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The impact of Environmental Policy on U.S. Job Growth and Unemployment

Author

Joshua Schneck, Nicholas Institute for Environmental Policy Solutions



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OVERVIEW

As legislative proposals for addressing climate change continue to be put forth and debated, they're accompanied by a steady stream of studies estimating the likely impact such policies would have on U.S. job growth and unemployment. Many of these studies reach wildly different conclusions, with some saying that the results would be economically devastating for families and job creation, and others predicting that climate legislation would rapidly propel the creation of millions of new jobs. The studies are almost always partial in nature, sometimes purposely so, but other times because those developing the studies are not fully aware of the complexities of the job issue or the methods that may be available to create more reliable estimates, as well as how to be more transparent about what their studies include and exclude.

This memo examines issues at play in the climate-jobs debate, and presents findings from a range of well-publicized studies estimating the employment impacts of proposed climate or energy legislation. Our objective is not to definitively answer the question of whether a price on carbon would result in a net increase or decrease in U.S. jobs, but rather to help interested parties in discerning what kinds of information to look for in these reports, and to become better positioned to arrive at your own conclusions when considering a specific policy proposal.

Key climate policy drivers of job creation or loss

Within the dynamic, complex and interactive workings of the U.S. economy, the principle drivers of net job creation or loss following the enactment of climate legislation are as follows:

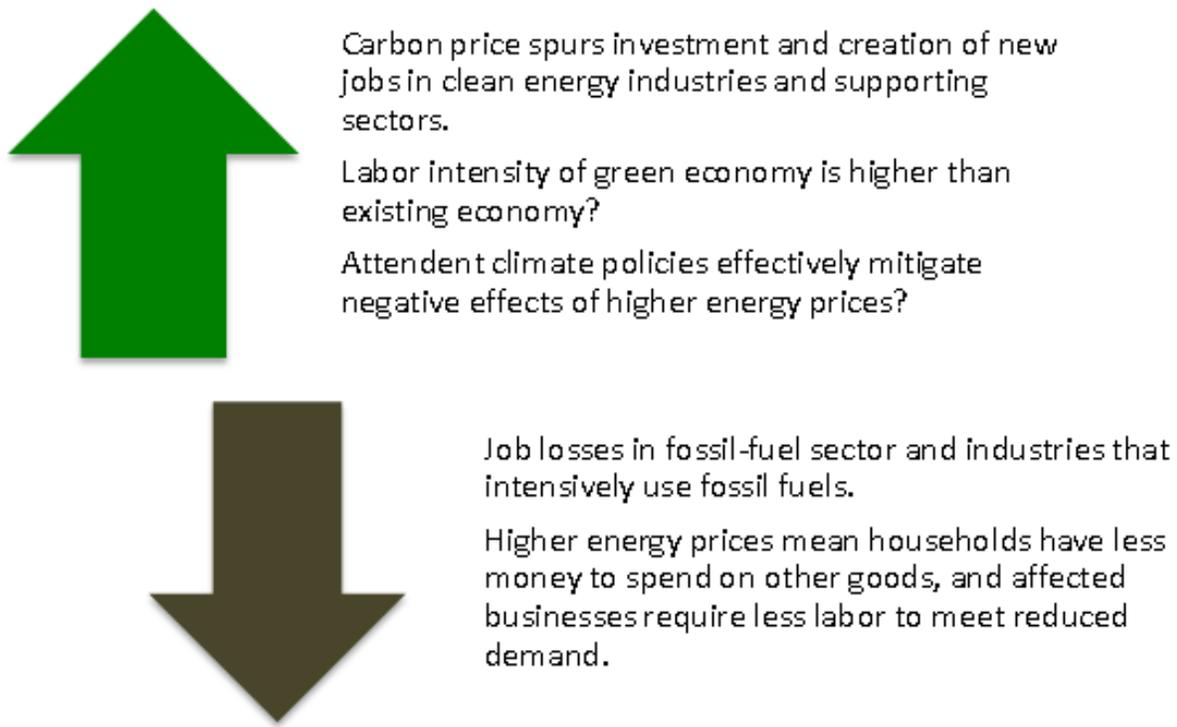
- *Higher energy prices*—In isolation, higher energy prices cause job losses, as households have less money to spend on other goods, and affected businesses require less labor to meet reduced demand.
- *Energy sector investment*—The timing, magnitude and types of energy sector investments are driven by expectations of future demand, as well as anticipated policy and regulation impacting the industry. Such programs include subsidies and support for clean or domestically produced energy, renewable energy standards, efficiency standards, rules governing the distribution and sale of energy, technological development, and the extent and magnitude of a future price on carbon.
- *Macroeconomic conditions*—Existing macroeconomic conditions in the economy will determine whether a surge in new investment demand is stimulative or inflationary. With unemployment hovering around 10 percent, and the Energy Information Administration predicting full employment occurring no sooner than 2019¹, any increased demand for investment should positively stimulate job growth in the near-term.
- *Labor intensity*—The net jobs effect of climate legislation depends to a large degree on the relative labor intensity among affected industries, that is, the relative proportion of labor to capital used to produce an output.
- *Domestic content*—Energy investment programs differ with respect to the level of economic activity that takes place domestically and abroad.
- *Changes in demand for low carbon energy and goods*—Closely tied to energy investments, a price on carbon would likely lead to job losses in fossil fuel industries and energy-intensive industries, particularly coal mining, and job gains in industries that supply or benefit from increased demand for low-carbon energy, such as those supplying solar panels or higher-efficiency appliances.
- *Export competitiveness*—job loss can occur in certain energy-intensive, trade-exposed (EITE) industry that compete against trading partners who fail to enact comparable legislation pricing

¹ Energy Information Administration, 2010. *Annual Energy Outlook 2010*. Washington, DC.

carbon. While this remains a lightning rod for political debate, most studies show minimal if any effects², and these can be addressed through border tariffs, subsidies, or other support.

- *Use of climate revenue to mitigate impacts*—The way in which revenue is collected and used under either a cap-and-trade system or a carbon tax can significantly alter the employment impact of energy and climate policy. For example, if revenue raised through pricing carbon is used to cut existing taxes that discourage employers from hiring—such as the payroll tax—then the net jobs numbers can change significantly. As mentioned above, carbon revenue can also be used to offset higher energy prices for EITE industry.

Figure 1. Net effects of climate policy on U.S. employment is a balance between different economic drivers accompanying a price on carbon (not all factors shown).



Modeling assumptions

All estimates for the impact of climate legislation on jobs rely on modeling, and while it is beyond the scope of this paper to explore the workings of these economic models in depth, here are a few key things to look for:

- *Gross vs. net job creation* – Many studies only look at gross employment effects, ignoring the net effect after raising taxes or cutting government services in future years to offset near-term deficit spending. In the case of energy policy, investments in clean energy and energy efficiency are typically paid for with higher energy prices rather than through government borrowing, and these higher energy prices work against the job creation benefits of green investment. While studies

² For a good overview and analysis of the link between competitiveness and climate policy, see Aldy, J., Pizer, W., 2009. *The Competitiveness Impacts of Climate Change Mitigation Policies*. Resources for the Future, Washington DC.

exploring gross job benefits can be valuable, job estimates must be tempered by non-quantified job losses in negatively affected industries.

- *Assumptions about the types and costs of technology adopted in the future* – Models differ in their assumptions about how quickly technologies like carbon capture and storage and cost-effective solar, bio, and other renewable technologies come on line, along with new designs and permitting rules for nuclear plants. The EPA, EIA, and other federal agencies tend to include a range of scenarios for technological adoption in their modeling of proposed legislation. Be wary of modeling that is overly optimistic, or severely restrictive, on the adoption of new technology.
- *Assumptions about the availability of offsets* – Cap-and-trade policy such as ACES or APA rely on the near-term availability of offsets from both international and domestic suppliers to limit the cost of complying with GHG reduction targets. Outside observers disagree on the likelihood of sufficient offset supply materializing in the near term, and therefore, look for studies that indicate how sensitive allowance price estimates and job numbers are to changes in offset supply.
- *Assumptions about the labor market* – Economists differ in their views regarding how quickly the labor market adapts to change, in this case, sustained increases in energy prices. Attendant policies like worker training and assistance to sectors and places likely to be negatively impacted by a price on carbon are attempts to help lessen any hardships associated with a transition to a low-carbon economy.

Review of recent analyses of climate legislation

ClimateWorks Foundation, Analysis of the American Power Act (APA), June 2010

- APA would create 440,000 additional jobs in an average year through 2020, and 540,000 additional jobs in an average year through 2030.
- Cap on emissions drives Investments in energy efficiency and new power sources, with attendant job gains in manufacturing, construction, services, health and trade sectors.
- Increases in electricity and natural gas prices are more than offset by reductions in energy consumption and rebates from local distribution companies (LDCs). As a result of efficiency gains and LDC rebates, consumer utility bills would decline an average of \$35 per year over the period 2012-2020
- Notes on methodology used in the study:
 - Employment numbers are net job gains
 - Study employs a model developed by McKinsey consulting, along with their popular U.S. GHG abatement curves, and another popular model created by Region Economic Models, Inc. (REMI).
 - Higher employment gains found in this study compared with the Peterson Institute study of APA (see below) reflect more aggressive energy efficiency assumptions found in the McKinsey model used here.

Peterson Institute, Analysis of the American Power Act (APA), May 2010

- APA would create 203,000 additional jobs in an average year through 2020. Job growth slows as U.S. economy reaches full employment by 2020.
- APA calls forth \$41.1 billion per year in near-term power sector investments vs. \$18.6 billion per year under business as usual.
- Notes on methodology used in the study:
 - Employment numbers are net job gains

- Study employs the widely-used National Energy Modeling System (NEMS) developed by the US energy Information Administration (EIA), modified by the Peterson Institute to allow for capturing the effects of increased energy sector investment.

Political Economy Research Institute (PERI) and the Center for American Progress (CEP), “The Economic Benefits of Investing in Clean Energy”, June 2009

- Investments in clean energy in today’s U.S. economy will generate roughly three times more jobs than spending the same amount of money within our fossil fuel energy infrastructure.
- Increased job creation is the result of two primary factors: (1) higher labor intensity of clean energy sector, and (2) higher domestic content of clean energy sector relative to fossil fuel based energy sector.
- Notes on methodology used in the study:
 - Employment numbers are gross job gains
 - Study is not examining a specific piece of proposed legislation.
 - Study employs input-output tables developed by the U.S. Department of Commerce, and is a static model that does not seek to trace the full set of interactions in the economy that would result from a large shift in investment, or a price on carbon.

Congressional Budget Office (CBO) “How Policies to Reduce Greenhouse Gas Emissions Could Affect Employment”, May 2010

- Under an emission-reduction program, “total employment during the next few decades would be slightly lower than would be the case in the absence of such policies.”
- Notes on methodology used in the study:
 - Not an independent CBO study, but rather an attempt to reconcile three different studies- only one of which evaluates a specific piece of U.S. legislation.
 - Misses price mitigating mechanisms typically found in climate legislation, such as revenue recycling.
 - Doesn’t capture increased near-term clean-energy sector investment likely to occur from a price on carbon.