Center for American Progress

Seven Questions About Green Jobs

Why the most productive jobs of the future will be green jobs

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The United States today faces two tremendous challenges—charting a course to economic recovery and tackling global warming. One straightforward solution goes to the heart of solving both these problems. Launching a bold transition to a clean-energy economy will drive innovation and lay the foundation for sustainable, long-term economic growth. Building this low-carbon economy will also create millions of new "green jobs" broadly distributed across industries and regions of the country.

The Center for American Progress has long championed efforts to create jobs through building a clean-energy economy. We applaud President Barack Obama and his administration for looking closely at how to expand economic opportunity, create middle-class jobs, support business growth, and improve international competitiveness while tackling the challenges of global warming and energy insecurity. This effort to find opportunity in crisis and to use economic recovery as a driver for investment in areas of critical public need is the hallmark of true leadership—and it is long overdue.

Greenhouse gas emissions threaten to attack the most basic systems that are at the root of all economic productivity—food, soil, fresh water, human health, and stable communities. Science tells us that continuing along our current path will bring about a dangerous climate crisis within our lifetimes and severely curtail the economic prosperity and quality of life we endow our children. We must be clear: Inaction in the face of global warming will be catastrophic.

What's more, our overdependence on fossil fuels and our underinvestment in a secure, reliable and clean-energy infrastructure costs our economy dearly. Each year we send hundreds of billions of dollars overseas to import foreign oil. The unreliability of our electricity grid costs the economy approximately $100 billion per year in damages and lost business,[1] and transmission congestion burdens consumers with $22 billion annually in higher energy prices.[2] Our lack of energy diversity not only links our economic growth unnecessarily to ever rising carbon emissions, but it also leaves businesses and consumers more susceptible to dramatic price swings in the price of oil, coal, and natural gas as global demand rises. The status quo is simply too expensive to maintain.

There is a better way forward: Building a green economy that transforms how we produce and use energy. Investments in new technology will access abundant domestic sources of renewable energy, cut costs for consumers and businesses, and build new industries. This clean-energy transformation also will increase economic productivity, boost the skills and incomes of American workers, and leave a legacy of productive public infrastructure that enables long-term innovation and growth. Smart policies to speed this transition will "crowd in" new private capital, create good jobs, and speed economic recovery.

Yet conservatives continue to attack the Obama administration's efforts to foster economic recovery through investments in alternative energy and energy efficiency, taking particular aim at the concept of green jobs. Their favorite target is one of our own studies, "Green Recovery: A Program to Create Good Jobs and Start Building a Low-Carbon Economy," published in conjunction with the Political Economy Research Institute at the University of Massachusetts-Amherst. This report detailed how solutions to global warming and our nation's energy insecurity can be a source of tremendous economic opportunity, good job creation, and productive new investments, leading to recovery and long-term economic growth.

The central finding of our "Green Recovery" report—which used proven methods of economic analysis—is that targeted investments in energy efficiency and renewable energy will produce approximately four times more jobs than spending the same amount of money on mature energy industries such as oil and gas.[3] And these investments will offer substantially better economic stimulus than simply increasing household consumption through rebates or tax giveaways. The report then details the kinds of jobs that can be created through building retrofits, public transportation and freight rail, smart grid electrical transmission systems, and renewable energy investments in solar, wind, and biomass.

One of the more recent assaults on our "Green Recovery" report—and others like it—claimed that research on the benefits of clean energy as a driver of jobs and economic growth suffered from an array of delusional myths. These conservative critics, however, make a fundamental error. The greatest delusion is that lasting economic prosperity can ever be achieved apart from sustaining the global environment. The most dangerous myth is that jobs and wealth must be forever linked to rising pollution.

As President Obama has made clear, the most effective response to the twin challenges of restoring the economy and responding to our climate and energy crisis is a green recovery. The creation of millions of new green jobs is a cornerstone of his economic stimulus package and his clean-energy infrastructure investments to rebuild the American economy.

Indeed, the transformation of our energy infrastructure around the platforms of increased efficiency, ending our overdependence on oil, and reducing greenhouse gas emissions represents *the* best potential engine for innovation and long-term progressive growth. As President Obama succinctly points out:

"We can remain one of the world's leading importers of foreign oil, or we can make the investments that will allow us to become the world's leading exporter of renewable energy…We can let the jobs of tomorrow be created abroad, or we can create those jobs right here in America and lay the foundation for our lasting prosperity."[4]

While we welcome a full and open debate on the efficacy of green jobs and clean-energy investments as a growth strategy for the economy, conservatives have by and large not offered a very satisfying opening salvo. Much of their critique is a rehashing of the same generic refrains proclaiming an unfettered faith in unregulated free markets, unsubstantiated threats of government intervention in free trade, untimely misunderstanding of the potential of public investment to prime the pump for stronger private markets, and unjustified criticism of environmental regulation as a whole Thus it is incumbent upon us to respond to these tired attacks, and so here we answer seven common questions about green jobs.

1. What is a green job?

Answer: "Green jobs" represent new demand for labor that results from investments in transitioning our economy away from carbon-intensive energy, minimizing degradation of our natural resources, maximizing the efficient use of our natural capital, and protecting humans and the planet from pollution and waste.

These green jobs include new jobs that will be *created*, imperiled jobs that will be *saved* through new investment, and critically, traditional jobs that will be *transformed* with new skills and new applications of existing skills. For generations, economic growth has been directly linked to greenhouse gas emissions. Green jobs help decouple our prosperity from our pollution.

The "green job" category may seem too vague to some. After all, it doesn't identify a discrete occupation, such as "fireman" or "nurse," and it leads to seemingly intractable paradoxes. Case in point: Is a truck driver delivering blades for wind turbines doing a green job and the same tucker hauling gasoline doing something different?

But this debate misses the point. The term green job describes the work involved in undertaking a set of activities, rather than a specific set of occupations. Green jobs result from increased demand for full-time labor as we invest in increasing energy efficiency, improving environmental quality, decreasing reliance on fossil fuels and other nonrenewable resources, and generally furthering our transition to a clean-energy economy. Investment in new infrastructure, more vibrant communities, and more efficient products will all create measureable impacts on employment. These green investments are the source of new green jobs, and they can be the foundation for recovery.

Broadly, most green jobs are familiar jobs, repurposed and expanded through new investments in a low-carbon economy. Most green jobs will be in familiar occupations that people already work in today. Constructing wind farms creates demand for steel workers and long-haul freight shipping. Energy-efficiency retrofits for buildings require roofers and insulators. And expanding mass transit systems employs electrical engineers and dispatchers. Green jobs are not a new set of specific job classifications, but instead are like "blue-collar jobs" in that they represent a broad category of work to be done in a range of productive activities. Green jobs, in short, are the "person-hours" involved in realizing the clean-energy transformation.

Green jobs also are frequently more local and thus more difficult to outsource. Green jobs involve transforming our built environment and investing in new, low-carbon infrastructure. This work is nearly impossible to offshore because much of it must be performed onsite. Making buildings more energy efficient, constructing new rail lines and rewiring the electrical grid, installing solar panels and wind turbines, expanding public green space, and growing and refining advanced biofuels all will take place right here in America.

These local, skill-intensive jobs also result in sustainable economic development. The money we spend to put in high-efficiency windows in a building in Lansing, Michigan stays in Lansing, Michigan because we can't move the building offsite. The source of the energy savings becomes the building itself, and those savings in turn are retained within the community.

2. Are green jobs low-paying jobs?

Answer: No. Green jobs encompass the full range of skill sets and pay scales. The majority are good-paying, middle-skill jobs accessible to all Americans.

Green jobs are broadly distributed across the entire economy. In a side-by-side comparison of job creation from investments in efficiency and renewable energy with jobs created through investments in the oil industry, CAP research with the University of Massachusetts-Amherst demonstrated that nearly four times more jobs are created through green strategies, including more jobs at every step in the pay scale and across every skill level. Looking more closely, green investment created three times the number of well-paying jobs earning over $16 per hour.[5]

These jobs represent a wide range of points of entry into meaningful long-term employment. Where entry-level jobs are created, this demand for employment can also be used to help rebuild career ladders into the middle class for lower-skilled workers if workforce training is systematically integrated into a larger green economic development strategy.

Importantly, green jobs are blue collar and white collar alike. Our research shows that investing in a clean-energy economy will especially drive new demand for labor in the construction and manufacturing sectors—two areas of the economy hardest hit in the current recession. Retrofitting millions of homes for energy efficiency will require substantial new demand for the skills of electricians, insulators, and laborers. Building a new generation of more-efficient appliances, technology, and building materials will drive demand for high-skilled manufacturing.

But green jobs are not only production-line construction and manufacturing jobs. Innovative green businesses will need secretaries, managers, and accountants, too. High-technology endeavors will offer new opportunities in design, engineering, and finance. Because the transition to clean energy represents a new stream of investment, the impact will be broadly felt in many sectors. Such a diverse spectrum of job creation is precisely what we need in an economy suffering from its worst downturn since the Great Depression.

3. Do gains in green jobs cause net job losses?

Answer: No. Investing in a clean-energy economy will result in net job creation because green investments have a larger multiplier effect, create work that is skill and labor intensive, are more locally based, and directly substitute domestic investment for imported energy.

Green investments create more jobs than investments in traditional energy. Investments in renewable energy and energy efficiency can create nearly four times as many jobs per dollar invested when compared to traditional fossil fuel investments. How? By redirecting money previously spent on wasted energy, pollution, and imported fuel toward advanced manufacturing, modern infrastructure, and skilled labor.

U.S. Department of Commerce data shows that for every million dollars spent on a mix of renewable energy and efficiency 16.7 jobs are created, while that same million dollars spent within the oil industry creates only 4.5 jobs.[6] This means that every dollar of public or consumer spending that shifts from oil dependence to clean energy results in nearly four times the overall job creation, or a net gain of four jobs for every job potentially lost.

Investing in green jobs also is a smart strategy for economic recovery. A "green recovery" strategy will generally create more jobs and better jobs than either investing in traditional energy or a consumption-based stimulus package. Some critics contend that policy-driven expansion of clean energy carries substantial opportunity costs by "crowding out" private investment in other parts of the economy, but this argument ignores the reality of our current economic downturn. At a time when there is slack economic demand and private capital is sitting on the sidelines rather than investing in new enterprises, public investment can prime the pump of the economy, encouraging private capital to follow.

This is the basic rationale for an economic stimulus amid a recession. If we are undertaking substantial near-term public investments to stimulate market activity, then we should make these historic investments carefully, with an eye toward long-term needs. Responding to the mandate to cut carbon emissions will boost job creation in the hard-hit construction and manufacturing sectors, promote business innovation, and lower the long-term cost of action on global warming. Green jobs not only get the economy moving again—they get it moving in the right direction. This is a simple matter of prudence and smart fiscal stewardship.

4. Do green jobs drive up energy bills?

Answer: No. Improving energy efficiency, energy diversity, and consumer choice will lower energy bills. Any short-term effect on energy prices from climate legislation can be offset with smart policies to protect consumers, improve efficiency, and keep bills low.

Customers care about their monthly energy bill and not their price per kilowatt-hour. There is a world of difference between the price we pay for a unit of energy and the utility bill we receive each month. California, for example, pays among the highest rates for their electricity in the country, yet the average bill for a California homeowner is exactly average when compared to other states. The reason: California invested heavily in smart clean-energy policies and as a result each Californian uses a staggering 43 percent less electricity per capita to achieve the same standard of living as the average U.S. citizen.[7]

Many energy efficiency investments pay for themselves in the near term, and then continue to accrue to the advantage of homeowners into the future. What's more, these types of investments pay workers immediately to complete the project. As we demonstrated in "Green Recovery," using Department of Energy figures, with a $2,500 up-front investment in home retrofitting the average household—$60,000 annual income—is likely to save about $900 per year in its energy bills. With those savings the retrofitting would be paid off in three years and the savings would then accumulate. Meanwhile, the project of retrofitting these homes will produce jobs for electricians, carpenters, roofers, truck drivers, accountants, secretaries, and all others involved in such efforts.

Many critics point to the potential for higher energy prices when carbon is priced in the marketplace as a way of attacking the notion that green jobs and sustained growth will result from the move to a clean-energy economy. This is wrong at both micro- and macro-economic levels.

At the consumer level, the Center on Budget and Policy Priorities estimates that by auctioning carbon permits and returning approximately 14 percent of the revenues to ratepayers, it would be possible to ensure that low-income households are held harmless from any net increase in energy costs.[8] And, according to a recent analysis by the Environmental Protection Agency, rebating higher percentages of the auction revenue

"could make the median household, and those living at lower ends of the income distribution, better off than they would be without the program."

A number of other organizations have forecast the effects of a carbon emissions cap on the overall economy, including the EPA, the Energy Information Administration, The Clean Air Task Force, the Massachusetts Institute of Technology, and the American Council on Capital Formation/National Association of Manufacturers. According to all the forecasts—including the worst-case scenario developed by the most pessimistic forecasters, the ACCR/NAM—the impact of cap-and-trade on U.S. gross domestic product growth will be negligible.

Under all models, the economy grows substantially. The difference in average annual GDP growth over the next few decades with or without a cap-and-trade system in these models ranges between 0.01 percent by 2050 with the MIT model and 0.11 percent with the ACCF/NAM model by 2030.[9] Even in the most pessimistic ACCF/NAM model, this amounts to a reduction in average annual GDP growth from 2.6 to 2.5 percent—yet even this model predicts that the economy still grows steadily over the course of 23 years and that it would only take 14 months longer for the U.S. economy to reach the same level of GDP with cap-and-trade as without.

Further, we must also keep in mind that this most pessimistic model incorporates no positive effects from a 36 percent reduction in greenhouse gas emissions below 2007 levels in 2030.[10] There is a difference between a pure cost and a long-term investment. Building a low-carbon economy will result in many enduring benefits such as improved energy efficiency, greater security of energy supplies, and diversity in our sources of power resulting in greater choice and lower costs for consumers. Clearly, the cost is small while the benefits to economic security and prosperity are great.

5. Are green jobs just government-subsidized jobs?

Answer: No. Green jobs come from new demand for labor from both public and private investments in transforming energy markets and green business innovation. Furthermore, building a low-carbon economy will fix major market failures.

Green jobs mean private-sector innovation and market transformation. A frequent but ill-founded critique is that creating green jobs only produces government jobs, or that public investment steals capital and resources away from other productive private investments, thus creating a net loss to the economy as well as increasing inefficiency. This is incorrect for several reasons.

First, where public investment takes place it generally will be in infrastructure or research and development, which in turn make private capital investments more productive.

Private businesses will execute most of the construction and deployment investments, from construction crews to utility companies to banks and financial institutions. Very little of the employment gains will be in public sector jobs.

Second, far more of the overall investment and job creation will be driven by private capital. Policies that shift incentives away from environmentally harmful activity and toward new clean-energy technologies will drive innovation in technology, services and business models. This follows a time-tested script where strategic public investment has led to transformative private-sector economic development, helping to build our railroads in the 19th century, rural electrification and then the aerospace industry in the 20th century and now the Internet and telecommunications superhighways. In each case, public leadership enabled market transformation and the growth of new industries with vast new opportunities for the generation of private wealth.

Nor does transitioning to a clean-energy economy by capping the emission of carbon distort the market as some have wrongly claimed. Rather, smart policy to limit emissions will improve the overall efficiency of the economy, driving down investment in pollution and recognizing the real value of clean technology by correcting the massive market failure of global warming. Current policy allows companies to "externalize" the true costs of pollution by pushing the real burdens of emissions onto society at large. The magnitude of these costs will only increase with delay as global warming intensifies, including rising sea level, decreasing soil productivity, and more devastating severe weather events.

Similarly, many of the net social benefits of clean energy—such as strengthening our energy security, driving innovation, and improving public health—are undervalued by the current imperfect market. From an economic perspective, policies to reduce pollution and drive a clean energy transition are by and large a net gain to productivity and efficiency, not a burden.

To fix these distortions and reap the benefits requires a comprehensive approach. Capping carbon emissions and making polluters pay is one tool for fixing the market and providing the private sector with the certainty it needs to invest in clean energy; using incentives in the tax code or regulation to increase energy efficiency or promote renewable energy development is another. In the face of such a powerful market distortion, it is ironic that some critics have challenged clean-energy policies as being anti-competitive or market distorting when in fact these policies will restore energy competitiveness in the market place, which is long overdue, with strong benefits for businesses, consumers, and the public good.

6. Do green jobs mean picking technology winners?

Answer: No. A clean-energy economy will reward efficiency, low-carbon energy, and environmental stewardship on the basis of performance. Any and all technologies can compete fairly and contribute in this transformed market.

Green jobs are performance-based and technology neutral. Some critics argue that advocates for green jobs are, at worst, technological luddites seeking to transform America to a more primitive society and, at best, trying to pick technological winners based on favoritism and political motivation. But this is precisely the state of our current energy market, which is highly skewed toward older fossil fuel-based technology due to market inertia and political favoritism.

The ability to pollute without cost or consequence creates a major advantage for high-carbon energy and acts as a barrier to free and fair competition. Building a clean-energy economy actually means fixing broken markets. Setting strong signals with smart policies through a combination of investment and regulation will increase consumer choice. These policies will also spur a huge wave of innovation as the private sector steps up to meet the challenges of solving global warming and reducing our dependence on polluting energy. A smart energy strategy promotes clean technologies not as the result of biased industrial policy, but because they are clean and that has real and lasting public value.

Green investments also encourage efficiency and productivity. Pollution is not just harmful but also a highly inefficient and inherently unproductive use of precious natural resources. Renewable energy is just the opposite, substituting skilled labor and valuable intellectual property and ingenuity for wasted fuel. As the U.S. economy becomes more energy diverse and efficient, our productivity, competitiveness and household budgets all will benefit. And because the first generation of green investments are of necessity labor intensive we will also immediately capture the advantage of putting the country back to work generating still more wealth overall.

7. Will green jobs interfere with our trade policy?

Answer: No. Like most improvements in physical infrastructure, many green jobs are of necessity local, but creating opportunity for such community-based and domestic investments, does not limit trade and is wholly different from protectionist policies.

Some conservatives claim that green jobs are anti-trade and will ultimately infringe on free-trade deals we need to maintain our economic competitiveness. What these critics seem to miss is a very simple point: Investing at the community level creates economic and social stability. Because these investments are made in the places where we live and work, they improve the productivity, mobility, and efficiency of regional economies.

These kinds of jobs by their very nature can't be outsourced, bought for a cheaper rate from overseas, or used as fodder in a trade war. By strengthening local economic development they will advance overall global economic stability and security—a goal today of all the leaders of the world's major economies. Green jobs also tend to be local jobs because they focus on transforming the natural and built environment. Our foreign competitors don't tag our investments in bridge safety as an unfair infringement on free trade because to do so

would obviously be ridiculous. We can't ship our transit projects or school building retrofits in Atlanta or Kansas City overseas for construction or weatherizing, which is why it's equally absurd to have similar concerns about emphasizing local investment in green jobs.

Nowhere do we argue that Americans should exclusively rely on local production or solely on domestic content. In terms of trade, what progressives do want is to reduce our dependence on the dangerous and unsustainable importation of 60 percent of our oil from mostly non-democratic countries at a cost of several hundred billion dollars a year, and a spiraling trade deficit.[11] We should shift away from wasteful investments on such a costly, dirty import and instead invest in the competitiveness of our own clean-energy industries. This is all for the good, and a solid step down the path toward making America more competitive in an increasingly global economy.

Conclusion: The most productive jobs of the future will be green jobs

As the United States turns the corner to become a leader in clean technology innovation by responding to the new imperatives of global warming, the shape of our workforce, our businesses, and our entire economy will change. We can navigate this change to our advantage, developing those skills and technologies that will most help us in the coming clean energy economy, or we can have unplanned change forced upon us. The status quo, however, is not an option.

In the future, jobs that do not help achieve the goals of reducing greenhouse gas emissions and improving environmental stewardship will simply be less productive and less competitive. Just as it would be hard to imagine a future president announcing a "Blueprint for the Creation of Unproductive Jobs," future Americans will consider imprudent and unwise any investments that reverse progress in energy independence or roll back the security and habitability of our planet.

Furthermore, in the face of dire warnings from the scientific community, accepting pollution as a price of doing business is simply no longer tenable. As we confront the realities of a rapidly-changing climate, and a rapidly-changing economy, the debate over green jobs allows us to consider what sort of future we wish to build and in what sort of society we want to invest. Soon, the question "What is a green job?" will simply be replaced with the question "What is a good job?" And the answer to that question will be a job that is green, fair, productive, and secure. To achieve this future we must start today.

Endnotes

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