

# *The Global Climate Change Marketplace*

Moving Forward Without the United States

*by David J. Hayes*

President Bush has stubbornly resisted taking serious measures to reduce greenhouse gas emissions and stem climate change, claiming it would hurt the economy. But the president has it backward. Capping emissions in a market-based system that lets companies profit by investing in alternative energy and other projects that reduce greenhouse emissions will trigger a flurry of new economic activity. Investment dollars will flow into projects that open new markets, create jobs, generate profits and, not coincidentally, greatly improve America's energy security by reducing the country's reliance on imported oil and gas.

Proof for this proposition comes from the burgeoning international marketplace that is already developing around climate change efforts under the Kyoto Protocol on Global Warming. Within 12 months of the treaty's entry into force, the brand-new international carbon market grew to more than \$10 billion in value. And it surged to nearly \$21 billion over the first nine months of 2006.<sup>1</sup> These are big numbers, but in fact they understate the economic activity associated with limiting greenhouse gas emissions (short-handedly referred to here as "carbon" emissions) because they only represent the market price for actual reductions in carbon emissions. The bigger picture is that those emissions reductions are the end result of much more substantial investments in things like efficient new power generation turbines and

technologies that capture and control methane and other greenhouse gases.

Even more remarkably, the new global marketplace has moved major investment dollars into the energy markets *simply in anticipation of reductions in carbon emissions that will not begin to go into effect until 2008 under the Kyoto Protocol*. That is, by creating a cap on carbon emissions based on "business as usual" assumptions, and signaling that reductions will follow, market forces have been unleashed to find and exploit low-cost ways to reduce carbon emissions. Rather than drag down economic activity, the international carbon market is demonstrating that when a mandatory cap is combined with market trading opportunities, the market responds quickly and vigorously, providing significant opportunities for

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*David J. Hayes is a PPI senior fellow and was the deputy secretary of the interior during the Clinton administration. He currently is a partner at the law firm of Latham & Watkins in Washington, D.C.*

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*“One person with a belief is a social power equal to ninety-nine who have only interests.”*

—John Stuart Mill

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This is not to say that the U.S. Senate was wrong to unanimously reject the Kyoto Protocol in 1997 under the Clinton administration. To the contrary, Kyoto was a badly flawed deal that would have placed a disproportionate share of the obligation for reducing carbon emissions on the United States, while asking little of emerging industrial powerhouses like China and India. But because President Bush reneged on his 2000 campaign pledge to establish a mandatory domestic system for limiting carbon emissions—and because the administration also turned its back and walked away from the international negotiations, rather than staying involved and trying to shape them—U.S. companies today are stuck on the sidelines while their global competitors are getting a head start investing in, and profiting from, carbon reduction projects.

American companies know well that they will eventually be subject to carbon limits of some kind, because it is widely understood that emissions must be restrained. But they have no market-based price signal to guide their investment strategies, and no mechanism for recouping the benefit of carbon reduction

projects at home or abroad. Without the additional incentives provided by a national or a global carbon market, U.S. investments are lagging in the new, job-creating technologies that would have the double-barrel benefit of addressing the serious threat posed by climate change and, at the same time, advancing U.S. energy independence and national security interests by providing alternatives to imported oil.

Limiting carbon emissions will not be cost-free for some companies and some sectors of the economy.<sup>2</sup> Moreover, there have certainly been hiccups in the development of the international carbon market—and, in the case of the European trading system, some design flaws that teach us important lessons about how to construct an effective cap-and-trade system. Nonetheless, the take-away from the emergence of a burgeoning global market for carbon is clear and undeniable: When carbon constraints are coupled with trading mechanisms that provide a broad array of options to reduce carbon emissions, the market economy will respond, unleashing huge investments in carbon-reducing projects of all types, including more efficient and alternative sources of energy.<sup>3</sup>

Apologists for the Bush administration's empty rhetoric on the subject of climate change have ignored the remarkable ramp-up in the international carbon marketplace, preferring to blithely treat all aspects of the Kyoto Protocol as one giant failure. But the truth is the administration's obstinacy in imposing substantial opportunity costs on the U.S. economy.

Congress should take three steps to right this wrong and bring U.S. businesses and investors into the carbon marketplace.

### ***Create a National Carbon Cap Now***

As PPI has advocated before, the United States needs to put a cap on carbon and adopt a national, market-based trading system that will allow companies to address emissions limits on a flexible and cost-effective basis.<sup>4</sup> Frustrated by the lack of action from the Bush administration and the Republican-controlled Congress, a number of states are moving into the vacuum and enacting their own schemes to reduce carbon through cap-and-trade mechanisms. California's recently enacted "Global Warming Solutions Act of 2006," for example, establishes carbon emission reductions for energy use in the state, but it leaves major implementation questions unanswered, including how allowances will be allocated among various industry sectors and how a California-based market can (legally and otherwise) account for the large amount of energy that California imports from out-of-state sources that are regulated, in turn, by other jurisdictions. The Northeastern states also are developing a plan to cap carbon emissions and allow for the trading of carbon credits.<sup>5</sup>

Although these state-based initiatives are well-intentioned, it makes little sense to proceed with a fragmented state-by-state or region-by-region approach to climate change, either in terms of the problem that is

being addressed—*global* warming—or the best mechanism for addressing it: a broad-based restriction on carbon emissions combined with a flexible and wide-ranging trading system.<sup>6</sup> For example, California's economy already is the most energy-efficient in the United States. If a cap covers only California—but leaves out Michigan, Texas, Iowa, and Ohio—emissions reduction opportunities will be significantly more limited and predictably more costly. The same holds true if only the Northeastern states participate in a cap-and-trade program. Under such a scheme, there will be no incentive provided for investments in alternative fuels in America's breadbasket because Midwestern states are not participating in the Northeast's limited market. Simply put, a national market for carbon is a far more robust and attractive market for investors and it provides more opportunities for low-cost emissions reductions—gained through a much wider array of investments—than any state-specific or region-specific plan.

### ***Create Reliable and Transparent Emission-Reduction Rules and Tools***

Once a national carbon control program is in place, the next step is to provide certainty and confidence for investors by establishing transparent, reliable market rules—rather than allowing a hodge-podge of inconsistent, confusing, and sometimes questionable practices to develop haphazardly in an unregulated voluntary market. The current U.S. system of so-called carbon emissions "offsets" illustrates both the problem with the dysfunctional status quo and the opportunity for a truly robust market to thrive. Carbon offsets involve reductions in carbon emissions that would not have occurred but for the impetus provided by a buyer's willingness to purchase the offset. Even in today's unregulated market, there is a notable

demand for carbon offsets by businesses that want to decrease their carbon footprint. But because there are no rules, conventions, or broad-based institutions with authority and responsibility in this arena, hucksters are selling carbon offsets of dubious quality and longevity, generating a backlash that threatens to undermine the availability of this important tool. Moreover, some of the best opportunities to generate offsets—in the developing world—are being mined by the Kyoto signatories, whose investments are guided by strict rules. For all of these reasons, the United States should take immediate steps to develop tough, transparent rules for offsets. This would enable carbon reduction projects—ranging from sound farming, rangeland, and forestry protection practices to methane capture projects—to be credited appropriately,<sup>7</sup> and allow U.S. companies to begin taking advantage of offshore investment opportunities like their European and Japanese competitors, among others.

### ***Re-Engage with the International Community***

The United States needs to re-engage in serious negotiations with the international community, with an eye toward joining a global carbon marketplace that moves beyond Kyoto's limitations. Indeed, if America moves quickly to develop its own cap-and-trade program in parallel with the Kyoto scheme, it will be in a far better position to lead the international community toward a sound, long-lasting international compact that corrects some of the Kyoto Protocol's serious shortcomings. Foremost among these is the imperative that all of the world's rapidly expanding, major economies—including China and India—join the United States, the European Union, Japan, and the other large economies in the world, in agreeing to limit their carbon emissions.

## **Emergence of the International Carbon Marketplace**

The Bush administration made a gross miscalculation when it assumed that by walking away from Kyoto international efforts to create a carbon marketplace would crumble. By taking its marbles and going home, the United States lost the opportunity to participate in and help shape the international economic boom that is now moving forward—without meaningful U.S. participation. The European Union and other Kyoto signatories have proceeded impressively down the dual track of phasing in overall carbon emissions limits and introducing market-based tools to facilitate investments in low-cost opportunities that reduce carbon emissions in both domestic markets and the developing world. (Ironically, of course, it was the United States that had originally pushed the use of trading and other market-based tools on a skeptical and resistant European Union, based on the successful acid rain and Southern California trading programs. Both of these have delivered environmental results through market-based systems that allow businesses to find the most cost-effective ways to reduce emissions.)

### ***Background***

The Kyoto Protocol became legally binding on February 16, 2005, following ratification by Russia. The protocol requires developed countries—so-called Annex I Nations—to reduce their carbon emissions from 1990 levels by 5.2 percent during the 2008 to 2012 timeframe.<sup>8</sup> Additional reductions are likely to be required in the period after 2012, given the continued evidence of climate change, but no agreement has been reached for that period.

Under Kyoto, each Annex I nation receives a defined quantity of emissions allowances known as its "assigned

amounts.” The assigned amount represents the total carbon-equivalent emissions that the country is allowed to emit during the first commitment period of the Kyoto Protocol (2008-2012). This total amount is then broken down into assigned amount units, or (AAUs), where each AAU is equal to one metric ton of carbon dioxide-equivalent (CO<sub>2</sub>e).<sup>9</sup> For example, reducing one ton of methane equates to reducing 21 tons of CO<sub>2</sub>e.

The primary way that Annex I countries meet their carbon emissions reductions is through the direct reduction of in-country carbon emissions via, for example, the replacement of heavy carbon-emitting energy sources with cleaner energy (e.g., switching from pulverized coal plants to carbon capture-and-storage coal plants, natural gas plants, or renewable energy plants) or by increasing the efficiency of energy sources (e.g., by investing in efficient new turbines, upgrading the electricity grid, etc.). When investments in emissions reductions projects yield more reductions than are required under the Protocol, excess emissions reductions can be sold to other companies who can then use these purchased credits to meet their emissions requirements. Under the European Union’s Emissions Trading System (ETS), trading is allowed throughout the EU. Companies that generate excess EU Allowances (EUAs) can sell them in an over-the-counter market to other companies (or countries) that need to acquire EUAs to meet their emissions requirements. In this way, the system encourages investments in the lowest-cost emissions reduction projects.

In addition to this primary compliance mechanism, the Kyoto Protocol created two additional mechanisms through which nations or individual companies may acquire additional emissions credits to meet their Kyoto obligations. First, emissions credits may be acquired through Clean Development Mechanism (CDM) projects in developing countries, a brilliant innovation that allows sophisticated investors to find and fund low-

cost carbon reduction projects in developing countries, thereby advancing their own economic interests while attracting much-needed investment dollars into emerging economies. Under the CDM program, Annex I countries can earn credits called “certified emission reductions” (CERs) that can be used to meet their Kyoto targets. The process for reviewing eligible projects, developing quantification methodologies, and approving credits is administered by the CDM Executive Board, a U.N.-based organization established under the protocol.

Second, under Kyoto’s Joint Implementation (JI) program, Annex I countries with binding targets can invest in specific projects in other developed countries and then acquire credits from these projects to meet their Kyoto targets. These JI credits are primarily associated with projects in countries that are former members of the Soviet bloc. Credits generated through JI projects are called emission reduction units (ERUs) and may be used for compliance with Kyoto targets.

Thus, the Kyoto Protocol trading system establishes three primary types of emissions credits that may be traded on markets—AAUs, ERUs, and CERs. In addition, “removal units” or “RMUs” are generated for land use and carbon sequestration activities by nations subject to Kyoto emission reduction obligations. (The Kyoto Protocol imposes significant limitations on the credits that can be generated via land use and carbon sequestration activities. But the signatory nations are revisiting whether they should provide additional opportunities for the generation of land use-related credits.)

### ***The Surprising Strength and Vitality of the New International Carbon Marketplace***

The carbon marketplace in Europe has developed more rapidly and robustly than

many observers expected. As explained above, significant reductions in emissions do not kick in under the Kyoto Protocol until 2008. To prepare for the reductions, the EU required member companies to identify emissions baselines, calculated largely on a “business as usual” scenario—with the expectation that countries and companies would experiment with trading and other market-based mechanisms during a 2006-2007 “shake-down period.” That was to be a prelude for the major use of the markets in connection with the reductions that will be required for the 2008 through 2012 period.

Instead, members have leapt straight in. A year into the initial shake-down period, it is apparent that the current, status-quo-oriented limitations on carbon—when combined with the prospect of additional reductions that will be required in the relatively near-term future (i.e., 2008-2012)—have created significant market forces that are driving carbon reduction efforts in Europe and throughout the world. In the EU market, EUAs worth \$8.2 billion traded in 2005, and \$6.5 billion traded in the first quarter of 2006 alone. The 2005 totals represent 322 million tons of carbon dioxide equivalent (tCO<sub>2</sub>e)—almost a 40-fold increase over the previous years’ volumes.<sup>10</sup>

In addition to the robust trading of EUAs on European exchanges, the new international marketplace has triggered significant investments in CDM projects in developing nations. The result is a flow of investment dollars into economies that need it, and direct dividends in the form of carbon credits to the investing countries or companies. As of June 2006, more than 1,000 projects were in the CDM pipeline, including a large number of renewable energy projects.<sup>11</sup>

The CDM market is expected to continue to grow in strength as the need for further reductions under Kyoto kicks in. Some experts have estimated that more than \$20 billion in CER credits from CDM projects will need to

be purchased to meet limits set for the 2008-2012 timeframe. This is based on the assumption that Annex I countries will not be able to generate enough in-country emissions reductions to meet their targets and will need to acquire credits from investing in carbon emissions reduction projects in developing countries under the CDM and JI programs.<sup>12</sup> Uncertainty regarding Kyoto’s post-2012 requirements may slow this strong push for new investments at some point, but the smart money suggests that Kyoto signatories will extend carbon reduction requirements past the 2012 period.<sup>13</sup>

Although the track record of the international carbon marketplace is remarkable, the Kyoto Protocol anticipated that there would be some challenges in creating a global marketplace from scratch. That is why it established the two-year shake-down period (2006-2007) for the markets to begin operating under a cap without significant carbon reduction requirements. As expected, there have been some obvious growing pains as various jurisdictions developed their approaches for creating a carbon market. Most notably, it now is apparent that national plans approved by the European Union for the 2006-2007 period included too many emissions allocations which led to a drop in the carbon market price once actual emissions levels were reported.<sup>14</sup> Even more importantly, however, EU members’ decisions to give away all initial allocations without charge, instead of holding back some and auctioning them off, provided a windfall to some major carbon emitters, while missing an opportunity to raise funds for investments in new technology and to help set the market price for carbon.<sup>15</sup>

There also have been some difficulties in administering the CDM program’s project-based credit system. The program is thick with red tape, and sign-offs by the CDM Executive Board and other parties (including the host nations) have been bureaucratic and maddeningly slow in many cases. Questions

relating to the methodologies for proving up actual “but for” reductions that are related to the new projects have been more complex than expected, testing the patience of investors and host countries alike. In addition to red tape, a handful of CDM projects are generating such enormous profits for investors that critics fear such windfalls will encourage companies to look for cheap and easy opportunities to clean up egregiously dirty facilities rather than make more costly improvements to the vast majority of facilities whose emissions could be reduced, but without such huge profit margins.<sup>161</sup>

The Kyoto signatories are taking steps to address these shortcomings. With new National Plans due for the 2008-2012 period, the EU has something of a fresh start ahead. New emissions estimates are being adjusted to reflect the actual emissions; the EU is encouraging member nations to auction off some percentage of their allocations for 2008-2012; and more money and attention is going into reducing the CDM program’s red tape.

### ***Adopting a National Cap-and-Trade System in the United States***

While the robust international carbon marketplace continues to gather steam, the United States remains at the starting gate. It has no constraint on greenhouse gas emissions, so there is no market-based price tag associated with carbon emissions in America and no accompanying market-based structure to provide flexibility for meeting the (non-existent) cap on emissions. American companies are facing major investment decisions that impact carbon emissions, but without a market-based price signal, they are flying blind. As a result, many companies that recognize the inevitability of carbon constraints are delaying needed and environmentally preferable capital investments until the U.S. regulatory picture becomes

clearer. Others are making investments in older technologies that ignore carbon risks in the hope that emissions limits will continue to be delayed, or that they will be grandfathered into any new system.<sup>17</sup>

Also, without the architecture to create a vibrant carbon market in place in the United States, the Chicago Climate Exchange (CCX), which is trying to emulate the European and international model, is a mere shadow of its European counterparts. Despite a laudable mission statement, the CCX trades carbon credits at a yawningly low price and at low volumes.<sup>17</sup> Adding insult to injury, the CCX is now under fire for crediting certain carbon offset projects that critics complain are not marketplace-tested—another predictable outcome of a voluntary system that is undisciplined by financial transactions that have real economic consequences.<sup>19</sup>

The status quo is unacceptable—for U.S. businesses and for the environment. A national cap on carbon emissions should be set now, in parallel with the establishment trading mechanisms that promote the same type of positive dynamics that are emerging in the Kyoto-driven international carbon marketplace. This is the consensus view of the bipartisan National Energy Commission and the Pew Center on Global Climate Change, among many others.<sup>20</sup>

Actions that are being taken by states, in the absence of leadership by the Bush administration, have increased the imperative that a national cap-and-trade system be put in place. California’s plan to create a single-state carbon market will provide limited opportunities for companies to find low-cost carbon reduction opportunities—particularly because California already is the most energy-efficient of our 50 states. Also, as noted above, California’s plans to regulate carbon emissions from energy sources in other states that do not have carbon constraints will breed confusion at best and, more likely, paralyzing litigation.

## *Establishing Rules to Govern the Generation of Carbon “Offsets”*

Parallel to moving forward with the establishment of a cap-and-trade program for carbon, America should immediately establish rules that inform and discipline the helter-skelter development of carbon offsets. As the European experience is demonstrating, the carbon market is powered primarily by investments in direct reductions in carbon emissions, but the market benefits from—and some participants need—access to offset credits generated from free-standing carbon reduction projects.<sup>21</sup> These are credits that are obtained, for example, from CDM projects in the developing world that may involve the capture and destruction of carbon emissions ranging from landfills and feed lots to sophisticated manufacturing facilities. Credits also can be generated through certain land use-related projects that take advantage of carbon sequestration opportunities, such as reforestation projects and carbon-sequestering farming practices.<sup>22</sup>

A number of players in the U.S. economy are not willing to wait for the development of a cap-and-trade system to begin addressing climate change. Many of these entities are interested in matching up carbon reduction offsets that they purchase from third parties against their own carbon footprints. Participants range from the mayors of large cities, financial service businesses, and utilities that want to provide customers with options to offset the carbon impact of their power purchases, to law firms looking to offset the carbon impacts associated with recruiting trips to law schools. All of these entities are beginning to purchase carbon offsets from third parties that are, in turn, purporting to reduce carbon emissions or increase carbon sequestration opportunities through projects that may—or may not—generate legitimate, measurable, and verifiable carbon benefits.

Critics are understandably leery of some of these third-party-generated carbon offsets. As

more and more questionable or unverifiable offsets emerge, there is the very real danger that this important supplemental tool for controlling carbon will become irretrievably discredited. This could lead to the potential loss of important opportunities to protect forestland, to improve farming practices, and to promote other carbon-benefiting projects. As noted above, for example, environmental groups have criticized the CCX's offset program,<sup>23</sup> and *The Economist* noted that while “the Kyoto protocol includes strict rules on the design, measurement and monitoring of the offsets it permits rich countries to buy from poor ones [through the CDM program] ... there are no accepted norms for voluntary offsets.”<sup>24</sup> In addition, the outsized profits that some companies in the developing world have earned from relatively small investments in controlling greenhouse gas emissions are leading some emissions trading skeptics to question whether more accountability needs to be built into the system.<sup>25</sup>

The United States should acknowledge the emerging demand for carbon offsets and move quickly to bring credibility and discipline to this arena. A highly respected panel of experts should be convened to establish rules governing the recognition of, and quantification for, carbon offsets. If transparent and verifiable rules are developed for various types of carbon projects, the offset business can become a respected part of the carbon market, rather than a pariah. Also, directing an officially sanctioned panel to develop rules for generating carbon credits in the developing world could provide a U.S. parallel to the CDM Executive Board, which evaluates the qualifications of proposed CDM investments under Kyoto. In this way, U.S. investors would have greater assurance that their foreign investments in carbon projects will provide the promised benefits, thereby providing an impetus to some U.S. companies to begin searching for low-cost carbon emission reduction projects abroad.

In addition, if America begins to tackle the tough work of developing rules that govern carbon investments, it will be in a better position to later join the international effort and credibly recommend improvements.

## Re-Engaging Internationally

The Bush administration's in-your-face rejection of the international community's carbon initiative has left the United States on the outside looking in as the large community of nations involved in implementing the Kyoto Protocol has moved forward with a cap-and-trade system that has generated a dynamic, vibrant international carbon market. The administration has attempted to put a fig leaf over its embarrassing lack of involvement in the burgeoning international marketplace by emphasizing cooperative, technology-related agreements that it has entered into with some trading partners. But the fact that British Prime Minister Tony Blair chose to enter into a climate change agreement with Gov. Arnold Schwarzenegger of California regarding potential mutually beneficial carbon market opportunities speaks volumes about the near-irrelevance of the United States when it comes to involvement in the international carbon market.

This situation is unacceptable. The United States should re-engage in serious discussions with the international community regarding potential U.S. participation in the international carbon marketplace. Initially, those discussions could facilitate a better understanding in the international community regarding the cap-and-trade program, and the offsets initiative

that we recommend domestically. As it begins to implement its own program, America will be writing rules that make sense for itself, but it also should study the approaches that the international community has taken under Kyoto. Where it makes sense, the United States should consider similar approaches. Where it does not, it should take a different tack, while explaining the reasoning for its alternative approach to the international community.

Ideally, this will enable the United States to incorporate the best of the lessons learned by the international community under Kyoto into its own cap-and-trade carbon market. And it will do so while in an open dialogue with the international community, setting the stage for the potential integration of the U.S. effort into the global marketplace—on terms that are acceptable to the United States and that take full advantage of the U.S. experience.

Needless to say, this approach will not be successful unless America does, in fact, move forward with its own cap-and-trade and offset programs and other related initiatives. But if it moves quickly in this direction, the United States will put itself in the much stronger position to negotiate conditions of its participation in a global cap-and-trade system that may replace the Kyoto scheme. A new arrangement would borrow features of Kyoto and the new U.S. carbon market that have worked well, while addressing the shortcomings of the Kyoto protocol, particularly with regard to obtaining agreements by China, India, and other expanding economies to limit their carbon emissions.

## Endnotes

<sup>1</sup> See generally "Status and Trends of the Carbon Market 2006," The World Bank; IETA, May 2006. To put these values in perspective, the carbon market value in 2005 was larger than the value of the entire U.S. wheat crop in 2005. See "Carbon Trading is a Volatile Market, World Bank finds," Greenwire, May 10, 2006. For an estimate of the carbon market through September, 2006, see also "PlanetArk," Reuters, Oct. 26, 2006; "Carbon Trading Doubles in Nine Months As Asian Countries Dominate CDM Projects," BNA Daily Environment, Oct 27, 2006.

<sup>2</sup> The transition to a new, less-carbon-intensive economy also can be eased through the use of additional innovative strategies, such as the National Commission on Energy Policy's recommendation that emissions limitations be combined with a "relief valve" to limit adverse cost consequences. See footnote 20, below.

<sup>3</sup> World Bank, *op. cit.*, “the evidence from the market . . . is that price signals in the carbon markets have stimulated innovation, especially in developing countries.” Emissions in the EU have stabilized and were nearly 1 percent lower in 2005 than baseline emissions in 1990, even though the EU 15 nations have reported economic growth of 32% since 1990, see BNA Daily Environment Report, June 27, 2006.

<sup>4</sup> Mazurek, Jan, “Cap Carbon Dioxide Now,” Progressive Policy Institute, June 2002, <http://www.ppionline.org>.

<sup>5</sup> See generally “Recent Developments in the Regional Greenhouse Gas Initiative,” Latham & Watkins Client Alert, No. 515, June 14, 2006, [http://www.lw.com/resource/Publications/\\_pdf/pub1576\\_1.pdf](http://www.lw.com/resource/Publications/_pdf/pub1576_1.pdf); “California Legislature Approves “California Global Warming Solutions Act of 2006; Governor Schwarzenegger Expected to Sign,” Latham & Watkins Client Alert, No. 539, September 5, 2006 [http://www.lw.com/resource/Publications/\\_pdf/pub1650\\_1.pdf](http://www.lw.com/resource/Publications/_pdf/pub1650_1.pdf).

<sup>6</sup> The design and implementation issues associated with fragmented, state-by-state or region-by-region carbon restrictions and carbon trading are daunting, particularly given the integrated, interstate nature of our system for delivering electricity and the more limited trading opportunities associated with an in-state (as opposed to a national) system. As noted above, California’s new law purports to cover carbon emissions from power plants that are located in other states but which sell power into California, but it is unclear how publicly-regulated power plants in neighboring states will navigate conflicting in-state and out-of-state rules associated with the sale of their electricity. Costly and complex legal challenges are sure to follow.

<sup>7</sup> Most experts agree that businesses will need to purchase some carbon emissions offsets to augment their emissions reductions efforts. In addition, there is increasing interest by individuals, non-profits, and service-oriented businesses and organizations in demonstrating a “zero emissions” footprint—something that they can only do by purchasing offsets. Unfortunately, in the U.S.’s unregulated, voluntary climate change world, there are no rules that govern how offsets can be earned and bought or sold. See generally Trexler, M. and L. Kosloff, “Selling Carbon Neutrality,” Environmental Forum at 34, Environmental Law Institute, March/April 2006.

<sup>8</sup> With the exception of the United States and Australia, the majority of the developed world has ratified the Kyoto Protocol. In addition, although they are not subject to binding emission reduction requirements, many less developed or developing nations have ratified the Kyoto Protocol as well. More than 165 nations have ratified the Protocol.

<sup>9</sup> The Kyoto Protocol measures greenhouse gas emissions in terms of tons of CO<sub>2</sub>-equivalents (CO<sub>2</sub>e), based on the relative global warming potential of the various greenhouse gases as compared to carbon dioxide. Below are tables identifying the relative global warming potentials of the gases covered in the Kyoto Protocol.

<sup>10</sup> See World Bank Report at p. 13.

## Relative Global Warming Potentials of Greenhouse Gases

Gas	GWP
Carbon dioxide	1
Methane	21
Nitrous oxide	310
HFC-23	11,700
HFC-125	2,800
HFC-134a	1, 300
HFC-143a	3, 800
HFC-152a	14

Gas	GWP
HFC-227ea	2,900
HFC-236fa	6, 300
HFC-4310mcc	1,300
CF <sub>4</sub>	6,500
C2F6	9,200
C4F10	7,000
C6F14	7,400
SF6	23,90

<sup>11</sup> See Point Carbon, CDM & JI Monitor, June 13, 2006.

<sup>12</sup> Under the Kyoto Protocol, for example, Italy must reduce its emissions by 6.5 percent from 1990 levels between 2008 and 2012, yet its emissions actually increased by 6 percent in 2004. Accordingly, Italy may need to purchase 17 Mt of credits at an approximate cost of \$476 million per year to meet its targets. Spain is allowed to increase its emissions by 15 percent from 1990 levels under the protocol, but, as of 2002, its emissions had increased by 41 percent. Spain therefore may need to purchase 25 Mt of credits per year at an approximate cost of \$700 million on an annual basis. Japan, in turn, must reduce its emissions by 6 percent from 1990 levels, but, as of 2003, its emissions had increased 8 percent. Japan accordingly is expected to purchase approximately 20 Mt of credits per year for an estimated \$560 million each year. "ICF Consulting Launches Tool to Forecast CO<sub>2</sub>e Prices," ICF Consulting, news release, October 17, 2005. See also "Japan Takes Steps to Formalize Purchases of Greenhouse Gas Emissions Credits," BNA Daily Environmental Reporter, July 12, 2006. Additionally, overall, it is anticipated that the economies of most Annex I countries will continue to grow at a rate of 2.3% to 3.5%, with carbon emissions tending to increase at similar rates. See "An Introduction to ICF Consulting's International Carbon Pricing Tool," ICF Consulting. The global investment firm, Morgan Stanley, recently confirmed this analysis in a comprehensive report in which it concluded that "the EU-15, Canada, and Japan are unlikely to meet their Kyoto targets. We [Morgan Stanley] anticipate a total Kyoto gap of around 300 Mt per annum, or 1.5 billion tons for the cumulative Kyoto period for all three geographies." Based on the estimated conservative price of allowances at €15, this shortfall would represent a €22.5 billion investment in JI and CDM credits. "Equity Plays on the Emerging Carbon Market", Morgan Stanley, Equity Research Europe, October 10, 2005.

<sup>13</sup> "EU's Dimas Says CO<sub>2</sub> Cap Tighter for Second Phase," Reuters, July 17, 2006.

<sup>14</sup> When actual emissions numbers were reported in mid-2006 for EU countries, the market price of EUAs dropped sharply from trading values of around €25 per ton to €15 per ton. See "Carbon Trading Plans from EU Countries Arriving Late, Offering Excess Allowance," BNA Daily Environmental Reporter, July 10, 2006. This drop in price was not a sign, however, of a broken market. To the contrary, the price drop reflected the fact that the marketplace developed much more rapidly than expected, overtaking the process of firming up actual emissions data from participating countries. Once the market digested the news that some of the original estimates of emissions had been overstated, it adjusted, and robust trading has continued, albeit at lower (but still significant) price levels that take into account the full emissions picture. And with all EU nations now submitting new National Plans covering the 2008-2012 period, emissions assumptions are being corrected, and it is expected that plans for reducing carbon emissions will move forward without further market disruptions. See generally BNA Daily Environment (Oct. 27, 2006) ["Carbon Trading Doubles in Nine Months As Asian Countries Dominate CDM Projects"] (quoting a World Bank and International Emissions Trading Association joint report: "The market was dominated by the European Union Emissions Trading Scheme, which shrugged off signs of weakness following the sharp declines that accompanied the release of verified emissions data in May 2006.")

<sup>15</sup> See "Power Companies and Shorting Traders Have Done Better than the Environment," *The Economist*, May 6, 2006; Fjellheim, H. "Commentary: Absence of Auctioning in Phase 2?" Point Carbon, Carbon Market Europe, June 23, 2006. See also Ball, J., "For German Firms, New Emission Caps Roil Landscape," *Wall Street Journal*, Sept. 11, 2006.

<sup>16</sup> K. Bradsher, "Outsize Profits, and Questions, in Effort to Cut Warming Gases," *New York Times*, Dec. 21, 2006.

<sup>17</sup> Some U.S. technology leaders in alternative energy and energy efficiency markets are taking advantage of high energy costs and some favorable tax policies to promote their products, but they are losing the additional growth and job opportunities that a strong push from a carbon market would provide. And with no domestic-driven incentive to obtain carbon emissions reductions credits, most U.S. companies are on the sidelines of the international hunt for carbon emissions reductions – a hunt that is fueled by the E.U.'s and Japan's need to obtain additional carbon credits to meet their reduction targets.

<sup>18</sup> See World Bank Report at 3 and CCX Press Release dated May 2, 2006 (showing the aggregate value of trading on the CCX in 2005 of \$2.83 billion, as compared with the aggregate value of EU ETS trading in 2005 of \$8.22 billion. The value of a metric ton of CO<sub>2</sub>e in the CCX approximated \$3.50, five times less than the equivalent value in the ETS system.

<sup>19</sup> See Burnham, M., "Groups Urge Cities, States to Avoid Chicago Exchange," *Greenwire*, August 11, 2006.

<sup>20</sup> "Ending the Energy Stalemate: A Bipartisan Strategy to Meet America's Energy Challenges," The National Commission on Energy Policy, December 2004; "Agenda for Climate Action," The Pew Center on Global Climate Change, Feb. 2006. It should be noted that while capping, and then reducing, carbon emissions and establishing a marketplace associated with emissions reductions credits will provide economic opportunities for many companies, these steps also have the potential to impose significant costs on some sectors of the economy. The National Commission on Energy Policy has recommended use of a "relief valve" mechanism to reduce the severity of these potential negative economic impacts. When combined with price signals that come with the establishment of a carbon market, use of a relief valve should help ease the transitional costs to an economy that has lower carbon emissions.

<sup>21</sup> See footnote 12, above. Also, "A Study conducted by PriceWaterhouseCoopers indicated that roughly 40% of European utilities are relying on CERs [from CDM projects] to comply with their allocation allowances and that approximately 25% of utilities are both using CERs for compliance and actively trading them on the market," from Latham & Watkins Climate Change News, May 2006.

<sup>22</sup> See, e.g., Samuelsohn, D., "Farmers find new cash crop in emissions trading schemes," *Greenwire*, June 22, 2006.

<sup>23</sup> Burnham, *op. cit.*

<sup>24</sup> "Upset About Offsets," *The Economist*, August 5, 2006.

<sup>25</sup> Bradsher, *op. cit.*

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