

The Case for Divesting Coal from the Norwegian Government Pension Fund Global



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Executive Summary

Over the past two years, Norges Bank, following upon its investment mandates from the Norwegian Parliament (Stortinget) and the Minister of Finance, divested the Norwegian Government Pension Fund Global (GPF Global) of its holdings in at least 49 companies with substantial operations related to mining and burning of coal. The decision was based on the conclusion that the business models of these companies were unsustainable for environmental reasons and because of the financial risk in its exposure to coal. Despite this reduction GPF Global retains substantial holdings in coal mining companies. The Fund also has significant holdings in utilities and power-generation companies, many of which have coal plants in their generation mix.

The question before the Stortinget now is whether to consider a more thorough divestment from coal mining and coal-burning power generation companies. This paper notes that substantial losses have already accrued from such holdings and that the constellation of financial, environmental and climate risks in such holdings makes a full divestment from these stocks practical and prudent.

The coal industry globally is in a state of structural decline. It is a shrinking industry with little upside potential. Coal stock prices have collapsed, markets are oversupplied and some analysts—including this one—have concluded that coal markets will never recover. Normal cyclical recoveries that have seen coal stocks and coal demand rebound in the past are most likely a thing of the past. Coal faces new market competition, new concerns over climate and air pollution leading to more restrictive policies, and new waves of public opposition. These factors are leading to permanent declines in market share in many areas of the world and a general slowdown in the rate of coal mining and burning even in countries that rely heavily on coal. Coal prices have dramatically declined for the last four years straight, and are expected to remain at prices that are unsustainable from the companies' point of view through 2021.

Investors have already lost billions of dollars in shareholder value in the coal sector. The Stowe Coal Index, an index of leading global coal stocks, has lost 71% of its value over the past five years. The Standard and Poor's 500 Index rose during the same period by 76%. In the U.S., where the decline in coal use has been the most acute coal-mining companies have lost between 60% and 90% of their stock value.

Leading utilities around the world that depend heavily on coal also have lost share value. Five of the seven largest utility holdings in the GPF Global portfolio with concentrations of coal-fired power in excess of 20% are experiencing significant share-value deterioration. In the U.S., coal-dependent utilities have shed billions in coal related assets. Despite plans in both India and China, two of the world's leading coal consumers, to continue burning significant quantities of coal, each country is fast shifting gears to invest significant capital in renewable energy. Air

pollution in both countries has stretched the patience of the public and constitutes an imminent political threat to the legitimacy of ruling parties.

The use of coal will continue around the world for the foreseeable future, but public opposition to coal mining and coal burning is also occurring in almost every major country where coal is burned and where mining is taking place.

GPFG places a high value on its engagement with companies in its portfolio. GPFG is involved with hundreds of companies annually at the staff and board level. The engagement process has been used to good effect. It is GPFG's preferred option over divestment in most cases. The engagement process implies shared concerns between shareholders and management. The issue of climate change has been a matter of growing concern for over a decade. The coal industry leads global opposition to both environmental and climate change initiatives, a position that has shown disastrous results for investors. A process of further engagement will be futile.

A call for a broader mandate to divest from companies involved in coal mining and coal burning has the advantage of being clear, effective and achievable.

On the mining side, the evidence of a broad, long-term structural decline that is destructive to share value is beyond dispute. The coal industry is arguably the poorest-performing sector in today's global economy. The only point of debate for the foreseeable future for coal mining is how much worse it will get.

For coal-burning utilities, it is a matter of risk exposure. Companies with large concentrations of coal in their portfolio have proven quite vulnerable. Even those supported by national governments and regulators are likely to see reductions in coal use. Many large utilities are already shifting away from coal. Those wedded to long-term, heavy dependence on coal are unlikely to succeed.

We suggest that the Fund extend its divestment rationale to companies with more than 20% of their production in coal (or that mine more than 50 million tons of coal per year). The Fund should divest also from utilities and power-generation companies that get more than 20% of their generation capacity mix from coal-fired power plants.

The high level of risk outlined in this paper for both coal-mining and coal-burning companies suggests weak long-term performance and is best avoided altogether.

I. Divestment Decisions Taken by GPF Global To Date

Over the past two years, Norges Bank, following its investment mandates from the Norwegian Parliament (Stortinget) and the Minister of Finance, divested the Norwegian Government Pension Fund Global (GPF Global)'s holdings in 49 companies with substantial operations related to mining and burning coal.¹ The decision was based on the conclusion that for various reasons the business models of these companies were unsustainable.

The rationale for the divestment from these companies in 2013 and 2014 fell into three categories:

1. Deforestation (involving 11 coal-mining companies in Indonesia and 5 in India).
2. Water-resource impacts (16 coal-mining companies and 2 mountaintop removal coal miners).
3. Exposure to energy markets /Greenhouse gas emissions (14 coal mining companies and one thermal power producer).²

The GPF Global's coal-mining holdings remain substantial, most notably its holdings in China's Shenhua, a company that produces 400 million tons per year. There are more than 30 remaining coal mining companies in the portfolio along with several diversified power and mining companies. The Fund's total coal sector holdings are valued at NOK 85.5 billion (US\$11.4 billion).³

The coal-related divestment steps taken by GPF Global thus far, made in part on environmental grounds and in part on the grounds of market risk exposure, protect the Fund from further losses from these particular companies. These decisions have also prompted dialogue about the need for a more thoroughgoing policy treatment of the coal question. Following a series of policy debates, the Ministry of Finance appointed the Expert Group to prepare a report addressing a request by the Stortinget to evaluate whether the exclusion of coal and petroleum companies is a "more effective strategy for addressing climate issues and promoting future change than the exercise of ownership and exertion of influence."⁴ The Expert Group was asked also to advise on potential exclusion criteria for these types of companies.

The Expert Group was appointed in April 2014 and published its report in December 2014.⁵

¹ <http://www.nbim.no/globalassets/reports/2014/2014-responsible-investment.pdf>, p. 71-72

² The figures used here are from: <http://www.nbim.no/globalassets/reports/2014/2014-responsible-investment.pdf> , p. 71-72. This Norges Bank document does not easily crosswalk with another public disclosure by the Fund http://www.norges-bank.no/pages/103220/040515_charts.pdf. In addition, Urgewald has developed a database based on publicly available fund bond and equity lists. Based on Urgewald's calculations, GPF Global has divested from 51 coal companies in Australia, British Virgin Islands, Canada, China, India, New Zealand, Poland, South Africa, United Kingdom and United States. The equities in this universe of divestments are valued at NOK 3 billion (US\$504 million).

³ See Appendix D.

⁴ See Annex I: The Mandate of the Expert Group, https://www.regjeringen.no/contentassets/d1d5b995b88e4b3281b4cc027b80f64b/expertgroup_report.pdf

⁵ <https://www.regjeringen.no/en/whatsnew/Ministries/fin/press-releases/2014/Report-from-the-Expert-Group-on-investments-in-coal-and-petroleum-companies1/Press-release-from-the-Expert-Group-on-the-Norwegian-Government-Pension-Fund-Global-investments-in-coal-and-petroleum-companies/id2342792/>

The report concluded:

- That the issue of climate change poses a credible risk to the long-term viability of the GPFG
- That the risk is best managed through a policy of engagement and active ownership with companies in the fossil fuel economic chain.
- That the GPFG manage climate risk also through broader participation in regulatory, investor and shareholder initiatives
- That the addition of an enhanced diligence criteria for investments under the heading “contributions to climate change” would provide additional policy authority for effective action by the GPFG.
- That the exclusions and the divestments that have occurred are best handled on a case-by-case basis.

The Expert Group offered several policy rebuttals to arguments in favor of a broader policy of coal divestment. Among their most noteworthy policy conclusions:

- That the fossil fuel industry is not inherently unethical.
- That the broad use of fossil fuels provides sufficient societal benefits to outweigh the costs.
- That the use of the exclusion tool would be used in a limited capacity.
- That broad divestment down the economic chain based on a single product focus (like coal or petroleum) would impair the investment flexibility of the GPFG.
- That Norway’s own involvement with mining, oil and gas make it difficult to push forward with a full divestment of all fossil fuels.
- That the GPFG cannot be a tool for climate change advocacy without compromising its core fiduciary obligations.
- That divestment is not an effective tool to combat climate change.

The Expert Group offered a precise set of definitions to assist with clarifying the complex issues, decision-making processes and roles of the Stortinget, the Minister of Finance, Norges Bank and other stakeholders:

“In debates about investments in fossil fuel companies, the concepts of exclusion and divestment are often used interchangeably. For the GPFG, it is useful to draw a distinction between the two. In this report *exclusion* refers to decisions *by the owner* (formally, the Ministry of Finance) to remove an asset from the GPFG’s investment universe. The rationale for exclusions is (or at least so far has been) purely ethical and based on avoiding investments in grossly unethical products and activities. Exclusions are based on pre-defined criteria and publicly disclosed.

In this report *divestments* denotes operational decisions *by the manager* (Norges Bank) that involve the selling of shares of specific companies, within the bounds of active management. The reasons for these divestments can be purely financial, or they can be

backed by broader sustainability considerations relevant to safeguarding the GPFG's long-term return. They need not be publicly disclosed. In our discussion about active ownership and engagement strategies for the Fund, we have found it useful to distinguish between the term *engagement*, which we use to describe GPFG activities directed at companies in the portfolio, including company dialogue, and *active ownership*, which we use to refer to a wider set of tools and activities. Such tools include, but are not limited to, company-directed activities as well as activities such as sector initiatives or dialogue with standard setters and stakeholders, voting, filing shareholder resolutions and portfolio adjustments.

We use the general term *fossil fuel investments* to refer to investments in companies that either extract fossil fuels (coal or petroleum businesses) or are large users of fossil fuels and therefore exposed to increases in the cost of this input (for example, a coal-fired power station). Where we need to be more specific, we will refer to a particular sector, such as coal, oil or gas companies. Finally, when we discuss the financial side of climate change and the management of the GPFG, we use the term *climate change risk* to denote potential financial risk stemming from either changes in climate policies or physical climate change. We also use the term *carbon risk*, to specifically denote the risk of an increase in the carbon price for businesses or industries.⁶

The Expert Group took as its mandate both to assess the risk to the finances of the GPFG from its exposure to carbon, and to “look at the financial risks surrounding investments in coal and petroleum companies.”⁷

In April 2015, the government released a white paper reviewing the management of the GPFG. The white paper included a summary of the Expert Group's findings regarding investment decisions in coal, and largely concurred with them. The white paper is before the Stortinget. The Stortinget response to the white paper is expected in June 2015.

These discussions take place as part of an ongoing public discussion on the structure and investment style of the Fund.⁸ The GPFG, one of the largest Sovereign funds of its kind in the world at NOK 7000 billion (\$US 850 billion) has several unique features, including its funding source from oil and gas drilling revenues and the nature of its governance combining both political and professional investment interests. The Fund relies principally on a set of benchmark indexes for its investment strategy which consists of 60% equities and 40% bonds.⁹ The Fund invests up to 5% in real estate as part of the bond allocation.¹⁰ The investment beliefs of the Fund are further amplified with specific relation to the coal issue in the Expert Group report.¹¹

⁶ https://www.regjeringen.no/contentassets/d1d5b995b88e4b3281b4cc027b80f64b/expertgroup_report.pdf, p.8.

⁷ https://www.regjeringen.no/contentassets/d1d5b995b88e4b3281b4cc027b80f64b/expertgroup_report.pdf, p. 8

⁸ <http://www.ft.com/intl/cms/s/0/b6e0e756-e87c-11e1-8397-00144feab49a.html#axzz3ZnELZfGo>

⁹ <http://www.nbim.no/en/the-fund/governance-model/management-mandate/#Chapter1>, Section 1.4.2.

¹⁰ <http://www.nbim.no/en/the-fund/governance-model/management-mandate/#Chapter1>, Section 3.5.7.

¹¹ https://www.regjeringen.no/contentassets/d1d5b995b88e4b3281b4cc027b80f64b/expertgroup_report.pdf, p. 11-13.

II. Overview: Nature of Global Coal Risk in Mining and Burning

The policy debate about whether the GPFG should divest further from the coal sector is taking place during a period in which the global coal industry is shrinking. The market for coal, particularly thermal coal, is in a state of decline.¹² The principal pressure on the industry is from an oversupply of coal that is driving prices to unprecedented lows. Low prices are expected to dominate market activity for the foreseeable future.

In most places where coal is mined or burned, a permanent and growing movement¹³ of public opposition is prompting regulatory and governmental action to mitigate pollution and environmental and climate destruction. China, the world's leading producer and consumer of coal, has sent strong signals of its plans to reduce coal dependency. In many countries coal producers and coal-burning utilities are laden with debt incurred through acquisition deals in the run-up of coal and power prices in 2007-08. Many of the world's coal-mining companies have posted several years of financial losses at a time when debt payments are stressing corporate balance sheets.

The coal industry also faces unprecedented competition from advances in wind, solar and energy efficiency and other fuel sources. The competitive pressures are felt acutely by the coal industry because it has a poor history of technological innovation.¹⁴ Finally, the worldwide concern over climate change has highlighted the need for the coal industry to find new ways to contribute to solving the problem.

The challenge facing large institutional investors reliant on fossil fuel investments is that this time of transition requires extra diligence. For decades, the fossil fuel sector (coal, oil and gas) was a source of steady, robust and reliable value and cash contributions. The size and influence of fossil fuel investments in institutional portfolios grew, as did investments in companies down the fossil fuel economic chain. Now, coal is arguably the poorest-performing sector in the world.¹⁵ Oil and gas remain relatively strong performers but face important challenges. The standard investment warning that past gains are no predictor of future performance is starkly and boldly true for the fossil fuels. More work and more diligence are required by institutional investors to ensure that they have an accurate read on these industries and that they are positioned to capture the value that remains.

As this paper documents, the diligence thus far shows massive value losses in the coal-mining industry and pervasive risk for coal-burning utilities with high concentrations of coal in their

¹² For a complete discussion of global coal markets and the variations on these risk themes around the world see: <http://www.carbontracker.org/wp-content/uploads/2014/09/Coal-Demand-IEEFA.pdf>. In September 2014 the Carbon Tracker Institute and IEEFA released a country by country review of the global coal trade. Much of the material for this part of the discussion flows from this research. See also: Appendix I detailing IEEFA's recent publications on the global coal market.

¹³ For a discussion of the nature and impact of public mobilizations and their impact on energy investments see: http://www.ieefa.org/wp-content/uploads/2014/10/IEEFA.OCI_.Material-Risks.compressed.pdf, p. 7. For a more detailed discussion of other organized opposition to coal see: <https://maryland.sierraclub.org/newsletter/grassroots-opposition-coal-international>

¹⁴ Thomas L. Friedman's, *Hot Flat and Crowded*, (New York: Farrar, Strauss and Grioux), p.247-248.

¹⁵ For example, Kurt Oehlberg, Managing Director, FBR, *U.S. Coal Investment Strategy*, Coaltrans USA, February 7, 2014, Slide 12, referred to the coal industry versus the Standard and Poor's 500 as the "last in class" performer.

portfolio. The global coal industry has lost 71% of its value over the past five years during a period of modest economic growth. The risk is not whether an investor will forego future returns if the investor sells coal holdings, the risk is how much more they will lose if they retain their holdings. The losses on coal stocks are not based on future imposition of carbon regimes, the losses are happening now and are getting worse.

An action by GPF to divest from coal would be more than symbolic. Typically those who oppose divestment point to the fact that other investors will simply step in and the investors who divests will lose returns. For the past several years the value loss of the coal industry demonstrates that investors are not stepping up to take over failing coal investments. Instead, large investment banks are warning investors to do the opposite. GPF's actions would be significant because of the size and prominence of the Fund. It would be a significant statement in what is becoming a global message to the coal industry to find another way. As we state throughout this paper, coal will retain a smaller part of the energy mix of the future. IEEFA's long term outlook projects zero demand growth.¹⁶ The companies and governments involved in the global coal trade will require a new consensus as to how the product can be used safely and mined profitably.

III. The Financial Case for Broader Divestment from Coal Mining and Coal-Burning Companies

A. The Case for Broader Divestment from Coal-Mining Companies

Whatever form any due diligence takes with regard to the coal industry, the analysis must take into account all of the signs that point to an industry in the throes of a permanent, structural decline. This paper addresses many of the primary underlying dynamics involved in the coal market. (It does this conscious of the contrarian voices that see a coal rebound and an investment opportunity somewhere in the distance.) Our conclusion is shared by many market observers. For example, analysts at Bernstein Research,¹⁷ in an exhaustive study of the role of China in the global sea trade for thermal coal, have made the point eloquently and succinctly: "The global thermal coal market will never recover."

¹⁶ The International Energy Agency provides an annual long term outlook for thermal coal use. They present this using three scenarios: For a complete discussion of IEEFA's statistical perspective on the long-term outlook on the thermal coal market see: <http://www.carbontracker.org/wp-content/uploads/2014/09/Coal-Demand-IEEFA-complete.pdf>, p. 7. For more detail on the comparative scenarios offered by BP, Exxon, Shell and the United States Energy Information Administration as well as a number of prominent coal consultants see p.13-15 of the report.

¹⁷ http://www.fossil.energy.gov/programs/gasregulation/authorizations/2013_applications/sierra_club_13-69_venture/Ex._110_-_Bernstein_peak_coal_report.pdf

Although some specific growth initiatives are moving forward in regional markets, the global thermal coal market has collapsed.¹⁸ The price of Newcastle coal, the global benchmark, which was at \$140/ per ton in 2011, has crashed. It is now in the \$60-per-ton range and is expected to remain in the high \$50-per-ton range through 2021.

The current price indicates there is no market for new mines (See Figure II). While coal will continue to play a significant role in the world's electricity markets, it will play a much smaller one than it has in the past. A consensus has emerged among the major investment banks that thermal coal markets are oversupplied. This condition will persist for the foreseeable future. The causes are largely structural, although some investment banks are more cautious on this point. The warning to investors is that the global thermal coal market is likely to remain a poor financial performer. The banks that have issued separate and independent reviews of the global coal market include: Citi¹⁹, J.P. Morgan²⁰, HSBC²¹, Goldman Sachs²², Deutsche Bank²³ and Bernstein Research.²⁴ These investment monographs have been backed by subsequent high-profile actions by these banks to avoid coal investments in Australia, the ²⁵ northwest United States²⁶ and Colombia.²⁷

Policy choices and electricity-market dynamics in large coal-burning nations (India, the United States, and China) drive the global coal markets, and increasingly reflect greater emphasis on alternatives to coal. The United States has been on a path of decreasing coal usage for several years. Coal provided electricity for 51% of electricity production in 2007 and now accounts for 38% of that market. Its share is expected to decline further. After worldwide public exposure of its air-pollution crisis, China's government has stepped up policies to decrease coal use. Coal imports to China have declined over the past year, as has the use of coal-burning power plants for energy.²⁸ India's plan is to burn more domestic coal in the coming years, decreasing its reliance on imports. India's coal plant build-out is encountering significant levels of failure,²⁹ plans for efficiency improvements in Coal India (the nation's largest public-sector coal producer) have not yet materialized, and India's utility system is in need of a major overhaul.

Taiwan, South Korea, Vietnam and Thailand are likely to increase their demand for coal, but in each country pollution and public opposition grows. Japan is expected to continue to burn significant amounts of coal, although the rate of growth is unclear.³⁰ The combined effect of even significant new demand from these countries will not offset the loss of imports from China, and from India over a broader time horizon. The overall global thermal coal market will remain

¹⁸<http://www.indexmundi.com/commodities/?commodity=coal-australian&months=60>

¹⁹<https://ir.citi.com/z5yk080HEXZtolax1EnHssv%2Bzm4Pc8GALpLbF2Ysb%2FI21vGjprPCVQ%3D%3D>,

²⁰http://pg.jrj.com.cn/acc/Res/CN_RES/INDUS/2014/6/29/37603388-1ecd-419e-8cbd-bd7d51fc5902.pdf

²¹http://www.businessgreen.com/digital_assets/8779/hsbc_Stranded_assets_what_next.pdf

²²http://www.eenews.net/assets/2015/02/13/document_cw_01.pdf

²³<http://www.reuters.com/article/2013/05/09/energy-coal-idUSL6N0DQ0UU20130509>

²⁴http://www.fossil.energy.gov/programs/gasregulation/authorizations/2013_applications/sierra_club_13-69_venture/Ex._110_-_Bernstein_peak_coal_report.pdf

²⁵<http://www.ieefa.org/wp-content/uploads/2014/10/IEEFA-briefing-Galiilee-Financiers.pdf>

²⁶<http://blog.seattlepi.com/seattlepolitics/2014/01/08/goldman-sachs-bails-out-on-coal-port-builder/>

²⁷<http://www.marketplace.org/topics/economy/goldman-downsizes-its-commodities-operations>

²⁸<http://ieefa.org/global-energy-markets/>

²⁹http://www.business-standard.com/article/specials/horror-and-its-layers-114060601215_1.html

³⁰ Carbon Tracker, "Carbon Supply Cost Curves: Evaluating financial risk to coal capital expenditures," September 2014, <http://www.carbontracker.org/wp-content/uploads/2014/09/CTI-Coal-report-Sept-2014-WEB1.pdf>

oversupplied, and companies in the coal industry will remain poor performers for the foreseeable future.

It is in the face of these financial headwinds that GPFM made its decisions to divest from mostly pure-play coal companies. GPFM retained most of its holdings in larger mining companies that extract coal and other minerals. These companies will be discussed below, but some have moved to sell their thermal coal mines in response to broader weaknesses in the commodity markets.³¹

The Global Thermal Coal Market, by the Numbers

The total seaborne global coal trade (including all types of coal) in 2013 was 1.3 billion tons per year. Two countries—Indonesia and Australia—provide over half of the world's seaborne coal.

Table I: Leading World Exporters of Coal (2013) in million tons

| Country | Total | Steam | Coking |
|---------------|-------|-------|--------|
| Indonesia | 426 | 423 | 154 |
| Australia | 336 | 182 | 22 |
| Russia | 141 | 118 | 60 |
| USA | 107 | 47 | 1 |
| Columbia | 74 | 73 | 0 |
| South America | 72 | 72 | 33 |
| Canada | 37 | 4 | 33 |

Table II: Leading World Importers of Coal (2013) in million tons

| Country | Total | Steam | Coking |
|-------------|-------|-------|--------|
| China | 327 | 250 | 77 |
| Japan | 196 | 142 | 84 |
| India | 180 | 142 | 38 |
| South Korea | 126 | 95 | 31 |
| Taiwan | 68 | 61 | 7 |
| Germany | 51 | 43 | 8 |
| U.K. | 50 | 44 | 6 |

Source: <http://www.worldcoal.org/resources/coal-statistics/>

Several important dynamics to consider are:

- Chinese coal imports rose to 327 million tons (tap) in 2013 but dropped to 282 million tons³² in 2014 and is likely to fall even further. (Before 2008, China rarely imported more than 50 million

³¹ <http://www.businessinsider.com.au/heres-what-the-bhp-spinoff-south32-will-look-like-including-its-dividend-policy-2015-3>

³² <http://www.industry.gov.au/industry/Office-of-the-Chief-Economist/Publications/Documents/req/REQ-March15.pdf>

tons of coal per year). Bernstein Research offers a clear perspective on the importance of China to global coal demand.

“Globally, Chinese demand for coal has been the primary driver or the backstop behind every new investment in coal mining over the last decade; the “global coal market” ended with the collapse in price in 2012: regional miners will see almost zero demand in China from 2015. Once Chinese coal demand starts to fall there is no robust growth for seaborne thermal coal anywhere; developed market demand is weak due to gas, environmental concerns or industrial activity; that leaves just one large structural growth market for seaborne coal: India.”³³

- Although much of the coal industry now sees India as the main bright spot for future coal demand,³⁴ the Indian policy message on imported coal is mixed.³⁵ India is likely to continue importing coal for the next three to five years. Steam coal imports in 2013 were 142 million tons and could rise to 200 million tons in 2015.³⁶ On the other hand, the Indian government was placed at a serious disadvantage in the years when coal and oil prices rose, contributing heavily to the country's deficit and the weakening rupee.³⁷ The country has considerable domestic coal reserves that have not been handled efficiently.³⁸ Even with global prices at their current lows, the cost of imported coal far exceeds that of coal that is mined and sold by the country's state-owned enterprise, Coal India.³⁹ The government has announced its intention to drive down the level of imports. The current minister of energy has repeatedly stated a desire to end India's reliance on imported coal.

If both China and India were to achieve reductions of 50% of their imports, 200 million fewer tons of thermal coal would be needed for the global seaborne trade.

Japan, Taiwan and Korea—the principal sources of import demand of thermal coal in Asia outside of China and India—import about 400 million tons per year today. Those countries, in addition to Vietnam (not listed in the chart above), would have to increase coal use by 200 million tons in five years just to keep markets at current production and shipping levels. These levels are currently showing very weak financial performance.

The likelihood of continued losses by global coal producers is high. The markets are oversupplied by producers who are reluctant to reduce production for fear of missing a market turnaround.

Indonesia, Russia, South Africa, Australia and Colombia are all sources of coal to Asia, and all have plans to continue to export coal.⁴⁰ They exported a combined 860 million tons of steam coal in 2013.

³³ Bernstein Research, *Asian Coal and Power: less, Less, Less...The Beginning of the End of Coal*, Cover Page, June 2013. (Bernstein)

³⁴ Rohan Somwanshi, Global seaborne coal exports to decline in 2015, but not enough to rebalance markets, SNL Energy, March 27, 2015

³⁵ <http://in.reuters.com/article/2014/11/12/india-coal-imports-idINKCN0IW0FJ20141112>

³⁶ <http://www.industry.gov.au/industry/Office-of-the-Chief-Economist/Publications/Documents/req/REQ-March15.pdf>

³⁷ http://www.ieefa.org/wp-content/uploads/2014/05/IEEFA-Briefing-Note_IndianElectricityCoalPricing_4-May-2014.pdf

³⁸ <http://www.dnaindia.com/india/report-importing-coal-unjustified-as-country-has-huge-reserves-piyush-goyal-2071168>

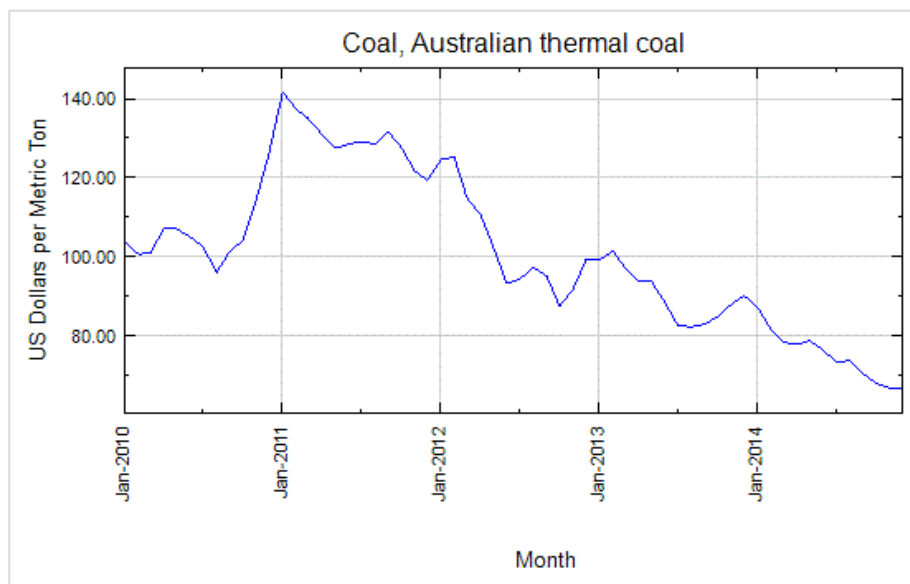
³⁹ <https://www.pwc.in/assets/pdfs/industries/power-mining/icc-coal-report.pdf>, p.14

⁴⁰ For a recent review of coal industry opinion on global markets and individual company outlooks see: Rohan Somwanshi, Global seaborne coal exports to decline in 2015, but not enough to rebalance markets, SNL Energy, March 27, 2015

Global Thermal Price Collapse

The extent of the oversupply can be seen in the collapse of the price of Newcastle thermal coal, the Australian coal whose price is used as a global benchmark.

Figure I: Newcastle Coal Benchmark Coal Price, January 2010- January 2015



Source: Index Mundi

A dramatic price run-up occurred in 2010-2011, driving many coal producers to predict a new supercycle for coal. Most coal producers looked forward to strong demand from China, India, and a host of smaller countries. The period was characterized by a ramp-up in new acquisitions by coal producers, and aggressive proposals for new greenfield mining projects in Australia, Africa, the United States, Indonesia, Russia and Colombia. However, with the subsequent collapse in prices, most coal producers are now facing shrinking revenues and large debt payments from acquisitions made at the top of the market.

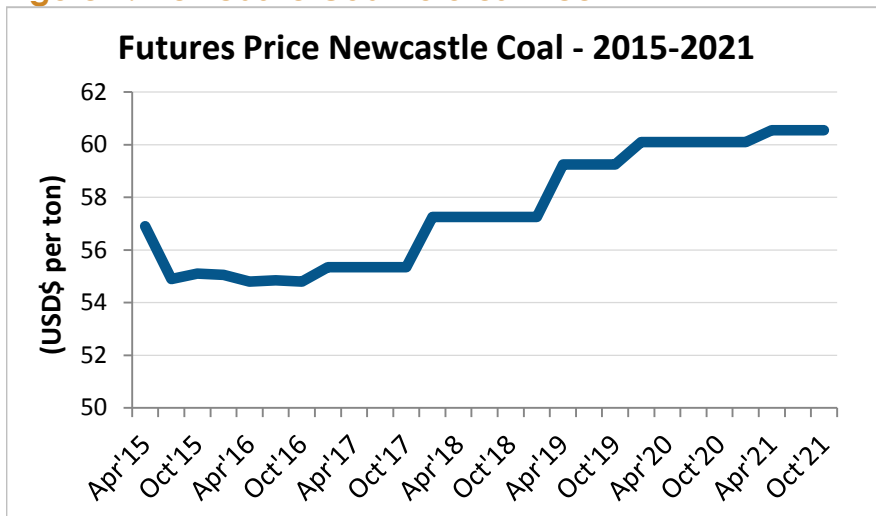
As shown above, the price of Newcastle Coal reached \$140 per ton in 2011. Many of the proposed new mining projects being planned will require a price of about \$100 per ton to continue, and much of the existing capacity around the world is based on coal in the \$80-\$90 range. As can be seen from the coal price futures chart (Figure II) coal prices are expected to

remain below \$60 per ton for the next six years. Taken together with the recent price collapse, the coal industry faces a full decade of tight or negative margins.

The Stowe Coal Index⁴¹ contains companies from all of the leading coal producing countries in the world: China, United States, Australia, Africa, Mongolia and India. Over the last five years, the Stowe Global Coal Index lost 71% of value while the

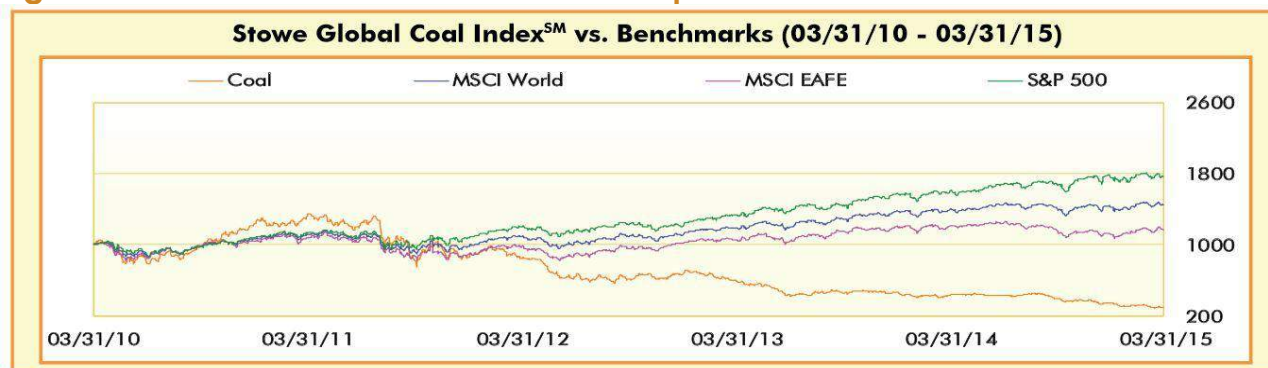
Standard and Poor's 500 Index increased by 76%.⁴² Coal stocks have faltered during a period of modest economic growth. As a broad macroeconomic trend, the decoupling of coal from worldwide economic growth suggests that many areas of the world continue to develop without increasing reliance on coal. The study by Bernstein Research referred to in this report shows the beginning of the breakdown between energy intensity and growth of Gross Domestic Product. As China begins to change its economic strategies it is using less electricity per unit of GDP growth. The country will use less energy and it will be investing less in coal for the energy it uses in the future. Similarly in the United States the significant gap between coal sector equities and the Standard and Poor's 500⁴³ reflects the market impact of the shale gas boom and changing energy policy priorities favoring renewables and natural gas.

Figure II: Newcastle Coal Futures Price



Source: <http://quotes.esignal.com/esignalprod/quote.action?symbol=NCFQ-ICE>

Figure III: Stowe Global Coal Index as Compared to Global Benchmarks



*Note: This chart is a normalized historical graph
Data Source: Bloomberg Data as of March 31, 2015

This chart is for illustrative purposes only. Historical information is not indicative of future results; current data may differ from data quoted. Investors cannot invest directly in index. Index returns do not reflect any management fees or brokerage expenses.

⁴¹ For a list of companies in the Index see: Appendix B

⁴² <http://stowe.snetglobalindexes.com/pdf/coal-Presentation.pdf>, p. 7

⁴³ <http://ieefa.org/report-nyc-and-nys-pension-funds-should-divest-coal-stocks-a-shrinking-industry-weak-upside-and-wrong-on-climate-change/>

B. The Case for Broader Divestment from Coal-Burning Utilities

The GPFG has divested from one coal-burning utility thus far, and Norges Bank has broadly summarized the risks to coal burning utilities as follows:

“Electricity production from coal is an area that may face particularly high risk in connection with regulatory changes in selected markets. A number of countries and regions have introduced targets to reduce greenhouse gas emissions from the power sector. In 2014, we divested from one power producer following an assessment of this risk. This was motivated partly by the proportion of the company’s power production that is coal-fired.⁴⁴”

The case for divestment from coal-burning utilities requires considerable diligence. The utility and power generation sector in many regions of the world faces a set of risks similar to the coal industry itself. The broader risks to coal fired power generation come from market competition for renewables and other energy sources, changing policy mandates of countries, ongoing concerns over air pollution, water contamination and shortages and ash spills. And, the evolving discussion on climate change has placed a significant question mark over coal burning worldwide. The utility industry, however, has demonstrated over time a greater ability than the coal industry to change. How utilities are navigating these changes should have a strong bearing on whether GPFG divests.

Norges Bank’s report titled “2014 Annual Responsible Investment Government Pension Fund Global” includes the following chart listing the fuel mix of the largest power production companies in the fund’s equity portfolio.⁴⁵

⁴⁴ <http://www.nbim.no/globalassets/reports/2014/2014-responsible-investment.pdf>. P. 71.

⁴⁵ <http://www.nbim.no/globalassets/reports/2014/2014-responsible-investment.pdf>

Table III: Fuel mix of the largest power production companies in the equity portfolio

| Company | Country | Renewable* percent | Coal percent | Other** percent | Million NOK |
|-----------------------|---------|-----------------------|-----------------|--------------------|-------------|
| Enel SpA | Italy | 33 | 29 | 38 | 5,346 |
| SSE PLC | U.K. | 19 | 56 | 24 | 7,412 |
| GDF Suez | France | 18 | 22 | 59 | 7,907 |
| NextEra Energy | U.S. | 17 | 4 | 80 | 3,645 |
| E.ON SE | Germany | 12 | 32 | 56 | 5,392 |
| Electricite de France | France | 11 | 9 | 80 | 2,268 |
| Duke Energy | U.S. | 9 | 40 | 52 | 3,349 |
| RWE AG | Germany | 6 | 61 | 32 | 2,486 |
| Dominion Resources | U.S. | 3 | 26 | 71 | 2,491 |

*includes among other wind, solar, geothermal and wind power

**includes among other nuclear and oil and gas based power generation

NOTES: chart was taken from Norges Bank 2014 Responsible Investment Government Pension Fund Global report, page 61. Original chart said "ten largest companies" but only nine were listed.

<http://www.nbim.no/globalassets/reports/2014/2014-responsible-investment.pdf>

This list covers utilities serving many countries and many regions of the world, including France, Germany, U.K and Ireland, Latin America, the Middle East, and the United States. Most of the companies have significant holdings in coal-fired power generation. The percentage of coal in each company's fuel mix ranges from 4% (NextEra – USA) to 61% (RWE AG - Germany). Each utility is in a state of transition and some are financially stressed because of the changes that are occurring due to the transformation of the energy economy. Five of the seven companies (EnelSpA, SSEPLC, GDF Suez, E.On SE, RWE AG) on the list with concentrations of coal in excess of 20% are experiencing significant share value deterioration (see Appendix A). The remaining two U.S. companies with high concentrations of coal and good stock performance enjoy regulatory protections and are shedding unprotected coal assets (see U.S. discussion below).

Nation-specific market behavior and policy choices influence each utility's decisions on the allocation of fuel sources. These decisions on fuel sources largely drive the utility's financial performance. Important factors include whether a utility is switching from coal to gas, how much it is banking on the rising and falling fortunes of nuclear, wind, solar or energy efficiency, and the ability of the company to adapt its business and regulatory models to changing circumstances.

In contrast to the data available on the coal market, it is difficult to find comprehensive data compilations or analyses on the financial performance of cross-regional, global coal-burning utilities. Therefore, our research surveys some of the utilities in the GPFG list and supplements it with a view on some companies that are held in relatively small amounts in the GPFG portfolio.

The picture that emerges is complex from a purely energy-management perspective, because the global utility sector includes a vast array of companies with a wide variety of energy mixes in their power-generation portfolios. The financial picture is clearer, however. Most companies

heavily invested in coal-fired power generation are financially stressed. Even those with heavy coal reliance and sound financial performance are seeking to broaden their portfolio mixes. The examples used in this paper of Duke Energy, Dominion Resources in the United States and Adani in India all indicate power generation that have long histories with coal but forward looking capital investment strategies moving in non-coal directions. Those countries and companies looking to build new coal plants face complex financial and political situations. Below are assessments of the dynamics facing coal-burning utilities in major countries and regions around the world.

United States

Coal claimed a 51% market share of electricity production in the United States in the 1990s. Today that number stands at 38% and is likely to decline. The country has an aging electricity grid. The average age of the plants in its coal fleet is 42 years. In 2005, the federal government announced a plan to add 150 new coal plants, most of which were never built due to market changes and significant public opposition. The existing fleet of aging U.S. coal plants now faces major pollution-control upgrades at a time when natural gas and power prices are low, and when economics are rapidly improving for wind, solar and energy efficiency. The nation could lose as much as a third, if not more, of its coal-fired capacity by 2020 due to retirements.

- Almost every major utility and power generator in the U.S. has written down, sold, or closed coal plants over the past seven years. No comprehensive data on write-downs is available, but when companies write off coal valuations, the amounts are usually in the hundreds of millions or billions of dollars. Ameren⁴⁶, Duke, AEP⁴⁷, Dynegy, First Energy⁴⁸, Dominion, Southern Company and Energy Futures Holding⁴⁹, some of the nation's largest and most prominent utilities, have lost billions in value on their coal plant portfolios.
- The value of coal plants in the U.S. has diminished rapidly as illustrated vividly in this example: After spending \$1 billion to upgrade pollution controls at its unregulated Brayton Point coal plant in Massachusetts, Dominion sold the plant to a private equity firm. Although the precise purchase price for the Brayton Point plant is unknown, the total deal, which included stakes in two other coal plants, was for \$472 million. One month after the deal was complete, the new owner announced it would close the plant by 2017 because the plant couldn't compete in the marketplace.
- While the market has retired considerable numbers of coal plants⁵⁰ already, several remaining large deals with additional coal retirement implications continue to dominate

⁴⁶ The estimated losses here are \$1 to \$2 billion, see: Dan Testa, *Wall Street welcomes Ameren's willingness to cut merchant business losses*, SNL, December 21, 2012.

⁴⁷ Currently the company is before the Ohio Public Service Commission to transfer coal plants under regulation. It is also planning the sale of coal assets in the near future and watching the market for strategic opportunities. See: Darren Sweeney, *Update: AEP merchant sale likely hinges on PJM capacity proposal, Ohio PPA Plan*, SNL, April 23 2015. Based upon a review of past AEP annual filings with the SEC we estimate a coal plant write off of \$1 billion.

⁴⁸ <http://ieefa.org/category/company/firstenergy/>

⁴⁹ The estimated losses on coal plants at this utility is \$25 billion. The utility is now in bankruptcy. <https://texasgreenreport.files.wordpress.com/2011/03/the-case-to-retain-big-brown-monticello-and-martin-lake-coal-plants.pdf>, p. 7.

⁵⁰ According to SNL Energy 67 GW MW of coal capacity has been retired since 2000. At the time the U.S. had 305 GW of coal fired capacity nationwide.

market news. Duke Energy's sale of its existing Midwest coal and gas holdings resulted in a \$1 billion to \$2 billion impairment write-down in 2014.⁵¹ Coal burning in the United States cannot take place without the support of government regulators. Unregulated coal plants have failed almost a decade with most major utilities and generators taking losses, selling assets and seeking new corporate and regulatory combinations to maintain plants that may prove efficient.

NextEra and Duke, two U.S. companies in GPFG's top holdings, illustrate the complexity of the issues involved:

- NextEra has a high-middle-range concentration of renewables and the lowest percentage of coal reliance on the GPFG list. It also is by far the best market performer among GPFG's top utility holdings. NextEra's positive performance has occurred during a decade that has seen significant changes in U.S. power markets. These changes include low natural gas and power prices, low interest rates, an end to new coal plant construction, a trend toward retirement of older coal plants and an increase in advances in solar, wind and energy efficiency. In 2014, Moody's upgraded most U.S. utilities, including NextEra, citing the constructive relations between utilities and regulators in a changing energy market.⁵² This industry-wide upgrade emerged out of a low-interest-rate, low-power-price, reduced-coal-capacity and rising-renewables environment.
- Duke Energy, a company with a high concentration of coal in its portfolio, is financially strong but its continued reliance on coal has hurt its reputation in recent years. It has suffered from criminal prosecutions and resignation of staff during the development of the Edwardsport, Indiana, coal plant⁵³ and a high-profile coal ash spill in North Carolina.⁵⁴ As noted above, the company has also recently sold several natural gas and coal plants.⁵⁵ Its capex budgets going forward are focused on transmission improvements, solar and natural gas, and ash-cleanup liabilities.⁵⁶
- Dominion Resources, which also has a high concentration of coal, has used the U.S. regulatory system to shield its coal assets while it has expanded into natural gas and sold most of its financially failing⁵⁷ merchant coal fleet, some of it at distressed prices.⁵⁸

Another U.S. utility held by GPFG (though not among its top utility holdings) is FirstEnergy, which operates in the Midwest. The company's overreliance on coal has left it poorly positioned in the markets. In 2008 FirstEnergy's stock traded at over \$80 per share; today it trades at around \$35 per share. The company suffers from decreasing revenues, a falling stock price, loss of

⁵¹ Jason Lehmann, *Duke to exit Midwest commercial generation, puts 6600 MW up for sale*, SNL, February 17, 2015. The company also declared a two-year \$2.7 billion impairment in their 2010 10K filing with the SEC on coal related merchant power generation.

⁵²http://www.eei.org/resourcesandmedia/industrydataanalysis/industryfinancialanalysis/QtrlyFinancialUpdates/Documents/QFU_Credit/2014_Q2_Credit_Ratings.pdf

⁵³ <http://ieefa.org/category/subject/edwardsport/>

⁵⁴ <http://ieefa.org/category/company/duke-energy/>

⁵⁵ <http://www.wsj.com/articles/dynegy-to-buy-assets-from-duke-energy-capital-1408706971>

⁵⁶ <http://seekingalpha.com/article/3129406-duke-energys-duk-ceo-lynn-good-on-q1-2015-results-earnings-call-transcript?page=7&p=qanda&l=last>

⁵⁷ https://docs.google.com/file/d/0B_qWeYLAqoq1dmZ3N3dIYThPNuk/edit?pli=1

⁵⁸ <http://www.businesswire.com/news/home/20130722005823/en/Fitch-Affirms-Ratings-Dominion-Resources-VEPCo-Outlook#.VU32qPRDtic> , see also: <http://www.providencejournal.com/breaking-news/content/20131008-new-owners-to-shutter-outmoded-brayton-point-power-station-in-2017.ece>

customers and dividend cuts.⁵⁹ Its response has been to lobby hard to defeat the development of renewable energy.⁶⁰ FirstEnergy has moved most recently to have some of its strategically important, unregulated coal plants placed under regulation in order to support the plants financially where the markets will not. For example, it successfully petitioned the state of West Virginia in 2013 to shift its ownership of the Harrison Coal Plant from its unregulated subsidiary to its regulated subsidiary. The company proposed that the plant, which had previously been valued at \$319/kilowatt hour, be transferred to the rate base for a value of \$767/ kilowatt hour. Ultimately the regulatory body allowed FirstEnergy to make the transfer at a value of \$565/kilowatt hour—thus transferring both the financial risk and higher electric bills to ratepayers. FirstEnergy has a similar proposal pending in Ohio. These regulatory bailouts should have benefited investors but First Energy's legacy debt and its continued reliance on coal keep its credit rating and stock price down. In 2014 when most U.S. utilities received a Moody's upgrade, First Energy did not.

Europe

On GPF's list of top utility holdings, the one with the largest concentration of coal in its portfolio (61%) is Germany's RWE AG. This company is also one of the poorest performers on the GPF utility list, having lost 62% of its share value over the past five years (See Appendix X). RWE AG's market capitalization has shrunk from EUR50 billion in 2007 to EUR13.7 in 2015. The company faces significant challenges related to low power prices, heavy debt, legacy coal plants and shifting policies that reward renewables. These factors have weighed heavily on RWE's balance sheets as the twin impact of revenue pressure and significant impairment write offs have driven profits and stock prices down. Germany is currently considering a new set of penalties for coal plants that exceed emission limits.⁶¹ RWE has objected, citing the negative impact the new penalties will have on its already troubled financial condition.⁶² RWE AG faces clear risks to its coal fleet as the country moves to decarbonize its electricity grid. Standard and Poor's has recently downgraded the company based on a medium-term low-price outlook and carbon risk.⁶³

EON, the Germany-based utility with consumer markets in the United Kingdom, Germany, Hungary, Russia, the Netherlands, Denmark, Spain and Italy, has a 31% share of its portfolio in coal. The company has experienced a steady decline over the past decade. In 2007, it had a market capitalization of EUR92 billion. Today that stands at EUR28.8 billion.⁶⁴ In January 2015, the company announced it would split off its natural gas and coal holdings.⁶⁵

These two large utilities, both of which are heavily dependent on coal, have had a combined market capitalization loss of EUR 71.1 billion since 2007.

⁵⁹ <http://ieefa.org/firstenergy/>

⁶⁰ <https://ecowatch.com/2015/05/01/firstenergy-war-on-renewables/>

⁶¹ <http://carbon-pulse.com/germany-plans-to-wield-emissions-fines-for-coal-plants-reuters/>

⁶² <http://www.bloomberg.com/news/articles/2015-04-23/rwe-chief-says-german-coal-power-policy-threatens-its-existence>

⁶³ <http://www.rwe.com/web/cms/mediablob/en/1780926/data/1775774/6/rwe/investor-relations/bonds/credit-rating/standard-poors-download.pdf>

⁶⁴ <http://www.statista.com/statistics/278646/market-capitalization-of-eon-ag/>

⁶⁵ <http://www.theguardian.com/business/2015/mar/11/eon-reports-record-group-losses-hive-off-fossil-fuel-business-german>

China

The market-oriented, developed economies of the world have witnessed significant value destruction and shareholder losses from power generators with heavy concentrations of coal-burning power plants. China's economic growth, fueled by coal-fired power generation but marred by massive air-pollution problems in major cities has reached environmental and political limits.⁶⁶ The government of China has indicated to the Chinese public and to the world⁶⁷ that it will continue to burn substantial amounts of coal but that future investments will be designed to diversify energy sources and that immediate action will be taken to curb coal emissions.

The government of China has recently announced that four major coal plants serving Beijing will be closed.⁶⁸ Additional coal plants in surrounding suburban communities are also slated to close.⁶⁹ These decisions were driven by public-health and environmental concerns, not because of plant or enterprise profitability.

Such decisions over the past two years are already having an impact. Chinese coal consumption fell by 4.7% year-over-year during the first quarter of 2015. The first-quarter data suggests a rapid acceleration of a trend that emerged very powerfully in 2014, although traces of a slowdown in the rate of growth of Chinese coal consumption actually first appeared in 2012, when year-over-year growth halved from the 10% compounded annual growth rate recorded over the preceding decade.

Three indicators illuminate the likely direction of Chinese coal usage in the near and longer term:

- Its annual economic growth has slowed to 7% today from 8-10%, and is likely to continue to moderate slowly over the next decade. (The International Monetary Fund forecasts 6.8% growth in 2015 slowing to 6.3% in 2016). Less demand growth means less electricity growth.
- The ratio of electricity demand growth and real GDP growth in China is changing. Having averaged more than a 1-to-1 ratio in the preceding decade, this ratio has fallen to 0.5-to-1 as electricity demand has grown by 3.8%, much slower than GDP, which was up 7.4%. This step-down in the ratio is a reflection of greater energy efficiency and of a structural change in the economy toward less electricity-intensive sectors. If this trend continues—and there's no reason to believe it won't—it would mean a faster transition away from coal. (The AFR reports that China electricity growth amounted to only 0.8% year-over-year in the first quarter of 2015.)
- China is investing hundreds of billions in diversifying its electricity generation away from coal, turning increasingly to hydro, nuclear, gas, wind and solar. The AFR itself reports that Chinese hydro-electricity production was up an additional 10% year over year during the first quarter

⁶⁶ <http://www.theguardian.com/environment/2013/dec/12/china-coal-emissions-smog-deaths>
<http://www.theguardian.com/environment/chinas-choice/2014/sep/24/china-pledges-to-cut-emissions-at-un-climate-summit>
http://www.nytimes.com/2014/11/21/business/energy-environment/china-to-place-limit-on-coal-use-in-2020.html?_r=0
<http://blogs.scientificamerican.com/observations/2014/11/25/can-china-cut-coal/>,
<http://www.bloomberg.com/news/articles/2015-03-24/beijing-to-close-all-major-coal-power-plants-to-curb-pollution>

⁶⁷ <https://www.whitehouse.gov/the-press-office/2014/11/11/us-china-joint-announcement-climate-change>

⁶⁸ <http://www.bloomberg.com/news/articles/2015-03-24/beijing-to-close-all-major-coal-power-plants-to-curb-pollution>

⁶⁹ http://www.chinadaily.com.cn/china/2015-03/19/content_19860091.htm

of this year. China is undertaking the largest build-out of hydro-electricity the world has ever seen, doubling its capacity to 400 gigawatts by the end of this decade. Likewise, a world leading wind-power program is on track to more than double China's total installed wind farm base to over 200 gigawatts by 2020 as well. For solar, the acceleration of installs continues, with the first quarter of 2015, seeing 5.0 gigawatts installed, putting China well on track for its recently upgraded solar-generation target of 17.8 gigawatts for this year alone.

For the first three months of 2015, coal imports are down 42% year on year, a massive acceleration in the rate of decline from the 11% reported for all of 2014. Peak coal consumption for China appears to have occurred in 2013, three years ahead of schedule even by IEEFA's expectations.

What makes this trend so globally important is that:

- China represents 50% of the world's consumption of coal and accounted for more than 20% of seaborne coal demand in 2014.
- India is looking to replicate China's achievements in the transformation of its own electricity system as outlined in a government policy plan that emerged in 2014. India is set to account for 20% of the world's seaborne thermal coal demand in 2015, and the scenario that sees the world's two largest import markets collapse to zero by 2020 is rapidly gaining credibility.

India

India's plan⁷⁰ is to improve the efficiency of its coal-burning and mining operations (and decrease reliance on coal imports),⁷¹ expand clean coal technology through a coal plant build-out initiative, ramp up wind, solar and energy efficiency, and reform its dysfunctional utility system. The Indian coal plant build-out is encountering significant levels of failure,⁷² plans for efficiency improvements in Coal India (the nation's largest public sector coal producer) have not yet materialized, and India's utility system is in need of a major overhaul

India's Energy Minister Piyush Goyal is leading this reform and transformation. It involves a number of factors, including;

- A tenfold lift in solar installation rates to 100 gigawatts by 2022, a fivefold increase to 60 gigawatts of new wind farms, 10 gigawatts of biomass and 5 gigawatts of small-scale, run-of-river hydro— a total of 175 gigawatts of additional renewable energy installations, requiring an investment of well over US\$200 billion.
- Opening up access to international debt and equity markets to assist in the funding of solar and potentially wind projects, with a proposal to price power purchase agreements (PPAs) U.S. dollars to access low-cost, long-duration loans and undertake centralized currency hedging, potentially halving the rupee cost of debt.

⁷⁰ For a thorough discussion of the Modi governments current energy strategy and IEEFA's view on its strengths and weaknesses see: <http://ieefa.org/wp-content/uploads/2015/05/Adani-Restructuring-2015-May.pdf>

⁷¹ <http://www.bloomberg.com/news/articles/2015-05-04/world-s-worst-air-spurs-modi-s-25-billion-utility-clean-up-push>

⁷² http://www.business-standard.com/article/specials/horror-and-its-layers-114060601215_1.html

- A US\$50 billion investment to upgrade the capacity and efficiency of the electricity transmission and distribution grid, and to significantly reduce the 23-25% transmission and distribution loss rate and to drive a 6% energy-efficiency saving by the end of 2015 and reduce the frequency of blackouts.
- A target to double Coal India Ltd's production output to 1,000Mtpa by 2019, with a focus on greater integration and co-ordination with India Railways to reduce logistical bottlenecks.
- A tender process for 204 coal deposits that commenced in February 2015 aimed at encouraging private industry to vertically integrate its fuel supply needs for industry and power generation, with a target of expanding private domestic coal mining capacity to up to 500Mtpa.
- Reducing railway inefficiencies and aligning coal mine-mouth power plants to reduce coal transportation distances.
- Lifting utilization rates of existing power plants to reduce the need for more capacity.
- Phasing out old, inefficient coal-fired power capacity and moving to a position where any new coal-fired power capacity installed is of the latest, highest-efficiency standards.
- Re-evaluating the merits of pursuing the now stalled Ultra Mega Power Project (UMPP) plan.
- Pursuing an accelerated distributed energy solution for the large portion of India that is off grid.

A greater reliance on energy efficiency and improved grid efficiency, plus plans to install 175 gigawatts of wind, solar, run-of-river hydro and biomass in the next eight years, combined with an acceleration in public and private domestic coal mining in India will all serve to facilitate a double transition; firstly away from imported coal, and then a diversification away from coal in its entirety, longer term.

This last assumption may seem contradictory. However, in IEEFA's view, any plan to triple domestic coal production would, almost by definition, see air and water pollution triple and is likely to exacerbate social unrest. According to the World Health Organization, India already has 13 of the 20 most polluted cities in the world, many far worse than China. Like China, the Government of India will need to act to remedy air and water pollution. In April 2015, New Delhi started to introduce regulatory changes to deal with pollution, including closing old coal-fired power plants—a strategy similar to China's.

As momentum builds, the Indian electricity market will likely rapidly pivot toward a significantly higher reliance on renewable energy and energy efficiency. Once built, renewable energy plants and energy efficiency initiatives have an almost zero marginal cost of production, hence they immediately work to undermine coal-fired power plants that have a high marginal cost of production. Already the government's attempt to build several large coal-fired power plants has been frustrated by poor financial planning and an unwieldy bureaucracy. The government's attempt to spearhead a large, private-sector coal plant build-out has resulted in

significant financial losses for several large power producers, most notably Reliance⁷³ and Tata Power.⁷⁴ Several of India's largest power generators including Jindal Power, Adani Power, JSW Energy and China Light and Power recently pulled out of competition for Plant Cheyyur in Tamil Nadu because of faulty project finances.⁷⁵ Furthermore, Minister Goyal's plan to access global debt capital markets will significantly lower the cost of renewables in India and accelerate the transition.

A recent IEEFA report illustrates how another large diversified power interest, Adani Enterprises, is handling a large coal portfolio. Its subsidiary Adani Power has performed poorly over the past four years.⁷⁶ Saddled with debt from prior deals (coal and others) with the government of India, the parent company is restructuring with an overall view of aligning its interests and those of the government. The restructuring will allow Adani to move more aggressively in the transmission and solar industries, two areas that the Modi government has identified as top priority. The company's capital budgets, however, retain the Galilee Basin mining project even as it charts a new and different strategic direction.

As this technology revolution rapidly develops, a natural result is that many new thermal power plants with a lifespan of 40 or more years will prove to be stranded assets, unable to generate an economic return. India is likely to run into the same problem that Europe has faced over the past decade, with the major utilities like RWE and E.ON seeing unprecedented shareholder-wealth destruction. The same is unexpectedly hitting China's coal-fired power sector now, with 2014 seeing record low coal power utilization rates of 53.7%, undermining profitability of even the newest coal-fired power plants.⁷⁷

Developing Countries

Although many developing countries around the world have mapped out plans for building new coal-fired power plants, a sizeable proportion of these plans are not coming to fruition. Two out of every three planned coal plants around the world have been canceled since 2010, according to a report published by Coal Swarm and Sierra Club in March 2015.⁷⁸

The report says: "The pace of net coal capacity additions (new capacity minus retired capacity) worldwide remained around 20 GW to 25 GW per year for over two decades [before 2005], then abruptly tripled during the period 2005 to 2012 before receding in 2013."

Collectively, East Asia, South Asia and Southeast Asia accounted for more than 80% of new coal plant construction in 2014 and the region is projected to continue to dominate the market

⁷³ <http://www.thehindubusinessline.com/companies/reliance-power-seeks-higher-tariff-for-tilaiya-umpp/article5220813.ece>

⁷⁴ http://www.business-standard.com/article/economy-policy/govt-staring-at-empty-power-sector-pipeline-in-13th-plan-period-114122600016_1.htm

⁷⁵ <http://www.businessworld.in/news/business/energy-and-power/power-play-1/1812027/page-1.html>

⁷⁶ <http://ieefa.org/briefing-note-an-overview-of-adani-enterprises-corporate-restructuring/>

⁷⁷ This discussion is taken from <http://ieefa.org/wp-content/uploads/2015/05/Adani-Restructuring-2015-May.pdf>. See full document for more details.

⁷⁸ Shearer, Christine, Nicole Ghio, Lauri Myllyvirta, and Ted Nace, Boom and Bust: Tracking the Global Coal Plant Pipeline, March 2015

for the next several years. However, new coal plants in Taiwan,⁷⁹ Vietnam,⁸⁰ Indonesia, Australia,⁸¹ India, Pakistan,⁸² the Philippines,⁸³ and Myanmar⁸⁴ all face market warnings and public opposition from a variety of players, including communities seeking to protect environmentally significant areas from destruction, small businesses protecting vital natural resources used for farming, fishing and other local economic needs, local governments seeking to reduce air pollution, organizations focused on preventing climate change, and advocates of renewable power and energy efficiency. The pace of cancellations is not likely to slow, given the market dynamics combined with the strength of community opposition, which can hold up permits, mobilize support and increase the costs of the projects significantly.

The world will continue to burn coal for many years, though most countries are slowing the growth of coal or halting expansion overall. Pollution problems and regulatory responses loom large and place pressure on power generators to find alternatives to coal. Competition is undermining coal's historic market share. The potential for both nation-based carbon initiatives and long-term international agreements persists. The outlook for companies with high concentrations of coal in their generation fleet is giving way to a more diversified energy strategy. From a broad energy perspective, diversification usually means that where coal is already in high concentration the goal is to minimize its impacts. And, where it is not relied upon currently, it is a less-desirable option, limited by public opposition, pollution and financial constraints.

IV. Recommendations for Next Steps

A. Overview of Fund Governance⁸⁵ and the Exclusion and Divestment Decisions

The Stortinget is charged with setting the policies of the GPF. The Finance Ministry is the owner and provides executive direction. Norges Bank is the manager and serves to execute the investment and investment-related programs that constitute the day-to-day operations of GPF.

⁷⁹ <http://www.taipeitimes.com/News/taiwan/archives/2015/05/05/2003617542> , <http://focustaiwan.tw/news/aeco/201504150029.aspx>

⁸⁰ <http://www.powerengineeringint.com/articles/2014/11/viet-nam-to-build-power-plant-despite-warnings-over-coal-shortage.html>

⁸¹ <http://www.theaustralian.com.au/business/mining-energy/agl-energy-turns-its-back-on-coal-fired-power/story-e6frg9df-1227307971981>

⁸² http://www.khaleejtimes.com/biz/inside.asp?xfile=/data/opinionanalysis/2015/May/opinionanalysis_May5.xml§ion=opinionanalysis

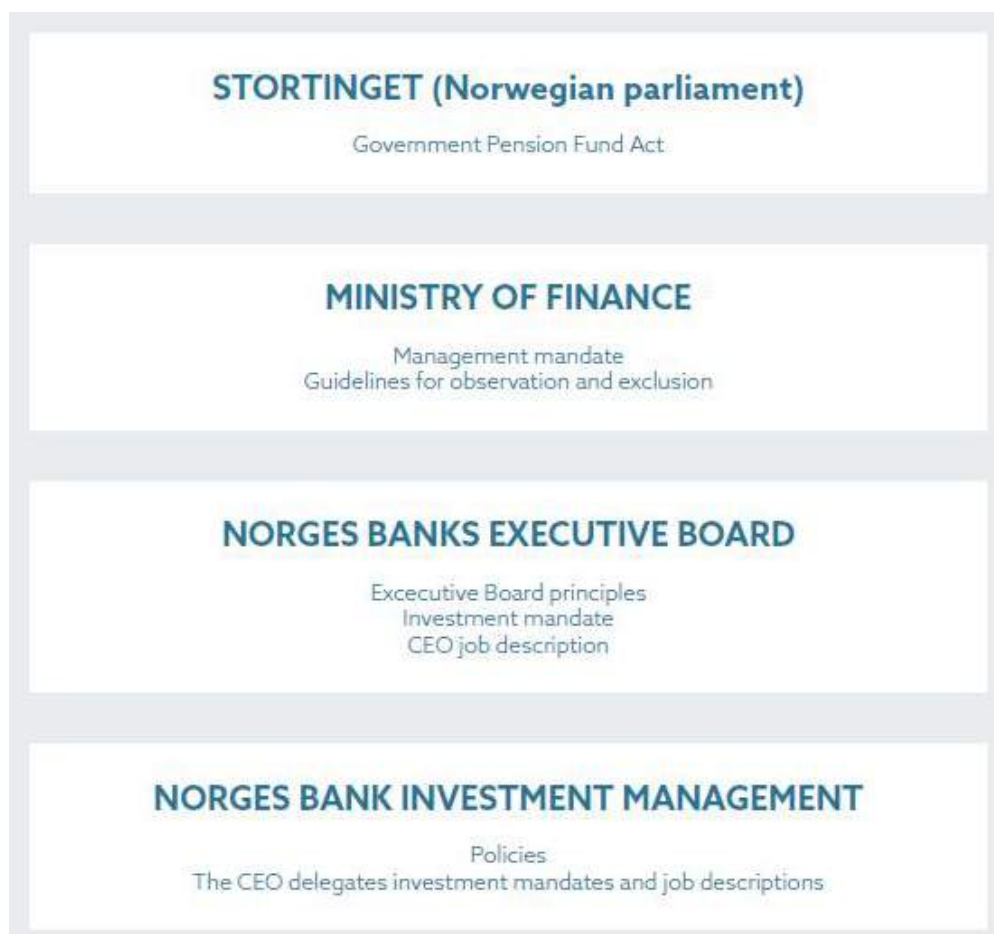
⁸³ <http://newsinfo.inquirer.net/688636/batangas-priests-lead-fight-vs-coal-fired-power-plant>

⁸⁴ <http://www.mmtimes.com/index.php/national-news/14307-no-coal-no-toyo-thai-mon-villagers-rally-against-plant.html>

⁸⁵ <http://www.nbim.no/contentassets/0ff9cd1d5c8e4737a7b7262d3ec167d4/norges-bank-investment-management-annual-report-2014.pdf> , see pages 80-83 for a more complete discussion of the Fund and assigned responsibilities

GPFG has an active program of ethical review, company engagement, ownership activity in broader forums and a divestment policy. The functions are carried out according to the following assignment of responsibilities:

- The Ministry of Finance as the owner has the authority to review and remove or exclude assets from the GPFG based upon ethical grounds and the conduct of the companies.
- Norges Bank makes operational decisions related to the divestment of shares, the actual selling of shares within the bounds of active management.
- Norges Bank can make these decisions based upon purely financial conditions or backed by broader sustainability considerations.
- Norges Bank also implements a program of company engagement whereby companies are in regular dialogue with the Bank on a series of investment-related issues. The Bank also spearheads the Fund's participation in broader efforts designed to shape regulatory, shareholder and other stakeholder issues.



B. Substantive Position of Expert Group

The Expert Group has taken the position that a broader divestment of coal is inconsistent with the best interests of the GPF. While acknowledging the risks faced by the GPF from climate change, the Expert Group finds that company engagement followed by a case-by-case analysis offers the best opportunity for effective action. The Expert Group also calls for a new category of analysis, "contribution to climate change," to be used in future diligence evaluations.

GPF places a high value on its engagement with companies in its portfolio. GPF is involved with hundreds of companies annually at the staff and board level.⁸⁶ The engagement process has been used by many institutional investors to good effect in a number of cases. However, the engagement process implies a shared set of professional concerns upon which shareholders and management can meet. The issue of climate change has been a matter of growing concern for over a decade. Most companies in the GPF investment portfolio have already made a decision about their approach to these issues. The Expert Group should more clearly acknowledge that the history of the coal industry is one of opposition to both environmental and climate change initiatives. The coal industry's decisions are now demonstrating disastrous results for investors. A process of mere engagement will be futile.

Notes on how recent coal industry strategy in the face of sustainability initiatives:

- In 2010, the U.S. coal industry worked successfully to defeat comprehensive climate legislation. The industry "victory" did nothing to stem the downward spiral of coal company financial fortunes.⁸⁷
- Last year Ceres, a U.S. based non-governmental organization with a long history of shareholder engagement, worked with 70 institutional investors worth over \$1 trillion in total requesting long-term carbon-asset management plans from the world's major oil, gas and coal companies. The individual coal companies offered no solutions, and in most cases did not bother to answer this investor query.⁸⁸
- Last month, Peabody Energy Chairman Greg Boyce referred to climate change as an "environmental crisis predicted by flawed computer models."⁸⁹ Peabody is considered the largest private coal producer in the world, with reserves in Australia and the United States and investment interests in Germany, Mongolia and China.

⁸⁶ The most recent Norges Bank report lists the meetings that Bank officials have had with companies in most sectors. It does not list any meetings with coal mining companies. <http://www.nbim.no/globalassets/reports/2014/2014-responsible-investment.pdf>, p. 37-38

⁸⁷ <http://ieefa.org/report-nyc-and-nys-pension-funds-should-divest-coal-stocks-a-shrinking-industry-weak-upside-and-wrong-on-climate-change/>

⁸⁸ Based on interviews with CERES staff, the coal industry was by and large unresponsive. <http://www.ceres.org/issues/press/press-releases/investors-ask-fossil-fuel-companies-to-assess-how-business-plans-fare-in-low-carbon-future?searchterm=carbon+asset+risk>

⁸⁹ <http://www.peabodyenergy.com/content/120/press-releases>

- Utility interests in the United States, while professing support for efforts to combat climate change, have issued a massive criticism of recent greenhouse gas regulation, including questioning the legal authority of the U.S. government to address the issue.⁹⁰

C. The Decision to Divest from Coal Thus Far

To date, the GPFG has not adopted a broad policy of coal divestment. However, the GPFG's policy of considering both the integration of environmental issues with the constellation of financial risks in the coal industry has compelled it to divest from most of the pure-play coal mining companies in the world. The steps that the GPFG has taken thus far to divest from individual coal companies and one power company, along with its governance infrastructure, position it well to consider additional actions related to coal.

The GPFG has a variety of possible actions open to it, which the Expert Group describes in the categories of active ownership, engagement, exclusion and divestment. All of these tools are essential to protecting the GPFG from the risks of owning interests in fossil fuel companies. For decisions regarding coal-burning utilities and coal-mining companies, we recommend that the next, most prudent step, should be a broader policy of coal divestment.

In 2014 Norges Bank divested from most pure-play coal mining companies. Citing both environmental and financial considerations (exposure to energy markets) the bank divested from these mining companies and one power generation company. GPFG's application of its principles of engagement and active ownership and its decision to divest from most of the individual companies recognized a type of systemic risk that should inform GPFG's future diligence in the coal area.

The GPFG has holdings in a significant cross section of the world's utilities. These utilities, particularly those with significant coal-burning capacity, are now the largest coal risk in the GPFG portfolio.

D. Next Steps

The question before the Stortinget is whether to proceed with divestment from coal.⁹¹ This would mean divestment from all coal-mining and coal-burning utilities. In theory this would mean divesting from any company with any coal operations providing revenue from coal mining or burning. As a practical matter, Norges Bank might be given operational guidance from the Finance Ministry and Stortinget to refine these judgments, taking into consideration the macro risk factors cited above and coal industry losses on the mining and burning side. Further guidance might be provided regarding the level of risk a company carries given the relative

⁹⁰ [http://www.eei.org/issuesandpolicy/testimony-filings-briefs/Documents/EEL_111\(d\)_Comments_Final_12012014.pdf](http://www.eei.org/issuesandpolicy/testimony-filings-briefs/Documents/EEL_111(d)_Comments_Final_12012014.pdf)

⁹¹ The steps outlined in this paper should be very familiar to the stakeholders in the Norwegian Fund process. Many of the tools suggested here are already used by Norges Bank and detailed in the Governance Model it describes in its Annual Report on Responsible Investing: see: <http://www.nbim.no/globalassets/reports/2014/2014-responsible-investment.pdf> . pps. 14-45.

weight of coal in its portfolio.

Questions to ask of utility holdings include whether a company has a minimal amount of coal in its fuel mix. Questions to ask of mine holdings include how much thermal coal assets weigh in the company's business model.

A clear mandate without micromanagement

A broad mandate to divest from companies involved with coal mining and coal burning at a particular threshold has the advantage of being clear, effective and achievable.

The proposed divestment in this paper is based on a recognition of substantial loss of share value and its likely continuation. The losses are based on the underlying financial, environmental and climate weaknesses in the industry's business model. Our proposal retains some coal mining and some coal burning in the portfolio in recognition of the continued use of coal in the broader economy and the necessity that the GPF, given its size and investment model, own the economy as a whole. The substantial reduction proposed herein reflects the significant risk going forward of holding any coal equities at all. The sizable relative decline in coal use already and that which is anticipated has disrupted the coal industry's models of profitability. How coal companies with significant thermal coal holdings become profitable again remains to be seen.⁹²

On the mining side, the evidence of a broad, long-term structural decline that is destructive to share value is beyond dispute. The only point of debate for the foreseeable future for coal-mining companies is how much worse it will get.

For coal-burning utilities, it is a matter of exposure. Companies with large concentrations of coal in their portfolio, even when supported by national governments, are likely to see reductions in coal use. Many markets and many investors (like those in the U.S.) have already seen substantial value reductions. Coal burning remains viable in the U.S. only because of protective regulatory policies, not market fundamentals. Elsewhere in the world, a combination of public policy and markets are curtailing most plans for coal expansion, although some new projects have moved forward. Public opposition is active everywhere that coal-fired power plants are being proposed or are already in use.

Several proposals have been advanced that suggest divestment would be appropriate for the Fund if it targeted companies that rely upon more than 30% or 50% of coal burning or thermal coal mining in their operations. Urgewald estimates⁹³ that at the 30% level, the Fund would divest from 84 companies valued at NOK 40.4 billion (US\$5.4 billion), approximately 1.4% of the Fund. Under the 50% scenario the Fund would divest from 59 companies valued at an estimated NOK 25.2 billion (US\$3.3 billion). Urgewald has advanced a more thoroughgoing coal criteria that would divest from 114 companies valued at NOK 85.5 at US\$11.4 billion.

⁹² <http://www.afr.com/business/mining/coal/no-coal-price-recovery-for-a-long-long-time-says-rio-tinto-20150510-ggy3m0>

⁹³ For a description of the data, methods and analysis for these scenarios see:
https://www.urgewald.org/sites/default/files/dirty_and_dangerous_coal_gpf.pdf

From a strictly financial standpoint, the less exposure a mining company has to thermal coal the more likely it will find financial solvency. Coal markets are oversupplied and will remain so for most of the next decade. GPFG has effectively divested from all pure-play coal-mining companies and should extend its risk analysis and divest from all integrated or diversified mining companies with more than 20% of production coming from coal (or that produce more than 50 million tons of thermal coal per year).

On the coal-burning utility side, the nature of the risks is somewhat different. All market factors point toward the need to end reliance on coal. Competition, policy and development choices, markets, environmental and climate considerations and coal reliability combine to make coal burning a risky proposition everywhere. In some places—including the United States, China, India and many developing countries—public policies protect the use of coal. These are not market decisions, but political decisions. The red-flag warnings on heavy coal use for utilities are clear. Investors can expect stock losses, revenue declines, substantial write-offs, dividend reductions. They can also assume that shareholder dollars will be used to oppose renewable energy.

As with coal mining, the lower the amount of coal-fired generation in a utility portfolio the more likely the company will be involved in productive electricity delivery.

Given the already large losses at large utilities around the world, along with likely further market and policy choices away from coal, IEEFA recommends that a prudent investment plan would be to divest from all coal-burning utility or generation companies with 20% or more of their portfolio capacity dedicated to coal.

Some questions have been raised regarding the imbalances that may be created within the Fund's indexing strategies if the recommendations made in this report are implemented. Most indexes have ongoing monitoring efforts on company performance that allow for the addition and deletion of companies in the index.⁹⁴ If necessary, the Fund can entertain various rebalancing scenarios that allow for the continued use of the index.

It has become almost commonplace for coal companies to be bumped from prominent financial indexes for failure to meet minimum requirements. Peabody Energy was deleted from the Standard and Poor's 500 Index last year.⁹⁵ Alpha Natural Resources and Arch Coal, two large U.S.-based coal companies, have been warned that they are in imminent danger of delisting from the stock exchange for failure to maintain stock prices above \$1 per share.⁹⁶

Why 20 Percent?

On the mining side, the GPFG has already made it clear that it is divesting from pure-play companies. Further divestment is a fairly simple question of risk and mathematics. A company

⁹⁴ For example the FTSE Global All Cap Index relied upon by the GPFG makes provision for adding and deleting both countries and companies. see: [http://www.ftse.com/vanguard/Content/docs/FTSE_Global_Equity_Index_Series_Index_Rules.pdf?567, specifically Section 7. Deletions.](http://www.ftse.com/vanguard/Content/docs/FTSE_Global_Equity_Index_Series_Index_Rules.pdf?567,specifically%20Section%207.%20Deletions)

⁹⁵ http://www.stltoday.com/business/local/peabody-energy-to-be-removed-from-s-p-index/article_601ff555-f353-5df4-8f02-6ecae78e79d4.html

⁹⁶ <http://www.kpax.com/story/29003518/americas-coal-industry-at-a-crossroads-as-stock-prices-plummet>

that limits 20% of its production to thermal coal can rely upon other operations—power plants, for example, infrastructure investments, or other metals and minerals mining—for returns. A 20% threshold offers risk protection. Companies that mine more than 50 million tons but whose tonnage and revenues fall short of the 20% threshold are nevertheless substantially exposed.

On the coal-burning utility side, probability and simple risk management inform the divestment question. If one seeks an overall rate of return of 11% on a utility portfolio, simple mathematics suggest that a 20% exposure to coal, which is likely to produce below the target level of returns, is easier to manage than a 30% or 50% exposure. An unscientific but practical investment example here is provided by the Norges Bank list of utilities. RWE-AG, a utility with a 60% coal portfolio, performs quite poorly in an environment in which policy decisions are forcing a move away from coal. In the U.S., Duke Energy, on the other hand, performs well with a 40% coal portfolio that is protected in part by regulators. Yet it still must reduce its 40% coal exposure as it is looking to sell its unregulated coal assets and to invest in the future in transmission improvements and solar energy. NextEra has a very small exposure to coal, at 4% of the generation portfolio, and it is managing to outperform most of the other utilities on the list.

The solutions and choices of individual utilities vary by markets, regions and political culture. As a large institutional investor, GPFG requires a more macro-oriented rule to make its judgments, and a 20% standard is in line with protecting against an industry that has already experienced large losses and is likely to experience more.

Conclusion

The Institute for Energy Economics and Financial Analysis recommends that the Norwegian Government Pension Fund Global divest from mining companies that dedicate 20% or more of their production to coal mining or that mine more than 50 million tons of coal per year.

We recommend also that GPFG divest from utilities and power generation companies that have more than 20% of their generation capacity mix in coal fired power plants.

The Norwegian Parliament (Stortinget) should clearly mandate the divestment, and Fund managers should implement it.

A broad mandate to divest from companies involved with coal mining and coal burning has the advantage of being clear, effective and achievable. The coal industry is arguably the poorest-performing sector in today's global economy. The high level of risk outlined in this paper for both coal mining and coal burning companies suggests weak long-term performance for both sectors.

GPFG would demonstrate its commitments to both social responsibility and its fiduciary duties by following these recommendations.

About the Author

Tom Sanzillo, Director of Finance, IEEFA

Tom Sanzillo is the Director of Finance for the Institute for Energy Economics and Financial Analysis. He has written several studies on coal plants, rate impacts, credit analyses, and the public and private financial structures for coal. In addition, Sanzillo has testified as an expert witness, taught training sessions, and conducted media interviews. Prior to his work with the Institute for Energy Economics and Financial Analysis and his own consulting practice, Sanzillo spent 17 years with both the City and the State of New York in various senior financial and policy management positions. He was formerly the State of New York's first deputy comptroller, a job that put him in charge of the finances of 1,300 units of local government, the management of 44,000 government contracts annually, oversight of over \$200 billion in state and local municipal bond programs and responsibility for a \$156 billion pension fund. From 1990 to 1993 Sanzillo also served in senior management in the New York City Comptroller's Office.

At both the City and State level Sanzillo had specific responsibilities for investment allocation, shareholder governance and political relations of the Fund. This included negotiation with the NYS state legislature over asset allocation strategy. He participated in the divestment of NYC funds from South Africa, NYS partial divestment of tobacco as well as forming specific pension fund responses on Sudan, affordable housing, human rights and discrimination. He had oversight responsibility for the formulation of pension fund voting policies on hundreds of shareholder proposals.

Sanzillo recently contributed a chapter to the Oxford Handbook of New York State Government and Politics on the NYS Comptroller's Office.

Important Information

This report is for information and educational purposes only. It is intended solely as a discussion piece focused on the topic of the energy sector. Under no circumstance is it to be considered as a financial promotion. It is not an offer to sell or a solicitation to buy any investment referred to in this document; nor is it an offer to provide any form of investment service.

This report is not meant as a general guide to investing, or as a source of any specific investment recommendation. While the information contained in this report is from sources believed reliable, we do not represent that it is accurate or complete and it should not be relied upon as such. Unless attributed to others, any opinions expressed are our current opinions only.

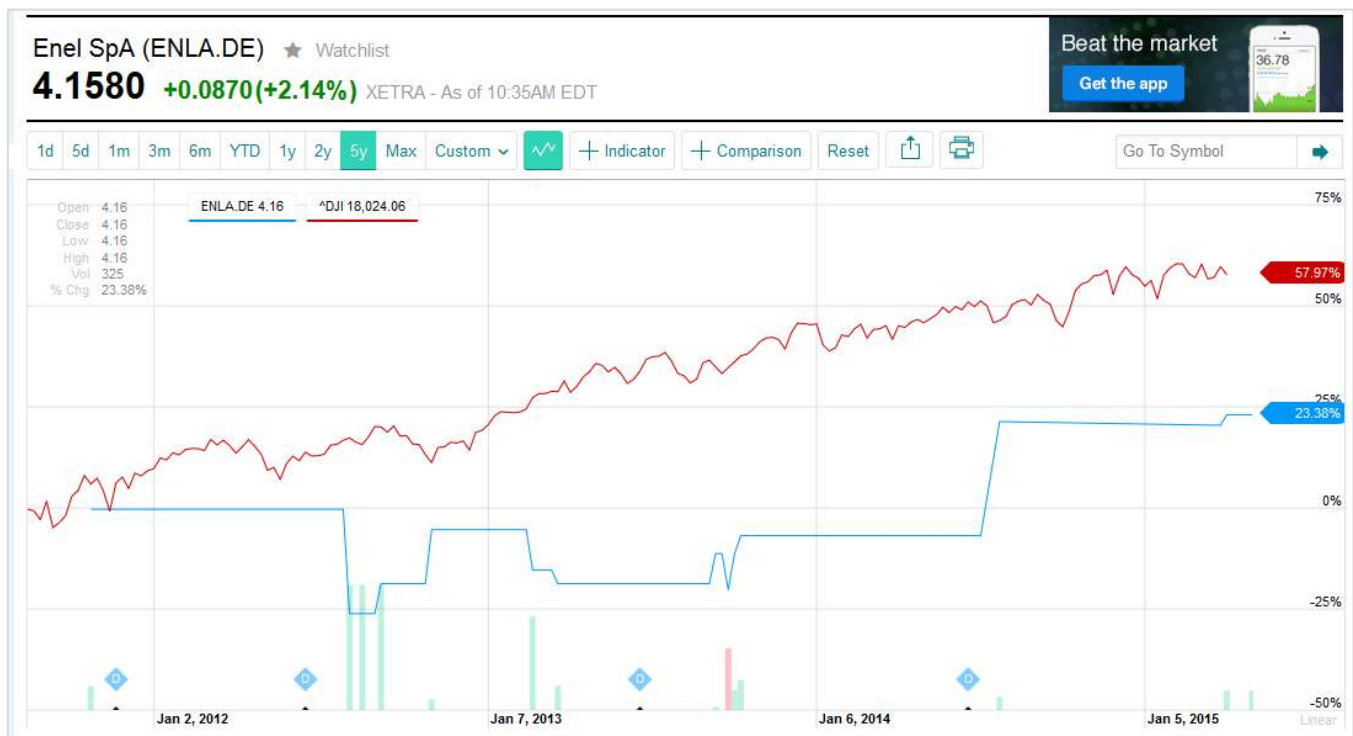
Certain information presented may have been provided by third parties. The Institute for Energy Economics and Financial Analysis believes that such third-party information is reliable, but does not guarantee its accuracy, timeliness or completeness; and it is subject to change without notice. If there are considered to be material errors, please advise the authors and a revised version can be published.

Appendix A

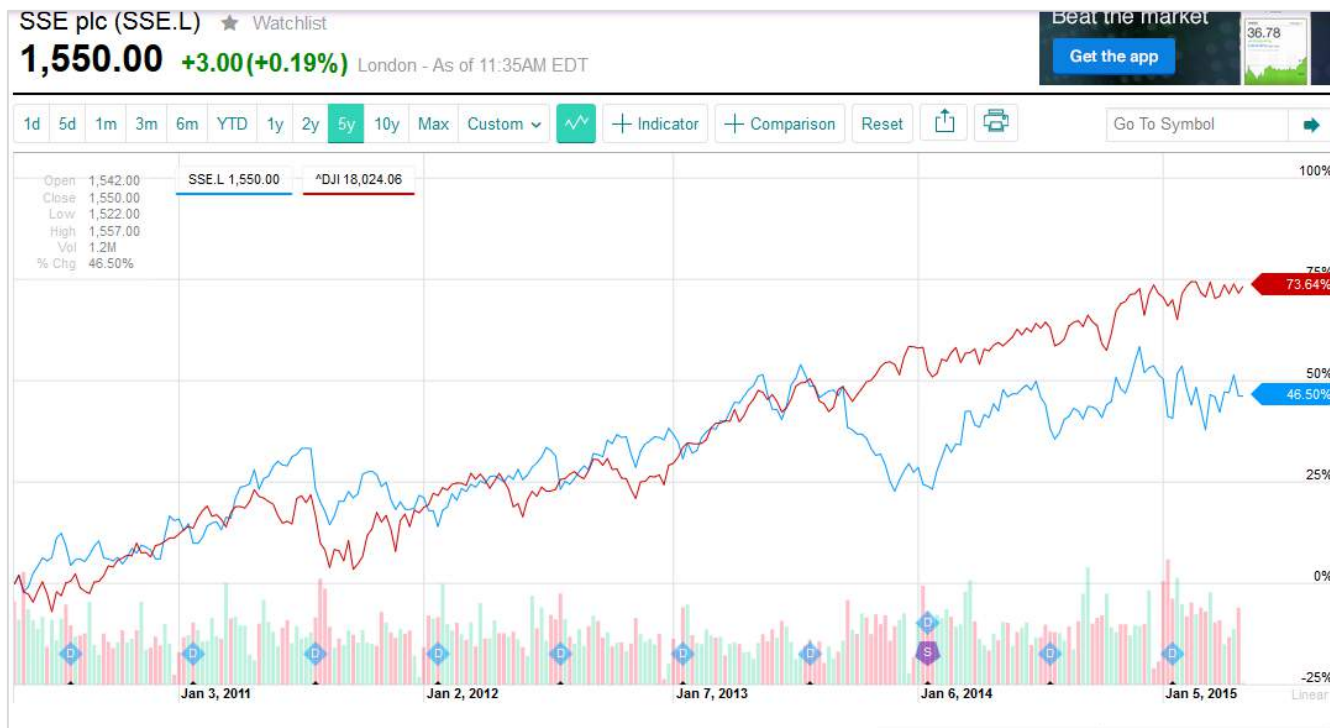
LARGEST UTILITIES IN GPFPG PORTFOLIO: Comparison of Stock Performance with the Dow Jones Industrial Average

The following data was retrieved from Yahoo Finance on May 1, 2015.

ENEL SpA - ticker ENLA.DE



SSE PLC – Ticker: SSE.L



GDF Suez (now called ENGIE) – ticker GSZ.PA



NextEra Energy – ticker NEE (NYSE)

NextEra Energy, Inc. (NEE) ★ Watchlist

101.65 +0.72(0.71%) NYSE - As of 3:57PM EDT

Beat the market
Get the app



E.ON SE – ticker: EONGY

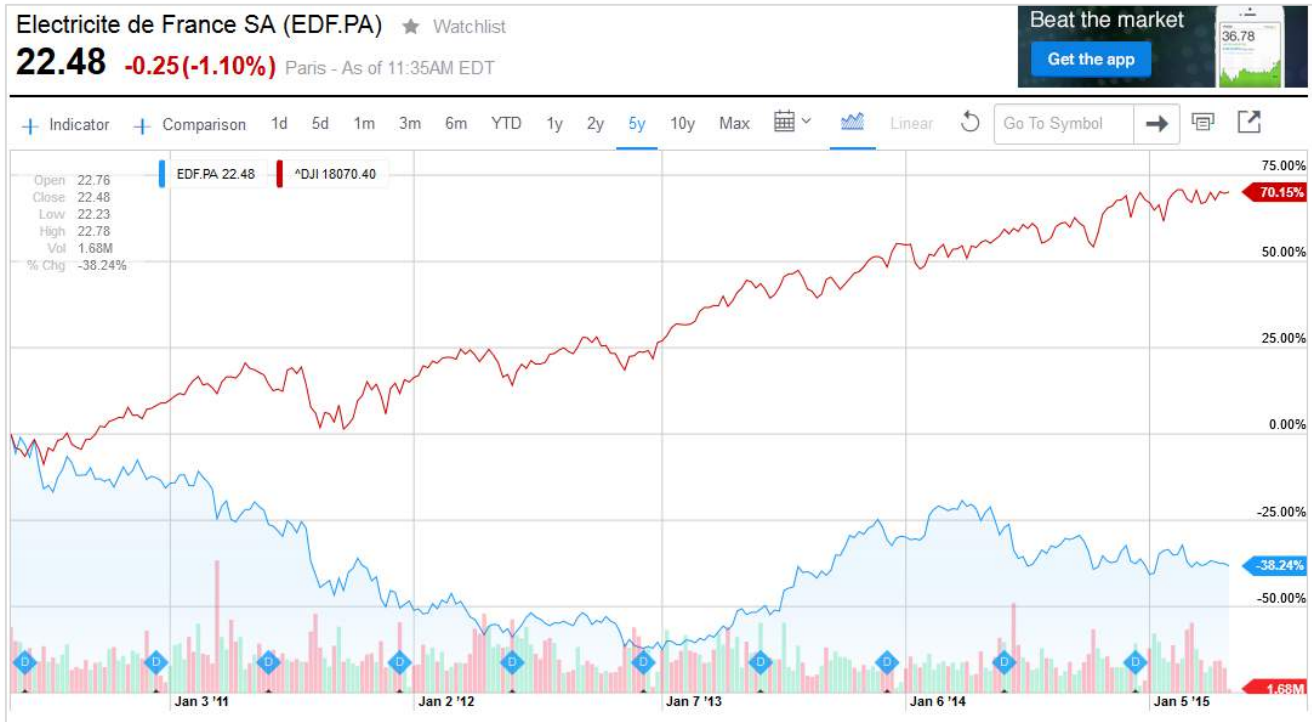
E.ON SE (EONGY) ★ Watchlist

15.63 +0.13(+0.84%) OTC Markets - As of 3:34PM EDT

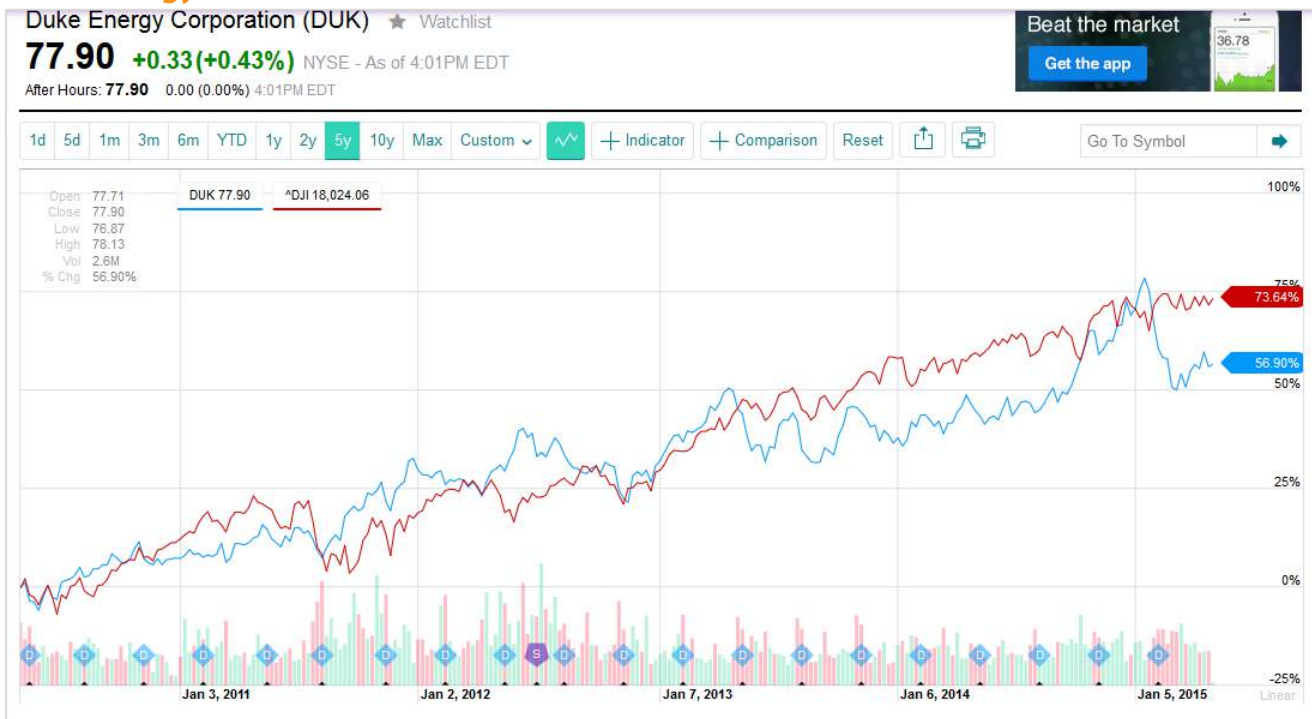
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Electricite de France – ticker: EDF.PA



Duke Energy: ticker DUK (NYSE)



RWE AG – ticker: RWE.DE

RWE AG (RWE.DE) ★ Watchlist
22.29 -0.23(-1.04%) XETRA - As of 11:35AM EDT



Dominion Resources: D (NYSE)

Dominion Resources, Inc. (D) ★ Watchlist
71.76 +0.06(+0.08%) NYSE - As of 4:02PM EDT
 After Hours: **72.11** ↑+0.35 (0.48%) 4:37PM EDT



Appendix B - Stowe Global Coal IndexSM.

Constituents & Weights

As of Mar 22, 2015 quarterly rebalancing

| Ticker | Company | Country | Weight | Sector |
|-----------|--|---------|--------|-----------------------------------|
| 1088 HK | China Shenhua Energy Co Ltd H Shares | CN | 8.32 | Mining & Production |
| BTU UN | Peabody Energy Corp | US | 8.17 | Mining & Production |
| 1171 HK | Yanzhou Coal Mining Co Ltd H Shares | CN | 7.93 | Mining & Production |
| CNX UN | CONSOL Energy Inc | US | 7.91 | Mining & Production |
| EXX SJ | Exxaro Resources | ZA | 4.87 | Mining & Production |
| 1898 HK | China Coal Energy Co Ltd H Shares | CN | 4.73 | Mining & Production |
| 900948 CH | Inner Mongolia Yitai Coal-B | CN | 4.52 | Mining & Production |
| SCC PM | Semirara Mining and Power Corp | PH | 4.29 | Mining & Production |
| ADRO IJ | Adaro Energy Tbk PT | ID | 4.29 | Mining & Production |
| 639 HK | Fushan International Energy Group Ltd. | HK | 3.47 | Mining & Production |
| WHC AU | Whitehaven Coal Ltd | AU | 3.38 | Mining & Production |
| PTBA IJ | Tambang Batubara Bukit Asam Tbk PT | ID | 3.27 | Mining & Production |
| ITMG IJ | Indo Tambangraya Megah PT | ID | 3.26 | Mining & Production |
| JOY UN | Joy Global Inc | US | 7.93 | Equipment, Transport & Technology |
| HW UN | Headwaters Inc | US | 4.72 | Equipment, Transport & Technology |
| RAIL UQ | Freightcar America | US | 2.20 | Equipment, Transport & Technology |
| S CN | Sherritt Intl Corp Restr vtg | CA | 2.96 | Mining & Production |
| WLB US | Westmoreland Coal Co | US | 2.83 | Mining & Production |
| CLD UN | Cloud Peak Energy Inc | US | 2.35 | Mining & Production |
| JSW PW | Jastrzebska Spolka Weglowa SA | PL | 1.62 | Mining & Production |
| ACI UN | Arch Coal | US | 1.17 | Mining & Production |
| ANR UN | Alpha Natural Resources | US | 1.08 | Mining & Production |
| HSP LN | Hargreaves Services PLC | GB | 1.05 | Mining & Production |
| 975 HK | Mongolian Mining Corp | MN | 1.00 | Mining & Production |
| BUMI IJ | Bumi Resources Tbk PT | ID | 0.95 | Mining & Production |
| 3315 JT | Nippon Coke & Engineering Co Ltd | JP | 0.89 | Mining & Production |
| HRUM IJ | Harum Energy Tbk PT | ID | 0.56 | Mining & Production |
| WLT UN | Walter Energy Inc. | US | 0.25 | Mining & Production |

Background presentation on Stowe Global Coal Index:

<http://stowe.snetglobalindexes.com/pdf/coal-Presentation.pdf>

Appendix C—Largest coal power producers by MW coal capacity (2013)

The following data was provided by Rainforest Action Network, as an appendix to their report entitled, "The End of Coal? Coal Finance Report Card 2015," April 2015. Generating capacity data is for 2013 (except for Chubu Electric, China Datang, and Kansai Electric Power, which are for 2012). Data is sourced from Bloomberg (except for China Guodian, DTEK, and Eskom, which are sourced from company websites and for U.S. electric power companies, where data is courtesy of the Sierra Club).

| Asia-Pacific | | Europe, Middle East, Africa | | United States | |
|--------------------------------|---|-----------------------------|----------------------------------|----------------------------|----------------------------------|
| Company | Megawatts of coal generating capacity, 2013 | Company | Megawatts of coal capacity, 2013 | Company | Megawatts of coal capacity, 2013 |
| China Guodian | 92,270 | RWE | 21,201 | American Electric Power | 26,000 |
| China Huaneng | 50,253 | Eskom | 37,745 | Southern Company | 22,750 |
| TEPCO | 42,950 | ENEL | 17,501 | Duke Energy | 19,509 |
| NTPC | 33,015 | EON | 14,640 | Tennessee Valley Authority | 16,607 |
| China Huadian | 26,889 | Vattenfall | 11,790 | NRG Energy | 14,160 |
| Chubu Electric Power | 25,159 | GDF Suez | 11,480 | PPL | 11,671 |
| Korea Electric Power | 24,247 | PGE | 10,190 | Berkshire Hathaway | 11,477 |
| China Resources Power Holdings | 23,692 | DTEK | 18,000 | FirstEnergy | 11,000 |
| China Datang | 21,247 | CEZ | 8,171 | Energy Future Holdings | 8,594 |
| Kansai Electric Power | 17,981 | Endesa | 6,676 | Xcel Energy | 8,128 |

Appendix D

Appendix D : GPF's Coal Sector Equity and Bond Holdings 2014

Source: Urgewald, May 2015

| Company sorted by Country | Investment Value 2014 in Norwegian Krona (NOK) | Coal Activity |
|---|--|--------------------|
| CTL = Coal to Liquids CTG = Coal to Gas | | |
| Australia | | |
| AGL Energy Ltd | 639,669,644 | Power, Mining |
| BHP Billiton Ltd | 5,385,469,737 | Mining |
| BHP Billiton Finance Ltd | 422,593,572 | Mining |
| BHP Billiton Finance USA Ltd | 836,886,774 | Mining |
| Cockatoo Coal Ltd | 512,061 | Mining |
| Cokal Ltd | 8,011,288 | Mining |
| Linc Energy Ltd | 12,157,346 | Mining, CTG |
| New Hope Corp Ltd | 22,878,369 | Mining |
| Yancoal Australia Ltd | 11,601,739 | Mining |
| Brazil | | |
| Vale SA | 1,720,461,020 | Mining |
| Vale Overseas Ltd | 441,764,075 | Mining |
| Vale SA | 40,320,382 | Mining |
| Canada | | |
| Teck Resources Ltd | 184,449,971 | Mining |
| Teck Resources Ltd | 389,396,551 | Mining |
| China | | |
| Beijing Enterprises (Beikong) Holdings | 71,626,723 | CTG |
| China Petroleum & Chemical Corp. (SINOPEC) | 1,766,839,385 | CTG |
| China Power International Development Ltd | 115,187,703 | Power |
| China Resources Power Holdings Co Ltd | 230,915,470 | Power |
| China Shenhua Energy Co Ltd | 210,824,934 | CTG, Mining, Power |
| CNOOC Ltd | 1,747,244,046 | CTG |
| CNOOC Curtis Funding No 1 Pty Ltd | 223,479,953 | Finance |
| CNOOC Finance 2003 Ltd | 87,797,893 | Finance |
| CNOOC Finance 2013 Ltd | 583,750,914 | Finance |
| CNOOC Ltd | 705,245,295 | CTG |
| Datang International Power Generation Co Ltd | 55,602,802 | Mining, Power, CTG |
| GD Power Development Co Ltd | 213,105,106 | Power |
| Guangdong Electric Power Development Co Ltd | 121,195,798 | Power |
| Hidili Industry International Development Ltd | 9,784,129 | Mining |
| Huadian Fuxin Energy Corp Ltd | 117,681,616 | Power |
| Huadian Power International Corp Ltd | 136,689,931 | Power |
| Huaneng Power International Inc | 471,313,209 | Power, CTG |

| | | |
|--|---------------|---------------|
| Inner Mongolia Yitai Coal Co Ltd | 131,495,358 | Mining |
| Sany Heavy Equipment International Holdings Co Ltd | 18,100,915 | CTG |
| SDIC Huajing Power Holdings Co Ltd (now: SDIC Power Holdings Co Ltd) | 156,639,529 | Power |
| TBEA Co Ltd | 29,173,114 | CTG |
| Czech Republic | | |
| CEZ AS | 289,497,592 | Power, Mining |
| CEZ AS | 338,043,447 | Power, Mining |
| Denmark | | |
| Dong Energy A/S | 231,053,312 | Power |
| Germany | | |
| E.ON SE | 5,391,648,940 | Power |
| RWE AG | 2,485,967,715 | Mining, Power |
| Greece | | |
| Public Power Corp SA | 103,708,837 | Power, Mining |
| Hong Kong | | |
| CLP Holdings Ltd | 1,411,950,946 | Power |
| HK Electric Investments & HK Electric Investments Ltd | 16,325,850 | Power |
| Mongolian Mining Corp | 10,632,089 | Mining |
| Shougang Fushan Resources Group Ltd | 140,347,801 | Mining |
| United Co RUSAL PLC | 94,249,072 | Mining |
| India | | |
| Reliance Holding USA Inc | 334,247,077 | CTG |
| Reliance Power Ltd | 31,604,647 | Power |
| Tata Steel Ltd | 303,697,388 | Mining |
| Isle Of Man | | |
| Sasol Financing International PLC | 448,060,336 | Finance |
| Italy | | |
| Enel SpA | 5,346,135,921 | Power |
| Enel SpA | 207,232,744 | Power |
| Japan | | |
| Electric Power Development Co Ltd | 436,114,533 | Power |
| Hokuriku Electric Power Co | 245,767,017 | Power |
| Itochu Corp | 1,306,354,240 | Mining |
| Mitsui & Co (Australia) Ltd | 1,757,008,186 | Mining |
| Nippon Coke & Engineering Co Ltd | 12,081,383 | Mining, Power |
| Okinawa Electric Power Co Inc/The | 26,218,662 | Power |
| Shikoku Electric Power Co Inc | 33,828,191 | Power |

| | | |
|--------------------------------------|---------------|--------------------|
| Luxembourg | | |
| Glencore Finance Europe SA | 203,469,268 | Finance |
| Netherlands | | |
| E.ON International Finance BV | 194,785,737 | Finance |
| EnBW International Finance BV | 107,661,331 | Finance |
| Enel Finance International NV | 1,631,745,601 | Finance |
| RWE Finance BV | 624,680,172 | Finance |
| Philippines | | |
| Aboitiz Power Corp | 105,749,319 | Power |
| Semirara Mining Corp | 58,392,415 | Mining, Power |
| Poland | | |
| Energia SA | 4,044,732 | Power |
| Lubelski Wegiel Bogdanka SA | 48,865,789 | Mining, Processing |
| PGE Polska Grupa Energetyczna SA | 35,885,655 | Power, Mining |
| Tauron Polska Energia SA | 57,623,263 | Power, Mining |
| Russia | | |
| E.ON Russia JSC | 121,683,803 | Power |
| Enel OGK-5 OJSC (now Enel Russia) | 66,927,853 | Power |
| Kuzbasskaya Toplivnaya Kompaniya OAO | 19,772,810 | Mining |
| South Africa | | |
| Sasol Ltd | 537,600,463 | Mining, Power, CTL |
| South Korea | | |
| Korea Electric Power Corp | 1,098,966,642 | Power |
| Korea Electric Power Corp | 38,299,376 | Power |
| Sweden | | |
| Vattenfall AB | 212,864,084 | Power, Mining |
| Thailand | | |
| Glow Energy PCL | 201,626,162 | Power |
| Toyo-Thai Corp PCL | 87,323,613 | Power |
| United Kingdom | | |
| Acacia Mining | 100,480,011 | Mining |
| Anglo American PLC | 2,985,775,040 | Mining |
| Anglo American Capital PLC | 290,949,359 | Mining |
| BHP Billiton PLC | 8,475,005,689 | Mining |
| Drax Group PLC | 382,937,937 | Power |
| Evrax PLC | 297,315,899 | Mining |
| Glencore PLC | 8,605,155,559 | Mining |

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|--------------------------------|-----------------------|---------------|
| New World Resources PLC | 9,314,931 | Mining |
| Scottish Power Ltd | 231,070,160 | Power |
| United States | | |
| AES Corp/VA | 348,742,690 | Power |
| Ameren Corp | 489,528,552 | Power |
| Ameren Illinois Co | 524,594,837 | Power |
| American Electric Power Co Inc | 1,186,770,319 | Power |
| Appalachian Power Co | 198,696,360 | Power |
| Dominion Resources Inc/VA | 2,491,002,660 | Power |
| Dominion Resources Inc/VA | 415,702,660 | Power |
| DTE Energy Co | 542,731,946 | Power |
| Duke Energy Carolinas LLC | 508,300,857 | Power |
| Duke Energy Corp | 3,349,250,104 | Power |
| Duke Energy Corp | 621,015,505 | Power |
| Duke Energy Florida Inc | 185,900,890 | Power |
| Duke Energy Ohio Inc | 83,643,588 | Power |
| Duke Energy Progress Inc | 464,870,289 | Power |
| FirstEnergy Corp | 853,628,668 | Power |
| FirstEnergy Solutions Corp | 20,681,873 | Power |
| Georgia Power Co | 597,962,167 | Power |
| Great Plains Energy Inc | 289,771,262 | Power |
| Great River Energy | 38,400,314 | Power |
| IDACORP Inc | 142,243,320 | Power |
| Integrus Energy Group Inc | 350,472,635 | Power |
| Midamerican Energy Co | 402,276,872 | Power |
| Midamerican Funding LLC | 47,514,778 | Power |
| Ohio Power Co | 127,483,838 | Power, Mining |
| PacifiCorp | 1,212,849,788 | Power |
| PPL Corp | 855,259,055 | Power, Mining |
| PPL Electric Utilities Corp | 201,622,295 | Power, Mining |
| Southern Co/The | 1,880,477,270 | Power |
| Southwestern Electric Power Co | 33,167,808 | Power |
| Westar Energy Inc | 304,398,030 | Power |
| Wisconsin Energy Corp | 913,890,196 | Power |
| Wisconsin Electric Power Co | 171,831,226 | Power |
| Xcel Energy Inc | 616,281,722 | Power |
| Xcel Energy Inc | 146,339,970 | Power |
| Vietnam | | |
| Pha Lai Thermal Power JSC | 26,883,482 | Power |
| TOTAL | 85,801,802,777 | |

Appendix E

IEEFA Published Works, Bios, and Significant Achievements

IEEFA Published Works

International

- [Teck Resources: Rough Road on Oil Sands Investments](#), April 2015
- ['A Constellation of Risks': How Public Accountability Is Slowing Tar Sands Development](#), October 2014
- [Remote Prospects: A financial Analysis of Adani's Coal Gamble in Australia's Galilee Basin](#), November 2013
- [Coal India: Running on Empty?](#), September 2013
- [Stranded: Alpha Coal Project in Australia's Galilee Basin](#), June 2013
- [Briefing Note: An Overview of Adani Enterprises' Corporate Restructuring](#), May 2015
- [Briefing Note: Global Energy Markets in Transition](#), January 2015
- [Briefing Note: The Narrabri Coal Seam Gas Project](#), December 2014
- [Briefing Note: The Outlook for Financing for Australia's Galilee Basin Coal Proposals](#), October 2014
- [Briefing Note: Fossil Fuels, Energy Transition & Risk](#), July 2014
- [Briefing Note: Fossil fuels, Energy Transition & Risk](#), June 2014
- [Briefing Note: Thermal Coal Outlook](#), May 2014
- [Briefing Note: India Power Prices](#), May 2014
- [Briefing Note: WICET](#), May 2014
- [Briefing Note: Fossil Fuels, Energy Transition & Risk](#), April 2014

International commentary

- [Adani's Restructuring Turns Its Australian Coal Project Into Collateral Damage](#), May 2015
- [For Canada's Teck Resources, a Tough Road on Oil Sands Investments](#), April 2015
- [Peabody's Dismal Numbers Speak Volumes About the Coal Industry as a Whole](#), April 2015
- [China's Appetite for Coal Continues to Slow as 2015 Is Looking More and More Like 2014](#), April 2015
- [You Can't Say Too Much About India's Ambitious Solar Plan](#), April 2015
- [Shenhua's Bombshell Numbers Show China's Coal Appetite Has Peaked](#), March 2015
- [From the Fossil-Fuel Center of the World, a Call to Renewables and Energy Efficiency](#), March 2015
- [Rio Tinto's Restructuring Signals a Global Industry Step Away From Coal](#), March 2015
- [The Renewable-Energy Juggernaut Gains Momentum](#), February 2015
- [More Signs of Solar Energy's Upside in India, Population 1.25 Billion](#), February 2015
- [It's Time for a Public Investigation of Adani's Australian Coal Scheme](#), February 2015
- [Elections Have Consequences: Adani's Big Australian Coal Project Is on the Ropes](#), February 2015
- [BHP's Latest Numbers Offer a Window on an Industry in Decline](#), January 2015
- [China's Full 2014 Numbers Show Renewables Gaining on Fossil Fuels](#), January 2015
- [More Evidence of a Fast-Changing Energy Economy](#), January 2015
- [Why Smart Investors Aren't Putting Their Money in Stranded Assets](#), January 2015
- [China's Declining Coal Dependence Is Evident in the Data](#), January 2015

- [On Solar, India Isn't Fooling Around](#), December 2014
- [Hats Off to Societe Generale for Stepping Back From Galilee Coal](#), December 2014
- [China's Offshore Wind Developments Foreshadow Transitions to Come](#), December 2014
- [The Solar Express](#), November 2014
- [U.S.-China Deal Suggests a New Way Forward for Coal Producers](#), November 2014
- [Our Tar-Sands Outlook, Part 1: Costly Opposition, in Perpetuity](#), November 2014
- [India Starts Down a Bold Path to a New Energy Economy](#), November 2014
- [The Case for Smart Energy Investing](#), October 2014

Related U.S. publications

- [NYC and NYS Pension Funds Should Divest Coal Stocks: A Shrinking Industry, Weak Upside, and Wrong on Climate Change](#), May 2014
- [Memo- Response to the Department of Interior, Office of Inspector General Audit on Federal Coal Leasing Program](#), July 2013
- [Great Giveaway: Almost \\$30 Billion in Revenues Lost to Taxpayers by "Giveaway" of Federally Owned Coal in Powder River Basin](#), 2012
- [Cost of Coal From Mine-Mouth Prairie State Plant Isn't the Bargain That Was Promised](#), April 2015
- [Left in the Dark: How the Alabama Public Service Commission Makes Customers Pay Billions of Dollars for Alabama Power Investments without Any Meaningful Public Review or Involvement](#), February 2015
- [Letter to the Alaska Department of Natural Resources regarding Chuitna Coal Mine](#), April 2015
- [2014 – Another Year of Unmet Promises for the Prairie State Energy Campus](#), February, 2015
- [Corporate Strategy at D.C. Ratepayer Expense: Exelon's Proposed Acquisition of Pepco Holdings](#), January 2015
- [No Need for New U.S. Coal Ports: Data Shows Oversupply in Capacity](#), November 2014
- [20 Fourth-Quarter Questions for Powder River Basin Coal Producers](#), November 2014
- [FirstEnergy Seeks a Subsidized Turnaround](#), October 2014
- [Report: No evidence of a turnaround at Prairie State](#), September 2014
- [Duke Energy and Costs of Coal Ash Cleanup](#), June 2014
- **Huntley Generating Station: Coal Plant's Weak Financial Outlook Calls For Corporate And Community Leadership**, January 2014
- [When, Not If: Bridgeport's Future and the Closing of PSEG's Coal Plant](#), January 2014
- [Energy Future Holdings and Mining Reclamation Bonds in Texas](#), October 2013
- [Dark Days Ahead: Financial Factors Cloud Future Profitability at Dominion's Brayton Point](#), March 2013
- [Why a Forward Capacity Market Won't Solve Texas' Resource Adequacy Problem: The Case of Energy Future Holdings](#), February 2013
- [A Texas Electric Capacity Market: The Wrong Tool for a Real Problem](#), February 2013
- [The Prairie State Coal Plant: The Reality vs. the Promise](#), August 2012

U.S. Commentary

- [Asterisks: Taints in Peabody's Financial Reporting](#), April 2015
- [On Fox Business, of All Places, a 'Coal Is Dead' Pronouncement](#), April 2015
- [Export-Market Downturn Spells Trouble for Proposed Alaska Coal Mine](#), April 2015
- [The Truth About Prairie State Energy Campus \(Part 4\): There Are Ways Out of This Bad Deal](#), April 2015
- [The Truth About Prairie State Energy Campus \(Part 2\): Its Coal Isn't Cheap](#), April 2015

- [In Lawsuit Over Prairie State Energy Campus, What's Happening in Missouri Might Not Stay in Missouri](#), March 2015
- [Coal Producers: Another Year Older and Deeper in Debt](#), March 2015
- [U.S. Coal-Industry Redux 2015: It's Not Getting Any Easier for Alpha, Arch, Cloud Peak, or Peabody](#), March 2015
- [Cloud Peak Energy: In the Black, but Precariously So](#), February 2015
- [What Might Happen to Alpha Natural Resources in 2015?](#), February 2015
- [Arch Coal, the Second-Biggest U.S. Producer, Is in Trouble](#), February 2015
- [Weak 2014 Numbers Worsen an Already Bad Outlook for Coal Companies](#), February 2015
- [In the New Energy Economy, Public Accountability Is a Market Force](#), January 2015
- [Many Difficult Quarters Ahead for U.S. Coal Producers](#), January 2015
- [A Shakeout Begins for U.S. Shale-Oil Producers](#), January 2015
- [Another Difficult Year Ahead for U.S. Coal Producers](#), January 2015
- [Neither the Fine Print Nor a Review by Moody's Shed an Honest Light on Prairie State's Dark Finances](#), December 2014
- [5 Reasons Coal Companies Should Pay Export Royalties Now](#), December 2014
- [There's a Better Way Out of This Mess Than What Paducah Power Proposes](#), December 2014
- [Peabody, a Lost Former Leader, Misses the New-Energy Boat](#), December 2014
- [5 Reasons Coal Companies Should Pay Export Royalties on Federal Leases Now](#), December 2014
- [Energy-Market Shifts Undermine One of Coal Industry's Once-Sure Bets](#), December 2014
- [Teddy Roosevelt Wouldn't Be Happy With This Coal-Royalties Loophole](#), November 2014
- [A Public Waste of Money, Both Public and Private](#), November 2014
- [In Praise of a Notable U.S. Department of Energy Program](#), November 2014
- [Coal-Company Debt Grows Increasingly Risky](#), October 2014
- [IEEFA Report: What's Wrong With FirstEnergy, Part 5](#), October 2014
- [IEEFA Report: What's Wrong With FirstEnergy, Part 4](#), October 2014
- [IEEFA Report: What's Wrong With FirstEnergy, Part 3](#), October 2014
- [IEEFA Report: What's Wrong With FirstEnergy, Part 2](#), October 2014
- [IEEFA Report: What's Wrong With FirstEnergy, Part 1](#), October 2014

The publications above were authored by various IEEFA personnel, whose biographies are listed below. To find the author of each individual piece, click on the report link.

Director of Finance Tom Sanzillo has 30 years of experience in public and private finance, including as a first deputy comptroller of New York State, where he held oversight over a \$156 billion pension fund and \$200 billion in municipal bond programs.

Director of Resource Planning David Schlissel is a long-time consultant, expert witness, and attorney on engineering and economic issues related to energy. He has testified in more than 100 court proceedings or cases before regulatory bodies.

Director of Energy Finance Studies, Australia, Tim Buckley has 25 years of financial markets experience, specializing in equity valuation, including as a top-rated analyst and as co-founder and managing director of Arkx Investment Management.

IEEFA Fellow Cathy Kunkel is an independent consultant with Kunkel Energy Research. She has testified before regulatory bodies and was a senior research associate at Lawrence Berkeley National Laboratory. She has undergraduate and master's degrees in physics.

Regulatory Consultant Lisa Anne Hamilton has provided legal support to Skadden Arps Meagher Slate & Flom and the Financial Institutions Group of Davis Polk & Wardwell. She is a member of the legal bar in New York, Maryland, and the District of Columbia.

Financial Consultant Deborah Lawrence Rogers works on the U.S. Extractive Industries Transparency Initiative, and has served on the Advisory Council of the Dallas Fed and the working group for the U.S. Energy Information Administration's Annual Energy Outlook.

IEEFA Significant Achievements

IEEFA has developed and refined an analytical framework for determining the economic viability of both proposed and operating coal-fired power plants in the U.S. Our research led to the cancellation of proposed coal plants in Iowa, Ohio, Wisconsin, Florida, South Carolina, North Carolina, South Dakota, Illinois, Michigan, West Virginia, Georgia, and Kentucky. We have also documented the likely closures of plants in Connecticut, New York, and Massachusetts. We have documented the high costs and reliability issues of the major new coal plants built in the U.S. over the past five years, and have provided testimony used in regulatory rate-setting cases about the ways in which utilities are using capacity payments and re-regulation methods to subsidize unprofitable aging coal plants. Our work on the Prairie State Energy Campus plant has led to a Securities and Exchange Commission investigation and to several lawsuits filed in member communities caught up in the project.

IEEFA's research has led also to reforms and investigations of issues related to coal valuation, coal royalties, and coal reclamation bonds in the U.S. Our analysis of the undervaluation of coal in the federal leasing program in the Powder River Basin (the biggest coal-mining region in the U.S.) revealed that the program had not been audited in 30 years. The report prompted five separate federal investigations of the program, including Congressional investigations, audits, and internal control reviews, and has led to proposed regulations eliminating the exemption on royalties for coal sold for export. We have provided key research showing that global coal markets will not support proposed new terminals in the Northwest U.S. to export Powder River Basin coal.

IEEFA has been the primary organization analyzing and documenting the financial flaws in plans to develop massive new greenfield coal mines in Australia's Galilee Basin and to export the coal to India through ports in the Great Barrier Reef. We have issued a series of reports on the proposed mining projects and the financial circumstances of the companies proposing to build them, and our work has been used as the basis for a number of major banks around the world to pledge they will not finance these developments.

IEEFA is a recognized opinion leader on issues regarding the energy economy and global coal markets. We are quoted regularly by major news organizations that include the Associated Press, Bloomberg News, Thompson Reuters, the Wall Street Journal, the New York Times, the Washington Post, the Chicago Tribune, the Guardian, the National Journal, SNL Financial, most major news outlets in Australia, several energy-market blogs of note, and many regional publications in the U.S. and abroad.

IEEFA provides financial-literacy training for environmental organizations, attorneys, and interested citizens who are working on energy-related issues. Our annual “Energy Finance” training at the New York University School of Law features presentations by speakers from leading financial institutions, including Bernstein Research Group, JP Morgan Chase, UBS Investment Research, Moody’s, M. J. Bradley and Associates, Bloomberg New Energy Finance, Luminus Investment, and others. The March 2015 four-day conference drew 250 attendees from 30 states and 16 other countries, including India, China, Thailand, South Africa, Vietnam, Bangladesh, Indonesia, Australia, United Kingdom, France, Japan, Philippines, Canada, Italy, Germany, and Turkey.