud over projections to phase out its use in that country well before the 2030 G7 deadline.

There are two factors behind coal's potential resurgence in America:

The first is a broad deregulatory push from the US administration, which has reopened the door for coal. Almost 800 individual US coal-fired power stations had been retired since 2000[11], before the announcement of a broad swath of deregulation measures, including easing environmental regulations governing coal.

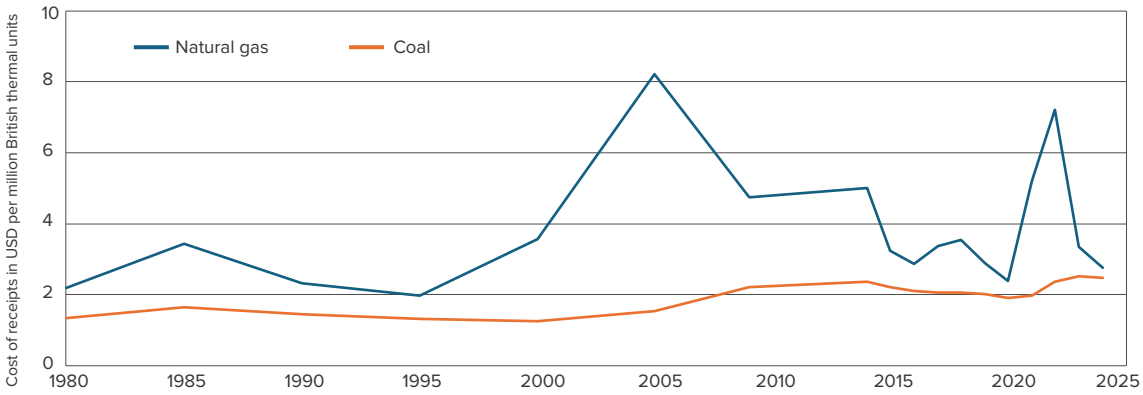
This energy policy reversal, however, is being driven by more than the politics of undoing the green ambitions of the previous administration. Demand for energy is playing a critical role, too. After more than a decade of stagnating, global electricity demand jumped by 3% in 2024, the fifth largest annual rise since 2000.[12] Much of that increase is due to the energy requirements of data centres supporting Artificial Intelligence (AI), and the electrification of transportation networks.

AI driving up demand for energy and potentially coal

AI in particular is re-shaping the energy landscape. A single AI data centre can require over 1 GW of power, equivalent to that produced by a large coal or nuclear plant.[13]

Data facilities of this nature are required to operate around the clock and cannot risk power outages or the intermittency associated with weather-dependent energy sources. As a result, the sudden rise in AI use, coupled with the significant energy demands of AI may, ironically, be the new technology that extends the life of coal, one of the world's oldest energy sources. Despite longstanding environmental pressures, and notwithstanding existing transition commitments made by the US, coal is suddenly an attractive energy source to the US administration: abundant and domestically available, resistant to the price volatility experienced in the natural gas market, and with a solid, reliable infrastructure free from the transmission constraints of renewable energy sources.

FIGURE 3: Cost of coal and natural gas for electricity generation in the United States from 1980 to 2023
(in U.S. dollars per million British thermal units)



Source: EIA (U.S. Energy Information Administration). Including taxes; prices are not adjusted for inflation.

It is not a stretch – at least in the short term – to envision positioning coal as the 'America first' energy source for the US economic renaissance, a perspective reinforced by the US desire to secure a leadership position in AI in the face of rapid AI developments in China.

Economic advantages, climate benefits favour long-term alternatives to coal

Longer-term, however, the use of coal is likely to continue its decline in the US, as it is in the rest of the industrialized world, driven by either the economic advantages or climate benefits (or both) of alternative energy sources.

In terms of climate-friendly alternatives to coal, the shift in global energy infrastructure towards renewable sources is a train well down the track, fueled by both climate policies and commitments, but also economics. For example:

- The average cost of newly installed utility-scale solar PV projects fell by 90% from 2010-2023, making it now 56% lower than the average cost of fossil fuels.[14]
- The cost of wind power installation has also fallen, though less dramatically.[15]
- Globally, new solar and wind projects are undercutting new gas and coal plants on production costs in nearly every market.[16]
- Roughly 81% of newly installed renewable power projects in 2023 were cheaper than fossil fuel alternatives.[17]
- 99% of existing US coal-fired power plants cost more to operate than if their generation was replaced by solar, wind, and energy storage.[18]

And while new pro-coal policies are concerning to supporters of the energy transition, the fact is the US remains a relatively small player in the clean energy space, accounting for only about 15% of the world's clean energy investment.[19] It is China that is the dominant investor in clean energy technology, which means two things: first, any retreat on renewable energy investment in the US

will only serve to extend China's lead in this space; and second, the relatively weak position of the US in clean energy means that US policies that favour the use of coal will have a negligible impact on the trajectory of the global energy transition. It's happening whether the US is on board or not.

That said, while the US remains behind, the shift towards renewables is clearly evident in the numbers. Wind and solar combined produced a record 17% of US electricity in 2024, overtaking coal at 15% for the first time. Solar remained the fastest-growing source of electricity, with its generation rising by 27% in 2024, surpassing hydro generation for the first time. And although there was a slight rise in overall fossil generation and CO2 emissions in the US, the rise in power demand was much faster than the rise in power sector emissions, making per unit electricity in the US the cleanest it has ever been.[20] If the US wishes to close the gap on China, the well-funded and economically-driven energy transition momentum of the Inflation Reduction Act is a good place to start.

Finally, if there is a US fossil fuel development that could impede the growth trajectory of renewable energy, it is not coal – it is fracking. The advent of fracking – the process of freeing oil and natural gas reserves encased in impermeable shale – has enabled easier access to deposits in shale formations that were previously uneconomical to exploit. This process has unlocked vast reserves of previously inaccessible oil and particularly natural gas, significantly boosting energy production, drastically deflating prices (especially if you remove the post- pandemic energy price spike) and altering the energy supply and demand dynamics in the US. The economics of fracking have dramatically shifted the share of fossil fuel-based energy sources decidedly in favour of natural gas.[21] While that shift will hardly improve matters from a carbon emissions perspective, and though fracking comes with its own set of environmental and health impacts, the more favourable economics strongly point to the continued long-term decline of coal.

While the US remains behind, the shift towards renewables is clearly evident in the numbers. Wind and solar combined produced a record 17% of US electricity in 2024, overtaking coal at 15% for the first time.

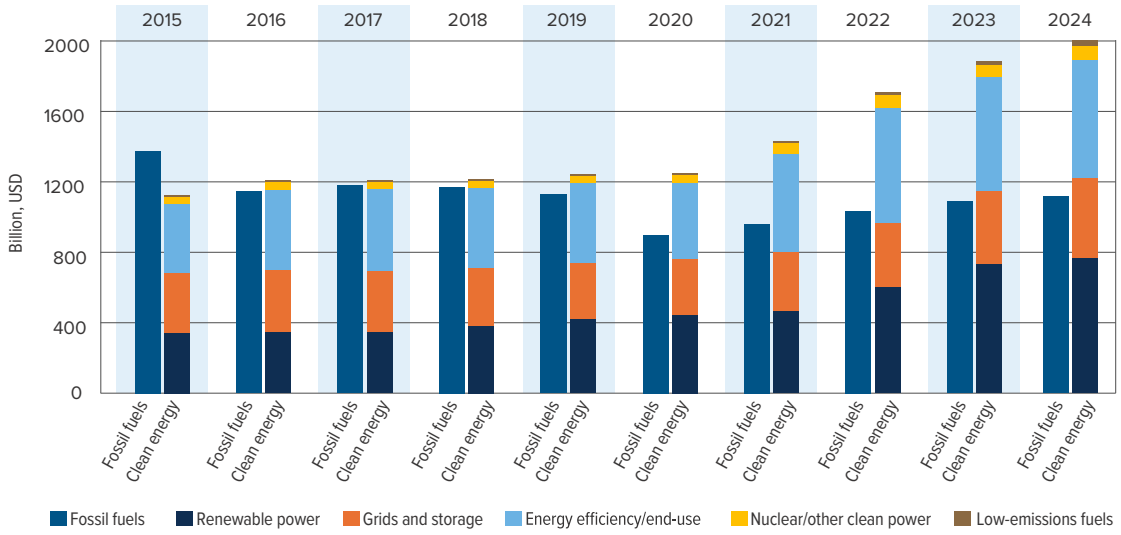
The timing and velocity of that decline may vary from previous expectations, but the long-term trend for coal is decidedly downwards. Increasingly cheaper and reliable options, combined with shrinking export markets (China is the world's biggest coal user, but also the world's leader in clean energy investment) and tariff-driven reductions in export demand, will undoubtably spell coal's eventual demise in the US, any short-term revival notwithstanding.

Investment opportunities in the energy transition remain highly compelling

In our view, any resurgence in coal – not just in the US, but globally – will be muted and eventually stalled by the staggering array of investment opportunities tied to the energy transition. Almost three quarters of global institutional investors report that their investments in energy transition assets are growing, as is their commitment to the investment opportunities associated with the energy transition.[22]

The numbers support this sentiment. Investment in the low-carbon energy transition worldwide grew 11% to hit a record $2.1 trillion in 2024. And investments in renewable energy hit $728 billion, which includes investment in wind (both on and offshore), solar, biofuels, biomass and waste, marine, geothermal and small hydro.[23] The world now invests almost twice as much in clean energy as fossil fuels, which means these sources are not only growing faster, the demand for clean energy will ensure they occupy a paramount position in the future global energy mix.[24]

FIGURE 4: Global investment in clean energy and fossil fuels, 2015-2024



Source: IEA (2024)

Economic, social and environmental benefits of shifting away from coal is too important to ignore

It is impossible to weigh in on the declining use of coal without acknowledging that reliable and affordable energy access is essential to human development, and that such access remains unequal across the globe. The demand for energy globally – clean or otherwise – is driven by the many factors cited here, but it is ultimately underpinned by the need to achieve better living standards for all global citizens. Approximately half the world's population, 4.5 billion people, have insufficient access to energy. The future use of coal must be evaluated with that goal in mind.[25]

That said, phasing out coal, the first fuel of the Industrial Revolution, remains essential, tied to another planetary imperative: the need to limit the negative impacts of climate change. Despite coal's likely persistence in specific markets and recognizing that much of the world's population requires greater access to energy of any kind, phasing out coal is a goal that is desirable and within reach. The negative economic, environmental and social effects of extended coal use are undeniable, but they are also mirrored in the tools available to fulfil the transition away from its use: the economic benefits of clean energy investments, the environmental imperative of meeting Paris Agreement commitments, and the social value of building a prosperous world free of coal's devastating health impacts.

How Mackenize Investments is responding

Mackenzie Investments remains committed to addressing climate risks and leveraging investment opportunities tied to the energy transition. We seek to address both climate-related investment risks and opportunities in three ways: policy, corporate engagement and investment decisions.

Thermal Coal Investment Policy

In keeping with Canada's commitment to phase out unabated coal by 2030, Mackenzie Investments has developed a Thermal Coal Investment Policy that reinforces our pledge to align our investment strategies with global decarbonization efforts and the goals of the Paris Agreement.

OECD countries*: by 2030, we will divest from companies with more than 10% revenue from mining, extraction and power generation of thermal coal, if they are deemed not to have a Credible Coal Phase-out Plan.

Non-OECD countries: by 2040, we will divest from companies with more than 10% revenue from mining, extraction and power generation of thermal coal, if they are deemed not to have a Credible Coal Phase-out Plan.

Until those dates, new investments in companies that generate over 10% revenue from thermal coal mining, extraction and power generation and do not have Credible Coal Phase-out Plans will be permitted and those companies will be a priority for our stewardship team to engage with.

Read the Mackenzie Investments Thermal Coal Policy

Contributors

David Rutherford
AVP, Sustainability Research

Yuhui (Rachel) Song
Senior Manager, Sustainability Research

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*Whether a company is in an Organization for Economic Co-operation and Development (OECD) country will be determined based on the country of risk as defined by Bloomberg. All currency is in USD unless otherwise noted.

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