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# What economics teaches us about environmental protection

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**LOCAL VOICES**

# What economics teaches us about environmental protection

*Editor's Note: This is the fourth and final part in a series on climate change written by UMass Dartmouth associate professor Chad J. McGuire. Part 1 (Jan. 4) focused on sea-level rise and flood insurance. Part 2 looked at public and private costs of protecting the environment (Jan. 11). Part 3 (Jan. 25) discussed environmental policy in relation to the voting public. Part 4 explores the role of economics in environmental protection. Please share with us your feedback on the series.*

**By Chad J. McGuire**

A basic premise in economics is that companies should pay all of the costs that are incurred in the process of producing their goods and services. The reason? By incurring all of the costs in production, the price charged by the company will reflect those costs. The price consumers pay, then, will also reflect all of the costs incurred in production. This leads to price efficiency, a major goal in free-market economic principles.

Unfortunately we don't always include the costs to the environment in the production process. Take, for example, electricity generation, which can be accomplished using different inputs. Coal-burning power plants, using coal as the "energy input," burn coal to heat water to create steam. The steam turns the turbine creating electricity. Natural gas plants burn gas as the input. Hydroelectric power plants use water. Wind turbines use wind as the input to directly turn a turbine. Solar power generators are a bit different. The sun excites electrons on the solar panel creating electricity. Depending on the inputs used, the costs to the environment, and thus human well-being, vary. Some inputs have environmental costs that are not considered in the production process, while others capture most, if not all, environmental costs.

Coal is generally considered a very cheap form of electricity generation. That is because the cost of producing coal (something that already exists) generally includes finding the coal, digging it up and transporting it to buyers like coal-fired power plants. Coal is abundantly available in the United States so it is easy to find. It can be dug up through mining operations, which can be dangerous to human safety, but the labor wages paid for mining are low. An alternative (safer for miners) is something called mountaintop removal, where the coal seams are exposed by blowing up the tops of the mountains where the coal is located. In either case, the cost of obtaining the coal is relatively cheap. Finally,



**This photo from 2008 shows a mountaintop removal coal mining site at Kayford Mountain, W.Va. with Coal River Mountain, left, in the background. The process keeps mining cost low, but the cost to the environment isn't reflected in the price for the resource or the price paid for electricity generated by coal. (AP PHOTO/JEFF GENTNER)**



**This photo from 2000 shows mountains near Kayford, W.Va., one of which has been flattened for the mining of coal. If the cost to the environment of burning coal were included in the price of electricity, rates could be as much as triple what they are today. (AP PHOTO/BOB BIRD)**

because it is located here in the U.S., it is very cheap to transport the coal to those who want to use it.

Electricity generators pay for the costs in producing the coal (finding it, digging it up and transporting it). But they don't pay the costs to the environment (Google "mountaintop removal" to get a sense of some of the environmental costs). Generators also don't pay all of the costs to the environment in burning the coal. Burning releases sulfur and compounds in the coal into our atmosphere, resulting in acid rain and other problems. But these costs are not included in the cost of the electricity; they are passed on to the environment (and any humans who might be affected). This violates the basic tenet of economics described at the beginning of this article: Coal-burning electricity generators were not paying for all

of the costs incurred in the process of producing the electricity.

The passage of the Clean Air Act in the 1970s began to address the environmental harm caused by coal-burning power plants by, in part, requiring the adoption of technologies to filter out many of the pollutants that were a byproduct of burning the coal. In many ways the Clean Air Act required the costs of producing electricity through burning coal to be included into the production process as envisioned in ideal economic conditions. The costs of implementing the pollution control technologies was now added on to the costs of producing the electricity, allowing the market to reflect a more realistic cost of using coal.

But coal burning has other issues beyond the pollutants mentioned. In recent decades, we have come to understand



**The coal-fired Plant Scherer is shown in operation last June in Juliette, Ga. Locally, before the coal-fired Brayton Point plant in Somerset installed cooling towers like those pictured, 1 billion gallons of 96-degree water was pumped into Mount Hope Bay per day. (AP PHOTO/JOHN AMIS)**

that burning coal releases carbon into the atmosphere, which intensifies a greenhouse effect leading to climate change. Because of the widespread damage that can be attributed to climate change, the "costs" associated with burning coal are expansive. But we have yet to fully internalize the carbon costs of coal into the price charged for coal. If we did, coal would undoubtedly be a lot more expensive than what it costs today.

Why is this important? Because we often think of coal as "cheap" and therefore preferable to other forms of electricity generation, like wind and solar. But coal is really not cheap when all of the costs to produce and use coal are internalized into the production process. An academic study in 2011 published in the peer-reviewed journal *American Economic Review* found

the environmental damages of coal, on average, were about three times the amount of the value added by the use of coal for electric power generation. While the actual math is more complicated, this study would suggest the rates of electricity produced by coal should be approximately three times its current amount. If this were actually the case, most of us would be running to choose those "alternative" sources of electricity that comparatively seem expensive.

The point here is that using the environment as a place to externalize costs does not really match the ideal of our free-market system. The economic principles underlying our free market state that price efficiencies can only occur when all of the costs of production are reflected in the price of the product or service created. When we externalize

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production costs onto the environment, we create a price distortion — a kind of subsidy. The environment carries the cost of that subsidy, but the environmental costs (damage) remain and actually accrue over time. This hidden subsidy makes coal seem price competitive to other sources of electricity generation. But this is a distortion. Rather than paying for the cost to the environment (allowing alternatives to compete on a true cost basis), we accrue them. The problem now is that we are beginning to pay for these costs through climate change. Heat waves, droughts, sea level rise and increased storm activity place these costs into other accounting categories, but they are real.

The issue of hidden subsidies is nothing new in our market system. Depressed wages provide subsidies for retail and other industries to offer goods and services below actual costs of production. We often hear in the news the need to increase the minimum wage to a level that reflects a "living" wage. If the living wage represents the true cost of production, then the prices we pay likely reflect a market distortion and are lower than they should be. Protecting the environment is no different. If we can include the true costs of production (include environmental harm) into the prices we pay, then we are better positioned to make informed decisions that reflect honest information.

My recommendation is that we follow our great American ideal of free-market economics. Let's put the costs of carbon back into the production process so the price reflects true costs. We can then make informed decisions, through price signals, about the relative value of one product over another. And if we make our environment a little safer today and tomorrow, then so much the better.

*—Chad J. McGuire is associate professor of Environmental Policy and chairman, Department of Public Policy, University of Massachusetts, Dartmouth.*

**YOUR VIEW**

# The US and Saudi Arabia — star-crossed sweethearts

**By G. Jefferson Price III**

If President Barack Obama had waited a few more weeks to meet up with King Salman bin Abdulaziz al Saud, who succeeded his brother Abdullah on the throne of Saudi Arabia last week, they could have marked the 70th anniversary of the first meeting between a Saudi monarch and a U.S. president.

That meeting occurred Feb. 14, 1945, between President Franklin Roosevelt and King Abdulaziz ibn Saud, the first king of modern Saudi Arabia, who was transported from the Saudi port of Jidda aboard a U.S. Navy destroyer to the secret rendezvous with Roosevelt awaiting him aboard a U.S. cruiser in the Great Bitter Lake of the Suez Canal.

Roosevelt was on his way home from Yalta, the Crimean resort town where he had held what was to be his last summit meeting with the leaders of America's allies in World War II, Josef Stalin of the Soviet Union and Prime Minister Winston Churchill of Great Britain.

Roosevelt's chief reason for meeting the king was to secure advantages for U.S. oil interests over those of Great Britain in

the exploitation of the vast oil resources of the Saudi kingdom. They could not have picked a more appropriate date than St. Valentine's Day for the beginning of what would abide as one of history's most enduring love affairs between two countries whose cultures were as different then as they are today.

The romance even included a vow quickly broken.

The cultural differences were stark enough in this early meeting, turning the transport of Ibn Saud and his party into a bizarre challenge for the commanders of U.S. naval ships in the final days of World War II.

Arranged in the utmost secrecy, Ibn Saud was to be taken to Roosevelt from Jidda aboard the USS Murphy. The Saudi king showed up with an entourage of some 200, including women from his harem, according to published descriptions of the voyage by Col. W.A. Eddy, the U.S. minister to Jidda, and Capt. John S. Keating, commander of the destroyer squadron that included the Murphy.

Both Americans were appalled by the prospect of throwing together the king's harem and the all-male crew of the Murphy who had been

at sea and at war for more than three years. Equally appalling, in addition to his human entourage the king wanted to transport with him enough live sheep to guarantee that Islamic dietary laws restricting consumption to freshly slaughtered livestock would be followed.

The human entourage was ultimately reduced to 48 people with no women, but including coffee servers, cooks and six huge Nubians with swords. The animal cargo was reduced from 100 to seven. "As the Murphy steamed out of Jidda harbor, to the amazement of the sailors, one of the sheep was already being skinned on the fantail of the destroyer," Eddy recalled.

In the two-night and a full day voyage, the king and his entourage stayed and slept under tents and over carpets that had been laid down on the deck of the Murphy. The king sat on a throne all day facing the forward deck except for the six times a day when he was called to prayer and faced toward Mecca, whose direction would be determined by the Murphy's navigator.

Roosevelt and Ibn Saud seem to have immediately warmed to each other. In an exchange of gifts, the king gave Roosevelt



**U.S. President Franklin D. Roosevelt and King Abdul Aziz Ibn Saud discuss Saudi-U.S. relations aboard USS Quincy in the Great Bitter Lake north of the city of Suez, Egypt, on Feb. 14, 1945. (AP PHOTO)**

an Arab robe of camel hair embroidered with gold thread, hand-painted bottles of perfume and a jewel-encrusted sword and dagger.

Learning that the king was virtually immobilized by various infirmities, Roosevelt gave him one of his spare wheelchairs. He also gave him a DC-3 airplane equipped with a throne that swiveled so he could face Mecca at any time without standing.

But Roosevelt could not move Ibn Saud on the issue of Jewish immigration to Palestine. Ibn Saud repeatedly rejected Roosevelt's assertions that the Jews of Europe deserved a safe haven in Palestine after the horrors of the Holocaust.

"Let the Germans pay," Ibn

Saud told Roosevelt, according to Eddy's account of the meeting. "Amends should be made by the criminal, not the innocent bystander. What injury have the Arabs done to the Jews of Europe? It is the Christian Germans who stole their homes and lives."

Roosevelt did not agree with this formulation, but he did promise that with regards to the future of Palestine, which was then under British mandate, his government would not act in a way that would offend Arab sensitivities.

On April 5, 1945, Roosevelt sent a letter to Ibn Saud confirming the promise he had made aboard the Quincy.

"Your Majesty will recall that on previous occasions

I communicated to you the attitude of the American Government toward Palestine and made clear our desire that no decision be taken with respect to the basic situation in that country without full consultation with both Arabs and Jews. ... [D]uring our recent conversation I assured you that I would take no action, in my capacity as Chief of the Executive Branch of this Government, which might prove hostile to the Arab people."

Seven days after that letter was sent, Roosevelt was dead. Harry S. Truman became president and Roosevelt's promise was set aside in favor of a policy that exists to this day.

In 1947, facing down critics warning him against a bias in favor of the partition of Palestine and the creation of a Zionist state, Truman explained: "I'm sorry, gentlemen, but I have to answer to hundreds of thousands of people who are anxious for the success of Zionism. I do not have hundreds of thousands of Arabs among my constituents."

*—G. Jefferson Price III is a former Middle East correspondent and foreign editor of The Baltimore Sun.*