Letter to Oil & Gas Companies from Investors

September 9, 2013

Attention: [redacted]

Re: Assessment of Carbon Asset Risk by [Company]

Dear [redacted]:

A number of publications over the last year have discussed the climate change-related risks facing fossil fuel companies – both from current and future policies to reduce greenhouse gas (GHG) emissions as well as from the physical impacts of climate change. In addition, investment analysts have expressed concerns about the viability of the current capital expenditure plans of many oil and gas companies. We are an international group of institutional investors, collectively representing nearly USD 3 trillion in assets, writing to inquire about [company] exposure to these risks and plans for managing them.

In 2010, international governments formally set a long-term goal to limit global warming to below 2°C,[1] requiring a stabilization of the atmospheric concentration of GHGs below 450 parts per million (ppm) carbon dioxide equivalent (CO_2e). Because the combustion of fossil fuels is the largest contributor of GHG emissions, it is widely recognized that strong policy action will be necessary globally to transform how we produce and use energy to achieve this 2°C goal. We support such action because we think the long-term health of the economy depends on effectively managing the financial risks posed by climate change.

According to the International Energy Agency (IEA), the world is currently on a path to raise the atmospheric concentration of GHGs to at least 660 ppm CO_2e, corresponding to a warming of 3.6°C or more.[2] The World Bank recently warned that there could be no certainty that adaptation to this level of climate change is possible, and that, "a 4°C warmer world can, and must be, avoided – we need to hold warming below 2°C".[3]

As investors with diversified portfolios, we recognize the critical importance of having affordable energy to support economic growth. We also recognize that more than 80% of the world's growing energy demand is currently met by fossil fuels, but that to achieve the 2˚C goal, fossil fuel-related GHG emissions will have to be reduced by about 80% by 2050. It is therefore important to understand how current and probable future policies to make these emissions reductions will impact capital expenditures and current assets in the oil and gas sector and how the physical impacts of unmitigated climate change will impact the sector's operations.

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[1] "The Cancun Agreements," (2010).
[2] International Energy Agency, "World Energy Outlook 2012," (2012).
[3] The World Bank, "Turn Down the Heat: Why a 4˚C Warmer World Must Be Avoided," (2012).

In its *World Energy Outlook 2012*, the IEA concluded, "No more than one-third of proven reserves of fossil fuel can be consumed prior to 2050 if the world is to achieve the 2°C goal, unless carbon capture and storage (CCS) is widely deployed."[4] Under a carbon-constrained scenario, investment bank HSBC assessed how a number of oil and gas companies would be affected and estimated that 40 to 60% of their market value could be lost because a portion of their proven reserves would become stranded assets and reduced demand for oil would drive down the prices for petroleum products, significantly reducing the value of their remaining proven reserves.[5] According to Standard & Poor's, such a price decline could pressure the creditworthiness of oil and gas companies, particularly those that have large exposure to high cost unconventional oil and gas production such as oil sands.[6] Despite the risk that a portion of current proven reserves of fossil fuels cannot be consumed if governments act on the 2°C goal, recent analysis by the Carbon Tracker Initiative and the Grantham Research Institute found that the world's 200 largest fossil fuel companies collectively still spent $674 billion in 2012 on finding and developing *new* reserves.[7] This raises concern about the possibility that returns on this capital may never be realized.

The costs of inaction could be considerable if the world continues on a path to a 3.6°C warming or greater. The *Federal Advisory Committee Draft Climate Assessment Report* recently concluded, "There is mounting evidence that the costs to the [U.S.] are already high and will increase very substantially in the future, unless global emissions of heat-trapping gases are strongly reduced."[8] In 2011 alone, the costs of extreme weather events, which are expected to increase with climate change,[9] totaled about $170 billion globally.[10] The oil and gas industry is also vulnerable to extreme weather due to the exposure of infrastructure such as refineries, ports, and offshore drilling rigs to hurricanes, flooding, and sea level rise.[11] Hurricanes Katrina and Rita, for example, caused extensive damage to the industry's assets along the Gulf Coast, taking more than a million barrels per day of refining capacity offline for months.[12] Extreme weather may also cause severe disruptions to other sectors, especially those such as agriculture that are particularly vulnerable to changes in weather patterns, as well as to communities and commerce generally, resulting in reduced overall economic growth and changes in energy demand.

As investors with long-term investment strategies, we would like to understand [company] reserve exposure to the risks associated with current and probable future

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[4] International Energy Agency, "World Energy Outlook 2012."
[5] Paul Spedding, Kirtan Mehta, and Nick Robins, "Oil & Carbon Revisited: Value at Risk from 'Unburnable' Reserves," (HSBC Global Research, 2013).
[6] Simon Redmond and Michael Wilkins, "What a Carbon-Constrained Future Could Mean for Oil Companies' Creditworthiness," (Standard & Poors, 2013).
[7] Carbon Tracker and The Grantham Research Institute, "Unburnable Carbon 2013: Wasted Capital and Stranded Assets," (2013).
[8] National Climate Assessment and Development Advisory Committee, "Draft Climate Assessment Report," (United States Global Change Research Program, 2013).
[9] C.B. Field et al., "Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation," (IPCC, 2012).
[10] Cynthia McHale and Sharlene Leurig, "Stormy Future for U.S. Property/Casualty Insurers: The Growing Costs and Risks of Extreme Weather Events," (Ceres, 2012).
[11] International Energy Agency, "Redrawing the Energy-Climate Map," (2013).
U.S. Department of Energy, "U.S. Energy Sector Vulnerabilities to Climate Change and Extreme Weather," (2013).
[12] Lawrence Kumins and Robert Bamberger, Congressional Research Service, "Oil and Gas Disruption From Hurricanes Katrina and Rita, "Updated Apr. 6, 2006, http://www.au.af.mil/au/awc/awcgate/crs/rl33124.pdf.

policies for reducing GHG emissions by 80% by 2050 to achieve the 2°C goal (including carbon pricing, pollution and efficiency standards, removal of subsidies, and/or reduced demand), and the risks to its operations as well as the economy as a whole of increasing extreme weather associated with the world's current path to a warming of 3.6°C or more. We would also like to understand what options there are for [company] to manage these risks by, for example, reducing the carbon intensity of its assets, divesting its most carbon-intensive assets, diversifying its business by investing in lower-carbon energy sources, or returning capital to shareholders.[13]

These long-term, climate change-related risks raise additional concerns for discussions already underway between the investment community and oil and gas companies about the viability of their capital expenditure plans.[14] There is now a widespread view that it is not in the best interest of investors for companies to expend further capital on low-return projects.[15] Government policies to reduce GHG emissions would be likely to further reduce the returns of these projects.

Therefore, we ask that [company] review both its exposure to these risks and its plans for managing them. To inform this review, in line with IEA's recent report, *Redrawing the Energy-Climate Map*, we request that [company] conduct a risk assessment under at least two main scenarios: (1) a business-as-usual scenario such as that used in [company] current reporting and (2) a low-carbon scenario consistent with reducing GHG emissions by 80% by 2050 to achieve the 2˚C goal. We recommend that this assessment evaluate:

- Capital expenditure plans for finding and developing new reserves, including consideration of rates of return and payback periods and alternative uses of capital;
- The potential GHG emissions associated with the production of all unproduced reserves categorized by resource type, e.g., onshore conventional, tight oil, shale gas, oil sands, offshore, etc.;[16]
- The risks to unproduced reserves, due to factors such as carbon pricing, pollution and efficiency standards, removal of subsidies and/or reduced demand;
- The risks to assets, particularly oil and gas infrastructure, posed by the physical impacts of climate change, including extreme weather, water stress, and sea level rise; and
- The impacts of the above-referenced risks associated with climate policies and the physical impacts of climate change on the Company's current and projected workforce.

While we recognize that detailed disclosure of the results of such an assessment could be commercially sensitive, we ask for disclosure that demonstrates [company] commitment to managing the risks outlined in this letter. Finally, given the strategic nature of these

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[13] International Energy Agency, "Redrawing the Energy-Climate Map."
[14] Andrew Peaple, "Europe's Oil Majors Should Focus on Shareholders," *Wall Street Journal* 2013 and della Vigna, M et al. "No Light at the End of the Tunnel" (Goldman Sachs Equity Research, 2013)
[15] Rats, M et al "Why 'Big Oil' has Underperformed so Much…" (Morgan Stanley Research Europe), Syme, A et al. "Investing for Commodity Uncertainty".(Citi Research, 2013); della Vigna, M et al "Death and Rebirth of an Industry" (Goldman Sachs Equity Research, 2012)
[16] A similar question appears in: Carbon Disclosure Project, "Investor Cdp 2013 Information Request," (2013).

issues, we would like to understand what role the Board has in overseeing this assessment.

We would appreciate receiving notification of [company] intent regarding this request by October 4, 2013 or immediately following the next Board meeting and your full response in advance of [company] 2014 Annual Stockholders Meeting or AGM. We realize that these are complex issues and welcome the opportunity to meet with you to discuss our requests in more detail. Please direct your response to Ryan Salmon, Manager, Oil and Gas Program at Ceres (salmon@ceres.org, 617-247-0700 x122), who is coordinating this engagement on behalf of the participating investors, and will communicate your response to the undersigned.

Sincerely,

Letter to Electric Companies from Investors

September 9, 2013

Attention: [redacted]

Re: Analysis of Carbon Asset Risk by [Company]

Dear [redacted]:

A number of publications over the last year have discussed the climate change-related risks facing fossil fuel companies – both from current and future policies to reduce greenhouse gas (GHG) emissions as well as from the physical impacts of climate change. In the U.S. due to a combination of low cost natural gas and environmental regulations, numerous coal-fired power stations are being shut down or repowered with cleaner gas, and many proposed new coal plants have been canceled. Meanwhile, the World Bank and the European Investment Bank recently announced that they would phase out financing to coal-fired power plants. We are an international group of institutional investors, collectively representing nearly USD 3 trillion in assets, writing to inquire about [company] exposure to these risks and plans for managing them.

In 2010, international governments formally set a long-term goal to limit global warming to below 2°C,[17] requiring a stabilization of the atmospheric concentration of GHGs below 450 parts per million (ppm) carbon dioxide equivalent (CO_2e). Because the combustion of fossil fuels is the largest contributor of GHG emissions, it is widely recognized that strong policy action will be necessary globally to transform how we produce and use energy to achieve this 2°C goal. We support such action because we think the long-term health of the economy depends on effectively managing the financial risks posed by climate change.

According to the International Energy Agency (IEA), the world is currently on a path to raise the atmospheric concentration of GHGs to at least 660 ppm CO_2e, corresponding to a warming of 3.6°C or more.[18] The World Bank recently warned that there could be no certainty that adaptation to this level of climate change is possible, and that, "a 4°C warmer world can, and must be, avoided – we need to hold warming below 2°C".[19]

As investors with diversified portfolios, we recognize the critical importance of having affordable energy to drive economic growth. We also recognize that more than 80% of the world's growing energy demand is currently met by fossil fuels, but that to achieve the 2˚C goal, fossil fuel-related GHG emissions would have to be reduced by about 80% by 2050. It is therefore important to understand how current and probable future policies to make these emissions reductions will impact capital expenditures and current assets in

[17] "The Cancun Agreements," (2010).
[18] International Energy Agency, "World Energy Outlook 2012," (2012).
[19] The World Bank, "Turn Down the Heat: Why a 4˚C Warmer World Must Be Avoided," (2012).

the electric utility sector and how the physical impacts of unmitigated climate change will impact the sector's operations.

In its *World Energy Outlook 2012*, the IEA concluded, "No more than one-third of proven reserves of fossil fuels can be consumed prior to 2050 if the world is to achieve the 2°C goal, unless carbon capture and storage (CCS) is widely deployed."[20] Under a carbon-constrained scenario, many fossil fuel electric generation plants would be idled or retired early and some currently under construction may face difficulties recovering their investment costs if they have not taken the costs of decarbonization fully into account.[21] Also, demand for electricity may be reduced due to increased energy efficiency. Despite this, the IEA estimates that an additional $2.7 trillion will be invested globally in new fossil fuel electric generation plants between 2012 and 2035 if the world remains on its current path. This raises concern about the possibility that some of these assets will become stranded.

The costs of inaction could be considerable if the world continues on the path to a 3.6°C warming or greater. The *Federal Advisory Committee Draft Climate Assessment Report* recently concluded, "There is mounting evidence that the costs to the [U.S.] are already high and will increase very substantially in the future, unless global emissions of heat-trapping gases are strongly reduced."[22] In 2011 alone, the costs of extreme weather events, which are expected to increase with climate change,[23] totaled about $170 billion globally.[24] The electric power industry is also vulnerable to extreme weather due to the exposure of infrastructure such as power plants and transmission lines to hurricanes, flooding, and sea level rise. For example, in the U.S., hurricanes Katrina, Rita, and Sandy caused extensive damage to the industry's assets, while increased extreme weather events such as droughts, wildfires, floods, and thunderstorms, have exposed the vulnerabilities of electric power systems worldwide. Power plants may also find it more difficult to remain in operation if summer heat raises the temperature of cooling water above prescribed thresholds.[25] Extreme weather may also cause severe disruptions to other sectors, especially those such as agriculture that are particularly vulnerable to changes in weather patterns, as well as to communities and commerce generally, resulting in reduced overall economic growth and changes in energy demand.

As investors with long-term investment strategies, we would like to understand [company] exposure to the risks associated with current and probable future policies for reducing GHG emissions by 80% by 2050 to achieve the 2°C goal (including carbon pricing, pollution and efficiency standards and reduced demand for fossil fuels), and the risks to its infrastructure as well as the economy as a whole of increasing extreme weather associated with the world's current path to a warming of 3.6°C or more. We would also like to understand what options there are for [company] to reduce these risks

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[20] International Energy Agency, "World Energy Outlook 2012."
[21] "Redrawing the Energy-Climate Map," (2013).
[22] National Climate Assessment and Development Advisory Committee, "Draft Climate Assessment Report," (United States Global Change Research Program, 2013).
[23] C.B. Field et al., "Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation," (IPCC, 2012).
[24] Cynthia McHale and Sharlene Leurig, "Stormy Future for U.S. Property/Casualty Insurers: The Growing Costs and Risks of Extreme Weather Events," (Ceres, 2012).
[25] U.S. Department of Energy, "U.S. Energy Sector Vulnerabilities to Climate Change and Extreme Weather," (2013).

by, for example, reducing the carbon intensity of its assets, divesting from its most carbon-intensive assets, diversifying its business by investing in lower-carbon energy sources.[26]

These long-term, climate change-related risks raise additional concerns about the viability of electric power companies' capital expenditure plans. There is now an increasing recognition that it is not in the best interest of investors for companies to expend further capital on coal-fired power plants that do not capture and store CO_2.

Therefore, we ask that [company] review both its exposure to these risks and its plans for managing them. To inform this review, in line with the IEA's recent report, *Redrawing the Energy-Climate Map*, we request that [company] conduct a risk assessment under at least two main scenarios: (1) a business-as-usual scenario such as that used in [company] current reporting and (2) a low-carbon scenario consistent with reducing GHG emissions by 80% by 2050 to achieve the 2˚C goal. We recommend that this assessment evaluate:

- Capital expenditure plans for developing new electric power generation assets, including consideration of payback periods and alternative uses of capital;
- The risks to assets due to factors such as carbon pricing, pollution and efficiency standards, removal of subsidies and/or reduced demand;
- The risks to assets, particularly electric power infrastructure, posed by the physical impacts of climate change, including extreme weather, water stress, and sea level rise; and
- The impacts of the above-referenced risks associated with climate policies and the physical impacts of climate change on [company] current and projected workforce.

While we recognize that detailed disclosure of the results of such an assessment could be commercially sensitive, we ask for disclosure that demonstrates [company] commitment to managing the risks outlined in this letter. Finally, given the strategic nature of these issues, we would like to understand what role the Board has in overseeing this assessment.

We would appreciate receiving notification of [company] intent regarding this request by October 4, 2013 or immediately following the next Board meeting and your full response in advance of [company] 2014 Annual Stockholders Meeting or AGM. We realize that these are complex issues and welcome the opportunity to meet with you to discuss our requests in more detail. Please direct your response to Ryan Salmon, Manager, Oil and Gas Program at Ceres (salmon@ceres.org, 617-247-0700 x122), who is coordinating this engagement on behalf of the participating investors, and will communicate your response to the undersigned.

Sincerely,

[26] International Energy Agency, "Redrawing the Energy-Climate Map."

Letter to Coal Companies from Investors

September 9, 2013

Attention: [redacted]

Re: Assessment of Carbon Asset Risk by [Company]

Dear [redacted]:

A number of publications over the last year have discussed the climate change-related risks facing fossil fuel companies – both from current and future policies to reduce greenhouse gas (GHG) emissions as well as from the physical impacts of climate change. A number of analysts have discussed the negative impacts of declining demand on coal company revenues and share price performance and noted recent bankruptcy filings. We are an international group of institutional investors, collectively representing nearly USD 3 trillion in assets, writing to inquire about [company] exposure to these risks and plans for managing them.

In 2010, international governments formally set a long-term goal to limit global warming to below 2°C,[27] requiring a stabilization of the atmospheric concentration of GHGs below 450 parts per million (ppm) carbon dioxide equivalent (CO_2e). Because the combustion of fossil fuels is the largest contributor of GHG emissions, it is widely recognized that strong policy action will be necessary globally to transform how we produce and use energy to achieve this 2°C goal. We support such action because we think the long-term health of the economy depends on effectively managing the financial risks posed by climate change.

According to the International Energy Agency (IEA), the world is currently on a path to raise the atmospheric concentration of GHGs to at least 660 ppm CO_2e, corresponding to a warming of 3.6°C or more.[28] The World Bank recently warned that there could be no certainty that adaptation to this level of climate change is possible, and that, "a 4°C warmer world can, and must be, avoided – we need to hold warming below 2°C".[29]

As investors with diversified portfolios, we recognize the critical importance of having affordable energy to drive economic growth. We also recognize that more than 80% of the world's growing energy demand is currently met by fossil fuels, but that to achieve the 2˚C goal, fossil fuel-related GHG emissions will have to be reduced by about 80% by 2050. It is therefore important to understand how current and probable future policies to make these emissions reductions will impact capital expenditures and current assets in the coal sector and how the physical impacts of unmitigated climate change will impact the sector's operations.

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[27] "The Cancun Agreements," (2010).
[28] International Energy Agency, "World Energy Outlook 2012," (2012).
[29] The World Bank, "Turn Down the Heat: Why a 4˚C Warmer World Must Be Avoided," (2012).

In its *World Energy Outlook 2012*, the IEA concluded, "No more than one-third of proven reserves of fossil fuel can be consumed prior to 2050 if the world is to achieve the 2°C goal, unless carbon capture and storage (CCS) is widely deployed."[30] Under a carbon-constrained scenario, investment bank HSBC assessed how a number of mining companies would be affected and found that 44% of the market value of their coal assets could be lost because reduced demand for coal would drive down coal prices, significantly reducing the value of their coal reserves.[31] Despite the risk that a portion of current proven reserves of fossil fuels cannot be consumed if governments act on the 2°C goal, recent analysis by the Carbon Tracker Initiative and the Grantham Research Institute found that the world's 200 largest fossil fuel companies collectively still spent $674 billion in 2012 on finding and developing *new* reserves.[32] This raises concern about the possibility that returns on this capital may never be realized.

The costs of inaction could be considerable if the world continues on the path to a 3.6°C warming or greater. The *Federal Advisory Committee Draft Climate Assessment Report* recently concluded, "There is mounting evidence that the costs to the [U.S.] are already high and will increase very substantially in the future, unless global emissions of heat-trapping gases are strongly reduced."[33] In 2011 alone, the costs of extreme weather events, which are expected to increase with climate change,[34] totaled about $170 billion globally.[35] The coal industry is also vulnerable to extreme weather due to the exposure of coal mining operations to flooding in areas where the frequency and intensity of rainfall increases with climate change and to water stress in areas where drought increases.[36] Extreme weather may also cause disruptions across the economy, especially to sectors such as agriculture that are particularly vulnerable to changes in weather patterns, as well as to communities and commerce generally, resulting in reduced overall economic growth and changes in energy demand.

As investors with long-term investment strategies, we would like to understand [company] reserve exposure to the risks associated with current and probable future policies for reducing GHG emissions by 80% by 2050 to achieve the 2°C goal (including carbon pricing, pollution and efficiency standards, removal of subsidies, and/or reduced demand), and the risks to its mining operations as well as the economy as a whole of increasing extreme weather associated with the world's current path to a warming of 3.6°C or more. We would also like to understand what options there are for [company] to reduce these risks by, for example, reducing the carbon intensity of its assets, divesting from its most carbon-intensive assets, diversifying its business by investing in lower-carbon energy sources, or returning capital to shareholders.[37]

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[30] International Energy Agency, "World Energy Outlook 2012."
[31] Paul Spedding, Kirtan Mehta, and Nick Robins, "Oil & Carbon Revisited: Value at Risk from 'Unburnable' Reserves," (HSBC Global Research, 2013); Nick Robins, Andrew Keen, and Zoe Knight, "Coal and Carbon," (HSBC Global Research, 2012).
[32] Carbon Tracker and The Grantham Research Institute, "Unburnable Carbon 2013: Wasted Capital and Stranded Assets," (2013).
[33] National Climate Assessment and Development Advisory Committee, "Draft Climate Assessment Report," (United States Global Change Research Program, 2013).
[34] C.B. Field et al., "Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation," (IPCC, 2012).
[35] Cynthia McHale and Sharlene Leurig, "Stormy Future for U.S. Property/Casualty Insurers: The Growing Costs and Risks of Extreme Weather Events," (Ceres, 2012).
[36] International Energy Agency, "Redrawing the Energy-Climate Map," (2013).
U.S. Department of Energy, "U.S. Energy Sector Vulnerabilities to Climate Change and Extreme Weather," (2013).
[37] International Energy Agency, "Redrawing the Energy-Climate Map."

These long-term, climate change-related risks add to concerns in the investment community about the declining value of companies in the coal sector.[38] There is now a widespread view that it is not in the best interest of investors for companies to expend further capital on low-return projects.[39] Government policies to reduce GHG emissions appear likely to further reduce the returns of these projects.

Therefore, we ask that [company] review both its exposure to these risks and its plans for managing them. To inform this review, in line with IEA's recent report, *Redrawing the Energy-Climate Map*, we request that [company] conduct a risk assessment under at least two main scenarios: (1) a business-as-usual scenario such as that used in [company] current reporting and (2) a low-carbon scenario consistent with reducing GHG emissions by 80% by 2050 to achieve the 2˚C goal. We recommend that this assessment evaluate:

- Capital expenditure plans for finding and developing new reserves, including consideration of payback periods and alternative uses of capital;
- The potential GHG emissions associated with production of all unproduced reserves categorized by resource type, e.g., metallurgic or coking, thermal or steam, brown, etc.;
- The risks to assets, including both current operations and unproduced reserves, due to factors such as carbon pricing, pollution and efficiency standards, removal of subsidies and/or reduced demand;
- The risks to assets, particularly coal mining operations, posed by the physical impacts of climate change, including extreme weather, water stress, and sea level rise; and
- The impacts of the above-referenced risks associated with climate policies and the physical impacts of climate change on [company] current and projected workforce.

While we recognize that detailed disclosure of the results of such an assessment could be commercially sensitive, we ask for disclosure that demonstrates [company] commitment to managing the risks outlined in this letter. Finally, given the strategic nature of these issues, we would like to understand what role the Board has in overseeing this assessment.

We would appreciate receiving notification of [company] intent regarding this request by October 4, 2013 or immediately following the next Board meeting and your full response in advance of [company] 2014 Annual Stockholders Meeting or AGM. We realize that these are complex issues and welcome the opportunity to meet with you to discuss our requests in more detail. Please direct your response to Ryan Salmon, Manager, Oil and Gas Program at Ceres (salmon@ceres.org, 617-247-0700 x122), who is coordinating this engagement on behalf of the participating investors, and will communicate your response to the undersigned.

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[38] Kofi Bofah, "Get out of Coal Stocks," *Seeking Alpha* 2013.

[39] Hsueh, M "Coal at a crossroads" (Deustsche Bank Markets Research, 2013); Parker, M and Purdy, Ho "Asian Coal & Power: Less, Less, Less...The Beginning of the End of Coal" (Bernstein Research, 2013)

Sincerely,