



The Consequences of Coal and the Case for Divestment

BY GARY COHEN

There have been times in our history when we decided certain practices were no longer compatible with our values and sense of who we are as a people.

We stopped the above-ground testing of nuclear weapons because we realized it was exposing people to dangerous levels of radiation. We divested from South Africa and removed the social license of the Apartheid regime because it was fundamentally unjust.

Now we are reaching a societal consensus that coal is so destructive to our health and the environment that it is time to divest from it and plan for its phase out. This action is important in a broader health context because climate change is recognized as the most serious public health threat of our generation.

As the one sector of our society whose mission is healing, the health sector needs to play a significant role in this divestment effort because:

- Coal is directly responsible for a wide range of serious health impacts and it is a leading driver of climate change. These impacts have been born by individuals and communities through increased suffering, disease, and health care costs.
- The financial market forces are working entirely against coal to the point where, financially, coal is simply the wrong choice for investors.
- Theologically, coal divestment offers a moral response to caring for the most vulnerable among us as well as to paving a pathway towards greater sustainability for future generations.

The health sector's divestment from coal may be largely symbolic since hospitals and health plans do

not have major holdings in coal companies. But this public and moral action is central to health care's mission, and perhaps even more important as a demonstration of leadership from the health sector.

When health care institutions divested from tobacco because it was contradictory to their healing mission, they also invested in aggressive public health campaigns to rid tobacco from their own facilities and implement smoking cessation programs for their employees, patients, and communities.

In the same way, divesting from coal should parallel health care's aggressive efforts to reduce its own climate footprint and strengthen alignment between its healing mission, values, and investment policies.

Throughout its lifecycle, coal is an enemy of public health at a global scale. Investing in coal is not consistent with the mission of the health sector. Divestment is an achievable, meaningful, and timely demonstration of leadership and commitment to individual, community, and planetary health.



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Coal's Harm to Human Health and the Health Sector's Duty to Divest

BY PETER ORRIS, MD, MPH

Coal causes widespread and significant harm to human health. Responsible for 39% of all electricity generated, it is the leading source of energy in the United States. But that energy comes at a cost.

The use of coal to produce electricity increases illness and death in the general population through air pollution. When coal is burned in power plants – to generate steam which spins turbines and creates electricity – it produces airborne pollutants of particulate matter, sulfur dioxide, oxides of nitrogen, carbon dioxide, mercury, arsenic, chromium, nickel, other heavy metals, acid gases, hydrocarbons, and varying levels of uranium and thorium in fly ash.

As a result, coal-fired power plants are among the most polluting industrial facilities on the planet. A 2010 study by the Clean Air Task Force estimated that air pollution from these plants account for more than 13,000 premature deaths, 20,000 heart attacks, and 1.6 million lost workdays annually – costing Americans more than \$100 billion each year.

If health and environmental damages were included in the price of coal, it would triple the cost of electricity for U.S. consumers. Yet the full impact of coal is not felt on wallets, it is born by the health of individuals and communities.

BURNING COAL IS HARMFUL TO RESPIRATORY HEALTH

Specific pollutants from burning coal that cause a negative health effect on the respiratory system include particulate matter (PM), sulfur dioxide (SO₂), and oxides of nitrogen (NO_x) such as NO₂. The U.S. Environmental Protection Agency (EPA) found that exposure to small particulate matter

(PM_{2.5}) likely causes respiratory symptoms, the development of asthma, and decrements in lung function in children. Long-term exposure is also linked to the development of lung cancer.

Exposure to SO₂ emitted by coal burning power plants increases the severity and incidence of respiratory symptoms of those living nearby, particularly children with asthma. SO₂ inhalation can cause inflammation and hyper-responsiveness of the airways, aggravate bronchitis, and decrease lung function. There is a significant association between community-level SO₂ concentration and hospitalizations for respiratory conditions and asthma emergency department visits, particularly among children and older adults.

THE EMISSION OF PARTICULATE MATTER CONTRIBUTES TO THE GLOBAL BURDEN OF CARDIOVASCULAR DISEASE

Coal-fired power plants contribute to the global burden of cardiovascular disease primarily through the emission of particulate matter. The World Health Organization (WHO) estimates that worldwide, 5% of cardiopulmonary deaths are due to particulate matter pollution. Long-term exposure to PM_{2.5} has been shown to accelerate the development of atherosclerosis and increase emergency department visits and hospital admissions for ischemic heart disease and congestive heart failure.

The EPA reports that a majority of the studies it reviewed found a 0.5-2.4% increase in emergency department visits and hospital admissions for cardiovascular diseases per each 10 µg/m³ increase in PM_{2.5} concentrations. A 2007 scientific review found an 8-18% increase in cardiovascular deaths

per 10 µg/m³ increase in PM_{2.5} concentration in the United States. Recent studies in China and Latin America confirm the significant link between outdoor air pollution and cardiovascular events.

AIR POLLUTION FROM COAL IS LINKED TO LOW BIRTH WEIGHT

A review of air pollution's effects on pregnancy outcomes found that SO₂, PM, NO₂, CO, and ozone pollutants were associated with low birth weight. Infant mortality was shown to increase with increased coal use in countries such as Chile, China, Mexico, Thailand, Germany, and Australia.

REDUCING COAL USE LEADS TO SIGNIFICANT HEALTH BENEFITS

Reducing greenhouse gases from burning coal and other fossil fuels has long-term health and economic benefits. As part President Obama's Climate Action Plan, the EPA proposed a new "commonsense plan" to cut pollution from power plants. These limits would have wide-ranging positive health outcomes, including: providing \$93 billion in climate and public health benefits; preventing 6,600 premature deaths, 150,000 asthma attacks in children, and 490,000 missed work and school days; and preventing 3,300 heart attacks and 2,800 hospital admissions.

The EPA also found that every dollar spent complying with the Clean Air Act saved \$25 in health care costs, thanks to reductions in premature deaths and poor health outcomes. Those savings amounted to \$22 trillion since 1970, the first year of the Act.

HEALTH CARE CALLS FOR END TO COAL

Health institutions are distancing themselves from coal. Gundersen Health System was the first U.S. health system to freeze any future fossil fuel investments. HESTA Australia, a health care industry retirement fund worth \$29 billion, is also freezing future coal investments, and the British Medical Association is divesting from fossil fuels entirely.

This momentum was evident during the 2015 World Congress on Public Health in Kolkata, India, where the world's public health associations advocated

"a rapid phase-out of coal" to limit further global warming and prevent illness and death associated with air pollution. One of the strongest to emerge from the global public health community, the statement calls for an investment in healthy communities by reducing the use of coal for electricity production, divesting from coal and other fossil fuels, and transitioning to renewable energy.

Health systems have both a responsibility to mitigate their contributions to climate change as well as a unique opportunity to become powerful beacons of change. The U.S. health sector is the second-largest consumer of energy in the country and makes up nearly one-fifth of the country's GDP. By divesting from coal and other fossil fuels and ramping up investment in energy efficiency and clean energy generation, the health sector will establish a crucial moral standard that drives the global economy towards healthier communities worldwide.



Dr. Orris, Professor and Chief of Occupational and Environmental Medicine at the University of Illinois Hospital and Health Sciences System, has four decades of practice experience in Occupational and Environmental Medicine in the Chicago area. He is a fellow of the American College of Physicians and the American College of Occupational and Environmental Medicine. He also holds Professorships on the faculties of the Northwestern and Rush Medical Schools in Preventive and Internal Medicine.

COAL'S HARM TO HUMAN HEALTH AND THE HEALTH SECTOR'S DUTY TO DIVEST

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Part 1 in a series of white papers making the health, financial, and theological case for coal divestment.

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“Coal is Simply the Wrong Choice”: The Financial Case for Divestment

BY AMELIA TIMBERS AND DAVID SHUGAR

The coal sector is experiencing financial trends and shifts in market fundamentals that concern investors. Coal’s financial performance has been so poor that many major pensions have divested coal in normal rebalancing processes as they shed poorly performing assets.

In the United States, coal has irrevocably lost demand and investment to cheaper, cleaner alternatives like natural gas and renewable energy. Laws to protect the public from the devastating health and environmental effects of coal combustion have raised the cost of operating coal plants and no investor-owned utilities are adding new coal plants. Indeed, utilities are focused on determining the appropriate retirement schedule for existing plants.

The power sector has invested billions of dollars in retrofits and technology to switch to natural gas that makes a future return to coal highly unlikely. The situation is similar abroad. For every new coal plant built around the world, two have been shelved or canceled since 2010. This rate is significantly higher in places like Europe, South Asia, Latin America, and Africa, and it has reached a six-to-one cancellation rate in India since 2012. In China, coal use declined in 2014 while renewables capacity expanded and the economy grew by 7.3 percent.

COAL DEMAND AND PRODUCTION IS IN DECLINE WORLDWIDE

Future coal demand and production is uncertain and has been declining in many markets. From 2008 to 2012, coal generation in the United States decreased from 48.2% of the electricity mix to 37.4%, a sharp drop of 10.8% in just four years. The decline in coal use for electricity has also decreased total U.S. coal

consumption by 17.6% during the same time frame. The future of U.S. coal use is bleak. Utilities claim that the EPA Clean Power Plan could result in “billions of dollars of stranded [coal] assets”, and additional coal plant closures beyond the approximately 60GW already slated for closure by 2020.

Globally, things are not much better for coal. The European Union reduced coal consumption 17.8% from 1995 to 2013. China, which has been the largest contributor to coal demand in recent years, may be nearing peak coal demand as it adopts clean energy policies. Organizations including Citibank, the Natural Resources Defense Council, and the Energy Resource Institute predict that China’s coal demand could peak by 2020 or earlier. Additionally, if world governments adopt the 2-degree global warming limit, global coal CO2 emissions would need to be reduced nearly 60% (from 2011) by 2035 – undermining long-term coal demand globally.

COAL STOCK VALUES ARE DECREASING

Coal’s equity performance has been poor, and on its own provides a strong incentive to divest to protect portfolios from deeper losses. The coal sector’s financial performance has been hemorrhaging in the past four years, especially among U.S. companies. The Dow Jones U.S. Coal index, which contains some of the largest U.S. coal companies, is now a fifth of its 2011 value, down 81.3%. Once the world’s largest coal company – Peabody – is down to a ninth of its 2011 value, representing losses of 88.7%.

Global coal stocks have had similar poor performance in the past four years. Bloomberg’s global coal index dropped nearly \$40 per share, down \$70 to \$31 since 2011. Similarly, the global coal stock ETF

(electronically traded fund) KOL Market Vectors – Coal decreased 71.62%, even during the S&P 500’s bull market. This means that \$100 dollars invested in the S&P 500 would return \$156 while \$100 invested in the KOL ETF would return \$28, a \$128 difference. Coal is simply the wrong place to locate investments.

STRANDED ASSETS EXPOSE COAL’S FINANCIAL RISK

The global coal industry is at perilous risk of compounding its cash shortfall with write-downs due to stranded assets. A potential \$230 billion of capex spending forecast between 2014-2025 is at risk of becoming “stranded assets”, or assets that become worthless due to market changes. Stranded assets have the potential to further harm the financial performance of coal investments, in addition to coal’s diminished price resulting from excess production and reduced demand. A study by Energy Transition Advisor and the Carbon Tracker Initiative estimates that half of Chinese coal production, two thirds of the global export market, and a substantial portion of the U.S. coal market is currently producing coal at a loss below its break-even cost. Assets may also be stranded by increasingly stringent environmental regulations, making coal investments unprofitable.

INVESTORS RECOGNIZE RISK AND ARE TAKING ACTION

Financial institutions are recognizing risk of the falling coal market and coal’s stranded asset risk and are taking action. A coalition of over 340 global investors (managing \$24 trillion) is calling for a low-carbon and climate-resilient economy in coordination with United Nations. Already, over 180 institutions have committed to completely divesting from fossil fuels, representing \$50 billion in assets under management. Large institutions are also divesting specifically from coal holdings, including Storebrand (\$74 bill), Swedish State Fund AP2 (\$35 bill), Scottish Widows Investment Partnership (\$233 bill), and the Stanford University Endowment Fund (\$18 bill). The Bank of England and the Norwegian Sovereign wealth fund have both publicly acknowledged the risks of stranded carbon assets, and the World Bank has stop investing in coal projects in most circumstances.

2014 saw several health care institutions commit to divesting from their coal holdings. Gundersen Health System, a well-known health system based in Wisconsin, became the first U.S. hospital system to announce it is freezing future fossil fuel investments. HESTA Australia, a health care industry retirement fund worth \$29 billion, is similarly freezing future investment in coal. The British Medical Association also announced its divestment from fossil fuels.

Given the market forces working against coal, health systems should divest from coal and other fossil fuel holdings and instead use their financial resources to invest in clean energy solutions.



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“COAL IS SIMPLY THE WRONG CHOICE”: THE FINANCIAL CASE FOR DIVESTMENT

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Part 2 in a series of white papers making the health, financial, and theological case for coal divestment.

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The Theological and Moral Implications of Coal Divestment

BY REV. DR. LESLIE COPELAND-TUNE

While there are compelling health and socioeconomic reasons to divest from coal, there is also a definitive theological and moral imperative for taking action. Coal divestment is consistent with the Christian faith and our beliefs in the sanctity and dignity of human life, justice, faithful stewardship of creation, serving and caring for the most vulnerable among us, and working for a more sustainable future for generations to come. Our faith supports the divestment of all coal holdings because of its devastating impacts on human beings and the harm it causes to nature itself.

THROUGHOUT ITS LIFE CYCLE, COAL DEVASTATES GOD'S CREATION

Whether it is mining and cleaning it, using it for electricity, or transporting and disposing of it, coal emits dangerous toxins that jeopardize the human life and pollutes our air, water, and land. We are called to live in peace and harmony with God's creation, not to destroy it. Yet, our use of coal has caused irreparable damage to the earth and suffering for God's people, particularly the most vulnerable. Mercury emissions have brought harm to the unborn, while air pollutants have impaired the lives of children, the elderly, and other vulnerable people. In addition, the global impact of climate change from the use of coal has had devastating effects on all of creation from destructive weather events to food security issues.

These impacts require our response and our action. The Apostle Paul instructs us in his letter to Philippi: "Let each of you look not to your own interests, but to the interests of others" (Philippians 2:4). Coal divestment is one way we respond to this call and restore the dignity of those whose lives have been endangered by the impacts of global climate change.

WE ARE RESPONSIBLE FOR PROTECTING GOD'S CREATION

We recognize that "The earth is the Lord's and everything in it, the world, and all who live in it" (Psalm 24:1). This scripture reminds us of the sanctity and dignity of human life and that as good stewards we are to protect and care for God's creation. It also lets us know that caring for our earthly home is part of our responsibility to one another, our neighbors, and to future generations. Our current trajectory will only result in further damage to humans and to nature if we do not take decisive steps toward change. Continuing to invest in coal negates our responsibility to care for the earth and for all of God's people. Instead, we have a moral duty to invest our resources in renewable and sustainable energy sources that support the common good and protect God's creation.

OUR CARBON FOOTPRINT DISPROPORTIONATELY IMPACTS THE LIVES OF THOSE WHO ARE LEAST RESPONSIBLE FOR CAUSING IT

Our faith teaches us that we are to care for the poor and the needy – those who are most vulnerable in our society. This mandate is consistent throughout Christian social teachings and in the life of Jesus. Consider Solomon's words of wisdom in the book of Proverbs that warn us not to oppress the poor in order to increase our own wealth (Proverbs 22:16) and Jesus' teachings that what we do to the least of these, we also do to him (Matthew 25:40). It would be unjust for us to reap a financial benefit from companies whose bottom line negatively impacts the people and communities we serve.

COAL DIVESTMENT EMBRACES THE HEALING MINISTRY OF JESUS

Christians embody caring for the most vulnerable through our work in poor communities in our nation and around the world. It is an outward expression of our faith that is also reflected in the mission of our hospitals. Coal's impact on individuals and communities undermines the work we do to promote good health and wellbeing in the places where we serve, especially for the poor and disenfranchised. Ongoing investment in coal holdings also contradicts our mission to further the healing ministry of Jesus and it uses our resources to strengthen an industry that is diminishing the quality of life in the very communities where we are working to improve it.

FAITHFUL STEWARDSHIP REQUIRES US TO MAKE SUSTAINABILITY A PRIORITY AND COAL DIVESTMENT A NECESSITY

In too many instances, particularly in the United States, our behavior has suggested that there are no limitations on the resources that are available to us and no consequences for haphazardly using those resources. Yet, the global climate change crisis confirms biblical teachings that our actions do have consequences. Severe weather events leading to injuries and illnesses as well as adverse public health outcomes from fossil fuels are a part of the negative impacts our actions have had. The Apostle John asks then answers the question, "How does God's love abide in anyone who has the world's goods and sees a brother or sister in need and yet refuses help? Little children, let us love, not in word or speech, but in truth and action." By no longer investing in an industry and practices that ultimately harm God's creation and the people we are called to serve, we demonstrate our love to our brothers and sisters, even as we live out our mission and the core values of our faith in word and deed.

Pope Francis, who will release an encyclical on climate change this year that will likely call us to deeper reflection and action on this issue, recently called Christians "custodians of creation". He said, "Creation is not a property, which we rule over at will; or, even less, is the property of only a few: Creation is a gift, it is a wonderful gift that God has given us, so

that we are for it and we use it for the benefit of all, always with great respect and gratitude."

Along with the many other initiatives that we have employed to secure a more sustainable and environmentally responsible future, coal divestment is our moral response to caring for our neighbors and those who are the most vulnerable among us as well as to paving a pathway to greater sustainability for future generations. It is a step toward fully embracing and caring for God's gift of creation.



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THE THEOLOGICAL AND MORAL IMPLICATIONS OF COAL DIVESTMENT

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