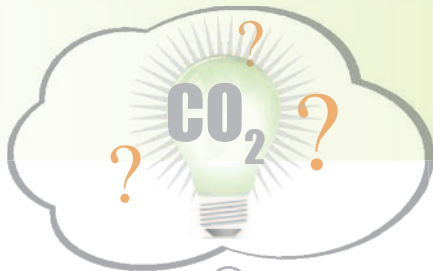




November 6, 2009



## Webinar Highlights

### THE CARBON CHALLENGE: GEARING UP FOR COPENHAGEN

**Broad discussions leading up to the climate talks in Copenhagen on the impacts of climate policy were at the center of Hart Energy Publishing's Oct. 27 Webinar.**



From left to right: **David Manning**, director of M.J. Bradley & Associates LLC, a division of Climate Change Capital Ltd., former executive vice president of U.S. External Affairs at National Grid and former deputy minister of energy for the Province of Alberta from 1993-1995; **Eric Lyman**, international climate change correspondent for *International Environment Reporter*, *Daily Report for Executives* and the *Daily Environment Report*, as well as editor in chief of *Climate-Change.tv*; and **Jim Slutz**, president and managing director of Global Energy Strategies and former U.S. assistant secretary of energy

>> *The Carbon Challenge: Gearing up for Copenhagen*, Hart's final Webinar in its 11-part Energy and Climate Series, was held last week.

"The mission of this carbon series has been to create a global community to share information and knowledge and build a better understanding of the effects new carbon related policy and developments will have on our energy industry and our environment," said Kristine Klavers, vice president of Hart Energy Consulting and publisher of *FUEL*, who opened the Webinar. "At Hart, we have gathered experts in each of the different topic areas covered to try to illustrate a holistic picture of the issues at hand and the different challenges each industry will face. As the last Webinar in

an 11-part series, the objective is to see how we will progress from here on out with effective carbon policies and international agreements."

"As this is the last Webinar in the series, we are looking to look back and briefly cover what we have explored over the past 12 weeks and to see how it all ties in as we move forward," said Jim Slutz, president and managing director of Global Energy Strategies and former U.S. assistant secretary of energy, who chaired the Webinar. "We started [this series] with looking at the high level issues and then focused on specific energy sectors. Our goal was to peel back the layers of information out there to provide unique and useful insights.

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American Council on Renewable Energy; Canadian Consulate; Consilience Energy Advisory Group Ltd; Precourt Energy Efficiency Center; World Petroleum Council.

**"WE CAN'T SOLVE PROBLEMS BY USING THE SAME KIND OF THINKING WE USED WHEN WE CREATED THEM"**

—Albert Einstein

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“In our first policy Webinar in the series, we went around the world and observed the different policies being developed and enacted... In the technology Webinar, we heard specific information about technology investment decision-making... In the Webinar for oil production, we discussed the real challenges that the industry will face and the potential opportunities that might come including details and challenges of constructing a CO<sub>2</sub> [carbon dioxide] pipeline system and the cost of construction. In the natural gas Webinar, we heard information on the development of gas supply and demand in the U.S., and how that may change the climate picture because of the new discoveries that have recently occurred... In our renewable energy Webinar, the clean development mechanism discussion helped frame potential opportunities for growth... In the carbon capture and storage (CCS) Webinar, we heard from three key organizations last week that will influence the framework of how CCS will be framed in the future.

“Considering all of these past Webinars, this brings us to the topic of how to move forward. In order to frame this discussion, it will be important to recognize the magnitude of the efforts that need to be carried out.”

The challenge that lies before us is almost daunting, Slutz pointed out. When looking at data from the U.S. Dept. of Energy that says in order to offset 1 gigaton of CO<sub>2</sub>, the options are to build 1,000 “zero-emission” 500-megaWatt power plants; open 3,700 sequestration sites the size of Norway’s Sleipner; construct 500 new nuclear plants (each 1 gigaWatt in size); replace 1 billion new cars at 40 mpg [miles per gallon] rather than 20 mpg; install 650,000 wind turbines; install 6 million acres of photovoltaics; or convert a barren area to new forest that is nine times the size of the state of Washington.

“The challenge is in order to meet our commitments of an 80% reduction of CO<sub>2</sub> emissions by 2050, there will need to be close to a 7-gigaton reduction of CO<sub>2</sub> from

anthropogenic activity,” Slutz said. “We will need to employ all these options, and others not listed, aggressively, in order to meet these targets. This is intended to illustrate the scale of the challenge set before us and to see where the opportunities may exist.”

First to speak on growing climate issues and focusing on the U.S. legislative scene was David Manning, director of M.J. Bradley & Associates LLC, a division of Climate Change Capital Ltd., former executive vice president of U.S. External Affairs at National Grid and former deputy minister of energy for the Province of Alberta from 1993-1995. He was followed by Eric Lyman, international climate change correspondent for *International Environment Reporter*, *Daily Report for Executives*, and the *Daily Environment Report*, as well as editor in chief of *Climate-Change.tv*.

**“THE CHALLENGE IS IN ORDER TO MEET OUR COMMITMENTS OF AN 80% REDUCTION OF CO<sub>2</sub> EMISSIONS BY 2050, THERE WILL NEED TO BE CLOSE TO A 7-GIGATON REDUCTION OF CO<sub>2</sub> FROM ANTHROPOGENIC ACTIVITY. WE WILL NEED TO EMPLOY ALL THESE OPTIONS, AND OTHERS NOT LISTED, AGGRESSIVELY, IN ORDER TO MEET THESE TARGETS.”**

—Jim Slutz, president and managing director of Global Energy Strategies and former U.S. assistant secretary of energy

A great deal of debate has surrounded the cap-and-trade initiative currently in the U.S. Congress, focusing on whether it will be a drag or driver on the economy.

“That’s why we need to look at the title of the legislation. The Waxman-Markey bill is titled ‘The American Clean Energy and Security Act of 2009,’ and I stress security act,” Manning said. “Sen. Bingaman’s bill, which passed through committee in July, is the ‘American Clean Energy Leadership Act,’ and now we have the Kerry-Boxer bill, which was just amended over this past weekend, the ‘Clean Energy Jobs and American Power Act.’

“The importance is to note the emphasis seen in Congress even though the legislation itself is committed to addressing cli-

mate change and does anticipate a cap-and-trade mechanism to be put into place. So, the Waxman-Markey bill is an all-encompassing bill, and though by a narrow margin, it did pass through the House. Bingaman’s bill does not address regulation of CO<sub>2</sub> emissions but is a comprehensive energy bill focused on renewable energy and energy efficiency. The new Kerry-Boxer bill, released Sept. 30, will be addressed with a series of hearings this week. Though there is a lot of detail not included in this bill, it is structurally very similar to the Waxman-Markey bill and is focused on an economy-wide cap-and-trade program.”

With the great amount of focus centering on health care in the United States right now, it is rather ambitious to think that something will pass in the Senate

going into November, Manning pointed out. The goal now would be to mark up this legislation by Thanksgiving, but even that seems to be ambitious, with the great divide in the health care debate, he said.

“It is, however, important to note that this is moving forward. It will be important to watch Sen. Kerry very closely as he will be a key element in trying to get over 60 votes for the passage of this legislation.

Competition overseas, mainly India and China, is also an important point of discussion, as there is necessity and importance to taxing imports from countries that lack similar emissions restrictions that the U.S. economy will face, Manning said.

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## FEATURE CONTINUED &gt;&gt;

“Covering international trade was an important amendment made on the Waxman-Markey bill put right at the end,” he added.

The United States has certainly progressed in more ways than it is given credit for in this area of legislation, Manning said.

“We are also reminded that the EPA [U.S. Environmental Protection Agency] is out there drafting the ‘endangerment finding,’ which is the first step for regulation of CO<sub>2</sub> under the Clean Air Act. Once the endangerment finding is finalized, there could be a series of cascading regulations on the U.S. economy,” he continued. “This would be detrimental to the U.S. economy, so naturally, it would be better to go with legislation that gives incentives.

“Sec. [Steven] Chu has shown optimism that there could be significant legislative completion by Copenhagen, but Carol Browner was fairly clear recently that legislation by Copenhagen was less likely. With this, this leads us into 2010 quagmire, which is mid-term elections, so there are a lot of politics going on. If this is a real incentive bill or real stimulus bill, this could roll over into the new year, but if it is not perceived that way, it would be a ‘heavy-lift’ as it is an election year.”

At the conclusion of Manning’s presentation, Lyman noted he tends to follow the international aspect of the climate change debate rather than focusing on what is going on in the United States.

“I mostly follow the International multilateral U.N. [United Nations] side of things, and I don’t follow the U.S. aspects as closely as David and other folks do,” he said. “It’s almost impossible to escape the importance of what’s happening in the U.S. The Kyoto process was crippled almost from the start, as the U.S. did not participate in it. I think that people’s eyes naturally drift to see what’s happening in the U.S. to see where things are going to go with domestic legislation.”

Lyman, referencing Manning’s presentation, went on to mention that the idea of U.S. legislation passing in time for Copenhagen had all but been abandoned.

“A lot of people in the European Union [EU] and advocates of multilateral agreements in this area have been hoping that there will be some sort of U.S. action that



**“COVERING INTERNATIONAL TRADE WAS AN IMPORTANT AMENDMENT MADE ON THE WAXMAN-MARKEY BILL PUT RIGHT AT THE END.”**

—David Manning, director of M.J. Bradley & Associates LLC, a division of Climate Change Capital Ltd., former executive vice president of U.S. External Affairs at National Grid, and former deputy minister of energy for the Province of Alberta from 1993-1995

will give some momentum to the process, and it looks increasingly like that’s no longer a possibility,” he said.

Lyman said one of the things that is so interesting about the international process is that it combines different aspects, such as domestic initiatives (as currently being debated in the United States); What the EU is doing; what developing countries like China are doing; technologies and other initiatives such as adaptation funding and clean development mechanism to name a few. However, he went on to say that it’s very slow, and for those who follow the process closely, “it’s really hard to feel that there is a lot going on. The process is very incremental, and it can be difficult to step back and see where things are going; but when you do that, you realize that all these different approaches are important – technology, CCS, domestic and regional legislation – they all play a key part in it.”

Lyman said he believes the outcome of Copenhagen comes down to China and the United States with China being a proxy for the “group of 77” (developing countries that include South Africa, India and Brazil). “Until there is some sort of agreement between these two parties as to who is going

to do what, who has what kind of responsibility etc., we are not going to see a lot of international progress...” he said.

Lyman agreed with Manning that there is probably a lot going on behind the scenes of which none of us is aware and that there will hopefully be a meeting out of Copenhagen or this process.

“All indications are that on the surface the progress has been quite incremental, and it has mostly been in legislative infrastructure in terms of how they are going to do things. There is not a lot of progress in terms of countries taking on commitments or creating funds for adaptation, for technology transfer or any of these real key issues that need to be solved in order for there to be an agreement.”

Lyman said he feels that although the sentiments have not been expressed, around mid-year people lost hope because of the realization we had started to fall behind the pace set by the Kyoto Protocol in 1997, and there was hope of a last-minute miracle with the Waxman-Markey bill to pull things forward.

As an addendum to Lyman’s presentation, Manning mentioned that in the trade press recently it was reported U.S. President Barack Obama had approached Saudi Arabia to assist China in getting additional exports of oil in the interest of reducing China’s dependency on Iran.

“You probably remember a few years ago when the Chinese Petroleum Corp. came in and attempted to buy a large domestic company – Unocal – and they were profoundly sent packing by Congress. Now they are very interested in the oil sands in Canada, very interested in the Gulf of Mexico, and I think it’s in China’s interest to curry some support and favor within the U.S.; and I think that may be part of their incentive,” Manning said.

For more information or for audio archives of the Energy & Climate Series, visit [www.hartcarbon.com](http://www.hartcarbon.com) ■

*—Louise Poirier, Editor, Ethanol & Biodiesel News; Rete Browning, Global Research Manager, International Sustainable Energy Exchange; and Denise Green, Manager International Sustainable Energy Exchange*

## FEATURE

## WEBINAR SERIES 1 1: AUDIENCE Q &amp; A

>> After the Webinar panel presentations and discussion on *The Road to Copenhagen*, audience members had an opportunity to ask more detailed questions. Carbon tax vs. cap-and-trade, India and China, and Copenhagen were among the topics that further interested listeners.

**AUDIENCE MEMBER: All discussions across a broad range of forums seem to point to a cap-and-trade framework. Are there any debates, dialogs or prognoses regarding a carbon tax as better policy for the U.S. and/or international community?**

**DAVID J. MANNING, Director, M.J. Bradley & Associates LLC, a division of Climate Change Capital Ltd.:** It is still very much a part of the U.S. conversation in some quarters, but it doesn't seem to get traction, and I don't think you can have a conversation about this where the simplicity of carbon tax is not raised. I commend the audience to look at British Columbia in Canada where a provincial tax has been established. It is a bit of a redistribution (tax) because it is to be revenue-neutral for the provinces; to redistribute so that there is not an impact on the economy or individuals. ExxonMobil last week indicated carbon tax should still be in the discussion. I don't know if that is the case within [U.S.] Congress, and for all the reasons that we've always discussed, it is still a tax, and tax is very difficult, particularly in this economy. I think the purists would say that a cap-and-trade bill is the only way to actually reduce emissions or to be assured that emissions would be reduced, and that if you don't have a cap, a carbon tax won't necessarily do it. I tend to think that that school is not in the center of this, nor is ExxonMobil. At this point Congress is pretty far along with the idea that cap-and-trade is manageable. That said, there has been some pushback in the hearings last week in the Senate Energy Committee about the free allocations, in this recent Waxman-Markey bill (this goes to the debate between whether the allowances should be auctioned or should be allocated out). The whole purpose of this bill is for phasing out of CO<sub>2</sub> [carbon dioxide]; one of the ways it got passed was of

"phasing in", which was free allocations, which would of course diminish over time. The lion's share of these free allowances was given to the LBC [large business center] sector. I think there is probably a lack of public understanding that this isn't a windfall. These funds will be passed through the LBCs to the consumer and to prevent the permanent crippling of the economy. I think it is a very good question, but I would have to answer in a simplistic way – it is difficult to achieve politically.

**ERIC LYMAN, International Climate Change Correspondent:** Here in Europe there are some conversations about this. Germany and especially France have talked about putting forward a carbon tax. Their plans are for a carbon tax of €17, which is about US\$26, per tonne. The opposition to a carbon tax in France (given that the French people are among the most heavily taxed in the world) is not that great. It is viewed as a disincentive for carbon intensive activities. The problem is it doesn't seem to get any traction in Europe. Sweden, who currently holds the EU [European Union] presidency, said a few days ago that there was no point doing it at the European level. I think because of the French interest in this area to create a disincentive for the production of carbon, it is more of an active part of everyday conversation for mitigation in Europe, but I think that the end result is going to be the same.

**AUDIENCE MEMBER: Is the rest of the world happy with the outline of the Waxman-Markey bill?**

**LYMAN:** I have seen some conversations where people talk about the details of what is in domestic U.S. legislation. The main thing people are looking for, be they European NGOs [non-governmental organizations], members of the European Parliament or interested parties within the EU, is that they want some kind of meaningful action taken in the U.S. The process has really been stumbling along the way because of the lack of that. One of the Italian delegates I spoke

to said that some meaningful action would be like the addition of salt to a meal; it would be bland without it and maybe inedible. I think they are looking for something which has some teeth, some meaning to it, and I think the details are less important.

**MANNING:** I would like to focus on one piece. As I indicated earlier, there was a final change to Waxman-Markey as it was being concluded, which was called the China/India portion. This dealt with the compatibility of regimes around climate change and CO<sub>2</sub> reduction. The way it was dealt with is that there would be a rebate program and the rebates would be available to those industries that were determined by the president to be in competitive industries; where they had to compete with other nations that may or may not meet with this U.S. standard. There was also the opportunity of border tariffs. So other countries such as Canada are deeply concerned about that because they have seen these issues before. So that is a specific area where the president pushed back shortly after, he was concerned about whether or not these provisions would offend the World Trade Organization commitments that the U.S. is bound by. But having said that, there was then a letter submitted by a number of senators indicating they would be supportive of this legislation going forward, but only if there was more done to save American jobs. So I think where the rest of the world is not focused on the entire picture, of the entire structure of the legislation, there is a lot of debate going on internally about offsets, about the clean development mechanism (CDM) type of initiatives, which I am sure your callers are interested in. There are a couple of provisions like that which have really raised a red flag.

**AUDIENCE MEMBER: The U.S. economy is in a pretty precarious situation, and these bills do talk about international offsets and very significant payments from the U.S. to developing countries. So how do you think that is going to play politically and this whole issue of should we be doing climate change with the economy**

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**Q&A CONTINUED >>**

**in a precarious situation? How do you think that's going to evolve in the discussion, both from the bill potentially moving forward and politically the ramifications from those things?**

**MANNING:** That is a big part of the discussion, and of course it comes up in the issue of offsets. We all know that the CDM and offsets had their genesis in efficiency. There was some very early work as I recall in Eastern Europe and in Russia, where basically Canadian firms were just patching pipelines, they were wrapping Bondo around pipelines and taking huge amounts of methane out of the air and racking up credits for a potential regime. That made a lot of sense relative to what it would have cost Transoil and others to convert and do CCS [carbon capture and sequestration] to some of their coal plants. That said there is a lot of angst within the U.S. during this particular time on seeing financial support go elsewhere. The irony of it is that what is driving a lot of it is that the administration and Congress have always enjoyed a time where U.S. innovation, fabulous universities and technical schools have always led the world in a lot of technology development – not all, but a lot of it. The role of China has been to replicate that for the mass market, and I think there is a real fear that areas like China may pass the U.S. in terms of development of renewable and smart technologies, and so we have to have the right set of rules. I think that's what is driving the president, (probably more than the polar bear) if there is in fact a new world order and there is going to be a new energy economy involved, that the U.S. retains its leadership role. I don't think it can do that without embracing some provisions such as offsets.

**LYMAN:** I think this is not the time to be asking countries to write a big check. People involved in the process try to explain that it is not necessarily a financial problem. The International Energy Agency (IEA) for example, released a study earlier this month that said these sorts of investments in clean energy and so on pay for themselves within a decade and a half, and that in the end, investments made today will show a net profit financially, in addition to terms of lower CO<sub>2</sub> levels by 2020, 2030 and so on. But I get the idea that this is really an elephant in the room a lot of

time that people don't want to talk about. Another thing that came out of the IEA report is that due to the world economic crisis, emissions are 3% lower this year than last year. I think this is the second time in 25 years that they have dropped, and it is the biggest drop they have recorded in 40 years. A lot of people in the process are starting to whisper that this takes away some of the urgency, even if according to estimates worldwide emission levels will be 1% higher than this year and back to normal in 2011, and if that is the case we might have until mid-2012 before we are back at 2008 levels. It is meant to be a bit of good news, to spur governments to invest in clean technology, but those involved in the process are saying that maybe it's not as urgent; maybe we can wait until the economy rebounds a little bit and some of these checks can be written at that point. I wouldn't be surprised, unfortunately, to see that argument gain more traction in the coming months.

**JIM SLUTZ, President, Managing Director, Global Energy Strategies LLC: You mentioned the IEA and that most of these investments would pay off in a decade and a half i.e. 15 years. That would seem to be a bit of a disconnect between government thinking and private sector thinking. Fifteen years would seem to be a long pay-off time in terms of the business decision-making process. So how would you define this divide, is it expanding or narrowing the separation between government and business?**

**MANNING:** I do think that is a divide that perhaps has always been there. There has always been a lot of concern expressed by industry about these costs, especially given that now we are in a pretty substantial financial doldrums and there is no question that the economy is not where it needs to be. So on one side they say you cannot count on economic slowdown and the reduction of CO<sub>2</sub> that has resulted, as a solution, as the economy will cycle back, and there are others who are saying that this is the worst possible time to address this. The public's concern and awareness about the environment tends to move in juxtaposition with comfort in the economy. The Pew Center last week put out a poll and they found that fewer than 25% of Americans recognized the term cap-and-trade as relating to the environment,

and ironically, of those respondents more Republicans understood the term than Democrats. Some commentators have called it the "Fox News Factor" – that Republicans hear more about cap-and-trade than others. It is an issue for concern, there is no doubt about that, but I also think there is some political momentum in Congress, but again it is not focused on cap-and-trade specifically or even the environment. It is on using this issue as an economic driver and retooling, which doesn't necessarily leave traditional fuels in the capward seat. As mentioned in one of your earlier Webinars, there is such an abundance of natural gas that the only way you are going to be able to drive a renewable economy and balance all that load in the grid is going to be with additional natural gas-fired combined cycle. I think that President [Barack] Obama is starting to recognize that in some of his public comments.

**LYMAN:** The only thing that I would add is in terms of the time horizon for things starting to become profitable, it is just comparing apples to oranges. You could take into effect many different factors, for example, if a carbon tax were introduced, however unlikely, these things would be more profitable much quicker because they would save money on a potential carbon tax and so on. But I do think there is a disconnect, and it is probably growing on a foundational level – even though there is increasing collaboration between governments and the private sector, I think that the multilateral negotiation process is increasingly requiring governments to combat this on so many different levels, it is much less linear; much more difficult to make companies feel they are involved in the process. When I talk to people in the private sector at different negotiations, what they want is a predictable legal framework, to know what their obligations are going to be in five, 10, 15 years down the line. I think the process is becoming so complex that it is difficult to handicap those sorts of things, and it is a source of frustration for the private sector, at least the people I talk to, and I think it is probably inevitable.

**AUDIENCE MEMBER: Can you comment on the oils getting less than 3% of the allowances when they have responsibility for nearly 40%**

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## Q&amp;A CONTINUED &gt;&gt;

**of the emissions when vehicular emissions are factored in, and will the U.S. public need to face up to sacrifices and lifestyle changes to work the climate change issues – drive much smaller cars for example; pay \$5,000 premium for PHEV [plug-in hybrid electric vehicle] cars?**

**MANNING:** There is a frustration in the oil and gas sector; where in the initial Waxman-Markey 35% was given to the electric sector and that there was some tweaking done for the coal industry as well. I do think it is a factor as to who were at the table, to some extent, some groups such as the Clean Air Partnership, and others that were engaged in the bill, were unusual partners and so now the upstream oil and gas industry is now trying to act, to be heard. On the car issue, it is very interesting that when oil hit US\$5 you were paying a premium on the Toyota Prius, but when the price dropped dramatically, they had several months' supply sitting on the lot, there was no premium and they were discounting. This is such a cost-driven issue in the U.S. economy. I think there is a lot more interest in energy efficiency and some of the drivers that get us to a Copenhagen -type solution. This high-energy volatility was frustrating to governments and economies; it tends to have public will rolling in and out. I think the upstream ministry is now engaging and I think starting to take this whole issue seriously. The U.S. Chamber of Commerce has been impacted by large members pulling out over this issue. It is complex, and I think there is a motion with corporate America. On the CAFE standards, that deal got cut. We know those numbers; it is going to be an ambitious challenge. The upstream is now engaged, although a bit late; but that said, we don't have a law yet.

**LYMAN:** I can't really comment on the first part of the question but on smaller cars and so on, one insight I have is that I sometimes write on the auto industry in Europe. The European carmakers are banking on that happening in the U.S. The most prominent is FIAT's deal to take over Chrysler, but also other European carmakers, Volkswagen and the French carmakers, are counting on a boom in the small car market in the U.S. If you look at their internal research, the reasoning behind that is exactly what David said; the idea that over

time you might not see such a dramatic spike as we saw recently in oil prices, but as energy becomes more and more expensive, and that would only be exacerbated by the fact that there might be some tax or a levy on carbon or fossil fuels and so on, that these cars will just become more attractive naturally, not because people are going to hunker down and have decided to tighten their belts and buy a small cars, but just because it is going to be cost prohibitive to have inefficient vehicles. So this is the kind of thing, that even though there is some kind of international debate about whether this is going to happen, certainly domestically in the U.S., industry, at least in Europe, is already banking on that and they sort of see it as a foregone conclusion.

**AUDIENCE MEMBER: Do any of you have any idea what happens after 2025?**

**LYMAN:** I think one of two things is going to happen; either this process for the most part is going to fail and then the efforts are going to be in terms of trying to adapt to whatever kind of climate change we can expect, and there is some talk of adaptation, something we didn't hear about until five or six years ago; there is talk of trying to help poor countries adapt. I think that if the multilateral process fails and of course if scientists are right about what's down the road for us, then that is one possibility that the cost of adaptation will be high enough that eventually the economics will force people to take certain steps, but they will be steps more toward adaptation. What I think is more likely to happen though is a complete reinvention of energy over the course of time. Now 2025 might be a little short as a time horizon, but I think that low-carbon power generation is going to develop in different areas. There is a big energy project that people are talking about in Europe called Desertec, where they are going to develop a huge solar panel array in North Africa, which will evidently, so I believe, produce enough power for the combined energy needs of Italy, France and Germany. Or there will be an increased emphasis on nuclear power, with all the problems that entails, but that's a very long debate here. There are some countries like Germany that are trying to phase out nuclear power and some like Italy

where they are reintroducing nuclear power after having been declared illegal following Chernobyl. These are I think the sort of degrees and mandates that we are going to have to see in order for some change to happen. It is not just going to be efficiency issues and that sort of thing. I see those as the two possibilities. As a resident of the planet I hope it's more along the lines of the second.

**MANNING:** U.S. competitiveness is on a lot of people's minds in terms of leadership, but I think the public is also focused on their own jobs and how competitive the U.S. will remain. I think foreign dependence is a concern because of the wars that are engaged in the regions and the role of energy in both supplying the troops and the nature of these political hotbeds. I think there is a legacy effect. I think the generation whose kids are growing are concerned about the environment and how they are perhaps going to leave the globe. But I think the greater element of long-term stability is going to drive a lot of this. I see electrification of the vehicle fleet, and I think there will be plug-in hybrids. I think the main preoccupation of the U.S. is dependence on foreign oil and fuels. I do see a much lower carbon economy; coming forward I think the market is going to take some of that. I also think it will be legislated, not as aggressively as we anticipated maybe a year ago given the economy, but I do think it is either going to be [U.S.] EPA [Environmental Protection Agency] or Congress, and I think the U.S. is going to be responding. I also think they are going to continue in international dialogue. I think the U.S. public is going to be very interested in new jobs, in a new energy economy, in some kind of employment. There are lots of concerns, but that said, I think by 2025 it will look very different. I think you will see a lot more CCS; I don't think that coal will be out of commission. I think it will be adapting, but I think a lot of older plants will shut down. A lot of renewable energy, I think you will have an electrical system that is much more efficient and there will be a lot more market-driven conservation. ■

—Denise Green, Manager, *International Sustainable Energy Exchange*

## PUBLIC POLICY

### STUDY FOCUSES ON GLOBAL FINANCIAL CRISIS AND EFFECT ON ENERGY SECTOR

>> The International Energy Agency (IEA) recently released an early excerpt of the World Energy Outlook (WEO) 2009 at the Bangkok United Nations Framework Convention on Climate Change meeting held earlier this month. This report is part of a more detailed study, which will be published Nov. 10 as part of the WEO 2009. This study will focus on the impact of the global financial crisis and effects on energy, recent policies that will impact the energy sector, analyses of international financial flows and mechanisms that might underpin a post-2012 agreement and also provides a comprehensive analysis of the results of the Reference and 450 Scenario's used in the WEO 2009 report.

WEO 2009's message is fairly simple and direct: if the world continues on the basis of today's energy policies, the climate change impacts will be severe. As energy contributes more than 65% of the world's greenhouse gas (GHG) emissions, addressing how we proceed in using energy will be vital in mitigating anthropogenic emissions. An "energy and environmental revolution" needs to take place to transform the way we use energy. The WEO highlights the current unsustainable energy trends on an environmental, economic and social basis.

Some other preliminary take-aways from this report are:

- during the past 18 months, the world has seen lower emissions, mainly because of the global financial and economic crisis. Using this as an opportunity, it has created a chance to combat climate change and to transition the global energy systems to the 450-ppm trajectory;
- delay in action will increase the cost of combating climate change and will reduce the likelihood of achieving the 450-ppm scenario. Decisive action must be taken now to achieve the appropriate goals;
- action by all countries is necessary, even though the transition will be challenging;
- the cost of achieving the 450-ppm scenario is costly but manageable;



- the energy system restructuring will yield economic development, enhance energy security, improve human health, reduce climate change effects and enhance environmental benefits; and
- energy is at the heart of the climate change problem, but it will play an integral role in the solution.

The WEO 2009 addresses many different pathways forward. In this preliminary report, it mainly focuses on the Reference Case and the 450 Scenario, which illustrate a detailed path for the energy sector to take to achieve an ambitious 450-ppm carbon dioxide equivalent concentration stabilization scenario. According to the Carbon Dioxide Information Analysis Center (CDIAC), we have reached 385 ppm ([http://cdiac.ornl.gov/pns/current\\_ghg.htm](http://cdiac.ornl.gov/pns/current_ghg.htm)) as of 2008, so decisive and aggressive action is needed accomplish the 450-ppm scenario. This WEO 2009 Climate Change Excerpt illustrates detailed pathways that can be taken to achieve the 450-ppm scenario by expanding on GHG reduction measures and necessary policies, required investments, and financial resources needed for action in developing countries provided through tradable credits and financial transfers.

#### The Reference Case

The Reference Case illustrates a scenario of how global energy markets would evolve if governments, globally, make no additional changes to their current policies. All policies adopted (though may not be fully im-

plemented yet) by mid-2009 are taken account in the analysis. Policies being considered and targets not backed up by commensurate policies are not included.

In the absence of new and more stringent policies and initiatives, the Reference Case shows rising fossil fuel use along with skyrocketing prices, and energy related CO<sub>2</sub> emissions rise from 29 gigatons in 2007 to more than 40 gigatons in 2030. Most of these additional emissions will come from developing countries. When this scenario is projected out to 2050, GHG concentrations are estimated to reach 1,000 ppm.

#### 450 Scenario

This Scenario analyses measures that force energy related CO<sub>2</sub> emissions down to a trajectory that stabilizes atmospheric GHG concentrations at 450 ppm. This scenario would have CO<sub>2</sub> concentrations peak at 510 ppm in 2035 and then slowly decline and stabilize at 450 ppm. The analysis covers the investments and financing needed to make this scenario a possibility. In this case, emissions are projected to peak right before 2020 at 30.9 gigatons and decline to 26.4 gigatons in 2030.

Additionally, cumulative energy related investment globally will increase above baseline by US\$10.5 trillion during the period of 2010 to 2030. In the purchase of more efficient vehicles and changing the infrastructure, the transportation sector will take \$4.7 trillion of this additional investment. Buildings, appliances and equipment will require \$2.5 trillion, the power sector will need \$1.7 trillion, and the remaining \$0.4 trillion will go to biofuels production. Of the \$10.5 trillion, \$2.4 trillion will be needed in the 2010 to 2020 timeframe and the remaining \$8.1 trillion will be needed from 2020 to 2030. Organization for Economic Cooperation and Development countries will require 48% of the \$10.5 trillion, other major economies (e.g. Russia, Brazil, China, India) will require 30%, other developing countries will take 18%, and the rest will be needed for

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## PUBLIC POLICY CONTINUED &gt;&gt;

international aviation. It is also assumed that the “energy efficiency investments in buildings, industry and transport sectors are recovered through energy cost savings.”

This Scenario reflects a reasonable set of commitments and policies, such as cap-and-trade programs, sectoral agreements and country specific policies tailored to specific needs. Possible national and international implications of a global climate deal for energy mix, GHG emissions, investment and cost implication are explored further on a sectoral and regional basis. This analysis does not predict future country GHG reduction commitments, rather it illustrates how emissions would

evolve under a “given set of assumption consistent with the overall stabilization goal.”

Aside from this excerpt, the WEO 2009 will address global energy supply and demand, energy investment needs, energy-related emission to 2030, a comprehensive analysis of the impact of the financial and economic crisis on energy/CO<sub>2</sub> trends. In short, by 2020, the Reference Scenario’s global emissions projections are 1.9 gigatons or 5% lower compared with the WEO 2008 analysis. This is mostly due to the economic downturn and slower projected economic growth in addition to government stimulus spending promoting low-carbon investments

along with new climate related policies.

The IEA WEO has been a long-respected guide used throughout industry. Though the publication possesses an alarmist tone, the science and methodology used in these predictive models are as accurate as possible. The WEO 2009’s release before Copenhagen is important in that it will give some benchmark for reference as delegates from each country convene in Copenhagen to discuss the world’s energy future.

This document can be accessed [here](#). ■

[Rete Browning, Global Research Manager, International Sustainable Energy Exchange](#)

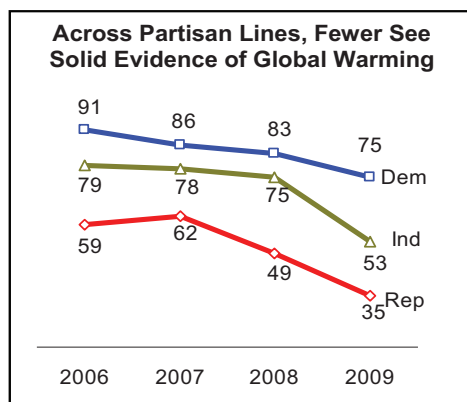
## CLIMATE SURVEY

## FEWER AMERICANS SEE SOLID EVIDENCE OF GLOBAL WARMING: STUDY

>> In late October, the Pew Research Center for the People & the Press released the results of a national global warming survey the center conducted from Sept. 30 to Oct. 4. Among 1,500 adults, this survey found that 57% think there is solid evidence that the average temperature on earth has been getting warmer during the past few decades. Compared to results in April 2008, that number has declined, as 71% said there was solid evidence of rising global temperatures at that time.

There has also been a sharp decline during the past year in the percentage of Americans who say there is solid evidence that global temperatures are rising, the study further determined, and even fewer Americans see global warming as a very serious problem, at just 35% today, down from 44% in April 2008. During the same period, there has also been a decline in the proportion of Americans who say global temperatures are rising as a result of human activity, such as burning fossil fuels, at just 36% today, down from 47% last year, according to the study.

Although the skepticism about global warming is growing, the Pew Research Center found there was more support than opposition for a policy to set limits on carbon emissions, and more than half of Americans actually favor setting limits on carbon emissions and making companies pay for their emissions – even if that means higher prices.



Source: Pew Research Center for the People & the Press.

In comparison, 39% opposed limiting carbon emissions under the same conditions.

Public ignorance about related carbon issues such as cap-and-trade policies is widespread as well, the survey also found. Just 14% said they had heard a lot about cap-and-trade policy, 30% said they had heard little about it, and 55% said they had actually heard nothing on the subject.

Furthermore, the Pew Research Center’s most recent survey of the public’s knowledge released Oct. 14 found just 23% of the public could correctly identify that the cap-and-trade legislation being discussed in the U.S. Congress deals with energy and the environment, while 48% were unsure and 29% said incorrectly that it deals with health care, banking reform or unemployment.

“With less than two months before the United Nations Climate Change Conference in Copenhagen, a majority (56%) of Americans think the United States should join other countries in setting standards to address global climate change while 32% say that the United States should set its own standards,” the study said.

The complete study is available for download [here](#). ■

[– Louise Poirier, Editor Ethanol & Biofuels News](#)

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