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Business Opportunities in Climate Change Mitigation

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The refusal of the United States to ratify the Kyoto Protocol does not mean that U.S. companies will remain under no compulsion to reduce their emissions of greenhouse gases (GHG), which are widely thought to be contributing to global climate change. Rather, many states, acting alone or in regional groups, are adopting their own rules. Moreover, many believe that whoever becomes president in January 2009, whether a Republican or a Democrat, will seek to reengage the U.S. in the international system of climate change regulation.

The absence of a unified federal approach may increase the costs of compliance, but it also creates laboratories for testing control measures before they are imposed nationally. The considerable expenditures that many companies are incurring are also creating major business opportunities.

This article summarizes the opportunities created for U.S. businesses by the emergence of a fragmented regulatory regime and the anticipation of a federal program.

Background

In 1992 Congress ratified and President George H.W. Bush signed the United Nations Framework Convention on Climate Change (UNFCCC). In order to implement the convention's objective of preventing human activities from damaging the climate, international negotiations led in 1997 to the Kyoto Protocol, which requires industrialized countries to reduce their GHG emissions. The Clinton Administration supported the Kyoto Protocol, but the Senate was hostile, due to the implementation costs and the Protocol's lack of binding controls on rapidly growing economies such as China and India. In March 2001, shortly after taking office, President George W. Bush repudiated the Kyoto Protocol.

Nonetheless, the Protocol came into force in 2005 when Russia ratified it. The U.S. and Australia are the only major industrial nations that have not joined. Each participating industrial country must reduce its GHG emissions during the period 2008-2012 by a specified percentage below 1990 baseline levels. An international "cap and trade" program allows countries that can achieve emissions reductions at low cost to sell credits to other countries where such reductions are more expensive.

The compliance costs of the Kyoto Protocol are further reduced by the devices called the Clean Development Mechanism (CDM) and Joint Implementation (JI), in which countries can pay for emissions reduction programs in less developed countries. Several hundred projects have been registered under the CDM; they are listed on the UNFCCC's Web site. The largest by far,

announced in August 2006, was a $1 billion deal assembled by the World Bank and 11 mostly European utilities, banks, trading firms and others to help two companies in China reduce their emissions of HFC-23, a powerful greenhouse gas.

Since the U.S. is not a signatory to the Kyoto Protocol, emissions reductions achieved in the U.S. are not eligible for credit under Kyoto's trading program.

The Kyoto Protocol is inspiring state and regional programs in the U.S. to adopt similar mechanisms.

Greenhouse Gas

Regional Greenhouse Gas Initiative (RGGI) is the most advanced of these programs. Its members are seven northeastern states -- Connecticut, Delaware, Maine, New Hampshire, New Jersey, New York and Vermont. Maryland will also be joining. RGGI aims initially at carbon dioxide from electric power plants that have a capacity of at least 25 MW, though other sources and gases may be targeted in the future. Mandatory emission reduction targets will take effect on Jan. 1, 2009.

Somewhat like Kyoto, RGGI adopts a cap-and-trade system, and also allows "offset projects" that bear some similarity to Kyoto's CDM. A model rule released by RGGI in August 2006 lists these types of approved offset projects, and provides many details on each type:

i) Landfill methane capture and destruction

ii) Reduction in emissions of sulfur hexafluoride, another potent GHG

iii) Sequestration of carbon due to afforestation (i.e., the conversion of non-forested land to forested land, as defined)

iv) Reduction or avoidance of carbon dioxide emissions from natural gas, oil, or propane end-use combustion due to end-use energy efficiency

v) Avoided methane emissions from agricultural manure management operations.

These projects may be located in any participating state, or in other states that enter into agreements with RGGI states.

By promulgating this list, RGGI has created a market for companies that can carry out any of these kinds of projects. Electric utilities subject to RGGI will want to know if they can achieve offset credits at reasonable cost through these kinds of projects. These utilities are also customers for businesses that can help them improve their efficiency or otherwise reduce their carbon dioxide emissions.

California

On Aug. 31, 2006, the legislature passed the California Global Warming Solutions Act. Governor Arnold Schwarzenegger has indicated he plans to sign it. It aims to roll back GHG emissions to 1990 levels by 2020. (In contrast, the Kyoto Protocol would obligate the U.S. to go seven percent below 1990 emission levels in 2008-2012; RGGI seeks to freeze GHG emissions at current levels between 2009 and 2015 and reduce them about 10 per cent below that by 2019.)

The California law, unlike RGGI, aims at all types of GHGs, not just carbon dioxide, and at many sources, not just power plants. However, it is much less fully formed. The California Air Resources Board (CARB) is given the task of working out the details. CARB may allow for participation in "market-based compliance mechanisms," which could include emissions trading, credits, and other actions that also resemble Kyoto. The law provides that in setting the rules CARB shall "maximize additional and economic benefits for California, as appropriate," but it does not say that only projects in California are eligible.

Litigation is currently proceeding in the U.S. District Court for the Eastern District of California, styled Central Valley Chrysler-Jeep v. Witherspoon, in which the automobile industry is challenging a regulation adopted by CARB in 2004 limiting GHG emissions from motor vehicles. The suit alleges that this rule is preempted by federal law. Similar challenges may be expected to rules CARB promulgates under the new law.

Other States

All the RGGI states, California, and many other states have adopted additional programs that, whether explicitly or in effect, would reduce GHG emissions. These programs are coming out at an accelerating rate. For example, on Sept. 7, 2006, Governor Janet Napolitano of Arizona signed an executive order calling for the state to reduce emissions of GHGs to 2000 levels by 2020, and to 50 per cent below that level by 2040.

One of the most important kinds of state programs is the "Renewable Portfolio Standards" that many states have adopted. These require that a certain percentage of an electric utility's generating capacity or energy sales come from renewable resources. Since renewable energy resources almost always have lower GHG emissions per unit of electricity produced than fossil fuels, projects that are spurred by the Renewable Portfolio Standards also tend to achieve GHG reductions, as well as to advance the national goal of energy independence.

Many municipalities, including New York City, have also undertaken their own programs to reduce GHG emissions, especially from city buildings and vehicle fleets.

All in all, throughout the U.S., new regulatory programs and economic incentives are sprouting up that create opportunities for businesses that can offer goods and services that can help reduce GHG emissions. Some kinds of businesses that can benefit will now be listed.

Renewable Energy

One of the most prominent beneficiaries of GHG reduction requirements will be providers of renewable energy. Wind and solar energy have long been at the top of this list. In recent years

much attention has also gone to biofuels, such as ethanol and biodiesel, that use farm-grown products to supplement or substitute for petroleum products, mostly as vehicle fuels.

In certain areas of the country, use of geothermal and hydroelectric power can be expanded. Experiments are underway on such innovative sources as tidal, wave, and ocean thermal energy.

The high price of oil certainly encourages the development of renewable energy. The renewable portfolio standards and the consumer benefit charges that accompanied electric utility deregulation in many states provide additional impetus. Concern about climate change is likely to become a growing source of support for renewable energy, both because renewables have a positive effect (thereby attracting money from socially responsible investment funds, for example) and because they are likely to receive favorable treatment under the new Kyoto-like state and regional programs, and any future federal program.

The expanded use of nuclear power is controversial, but there are several parts of the U.S. that would accept new nuclear power plants, and many scenarios for reducing GHG emissions include a nuclear element.

Conservation, Efficiency

Another way to reduce GHG emissions, of course, is to use less energy, or to use it more efficiently. This is one of the major impetuses behind the growing attention paid to "green buildings." This in turn creates opportunities for businesses that can develop, manufacture, install and operate materials (such as certain kinds of glass and insulation) and systems (such as efficient HVAC devices and controls).

The success of hybrid vehicle sales is one indication of the demand by the U.S. public for automobiles that save energy, reduce emissions and lower fuel costs. Fuel cells, which can yield energy efficiencies, are being developed for many mobile and stationary applications.

Technologies are also being developed to improve the energy efficiency of appliances, electric generating plants, many kinds of industrial facilities, and all other manner of energy-consuming operations.

Sequestration

Another way to prevent GHGs from entering the atmosphere is to capture them and store ("sequester") them. Much attention today is going to integrated gasification combined cycle, a technology that can be installed in new fossil fuel power plants to capture the carbon dioxide before it escapes from the smokestack. The carbon dioxide is then transported (usually by pipeline) to deep geological repositories, particularly where most of the oil and natural gas has been pumped out; the injection of carbon dioxide allows for recovery of some of the oil and gas that remains.

Another kind of sequestration is biological. Forests are created or preserved, so that the trees will naturally absorb carbon dioxide. (Decomposition, forest fires and land use changes may later release the carbon dioxide; the permanence of several kinds of sequestration is a major issue.)

Methane is another significant GHG. Much of it is generated by farm operations (such as livestock and poultry manure); capturing that methane is a growing GHG control method.

Technologies are also being developed to find substitutes for such potent GHGs as sulfur hexafluoride, hydrofluorocarbons, and perfluorocarbons.

Adaptation

Many scientists believe that, even with the most aggressive GHG controls, global temperatures will continue to rise before they stabilize and, perhaps, decline. Thus measures are needed to adapt to these changes. Among the actions are more floodproofing, higher seawalls, stronger shoreline and offshore structures, and controls on new construction near coastlines. Changing patterns of agricultural production, water supply, and many other items will require adaptation.

Trading and Insurance

Emissions trading systems create lively markets. The global carbon emissions market reached $10 billion in 2005, mostly as a result of the European Trading System (part of the European Union's implementation of Kyoto), and is growing rapidly. The voluntary Chicago Climate Exchange is providing opportunities for U.S. companies to try out emissions trading. RGGI and the California law, and ultimately perhaps a federal program, will yield large volumes of trading activity.

The world's largest insurance companies have also taken notice of the increased exposure to weather-related claims that may occur, and also to new insurance products that may be offered, such as those concerning the performance of GHG control and sequestration projects.

Conclusion

Such major companies as General Electric and BP have already seen tremendous opportunities in reducing greenhouse gas emissions, and are actively promoting their efforts. The emergence of GHG control programs at the state and local levels, and the likely adoption of a federal program in a few years, are creating tremendous opportunities for businesses that anticipate and can satisfy the rapidly growing demand for GHG controls.

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