

Part of a series on

**CAP
2.0**

Policy Brief



Comprehensive Clean Energy and Climate Legislation Will Bring More Jobs, a Stronger Economy, and Less Pollution

America's past experience with establishing regulations to curb pollution provides every reason to believe that enacting comprehensive climate and energy legislation will not only bring environmental and health benefits, but will also unlock technological innovation and boost our economy. Since the nation's first comprehensive environmental laws in the 1970s, hundreds of dangerous pollutants have been regulated, providing valuable health benefits from reduced exposure to certain toxic chemicals. In 2010, the Clean Air Act alone prevented an estimated 20,000 deaths, more than 23,000 cases of chronic bronchitis and asthma, and 59,000 hospitalizations.¹ At the same time, tens of thousands of jobs per year were created in the environmental protection industry, GDP more than tripled, and average household income grew by more than 45 percent.

This impressive history of prosperity can be repeated with comprehensive clean energy and climate legislation. Climate legislation will help kick start the economy and build a foundation for sustainable long-term growth. Contrary to alarmist claims of future job loss touted by opponents of energy reform—many of whom seek to profit from furthering our dependence on outdated and dirty energy technologies—taking the clean energy path will actually create substantially more jobs than would relying on an unsustainable dependence on fossil fuels. Without comprehensive legislation, the United States will miss out on many new employment opportunities, and will be left behind in the growing world market that rewards green **innovation.**

For more information,
please contact

Laurie Johnson
ljohnson@nrdc.org
(202) 289-6868

www.nrdc.org/cap2.0



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PAST EXPERIENCE CONFIRMS THAT ENVIRONMENTAL REGULATION DRIVES JOB GROWTH

Based on what we have seen from past experience regulating dangerous pollutants, it is realistic to expect employment gains from climate legislation. Between 1977 and 1991, the EPA estimated that an average of 50,000 new environmental protection jobs were created every year.² And between 1997 and 2007, as clean energy markets expanded, PEW Charitable Trusts estimated as many as 85,000 clean energy jobs per year were created.³ Meanwhile, survey data collected by the Bureau of Labor Statistics (BLS) consistently found employment losses resulting from pollution control requirements to be only on the order of 1,000 to 3,000 jobs per year.⁴ Relative to other reasons for job losses, these were practically invisible: every year approximately 9,500 layoffs resulted from adverse weather events and over 450,000 from seasonal changes in employer demand for workers. Estimates by the EPA, the Commerce Department, and the Oil, Chemical, and Atomic Workers Union confirm the BLS findings.⁵

WHERE GREEN JOBS WILL GROW

The most significant job growth will be in renewable energy and energy efficiency. On average, each dollar spent on renewable energy sources and energy efficiency creates three times more jobs than the same amount of money spent on fossil fuels. The reason for this stark difference is that renewables and energy efficiency are homegrown energy sources that require more labor and domestic inputs than dirty fossil fuel production.^{6,7} An economy that relies on clean energy to drive economic growth will therefore employ more workers than one that follows a dirty growth path.⁸ A study from a group of independent researchers at the University of California, Yale University, and the University of Illinois found that climate legislation will produce 900,000 to 1.9 million net new jobs by 2020.⁹ The American Council for an Energy Efficient Economy (ACEEE) estimates that efficiency provisions in proposed climate legislation alone could create 600,000 to 1 million net new jobs by 2030.¹⁰

Climate legislation would also increase jobs in the automobile sector, putting America back on the map as a leader in the global auto industry. The manufacture and deployment of advanced technology vehicles (e.g., hybrid, electric, and advanced biofuel) and improvements to design of more conventional vehicles could raise average fuel economy for new cars to 70 miles per gallon by 2030, saving American families and businesses up to \$95 billion dollars per year in reduced oil imports.¹¹ And a recent study sponsored by NRDC, the United Auto Workers, and the Center for American Progress shows that with the right incentives to manufacture clean car components in the United States, attaining a fuel economy of 40 mpg by 2020 would create 50,000 to 150,000 new domestic auto sector jobs.¹²

Climate legislation would even drive job creation in the U.S. oil industry due to the potential to boost enhanced oil recovery (EOR) from existing depleted oil fields. EOR is a technology that has been used for decades to produce additional oil from existing fields by injecting carbon dioxide (or steam) to free oil that is ordinarily left trapped in the underground formation. Currently, most of the carbon dioxide used for CO₂-EOR is extracted from natural sources which are limited in supply. With climate legislation, the supply of carbon dioxide would increase dramatically from carbon dioxide waste captured at power plants and industrial facilities. In addition to providing a place to sequester carbon dioxide, an abundance of existing and abandoned oil fields are available for CO₂-EOR, which could yield billions of barrels of oil and reduce pressure to open up new, untouched areas for oil exploration. The result is that by 2020, more than 40,000 jobs could be created from CO₂-EOR, rising to approximately 350,000 by 2030.

ALL THESE JOB OPPORTUNITIES ARE WAITING FOR ONE THING: PASSING COMPREHENSIVE CLIMATE AND ENERGY LEGISLATION

We need this legislation not only for steady long term job growth, but to help put Americans to work in secure, good-paying jobs right away. With almost 10 percent of workers currently unemployed and lacking income to purchase goods and services, investors need a reason to invest. A cap on carbon would give them just that, by stimulating growth in clean energy. As Nobel Prize-winning economist Paul Krugman writes, “[Climate legislation] wouldn’t just be good for the planet, it would be good for the [economic] recovery.”¹⁴ Other distinguished economists agree, noting that enacting legislation will create demand and jobs in the short term when the economy has idle labor and other economic resources that can be put to work building the foundation of a clean energy economy. In the long term, this legislation will strengthen our economy by making the United States a leader in clean energy technologies and delivering the employment opportunities and benefits that are concomitant with such leadership.¹⁵



A CAP ON CARBON POLLUTION IS ESSENTIAL FOR LONG-TERM SUCCESS CURBING POLLUTION AND BOOSTING THE ECONOMY

While state renewable electricity standards and individual government incentive are useful, a piecemeal approach to clean energy policy will fall drastically short of meeting our national climate goals, and maximizing job growth and innovation at the lowest cost. For example, even the sponsors of the fossil fuel energy bill reported by the Senate Energy and Natural Resources Committee estimate it will create at most 500,000 new jobs over the next decade;¹⁶ this figure is in stark contrast to the 1.9 million jobs that would be created by comprehensive legislation. We need a cap on carbon that makes clean energy investments economically sound in their own right, bringing in the innovation and cost cutting benefits of competitive market forces. Without any legislative certainty that clean technologies will have a market advantage over dirty ones, rather than the reverse, venture capitalists will remain reluctant to aggressively invest in clean energy.

RICH AND POOR COUNTRIES ALIKE CAN GAIN FROM THE "GLOBAL CLEAN ENERGY RACE"

Without climate change legislation, the United States risks falling behind leading clean energy competitors like China and India, as well as developed countries such as Germany and Spain, who invested heavily in clean energy. While wages are one factor in decisions about where to locate clean energy manufacturing facilities, they are by no means the most important determinant in building a domestic industry; more important are deployment, financing, manufacturing and innovation policies that would give investors and industry the certainty they need to invest in building new projects and factories. Key policies in the United States have included renewable electricity standards (RESs), and a host of short-term intermittent programs, including various production incentives, research and development (R&D) funding, public financing entities, and manufacturing and job-training incentives.

While such policies have helped drive significant clean energy growth in the United States, competitor countries are taking much more long-term and aggressive measures, with corresponding payoffs in clean energy markets. China recently issued a national development target for renewable power of 15 percent by the year 2020, and has created a number of market measures to stimulate the participation of investors to achieve these targets; in comparison, the United States only has RESs across a patchwork of states—and no overarching federal standards. As a result, China now takes the top spot in total clean energy investment with \$34.6 billion in 2009—surging past the United States (in second place) with \$18.6 billion.¹⁷ Recently, the European Union mandated a 34 percent RES by 2020 (up from 15.5 percent in 2006), and is investing billions of dollars in performance-based feed-in tariffs to achieve those targets. Clean energy economies are the way of the future and any country that does not prioritize accordingly will be left behind in the world economy.



Regardless of how far along the world's most developed countries are in transitioning to a clean energy economy, three factors provide reason and incentives for all of them to move quickly. First, electricity must be produced relatively near to where it is consumed, so there are serious limits to how far that clean generation can be outsourced. Second, some technologies will require local innovations specific to a country's unique needs and circumstances. And third, the scale of what is needed to meet our climate goals and avoid the worst consequences of global warming is so large it will require sizable clean energy development in every major emitting country. This is a phenomenal opportunity for innovation, and economic success will follow the technology. The International Energy Agency estimates that to meet a 450 parts per million (ppm) target, renewable power will need to expand by 45 percent relative to business as usual in 2030 and in the United States by 30 percent.¹⁸ This scale of production would provide vast opportunities and be welcomed by U.S. entrepreneurs, who are constantly looking for innovative ways to add value in local markets and in areas suitable for export.

STUDIES WITH HIGH JOB LOSS PREDICTIONS RELY UPON UNREALISTIC ASSUMPTIONS

Studies that forecast high job losses resulting from climate legislation are usually sponsored by dirty fuel industries that stand to profit from blocking climate legislation, and these studies rely upon implausible assumptions to produce their results. The analysts assume there are no profitable opportunities for energy efficiency improvements, despite overwhelming evidence to the contrary, and despite provisions in climate legislation that would increase the need for energy efficiency. They also severely minimize the capacity for growth in clean energy industry—some to zero above business as usual. Where they do allow for growth in low-carbon energy they assume production costs will not decrease over time as a result of energy efficiency, economies of scale, and substantial incentives provided in climate legislation. In sum, industry-funded studies assume little to no market innovation in response to a carbon price and complementary legislative provisions, and an imaginary world in which the current economy is using energy with perfect efficiency.¹⁹ These types of alarmist studies have been churned out to impede progress to protect our air, water, and health many times during the last four decades, and none of the predicted doomsday scenarios ever materialized.

THE ECONOMY CAN ADJUST SMOOTHLY TO CLIMATE LEGISLATION

Past experience tells us that with the right policy framework we can achieve a smooth transition to a clean energy economy. As with all environmental regulations, a cap on carbon will be phased in over time, giving the economy time to gradually adjust. In its economic analysis of the American Clean Energy and Security Act (ACES), the Congressional Budget Office (CBO) concluded: “The shift in employment between sectors of the economy would occur over a long period, as the cap on emissions became progressively more stringent...the larger story is one of offsetting job creation and shifts of workers to other sectors of the economy.”²⁰ Rather than causing abrupt widespread job loss, clean energy will create lots of new jobs to meet growing demand for energy, gradually replacing fossil fuel plants as they naturally reach the end of their useful lifetime. The CBO further notes that “the economy can absorb such long-term changes and maintain high levels of overall employment.”

Some job losses can be expected in extractive fossil fuel industries, but in the aggregate their number and therefore, impact, will be small. Further, provisions in climate legislation will protect employment in energy-intensive industries. An interagency task force concluded that such provisions in climate legislation can fully offset job impacts on energy-intensive manufacturing.²¹

Of course, job loss is never a small matter for the individuals personally affected. Rather than serving as a basis to oppose legislation, the appropriate policy response is to mitigate the small number of jobs lost, through various measures, such as job training, transitional assistance, initiatives to create alternative employment opportunities, and retirement packages for older workers. For example, displaced coal miners could be employed to retrofit homes to be more energy efficient. Because so few workers are likely to be negatively affected by climate legislation, only a small portion of the value of carbon allowances under a cap-and-trade system would be needed for such programs.

THE BENEFITS ARE CLEAR, AND NOW IS THE TIME TO ACT

Past successful efforts to regulate pollution show that we can simultaneously strengthen the economy, increase jobs, and reduce pollution. And economic analyses of climate legislation by respected government agencies and academic institutions predict the same. Passing comprehensive climate and energy legislation will put the United States onto a long-term and steady growth path, keep America at the forefront of the clean energy revolution and bring home the jobs that come with that leadership position, and reduce dangerous carbon dioxide pollution levels in the earth’s atmosphere.

¹ U.S. Environmental Protection Agency (1999). The Benefits and Costs of the Clean Air Act, Appendix D.

² The environmental protection industry: A proposed framework for assessment (1995). U.S. EPA, Washington D.C.

³ The clean energy economy: Repowering jobs, businesses, and investments across America (2009). PEW Charitable Trusts, Washington D.C.

⁴ Note: net job creation is not equal to 50,000-85,000 per year minus 1,000-3,000. Had the United States spent its growing income on other goods and services, these would have also created jobs, though slightly less due to environmental protection industry being more labor intensive than the rest of the economy as a whole.

⁵ This summary of survey data is drawn from Goodstein. The trade off myth: Fact & fiction about jobs and the environment (1999), Island Press: Washington D.C.

⁶ Pollin, R, Wicks-Lim, J, and H Garrett-Petlier (2009). The economic benefits of investing in clean energy: how the economic stimulus program and new legislation can boost U.S. economic growth and employment. Political Economy Research Institute, University of Massachusetts, Amherst, MA.

⁷ A net increase in jobs will be created in the presence of unemployment, i.e. there is a pool of workers available from which to draw labor. Historically, the U.S. economy has never operated at full employment, making clean energy investments a potential source for new job creation.

⁸ Some have argued that average wages are lower in clean energy, however this argument is misleading. Wages are on average lower, but more workers are needed at every wage level for clean energy. Pollin, R, Wicks-Lim, J, Garrett-Petlier H, (2009). Green prosperity: how clean-energy policies can fight poverty and raise living standards in the United States. Political Economy Research Institute, University of Massachusetts, Amherst, MA. Moreover, because clean energy is more labor intensive and fossil more capital intensive, a shift to clean energy is progressive in that it redistributes income to labor from owners of capital.

⁹ Roland-Holst, D, and Kahl, F (2009). Clean energy and climate policy for U.S. growth and job creation: An economic assessment of the American Clean Energy and Security Act and the Clean Energy Jobs and American Power Act.

¹⁰ Gold, R, Furrey, L, Nadel, S, Laitner J, and Elliott, N (2009). Energy efficiency in the American Clean Energy and Security Act of 2009: impacts of current provisions and opportunities to enhance the legislation. ACEEE, Washington D.C.

¹¹ Analysis of the transportation sector: Greenhouse gas and oil reduction scenarios (2010). Environmental Protection Agency.

¹² Baum, A, and D Luria, Driving growth: how clean cars and climate policy can create jobs.” The Planning Edge, and Michigan Manufacturing Technology Center, March 2010. Note: this analysis is a “partial equilibrium” analysis in that it only examines impacts in the auto sector and its supply chain, rather than across all sectors of the economy simultaneously.

¹³ Projected EOR production is taken from “U.S. oil production from accelerated deployment of carbon capture and storage,” Advanced Resources International, March 2010. Jobs are calculated by applying the multiplier for oil and gas extraction from PERI (2009) (referenced above) to the amount of additional oil produced from CO2-EOR. We conservatively assume that each incremental barrel of oil produced relative to EIA’s Annual Energy Outlook displaces 0.75 barrels of imports and 0.25 barrels of domestic oil from other sources.

¹⁴ Pohjanpalo, K. Nobel Winner Krugman Says “End of World Postponed.” Bloomberg News, September 21, 2009.

¹⁵ Remarks of Lawrence H. Summers, Director of the National Economic Council. Responding to an historic economic crisis: The Obama program. Brookings Institution, Washington, DC, March 13, 2009, p. 10; Stiglitz, J. and Stern, N. Obama’s chance to lead the green recovery: As the world moves to a low-carbon economy, those who embrace these technologies will have a competitive advantage. Financial Times, March 3, 2009.

¹⁶ Senator Jeff Bingaman, “ACELA Fast-Tracks Jobs,” Nov. 5, 2009. Available at www.energy.senate.gov

¹⁷ Tankersley, J and Lee, D. China takes lead in clean-power investment; U.S. falls to No. 2 in funding for such alternative sources as wind and solar. Los Angeles Times, March 25, 2010.

¹⁸ World Energy Outlook 2009. International Energy Agency.

¹⁹ For a more detailed critique, see http://switchboard.nrdc.org/blogs/ljohnson/eight_questions_to_ask_about_c.html and http://docs.nrdc.org/globalWarming/files/glo_10042201a.pdf.

²⁰ The economic effects of legislation to reduce greenhouse-gas emissions (2009). U.S. Congressional Budget Office.

²¹ The Effects of H.R. 2454 on International Competitiveness and Emission Leakage in Energy-Intensive Trade-Exposed Industries (2010); An Interagency Report Responding to a Request from Senators Bayh, Specter, Stabenow, McCaskill, and Brown.