

Country Brief on Low Carbon Societies, United States

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Abstract²

The most recent Greenhouse Gas Emissions Inventory of the United States (2010) puts 2008 U.S. aggregate emissions at 6957 million tons of carbon dioxide-equivalents (MtCO₂e), or 6016 MtCO₂e when including land use and forestry changes (LULUCF). The energy sector accounts for roughly 86% of this total. Depending on the source of information, this makes the United States the largest or second largest emitter of greenhouse gases in the world.

A different picture emerges when one looks at the evolution of emissions intensity in economic terms. There are some signs that the dependence of the U.S. economy on GHG-emitting activities is slowing. The emissions intensity of the U.S. economy has actually fallen by 30% over the 1990-2008 period. Emissions per capita have fallen 6% over the same period.

The challenge of producing a comprehensive national legal framework to reduce greenhouse gas emissions in the United States should be understood in the context of its particular geographic, economic, and institutional circumstances. The large land area comprising the United States, as well as the system of strong checks and balances that characterize the federal government, largely explain the tendency for climate change initiatives to begin at the local or regional level.

While the completion of comprehensive national legislation to reduce greenhouse gases has been stalled in the U.S. Congress over 2010, such legislation is only one tool in the long-term strategy to attain a low carbon society. Climate mitigation actions are rigorously being developed at the regional and state levels. The President of the United States has expressed his prioritization of climate change issues through the issuance of executive orders for government agencies to move forward with climate mitigation activities. U.S. government agencies, answering directly to the President, have taken significant steps in steering economic activities on a low carbon path.

There are concrete actions that have been taken, evidence of a U.S. transition towards a low carbon economy. Three regional, multi-state, carbon-reducing initiatives are currently being implemented or planned. The U.S. Environmental Protection Agency (EPA), after having been ordered by the U.S. Supreme Court to evaluate greenhouse gases for harm to the public (as outlined by the Clean Air Act), released its Endangerment Finding that finds GHG emissions to harm public health and welfare and requires emissions to be explicitly controlled accordingly. Its Mandatory Reporting Rule requires GHG emissions accounting for most producers, covering roughly 85% of current emissions. This will allow for great advancements in knowledge of the sources of GHGs and of the impacts subsequent to any climate mitigation policy.

¹ The views expressed in this paper are only those of the author and do not necessarily represent those of the U.S. Government or the U.S. Environmental Protection Agency. The author may be contacted at garber.david@epa.gov for further information.

² While the majority of the author's words and ideas are original, descriptions of national programs are often extracted from the 2010 U.S. Climate Action Report, found at: <http://www.state.gov/g/oes/rls/rpts/car5/index.htm>

A large part of the reason for any hesitancy to move forward with national climate legislation is rooted in uncertainties inherent to discussions of climate change. Predictions of climate change effects as well as policy effects are characterized by a wide range of estimates. The urgency of the climate change issue has encouraged the rapid development of a wealth of scientific inquiry as well as an unprecedented level of collaboration between government and centers of research.

The enthusiasm to find a viable solution to the climate change problem is evident from the posting of climate specialists throughout many parts of the United States Government. The United States Global Change Research Program is a clearinghouse of climate research produced throughout the 13 federal government agencies that are heavily involved in advancing knowledge in the area. Research activities have been particularly intense over the past 2 years, demanded by the public as lawmakers debate the best way to move forward with national climate legislation.

The United States Environmental Protection Agency has been a strong advocate of bringing scientific inquiry into policy discussions. The EPA, in its analyses of the economic impacts of climate change policy, has made use of some of the most advanced computable general equilibrium (CGE) models that are currently available. For this reason, the U.S. Congress has repeatedly called upon the EPA to compare different forms of legislation.

Nevertheless major challenges remain in using scientific inquiry to create strong climate mitigation advocates among U.S. citizens. While advancements in estimating economic costs of policy have been impressive, progress on estimating the ancillary effects of climate change has been significantly slower. The result has been to create a conversation with lawmakers and the public about the low cost of climate policy rather than about the high cost of no policy. Particularly during this current economic recession, it is essential that this conversation on policy costs include, and perhaps center on, the economic costs of doing nothing in the face of climate change.

The Decision-Making Mechanism in the United States

The challenge of producing a comprehensive national legal framework to reduce greenhouse gas emissions in the United States should be understood in the context of its particular geographic, economic, and institutional circumstances. The large land area comprising the United States, as well as the system of strong checks and balances that characterize the federal government, largely explain the tendency for climate change initiatives to begin at the local or regional level. This section presents a geographic and political context of the United States, necessary to understand and further discuss the most likely path to promote a low carbon society.

At a total land area of 9.2 million km², the space that any national-level low carbon program in the United States would cover is vast. A wide variety of distinct geographies are contained within U.S. borders: Atlantic and Pacific oceans, the Gulf of Alaska and the Gulf of Mexico, two major mountain chains, a sub-tropical region, a large desert in the southwest, and the frigid plains of the north-central region, among others.

It is perhaps this geographic, as well as subsequent cultural, diversity that has expressed itself through the federal nature of U.S. governance. Each U.S. state is represented by two elected representatives in the Senate, each population-defined locality being further represented by an elected official in the House of Representative. The Senate and the House of Representatives comprise the bicameral Congress, the legislative branch of the U.S. Proposals (bills) become laws after both the House and the Senate pass their own versions of a bill, reconcile the differences between the two, and send a finished product to the President for signature.

U.S. governance is also characterized by a strong system of checks and balances between its three branches: legislative, executive, and judiciary. The President reviews bills approved by Congress and may prevent a bill from becoming law if (s)he finds it particularly flawed. Congress may then modify the bill such that it is favorable to the President or, if sufficiently strong support for the original version exists, may force the bill to become law despite the President's objection.

Other than the power to block a bill from becoming national law if insufficient congressional support for it exists, the United States President has no official direct influence in creating new laws. Government agencies and departments, such as the Environmental Protection Agency and the Department of Energy, as part of the executive branch of government, also do not have an official direct voice in the Congress.

The unique characteristics of the U.S. political system help to explain the particular challenges of passing national laws related to climate change. They also help to explain the grass-roots pathway by which groundbreaking plans for national action gain acceptance on the national level.

National Legislation

The United States made significant progress on the road towards a Low Carbon Society with the passage of the American Clean Energy Security Act (ACESA) in June 2009 in the U.S. House of Representatives. ACESA is a comprehensive energy and climate mitigation package that includes a greenhouse gas emissions cap and trade mechanism. Corresponding to the U.S. commitment at Copenhagen, the Act calls for a reduction of GHG emissions by 17% by 2020 and by 83% by 2050, both measured relative to the 2005 level.

- Emphasizing energy-efficient technologies, practices, and policies, including a 30 percent tax credit for residential energy efficiency investments, as well as mandates for improved energy efficiency standards for electric heat pumps, central air conditioners, water heaters, wood stoves, oil furnaces, and hot-water boilers.
- Increasing the investments allocated to new clean renewable energy bonds and qualified energy conservation bonds.
- Investing in critical energy infrastructure by providing loan guarantees for new or upgraded electric power transmission projects, and by providing funding for the Smart Grid and new Smart Grid technologies.
- Asserting an energy efficiency leadership role for the federal government, investing in the “green” conversion of federal facilities, and purchasing vehicles for government use with higher fuel economy, including hybrid and electric vehicles.

In addition to the American Recovery and Reinvestment Act, other recently enacted laws are noteworthy actions to promote a low carbon society. The Energy Independence and Security Act (EISA) of 2007 sets a minimum target of 35 miles per gallon for the combined fleet of cars and light trucks by 2020. In May 2010, The U.S. Environmental Protection Agency and the Department of Transportation published a final regulation on increasing fuel economy standards, the rule expected to save roughly 960 million MtCO_{2e} over the life of the regulated vehicles.

EISA also establishes a renewable fuel standard, increasing from 9 billion gallons in 2008 to 36 billion gallons by 2022, including 21 billion gallons from cellulosic ethanol and other advanced biofuels. The law also contains a variety of new standards for reducing energy use in lighting and for residential and commercial appliance equipment, including incandescent and fluorescent lamps, residential refrigerators, freezers, electric motors, and other advanced biofuels.

EISA also does the following:

- Establishes a national goal to achieve zero-net-energy use for new commercial buildings built after 2025.
- Requires total energy use in federal buildings to be reduced by 30% by 2015 from 2005 levels.
- Authorizes the Energy Efficiency and Conservation Block Grant Program to develop and implement projects that help reduce energy use and emissions at the local and regional levels.
- Directs U.S. government agencies to support accelerated research, development, and commercial application of clean technologies.
- Expands research and development on carbon capture and sequestration.

Signed into law in October 2008, the Energy Improvement and Extension Act of 2008 offers an array of incentives for U.S. energy production and conservation, including provisions for renewable energy production, clean coal and carbon sequestration, and efficient transportation and end-use standards and incentives. Measures to encourage investment in capital-intensive projects with otherwise high financial risk are emphasized, such as incentives for wind, biomass, solar, geothermal, landfill gas, trash

combustion, combined heat and power systems, marine and hydropower facilities, fuel cells, microturbines, and advanced coal-based generation technology projects. The Act also accelerates the deployment of the next generation of vehicles by supporting renewable and alternative fuels and alternative-fuel vehicles. Other low-carbon transportation measures include incentives for bicycle commuting and idling-reduction devices in heavy trucks.

The Current Administration's Climate Change Agenda

The Obama Administration is fully supportive of advancing clean energy and of United States commitments to contribute to global reductions in greenhouse gas emissions. While limited by the actions of Congress, the President has made a number of decisions that will lead to lower GHG emissions, including the release of executive orders that direct federal government agencies to carry out climate mitigation actions.

For example, on October 5, 2009, President Obama signed an Executive Order that sets sustainability goals for federal agencies and focuses on improving their environmental, energy, and economic performance. The Executive Order requires federal agencies to set a 2020 GHG emission reduction target within 90 days, increase energy efficiency, reduce fleet petroleum consumption, conserve water, reduce waste, support sustainable communities, and leverage federal purchasing power to promote environmentally responsible products and technologies.⁴

The new Executive Order requires agencies to measure, manage, and reduce GHG emissions toward agency-defined targets. It describes a process by which agency goals will be set and reported to the President by the Chair of the Council on Environmental Quality (CEQ). The Executive Order also requires agencies to meet a number of energy, water, and waste reduction targets, including:

- 30 percent reduction in vehicle fleet petroleum use by 2020, relative to 2005;
- 26 percent improvement in water efficiency by 2020;
- 50 percent recycling and waste diversion by 2015;
- 95 percent of all applicable contracts in compliance with sustainability requirements;
- implementation of the 2030 net-zero-energy building requirement;
- implementation of the stormwater provisions of the Energy Independence and Security Act of 2007 (EISA), section 438; and
- development of guidance for sustainable federal building locations in alignment with the Livability Principles put forward by the U.S. Department of Housing and Urban Development (HUD), the U.S. Department of Transportation (DOT), and the U.S. Environmental Protection Agency (EPA).

For additional information on Administration activities on climate change, see the latest United States Climate Action Report, at <http://www.state.gov/g/oes/rls/rpts/car5/index.htm> .

⁴ See the text of the Executive Order at: http://www.whitehouse.gov/assets/documents/2009fedleader_eo_rel.pdf

Climate Change and the Clean Air Act (CAA)

The Clean Air Act, a federal law passed by the U.S. Congress in 1970, also established the Environmental Protection Agency as the steward of environmental health in the country. Under the CAA, through a variety of “rules,” EPA sets quantity limits on certain air pollutants. U.S. states are obligated to develop State Implementation Plans that outline how each state will control air pollution under the CAA. If a state does not fulfill its responsibilities under the CAA, the EPA can issue sanctions against the state and may take over enforcing the CAA in that area.⁵

In 2007 the United States Supreme Court decided that greenhouse gases are subject to consideration for regulation under the CAA, obligating the U.S. EPA to review evidence of harm to the U.S. public from GHG emissions. In December 2009 the EPA released its final Endangerment Finding, that GHG emissions are harmful to the public and subject to limits under the CAA. The U.S. EPA is currently developing a series of rules that limit greenhouse gas emissions.

Also in 2009, the Environmental Protection Agency issued a Rule requiring reporting of greenhouse gas emissions from large U.S. sources. This is intended to collect accurate and timely emissions data to inform future policy decisions. Under the rule, suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHGs are required to submit annual reports to EPA. Compiling comprehensive and accurate data on GHG emissions from U.S. sources lies at the cornerstone of United States climate mitigation efforts. The Reporting Rule covers approximately 85% of total U.S. GHG emissions of GHGs. Annual reporting begins in 2011, the data being made available to the public.

The EPA has released two additional rules related to the control of GHG emissions. In April 2010 the EPA and the U.S. National Highway Traffic Safety Administration (NHTSA) jointly released a final rule that sets the first ever harmonized GHG and fuel economy standards for light-duty vehicles of model years 2012-2016. The rule thus covers 60% of GHG emissions from the transportation sector. EPA is in the process of developing a rule that covers heavy-duty vehicles.

The May 2010 “Tailoring Rule,” aims to ease in GHG reduction obligations for smaller businesses by setting a threshold of 75,000 – 100,000 tons per year above which businesses must obtain an operating permit from the EPA. Roughly 70% of GHG emissions from stationary sources will be regulated upon implementation of the Tailoring Rule.⁶

Regional Action

In the U.S. tradition of grass-roots action, several local and regional greenhouse grass initiatives are worth noting. For an understanding of the American legislative path to a Low Carbon Society, it is crucial to understand that despite challenges at the national level, the American awareness of climate change issues manifests itself in such local initiatives that are closer-to-home but very real. Local and regional initiatives that require reductions in greenhouse gas emissions cover areas shown below in the map of figure 2.

⁵ For a basic description of the Clean Air Act, see: <http://www.epa.gov/air/peg/index.html>

⁶ Text of US EPA Rules can be found at: <http://www.epa.gov/NSR/actions.html>

Regional Greenhouse Gas Initiative (U.S. Northeast including Maryland, Delaware, New Jersey, New York, Connecticut, Rhode Island, Vermont, New Hampshire, and Maine):

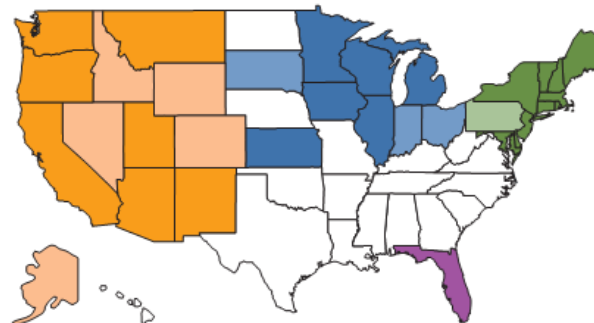
Launched on January 1, 2009, and adopted by law in all participating U.S. states, the Regional Greenhouse Gas Initiative (RGGI) is the first and only mandatory market-based U.S. cap-and-trade program to reduce GHG emissions. Emissions from large electricity generators in 10 Northeast and Mid-Atlantic states are capped at approximately 188 million short tons (approximately 171 million metric tons) of CO₂ per year from 2009 to 2014. Then the cap will be reduced by 2.5 percent in each of the four years from 2015 through 2018, for a total reduction of 10 percent. Offsets generated from a well-controlled list of eligible projects are permitted for submission of up to 3.3% of a covered entity's compliance obligations.

As of June 2010, the RGGI states have auctioned more than 220 million allowances and have generated revenues of over \$600 million. Most states have decided to auction the majority of allowances for public benefit and use the proceeds to invest in energy efficiency improvements and renewable energy programs at the state and local levels. The RGGI auctions are held quarterly.

For more information on the RGGI, see <http://www.rggi.org>

Figure 2: U.S. Regional Emissions Reduction Actions

Many states across the nation have joined regional initiatives to reduce greenhouse gas emissions and promote clean energy.



- Regional Greenhouse Gas Initiative (RGGI)
- RGGI Observer
- Midwest Greenhouse Gas Reduction Accord (MGGRA)
- MGGRA Observer
- Western Climate Initiative (WCI)
- WCI Observer
- Individual State Cap-and-Trade Program

Source: Pew Center on Global Climate Change.

Midwest Greenhouse Gas Reduction Accord (U.S. Midwest including Michigan, Wisconsin, Illinois, Iowa, Minnesota, and Kansas, along with the Canadian province of Manitoba):

The Midwestern Greenhouse Gas Reduction Accord, signed in Milwaukee, Wisconsin, in November, 2007, includes six U.S. Midwestern states, along with the Canadian province of Manitoba. The accord aims to:

- Establish greenhouse gas reduction targets and timeframes consistent with MGA member states' targets;
- Develop a market-based and multi-sector cap-and-trade mechanism to help achieve those reduction targets;
- Establish a system to enable tracking, management, and crediting for entities that reduce greenhouse gas emissions; and
- Develop and implement additional steps as needed to achieve the reduction targets, such as a low-carbon fuel standards and regional incentives and funding mechanisms.

In January, 2009, draft recommendations on a cap-and-trade program were released. The recommendations include mid-term targets that would reduce emissions by 18–20 percent from 2005 levels by 2020 and long-term targets that would reduce emissions by 80 percent from 2005 levels by 2050. Assuming adaptation into law by the six state legislatures, the cap-and-trade program is scheduled to come into effect in January 2012.

For more information on the Midwestern Greenhouse Gas Reduction Accord, see <http://www.midwesternaccord.org>

Western Climate Initiative (U.S. West including California, Oregon, Washington, Arizona, Utah, Montana, and New Mexico; Canadian provinces of British Columbia, Manitoba, Québec, and Ontario)

The Western Climate Initiative (WCI) was launched in February 2007 by the governors of five western states, with the goal of aggregate GHG emission reductions of 15 percent below 2005 levels by 2020. Beginning in 2012, WCI aims to cap emissions from the electricity sector (including imported electricity) and large industrial sources (including combustion and process emissions). The second phase is set to begin in 2015, when the program expands to include transportation fuels and residential, commercial, and industrial fuels not otherwise covered. The WCI also includes commitments to “complementary policies” promoting clean energy.

While several U.S. states have expressed enthusiasm for passing the legislation necessary for implementation of the WCI, the outcome of an upcoming November referendum in California may have a particular influence. “Proposition 23” would overturn California’s current global warming policies until the state unemployment rate remains at or below 5.5% for four consecutive quarters.

California represents approximately ½ of the emissions that would be covered by the initial implementation of the WCI in 2012, the remainder of the coverage represented by the other early implementing members: New Mexico, British Columbia, Manitoba, Ontario, and Québec. These six members represent roughly 70% of the total emissions covered by the full group of WCI members.

For more information on the WCI, see <http://www.westernclimateinitiative.org>

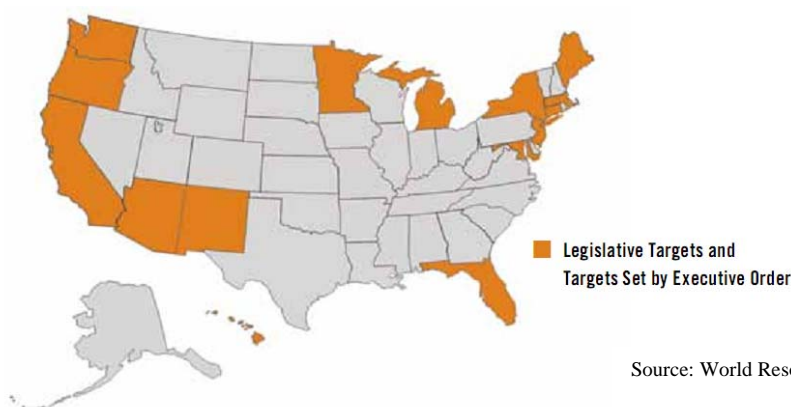
State-Level Action

At an even more local level and in addition to the regional agreements discussed above, as of July 2010 the legislatures of 10 U.S. states have enacted law establishing mandatory GHG reduction targets. Five additional states, through executive order of their respective governors, have mandatory emissions reduction targets. These states currently with GHG reduction policies are shown in figure 3.

In 2006, California became the first state to adopt legislation specifying mandatory GHG reductions. It was soon joined by Hawaii, New Jersey, Washington, Connecticut, Massachusetts, Minnesota, and Maryland. These laws cap state GHG emissions by a certain percentage relative to a baseline year, such as 1990. For example, California's Global Warming Solution Act has capped the state's GHG emissions at 1990 levels by 2020. In May 2009, Maryland passed a law requiring that the state achieve a 25 percent reduction in GHG emissions from 2005 levels by 2020. Maryland expects that decreasing emissions by this amount will have a positive net economic benefit of \$2 billion by 2020.

In another example of state-based action on climate change, Florida passed legislation in 2008 that authorizes its Department of Environmental Protection to develop a cap-and-trade program for the electric utility sector. Florida has set its reduction target at 2000 levels for 2017, 1990 levels by 2025, and 80% below 1990 levels by 2050.

Figure 3: Individual U.S. State Actions on Emissions Reductions



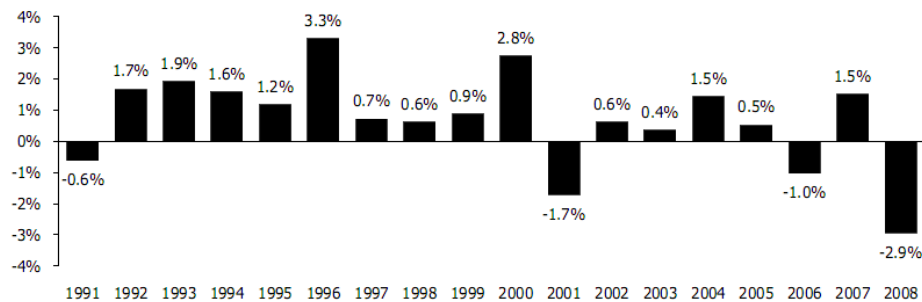
Source: World Resources Institute, July 2010

U.S. GHG Emissions

The most recent Greenhouse Gas Emissions Inventory of the United States (2010) puts 2008 U.S. aggregate emissions at 6957 million tons carbon dioxide-equivalents (MtCO₂e), or 6016 MtCO₂e when including land use and forestry changes (LULUCF).⁷ The energy sector accounts for roughly 86% of this total. Depending on the source of information, this makes the United States one of the largest emitters of greenhouse gases in the world.

⁷ See <http://www.epa.gov/climatechange/emissions/usinventoryreport.html>

Figure 4: Annual Percentage Change in U.S. Greenhouse Gas Emissions (without LULUCF)

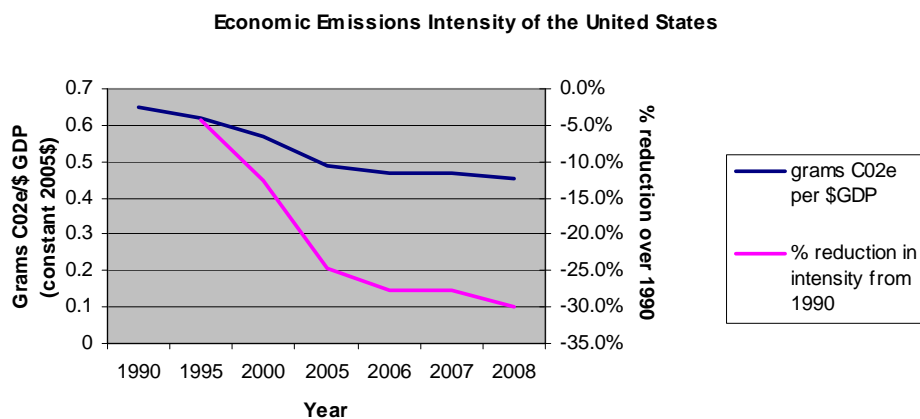


While the United States represents a large potential source of emissions reductions, other measures exist to gauge how clean the U.S. economy is becoming relative to the rest of the world. Many cited statistics used to say something about the cleanliness of an economy focus on emissions intensities in per capita or GDP terms.

In 2008 the economic emissions intensity of the United States was \$2388/tonne. The United States ranks 3rd among Kyoto Annex 1 countries (of which the United States is not a signatory) in economic emissions intensity. In population terms, the emissions intensity of the United States was 19.8 tons per person. Among Kyoto Annex 1 countries, the United States ranks 2nd in this regard.

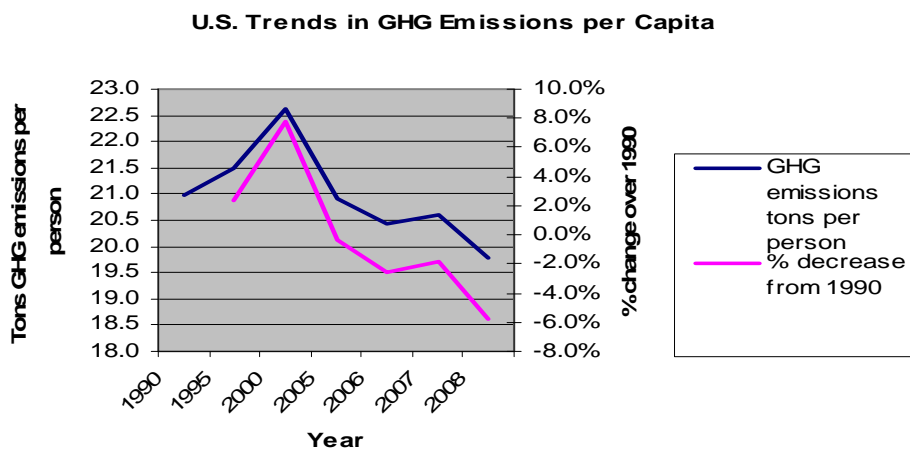
Perhaps a more interesting question about U.S. GHG emissions than on current numbers is on historical trends. Figure 4, above, shows the yearly percentage changes in cumulative GHG emissions (excluding LULUCF) in the United States. The quantity of emissions has increased in most years, with exceptions that are likely due to periods of economic slowdown.

Figure 5: Evolution of Economic Emissions Intensity of the United States



A different picture emerges when one looks at the evolution of emissions intensities. These are some signs that the dependence of the U.S. economy on GHG emitting activities is slowing. Figures 5 and 6 show the evolution of economic and population GHG emissions intensities in the United States from 1990 to 2008. It shows that the emissions intensity of the U.S. economy has actually fallen by 30% over the 1990-2008 period. Population-based emissions intensity has fallen by 6% over the same period.

Figure 6: Evolution of U.S. GHG Emissions Per Capita



Climate Change Science and Economics in U.S. Policy and Opinion

Climate change has become a prioritized issue throughout the U.S. government. This is in full evidence by the large presence of climate experts across the federal executive agencies.

The United States Global Change Research Program is a clearinghouse of climate research produced throughout the 13 federal government agencies that are heavily involved in advancing knowledge in the area.⁸ Research activities have been particularly intense over the past 2 years, demanded by the public as lawmakers debate the best way to move forward with national climate legislation. The Department of Energy (DOE) and the Environmental Protection Agency (EPA) are two prominent examples of agencies that have established spaces in which academic research and policy decision making inform each other on their respective discoveries.

The United States Department of Energy is one of the central agencies working to push forward advancements in climate science. The DOE runs several research centers throughout the country whose focus includes climate change. Research centers such as the National Renewable Energy Laboratory, the Pacific Northwest National Laboratory, the Lawrence Berkeley National Laboratory, the National Energy Technology Laboratory, and the Oak Ridge National Laboratory, among others, are working to develop clean technologies as well as to advance the science of policy economic analysis.⁹

The United States Environmental Protection Agency has been a strong advocate of bringing scientific inquiry into policy discussions. The EPA, in its analyses of the economic impacts of climate change policy, has made use of some of the most advanced computable general equilibrium (CGE) models that are currently available. The U.S. Congress has repeatedly called upon the EPA, as well as the DOE, to compare different forms of proposed legislation.¹⁰

Great advancements have been made in the modeling of climate change policy costs. CGE models with a high level of sectoral and household detail are beginning to bridge the gap between the so-called “bottom-up” and “top-down” models.

⁸ See <http://www.globalchange.gov>

⁹ See <http://www.energy.gov/organization/labs-techcenters.htm> for the gateway to these DOE research centers.

¹⁰ See <http://www.epa.gov/climatechange/economics/economicanalyses.html> for links to EPA climate policy economic analysis.

While sophisticated models are being used to analyze policy costs, a weakness common to virtually all of these models is their inability to model the economic costs arising from climate change itself in the case that no policy is implemented. This weakness expresses itself as an overestimation of economic growth in any given baseline (business-as-usual) scenario. Subsequently, policy costs to avoid climate change are overestimated as they are based on an over-optimistic outlook under the baseline (otherwise stated, the benefits of avoiding climate change are not included).

The inability of the current models to include the economic costs of climate change has had an adverse impact on public conversation over climate policy. During the latest wave of efforts to formulate national legislation, analyses have focused almost exclusively on how much the policy will cost the U.S. citizenry. Given the particularly fragile state of the current U.S. (as well as the global) economy, it has been difficult to convince the public to approve policy that economic analyses have estimated to have positive net costs.

Rather than continuing to focus exclusively on the costs of climate mitigation policy, it is essential that ancillary economic impacts of climate change be included and given their appropriate role. The discipline of economics casts the climate change issue as one of externalities. The market is unable to properly value public goods (the atmosphere) as it does well for privately owned goods. Thus, theoretically, any climate policy that “corrects the market” (and that is also carried out in a cost-effective manner) will show a positive net benefit to society.

The suggestion is to change the public conversation on the economics of climate change by investing more heavily in research of the ancillary economic impacts. The climate change issue should be discussed in the same manner in which typical pollution problems have been discussed – one party emits, another party suffers from emissions, and the suffering of the latter should be internalized into the emissions decision making of the former.

Summary

Despite the apparent slow pace of climate mitigation national legislation, climate action has been accelerating in the United States and has shown itself in various forms. One cap and trade system is already being implemented in the U.S. Northeast. Two comprehensive regional emissions reduction agreements are pending. Many U.S. states have implemented their own policies. The U.S. President has issued executive orders that require federal government agencies to move ahead with climate action and research. U.S. emissions intensities have continued to decline.

An important sign that the U.S. is prioritizing the climate change issue is the large presence of climate change experts working in or collaborating with the U.S. federal government agencies. Climate change science and economics is advancing in part due to an increasing stream of federal government financing. Climate models continue to become increasingly sophisticated in order to handle the vast complexity inherent in producing estimations.

The usefulness of climate economics models would increase with advancements on the “benefits side” of policy analysis. Currently, the majority of models aim to produce estimates of policy costs, without including the ancillary impacts of climate change. These positive impacts are large; and, following basic economic theory, they are expected to outweigh policy costs for

some positive level of mitigation. Advancing benefits analysis, sometime referred to as the Social Cost of Carbon, will help to steer public conversation towards one that identifies and focuses on the large economic cost that is currently being forced upon the public absent a mitigation policy.

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