

Policy Design Issues

Most major stakeholders now agree that they must respond to the scientific and the political reality of climate change. Their responses over the next few decades are likely to transform the industry's governance, operations, infrastructure and technology.

Federal climate change legislation and policy, which most Forum participants agreed is likely to be passed during the next Administration, will provide the architecture for the transformation of the electric power industry and, in many respects, the economy as a whole. Thus, the nature of federal legislation will have a major impact on the pace and direction of change in the industry and on the effectiveness of climate change mitigation.

Some participants cautioned that the recognition of an urgent need for federal climate change legislation would not necessarily result in timely or sufficient action to address the problem. They remain skeptical of the federal government's ability to provide leadership on climate change, since it has yet to begin establishing the appropriate regulatory framework and has not yet made real commitments to the development of critical technologies such as CCS. Some observers suggested that the process of passing and implementing climate change legislation and establishing a sound regulatory framework could take another decade, while at the same time climate change science increasingly points to a need for faster and more drastic action.

Bearing in mind both the urgency and the importance of government responses to climate change, participants in this session addressed questions of policy choice and design and considered challenges of passing climate legislation at the federal level.

Congressional Actions and Prospects

Both houses of Congress have been actively considering various climate bills over the past year. In early 2008, the Senate Environment and Public Works Committee reported a climate bill that subsequently failed to make it to a floor vote, even with the addition of more than \$800 million of incentives for carbon intensive industries. In the House of Representatives, the Energy and Commerce Committee held more than a dozen hearings on climate change in an effort to educate lawmakers on the state of the science and on policy options.

While the prospects for passage of climate legislation appear unlikely during the current Congress, it appears that a successful climate bill will have many provisions in common with the Lieberman-Warner and other bills recently considered including: a carbon emissions cap-and-trade system; increased support for energy technology R&D; incentives for energy efficiency; allowances for firms to receive credits for carbon offsets; and support to help hard-hit workers and industries transition to a low-carbon economy.

There are also several controversial issues that will still have to be addressed and resolved. For example, Congress remains divided over key policy design questions such as the inclusion of safety valve provisions in a cap-and-trade system, which would effectively set a ceiling price for carbon or, alternatively, the use of carbon taxes to give price certainty. There may also be trade provisions that offer protection to U.S. companies that cut emissions and that will have to continue to compete with foreign firms that do not. Some members of Congress favor border tariffs on imports as a means of leveling the playing field for U.S. companies, while others counter that such measures would be too broad a solution to a narrowly focused prob-

lem and would introduce new tensions into relationships with key countries such as China and India.

Although a weakening U.S. economy or the continued opposition of key Republican opponents could still impede its adoption, most participants agreed that comprehensive climate change legislation has considerable momentum behind it going into the next Congress. Since both Presidential candidates have indicated that they intend to sign a climate bill, and since Congress appears likely to remain under Democratic control, odds for the passage of legislation during the next presidential term appear better than even. Many are also eager to see the U.S. take a leadership role in climate diplomacy once again beginning in 2009 at the Copenhagen Conference, where negotiations on the post-Kyoto Protocol international climate policy architecture will commence. Even in the absence of legislation, the incoming President could order the Environmental Protection Agency to move ahead with carbon controls since the U.S. Supreme Court granted that authority in 2007.

Choosing Climate Policy Mechanisms

Any legislation adopted at the federal or state level will have to include concrete mechanisms for greenhouse gas abatement. Two policy tools for emissions reduction, the emissions cap-and-trade system and the carbon tax, are under consideration in the U.S. Cap-and-trade systems with a variety of trading regimes and traders have been adopted already by some U.S. states, by some private firms around the world, and by the European Union, which has by far the world's largest carbon trading system. Each of these options offers what many analysts feel are preferred approaches to emissions reduction and each design has its advantages and disadvantages, advocates and detractors. Forum presenters explained the key features and the relative merits and drawbacks of both approaches.

Proponents of a cap-and-trade system, including many forum participants, argue that one of the most important and fundamental features of this approach to emissions mitigation is that it allows

market forces to set the price of carbon and other controlled greenhouse gases. Reliance on the market to determine the price of emissions, they argue, would lead to economically efficient emissions reductions and, at least relative to carbon taxes, would be less likely to engender overwhelming voter resistance. The specified level of annual greenhouse gas emissions under a cap-and-trade system also offers greater certainty in the amount and schedule of reductions, providing greater assurance that emission goals will be met.

Some critics of cap-and-trade point to the volatile first phase of the European Emissions Trading Scheme (ETS) as evidence of inherent shortcomings of this policy approach to carbon management. Yet, other analysts who have watched ETS closely into its current second phase contend that critics have misinterpreted the implementation of the system. By this reckoning, the ETS has achieved modest but real results in terms of emissions reductions and stable carbon prices thus far in its second phase (2008-2012).

The initial allocation of emissions permits is one of the most controversial questions surrounding cap-and-trade proposals. Many analysts advocate free distribution of a fixed percentage of permits, at least for a period of time, to the most carbon-intensive emitters—those who would incur the greatest hardships under the cap-and-trade system. The remaining permits would be auctioned on the open market. Using free allowances to reduce inherently unequal burdens could be an important means of garnering the support of firms and industries that might otherwise be powerful political opponents. Auction of permits, on the other hand, would not favor major carbon emitters and would generate more funds for research and development, adjustment assistance, and other desirable goals that could help win Congressional support. Advocates of cap-and-trade emphasize that a well-functioning system would also necessarily incorporate design features to prevent allowance hoarding and price manipulation. Whether permits are allocated at no charge or by auction, however, providing for banking and borrowing of emissions credits would introduce greater flexibility into the system by allowing emitters to either save or draw down emissions allowances in response to market conditions.

Carbon offsets managed through the Clean Development Mechanism (CDM) could also be incorporated into a cap-and-trade system as a means of controlling cost. Offsets would allow emitters in wealthier countries to fund emissions reductions in developing countries in cases where cheaper emissions reductions can be found there. Offsets, while promising, present an accounting challenge. They would require independent verification by a third party, such as the CDM Board in Bonn since both purchasers and providers would have incentives to exaggerate the effectiveness of offset projects. Currently however, there is no established federal level regulatory framework for carbon trading in the U.S. and no global governance structure either for carbon allowances or for carbon offsets. Some analysts believe that effective management of offsets will require the establishment of a baseline emissions scenario prior to the approval of any particular project, since offset projects are often based on counterfactual measurements of avoided emissions. Effective offset programs will require more rigorous measurement and documentation methods.

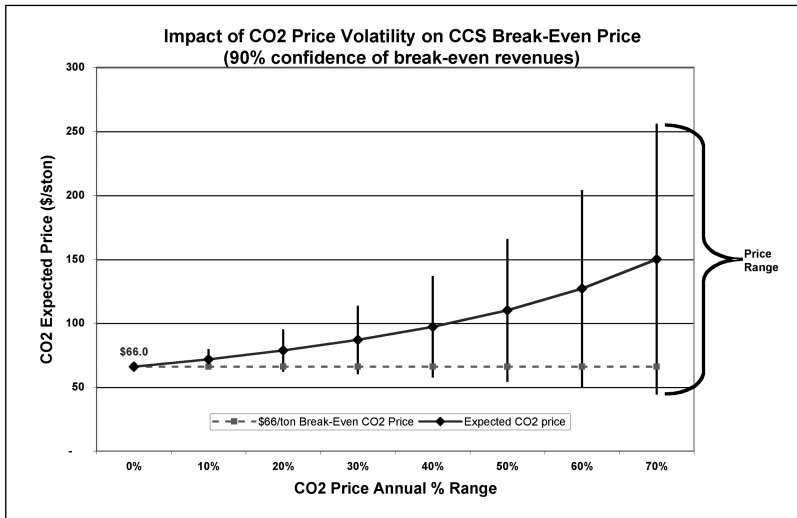
The “safety valve” is another cap-and-trade system design feature that has sparked controversy. Since emissions prices are set by the market, cap-and-trade systems offer no guarantees that prices will not rise to unanticipated high levels. For example, carbon prices in the European Union are expected to continue to rise throughout Phase II of the Emissions Trading Scheme (2008-2012) and beyond from the current level of approximately €23. A safety valve would effectively set a ceiling price for emissions in any given year as a means of controlling allowance prices for affected industries. Opponents of the idea argue that safety valves provide a disincentive for firms to reduce emissions and, unless it is set very high, amounts to a de facto carbon tax, resulting in an inefficient, hybridized climate policy. Moreover, critics argue that other hedging mechanisms could be used to reduce a firm's potential exposure to high carbon prices.

For those who favor carbon taxes over cap and trade, the ability to provide certainty on carbon prices and their impact on the economy is the most attractive feature. Since it is not possible to control both the quantity and the price of emissions reduction, tax proponents fear

that the statutory emissions reductions under a cap-and-trade system would be likely to lead to high price volatility, as has often characterized the SO₂ tradable permit regime, and overall high carbon prices. Recent analyses also suggest that adoption of the cap-and-trade system proposed under the Lieberman-Warner bill could introduce significant price volatility into both carbon and gas markets.

While emissions banking and borrowing provisions could help to alleviate some of the CO₂ price volatility under cap and trade, extensive volatility could preclude sufficient investment in critical new technologies. One analysis suggests the extent to which greater volatility would raise the average expected price investors might require to invest in CCS. (See Figure 4.)

CO₂ Price Uncertainty and Investment



Source: The Brattle Group

Assuming a level price of \$66 per ton of CO₂ were needed to break even on an investment in carbon capture and storage, price variability would raise the average expected price needed to ensure that 90 percent of the time the investment will break even or make a profit.

Similarly, one analysis suggests that carbon prices would be highly sensitive to changes in natural gas prices. For example, under one coal-to-gas redispatch scenario, a 20 percent rise in natural gas price would necessitate a 30 percent rise in carbon price to maintain the same emissions reduction.

Proposed cost control mechanisms under cap and trade aim to make carbon prices less volatile and thus more tax-like, in the opinion of carbon tax proponents. Yet these features may still be insufficient to allow cap and trade to deliver sufficient stability in terms of either price or emissions reductions.

Trade Implications of U.S. Climate Policy Choices

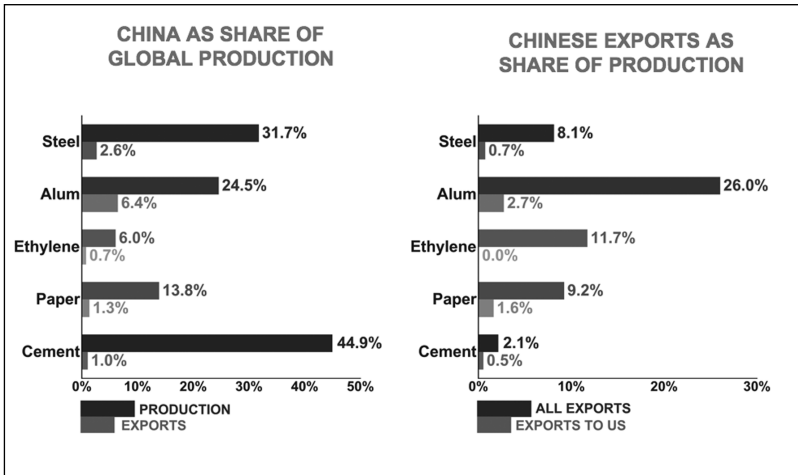
Regardless of the climate policy course that the U.S. chooses in coming years, industry and lawmakers have expressed concerns that it will give major trade advantages to countries that have not also adopted mandatory limits on greenhouse gas emissions. Globalization has already put great pressure on some U.S. manufacturing, and a primary concern now is that climate policy will disadvantage U.S. industry further, benefiting competitors in China particularly.

Some members of Congress and U.S. industry have proposed tariffs on energy-intensive imports from China and other developing countries to prevent such “carbon leakage.” These measures would impose comparable costs on imports from targeted countries and protect U.S. heavy industries expected to be most affected by climate policies including steel, chemicals, aluminum, paper, and cement.

Yet closer analysis suggests that such tariffs would offer little protection to U.S. industry or leverage to the U.S. government and would serve principally to exacerbate relations between the U.S. and China, for several reasons. First, China is a minor source of U.S. imports in each of the industries mentioned as vulnerable, with the exception of cement, ranking it behind major partners by a factor of three or more. Second, demand for energy- and carbon-intensive Chinese goods is growing much faster domestically and in other

developing countries than it is in the U.S. or other OECD countries, where demand is even decreasing in some cases (e.g. steel, cement). Thus, U.S. tariffs would be likely to impose next to no pressure on China's carbon-intensive industries (see figure below).

Extent of U.S. Trade Leverage over China



Source: Peterson Institute and World Resources Institute. Data from UN Comtrade, IISI, IAI, FAOStat, OGI, USGS and CSA estimates.

Both concern that a cap-and-trade program will cause carbon-intensive U.S. industries to lose market share to China and hope that broad trade restrictions could prevent such a loss appear to be exaggerated. China is not a large exporter of these products, and Chinese exports are not a large share of U.S. imports.

Third, the Chinese government is already seeking to rein in exports of carbon-intensive goods, not because of potential climate impacts, but because of the impacts heavy industry has on human health domestically. For example, the Chinese government's removal of a value added tax rebate on steel exports in June 2007 has amounted to the equivalent of a \$50/ton tax on steel. Combined with the effect of a weakened U.S. dollar, Chinese steel imports already face a de facto U.S. import tariff of \$300.

Some analyses show that the structure of the Chinese economy may already be changing in important ways that have not yet been recognized by the International Energy Agency and others making projections of China's future carbon emissions. While mainstream projections show Chinese emissions on a steep, upward trajectory, China's discernible shift toward importing more energy-intensive goods and manufacturing less energy-intensive ones for the domestic and import markets could reshape China's emissions trajectory fundamentally. Rather than impose tariffs or other measures that are likely to do more harm than good, the U.S. should focus on constructive engagement with China through, for example, technical cooperation that will accelerate the reduction of industrial energy intensity and promote engagement on climate change and other key issues.

The perceived recent growth in protectionist sentiment in the U.S. Congress stems in large part from the desire to preserve U.S. manufacturing jobs, which appear threatened by the prospect of a climate policy, in the eyes of some observers. Yet it may be that the growth in new green jobs in the U.S. stimulated by climate policies could more than offset losses due to the closure of carbon-intensive manufacturing facilities and carbon leakage overseas. Moreover, as one analyst suggested, international trade and growth need not be a zero-sum game. Like other high tech industries such as information technology, green industries such as renewable energy are likely to constitute a large, international network. The success of a single company might entail job growth in the U.S., China, India, and Europe simultaneously, as some tasks are outsourced and others are performed at home.