



PIIAC PROPOSAL

Arguing for Fossil Fuel Divestment

Abstract

In this proposal we argue that JHU divest its endowment from fossil fuel companies because: the current and past actions of fossil fuel companies have grave social and environmental costs, there is widespread support for fossil fuel divestment among the JHU community, divestment is an effective tactic to reduce the negative impacts of fossil fuel companies, and fossil fuel divestment is fiscally responsible for the University endowment.

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Managed by Fossil Free Indexes LLC, the Carbon Underground 200™ identifies the top 100 public coal companies globally and the top 100 public oil and gas companies globally, ranked by the potential carbon emissions content of their reported reserves. We request that Johns Hopkins University terminate all direct investments it currently holds in any of the companies listed in the Carbon Underground 200™. We also request that Johns Hopkins University make a vow to not invest in any of these companies in the future. Further, we ask for the school to investigate the potential to move the university's commingled funds into more sustainable investment portfolios. Though the names of the particular companies that the university is invested in have not been revealed to us, we can assume that some of the money we have invested in fossil fuels is invested in a number of these carbon-exploiting companies. Furthermore, we suggest that the divested funds be reinvested in more sustainable and socially responsible industries.

The practices and policies of fossil fuel companies in regards the acquisition, refining, transport, and use of crude oil, coal, natural gas, and heavy oils have been proven to cause substantial social and environmental impacts. According to researchers from the University of California, Berkeley and the Massachusetts Institute of Technology:

“The impacts of oil production, transport, refining, and consumption are significant and widespread. From environmental impacts on fragile ecosystems, to cultural impacts on indigenous groups, health impacts on workers and communities, global climatic impacts, and military conflicts, oil is perhaps the single most controversial and influential commodity in the world (O'Rourke & Connolly, 2003).”

The exploration, drilling, and extraction of oil sources each result in major physical alterations of the environment where they are performed. Major impacts include deforestation, ecosystem destruction, chemical contamination of land and water, long-term harm to animal populations (particularly migratory birds and marine mammals), human health and safety risks for neighboring communities and oil industry workers, and displacement of indigenous communities (National Research Council, 2003). Networks of trails used for seismic exploration have degraded the visual experience of local residents and tourists, and have also harmed vegetation and caused erosion (Effects of Oil, n.d.).

Industrial coal mining has been in practice since the 1600s and thus has been substantially studied. A typology of the known impacts arising from mine voids and wastes in

coal mining districts has been developed, which recognizes known impacts under five major headings: air pollution, fire hazards, ground deformation, water pollution, and water resource depletion (Younger, 2004). Human health has been adversely affected by coals containing arsenic, fluorine, selenium, and mercury. An irreversible kidney disease of unknown origin, Balkan endemic nephropathy (BEN), has been related to the proximity of Pliocene lignite deposits. However, human disease associated with coal mining mainly results from inhalation of particulate matter during the mining process (Coal Worker's Pneumoconiosis or "black lung disease") (Finkleman, et al., n.d.)

Further, as easily accessed sources of fossil fuels become increasingly scarce, leading to a decline in fossil fuel's energy returned on energy invested (Younger, 2004), companies are utilizing more potentially risk-laden techniques to acquire their products. Some companies use hydraulic fracturing, a method of extracting oil and natural gas, without any conclusive proof of its safety. A team from the Johns Hopkins Bloomberg School of Public Health recently published a study that found an association between fracking wells and both premature births and high-risk pregnancies, concluding that "prenatal residential exposure to unconventional natural gas development activity was associated with [these] two pregnancy outcomes, adding to evidence that unconventional natural gas development may impact health" (Hub Staff Report, 2015). According to the study leader, Department of Environmental Health Science professor Brian S. Schwartz (2015), "The growth in the fracking industry has gotten way out ahead of our ability to assess what the environmental and, just as importantly, public health impacts are. Our research adds evidence to the very few studies that have been done showing adverse health outcomes associated with the fracking industry."

Concerns about hydraulic fracturing include other public health concerns, increased seismic activity, and water contamination. The United States Geological Survey's Working Group on Understanding Fluid Injection Induced Seismicity (2015) found that "To a large extent, the increasing rate of earthquakes in the mid-continent is due to fluid-injection activities used in modern energy production." They also noted that the use of supercritical carbon dioxide in some fracturing projects may pose future seismic hazards and that "the general public is the most important stakeholder because they may be exposed to potential injury and damage"(McGarr 2015). A joint review from Duke University, Stanford University, Dartmouth College, and the

Ohio State University identified four plausible risks to water resources associated with shale gas development and hydraulic fracturing:

“The first risk is contamination of shallow aquifers in areas adjacent to shale gas development through stray gas leaking from improperly constructed or failing gas wells. Thus, evidence of stray gas contamination could be indicative of future water quality degradation, similar to that observed in some conventional oil and gas fields. The second risk is contamination of water resources in areas of shale gas development and/or waste management by spills, leaks, or disposal of hydraulic fracturing fluids and inadequately treated wastewaters. The third risk is accumulation of metals and radioactive elements on stream, river and lake sediments in wastewater disposal or spill sites, posing an additional long-term impact by slowly releasing toxic elements and radiation to the environment in the impacted areas. The fourth risk is the water footprint through withdrawals of valuable fresh water from dry areas and overexploitation of limited or diminished water resources for shale gas development”(Vengosh, 2014).

It was also found that “the public cannot ascertain the cause of most shale gas-related problems because the full datasets are often not released publicly and explained” (Llewellyn et al. 2015).

After fossil fuels have been extracted, they generally have to be refined. Oil refineries have been categorized as “major polluters” by some energy specialists because they produce large quantities of wastewaters, release hazardous gases into the atmosphere, and generate solid wastes that are difficult both to treat and dispose of (Mariano, n.d.). Oil refinery effluents contain many different chemicals at different concentrations including ammonia, sulphides, phenol and hydrocarbons (though individual refineries can vary greatly on process, output, and toxicity.) Field studies have shown that oil refinery effluents often have a negative impact on the fauna they interact with (Wake, n.d.). Refineries have also been shown to disrupt the ecosystems they occupy.

Fossil fuels also have to be transported. In countries with weak governance, gas and oil transportation can be environmentally damaging, leading to water contamination and soil erosion. There is also the risk of environmental catastrophes such as oil spills. Spills in marine environments can have severe environmental impacts over wide areas (Beyer et al., 2013). An unfortunate oil spill that occurs in an ecologically sensitive location can cause devastating damage to natural environments, property, businesses, and human lives.(Etkin, 2001).

A major, overarching effect of fossil fuel companies is their greenhouse gas emissions. A large majority of the scientific community recognizes that human activities have contributed substantially to climate change by adding carbon dioxide and other heat-trapping gases to the atmosphere. These greenhouse gas emissions have increased the greenhouse effect and caused Earth's surface temperature to rise. The primary human activity that affects the amount and rate of climate change is greenhouse gas emissions from the burning of fossil fuels.[xv] Information that concisely reports the overall effects of fossil fuel use and emissions can be found in the reports from the Intergovernmental Panel on Climate Change. A brief summary is as follows:

“Fossil energy use is responsible for about 85% of the anthropogenic CO₂ emissions produced annually. Atmospheric concentrations of CO₂ (379 ppm) and CH₄ (1774 ppb) in 2005 exceed by far the natural range over the last 650,000 years. Most of the observed increase in global average temperatures since the mid-20th century is *very likely* due to the observed increase in anthropogenic GHG concentrations. It is *likely* that there has been significant anthropogenic warming over the past 50 years averaged over each continent (except Antarctica). Human influences have *very likely* contributed to sea level rise during the latter half of the 20th century, *likely* contributed to changes in wind patterns, affecting extra-tropical storm tracks and temperature patterns, *likely* increased temperatures of extreme hot nights, cold nights and cold days, *more likely than not* increased risk of heat waves, area affected by drought since the 1970s, and frequency of heavy precipitation events.”

While the climate change effects strongly driven by the actions of fossil fuel companies have major global repercussions, they are also damaging to communities on a more local scale, including Johns Hopkins' beloved Baltimore.

Sea levels in the Chesapeake Bay are rising twice as fast as the global average- they are estimated to climb by as much as two feet in the next 35 years before potentially moving past a five foot increase by the end of the century. Floods in Baltimore and Annapolis have already increased by more than 900 percent since 1960. Climate Central, a nonprofit research group, has estimated that even moderate sea level rise will result in an increased risk of flooding for 41,000 local homes. If no action is taken, sea level rise will be more severe, and more than 440,000 acres of land, \$42.3 billion in property, and 94,000 homes in Maryland will be threatened by encroaching water. (Cassie, 2015). Climate Change Maryland, a public outreach program from

the Maryland Department of the Environment, states that “Marylanders around the state are already noticing warmer winter days, more intense heat and humidity in the summer, and more damage due to storms.” Additionally, if climate impacts are not curtailed, Maryland's population will face a likely increase in the number of respiratory illnesses, diseases caused by bacteria and viruses, and health risks due to heat stress (Climate Change Maryland).

Even when fossil fuel companies are not neglecting regulations, their functioning results in substantial negative impacts. However, another pressing reason to divest from these companies is that they have recurring instances of negligence that result in further damage. Historically, these incidents are often coupled with failures to heed warnings and subsequent legal ramifications.

Since 2010, there have been more than 600 oil pipeline spills in the United States (including some as large as contaminating Michigan’s Kalamazoo River with 840,000 gallons of crude oil.) A faulty welding technique used in the 1970s was found to cause cracks in the walls of an estimated 45,000 miles of petroleum pipelines. Fossil fuel companies, including Exxon, were warned about this problem by the United States Pipeline and Hazardous Material Safety Administration in the late 1980s.

Exxon has repeatedly neglected pipeline inspections since then. In 2010, the Transportation Department fined the company \$26,200 for not inspecting a pipeline under the Mississippi River. In 2011, another Exxon pipeline ruptured on Montana’s Yellowstone River (pouring 60,000 gallons of oil into it) despite government warnings about high floodwaters. For this incident, federal pipeline officials fined Exxon \$1.7 million for the spill, saying the company had “failed to consider all relevant risk factors.” A few years later, Exxon Mobil was fined \$112,300 for not performing required pressure tests on another oil pipeline in Louisiana. In 2013, a section of Exxon’s Pegasus pipeline spilled 200,000 gallons of oil in Mayflower, Arkansas, filling the streets with unknown quantities of chemicals, including benzene, a known carcinogen. The spill in this occurrence was from a 22-foot gash along the spine of the pipe, which was determined to have been caused by the faulty manufacturing technique that Exxon had been warned about decades earlier (Osborne, 2013). As of October 2015, the federal Pipeline and Hazardous Materials Safety Administration found the ExxonMobil Pipeline Company liable for nine violations regarding the Mayflower spill and ordered them to pay a \$2.63 million fine. The violations included failing to follow written risk-assessment procedures, failing to obtain

sufficient information about the conditions on its pipeline, and failing to reassess the seam integrity of the pipeline at least every five years (Lyon, 2015).

Coal companies have also been faulted for infractions. Recently, a statement from New York's attorney general asserted that Peabody Energy, the world's biggest private-sector coal company, has violated New York laws with misleading statements to investors and the public about the financial risks from climate change and potential regulatory responses (Krauss, 2015). The aforementioned incidents are a mere fraction of these two companies' transgressions. Considering that fact, the combined impact of total crimes of the 198 companies on the Carbon Underground 200™ list is absolutely staggering. Though given ample warnings and time, fossil fuel companies have repeatedly failed to reform their ways and it follows that further action needs to be taken to hold them accountable for the harms they cause.

A referendum open to all undergraduates on the issue of fossil fuel divestment was conducted in 2014. The poll engaged the opinions of 397 students from all classes, with 73% of students agreeing that the university should divest its endowment of the top 200 fossil fuel companies as decided by their total carbon reserves. A faculty petition being circulated among professors at Hopkins has garnered dozens of positive responses and signatures thus far. On November 19th of this year, the President of the Johns Hopkins University signed the White House Act on Climate Pledge. This pledge was supported by multiple student groups, from the Students for Environmental Action to the College Republicans. Among other positive environmental measures, this pledge includes a vow to “accelerate the transition to low-carbon energy” and “embed sustainability practices and principles into the culture of Johns Hopkins University” (White House Act on Climate Pledge, 2015). This pledge has received positive attention across campus, indicating that students and faculty alike agree on the goal of reducing Hopkins' impact on climate change; fossil fuel divestment is an effective method through which to achieve this goal.

Furthermore, the mission of JHU, as taken from its website, is “to educate its students and cultivate their capacity for lifelong learning, to foster independent and original research, and to bring the benefits of discovery to the world.” As a national leader in research and education, it is important that we show our commitment to our ideals through our actions. We cannot, in good conscience, conduct research and teach classes identifying and quantifying the risks of climate

change and the health impacts of fossil fuel combustion, while simultaneously investing in the companies that contribute to these issues the most.

Johns Hopkins has over a dozen programs dedicated to understanding and resolving issues related to environmental degradation and climate change. If the education provided by the university and the research conducted by its constituents is reflective of the university's priorities, then the multitude of opportunities offered to students and faculty to work with the science behind, impacts of, and solutions to climate change suggests a strong consensus of support for the existence and mitigation of anthropogenic climate change. These programs include:

- [Energy, Environment, Sustainability, and Health Institute](#)
- [Undergraduate Program in Global Environmental Change and Sustainability](#)
- [Masters Program in Environmental Sciences and Policy](#)
- [Engineering Department of Geography and Environmental Engineering](#)
- [Masters Program in Environmental Engineering, Science, and Management](#)
- [Bloomberg School of Public Health Masters in Public Health Concentration on Global Environmental Sustainability and Health](#)
- [School of Advanced International Studies Program in Energy, Resources, and Environment](#)
- [Carey Business School Global Masters in Business Administration](#)
- [The Center for a Livable Future](#)
- [Center for Environmental and Applied Fluid Mechanics](#)
- [NIEHS Center in Urban Environmental Health](#)
- [Water Institute](#)
- [Center for Global Health](#)
- [Global Assimilation of Information for Action](#)
- [Systems Institute](#)
- [Sustainability Network](#)

The mission statements of these programs make it clear that they understand climate change to be a viable threat to the world. The Hopkins Global Environmental Change and Sustainability (GECS) program website states “the goals [of GECS] are to advance awareness of

the magnitude and consequences of these issues and to train the next generation of problem-solvers to address the effects of global environmental change.” The Energy, Environment, Sustainability, and Health Institute website explains that one of its goals is to “establish Johns Hopkins University as a world leader in, and provide a single point of contact for, integrative approaches to global environmental change, sustainability, and their related health challenges.” The Center for a Livable Future website says that its mission is to “advance an ecological perspective in reducing threats to the health of the public and to promote policies that protect health, the global environment and the ability to sustain life for future generations.” The missions of Hopkins and these programs affiliated with Hopkins, among others, frequently reference the next generation of students and global citizens. Continuing to invest in fossil fuel companies that damage the future of our students and our world is contradictory to Hopkins’ purported forward-thinking goals. If Hopkins wants to truly be a “world leader” in solutions to environmental challenges, we can start with the strong statement of fossil fuel divestment. Hopkins has already taken a stance against climate change through the creation and support of these organizations; divestment from fossil fuel companies would reinforce this position.

A global consensus on the need for immediate action to combat climate change was just formed at the 2015 United Nations Climate Change Conference, where 195 participating national governments agreed to reduce carbon output as soon as possible and keep global warming well below two degrees Celsius.

Fossil fuel divestment is a worldwide movement. Stanford, Syracuse, and Oxford and other universities have either fully or partially divested from fossil fuels. Organizations such as the Rockefeller Brothers Fund, the British Medical Association, and the World Council of Churches have divested, in addition to the cities of Seattle, Madison and San Francisco (Fossil Free, 2015). More than 400 organizations and 2,000 individuals across the world with \$2.6 trillion in assets have pledged to divest from fossil fuel companies, according to a new report from Arabella Advisors, a consultancy firm for philanthropies. A year ago, the total amount of assets being divested from fossil fuel companies was just \$50 billion (Luckerson, 2015). There is a consensus across organizations, politics and even countries that divesting from fossil fuels is not only reasonable but also necessary. Johns Hopkins would be an excellent addition to this global movement.

If Johns Hopkins University divests from fossil fuels, the affected companies will be dealt a massive blow to their public persona and image. Through this action, Johns Hopkins, a name synonymous with health across the world, will be effectively stating to the world that fossil fuel use as it is now is detrimental and unsustainable. We expect this action to have a massive positive impact on the corporate practices of fossil fuel companies as these institutions struggle (with increasing difficulty) to maintain a positive image in the eyes of the individuals and organizations that purchase their products. They would likely engage in a series of reforms shorter in substance than in presentation and marketing. These would be significant (but nowhere close to satisfactory) in diminishing the climate crisis.

Fortunately, JHU does not exist in a vacuum. JHU divesting is one step further for a growing movement of divestment in over 390 universities, religious congregations, pension funds, philanthropic foundations, and other institutions as described above. In addition to its global name in health, Johns Hopkins is especially important due to its status as a private, elite university with an endowment of at least \$3.4 billion (National Association of College and University Business Officers and Commonfund Institute, 2015). It, in conjunction with other similar institutions like Georgetown and Stanford, will exert tremendous social pressure on other elite, private universities to divest as well. Many have called Harvard University a “hedge fund with a university attached to it.” The force of Hopkins divesting alone may not force fossil fuel companies to alter their practices. However, the critical mass of Hopkins divesting in concert with Georgetown, Syracuse, Stanford, the University of California, and other institutions such as Harvard and Princeton certainly will.

Other individuals and organizations will make a more substantial effort towards lowering their carbon footprint once Johns Hopkins University, an institution full of global thought leaders, has joined the fossil fuel divestment movement. Many people and institutions will be energized by Hopkins’ bold action, recognize that we are careening towards a catastrophic future, and have a better sense of their own agency and power in combatting climate change.

We are cognizant of the fact that fossil fuel companies are large and powerful institutions that have an incredible amount of capital devoted to the extraction and use of fossil fuels for profit. Fossil fuel divestment will not destroy these institutions outright. We do not expect Johns Hopkins University divesting from fossil fuels (on its own) to substantially affect the cost of capital or profit margin of fossil fuel companies. Since we expect Johns Hopkins on its own to

have an almost negligible shareholder stock in fossil fuel companies, fossil fuel divestment is a much more effective strategy for fighting the devastating effects of climate change than some alternative “shareholder engagement strategy.” Even if Johns Hopkins or some consortium of colleges had a majority stock of one or more fossil fuel companies, the purpose of a fossil fuel company remains the same: to extract fossil fuels for profit. Some reforms might be enacted, but these will almost certainly be small and easily rescinded (with new management) because the companies are not being forced to enact them. When looking at recent and historical examples of boycotts (divestment is another form of boycott) such as the Montgomery Bus Boycott and the South African Apartheid divestment movement, the boycotters usually do not dramatically affect sales or capital: “The real power of a boycott lies in its ability to inflict damage to corporate reputation” (King, 2008).

A report published by the United Nations Environment Programme (UNEP) Finance Initiative and Mercer, a consulting firm, reviewed twenty academic research papers examining the performance of investment portfolios adjusting for Environmental, Social, and Governance Factors (ESG). Of the twenty studies, ten found that portfolios that adjusted for ESG factors saw increased performance, three studies saw decreased performance, and seven saw neutral performance (UNEP FI & Mercer, 2007). One study of 126 conventional and socially-responsible mutual funds found that that “not a single characteristic of socially responsible mutual funds is significantly different from that of conventional funds” (Bello, 2005).

Another study analyzed the performance of firms recognized for their attention to ESG factors. They found that firms listed on the Council for Institutional Investors’s (a nonprofit association of endowments and benefit funds self-described as a “voice for corporate governance”) focus list experienced ten percent or higher growth compared to the S&P 500 after one year, and five percent or higher growth over the long term (Opler & Sobokin, 1995). One study of 450 stocks found that environmentally efficient firms (that produce a high amount of economic value relative to the waste they generate) perform 6% p.a. better than low-ranked environmental stocks. This result is statistically significant across a risk, style, and industry adjusted basis (Guenster, Derwall, Bauer & Koedijk, 2004). When given the option, investors prefer to invest in socially and environmentally responsible firms.

Of the three studies that saw decreased performance: one attributed the time period of the study (market downturn) as a contributor to the discrepancy between the “vice fund” of tobacco,

weapons, gambling, and alcohol-involved firms and the Socially Responsible Investment (SRI) fund, another had a limited sample size of 34, and the validity of the third's overall hypothesis was questioned by UNEP and Mercer (UNEP FI & Mercer, 2007). Based on the provided research, one can expect Johns Hopkins University's endowment investment portfolio's performance to be positively affected or unaffected by divesting from the Carbon Underground 200 index of fossil fuel companies. Risk may increase slightly, but over the long-term divestment from fossil fuel companies will have a positive fiduciary impact due to: the massive amount of stranded assets accounted for by fossil fuel companies and the negative financial impact climate change will have on the Maryland and world economy – of which Johns Hopkins is inextricably linked to.

Though we have established that fossil fuel divestment has a likely positive or neutral impact on a portfolio's rate of return, we recognize that another large concern regarding fossil fuel divestment is increased risk to the University's endowment portfolio. Aperio Group LLC, a portfolio manager, ran a study to determine how divesting from fossil fuels affects a portfolio's risk. The group first measured tracking error, a measure of dispersion between a screened portfolio and a target benchmark like the Russell 2000. Using a statistical model, stock portfolios screened of fossil fuel companies were found to have a tracking error of .5978%. This value is very small, considering that the normal tracking error for active management of an institutional fund is five percent. From the .5978% measurement, the group found that stock portfolios screened for all fossil fuel companies are expected to experience an increase in risk of only .01%. They also found that a portfolio screened of the fossil fuel industry had an average annualized ten-year return .08% higher than the Russell 3000 index from 1988 to 2012 (Geddes, 2013).

What is the consequence of higher risk for portfolios screened of fossil fuels, even if the increase in risk from divesting is very small? That if fossil fuels perform better than the general economy, then the screened portfolio suffers (albeit slightly). If fossil fuels perform worse than the general economy, then the screened portfolio outperforms conventional portfolios. We have every reason to believe that the latter will be the case over the long term. If humanity wants to reach the goal of limiting the earth's temperature rise to two degrees Celsius just agreed upon by 195 governments in the Paris Agreement, only 900 gigatonnes of carbon currently in the ground can be burned. Even in that case there is only an 80% probability that the earth's temperature will stay two degrees above pre-industrial levels. Fossil fuel companies currently list 2,860

gigatonnes of CO₂ in the ground as assets (Leaton, J., Ranger, N., Ward, B., Sussams, L., & Brown, M., 2013). Oil, gas, and mining companies spent \$674 billion in 2012 trying to find new reserves. 70-80% of fossil fuel companies' currently listed reserves are stranded assets that need to stay in the ground if the planet is to avert catastrophe.

HSBC analysis has found that equity valuations for fossil fuel companies could drop 40-60% in a low emissions scenario. As national governments start to regulate carbon emissions, renewable energies are increasingly adopted, and public opinion (hopefully) shifts away from fossil fuels, stock valuations will suffer. The top 200 fossil fuel companies currently hold \$1.5 trillion in debt. If credit rating agencies take the pledges of the world's governments seriously, then one can see credit downgrades, increases in borrowing costs, and default in the near future for several fossil fuel companies – especially if oil prices stay as low as they have since late 2014 (Leaton, J., Ranger, N., Ward, B., Sussams, L., & Brown, M, 2013). It is very likely that fossil fuel companies are seriously overvalued as an investment today. JHU should recognize this and protect the University's endowment from a much larger risk than divesting from fossil fuels: continuing to invest in them.

Continuing to invest in fossil fuels drains the University's endowment by perpetuating the economic and human losses of climate change. This limits the growth of the other firms the University is investing in. In Maryland where JHU is the state's largest employer, climate change will cost the state two percent of its total annual output through storm damage, labor losses, hurricanes, and energy demand increases. 1-2% of Maryland's property is expected to be under sea level by 2100 (Kopp, et al. 2014). Globally the story is similar, where economic losses due to climate change *already* total \$125 billion per year (Annan, et al. 2009).

In sum, we argue that Johns Hopkins University divesting from fossil fuels is fully supported by the Johns Hopkins community, an effective tactic to combat climate change, and fiscally responsible. Most importantly, it is, ethically, the correct action to take.

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