

GREEN JOBS

Not a Black and White Issue

Is saving the environment the best way to boost employment?

BY JESSIE ROMERO

Most scientists agree that the Earth is warming and the oceans are rising — a fact they attribute largely to carbon dioxide emissions. The United States emits roughly 6.7 billion metric tons of carbon dioxide each year, about one-fifth of the world's total. At the same time, 12 million people are currently looking for work, and millions more are either underemployed or have dropped out of the labor force entirely. So why not put those people to work building a new, green economy? It is a compelling vision: millions of people employed building wind farms, retrofitting buildings to make them more energy efficient, or designing electric cars.

Investing in such “green jobs” is viewed by many as a win-win-win situation. Green industries will create more and better jobs relative to other industries; investing in new technologies will plant the seeds for future innovation and productivity gains; and these new industries will help conserve natural resources and reduce greenhouse gas emissions.

Green jobs were a centerpiece of the \$787 billion American Recovery and Reinvestment Act of 2009 (ARRA), and many federal, state, and local policies are premised on the link between environmental policy and economic results. But that link isn't entirely clear, and policies that

attempt to achieve both economic and environmental goals might not be the most effective way to achieve either of them.

What Does “Green” Mean?

Before you can create a green jobs policy, you have to know what a green job is. But that's not a simple task. “If we think about someone putting solar panels up on roofs, you could say, ‘Well sure, for sure that's a green job,’” says Robert Pollin, an economist at the University of Massachusetts Amherst. “On the other hand, that person is probably an electrician who is spending 70 percent of his or her time doing something other than putting up solar panels.” Another question: If a job is not directly related to green output — such as the accountant at a solar panel firm — should it be counted as green?

The answer is “yes,” according to the Bureau of Labor Statistics (BLS), which began collecting information on green jobs in 2010. (The BLS ended the program in March 2013 in response to mandatory budget cuts.) The BLS has defined two categories of green jobs: “green goods and services” jobs and “green technologies and practices” jobs. The former are “jobs in businesses that produce goods or provide services that benefit the environment or conserve natural resources” — including that accountant. The latter are “jobs in which workers' duties involve making their establishment's production processes more environmentally friendly or use fewer natural resources.” About 3.4 million people, amounting to 2.6 percent of total employment, had green goods and services jobs in the United States in 2011 (the most recent year for which data are available). About 850,000 people were employed in green technologies and practices jobs. Because these data are gathered via different surveys, there is some overlap between the groups; for example, someone working on a green process at a company that produces a green good would be counted in both surveys.

Thus, green jobs aren't all solar panels and windmills. According to the green goods and services survey, the largest green occupational category, with about 475,000 jobs, is “transportation and warehousing.” The category includes nearly 300,000 city and school bus drivers, who are considered green because they reduce the number of individual drivers on the road. (See chart.) More than 350,000 people are employed in “administrative and waste services,” a category that includes garbage collectors, who in many cities also



Green jobs aren't just solar panels and windmills. In many cities, garbage collectors who pick up recycling are considered green workers.

PHOTOGRAPHY: SHUTTERSTOCK

pick up recycling. Green workers also are found on organic farms, at nuclear power plants, and at steel mills. Only about 5 percent of green jobs are in the renewable energy sector, according to a 2011 analysis by Mark Muro, Jonathan Rothwell, and Devashree Saha at the Brookings Institution, which used a green jobs definition similar to the BLS. The Brookings researchers counted 2.7 million green jobs overall.

More than 350,000 green jobs are in “public administration,” including administering and enforcing environmental regulations — which explains why Washington, D.C., has the highest share of green jobs in the country, 5.1 percent. (California has the highest absolute number of green jobs with 360,000.) In Maryland, about 3.7 percent of jobs are green, and in the rest of the Fifth District the share is close to the national average of about 2.6 percent.

Nearly half of green jobs are held by workers with a high school degree or less, compared to 37 percent in the United States overall, according to the Brookings report. At the same time, the Brookings researchers found that median wages in the “clean economy” were 13 percent higher than median U.S. wages overall. Green firms don’t necessarily pay more for the same work, but green jobs tend to be in better-paying industries and better-paying occupations, according to Brookings, which suggests that green jobs might offer better opportunities for lower-skilled workers.

Green Policy

Interest in green jobs was especially high during the recession of 2007-2009, when numerous studies proposed green jobs as the cure for a flagging labor market. In 2008, for example, Pollin and several colleagues estimated that \$100 billion allocated to energy efficiency and renewable energy, split among tax credits, direct government spending, and loan guarantees, would generate 2 million new jobs. A 2009 report published by the Peterson Institute for International Economics, a nonpartisan research institution, projected that every billion dollars invested in “green recovery” would generate more than 30,000 jobs. Many other studies were similarly optimistic.

The ARRA stimulus legislation did include about \$90 billion for a variety of environmental initiatives. The chief components were \$20 billion for energy efficiency measures, such as weatherizing homes; \$27 billion in tax credits and loan guarantees for renewable energy; \$18 billion for transit improvements, including building high-speed rail lines; and \$11 billion for modernizing the electric grid. The remainder of the money went toward advanced vehicle development, green job training, and other programs.

It is difficult to determine precisely what effect the stimulus had on the economy, much less what effects can be traced to specific provisions. According to a report by the liberal Economic Policy Institute and the BlueGreen Alliance, an association of labor unions and environmental organizations, the green portions of the bill saved or created 1 million jobs, including indirect and induced jobs. One key assumption of the report’s model, however, was that all

Green Jobs by Occupation, 2011



NOTE: Industries are based on the North American Industry Classification System (NAICS).
SOURCE: Bureau of Labor Statistics “Green Goods and Services” survey

\$90 billion of the authorized funds actually made their way into the economy. But only about half of the money actually has been spent; many agencies and potential recipients found it difficult to comply with the application and reporting requirements. “The stimulus was coming into a situation where the level of government investment was negligible. To go from spending one or two billion to \$90 billion is really hard,” Pollin says. “The standards were pretty high; it took six months just to figure out how to write a spreadsheet.”

Although direct government spending toward green jobs was relatively low prior to the ARRA, the linking of environmental and economic objectives predates the Great Recession. In 2007, for example, Congress created the Advanced Research Projects Agency within the Department of Energy, known as ARPA-E. The agency was modeled after DARPA, the research arm of the Department of Defense, which supported the research that led to the development of the Internet, among other technologies. ARPA-E provides funding to energy projects that are not yet ready for private sector investment. First among the agency’s listed goals is not protecting the environment but rather enhancing the United States’ economic prosperity.

Since 2007, the Department of Energy also has run a loan guarantee program devoted to helping renewable energy projects reach a scale “sufficient to contribute meaningfully to the achievement of our national clean energy objectives,” the first of which is job creation. The program also aims to enhance national competitiveness by ensuring that the United States is at the forefront of developing any new energy technology. Many people point to China’s dominance today in producing solar panels as an example of a missed opportunity for the U.S. manufacturing sector. (See “American Made,” *Region Focus*, Fourth Quarter 2011.) In addition, many experts believe that innovation in one sector lays the groundwork for future innovation in other sectors. “This is a tremendous opportunity for technical innovation, and integrating innovation into the economy,” Pollin says.

The federal government also supports renewable energy industries via production and investment tax credits, which help producers recoup their investment costs. (Oil and gas companies also receive a variety of tax allowances.)

The 20-year-old production tax credit, which covers producers of geothermal, biomass, and wind energy, among other technologies, has been renewed multiple times, most recently at the end of 2012. The fortunes of these industries appear closely tied to the tax credit; Congress has let it expire four times since 1992, and investment fell sharply during each year before it was renewed. Prior to the credit's anticipated expiration in 2012, manufacturers had begun laying off workers; the credit's renewal saved as many as 35,000 jobs, according to Sanjay Mazumdar, an industry analyst and chief executive officer of the consulting firm Lucintel.

An investment tax credit for solar power was established in 2005 and renewed for eight years in 2008. Solar installations doubled the year after the investment tax credit went into effect, and have doubled four more times since then, according to the Solar Energy Industry Association, a trade organization. Consumers also are eligible for a federal tax credit for installing renewable energy products in their homes, which may boost demand for these industries.

All 50 states and the District of Columbia have pursued green business as an economic development strategy, offering some mix of business and consumer tax credits, renewable energy mandates, and green job training programs. In the Fifth District, for example, Maryland has four different incentive programs for businesses toward its goal of creating 100,000 green jobs by 2015. Even West Virginia, one of the nation's largest producers of coal, offers corporate and residential tax credits for wind and solar power.

It's Not Easy Being Green

The relationship between environmental policy and economic growth is far from straightforward, however. One issue is that "green jobs" is a very broad category, as economists Jon Strand and Michael Toman of the World Bank explained in a 2010 paper. For example, labor-intensive policies that can be implemented quickly, such as environmental cleanup projects or energy efficiency retrofits, are effective for short-term stimulus but might not have a large effect on long-term growth. Projects with long-term environmental and economic potential, such as investments in renewable energy or transportation infrastructure, take a long time to scale up and are unlikely to create a lot of jobs in the near term.

The mix of projects in the ARRA illustrates this trade-off. Workers who were hired to weatherize homes or to clean up hazardous waste sites were laid off when the funding for the projects ended. On the other hand, \$8 billion was allocated to 22 states and Washington, D.C., to construct high-speed rail lines, but construction on the nation's first high-speed line won't begin until later this year.

In addition, job gains in the renewable energy sector could be offset by job losses in the fossil fuel industry, as the Congressional Budget Office noted in a 2010 report. It takes time for the labor market to adjust to new conditions; workers might have to move to new locations or acquire new skills, and some workers might not be able to adapt at all.

"Whenever government encourages job creation in one sector of the economy, there's usually going to be job loss in another sector," says John Whitehead, an environmental economist at Appalachian State University in Boone, N.C.

Some critics of green job creation policies agree that green technologies yield relatively high rates of job creation — but they don't agree that this is good for the economy. At present, for example, renewable energy is much more labor-intensive than traditional energy. The jobs created thus are low-productivity jobs, and the high labor content contributes to the energy's high costs. Mandating renewable energy, according to this argument, could decrease productivity and raise costs throughout the economy as a whole.

A large number of green jobs could even be a sign of poor environmental policy. Many green jobs involve cleaning up pollution, "and to a certain extent, this is a very unproductive activity," Whitehead says. "Look at the *Exxon Valdez* oil spill. It created a lot of green jobs. But if firms could get the proper incentives to clean up the pollution before it gets in the air or the water, then it's not going to create many jobs and that would be a good thing."

"It's An Externality, Stupid"

Job creation, long-term economic growth, and environmental protection are all important goals — but that doesn't mean they should necessarily be addressed with the same policies. According to the "Tinbergen Rule," named for the late Jan Tinbergen, a Nobel laureate and economist at the Netherlands School of Economics, for each policy goal there must be at least one distinct policy instrument. Trying to achieve multiple goals with a single tool might prevent policymakers from choosing the most effective tools for each goal. For example, other sectors of the economy might be better targets for short-term job creation, and the best policy to help the environment might not be one that creates a lot of jobs. "Employment policy should be employment policy and environmental policy should be environmental policy," Whitehead says.

Crafting effective environmental policy is complicated, but at base the economics of the problem are simple. In the words of Carlo Cottarelli, the director of the fiscal affairs department at the International Monetary Fund: "It's an externality, stupid — so price it."

An externality is a cost or a benefit that isn't reflected in the price of a good, and thus accrues to a party other than the buyer or seller of the good. For example, the private sector can't fully monetize the benefits of a cleaner environment — a positive externality — so it is unlikely to invest in a socially desirable amount of clean energy. Manufacturers don't bear the cost of the pollution they produce — a negative externality — and thus are likely to produce more of it.

Most economists agree that the government has a role to play in correcting such "market failures." But not all interventions are created equal. With respect to the environment, for example, the government could address

positive externalities by subsidizing new energy technologies. But subsidies often create inefficiencies and unintended consequences in other markets, and are subject to the criticism that the government is attempting to pick winners and losers, a task better left to the market. One way to address negative externalities is via regulation, such as fuel efficiency standards or limits on the use of certain hazardous products. While such regulations can be effective, they could also encourage firms to change their behavior only to the regulated level.

Instead, economists of all stripes agree that the government could have the greatest effect on the environment by putting a price on large negative externalities. A carbon tax, for example, would raise the price of goods and services that use fossil fuels to reflect the high costs of pollution. Demand would shift to other sources of energy, and firms would have an economic incentive to continue reducing their use of fossil fuels. “Basic economics tells us that when you tax something, you normally get less of it. So if we want to reduce global emissions of carbon, we need a global carbon tax,” Gregory Mankiw, an economist at Harvard University

and the chair of the Council of Economic Advisers under George W. Bush, wrote in a *New York Times* editorial. (A carbon tax is an example of a “Pigovian tax,” named after British economist Arthur Pigou, who developed the idea of using taxes to correct negative externalities.) Another way to put a price on pollution is via a “cap-and-trade” system, which limits the total amount of pollutants and issues emissions permits to firms. A cap-and-trade bill passed the U.S. House of Representatives in 2009, but failed in the Senate.

It’s possible that policies to reduce greenhouse gas emissions or conserve natural resources will create more jobs or spur long-term economic growth. Certainly, people and the planet will be healthier for them, and “to the extent that improved air quality or improved water quality will have a positive impact on human health, then that will have a macroeconomic impact through labor productivity,” Whitehead says. But measuring the success of environmental policy by the number of jobs created, rather than by the effect on the environment, could make it more difficult to achieve either goal. **EF**

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FULL HOUSE *continued from page 21*

customers to Maryland, primarily to Maryland Live! “It’s a phenomenon we’ve seen throughout the Northeast,” says Schwartz. “As casinos have proliferated, new jurisdictions have done well but the old jurisdictions have definitely suffered.”

It’s an open question, however, whether or not Maryland can support all the casinos that are scheduled to open. When Maryland Live! opened in June 2012, gambling revenues fell noticeably at Hollywood Casino Perryville and Ocean Downs. The Rocky Gap casino opened in May with about 300 fewer slot machines than originally planned, and Hollywood Casino Perryville recently reduced its number of slot machines by almost 350. “We have too much supply for the demand we have,” general manager Bill Hayles said in a statement. But even Maryland Live! might take a hit; a 2012 study by the DLS with PricewaterhouseCoopers calculated

that nearly half of the revenues from a new casino in Prince George’s County would come at the expense of those in Anne Arundel County and Baltimore.

While the proliferation of casinos poses challenges to the casinos themselves, it could be good for consumers. “For most people who like to gamble, and who view it as a recreation, there is a benefit to being able to gamble closer to home rather than having to travel to Las Vegas,” says Grinols.

Lawmakers tend to be less interested in consumer utility than in creating lots of jobs and tax revenue. In this respect, the evidence is mixed. Still, the fact that casinos might fall short of expectations for economic development doesn’t necessarily mean that they shouldn’t be legalized — but policymakers must carefully weigh the costs and benefits for their own communities. **EF**

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