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The Costs of Going Green

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Groundbreaking advancements in technology over the past two decades have introduced cleaner, renewable energy sources into the mainstream marketplace for consumer energy. Be it the exponential growth of global wind power capacity or the burgeoning adoption of electric hybrid vehicles, the beginning of the 21st century has been marked by revolutionary innovations in the energy sector.

However, as of now, these environmentally-friendly sources of energy are often more expensive and less reliable for consumers than traditional sources such as coal and other fossil fuels. In a free marketplace, cost-conscious customers will often overlook the potential long term benefits of clean energy and instead opt to buy a cheaper, but less sustainable, appliance. In order to induce citizens to adopt green energy in their daily lives, governments at both the state and federal level have created numerous programs and regulations aimed at lowering the relative costs of sustainable energy and discouraging the use of fossil fuels.

While these policies are well-intended, with the explicit purpose of shifting energy consumption to more environmentally-friendly means, the undue costs of government policy can sometimes greatly exceed the benefits, making intervention more costly than the initial market failure.

A Legitimate Role for Government?

Advocates for state intervention in energy markets often claim that government regulation plays a legitimate role because of the presence of negative externalities, or situations where the consumption or production of a certain good has an adverse impact on bystanders who are not the consenting buyer or seller in the given transaction. In an interview with the HPR, Joseph Aldy, associate professor of public policy at Harvard University's Kennedy School of Government, affirmed the necessity of government intervention to address externalities caused by energy consumption, stating that "we see socially harmful high levels of local air pollution and carbon pollution because people don't bear the full cost of those emissions."

Because the “external” costs of this good are not completely internalized by the involved parties, its market price is lower than its actual cost to society. Therefore, the government seeks to address this mismatch between private and social costs by implementing policies such as a tax equal to the difference of these costs. Aldy held that because of this failure of markets, “there’s always going to be a role for the state in the power sector.”

However, a corrective tax is only considered efficient to the point where it equates the private and social costs. Given the difficulty of determining this equilibrium before the fact, the costs of government environmental programs often exceed any received benefits.

For instance, a 1999 report demonstrates the potential shortcomings of intervention when costs are unknown before the fact. This study examines the efficacy of the federal EPA Superfund, a program “responsible for cleaning up some of the nation’s most contaminated land” and averting cases of cancer for local populations. This policy was an attempt to address the negative externality of toxic waste disposal. The authors found that at “the majority of sites the expected number of cancers averted by remediation [was] less than 0.1 cases per site and that the cost per cancer case averted [was] over \$100 million.”

At first glance, it may seem uncompassionate, or morally repugnant, to try to express the value of a human life in financial terms; however, within the field of economics it is a useful academic practice. In a recent interview,. Jeffrey Miron, senior lecturer and director of undergraduate studies in the Department of Economics at Harvard, indicated to the HPR that economists have long placed a dollar figure on human lives. According to the EPA, which provides one of the higher valuations, the average value is around \$9 million.

This is not to say that all externalities should be regarded as trivial. “What it comes down to is the empirical question about how much we are, due to policy intervention, spending to reduce health risk or climate change risk and how much that compares to the benefits,” explained Aldy. Instead of leaving these abstract words — “risk,” “benefits,” “value” — up to the subjective interpretation of the individual, economists quantify these measures in order to objectively and empirically analyze the efficiency of a given policy, so that policy is driven by evidence, and not emotion.

In the case of the EPA Superfund, it is evident that the cost of intervention greatly outweighs the benefit, as not even one case of cancer was averted per site on average, and the cost of each case averted was ten times greater than the modeled benefit.

Therefore, at least from an economic efficiency standpoint, the costs of intervention can, and often do, exceed the benefits. Not all interventions are created equal; while they might all share the same noble intention — mitigating the adverse health risks of pollution — they do not all make sense economically. Following the advice of Aldy, policymakers should weigh their legislative goals against the costs of intervention in order to pursue less wasteful public policy.

Mandates and Incentive Programs

A common way that the government has tried to steer consumers towards less harmful energy sources is through mandates and incentive programs. A mandate is a “command and control”

regulation, which sets the legal standards of consumption for a certain type of energy. For example, the Energy Independence and Security Act of 2007 established a principle that all home-use light bulbs “had to use about 25 percent less energy,” effectively banning the use of the then-common incandescent light bulb and leading to the more widespread adoption of CFL and LED light bulbs.

By contrast, an incentive program denotes a state-sponsored subsidy created to help people purchase more environmentally-friendly appliances. These are prevalent at both the state and federal levels, and subsidize a range of appliances from electric vehicles to washing machines.

Incentive programs are often hailed as a better policy alternative to mandates because they ultimately preserve consumer choice, while still nudging people towards more energy efficient goods by lowering their market costs.

Patrick Michaels, director of the Center for the Study of Science at the Cato Institute, disagrees with this standard interpretation, however. “One is just a softer form of the other ... I call it ‘free-market socialism,’” he quipped to the HPR in a recent interview. “The optimal solution is no solution ... I don’t think there has to be a law.”

Both mandates and incentive programs are costly. By regulating energy efficiency standards, these policies increase the production costs of manufacturers, which are in turn passed on to consumers through higher prices. Subsidies are often costly for the sponsoring government and can distort the markets in which they are given.

There is also little evidence that they achieve their desired goals of reducing overall harm to the environment. According to a Dartmouth study, the majority of statewide subsidies to incentivize the purchase of electric vehicles “ ... [make] society as a whole worse off” because local air pollution damage is simply “exported” to other states, owing to “the distributed nature of electricity generation.” Simply, in harnessing electric energy, fossil fuels are burned anyways. By incentivizing the use of electric cars, states are simply substituting clean energy use in their state for more harmful energy production in another state.

In this instance, more emissions are released into the atmosphere through power generation on average than if people were to drive gasoline-powered vehicles. Thus, by encouraging the purchase of electric vehicles through subsidies, state governments inadvertently contribute to the very problem that they are trying to solve.

Michaels suggested that policymakers would do better to encourage innovation, rather than forcing something onto consumers that is against their interests. “There are clear markets for efficient things,” he stated. “Everybody is in search of a better mousetrap — that also applies to energy.”

Currently, the problem with leaving the energy sector up to the market is that the private costs for traditional fossil fuels, which generate negative externalities, are lower than those of clean sources. Therefore, taxes on fossil fuels or clean energy subsidies may be economically efficient in the sense that they are correcting the externality.

It seems, however, that this price parity between traditional sources of energy and cutting edge, clean energy is fast approaching. A recent report notes that by 2020, “all the renewable power generation technologies that are now in commercial use are expected to fall within the fossil fuel-fired cost range.” When this occurs, there should be no economically sound argument for continuing subsidies — consumers will adopt renewable power because it will be in their economic best interest to do so, demonstrating the effectiveness of markets in correcting social problems through innovation.

Crowding Out and Buying In

This desired innovation is less likely to occur, however, in the event of excessive government intervention. Because mandates, regulations, and taxation are costly to businesses, they generate deadweight loss, or market inefficiencies that arise due to intervention. This leaves firms with less available capital to devote to research and development. On the other hand, “[i]f industry, and therefore people, kept their money, then they would invest it in technologies of their choice ... and it is the efficient technologies that are advantaged [in this market],” said Michaels.

It is this private enterprise, and not government control, that is driving innovation in the tech sector. Take, for instance, the case of NET Power, a Texas energy startup that has successfully created a zero-emissions power plant using natural gas. NET power is able to “produce emission-free power at about \$0.06 per kilowatt-hour ... about the same cost as power from a state-of-the-art natural gas-fired plant — and cheaper than most renewable energy.” By allowing private businesses to operate free from unnecessary regulations or costs, governments can work towards addressing environmental issues without inhibiting the growth that drives innovation in the energy sector.

As firms experiment and develop cheaper, more effective ways to deliver energy, the forces of the market, and not of the law, will efficiently bring about sustainability in a way that regulation simply never could. While subsidies and corrective taxes may promote the use of clean energy in the short run, these interventions come at a cost to both taxpayers and entrepreneurs.

Technological innovation, on the other hand, is driven by competing private companies in a marketplace, which will allow for clean energy to naturally reach price parity with fossil fuels, ultimately leading to its widespread adoption. Policymakers should step out of the way of progress, and allow entrepreneurs to usher in a new century of American energy innovation.