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MAKING GREEN POLICIES PAY OFF

Responsible climate-change package can benefit environment, workforce

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As scientists become convinced that carbon emissions and other "greenhouse gases" may cause irreparable harm to the earth's climatic system, the public debate has shifted away from questioning the science of climate change and toward questions of how to reduce these emissions. Because the economy is largely dependent on the consumption of fossil fuels that result in carbon emission byproducts, concerns exist about the economy's ability to reduce these emissions without sacrificing output and employment.

In recent years, organized labor has expressed legitimate concerns about the effects of climate-change policies on jobs. In addition, various vested interests have attempted to influence the debate with predictions of economic disaster if serious carbon-reducing measures are undertaken. Claims of job losses ranging in the millions have become common.[1] Despite these dire predictions, preliminary research from the joint climate-change policy project of the Center for a Sustainable Economy (CSE) and the Economic Policy Institute (EPI) shows that a responsible approach to addressing carbon emissions can avoid the vast majority of these harmful effects, and can even result in *benefits* for a large majority of the workforce.

A reasonable policy response to climate change

Economists tend to agree that the most efficient way to reduce pollution is to make polluters pay for whatever damages they cause. In this case, that would mean either putting a tax on carbon emissions or using a cap-and-trade system, like the one recently used to reduce sulfur dioxide emissions from electric utilities. A cap-and-trade system would put a limit on the amount of carbon that could be emitted; firms would have to own one permit for every ton of carbon that they want to emit. If they want to emit more, they would have to buy an additional permit

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from another firm that was reducing its emissions. Most dire predictions are based on the assumption that carbon pricing, through a tax or a cap-and-trade system, is the only policy available to us. Putting a price on carbon raises energy prices, which, at least in the short run, causes economic activity to slow.[2]

A responsible climate-change policy doesn't stop with carbon pricing, however. A wide array of other policies can be used in conjunction with carbon pricing to achieve the desired emissions reductions while avoiding most of the predicted economic pain. It is implausible that the government would institute a carbon-pricing policy without including some of these additional policies. In fact, some of those policies are already in place, and European nations have already gone even further toward reducing greenhouse gas emissions.

In addition to the policies that put a price on carbon emissions, a well-designed policy package would also include: measures to return to the public the revenue it raises by cutting other taxes; policies to promote energy efficiency and renewable energy technologies, where such measures are cost effective[3]; and transitional assistance, providing a remedy that "makes whole" any who might lose their jobs as a result of the climate policy package. (Another important piece of this policy package, to be discussed in detail in a future report, would include targeted policies to help energy-intensive industries maintain their competitiveness as they become more energy efficient.)

Building on earlier work by CSE,[4] this report first divides the economy into 498 separate industries. By tracing the impacts of the policy package on each industry — and using an input-output model to determine how those effects would impact other industries — we are able to assess these policies' overall impact as they ripple through the entire economy. This analysis was linked to government forecasts for the economy with the intention of determining how these policies will ultimately affect the economy. The analysis takes into consideration how many workers are employed in each industry and how many of those workers are unionized in an effort to determine employment impacts.

This report's policy package has two components. The first involves a $50 per ton carbon tax (with an equalizing charge on the electricity produced by nuclear power and large-head hydropower).[5] This revenue would then be returned through a per-capita cut in labor (payroll) taxes. The second component is a package of energy-efficiency and renewable energy policies that is consistent with those discussed in the report, *Scenarios for a Clean Energy,* produced by the five National Labs of the U.S. Department of Energy (IWG 2000).

The goal of this analysis is to determine whether a basic climate policy would increase or decrease the demand for workers and for union labor. An increase in the demand for labor has different effects under different economic conditions. In slack times, it results in an increase in employment. In boom times, it results in an increase in wages and in labor's share of national output. We have not attempted to determine which of these effects would dominate over the long run.

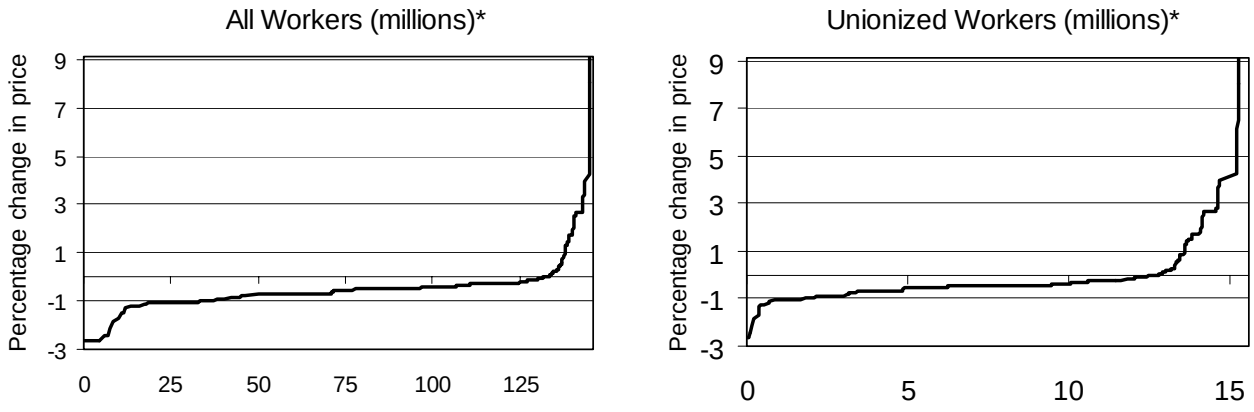
Job gains would vastly outnumber losses

The overall distribution of results can be seen in **Figure A**, which arranges the workforce according to the increase or decrease in production costs experienced by industry. The left panel (All Workers) in Figure A shows, for example, that about 133 million workers will be employed in industries whose costs go down as a result of these policies (and thus have negative price impacts). The right panel (Unionized Workers) shows that about 13 million of these workers in industries that would benefit from these policies are unionized. The vast majority of total jobs and of union jobs are thus in "winner" industries – industries that would see a net reduction in their real cost of production after energy efficiency improvements. However, the widespread benefits are smaller, on average, than the more concentrated losses.

FIGURE A

CHANGES IN INDUSTRY OUTPUT PRICES FROM CLIMATE POLICY

(BY INDUSTRY EMPLOYMENT LEVEL)



*Graphs are truncated at the electricity and fossil fuel industries, for which price increases range from 10% (electricity) to 76% (coal).

SOURCE: CSE/EPI analysis. Based on unpublished 1996 BEA Input-Output tables, RAS-balanced to 2020 fuel, electricity and industrial output levels from IWG (2000).

In order to get a better handle on how the increases and decreases impact total workers and union workers as a whole, we then calculated an index of the change in labor demand due to the price changes (see **Table 1)**. The table's total employment column shows the number of workers in two industry groups in 2020: the industries that see net price cuts under this set of policies ("winner" industries) and those in industries with net price increases ("loser" industries). The next column does the same for union jobs, assuming the distribution of unionization across industries remains roughly constant.

The final two columns in the table provide a rough index of the actual change in employment from the baseline as a result of the climate policy.[6] Note that these job effects are small relative to total employment; in no case do they amount to more than 0.4% of employment in their broad industry group. These effects are likely to be

TABLE 1
Employment effects of climate policy package
(in thousands)

	Total employment	Union employment	Jobs gained	Union jobs gained
"Winner" industries	168,138	16,266	260	19
"Loser" industries	15,862	3,290	-55	-14
Total	184,000	19,557	205	6

Note: Totals may not add due to rounding.

SOURCE: CSE/EPI analysis.

largely invisible. (However, it should be noted that a handful of industries with larger price increases, such as coal mining, would see more serious impacts.) Note also that non-trivial job losses do occur: about 55,000 jobs in total, a quarter of which are union jobs.

But despite the losses, the net effect is positive. Roughly five jobs are created for each job destroyed. (If employment is full, the interpretation is that the induced increase in total labor demand is five times as large as the induced decrease, resulting in wage increases.) Because unionization rates are higher on average in more energy-intensive industries, the positive effect on union jobs is not as strong, but it is still true that four union jobs are created for every three lost.

Ensuring the benefits, ameliorating the losses

These results have several important implications. First, those who claim that climate change cannot be addressed without huge economic costs and massive unemployment are simply wrong. A responsible climate-change policy package can significantly reduce carbon emissions while simultaneously conferring modest economic benefits on the working population as a whole by improving energy efficiency and increasing the demand for labor.

A second implication of these results is the importance of revenue recycling. Much of the negative impact of carbon/energy taxes (as forecast by industry-backed studies) is due to the fact that they assume that the revenue will not be recycled through cuts in other taxes. This is why it is critical that the pricing policy be accomplished either by permits that are sold or by energy taxes, not through permits that are given away to industries at no cost (i.e., "grandfathered" to existing companies). Grandfathering permits effectively creates government-enforced energy-industry monopoly pricing. It results in windfall profits to large oil and coal companies, and has all the economic costs of taxes or auctioned permits with none of the benefits from cutting taxes on workers. Nor do grandfathered permits provide revenue for transitional assistance to "loser" industries and their workers.

A third conclusion is that there are some industries that will be hurt by an effective climate policy, requiring effective policies to help these industries adapt or provide compensation. Coal mining and oil imports will fall, and some coal miners will lose their jobs. But the results in this report suggest that a generous transition assistance package of $102,932 per worker[7] would cost less than 1% of the annual energy tax or permit revenues.

In addition, these policies could result in significant international competitiveness problems in the most energy-intensive industries – metals, ceramics, fertilizer and some chemicals, cement, and a few others – if no policies are adopted to help those industries. Such policies include border adjustments (imposing the energy tax on imports and rebating it on exports, as is done with existing alcohol and motor fuels taxes); investment tax credits for energy efficient equipment; and tax breaks tied to energy-efficiency improvement targets.[8] Many of these policies have already been adopted by various European nations and have proven track records. It should be noted that the results presented here *do not* include the effects of such policies, and thus overstate the negative impact of climate policy.

While some industries and some workers will be seriously affected by any efforts to reduce carbon emissions — as is the case with many major environmental policies — the preliminary results summarized here show that the predictions of economic disaster grossly overstate the likely size of these effects. In fact, if done correctly, carbon-reducing policies can bring benefits to most of the economy and its workers. The fact that some negative impacts are unavoidable means that we should devote substantial effort and resources to mitigating these impacts — it does not mean we should do nothing at all and hope that all the scientists are wrong.

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Endnotes

1. See, for example, CRA (1999, 1997), CONSAD (1998), DRI (1998), WEFA (1998), and Bernstein et al. (1997).
2. For a more detailed discussion of how such economic forecasts are generated, see Barrett (1999) and Repetto and Austin (1997).
3. For an overall assessment of the cost effectiveness of energy efficiency, see IWG (2000). For a specific assessment of the cost effectiveness of tax incentives to promote clean technologies, see Hoerner (2000a).
4. For a technical description, see Hoerner (2000b).
5. The equalizing charge on nuclear and hydropower is based on our desire to avoid giving preferential treatment to these technologies, both because they are themselves associated with serious environmental concerns, and because failure to do so poses serious issues of interstate and interregional equity.
6. These index numbers are calculated by assuming all industries have constant elasticity reduced-form demand curves with demand elasticities of 0.2. Because several sectors, like the electricity industry, are likely to have demand elasticities lower than 0.2, this assumption makes our results overly pessimistic
7. Barrett (forthcoming) calculates that this amount of money would be sufficient for a make-whole transition package for workers likely to be laid off by climate-change policies.
8. For a discussion of other alternatives to preserving the competitiveness of energy-intensive industries under a broad-based carbon/energy tax, see Hoerner (1997).

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