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ROADMAP FROM POZNAN TO COPENHAGEN—PRECONDITIONS FOR SUCCESS

HEARING

BEFORE THE

SELECT COMMITTEE ON ENERGY INDEPENDENCE AND GLOBAL WARMING HOUSE OF REPRESENTATIVES

ONE HUNDRED ELEVENTH CONGRESS

FIRST SESSION

FEBRUARY 4, 2009

Serial No. 111–2



Printed for the use of the Select Committee on Energy Independence and Global Warming

globalwarming.house.gov

U.S. GOVERNMENT PRINTING OFFICE

62–184 WASHINGTON : 2010

For sale by the Superintendent of Documents, U.S. Government Printing Office
Internet: bookstore.gpo.gov Phone: toll free (866) 512–1800; DC area (202) 512–1800
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HEARING ON ROADMAP FROM POZNAN TO COPENHAGEN—PRECONDITIONS FOR SUCCESS

WEDNESDAY, FEBRUARY 4, 2009

HOUSE OF REPRESENTATIVES,
SELECT COMMITTEE ON ENERGY INDEPENDENCE
AND GLOBAL WARMING,
Washington, DC.

The Committee met, pursuant to call, at 10 a.m., in room 2318 Rayburn House Office Building, Hon. Edward Markey (chairman of the Committee) presiding.

Present: Representatives Markey, Blumenauer, Inslee, Cleaver, Sensenbrenner and Blackburn.

Staff present: Joel Beauvais and Camilla Bausche.

The CHAIRMAN. Good morning. Today the Select Committee on Energy Independence and Global Warming will have a briefing from the Ambassador of the European Commission to the United States regarding the EU's progress toward the Copenhagen negotiations. And then we will have a hearing to learn about our country's progress.

Despite the chill in the air today, global temperatures remain high. Two thousand eight was tied for the eighth warmest year on record. The evidence of shrinking ice caps and increasingly violent storms reminds us of the danger and challenges we face due to climate change. The debate is no longer about whether humans are causing global warming but what we are prepared to do about it.

Now that the United States has a President committed to action, Congress is poised to help resolve it. Last Congress made progress with the passage of the 2007 energy bill, which by raising fuel economy and appliance efficiency standards will reduce global warming pollution in the future.

Now the task confronting us is how to construct policies that meet the scientific need and the political will. To accomplish this, we will build and improve upon the good work from the 110th Congress. During this economic crisis, we must find a way to "lay a new foundation for growth," as President Obama said in his inaugural address. That is our challenge: to embrace the opportunity to create sustainable jobs and a resilient economy, to reduce our dependence on oil, and to prevent human misery.

But the United States cannot solve the problem alone. The only prospect for success exists if the global community engages in a joint effort. This is the challenge the international community accepted in Bali in 2007. At that meeting, delegates from almost 200

countries met to discuss international climate protection. They decided on a path of negotiations leading to a comprehensive future climate regime to be adopted in 2009 in Copenhagen. The Select Committee one year ago heard testimony about the progress made at the Bali meeting.

Today we are at the halfway point on the road to Copenhagen. This hearing will examine what progress has been made in answering the four main questions posed by the Bali roadmap: how to fulfill the needed greenhouse gas reductions outlined by science, how to adapt to impacts we can no longer avoid, how to answer the need for technology cooperation, and how to support poor countries as they struggle to cope with the realities of climate change.

It is time to take stock and to plan ahead. There are encouraging signs all across the globe. Mexico, South Africa, the EU and others have made significant domestic commitments. China's recent five-year plan makes energy efficiency, renewables, and carbon reduction a priority. Carbon markets are being implemented all across the world.

The next step from Bali was Poznan, Poland. In December, almost 4,000 government officials met to negotiate the next steps on the path to Copenhagen. Today we will examine the concrete results of the conference, the progress of the international community on the Bali agreement, and whether that progress is enough to guide us out of the climate crisis.

There are only 305 days left until the final negotiations in Copenhagen. Three hundred five days from today, the United States and the world will have to reach an agreement that reduces global warming pollution and facilitates cooperation on adapting to unavoidable climate impacts, developing and deploying low-carbon technology, and financing aid to developing countries.

The road to Copenhagen will require the determination of heads of state and the hard work of negotiators, policy-makers, scientists, and economists alike. It will not be easy, but there is no alternative to a global solution. We must find a way to protect the planet while ensuring prosperity for those on it.

That concludes the opening statement of the Chair. We now turn to recognize the Ranking Minority Member, the gentleman from Wisconsin, Mr. Sensenbrenner.

[The prepared statement of Mr. Markey follows:]

THE SELECT COMMITTEE ON
ENERGY INDEPENDENCE AND GLOBAL WARMING

"Roadmap from Poznan to Copenhagen – Preconditions for Success"
OPENING STATEMENT from Chairman Edward J. Markey
February 4th, 2009

Good Morning. Today the Select Committee will have a briefing from the ambassador of the European Commission to the United States regarding the EU's progress toward the Copenhagen negotiations and then we will have a hearing to learn about our country's progress.

Despite the chill in the air today, global temperatures remain high. 2008 was tied for the 8th warmest year on record. The evidence of shrinking ice caps and increasingly violent storms reminds us of the danger and challenges we face due to climate change. The debate is no longer about whether humans are causing global warming, but what we are prepared to do about it.

Now that the United States has a President committed to action, Congress is poised to help resolve it. Last Congress made progress with the passage of the 2007 Energy Bill, which by raising fuel economy and appliance efficiency standards will reduce global warming pollution in the future.

Now the task confronting us is how to construct policies that meet the scientific need and the political will. To accomplish this, we will build and improve upon the good work from the 110th Congress. During this economic crisis, we must find a way to "lay a new foundation for growth," as President Obama said in his inaugural address. That is our challenge: to embrace the opportunity to create sustainable jobs and a resilient economy, to reduce our dependence on oil and prevent human misery.

But the United States cannot solve the problem alone. The only prospect for success exists if the global community engages in a joint effort. This is the challenge the international community accepted in Bali in 2007. At that meeting, delegates from almost 200 countries met to discuss international climate protection. They decided on a path of negotiations leading to a comprehensive future climate regime to be adopted in 2009 in Copenhagen. About year ago, the Select Committee heard testimony about the progress made at the Bali meeting.

Today, we are at the halfway point on the road to Copenhagen. This hearing will examine what progress has been made in answering the four main questions posed by the Bali Roadmap:

- How to fulfill the needed greenhouse gas reduction outlined by science?
- How to adapt to impacts we can no longer avoid?
- How to answer the need for technology cooperation?
- How to support poor countries as they struggle to cope with the realities of climate change?

It is time to take stock and plan ahead. There are encouraging signs all across the globe. Mexico, South Africa, the EU and others have made significant domestic commitments. China's recent five year plan makes energy efficiency, renewables and carbon reduction a priority. Carbon markets are being implemented all across the world.

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There are only 305 days left until the final negotiations in Copenhagen. 305 days from today, the United States and the world will have to reach an agreement that reduces global warming pollution and facilitates cooperation on adapting to unavoidable climate impacts, developing and deploying low-carbon technology, and financing aid to developing countries. The road to Copenhagen will require the determination of heads of state and the hard work of negotiators, policymakers, scientists and economists alike. It will not be easy. But there is no alternative to a global solution. We must find a way to protect the planet while ensuring prosperity for those on it.

Mr. SENSENBRENNER. I thank the Chair.

Global warming is a universal challenge. The logic supporting global treaty is, therefore, obvious, but a global agreement without global commitments is not a solution. With the United Nations' self-imposed deadline to replace the Kyoto Protocol approaching, we can't allow expedience to dictate a costly and ineffective response.

Opposition to Kyoto was bipartisan. In 1997, the Senate voted 95 to nothing to pass the Byrd-Hagel resolution, stating that the United States should not be a signatory to a treaty that does not include binding targets for developing nations or that would result in serious harm to the economy. Because Kyoto failed on both counts, President Clinton never submitted the treaty to the Senate for ratification.

Kyoto's principal failure was its lack of inclusiveness. By only requiring commitments from developed countries, Kyoto does not place restrictions on a majority of countries, including three of the world's five largest emitters: China, India, and Brazil. A treaty cannot reduce emissions without their participation.

Even Al Gore, Al Gore, conceded that binding commitments from developing countries is essential. But I was the only member of the House to attend the U.N. Climate Conference in Poznan last December. The negotiations are now headed in that direction.

I met with delegations from both China and India, and I asked pointblank, "Will you agree to mandatory emissions cuts?" Both countries said no.

The emissions in the developing world are rising so rapidly that reductions from developed countries will be entirely offset by countries without binding commitments.

The Battelle Memorial Institute recently calculated that based on business as usual projections, developing countries will produce more emissions than developed countries within the next ten years. And there is a graphic over there that demonstrates that fact.

A recent article in Foreign Affairs magazine quantified China's growth. By 2050, China is expected to have more cars than the United States. China's grand-scale urbanization plan will aggravate matters. China's leaders plan to relocate 400 million people, the newly developed urban centers between 2000 and 2030. In the process, they will erect half of all of the buildings expected to be constructed in the world during that period.

That is a troubling prospect considering the Chinese buildings are not energy-efficient. In fact, they are roughly two and a half times less so than those in Germany.

Rather than accept mandatory limits or increase its efficiency, China and other developing countries hope to sell offsets to the developed world. Accepting foreign investment is hardly a sacrifice comparable to binding limits on emissions. But beyond the unfairness, there is no way to guarantee that the offsets will actually happen.

The theory is sound. Instead of limiting emissions where they are the most costly, companies can make the same cuts for less money abroad. The problems, however, are twofold. First, the money that should be invested in our own economy is sent to China. And, second, many of the offsets won't happen.

A recent project demonstration demonstrates the problem. Germany recently agreed to purchase offset credits from Chinese developers to build a new dam. The U.N. approved more than 16 million credits for the project. This legitimizes 16 million tons of emissions in Germany and generates tens of millions of dollars of revenue for China. The problem beyond the massive transfer of wealth is that developers began constructing the dam two years before applying for the credits.

According to the British Times Online, one U.N. official estimated that 20 percent of the carbon credits failed to result in actual reductions. Karen Harbert, the President and CEO of the Institute for 21st Century Energy, will testify that the 2007 U.N. negotiations in Bali and Indonesia produced positive steps towards a new treaty.

In Bali, developing countries agreed to actions that were measurable, reportable, and verifiable. This fits with the principle of common but differentiated responsibilities and respective capabilities that I support and that is fundamental in these negotiations.

An agreement to handicap the handful of economies won't change economic realities. Consumers will still buy goods. The manufacture of these goods will result in the same emissions. And America will simply outsource more emissions and more jobs.

Every country has the right and every government has the obligation to pull its citizens from poverty and advance their way of life. The current global downturn historically demonstrates that wealth isn't a fixed pie. It can increase and decrease in absolute terms and America prosperity doesn't come at the expense of the world.

The entire economic world can grow, but all that growth must be subject to the same limitations. We cannot self-impose costs while foreign markets grow freely. The result is too predictable: a long-term contraction of the U.S. economy coupled with the continued explosion of global markets. In the face of intense pressure to find a solution, we can't adopt a costly one that won't work.

And I thank the Chair.

The CHAIRMAN. The gentleman's time has expired. The Chair recognizes the gentleman from Washington State, Mr. Inslee.

Mr. INSLEE. Thank you.

I would like to make three points. First, I want to answer the question of why we are here when we have such an economic meltdown underway, why we are talking about global warming. And I want to suggest there are two reasons for it.

Number one, the Arctic as it melted this summer did not pay any attention to the Dow Jones average. The Pacific did not pay any attention to the Standard and Poor's as it became 30 percent more acidic in the last 50 years.

Mother Nature does not wait for us. We have a necessity of acting now. And, secondly, anyone who looked around, the best opportunities for economic growth in this country are associated with beating global warming.

We know there is a world out there that is going to want these technologies, and we believe and we took a first step with our economic recovery package to develop these technologies. This is an

economic recovery mission that we are on as well as a global environmental one.

Second point as to why we should act while China has not entered into an agreement yet with us, let me suggest that I believe the road ahead, the single most important thing we can do is for the United States to regain its moral authority to lead the world.

We are not in a real strong position to lead right now because we haven't acted. And I would suggest that we need to act domestically before Copenhagen so that we have moral authority to lead the world into an international agreement.

I believe it is in our American destiny to do this. And what we did last week in adopting our economic recovery plan, which has about $88 billion of investment in these new technologies, we are on our way to restoring our moral authority to lead the world.

The moral of the story is you can't blame everything on China when you haven't done anything at home. And I wish we would spend more time figuring out how we are going to have a domestic response to this and a little less time blaming all the problems of the world on China when we are the ones who have three to five times more CO_2 output per capita than the Chinese.

A third point, just real quickly, I met with the Deputy Minister of Environment for Czechoslovakia yesterday. He had some very interesting ideas about what we should ask the Chinas and Indias of the world. I believe there are many things we can obtain by agreement with the developing world, but we need to regain our moral authority first.

Thank you.

The CHAIRMAN. The gentleman's time has expired.

The Chair recognizes the gentleman from Oregon, Mr. Blumenauer.

Mr. BLUMENAUER. Thank you, Mr. Chairman.

And I appreciate what my friend, the Ranking Member, from Wisconsin outlined. There are real considerations we need to take into account to be able to do this right. But while Germany may be two and a half times more energy-efficient than China, the United States doesn't look all that good in comparison with Germany itself, despite our advanced economy and having talked about this for some time.

I do feel very strongly that Mr. Inslee's point about this being the path for the new economy, for one that is sustainable and has economic opportunity, is spot on.

I think that with the benefit of this hearing and the work, Mr. Chairman, you are doing with the Select Committee, we can refine proposals to make sure that we don't outsource pollution and jobs.

There is no reason we can't refine our own trade and environmental policies to make sure that there is, for example, a carbon tariff to avoid that. These are things that are within our capacity.

Now that the United States has ended an eight-year hiatus where it was not part of the global process, working in tandem, that we have a President that is committed to our international cooperation and our international leadership, I look forward to hearing from the witnesses and devising legislation and ideas that are based on the experience around the world, good and bad, so that we can meet this global climate change.

Thank you.

The CHAIRMAN. I thank the gentleman. Time has expired for opening statements.

[The prepared statement of Mr. Cleaver follows:]

U.S. Representative Emanuel Cleaver, II
5th District, Missouri
Statement for the Record
House Select Committee on Energy Independence and Global Warming Hearing
"Roadmap from Poznan to Copenhagen – Preconditions for Success"
Wednesday, February 4, 2009

Chairman Markey, Ranking Member Sensenbrenner, other Members of the Select Committee, good morning. I would like to welcome our distinguished panel of witnesses to the hearing today.

In May of 2007, I accompanied several Members of the Select Committee and Speaker Pelosi on a Congressional delegation trip to Greenland, where we were able to see the real impacts of global warming. We witnessed large reductions in the size of ice sheets there, and the economy and livelihood of the country's residents are at risk. That same trip, my colleagues and I visited with European heads of State to learn about the European Union's initiatives to combat climate change. It was astounding to learn of how much progress the EU has made, when compared to the United States.

Now that change has truly come to Washington and to the Administration, I am confident that Congress will have a responsive ally in controlling greenhouse gas emissions and mitigating global warming. I especially look forward to the briefing by Ambassador Bruton on chances for EU and US cooperation on this crucial issue. Opportunity for widely beneficial policymaking in this area has come, and we must act swiftly and deliberately for the welfare of Americans and our international friends as well.

I thank all of our witnesses for their insight and suggestions, and I appreciate them taking the time to visit with our committee today.

Thank you.

The CHAIRMAN. And we will now begin with a briefing from His Excellency, John Bruton, who is the Ambassador of the European Commission to the United States.

As a reminder, we are not receiving testimony from a witness but a briefing by a foreign dignitary. The Select Committee is honored to hear from Ambassador Bruton. Before accepting his current position, Ambassador Bruton was the Prime Minister, the Taoiseach, of Ireland, where he helped to transform the economy and enhance the peace process.

Your Excellency, thank you very much for joining us today. Whenever you are comfortable, it is our honor to have you here. Thank you, sir.

[The prepared statement of Mr. Bruton follows:]

House of Representatives Select Committee on Energy Independence and Global Warming

Hearing: "Roadmap from Poznan to Copenhagen - Preconditions for Success"

4 February 2009

Written Statement by Ambassador John Bruton
Delegation of the European Commission to the USA

What progress has the international community made since the negotiations in Bali?

2008, the year between the UN climate meetings in Bali and Poznan, was a period for getting ideas on the table and for building understanding. The UN process was complemented by discussions between the largest economies and emitters in the G8 meetings and the Major Economies Meetings, which helped focus minds on areas where agreement needs to be found, including at the highest levels. This allows all parties to come forward with their position for Copenhagen, now that the Poznan conference has marked the shift to full negotiating mode. We expect negotiating texts on the table by the meeting in Bonn in June 2009.

At the same time, developed and developing countries have continued working to put in place policies which tackle climate change.

The European Union has moved a step closer to meeting its Kyoto targets, reducing emissions whilst achieving very healthy economic growth. The 15 Member States that were part of the EU at the time of ratification (EU-15) had reduced their emissions of greenhouse gases by 2.2% below 1990 levels by 2006 (latest data published in 2008). Over the same period, their economies grew by almost 40%. It is worth noting that while the economies of the 12 Member States that joined the EU in 2004 have seen significant growth since 1990, their emissions were 25.3% below 1990 levels in 2006; their emissions growth had virtually levelled off after the drop resulting from economic restructuring in the early nineties. The EU also used the year to agree a comprehensive package of climate and energy legislation that will allow us to further reduce our greenhouse gas emissions up to 2020 and beyond, a package which allows us to meet our commitment to cut our emissions by 20% by 2020 relative to 1990 levels . We are also committed to cutting emissions further - by 30% relative

to 1990 - if there is a satisfactory international agreement, provided other developed countries make comparable efforts.

Since Bali, whilst pushing forward with the international negotiations under the Bali Action Plan, we have worked fast at home to put in place the policies needed to reduce emissions in the EU up to the year 2020 and processes to allow us to react quickly to the agreement in Copenhagen. It took the EU, with its 27 Member States less than a year, with intense negotiations, to agree a broad package of measures that allows us to meet our ambitious targets, which remain unchanged from the levels set in 2007. The package also addresses the concerns of the 27 Member States that face very diverse situations, especially the poorer Members in Central and Eastern Europe, and a number of countries that rely heavily on the use of coal. The resulting climate and energy package covers all sectors of the economy. It extends the EU Emissions Trading System (EU ETS), and includes binding targets and new measures to increase renewable energy consumption, binding commitments by Member States to reduce emissions in all sectors not covered by the ETS, a framework for carbon capture and storage (CCS), and binding targets for emissions from the new car fleet along with standards on the carbon content of fuels. Most importantly, we were able to take full account of the lessons learnt during the learning phase of the EU's cap and trade system.

A number of improvements have been made to the functioning of the EU ETS:

- a fundamentally new approach to cap-setting, with an EU-wide cap that extends to 2020 and beyond, decreasing linearly by 1.74 % per annum from 2013 onwards;
- a gradual broadening of the scope of the European carbon market, to include more large-scale stationary emitters and aviation - the first time we have moved beyond stationary sources;
- auctioning is set to become the default allocation method and is being gradually introduced; we are now preparing for the largest ever emission allowance auctions;
- transitional free-allocation governed by EU-wide rules;
- tighter rules for recognition of international offsets, with a more restrictive and strategic clean development mechanism (CDM) import policy;
- important incentives for the next generation of abatement technologies, in particular CCS and renewable energy.

At the same time, we have set out our vision for a transatlantic and OECD-wide carbon market.

Coming at a time of economic crisis, the package sets a framework for a shift to a lower carbon economy, green jobs and more sustainable economic activity. It will also save costs by cutting imports of fossil fuels and improving air quality. Furthermore, the EU's economic recovery plan will contain measures to make the EU's economy more energy-efficient and energy-secure.

Some media reports have suggested that the package agreed in December 2008 represents a weakening of the EU's commitments to reduce emissions. On the contrary, our commitments remain unchanged. The EU will reduce its emissions by 20% relative to 1990 levels by 2020 and by 30% if there is a satisfactory international agreement - just as agreed in 2007. There has been no compromise on our environmental ambition, only in the fine-print on how to get there. The main changes compared to the proposals for the package made by the Commission are firstly the speed and conditions under which we phase out free allocation for energy-intensive industry, and secondly giving the poorer Member States that are more heavily dependent on coal than others the option of moving more gradually towards auctioning in the power sector. It should be noted however that countries who decide to take up the option to delay auctioning do so at the cost of lost auction revenues. Small changes were made on CDM access, although the amount of CDM importing allowed has not changed much.

Developing countries have been pushing ahead with drafting and implementing strategies and plans for climate action. China has a National Climate Change Program published in 2007 and energy efficiency targets set in the 11th Five Year Plan, with a series of measures and targets to be implemented by 2010. India published its first ever Climate Change Action Plan in June 2008, complementing a number of existing policies – on for example energy efficiency, renewable energy and urban transport – which were not adopted to tackle climate change, but which do help reduce emissions. South Africa has been leading the way with proposals for developing country actions. In July 2008, the South African government outlined its vision for the road ahead, with a substantial, quantified deviation from baseline, enabled by international funding and technology, whereby South Africa's greenhouse gas emissions would peak in around 2020-2025, stabilise for up to ten years and then decline in absolute terms. Mexico has also continued to be proactive, proposing no-lose targets for advanced developing

countries, including itself. Its 2007 National Strategy on Climate Change identified specific mitigation measures for the energy, forestry and land use sectors, with substantial emission reductions.

What are the major challenges we face on the way to Copenhagen?

The first challenge is to get an outcome at Copenhagen which is sufficiently ambitious and which is open to new scientific information, for example on the level at which greenhouse gas concentrations need to be stabilised in the atmosphere. The EU's agreed objective is to limit the average global temperature rise to less than 2 degrees Celsius above pre-industrial levels. This will avoid some of the worst impacts of climate change, but would still require significant adaptation. New research findings have led an increasing number of scientists to call for the level of greenhouse gases in the atmosphere to be stabilised at a significantly lower level than previously recommended: as low as 350 ppmv CO_2 equivalent.

To have a reasonable chance of staying below the 2°C threshold, global greenhouse gas emissions must be reduced to less than 50% of 1990 levels by 2050. In addition, global GHG emissions, excluding emissions from land use, land-use change and forestry, will have to peak before 2020.

For a successful international climate policy, which can deliver the scale of global emissions reductions needed, we see the need to address three essential elements:

- targets for developed countries and actions by developing countries
- finance for mitigation and adaptation
- the development of a robust international carbon market.

The first two will form the essential parts of a successful Copenhagen agreement under the UN framework to tackle climate change post-2012. The last, the development of the international carbon market, will take place largely outside the UN negotiations, for instance through bilateral engagement between the EU and the US.

Developed countries, as a group, should reduce their emissions by an amount consistent with the 2° objective. The Fourth Assessment report by the Intergovernmental Panel on Climate

Change (IPCC) indicates that this would require emission reductions for developed countries in the range of 25-40% by 2020 and 80-95% by 2050.

A significant contribution is needed from developing countries, especially from the more economically advanced. The greenhouse gas (GHG) emissions of developing countries are increasing rapidly and, if not addressed, will outweigh the efforts by developed countries to reduce their own emissions. To stay within the 2 degrees Celsius rise, a recent scientific report indicates that developing countries, as a group, will need to limit the rise in their GHG emissions through nationally appropriate actions to 15-30% below baseline by 2020. In addition, gross tropical deforestation should be reduced by at least 50% compared to current levels by 2020 and global forest cover loss should be halted by 2030.

One of our biggest challenges is to make sure that sufficient financing is available to allow the implementation of a Copenhagen agreement for adaptation and mitigation. This will involve significantly scaling up, redirecting and optimising finance and investment, as well as finding mechanisms to ensure that goals are met cost-effectively. Increased financial flows must be accompanied by appropriate governance.

Estimates suggest that the net incremental investment needed globally is of the order of €175 billion or $224 billion, more than half of which would need to be invested in developing countries. In addition, developing countries may need €23-54 billion or $29-69 billion, per year in 2030 to adapt to the unavoidable impacts of climate change. In addition, the fall in funding for research, development and deployment of clean energy technologies needs to be reversed. To raise the overall investment needed globally, we need to look across the board at private and public funding, and at international, multilateral and bilateral grants and loans. The carbon market will have an important role to play.

While the amounts of finance are significant, they are small in relation to the costs of inaction. The Stern report for example estimates that failure to act against climate change could cost us 5 to 20% of global GDP by 2030. It is also important to remember that the investment required across our economies to reduce emissions is also investment in our future - in new technologies, skills, infrastructure and innovation - which are the ingredients for energy security, economic growth and high quality jobs that can be maintained into the future.

The international carbon market is important in terms of achieving low-cost mitigation and in terms of shifting private investment into low-carbon projects. Domestic cap and trade systems are one of the best policy measures available. The cap ensures the environmental outcome and trading provides the flexibility to companies to find the most cost-efficient emissions reductions. Auctioning of allowances also provides an important source of revenue. This can be used to tackle climate change, and for those who lose out in the shift to a lower emissions economy or for other public policy objectives. Domestic schemes can be linked, to build a more effective international market with greater potential to reduce the costs of mitigation and redirect finance.

A big challenge on the way to Copenhagen is the limited time available. In this respect, it is very much appreciated that President Obama has set out a long-term vision of reducing emissions by 80% relative to 1990 levels by 2050, and that he has already appointed core members of the new 'climate team' who bring with them tremendous experience. It is also encouraging to hear that, alongside this, the House and Senate are pressing ahead with hearings and drafting of domestic legislative proposals, some to be voted through Committee by Memorial Day. The dual process of getting domestic legislation in place and engaging in the international negotiations is already off to a good start.

How is the EU proposing to contribute to the international regime and a success in Copenhagen? What are the EU's views on how other countries – developed, developing and emerging economies – should contribute to international efforts on climate protection?

The European Commission's proposals for Copenhagen are hot off the press. We adopted our "Copenhagen Communication" a week ago (28 January 2009). This sets out what are effectively draft EU proposals, which now go to our Member States for discussion and adoption. The European Council conclusions will be adopted at the beginning of March, building on the Commission proposals, giving a clear political mandate for the negotiations.

Our communication sets out a broad set of proposals. The full text is annexed. The key elements that address the challenges set out above are:

- criteria to ensure the comparability of developed country targets;

- how to step up nationally appropriate mitigation action in developing countries and emerging economies;
- the financial architecture;
- our vision for the international carbon market, including reform of the Clean Development Mechanism (CDM).

It is important that the Copenhagen agreement provides a fair distribution of effort between developed countries. To **ensure that the targets of developed countries are comparable**, the following **four criteria seem to be key when assessing the proposals of different countries**:

- GDP per capita: recognising the capacity to pay for reductions, also via the carbon market;
- GHG emissions per unit of GDP: indicating the energy intensity of an economy;
- trends in emissions between 1990 and 2005: to recognise early action;
- population trends: recognising population growth (such as in the US) or decreases (such as in Russia and Japan).

Such criteria should be used to establish targets that allow all developed countries collectively to reduce their emissions by 30% relative to 1990 levels by the year 2020.

We are also looking for **increased action from developing countries**. As a group, they need to collectively reduce their emissions by 15 to 30% below business as usual by 2020, respecting the principle of common but differentiated responsibilities and respective capabilities, so that they can continue to grow their economies rapidly and reduce poverty.

We do not propose that developing countries commit to targets. Instead we propose that each developing country draws up a Low Carbon Development Strategy, which is consistent with the general ambition of developing countries as a group reducing emissions by 15% to 30% compared to business as usual. This should cover all key emitting sectors, including the power sector, transport, energy-intensive industries, forests and agriculture. These strategies should map out concrete actions to limit their emissions, and indicate where support is required to implement these actions. The strategies should provide the basis for a discussion between the developing country and donors that can support the implementation of actions.

All developing countries, with the exception of the least developed, should commit to adopting a Low Carbon Development Strategy by the end of 2011. However, economically more advanced countries should update their strategies during the course of this year and before the Conference in Copenhagen.

Robust and verifiable Low Carbon Development Strategies should be a prerequisite for access to international support for mitigation action. Developing country action should also be entered in an international registry, showing emissions reductions achieved based on transparent and robust measurement, reporting and verification.

We also propose that independent technical analysis is provided to ensure a sufficient level of ambition in terms of the actions and the support provided. A new platform should be created to match proposed actions with appropriate bilateral or multilateral support; we have called this the Facilitative Mechanism for Mitigation Support.

A credible financing package will be essential for a deal in Copenhagen. A large part of these additional investments will come from developing countries themselves, including in loan programs. But we will also need to significantly increase our support for developing countries. The bulk will have to come from the private sector and through the global carbon market. But part will also need to come through additional public investment. It is clear that for sufficient public funds to be made available, assurances of performance will be required.

We need to improve the coordination of climate finance, as it will come from many different sources. We propose a high-level forum on international climate finance to bring together key decision-makers from the public and private sectors and international financial institutions. This forum would review funding availability and expenditure and provide recommendations for improvements.

We have explored **two options to generate this additional public financial support for developing countries which are both on the negotiation table**. The first is that we determine a financial contribution from each developed country taking into account its emissions and its per capita GDP, broadly along the lines of a proposal put on the table by Mexico. The second is that part of each country's emission budget is withheld and subsequently auctioned centrally to governments, with the revenue used to finance climate action, along the lines of a proposal from Norway. Elements of these options could also be

combined. We suggest also that developing countries should start contributing according to their financial capability.

We see the development of the **international carbon market** taking place in parallel with the UN negotiations. A robust carbon market needs to be underpinned by strong domestic legislation. We regard the post-2012 agreement as a political framework that guides the further development of sound domestic carbon markets. We suggest that OECD countries put a domestic emissions trading system in place by 2013, to allow linking of compatible systems by 2015. Moreover emissions trading is also a good tool for key sectors in developing countries, and should be encouraged.

The integration of EU and US carbon markets would be a major step in this direction Together, the EU and US carbon markets will be the major drivers of the carbon market at OECD and international level. While domestic trading systems do not have to be identical, the successful creation of a wider international market depends on intensive cooperation between the EU and US for the development of effective, robust and compatible systems.

The Clean Development Mechanism, the CDM, as an international offset mechanism, has enabled developing countries to participate in the carbon market. It has provided financing for clean technology projects, it has given a price signal and has acted as an incentive to reduce emissions and build capacity for climate policies in developing countries. But for reasons of environmental integrity it is **necessary to reform the CDM**, as part of the Copenhagen agreement. In the future, CDM should only credit those projects that are additional and go beyond low-cost options. For advanced developing countries and highly competitive economic sectors, this should go further: the project-based CDM should be phased out in favour of moving to a sectoral carbon market mechanism. This would be an efficient mechanism to drive development and deployment of low-carbon technologies in developing countries. It would pave the way for the development of cap and trade systems.

Of course it would be desirable to see cap and trade systems implemented in developing countries sooner rather than later. However, cap and trade is a policy that requires strong domestic environmental institutions and governance structures, which are not in place in countries that are only now building up the environmental institutions that were put in place in Europe or the US three or four decades ago. In such cases CDM offers an attractive first step to build capacity and engage developing countries in global mitigation efforts. The lack of

domestic institutions is substituted by institutional infrastructure built up under the UN umbrella.

New clean technologies will be needed to achieve our objectives. Research, Development and Demonstration (RD&D) of low-carbon and adaptation technologies in all economic sectors and activities will require a major financial boost. Globally, it would be desirable to at least double energy-related RD&D by 2012 and increase it to four times its current level by 2020, with a significant shift in emphasis towards low-carbon technologies, especially renewable energy sources. Likewise research on impacts, adaptation and other mitigation options to climate change need to be strengthened at international level. A commitment to do so should form an integral part of the Copenhagen Agreement.

The EU has a number of new RD&D initiatives on the table:

- the European Strategic Energy Technology Plan (SET-Plan) to accelerate the development of and kick-start the deployment of strategically important low-carbon technologies;
- the first Knowledge and Innovation Communities on climate mitigation and adaptation as part of the European Institute on Innovation and Technology (EIT).
- support for Carbon Capture and Storage and innovative renewable technologies; 300 million allowances are being set aside under the revised EU ETS to help stimulate the construction of CCS demonstration plants and innovative renewable energy technologies; there will soon be a communication on the financing of low-carbon technologies, focused on CCS demonstration in developing countries.

One final point: after ten years of discussions in IMO and ICAO there are no mature proposals for effective mandatory measures to reduce GHG emissions from aviation and maritime transport – and none are likely before Copenhagen. Yet emission reductions from these two sectors are possible using currently available technologies and strategies, including air traffic management, tracking and tracing, maritime engines and equipment. Aviation and maritime emissions should be included in the Copenhagen agreement to help IMO and ICAO deliver global reduction measures.

For further details and information on further proposals not covered in this testimony, please see the attached communication, also available at:
http://ec.europa.eu/environment/climat/pdf/future_action/communication.pdf

What are your visions on EU-US cooperation in this context?

Clearly there are a number of areas where further cooperation would be very fruitful. We have well established cooperation on clean technologies. We need to work closely together on international and related domestic policy development.

Firstly the US and EU should develop as much common ground as possible in the lead up to Copenhagen. We should also be working with other parties, including other major emitters through the G8 and a follow up to the Major Economies Meetings to generate shared understanding and convergence of positions.

We need to work together on what type and intensity of actions we expect from developing countries. As developed countries we also need to engage far more in terms of our targets, and what we will offer developing countries in return for stepping up their actions, including:

- finance and technology;
- incentives through our combined carbon markets, for example through access to carbon offsets and credits but also through the potential use of auctioning revenues.

We can gain a lot of ground and save valuable time by learning from each other's policy experience.

The development of the international carbon market is an area where such US-EU cooperation has a very important role to play. In the near future, the EU and US cap and trade systems are expected to make up the bulk of an international market. If we link together to form a transatlantic carbon market, our markets can be the twin engines driving the global market. We are keen to set up an EU-US working group on the design of carbon markets. This is an area where we can both benefit from technical exchanges. While we drew heavily on US experience in SO2 trading when we were setting up the EU ETS, we have now built up considerable practical experience in developing and implementing the largest cap and trade system for CO2 emissions. We are happy to share this experience.

The reform of the CDM is a related area where the EU and US should also seek common ground, including with other countries that have cap-and-trade systems, to generate demand

for offset credits in a coordinated manner. Allowing competing approaches for generation and/or recognition of international credits or offsets into our systems could be counterproductive; it could weaken the incentive we send to developing countries to step up their climate actions, and weaken our systems, reducing prospects for linking. Quantitative and qualitative limits, such as those used to govern the use of CDM offsets in the EU ETS provide a means of safeguarding the environmental integrity of our cap and trade systems, whilst rewarding projects in developing countries with high environmental performance. By working together on such approaches for access to our combined markets, especially as we look to reform of the CDM, we can use the weight of our markets to leverage high quality emissions reductions in developing countries.

Cooperation needs to be stepped up without delay. The next session of the negotiations will take place in Bonn at the end of March, with parties expected to come forward with positions. The following negotiation session will take place in June, and by then we should have a text on the table for negotiation. There are also a number of high level meetings outside the formal negotiations which we need to use to full effect to push for ambitious global climate action and a good agreement in December, including the G8 Environment Ministers meeting in April and the G8 Leaders Summit in July. We also see value in a follow up to the Major Economies Meetings. High level officials from the European Commission visited Washington DC last week and held a series of productive first meetings with their counterparts in the new administration. We trust this will mark a new beginning in a process of valuable cooperation to tackle climate change.

[Brief recess.]

The CHAIRMAN. And we have a second panel, which will also now please move up to the witness table, and would ask our first witness when he is ready to begin with his five minutes of opening testimony. And that would be Elliot Diringer, who is the Vice President of International Strategies for the Pew Center on Global Climate Change. Mr. Diringer served in the Clinton administration as Deputy Assistant to the President and Deputy Press Secretary. He now directs the Pew Center's outreach to key governments and actors involved in international climate change negotiations.

Mr. Diringer, whenever you are ready, please begin.

STATEMENTS OF ELLIOT DIRINGER, VICE PRESIDENT, INTERNATIONAL STRATEGIES, PEW CENTER ON GLOBAL CLIMATE CHANGE; ROB BRADLEY, DIRECTOR, INTERNATIONAL CLIMATE POLICY INITIATIVE, WORLD RESOURCES INSTITUTE; AND KAREN ALDERMAN HARBERT, PRESIDENT AND CEO, INSTITUTE FOR 21ST CENTURY ENERGY

STATEMENT OF ELLIOT DIRINGER

Mr. DIRINGER. Mr. Chairman, members of the Committee, thank you for the opportunity to appear before you today.

In summarizing my written testimony, I would like to emphasize four points: the progress made since Bali, what is needed in a post-2012 climate framework, what will constitute success this year in Copenhagen, and how the United States can best ensure that success.

While global greenhouse gas emissions continue to rise at an alarming rate, governments have made important progress since the Bali conference. Ambassador Bruton has just described efforts under way in Europe. Other developed countries also are moving forward. Australia is planning a cap-and-trade system and other measures to reduce its emissions 15 percent by 2020. Japan will announce its own mid-term target later this year.

Even more encouraging is that several major developing countries have now adopted national climate strategies. China, which adopted a national climate program in 2007, was joined last year by India, Brazil, Mexico, and South Africa. Brazil is proposing to reduce deforestation rates by 70 percent by 2017. Mexico has set an aspirational goal of reducing emissions 50 percent by 2050. And South Africa has pledged to stop its emissions growth by 2025, with absolute reductions to begin 10 years later.

Internationally as well, we have seen progress since Bali. President Bush and other G8 leaders supported a global goal to reduce emissions at least 50 percent by 2050. Then the major economies, China, India, and other developing countries acknowledged that their emissions must deviate from business as usual. And in the U.N. climate negotiations, governments have put forward dozens of concrete proposals for fashioning a comprehensive post-2012 agreement.

In anticipation of new U.S. leadership, governments resolved two months ago in Poznan, Poland to shift this year into full negotiating mode. After years of stalemate, conditions are finally set for genuine negotiation to begin.

The Pew Center believes that to be effective, a post-2012 climate agreement must establish verifiable commitments by all major economies, including economy-wide emission targets for developed countries and a range of policy commitments for developing countries.

We see four major challenges between now and Copenhagen. The first is agreeing on a range of comparable emission targets for developed countries. President Obama has called for reducing U.S. emissions to 1990 levels by 2020. The European Union, as we have just heard, has set a target of 20 percent below 1990 levels.

Measured against a 1990 baseline, these goals appear very much at odds. However, circumstances today are different. Measured against a more current baseline, these goals appear considerably more comparable. Both, in fact, would reduce emissions roughly 15 percent below 2005 levels. Targets under consideration in Australia, Canada, and Japan fall in a similar range.

The second challenge is defining developing country actions in a way that works for developing countries and can be accepted by the United States and other developed countries as a genuine commitment.

Developing countries are not prepared at this stage to assume economy-wide targets. Commitments to implement nationally defined policies, such as energy-intensity goals, efficiency standards, or sectoral targets are a reasonable alternative provided that these policies are defined in clear metrics and produce verifiable emission reductions.

The third major challenge is agreeing on the appropriate means and level of support for developing country action. Mobilizing support will be difficult under current economic conditions, but early progress in this area will be essential to reaching agreement in Copenhagen.

The fourth major challenge is deciding how countries' efforts are to be measured and verified. A credible verification system is key to establishing and maintaining parties' confidence in their efforts in the overall regime.

We cannot realistically resolve all of these issues in the next ten months. As such, we believe that the Copenhagen Conference should be considered a major success if it produces a strong interim agreement that puts a full, final, and ratifiable treaty within reach.

This interim agreement should do three things. It should establish the basic architecture of a post-2012 framework. It should indicate the range of emission reductions and level of support that developed countries are prepared to commit to. And it should initiate a process to determine the specific actions to be undertaken by developing countries. This would settle fundamental, legal, and design issues, and create a positive dynamic for concluding the final agreement.

To ensure success in Copenhagen, the United States must first and foremost lead at home by quickly enacting comprehensive mandatory legislation to reduce U.S. emissions. The United States must also lead abroad through a full-fledged diplomatic strategy.

Congress can help strengthen the hand of U.S. negotiators through its design of domestic climate legislation. Congress could, for instance, authorize immediate assistance for capacity building

in developing countries with assistance for technology development to be made available upon U.S. ratification and entry into force of a new climate agreement.

Similarly, Congress could set aside allowance auction revenues to be made available on entry into force for emission reductions overseas above and beyond a U.S. domestic target. The targets set under domestic legislation must fundamentally guide the U.S. negotiating position, but room to bargain could provide the negotiating leverage needed to secure stronger commitments from others.

I thank you for this opportunity and would be happy to answer your questions.

[The prepared statement of Elliot Diringer follows:]

Statement of

Elliot Diringer
Vice President, International Strategies
Pew Center on Global Climate Change

regarding
The Roadmap from Poznan to Copenhagen –
Preconditions for Success

submitted to the
Select Committee on Energy Independence and Global Warming
United States House of Representatives
February 4, 2009

Mr. Chairman, Mr. Sensenbrenner, and members of the Select Committee, thank you for the opportunity to testify on the international climate change negotiations and the path toward a post-2012 climate treaty. My name is Elliot Diringer, and I am the Vice President for International Strategies at the Pew Center on Global Climate Change.

The Pew Center on Global Climate Change is an independent non-profit, non-partisan organization dedicated to advancing practical and effective solutions and policies to address global climate change.[1] Our work is informed by our Business Environmental Leadership Council (BELC), a group of 44 major companies, most in the Fortune 500, that work with the Center to educate opinion leaders on climate change risks, challenges, and solutions.

Mr. Chairman, in requesting my participation in this hearing, you asked me to address several important questions. Before responding to each in turn, I would like to highlight the following key points:

- Governments have made important progress since the 2007 Bali conference in strengthening their national efforts and in laying groundwork for a new multilateral agreement. In anticipation of new U.S. leadership, governments recently agreed to enter into "full negotiating mode" with the aim of achieving a comprehensive agreement later this year in Copenhagen.
- To be effective, a post-2012 climate framework must establish verifiable commitments by all major economies, including economy-wide emission targets for developed countries, and a range of policy commitments for developing countries. The major challenges for Copenhagen are agreeing on: a range of "comparable" emission targets for developed countries; the basic terms of developing country action and a process to further specify them; the appropriate means and level of support for developing country actions; and how countries' efforts are to be measured and verified.

[1] For more on the Pew Center, see www.pewclimate.org.

- The Copenhagen conference should be considered a major success if it produces a strong interim agreement that puts a full, final and ratifiable treaty within reach. This agreement should establish the basic architecture of a post-2012 framework; indicate the range of emission reductions and the level of support that developed countries are prepared to commit to; and initiate a process to determine the specific actions to be undertaken by developing countries.
- To ensure success in Copenhagen, the United States must lead at home, by quickly enacting comprehensive mandatory legislation to reduce U.S. emissions, and abroad, through vigorous multilateral and bilateral engagement. In fashioning domestic legislation, Congress can strengthen the hand of U.S. negotiators. Provisions authorizing a stronger U.S. effort and stronger support for developing countries upon ratification of a new climate treaty could provide important leverage to secure stronger commitments from other countries.

1. What progress has the international community made since the negotiations in Bali?

The UN Climate Change Conference in Bali marked a significant turning point in the international climate negotiations. The United States and other parties to the UN Framework Convention on Climate Change (UNFCCC) launched a two-year process with the aim of reaching a comprehensive agreement at the UNFCCC Conference of the Parties to be held later this year in Copenhagen. In the year since Bali, global emissions have continued to rise at an alarming rate. But there has been encouraging progress both at the national level, with many countries stepping up their climate efforts, and in multilateral discussions, with governments now weighing specific options for a new agreement.

Many developed countries have taken steps to strengthen or establish mandatory programs to reduce greenhouse gas emissions. Most notable is the decision in December by European heads of state enacting a suite of policies aimed at achieving the European Union's ambitious goal to reduce greenhouse gas emissions 20 percent below 1990 levels by 2020. These include an expansion of the EU's Emissions Trading Scheme, new measures in sectors not covered by the trading system, and individual member state targets to increase renewable energy to 20 percent of the EU's overall energy mix. Separately, the United Kingdom set a mandatory target to reduce emissions 80 percent below 1990 levels by 2050. Elsewhere, the Australian government decided to develop a national cap-and-trade system and other measures to reduce emissions 5 to 15 percent below 2000 levels by 2020, and 60 percent by 2050. And the Japanese government launched a voluntary emissions trading system, and set a goal of reducing emissions 60 to 80 percent below 2005 levels by 2050. Japan plans to announce a mid-term emissions target later this year.

A number of major developing countries, meanwhile, have put in place national climate change strategies. China, which adopted a National Climate Change Program in 1997, issued a white paper last year elaborating its policies and actions. China also reported progress toward its ambitious energy intensity target, with energy consumption per GDP down nearly 3.5 percent in the first three quarters of 2008. India adopted a National Action Plan on Climate Change outlining existing and planned actions in eight areas, with a strong emphasis on energy efficiency and large-scale solar power. Brazil adopted a National Plan on Climate Change that includes

policies to increase renewable energy and cut electricity consumption 10 percent by 2030. Brazil's plan also calls for reducing deforestation rates about 70 percent by 2017 – avoiding nearly 5 billion tons of carbon dioxide emissions – with support from the international community.

Mexico recently announced an aspirational goal to reduce emissions 50 percent below 2002 levels by 2050, and is developing sectoral targets with the aim of launching an emissions trading system by 2012. Finally, South Africa, following a detailed analysis of its mitigation options, has set a goal of stopping greenhouse gas emissions growth by 2020 or 2025, with absolute reductions to begin ten years later. The government intends to achieve its goals in part with an escalating price on carbon through a tax, emissions trading, or a combination of market mechanisms.

Beyond these national efforts, governments also have made progress since Bali in building common ground for an effective long-term global response. At the G-8 summit in July in Hokkaido, Japan, President Bush and other leaders supported a global goal of reducing greenhouse gas emissions at least 50 percent by 2050. In a declaration by leaders of the world's major economies, China, India and other major developing countries pledged to pursue "nationally appropriate mitigation actions…with a view to achieving a deviation from business as usual emissions." A new Clean Technology Fund launched at the World Bank through the Bush administration's initiative will help developing countries by supporting the deployment of commercially available clean energy technologies.

Within the UN climate negotiations, meanwhile, governments have begun debating the key issues and options for a post-2012 agreement. Parties have come forward with dozens of concrete proposals addressing key elements under the Bali Action Plan, including developed and developing country efforts; mechanisms for financial, technology and adaptation support; and a long-term vision to guide the international effort. These proposals and debates have highlighted significant differences among parties. But they also reflect a wealth of new and serious thinking within governments about the practical challenges of crafting a workable climate treaty. Perhaps most encouraging are the proposals from a number of developing countries suggesting ways their actions can be strengthened and embedded in a new climate agreement.

For years, governments have engaged in a prolonged pre-negotiation, even as the evidence of accelerated warming continued to mount. In anticipation of new U.S. leadership, parties resolved in Poznań in December that they were now ready to enter "full negotiating mode." Conditions are finally set for a genuine negotiation to begin.

2. What are the major challenges faced on the way to Copenhagen?

The Pew Center believes that, to be effective, the post-2012 framework must establish verifiable commitments by all the major economies, and that in order to do so, it must allow some flexibility in the types of commitments taken by different countries.

We believe all developed countries should commit to economy-wide emission reduction targets. They are effective and efficient, and are the foundation of a global greenhouse gas market. For reasons both political and practical, however, most developing countries cannot be expected at this stage to assume economy-wide targets. For these countries, the framework should also allow for policy-based commitments. These would be commitments to implement nationally defined policies – such as energy efficiency standards, renewable energy targets, sustainable forestry plans, or other sectoral policies – to produce verifiable reductions in greenhouse gas emissions.

In addition, the framework must provide incentives to developing countries to reduce their emissions, through market-based mechanisms and public finance, and it must help the poorest and most vulnerable countries adapt to the impacts of climate change.

The major challenges for Copenhagen are to reach agreement on: a range of "comparable" emission targets for developed countries; the basic terms of developing country action and a process to further specify them; the appropriate means and level of support by developed countries for developing country actions; and how countries' efforts are to be measured and verified. Each presents its own set of challenges; pulling them all together in a comprehensive package will be more challenging still.

Comparability of Developed Country Targets – Under the Bali Action Plan, a new agreement is to ensure the "comparability of efforts" among developed countries, a question that is likely to revolve primarily around mid-term emission reduction targets.

Comparability could depend on host of factors such as a country's: emissions intensity (emissions per GDP); relative wealth, or ability to pay; economic and population trends; past efforts to reduce emissions; marginal costs of abatement; and other national circumstances (resource base, climate, geography, patterns of trade, etc.). Agreement on a quantified formula to determine respective targets seems unlikely, however. Rather, targets will likely be determined through a political negotiation in which parties take factors such as these into account.

In the United States, President Obama has called for a domestic cap-and-trade system with the mid-term goal of reducing U.S. emissions to 1990 levels by 2020, the same target adopted by the state of California and by the six other states and four Canadian provinces in the Western Climate Initiative. The European Union, by contrast, has set a goal of reducing emissions 20 percent below 1990 levels, and says it is prepared to go further if other developed countries agree to comparable reductions.

Viewed against a 1990 baseline (the base year employed in the UNFCCC and the Kyoto Protocol), the EU target and the one proposed by President Obama appear very much at odds. Circumstances, however, have changed considerably since 1990. U.S. population has grown 19 percent, for instance, while Europe's has held steady. For the United States, a return to 1990 levels by 2020 would require a very significant level of effort. Measured against a more recent baseline, the EU target and the one proposed by President Obama appear considerably more comparable – each would reduce emissions roughly 15 percent below 2005 levels. Numbers

emerging elsewhere fall in a similar range. Australia is considering reductions up to 15 percent below 2000 levels. Canada has talked of reducing emissions 20 percent below 2006 levels. Japan has yet to formally propose a target, but a government analysis released last year suggested a maximum feasible reduction of 14 percent below 2005 levels.

Defining Developing Country Actions – A major step forward in Bali was the agreement by developing countries to negotiate "nationally appropriate mitigation actions." One of the central challenges for Copenhagen is defining these actions in a way that is acceptable to developing countries and can be accepted by the United States and other developed countries as a genuine commitment.

The key issues are the form of developing country commitments, and the process for determining their specific content. As noted earlier, the Pew Center supports the use of policy-based commitments, in which countries agree to implement nationally defined policies producing verifiable emission reductions. Countries could tailor their policies to their natural circumstances, mitigation potentials, and development objectives. Policies could be sector-based or economy-wide, and could include standards, targets and fiscal or other measures. They should be defined in clear, verifiable metrics, such as energy intensity improvement, growth in renewable energy, reduced deforestation rates, or sectoral targets.

Beyond agreement on a general approach, a process is needed to define the specific actions of individual countries. This process could serve two purposes. The first would be to allow some assessment of the soundness and adequacy of the proposed actions. The second would be to determine the means and level of support to be made available to help implement the proposed actions; under the Bali Action Plan, developing country mitigation actions are to be "supported and enabled by technology, financing and capacity-building." These two purposes are inherently related: the strength of a country's commitment will depend in part on the support provided, and vice versa.

The expectations for any given country – and the nature and level of support it is likely to receive – will depend heavily on its particular circumstances. Developing countries strongly oppose any explicit differentiation among them beyond the categories already established in the Framework Convention, which gives special consideration to least developed countries and small island developing states. The bargaining process itself is likely to produce a de facto differentiation, however, with stronger commitments by the most advanced emerging economies, and perhaps none at all by many others.

Support for Developing Country Efforts – Agreement in Copenhagen will not be feasible without major progress on the question of incentives and support for developing country efforts. As noted, the Bali Action Plan makes developing countries' mitigation actions at least partially contingent on support from developed countries. Developing countries need assistance in analyzing their mitigation potentials, developing and implementing effective policies, deploying climate-friendly technologies, and measuring and verifying their emission reductions. In addition, the Bali Action Plan calls for stronger support for adaptation in vulnerable countries. Although mobilizing support will be especially difficult under current economic conditions and

budgetary constraints, early progress in this area will greatly enhance prospects for an agreement.

There is broad recognition that the majority of investment for mitigation will come from private flows, in part through greenhouse gas markets. But additional public finance is needed to supplement private flows for mitigation and to address adaptation. While the level of support to be provided will in the end be critical, other questions must be addressed first. These are the means by which any public finance is to be generated, the institutions through which it is to be disbursed, and their governance.

International climate funding has relied primarily to date on pledging by donor countries; resulting flows are modest and unpredictable. An effective agreement will require adequate, predictable funding. Countries could commit to certain funding levels or formulas, but actual flows would remain subject to national appropriations processes. International mechanisms proposed by some parties – such as levies on international emissions trading, or an auction of international emissions allowances – would not require national appropriations but would be subject to fluctuations in the greenhouse gas market.

Institutionally, the major issue is whether any new funds are managed directly under the Framework Convention, as developing countries have proposed, or at the Global Environment Facility or a multilateral bank, as many donor countries prefer. Governance is another issue, with developing countries insisting on a much stronger say than under traditional donor-weighted models. The new Clean Technology Fund points to a potential compromise – placing any new funds at an existing institution, avoiding the need to re-create institutional capacity, but with a more balanced governance structure.

Measurement, Reporting and Verification – The Bali Action Plan introduced a critical new construct into the climate negotiations with the requirement that the mitigation efforts of both developed and developing countries, as well as support for developing country actions, be "measurable, reportable and verifiable" (MRV). Credible approaches to MRV will be essential to establish and maintain parties' confidence in their respective efforts and in the overall regime.

Existing practices under the Framework Convention and the Kyoto Protocol should prove adequate in the case of countries with economy-wide targets. New approaches will be needed for developing countries, which now have only minimal reporting requirements and are not subject to international review. If verification is done nationally, as proposed by developing countries, it should follow agreed international guidelines and be subject to international review. A review process could be strictly facilitative, providing expert advice where countries are falling short, or could entail consequences, such as a loss of financial support or access to the carbon market.

How support for developing countries is to be verified will depend on the way it is provided. As some support is likely to continue to flow through bilateral channels, common criteria are needed to distinguish "climate-related" assistance from other aid.

3. In what way should the US contribute to facilitating a success in Copenhagen?

The Copenhagen conference should be considered a major success if it produces a strong, balanced interim agreement that puts a full, final and ratifiable treaty within reach. Such an agreement could take the form of a decision of the UNFCCC Conference of the Parties and should:

- Outline the basic architecture of a post-2012 framework, including the types of mitigation commitments to be undertaken by different groups of countries, mechanisms of support for developing countries, and basic terms and mechanisms of measurement, reporting and verification;
- Set an emissions target range, or minimum target levels, for developed countries;
- Indicate the level of support to be provided for developing country actions, assuming a final agreement with appropriate developing country commitments; and
- Initiate a process to determine the specific actions to be undertaken by individual developing countries.

An agreement of this type would settle fundamental legal and design issues. Further, by specifying the level of effort they are prepared to undertake, and the level of support they are prepared to deliver, developed countries would in essence be placing a concrete and comprehensive offer on the table. This would create the necessary conditions to then negotiate the specific terms of developing country action, the major additional element needed to form a ratifiable agreement.

No country could do more than the United States to ensure success in Copenhagen. Inaction by the United States – the world's largest economy, and largest historic greenhouse gas emitter – has been the single greatest obstacle to global action on climate change. Over the coming year, the United States has the responsibility and the opportunity to instead drive the global climate effort through renewed leadership both at home and abroad.

First and foremost, the United States must exercise leadership at home by moving swiftly to enact comprehensive mandatory legislation to cap and reduce U.S. emissions. The Pew Center, along with the other members of the U.S. Climate Action Partnership, urges Congress to enact legislation this year to establish an economy-wide cap-and-trade system to reduce emissions 14 to 20 percent below 2005 levels by 2020, 42 percent by 2030, and 80 percent by 2050. We recognize that this timeline and these targets are ambitious. We believe they are achievable and economically sustainable, and that now is to the time to act.

The United States also must exercise leadership abroad through a full-fledged diplomatic strategy to achieve a comprehensive agreement under the UNFCCC establishing fair, effective and verifiable commitments by all major economies. President Obama's recent pledge of vigorous international engagement and his appointment of a Special Envoy on Climate Change are encouraging signs that the Administration intends to move quickly.

The Administration must immediately engage in the ongoing UNFCCC negotiations, making clear its commitment to achieving the strongest possible outcome, while at the same time helping to set realistic expectations for Copenhagen. Stepping into a negotiation midstream

requires great delicacy. The new Administration will surely be welcomed, but it must be mindful of decisions already taken, and it may have to work hard to overcome a deficit of trust. It will be especially important to acknowledge recent movement by developing countries, and to make early progress on incentives for developing country action.

Success in the negotiations will require vigorous efforts on other fronts as well. The United States should work with other countries to quickly reconstitute the Major Economies process launched by the Bush administration. Despite their initial reluctance, many governments have come to recognize the enormous value of a small-group dialogue in laying the foundation for a comprehensive agreement under the UNFCCC. At the same time, the United States must step up bilateral engagement with key countries. With Europe and other developed countries, the Administration must work toward consensus on emission targets and common approaches to developing country engagement. With developing countries, it must signal a strong willingness to provide the support they need, while being clear about what the United States needs in return.

Of all the bilateral relationships, perhaps the most critical, and most delicate, is with China. While China has shown a greater willingness to engage in climate discussions, and is sensitive to its new standing as the world's largest greenhouse gas emitter, it is reluctant to be cast in the spotlight. Still, closer collaboration on clean coal technology and other energy and climate challenges could produce practical benefits for both countries and help pave the way for a multilateral agreement. Next week, the Pew Center will release a report produced jointly with the Asia Society outlining a proposed roadmap for U.S.-China cooperation on energy and climate change.

4. What are the inter-linkages between the ongoing national and international climate negotiations and how can they enhance and influence one another?

One of the most critical lessons of the Kyoto experience is how important it is that our domestic and international climate policies proceed in tandem. The United States should not repeat the mistake of allowing its climate diplomacy to move out ahead of its domestic policy process. This requires close coordination not only within the executive branch, but more importantly, between the Administration and Congress.

The United States' leverage in the international negotiations will depend heavily on the pace of domestic climate legislation. The ultimate timing and stringency of U.S. legislation will bear directly on the timing and strength of a U.S. commitment. For that reason, U.S. negotiators may not be in a position to conclude a final agreement intended for ratification until domestic legislation has been enacted or is close to enactment. Still, with the general direction of domestic climate policy now emerging, the United States can and should begin negotiating the overall structure of a new international agreement. At the same time, the Administration should work with Congress to incorporate into legislation provisions that will help at the negotiating table.

Many of the core issues in the design of a domestic cap-and-trade system have implications for international engagement. Some approaches can provide strong positive incentives for developing country action. Allowing U.S. emitters to meet their targets in part through the purchase of international offsets can mobilize private investment to reduce emissions

in developing countries. Revenue from the auction of emission allowances can be used to support both mitigation and adaptation efforts. Border measures imposing costs on energy-intensive imports have been advocated as a way to encourage stronger developing country action. However, these could lead to trade and other conflicts, and other approaches can better address the competitiveness concerns of energy-intensive industries.

In fashioning domestic legislation, Congress can build in provisions to strengthen the hand of U.S. negotiators. The targets set under domestic legislation must fundamentally guide the U.S. negotiating position, but reaching an agreement will be easier if negotiators have additional room to bargain. Congress could, for instance, authorize immediate assistance for capacity-building in developing countries, with assistance for technology deployment to be made available upon U.S. ratification and entry into force of a climate agreement. Similarly, Congress could set aside allowance auction revenues to be made available on entry into force for emission reductions overseas above and beyond a U.S. domestic target. Being able to offer an international target somewhat stronger than the domestic target could provide the negotiating leverage needed to secure stronger commitments from others.

To summarize, I believe we now have an historic opportunity to mobilize an effective multilateral response to climate change, and it is incumbent upon the United States to lead both at home and abroad to ensure its success. I commend the Select Committee for bringing the attention of the Congress to bear on these critical issues, and thank you for the opportunity to present our views. I would be happy to answer your questions.

The CHAIRMAN. We thank you very much, Mr. Diringer.

Our second witness is Rob Bradley. He is the Director of the International Climate Policy Initiative at the World Resources Institute. Mr. Bradley, a trained physicist, now manages a variety of projects, including clean energy technologies for poverty reduction and adaptation strategies for climate change.

We welcome you, Mr. Bradley.

STATEMENT OF ROB BRADLEY

Mr. BRADLEY. Mr. Chairman, members, thank you and good morning. My name is Rob Bradley. I am Director of the International Climate Policy Initiative at the World Resources Institute. Thank you for the opportunity to join you today.

I would like to make three points, each of which I treat in more detail in my written testimony, which I hope can be included in the record. First, success against climate change will mean both strong federal policy in the United States and action from major developed and developing economies.

Second, the world has changed dramatically from the days of the Kyoto Protocol. Major developing countries are ready to take significant action on limiting emissions.

Third, the Bali Action Plan provides a solid foundation for a new international agreement that meets key U.S. interests.

The United States is an indispensable leader in the fight against climate change. Without the world's largest economy and biggest historical emitter, other countries cannot fix the problem, but nor can the U.S. do it alone. Almost 80 percent of global emissions are produced by 15 countries, counting the EU as one country, 9 of which are in the developing world.

The Kyoto Protocol, the main climate agreement to date has been rejected by the U.S., in particular, because of the concern that without meaningful participation from major developing countries, it would be ineffective and excessively costly to the U.S. economy.

Developing countries have historically argued that with their poverty and small historical contribution to the climate problem, they should not be responsible for curbing emissions. But in recent years, there has been a flood of developing country climate plans. For example, Brazil announced that it would reduce its deforestation rate over 50 percent from the recent levels by 2017, avoiding an estimated 4.8 billion tons of CO_2 emissions.

China committed to reducing national energy intensity—that is energy use per unit of GDP—by 20 percent by 2010 and looks on course to meet that goal with programs expected to cut emissions by 550 million tons of CO_2. Investment in wind, hydro, nuclear, and biomass are expected to save an additional 640 million tons by 2010.

India has a number of states that are taking forward-aggressive renewable energy targets with renewable portfolio standards.

Mexico aims to halve its greenhouse gas emissions by 2050 and is considering employing a cap-and-trade policy akin to the one recently considered by the U.S. Congress.

South Africa has presented a detailed and highly ambitious plan to peak its national emissions by 2020 and to bring them down to low levels in 2050 in accordance with the science.

These policies will often not be in the same form as the cap-and-trade approach favored in the U.S. and Europe, but that need not make them any less ambitious. They are the more impressive when we consider the poverty of many of these countries.

As has already been mentioned, in India, 550 million people still lack any access to electricity. And they, just like Americans and Europeans in the last century, legitimately aspire to get it. But they are seeking to do so on a lower-carbon pathway. Indeed, countries such as China and India see their future as leaders in the clean energy revolution.

Significant questions do remain. Many of these countries have a poor record of implementing national plans. Reliable data are hard to obtain. Standards of enforcement, governance, and transparency are very variable.

It will certainly not be enough for countries to take each other's plans at face value. This is where the international agreement comes in. It must enhance collective willingness to act by establishing accountability, to build trust that countries are taking real action to cut emissions, and framing those actions in the context of global goals.

The Bali Action Plan provides for a radically different agreement from the Kyoto Protocol. Mitigation actions from both developed and developing countries are to be "measurable, reportable, and verifiable." This language also applies to finance, technology, and capacity-building support to developing countries.

This body can shape the success of the international process. Most importantly, adopting an ambitious federal climate policy will unleash action not only in the U.S. but also from countries that have been waiting on the world's biggest economy. Second, U.S. policy should include provisions for financing international action on adaptation, forest protection, and clean technologies.

I don't want to imply that this will be easy. Many countries remain wary of commitments. And their rhetoric will stress these fears. But the world has moved on a lot in ten years. There is a real willingness to tackle emissions and a potential agreement that can turn this willingness into verifiable action. For the United States and for the world, the time is right to rise to this challenge.

Thank you. And I look forward to your questions.

[The prepared statement of Rob Bradley follows:]

TESTIMONY OF MR. ROB BRADLEY
DIRECTOR, INTERNATIONAL CLIMATE POLICY INITIATIVE
WORLD RESOURCES INSTITUTE

HEARING BEFORE THE SELECT COMMITTEE ON ENERGY INDEPENDENCE AND GLOBAL WARMING

February 4, 2009

Thank you for the opportunity to contribute to the deliberations of this Select Committee. My name is Rob Bradley, and I am Director of the International Climate Policy Initiative at the World Resources Institute. The World Resources Institute is a non-profit, non-partisan environmental think tank that goes beyond research to provide practical solutions to the world's most urgent environment and development challenges. We work in partnership with scientists, businesses, governments, and non-governmental organizations in more than seventy countries to provide information, tools and analysis to address problems like climate change, the degradation of ecosystems and their capacity to provide for human well-being.

I am very pleased to be here to speak to what I consider the most pressing environmental issues faced by the world – and to what I consider a major opportunity for the United States to assume a role of international leadership. In this testimony, I would like to make three points, each of which I will expand on below:

First, that the time is very ripe for the U.S. to reengage internationally on the issue of climate change and take up a leadership role. Further, that the engagement between the U.S. and major developing countries will be a critical factor for success.

Second, the world has changed dramatically from the days of the Kyoto Protocol. Major developing countries are ready to take significant action on limiting emissions and the Bali Action Plan provides a solid foundation for a new international climate agreement that meets key U.S. interests.

Third, I want to discuss key features of the new agreement for engaging developing countries. These include how different countries will take on actions and commitments, and funding for international adaptation, forests and technology. In conclusion, I also want to flag some ways in which these considerations might affect features of U.S. climate legislation.

1. There is no time to lose

Let me begin by commenting on the urgency of the challenge. The science is compelling. Engaging major developing countries is critical to success. Finally, conditions are right for a major reengagement by the US.

The science is compelling

The Earth is warming, primarily due to human activities. The cheap, plentiful fossil fuels that have enabled huge increases in human productivity and great improvements in human well being over the past 200 years together with significant deforestation have been the most important causes of global warming. The buildup of carbon dioxide and other greenhouse gases (GHGs) is accelerating, and unless we act very soon to control emissions during our children's lifetimes warming will rise to very dangerous levels.

In February 2007, the Intergovernmental Panel on Climate Change (IPCC - the official science process sanctioned by the world's governments and participated in by the United States) released its report on climate change science. The report states that it is "unequivocal" that Earth's climate is warming, and confirms that the current atmospheric concentration of carbon dioxide and methane, two important greenhouse gases (GHGs), "exceeds by far the natural range over the last 650,000 years." Further, the IPCC concludes that it is now "very likely" (greater than 90% probability) that greenhouse gas emissions from human activities have caused "most of the observed increase in globally averaged temperatures since the mid-20th century."

In the two years since this alarming conclusion, further compelling evidence of the impacts of warming have been seen. Indeed, the impacts of warming have become increasingly evident to non-scientific observers. Sea ice in the Arctic is shrinking, and Greenland's massive ice sheet is melting – far faster than predicted. Glaciers are rapidly shrinking from the Rockies to the Alps. WRI annually reviews the latest in climate science. This review confirms that our climate system is changing. Jonathan Lash, WRI's president, provided several examples in his January 15, 2009 written testimony before the U.S. House of Representatives Committee on Energy and Commerce Committee. These include:

According to the National Snow and Ice Data Center (NSIDC), levels of Arctic sea ice from June through September 2007 were at a record low of 4.13 million km^2.1[1] In 2008, while there was some modest recovery, the world still saw the second lowest recorded ice extent since record-keeping began in 1979. Still more worrisome, the extensive losses during the past two summers have led scientists to speculate that the Arctic Ocean may be ice-free in the summertime much sooner than anticipated. Furthermore, in October 2008, scientists reported that the thickness of winter sea ice plummeted after the 2007 minimum, showing that the ice pack is not only shrinking but is decreasing in overall volume.[2]

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[1] NASA "Record Arctic Sea Ice Loss in 2007"
http://earthobservatory.nasa.gov/Newsroom/NewImages/Images/arctic_ams_2007259.jpg
[2] Geophys. Res. Lett.35, L22502; 2008

The British Columbia Ministry of Forests and Range, in their 2007 report on the mountain pine beetle outbreak[3], shows that in 2007, the impacted area had increased to 13 million hectares (from 4.2 million hectares in 2003). Mountain pine beetles prefer mature lodgepole pines and while they typically die off with cold snaps, warmer temperatures in the region have allowed them to persist. They cut off the nutrient and water supply of the trees by burrowing in trees' bark. The Ministry finds that 40% of merchantable pine volume – 12% of total merchantable volume on the timber harvesting land base in British Columbia – has been impacted from 1999 to 2006. They project that if the pine beetle outbreak continues at the same pace, it will kill off 78% of the pine volume – 23% of total merchantable volume on the province's timber harvesting land base – by 2015.

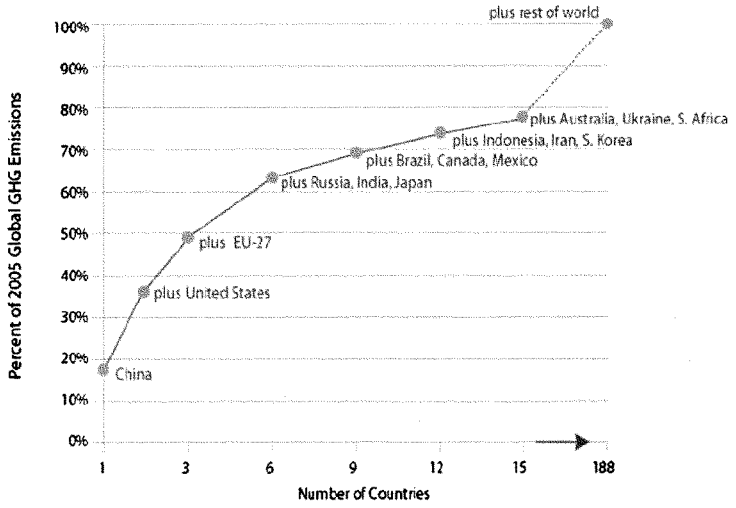
These and countless other observations make it clear that everything we thought we knew a few years ago about climate change has been superseded. All of the trends are proceeding more quickly than we anticipated. Rising temperatures and the consequent impacts are all taking place faster than the models predicted. That means that our long-range projections of what might happen are off. While of course we cannot yet know with complete certainty what will occur 20 (much less 50) years from now, according to our best current work, everything is trending to the high end. And the consequences we are observing today are the product of a mere 0.8 degrees centigrade of warming. Even very aggressive action will only barely forestall two degrees centigrade of warming. The science is telling us we have to act with extraordinary urgency – and that our action must be more than the modest marginal efforts made to date – it must fundamentally change the course of our energy infrastructure, it must address land use and forestry, and it must build a regime that can have global effect, not merely address U.S. emissions.

The importance of developing countries

The importance of such a global effort is illustrated by Figure 1. China is of particular importance in terms of emissions, having superseded the United States as the world's largest emitter (though it remains at barely a quarter of US emissions per person). Almost 80% of global emissions are produced by fifteen countries (counting the European Union as a single country). Of these, nine are developing economies and two (Russia and Ukraine) are post-communist countries still wrestling with economic transformation. Without a viable means of engaging these countries in the effort to cut emissions we cannot avoid catastrophic climate change.

[3] B.C. Ministry of Forests and Range, Forest Analysis and Inventory Branch. 2007. "Timber Supply and the Mountain Pine Beetle Infestation in British Columbia: 2007 Update http://www.for.gov.bc.ca/hfp/mountain_pine_beetle/Pine_Beetle_Update20070917.pdf

Figure 1: Aggregate GHG emissions by country, 2005



Sources and Notes: WRI, CAIT. Percent contributions are for year 2005 GHG emissions only. Moving from left to right, countries are added in order of their absolute emissions, with the largest being added first. Figures exclude emissions from land-use change and forestry and bunker fuels.Adapted from Figure 2.3 in Baumert et al. (2005).

The UNFCCC action on climate change to date

The need for global action has been recognized for at least two decades, and was the basis for the 1992 United Nations Framework Convention on Climate Change (UNFCCC), to which the U.S. is a Party. The UNFCCC commits all countries to the fight against climate change on the basis of "common but differentiated responsibilities." This puts the responsibility of the richest and most polluting countries to lead, and to provide support to the less capable, but for all to participate.

While the UNFCCC commands wide support as an articulation of the climate challenge and a global response, it did not set specific goals for individual countries to deliver emission cuts. For that reason the Kyoto Protocol was agreed in 1997, including binding emissions targets for industrialized and post-communist countries.

The Kyoto Protocol has had a significant impact, in particular in moving the European Union to adopt climate policies, including a cap-and-trade system. It has generated an international market for carbon offsets, and has given a major signal to business in many countries that a world of constrained emissions is coming.

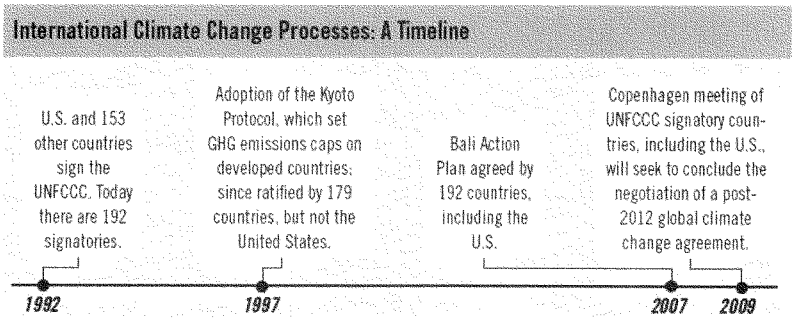
However, Congress raised several concerns with the Kyoto Protocol structure, and the treaty was not ratified by the United States. The concerns included:

- Concerns about economic impacts. At the time targets were set, few countries had a clear understanding of what meeting those targets would mean in economic terms. Congress feared that Kyoto would cause undue damage to the U.S. economy.
- Lack of developing country commitments. Congress similarly insisted that major developing countries such as China and India should have commitments to limit emissions.

These objections were most famously expressed in the Byrd-Hagel resolution of 1997. Although this Resolution was adopted before the Kyoto Protocol was agreed, there has been a wide perception that the Protocol did not meet Byrd-Hagel's provisions. The Protocol was never submitted to the Senate for ratification. In fact, diplomatic leadership by the Clinton Administration may have overreached Congressional support for legislative action domestically.

A new opportunity

The Kyoto Protocol sets targets until 2012. The United Nations, including the U.S., have agreed to a timetable (the so-called "Bali Action Plan") for negotiating the post-2012 climate arrangements, with the deadline of a meeting to be held in Copenhagen, Denmark, in December 2009. This Fifteenth Conference of the Parties to the UNFCCC (COP15) aims to bring together the countries within and outside the Kyoto Protocol in a more inclusive agreement, although it is not yet clear exactly what form that agreement will take.



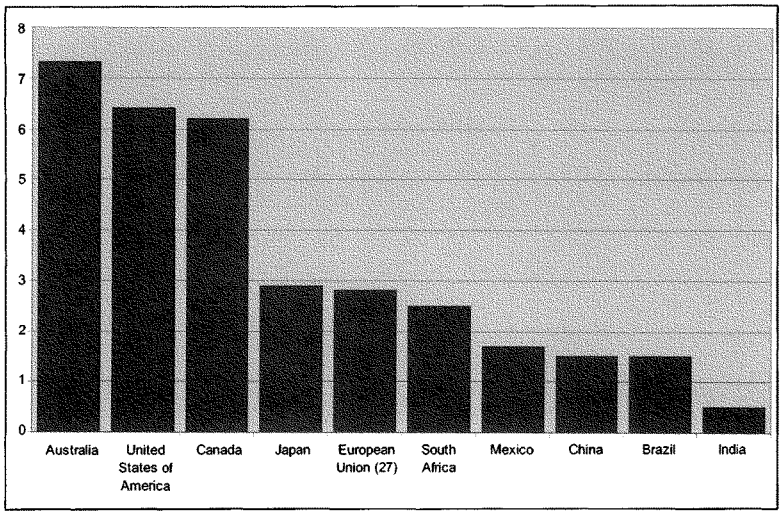
What is clear, however, is that the negotiating mandate provided by the Bali Action Plan provides for a radically different agreement from the Kyoto Protocol. In particular, it provides for mitigation actions from both developed and developing countries. This is a major departure from earlier models of climate action internationally, and it reflects real changes in the world outside the negotiations. In the next section I will discuss those changes and what they mean for an international climate agreement.

2. The transformation in developing country action

For many years, developing countries have been clear in their view that they expect a clear lead from rich countries before they take action on emissions. There are sound reasons for this stance.

They are far poorer than developed countries; they have played a far smaller role in creating the climate problem; and their emissions per person remain in the main much lower than those of developed countries (see Figure 2).

Figure 2: Emissions in tons carbon per person in selected countries (2005, excludes land use)



Source: Climate Analysis Indicators Tool (CAIT) Version 6.0. (Washington, DC: World Resources Institute, 2009). See http://cait.wri.org

However, in the last 2-3 years there has been a flood of developing country plans for addressing climate change. Most major developing countries have now brought forward climate plans. I want to highlight some interesting examples:

Brazil announced it would reduce its deforestation rate over 50 percent from recent levels by 2017, avoiding an estimated 4.8 billion tons of CO2 emissions. Deforestation accounts for about two thirds of Brazilian GHG emissions.

China set a target of reducing national energy intensity (energy use per unit GDP) by 20% in the five years to 2010. It has already reduced in each of the past three years: by 1.6% in 2006, 3.7% in 2007, and 4.3% in 2008. Thus China looks likely to be approximately on target to meet its goal. Together, the industrial and building efficiency programs supporting this goal are expected to yield 550 million metric tons CO_2 in GHG savings. Addition savings are expected from measures in the transport sector. China also has ambitious non-fossil plans, including wind, hydro, nuclear and biomass, all of which are expected to save 640 million metric tons CO_2 by 2010.

Mexico pledged to halve its greenhouse gas emissions by 2050, employing a "cap-and-trade" policy like the one recently considered by the U.S. Congress.

South Africa has presented a detailed plan to peak its national emissions by 2020.

Motivations

Why are developing countries taking these actions? As in the United States, there are a number of drivers that interact.

First, they are increasingly aware of the risks that climate change presents to their development. China's National Climate Change Programme goes into considerable detail on the risks to its coasts, fresh water supply, agricultural output and other critical concerns. There can be little doubt that even in the midst of pressing development concerns climate change is viewed as an important challenge. However, it is important to recognize the limits of this thinking. Although, to differing degrees, these countries are taking action, they all still look to the United States to lead, given its wealth and historical emissions.

Second, climate concerns align in many instances with broader worries about energy. With the greater energy intensity of their economies, high energy prices have been even more onerous of developing economies than on the U.S. energy security, costs, and pollution are top-level political concerns. Just as here, policy makers are looking for ways to intelligently tackle all these issues.

Third, many countries see opportunity in the new energy technology landscape that is emerging. Countries such as China and India do not see their future in old technologies and businesses. They are keen to position themselves as leaders in the clean energy revolution. Indian wind companies, Chinese solar manufacturers, and Brazilian biofuels companies are all among the world's leaders.

It is important to keep these motivations in mind. Any international agreement depends on the signatories choosing to carry out the provisions of the agreement. An alignment of national and international interests provides at least some prospect of genuine participation, and the Bali Action Plan provides a new way to take advantage of this growing alignment. There is a broad interest in seeing the climate agreement succeed, suggesting that countries will take their international commitments seriously.

However, significant questions do remain. Many of these countries have a very mixed record of implementing the goals in their national plans. Reliable data are hard to obtain even on such broad indicators as energy use or economic growth. There are important initiatives in all these countries to implement GHG monitoring, but today very large uncertainties remain in a lot of the emissions data. Furthermore, standards of enforcement, governance and transparency are very viable. It will certainly not be enough for countries to take each others' plans at face value.

How the Bali Action Plan includes developing country action

This is where the international negotiations are important. Creating robust reporting and verification structures can help build trust among countries that bold commitments are really being turned into action. The opportunity provided by the Bali Action Plan (BAP) structure is to align international commitments with national development goals and to create reporting programs that also align with the countries' own abilities to collect and disseminate information. The BAP calls for

"enhanced national/international action on mitigation of climate change, including consideration of:

> *(i) "Measurable, reportable and verifiable nationally appropriate mitigation commitments or actions, including quantified emission limitation and reduction objectives, by all developed country Parties, while ensuring the comparability of efforts among them, taking into account differences in their national circumstances;*
> *(ii) "Nationally appropriate mitigation actions by developing country Parties in the context of sustainable development, supported and enabled by technology, financing and capacity-building, in a measurable, reportable and verifiable manner."*

The phrase "measurable, reportable, and verifiable" (MRV) was critical to the agreement of the BAP, and how MRV is reflected in the post-2012 agreement will have significant implications for the effectiveness of that agreement for stakeholders in both developing as well as developed countries.

At the heart of the new agreement therefore is the question of how to measure, report, and verify different actions in a way that gives real confidence that promises are being kept and that real action is being undertaken. In the next section I will discuss the key elements of a successful deal.

3. What is needed in the new agreement

Much like the United States, most countries are not going to design their domestic energy and climate policies in a United Nations negotiation. A new agreement will not – and cannot – force countries to take actions that they actively want to avoid. Rather, it can build trust by allowing countries to compare and assess their own progress in implementing agreed commitments, and those of their international partners. And it can provide structures for specific international needs, such as support for adaptation efforts or international registries for emissions trading.

For the engagement of developing countries, my particular focus here, I want to discuss two issues in particular.

1. What to expect in terms of the actions that countries bring to the table, and the ways in which they are measured, reported and verified.
2. Support, in particular financial support, that the U.S. will need to bring to the table.

What should we expect from developing countries?

There are three things to think about as we look at a country's climate commitments:

1. How *ambitious* are they? What do they deliver in terms of lower carbon emissions?
2. What *form* do they take?

3. How *credible* are they? Do countries have confidence in each others' capacity and intent to implement the actions, and is there a reliable and transparent way of measuring this?

As I discussed above, many developing countries are indeed bringing forward such actions. The role of an international agreement is to turn these actions into a set of commitments that can be mutually verified, so that all countries can have confidence that what is being promised is also being delivered.

Ambition
How much effort should each country make? This is a complex and highly politically-charged question - I want to offer a caution on what can be expected.

While all major emitters will be expected to bring actions to the table, it does not follow that all make the same effort. The average Indian still produces just over one twentieth of the emissions of the average American. Some 550 million Indians still lack any access to electricity. Vehicle ownership in developing countries remains a small fraction of levels in the United States or even Europe or Japan. It follows that developing country actions are mostly going to be about reducing rates of emissions growth, at least at first, rather than absolute emission cuts from today's levels.

Form
The United States should seek commitments from our international partners that they will undertake ambitious actions to reduce emissions. We need to recognize that the solutions that we adopt here, such as cap-and-trade, are not necessarily going to be the most suitable right now in developing countries, and that their actions may therefore take a different form. The types of actions a country undertakes will be driven in significant part by the institutional capacity in that country, as well as by political traditions and priorities. Indeed, as I argued above, actions that are firmly rooted in national priorities will be more likely to be effectively implemented.

In the longer term, we need to ensure that the world is moving on the right low-carbon path, and should help all countries to develop the capabilities to cap emissions. But in the post-2012 climate agreement it is important to recognize ambitious actions of all kinds.

Credibility
Making climate actions into credible and verifiable parts of a deal is at the center of the "measurable, reportable and verifiable" approach of the Bali Action Plan.

Although the Kyoto Protocol includes targets that are legally binding, and is equipped with compliance mechanisms, the teeth of an international agreement are generally not sharp. Kyoto's penalties for not meeting a target are not strongly dissuasive: they amount to a penalty against a later target, which itself has not yet been negotiated. It is striking therefore that most countries are on course to meet their Kyoto targets, and in some cases have made considerable efforts to do so. An international agreement does seem to bring a significant political incentive to comply. Enforcement of commitments within a climate agreement is likely to be based on two trade-offs:

Mitigation action based on recognized mitigation action by others. Countries will feel bound to their own emissions cuts to the extent that others are delivering theirs. Experience with the Montreal Protocol suggests that a progressive building of trust as countries see each other meeting their commitments can be a powerful means of encouraging international action.

Mitigation action linked to financial or technological support. Countries hoping for support in the form of finance or technology cooperation (see below) will need to demonstrate real action on emissions, or lose that support.

One vital role for the agreement is to a credible mechanism for sharing and monitoring national actions. This "registry" of actions will be needed that sets metrics by which implementation will be measured, reported and verified. Frequent reporting and robust verification should help build trust among participants.

In addition, the registry would be used to measure, report and verify the support being given to developing countries in undertaking their mitigation actions. It is important to note that such support is a critical part of the BAP deal in the eyes of developing countries. Specific needs will vary considerably. Richer developing countries may need assistance primarily with the monitoring systems that will help them implement their policies. Poorer countries will look for more direct support in reducing emissions. The G77, a grouping of developing countries within the negotiations, has placed significant emphasis on access to cleaner technologies. Finding appropriate structures for this will require further negotiation, not least because countries have very different expectations. Some may seek mainly to acquire clean technologies on favorable terms. Others have a greater interest in building the capacity to manufacture and innovate in new sectors.

Financial and other support

Although both developed and developing countries are called on to take mitigation action under the Bali Action Plan, the Plan promises developing countries support for their actions. Furthermore, that support also needs to be "measurable, reportable and verifiable."

Financial support is the most obviously measurable of these, and contributions from the U.S. and other developed countries will be essential to a successful deal. Perhaps the most important priority in this regard is adaptation. With climate impacts already being felt, and with the poorest countries and communities likely to be hit hardest, there is a real need for such support. But support will also be needed in developing countries to mitigate emissions, and to implement the measuring, reporting and verification systems needed to enshrine these actions in an agreement.

There is a wide range of assessments about the scale of resources required for mitigation and adaptation globally. Within the context of the UNFCCC negotiations, there are high expectations on the part of the developing countries for support and finance for mitigation and adaptation from Annex I countries. This expectation is based on the principle of "common but differentiated responsibilities" from the 1992 Framework Convention. Non-Annex I countries feel that Annex I parties should be responsible for a greater portion of the solution to climate change, given that

their historical contribution to the problem outweighs the contribution by Non-Annex I countries. Responsibility for the solution would take the form of financial support for developing country mitigation and adaptation.

Figure 3 shows the needs and expectations for global mitigation, based on the UNFCCC's 2007 assessment of the level of funding required for global mitigation, and on the G77 and China's proposal on finance submitted to the UNFCCC, which calls for Annex I countries to commit to funding equal to 0.5-1% of their GDP to cover mitigation and adaptation. The figure compares some of the existing and proposed sources of mitigation funding, including existing clean technology funds, the UNFCCC's Clean Development Mechanism (CDM), Official Development Assistance (ODA), and global investment figures, against these expectations and needs. Clearly, the existing financial flows for climate change mitigation are inadequate relative to the scale of the challenge. However, ODA and foreign direct investment (FDI) are both adequate in terms of scale, which indicates that the necessary finance for mitigation is available but must be steered toward climate-friendly investments.

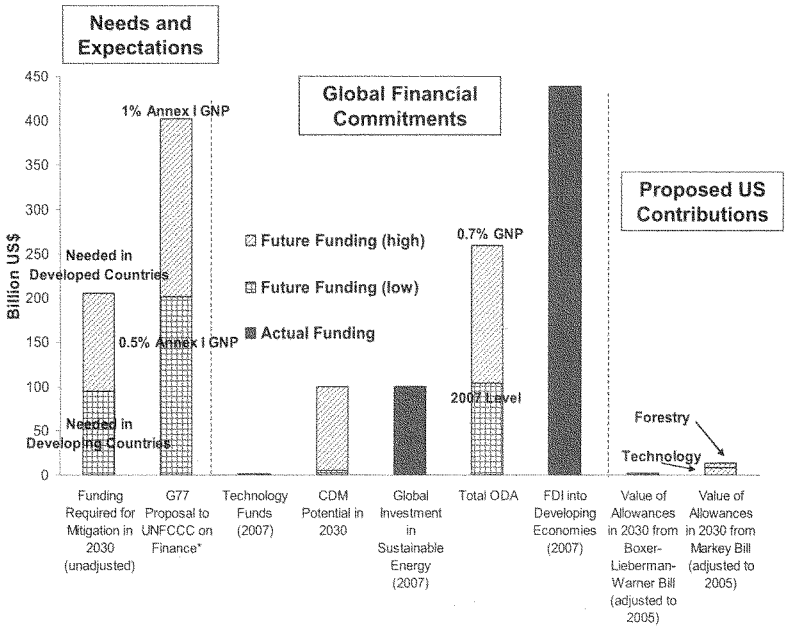
The figure also shows an indication of possible U.S. contribution to developing country mitigation, based on provisions in recent legislative proposals. The figure includes the 2030 values for allowances allocated to international mitigation and adaptation efforts from the 2008 Boxer-Lieberman-Warner Climate Security Act (S.3036) and from Representative Markey's 2008 bill, Investing in Climate Action and Protection Act (H.R.6186). These bills reserved a portion of allowances to fund international forestry, international technology deployment, and international adaptation.[4] This illustrates the size of the gap between the needs and expectations of the developing world for finance from Annex I countries versus what the U.S. has offered to date.

However, it is not clear at this stage what level of finance will be needed in the near term to ensure a successful climate deal.

Figure 3. International Funding for Climate Change: How do U.S. proposals stack up against the need and expectations and against other global financial flows?

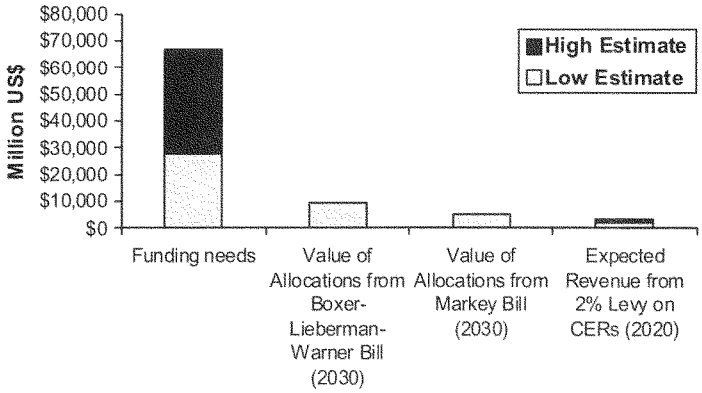
Mitigation:

[4] Note: The Boxer-Lieberman-Warner Climate Security Act (S.3036) included allocations for international forestry and adaptation, but did not include allocations for technology deployment. Markey's Investing in Climate Action and Protection Act (H.R.6186) was probably the most aggressive bill in terms of funding for international technology deployment, and these numbers are likely an understatement.



***Note: G77's proposal references a percentage of Annex I GDP. GNP is used here for consistency. Figure includes funding for both mitigation and adaptation.**
Sources: EIA, New Energy Finance, OECD, UNCTAD Statistics, UNFCCC, The World Bank, and WRI analysis.

Adaptation:



Sources: EIA, OECD, UNFCCC, and WRI analysis

Although finance is likely to be important, some countries, notably China, put as much or more emphasis on technology cooperation. In many cases this is not a question of funding, but of combined efforts in R&D (with a sharing of the resulting intellectual property) or joint support of demonstration projects. These efforts need not all be pursued within a multilateral agreement, but their presence will help create a more constructive deal.

Conclusions

The U.S. is seeking a new leadership role on climate change, both through adopting national climate policy and by engaging internationally. These two aims are linked: domestic policy will give the U.S. credibility abroad, and participation by other major emitters will help the U.S. undertake ambitious action itself.

The moment is ripe for international engagement. Other major emitters, including all the largest developing economies, have presented national climate change plans, targets or policies. Some have gone much further than others in implementing these, but all have made a major leap from the era of Kyoto.

The international agreement to be negotiated under the Bali Action Plan offers scope to include actions by developing and developed countries that are measurable, reportable and verifiable. This, combined with the national plans being brought forward by developing countries, should answer Congress' major criticism of Kyoto.

In national policy, Congress should seek to support constructive international engagement. Provisions that take a more confrontational approach, for instance through trade measures, should be considered with caution. A successful climate negotiation will also require financing. Use of allowance value, as has been considered in a number of recent climate bills, may provide one way to address this.

The CHAIRMAN. Thank you, Mr. Bradley, very much.

Our final witness is Ms. Karen Alderman Harbert, who is the President and CEO of the U.S. Chamber of Commerce's Institute for 21st Century Energy. Prior to her time at the Institute, Ms. Harbert served as the Assistant Secretary for Policy and International Affairs at the U.S. Department of Energy.

We welcome you, Ms. Harbert. Whenever you are ready, please begin.

STATEMENT OF KAREN ALDERMAN HARBERT

Ms. HARBERT. Thank you, Chairman Markey and Ranking Member Sensenbrenner, other members of the Committee for holding today's very important hearing on climate change.

Climate change is undoubtedly one of the most complex issues facing the international community today. And I want to focus on some of the major challenges to a new agreement and where I believe the U.S. needs to play a constructive role.

However, it is important to keep in mind the global context in which these negotiations are occurring has changed. The world has changed considerably since the UNFCCC was launched in 1992. Energy demand is going to increase by 50 percent between now and 2030. And 75 percent of that growth is going to be in the developing world.

Next year CO_2 emissions from the industrialized nations will account for 47 percent of emissions. The developing world will be 53 percent. In 2030, that will be a very different picture. The industrialized world will be 38 percent. and the developing world will be 62 percent.

So to be effective, therefore, any new arrangement should take into account changing trends in global economic development, energy demand, and emissions. The old model of donor and recipient countries simply will no longer work.

Climate change needs to be addressed as part of an integrated agenda that proceeds from a clear understanding that for many countries, energy security is a greater concern right now than climate change. Too often energy is vilified in these international discussions. Yet, in reality, affordable energy is central to addressing climate change because it underpins economic growth, which is necessary to drive technology creation and employment and definitely environmental protection.

International strategies that recognize the reality can raise the level of trust between and among developed and developing nations. In addition, in these negotiations, which were going to be very difficult to begin with under the very best of circumstances, are now complicated further by the recent financial crisis.

Looking ahead, the U.S. must be the voice of reason in these negotiations. Permeating much of these negotiations is an air of unreality that ultimately could derail an agreement. Unachievable emission reduction targets, the weakening of intellectual property protections, and unrealistic demands for financial support, for example, are now all on the negotiating table.

We must temper our ambition with realism, which means that while we promote a positive, pro-growth agenda that will attract

developed and developing nations and will improve environmental stewardship, we must also be willing to walk away from a bad deal.

Further, to ensure our economy retains its competitiveness, any new domestic climate policy should be conditioned on an international agreement that has full international participation. The idea that if the U.S. goes first, China, India, and other nations will follow is just simply an unjustified article of faith that carries with it tremendous economic risk and potentially no environmental benefit.

We have seen with the Kyoto Protocol that top-down approaches simply do not work. A new agreement needs to accommodate a wide range of national circumstances and approaches, and it should be very simple to implement and oversee.

A long-term global emissions reduction goal should be realistic, achievable, and take into account emerging science, the pace of technology development and diffusion, and should not undermine economic growth or simply shift jobs or pollution overseas.

To be effective, a new agreement must include the participation of countries like China and India. In this regard, the Bali Roadmap was very welcome in that we saw an indication of their willingness to participate in activities that were measurable, verifiable, and reportable.

A new arrangement should include commitments by all countries in accordance with the common but differentiated responsibilities. However, we should not use that as a source for inaction. We believe the notion of responsibilities and capabilities ought to evolve as economic conditions evolve and countries evolve. And we must recognize that countries should graduate from developing to developed status.

At the cornerstone of any success is technology development and deployment. And that will determine how quick and how costly any future agreement will be.

We know that the world will use coal, will use natural gas, and will use oil. And we must fashion policies to accommodate their exploitation in the developing world, yet being mindful of environmental stewardship.

We, of course, are paying close attention to China and the G77 weaken intellectual property as part of their proposal. We have to resolve what place nuclear power and carbon capture storage and sequestration will be in any new agreement.

We can lead by example. And we can accelerate nuclear power in this country. And we can invest seriously in CO_2 carbon capture and storage. So we have opportunities to exert leadership here at home by making wise, smart energy policy choices.

And through the WTO, we should eliminate tariff and non-tariff barriers to environmental goods and services, which will lower the cost of any eventual agreement. But it is important that climate change not be invoked as an excuse to erect tariff barriers to gain competitive advantage or redistribute wealth.

And we also have to remember that financing is critical. This will not be cost-free, as Ambassador Bruton said. We need international concessionary financing. And we need to re-look at the financial instrumentation we have here at home.

So, in sum, what would a new international approach look like? The following eight principles. It should consider growing energy needs, circumstances, and resource endowments of all countries. It should set realistic and achievable. It should strike a good balance between environmental protection, energy security, and economic growth. It should ensure global participation. It should allow for diversified approaches. It should ensure that mitigation actions are all measurable, reportable, and verifiable. And it should place technology at the cornerstone while protecting intellectual property and the rule of law. We should keep business at the table. We should keep the energy sector at the table because they will be key to the success of any ultimate agreement.

Thank you.

[The prepared statement of Karen Alderman Harbert follows:]

U.S. House of Representatives
Select Committee on Energy Independence and Global Warming

Testimony of Karen A. Harbert
President & CEO
Institute for 21st Century Energy
U.S. Chamber of Commerce

Wednesday, February 4, 2009

Thank you, Chairman Markey, Ranking Member Sensenbrenner, and members of the Committee for holding today's hearing on the international climate negotiations. I am Karen Harbert, President and CEO of the Institute for 21st Century Energy, an affiliate of the U.S. Chamber of Commerce. The U.S. Chamber of Commerce is the world's largest business federation, representing more than three million businesses and organizations of every size, sector, and region.

My testimony will focus on what I believe are some of the major challenges to a new climate change agreement and where I believe the U.S. can play a constructive role. As the business community will be largely responsible for developing and deploying the solutions that might emerge both from the Congress and from these international negotiations, it is important that we have a voice at the table. Therefore, I appreciate that the Committee has reached out to the Chamber's Energy Institute for input.

Climate change is among the most complex issues facing the international community. Negotiations are currently taking place under both the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol with a goal of completing a new arrangement to address climate change in Copenhagen, Denmark at the end of 2009. These negotiations are being guided by the outcomes of the 13th Conference of the Parties (COP) in Bali in December 2007 and the 14th COP in Poznan in December 2008 and revolve around a shared vision for long-term cooperative action, mitigation, adaptation, technology, and finance.

The World Has Changed

It is important to keep in mind the global context in which these negotiations are occurring. The world has changed considerably since the UNFCCC was launched in 1992, and a new arrangement should take into account changing trends in global emissions and economic development. The old model of donor and recipient countries reflects neither the current nor future state of affairs.

The vast majority of future energy demand and greenhouse gas emissions growth is expected to come from the developing world. Our policies must recognize—indeed, embrace—the aspirations of people everywhere for economic growth, abundant and affordable energy, an improved quality of life, and a clean environment. An estimated 1.5 to 2.0 billion people lack access to modern energy services. Providing these energy services is a priority for governments around the world to lift people out of poverty.

Indeed, significant transitions are occurring and will continue in world energy markets, especially in non-Organization for Economic Cooperation and Development (OECD) countries. This has changed the structure of energy markets dramatically. The Energy Information Administration projects that by 2030, global energy demand could be 50 percent higher than in 2005, with the vast majority of this growth—roughly three quarters—coming from developing countries. The anticipated growth in energy demand from large developing countries is enormous. For example, between 2005 and 2030 the increase in energy demand from China alone is expected to be nearly twice that from all OECD countries combined (88.1 vs. 45.0 quadrillion Btu).

This increase in energy use will lead to an increase in greenhouse gas emissions, primarily carbon dioxide. Over 80 percent of the increase in carbon dioxide emissions from energy between 2005 and 2030 is expected to come from developing countries.

Climate change risks need to be addressed as part of an integrated agenda that enhances energy security, increases economic prosperity, reduces pollution, *and* mitigates greenhouse gas emissions. In the climate change debate, energy is viewed as the problem. In reality, affordable energy provides a solution to climate change because it allows the economic growth necessary to drive technology change and environmental protection. History has shown that poor economies do not have the resources to make protecting the environment a priority, but vibrant economies do. A smart energy policy can capitalize on this dynamic, providing clean energy to power economic growth and poverty eradication across the globe. Strategies that recognize these realities can raise the level of trust between and among developed and developing countries and win international support.

In addition to these broad trends, the UNFCCC negotiations will be complicated further by the recent financial crisis.

Bumpy Road to Copenhagen

The COP-14 meeting in Poznan marked the half-way point between COP-13 in Bali and COP-15 in Copenhagen, where the negotiations are expected to conclude in a new international arrangement. The Poznan meeting did not deliver any dramatic developments. Indeed, the difference in atmosphere between Bali and Poznan was

palpable. In Poznan, the world financial crisis, a transition to a new administration here in the U.S., squabbling in the European Union over a new package of greenhouse gas emissions rules, and rising concern about energy security worldwide loomed over negotiations that would have been hard enough even in the best of times.

Looking ahead, 2009 promises to be a busy year, with as many as five negotiating sessions before Copenhagen. Most of the focus over the coming year will be on four of the five areas identified at Bali—mitigation, technology, adaptation, and finance. There was general agreement in Poznan that these four elements will be central to a global goal for emissions reductions in discussions that promise to be among the most contentious.

The U.S. must continue to be the voice of reason as the negotiations unfold. To be frank, there is in much of these negotiations an air of unreality that ultimately could derail an agreement. Unachievable emission reduction targets, the weakening of intellectual property protections, and unrealistic demands for financial support, for example, are all on the table. We must learn to temper our ambition with realism, which means that while we must promote a positive, pro-growth agenda that both developed and developing countries can align with, we also must be willing to walk away from a bad deal. U.S. acquiescence to the Berlin Mandate and the Kyoto Protocol, neither of which were practicable nor in the best interests of the U.S., continues to bedevil U.S. efforts.

Moreover, to ensure our energy-intensive industries retain their competitiveness, any new national domestic climate change policy should be conditional on an international agreement that has full international participation. The idea that if the U.S. goes first, China, India and other emerging economies will fall into line behind is an article of faith that carries with it great risk.

Principles for a New International Agreement

We have seen with the Kyoto Protocol that top-down approaches do not work. A new agreement needs to accommodate a wide range of national circumstances and approaches, and it should be as simple as possible to implement. Therefore, the U.S. should work to promote a more bottom-up international approach to energy security and climate change that considers growing energy needs; sets realistic goals; ensures global participation, including major developing countries; promotes the development and commercialization of, and trade in, clean energy technologies and services; protects intellectual property; and maintains U.S. competitiveness.

A long-term global emissions reduction goal should motivate and provide direction for national and regional cooperative activities. Such a goal should be realistic and achievable and take into account emerging science and the pace of technology development and diffusion. Moreover, a global goal should not undermine economic growth, which is a necessary prerequisite for technology investment.

A bottom-up approach that recognizes the results of domestic, bilateral, and multilateral activities may be the most appropriate approach, and one that could garner a broad range of support. Such an approach should incorporate sufficient flexibility to permit new ideas and approaches to be introduced as they emerge. In particular, voluntary sectoral approaches, of which the Asia-Pacific Partnership on Clean Development and Climate is a good model, could help capitalize on opportunities in a number of energy-intensive sectors and provide flexibility for countries with different circumstances.

To be effective in reducing global emissions, any new international arrangement addressing climate change must include active participation from developing countries, like China and India. In this regard, the Bali Roadmap that emerged from the UNFCCC talks in Indonesia in 2007 was a welcome development in that developing countries agreed to consider actions that are measurable, reportable, and verifiable. A new arrangement should include commitments by all countries, developed and developing alike, in accordance with the principle of "common but differentiated responsibilities and respective capabilities" enshrined in the UNFCCC. However, all too often this principle is invoked as an excuse for inaction. These notions of "responsibilities" and "capabilities," then, ought to change as the economic conditions of countries change.

This is not to say we expect developing countries to take on commitments similar in scope to developed countries. While the character of the commitments in developing countries should be similar to those in developed countries in terms of ambition, the content of those commitments could be quite different depending on national circumstances. The focus, therefore, should be on the mitigation potential of different countries and on actions to achieve that potential that are "measurable, reportable, and verifiable," in accordance with the Bali Roadmap.

The Major Economies Meetings, initiated by the Bush Administration, should continue. The 16 participating countries and regions account for about four-fifths of global greenhouse gas emissions. An effective deal will be impossible without the agreement of these key players. We are encouraged that the Obama Administration is seriously considering continuing this important forum.

Technology development and deployment will be one of the most important factors determining how quickly and at what cost greenhouse gas emissions can be reduced. In many developing countries, providing citizens with energy services is a much more pressing need than addressing climate change. It is a simple fact that much of the energy needed to power economic growth will likely be supplied by fossil fuels. Many developing countries have large resources of coal, natural gas, and oil, and it would be unrealistic to expect them not to use it. However, the increased use of existing and advanced technologies can limit the environmental impact of using these fuels, reduce demand for them through efficiency, and provide alternate sources of energy.

The UNFCCC process should consider ways to overcome barriers to technology transfer and commerce. We are therefore concerned about efforts by China and the G77 to weaken intellectual property protections for clean energy technologies. Without proper intellectual property protections, new technologies will be slower in coming just when we need them most.

The U.S. should continue to encourage the proper environment for technology commerce, cooperation, and investment in developing countries—e.g., transparent markets, the rule of law, property rights, etc. Developing countries must be convinced that intellectual property rights protections are in their interests as well as ours, and that technology commerce *is* technology transfer.

Moreover, we need to boost funding for technology development worldwide. Together, the U.S. and Japan account for about 80% of all energy R&D funding by national governments. The Institute has proposed a doubling of the federal government's funding of clean energy technology research, development, demonstration, and deployment over the next five years to accelerate the development of clean energy technologies, and we should be encouraging other countries to do the same.

And we have to resolve the role of nuclear power and carbon capture and storage under the new agreement. If we really are serious about reducing global emissions significantly, both have to be a part of the solution.

Eliminating tariff and non-tariff barriers to environmental goods and services also should be pursued to lower costs and increase global access of clean energy technologies. It is important that the international climate negotiations are not used as an excuse to erect barriers to free and open trade, or as a way to gain competitive advantage or redistribute wealth. The World Trade Organization (WTO), not the UNFCCC, is the appropriate forum for trade discussions, and we would encourage Congress and the Obama Administration to continue to work within the WTO to remove trade barriers for these technologies.

Financing is critical to advancing climate change solutions, but it will be generated outside the UNFCCC and will depend in large part on investment environments and the effectiveness of institutional arrangements in developing countries. Clearly, there is not enough government financing available to increase significantly technology diffusion on its own. Most financing will come from the private sector, with government financing serving to spur and bolster these investments.

The U.S. should work with other industrialized countries to establish an International Clean Energy Fund, housed at the World Bank, to reduce capital costs for clean energy projects in the developing world, and Congress should see that funding is available for this activity. Furthermore, our country should examine all of its tools through the Export-Import Bank, U.S. Trade and Development Agency, and the Overseas Private Investment Corporation, and work closely with multilateral development banks to ensure that attractive instruments are made available for clean energy projects.

Conclusion

The Energy Institute at the U.S. Chamber of Commerce believes that a new international approach to climate change should encourage the broadest possible participation and should:

- Consider growing energy needs, circumstances, and resource endowments of all countries;
- Set realistic and achievable goals that take into account science and technology development and diffusion and ensure that economic growth is not undermined;
- Strike a good balance between environmental protection, energy security, and economic growth;
- Ensure global participation and effective commitments by all major emitting countries, including developing countries;
- Allow for diversified approaches tailored to meet national circumstances;
- Ensure that mitigation actions by all parties are measurable, reportable, and verifiable;

- Recognize technology development and commerce, and the enabling environments that promote them, as crucial prerequisites to achieving emissions reductions breakthroughs;

- Protect intellectual property rights and the rule of law to accelerate technology deployment and cooperation;

- Remove trade barriers to environmental goods and services in a non-discriminatory manner; and

- Place the U.S. on an equal competitive footing with the rest of the world.

In closing, it is important that the business community have a strong voice and seat at the table for these negotiations as they progress. The Energy Institute plans to stay engaged and offer sensible solutions to challenge of energy security, economic growth, and climate change.

The CHAIRMAN. Thank you, Ms. Harbert, very much. I will turn and recognize the gentleman from Washington State, Mr. Inslee.

Mr. INSLEE. Thank you.

I would like to ask about alternative ways to deal with the situation if countries do not enter into this new international framework. We have heard some discussion of potential—Mr. Blumenauer threw out the idea of some tariffs to be an adjustment. Let's assume that country X does not enter into this international agreement, the possibilities to have some tariff associated with their failure to do so associated with the costs of noncompliance.

Mike Doyle and I are working on an approach a little different that would essentially provide free permits to energy-intensive industries as an approach to prevent leakage overseas. It wouldn't be directed to any one country. It would simply say that energy-intensive industries would receive some free permits, as opposed to having to buy them at what is supposed to be an effective auction.

I just wonder if you would like to comment on those two different approaches. Mr. Diringer, would you like to speak?

Mr. DIRINGER. Thank you, Mr. Inslee.

Let me distinguish between two scenarios, then: one, domestic action in anticipation of an international agreement; and the second scenario being once we have reached an international agreement.

I think in the first scenario, the approach you and Mr. Doyle have put forward seems rather workable. In our analysis of potential competitiveness impacts, they actually appear reasonably modest and can be addressed through the allocation process.

Ambassador Bruton described how Europe has chosen to go that route. Australia also is using free allocation to energy-intensive industries to address this issue. And we would prefer that to the imposition of border measures, unilateral border measures, in the absence of an international agreement.

Assuming that we are able to achieve an international agreement. It seems as if there are two options. One would be to try to structure into the agreement the use of some types of tariffs or border measures as a means either to enforce the agreement or as a tool to encourage action by parties that have not yet entered into the agreement.

The other option would be not to have those as an explicit tool of the agreement but for countries again to choose to do that unilaterally but now with an agreement in place.

Either of those options, assuming an agreement in place, to my understanding would be more effective and more legitimate under the WTO than choosing to go the route of unilateral trade measures in the absence of an international agreement.

I should emphasize I am not an attorney and by no means a WTO expert, but my understanding again is that if parties have reached an international environmental agreement, then the use of trade measures, either as a means of enforcing that agreement or as a unilateral tool to guard countries against impacts, would be both more legitimate and more effective.

Mr. INSLEE. Thank you.

I am going to just take Mr. Diringer's answer—it kind of covered several things—because I wanted to ask another question. Let me

start with Ms. Harbert, if I can. I really appreciated your comment about trying to drive technology is the answer to this problem. It is one thing I wholeheartedly embraced. And I appreciate you bringing that up.

I want to ask you about what you believe, what your organization believes should be the relative contributions of the world's citizens to this problem. So I will invite you to play Slumdog Millionaire with me for a minute.

Take two world citizens: one in India, one in Mumbai, one living on a dollar a day with no legal place to live; and then a middle-class American living in the First Congressional District, where I live, my constituents, myself included, about ten times more per capita than the Slumdog Millionaire.

So I guess the question is, what do you think our relative expectations should be of one another in this international agreement? How should we quantify that? Should they be dependent on our gross domestic products? You know, what should we expect of each other? Should we have the same per capita emissions, in which case Indians could go up by a factor of five and ours come down by 50 percent? That seems not very attractive to me, but it might be seen as fair to the Indians. In fact, Prime Minister Singh has said as much. What do you think it should be?

Ms. HARBERT. Well, first of all, the first thing I am going to do after this hearing is go see the movie since obviously you are enamored with it.

Mr. INSLEE. Great.

Ms. HARBERT. First of all, we want to presume that any agreement that anybody ever is going to be party to is going to be a success. In order for it to be a success, it has to be binding. And, therefore, there have to be responsibilities that everybody is going to agree to.

There is a precursor agreement that the developing world will have common but differentiated responsibilities. But if there is a binding agreement, that means that over time those will increase.

And so we have to be willing to sit at a table and look across the table at our counterparts in the developing world and have them agree to binding agreements. Therefore, it will not be incumbent. And our taxpayers and our citizens will not be the ones paying continuously over time for the compliance of the developing world.

If we erect tariff barriers at our borders because either they have not signed onto an agreement or they are not in compliance with their agreements, that basically is just going to put on the burden of the American citizen that cost. And that would be unfair, whether it is in your district or anybody else's district, that we were paying for the failure of the agreement. And it is either an enforcement or whether it was just never successfully negotiated to begin with.

So we have to recognize the aspirations of the developing world. They have a right to develop. But they also have an obligation to enter into a binding, enforceable agreement that will really and materially reduce greenhouse gas emissions every time. If they do not participate, we will not succeed. So if the goal is to succeed, they have to be party to it. And they have to have binding, enforceable obligations.

Mr. INSLEE. So what I hear you saying, it needs to be binding, but it can and should be differentiated. And so the cut or the difference from the business as usual approach that the Indians may take may be different than the percentage we would take. You would accept that as a principal?

Ms. HARBERT. Well, certainly every country is different in the type of natural resources it is endowed with, with the types of industries that its economy relies upon. So every country should have the sovereign right to decide how it is going to get to the target and to the binding obligations that it has agreed to because a country that has a lot of oil and gas and coal is going to go about it differently than a country that may be of a declining population that has a huge wind and solar base.

And so we should not be trying to enter into this with a prescriptive formula. It should be flexible. There should be different sectoral approaches to this. But at the end of the day, if we allow countries to be exempt from any obligations, our industries, our jobs will go overseas, and our citizens will pay the price. And it will do nothing to improve the environment.

Mr. INSLEE. Thank you.

The CHAIRMAN. The gentleman's time has expired.

The gentle lady from Tennessee, Ms. Blackburn, is recognized.

Mrs. BLACKBURN. Thank you, Mr. Chairman. And thank you all for your patience today and for the good conservation about this because I think it is something that does concern us all and especially in this economic environment in which we find ourselves.

Mr. Bradley, I wanted to come to you. One of the things that I hear from my Ag. Committee quite a bit, they are very concerned about livestock emissions and regulations that might be forced on them. I want to know what your opinion is on that.

Mr. BRADLEY. Agricultural emissions are a significant source of emissions in large parts of the world. And certainly when we look at some of the developing countries that we have been talking about here today, finding reliable ways to address emissions from rice patties, from cattle, for instance, in places like India is going to be a large part of the overall solution that we need to explore in those countries.

I would say that while there are a range of things that can be done within the agricultural community, this is probably something that is going to be somewhat more detailed than perhaps inclusion in the cap-and-trade mechanisms of the kinds that we have been talking about here more generally.

Certainly I think these are areas where there is some ripe scope for technology cooperation. Agricultural research is actually an area which has quite a good traditional of international collaboration. And certainly it would be I think a very promising area to try and find some constructive ways in which the U.S. and developing countries can work together to explore solutions through emissions in that sector.

Mrs. BLACKBURN. Well, I will tell you that it is something that does concern us because you are talking about an issue that would end up affecting every single U.S. farm. And the impact of that on our food security supply and network is something that is not lost

on us. So any further detail that you have on that that you could submit in written form I would definitely appreciate having.

Another question for you. Reading some of the economists' writings on climate change and dealing with the economic situation that we are currently in, the jobs retention issues that are in front of us, a large number of them have stated that spending billions of dollars on climate change right now is unnecessary. And they say the money probably would be better spend going toward projects such as clean water and sanitation, that that would be a more effective route in developing countries than putting the focus on climate change. And I would like to hear you address that.

Mr. BRADLEY. So, just to make sure I understand your question, it would be more effective in that view to spend money on water systems in developing countries than on cutting emissions——

Mrs. BLACKBURN. Clean water and sanitation, correct, instead of addressing the emissions and climate change issue.

Mr. BRADLEY. There are two ways in which this interacts with climate change. One is—and this is something you alluded to with the agricultural question as well—it is not going to be possible to build effective water and sanitation and similar infrastructure in developing countries unless, first of all, we take into account the climate impacts that they will already be facing because those water systems will have to exist and provide their service within those stressed environments.

And, secondly, simultaneously we do need to ensure that climate change doesn't race ahead and perhaps outstrip some of the values that those systems are going to bring.

If you are asking, though, does it make sense for a country like India to be spending more of its effort proportionately on providing those kinds of services than on cutting emissions at this stage in its development, then yes, I would agree.

I think that this is an issue we have sort of patched back to a number of times in this hearing. And it is important to understand how heterogeneous these countries are. There is a so-called Germany within India.

You have 70–80 million people in India who live what would be largely viewed as a Western lifestyle, you know, drive Mercedes, have air-conditioned apartments, and so forth. Simply because they happen to be lodged in the middle of a very poor country should not exempt those kinds of communities for taking action.

And this is why some of the discussions we have been having around developing countries emphasizes taking specific actions, rather than necessarily starting from a national emissions limit because within that national emissions limit, you potentially end up dragging down the Slumdog Millionaires, whom we desperately need to help get out of poverty, provide water to, provide energy to, and so on.

Mrs. BLACKBURN. Thank you. Yield back.

The CHAIRMAN. The Chair recognizes the gentleman from Missouri, Mr. Cleaver.

Mr. CLEAVER. Thank you, Mr. Chair, Mr. Diringer, and Mr. Bradley.

Mr. Diringer, in your testimony, you suggest that the U.S. move swiftly to cap and reduce emissions, which I agree with, inciden-

tally. In fact, I had hoped that it would have been something that we moved early in this Congress. But with the hemorrhaging economy, my fear is that that will take such a precedent that some of the issues that some of us, at least on this side, are extremely concerned about are going to be delayed.

We already I think have somewhat of a damaged image in this area internationally. That is where Mr. Bradley comes in as well. Does a delay in moving in this area of cap and then reducing emissions further damage our international credibility as it relates to climate change are the effort by the world community to begin to address this serious problem?

And, secondly, if I can ask both questions? And then I will just let the two of you speak. Having family in Tanzania, Tanzania as they call the country—we changed it over here—where they have a $1,500 a year annual income—and I have seen the devastation there of the environment—they are really suffering there. Even in the shallows of Kilimanjaro, they have serious water problems.

The only way we are going to address the developing countries is if the First World countries understand that issue and then spend whatever is necessary. Deforestation, I mean, probably they have knocked over an acre since this Committee has been in session today.

So I would like to get you to discuss without rambling as I did the two issues that I raised.

Mr. DIRINGER. Let me try to address the first. And perhaps Rob will want to pick up on the second. Absolutely further delay in domestic action by the United States will delay and I think actually would preclude the possibility of an effective global agreement in action to date by the United States, which is not only the largest economy in the world but also the largest historic emitter of greenhouse gases, has been the single greatest impediment to progress in developing an effective global agreement. I think that we have been in a very prolonged period of stalemate and then prenegotiation with countries waiting to see what the U.S. is prepared to do.

You know, we did see some progress over the past year. We saw some progress in the major economies dialogue that President Bush initiated. There was initially some great skepticism from other countries, but I think other countries came to recognize the value in that type of dialogue. But I think the reason it didn't produce any more is because President Bush didn't put anything on the table in terms of U.S. action.

There are great expectations right now about the new administration and what it will be prepared to do, both in terms of moving forward with domestic action and bringing something into the negotiations. So I think that, frankly, domestic action in the U.S. is essential. It may not be sufficient, but it is the first essential step towards moving forward internationally.

If I could, you mentioned, you know, concern about the current economic situation perhaps delaying action. I just want to note that the Pew Center along with the World Resources Institute are both members of the U.S. Climate Action Partnership Coalition of major companies and nongovernment organizations calling for mandatory action and enactment of cap-and-trade legislation this year.

One of the points made by the CEOs of the companies is that there is a cost to regulatory uncertainty. For them, this is actually a very strong economic rationale to move as quickly as possible to enact the kind of legislation we need.

Mr. CLEAVER. Thank you.

Mr. Bradley.

Mr. BRADLEY. As briefly as I can, absolutely without the United States taking a leadership position on domestic policy, I see very little prospect for an international agreement.

And it is striking we focus a lot in these conversations on the sort of differences with China, but in many ways, the conversations that we hear when we go to China are extremely similar to the ones being held here in Washington around climate change.

They completely get how bad the climate change is. They really worry about the impacts that they face. But they say, "Listen. We are trying to do some things right now, but without the world's biggest economy moving on this, how can we move much faster than we are now?" They have been extremely explicit.

I would depart a little bit from Mrs. Harbert's framing of it. The idea that China and India will to a certain extent wait on U.S. leadership before following suit I don't think is an article of faith. I think it is something they have repeatedly and publicly stated and that, at the very least, is worth trying to take them at their word for one part of that conversation.

Certainly the issue of countries like Tanzania and the kinds of impacts that they face from climate change is one of the things that should galvanize us all. I was on Mount Kilimanjaro a couple of years ago. And you see the pictures from the '50s and '60s with this kind of shaggy mane of snow on Mount Kilimanjaro. And it is now thinner than my hair. It is something which really underlines the incredible difficulties that many of these countries are going to face.

One of the things that I think was very praiseworthy in many of the discussions around the climate bills last year was a fairly consistent intent on the part of Congress to provide finance for international adaptation.

It was interesting to see the religious community, in particular, fall full square behind that. I think that is an important recognition of the moral case that there is there to provide that kind of assistance to the countries that are going to be most effective.

The CHAIRMAN. The gentleman's time has expired.

Let's go back to this issue of a Germany inside of India. What country would be inside of China given their economic development right now? Even larger than a couple of Germanies inside of China.

So, Ms. Harbert, what do you think about the prospects of us reaching an agreement with the well-to-do in Shanghai, the well-to-do in Bangalore, the interests that they represent? At least in sectoral agreements on steel and cement, we are there modernizing. We are there building these new plants.

There is a good reason to believe, do you not believe, that we could, in fact, reach differentiated agreements with these countries so that wherever they are modernizing, wherever they are building, wherever their wealth is great, they are bound by the same rules? But we can take into account the Slumdog aspect of it in the movie

that you haven't seen, but you can only assume that it is that dollar-a-day resident of both of those countries.

Ms. HARBERT. Well, there are ongoing efforts right now that are succeeding on a sector-by-sector basis: the Asia Pacific partnership. You have the aluminum industry working amongst 12 or 13 countries to find ways to produce aluminum in a much more energy-efficient manner, the same in the area of cement and steel, et cetera. And that is because we are using technology and reality and economics as the base for making decisions on how to modernize these systems.

One of the most important things we could do is reduce the tariff barriers on clean energy goods and services. And we have not been successful in the Doha round. We may need to look at different ways of doing this.

Why are we making clean energy more expensive in the developing world? That is needless, and we could reduce that. Those would be American jobs and American exports.

If you listen to the Chinese—and I spent a lot of time in China, as have you—the Chinese have said, yes, we're willing to sit at the table. It's going to be very costly.

Our priority is economic growth, bringing our people out of poverty so that we don't have these pockets of Germany, that everybody has a much better baseline and we should afford them the right to have their people have a better way of life.

But they said, "It is going to cost money. And we don't have it. And, therefore, we expect to be paid." In fact, they have said they want .7 percent of the industrialized world's GDP on an annual basis to be able to sit at the climate negotiating table and agree to something.

Well, that would mean $80 billion every year from the American taxpayer to fund China's compliance with an international agreement. That is a heck of a lot of money. And that is just the U.S. obligation.

So we have to be very careful in how we approach bringing them in and that it ultimately doesn't fall just purely on an economic basis on the people inside the United States that for a long time have been more prosperous.

The CHAIRMAN. Mr. Diringer, do you agree with Ms. Harbert? Is that a good formula for us to use?

Mr. DIRINGER. Well, first, on the question of sectoral agreements, we think that is certainly something worth exploring. I don't know about the practicality of trying to negotiate something with a national government with respect to action in specific geographic areas, but in terms of action within certain economic sectors, that is certainly something we should be discussing. And, in fact, if we were able to reach agreements around specific sectors, particularly the energy-intensive sectors, that would be one very effective way to address the competitiveness concerns that we have.

I mean, as far as the formula, the quid pro quo, if you will, that needs to be reached in order to move forward internationally, I think we need to be very clear. We need to see commitments. We need to see reasonable commitments. We also need to be prepared to provide some support to those countries that need it to achieve those commitments.

In the case of China, when you have conversations, I mean, the impression I get is that they understand that: (a) they have lots of money and that is not really the thing they need from us; and that lots of money is probably not forthcoming from the United States toward China. What they do need is some assistance on the technology front.

The CHAIRMAN. So what do you recommend? You know, Ms. Harbert said the same thing. So how do we handle this issue of technology——

Mr. DIRINGER. I think——

The CHAIRMAN [continuing]. And its transfer? What would you have built into the agreement, first, you, Mr. Diringer? Then we will go back to you, Ms. Harbert. What are the specifics that you would like to see included?

Mr. DIRINGER. Well, I think an immediate priority for this administration is to initiate a high-level dialogue with China to have an honest conversation about what they are prepared to do and what they need to do that.

I think in terms of the types of measures that we build into an agreement, we need specific commitments from them and we need to help establish financial mechanisms that provide support, although that will be differentiated support and you need to evaluate on a case-by-case basis based on the types of actions countries are prepared to do, the types of assistance that would be available to them given their national circumstances.

And for a country like China that has considerable financial resources available to it, then that may not be the most appropriate form of support to provide——

The CHAIRMAN. So you are not that sympathetic to China in terms of our need to provide them with technology transfer in order to deal with their issues? You think that they have sufficient technological capacity and resources to do it the——

Mr. DIRINGER. Well, I think they have sufficient financial capacity, but I do think that there may be areas where we can assist them in terms of technological capacity provided—I mean, we need to have not as conversations——

The CHAIRMAN. Just so that I can understand what you are saying——

Mr. DIRINGER. They need——

The CHAIRMAN [continuing]. So what do you recommend specifically that we do in those areas that you think——

Mr. DIRINGER. Coming to clear terms about the sharing of technology in a way that allows them access to the state-of-the-art clean technologies that will enable them to reduce their emissions while at the same time protecting and preserving——

The CHAIRMAN. But what are those——

Mr. DIRINGER [continuing]. Intellectual property of U.S. companies.

The CHAIRMAN. But what are those clear agreements? How do we make it——

Mr. DIRINGER. There are many companies that operate day to day right now in China, U.S. companies, that have technology-sharing agreements and are able to do business in China in ways that they don't feel is undermining their intellectual property.

So I think those are the types of agreements that we need to work out with respect to the clean energy technology.

The CHAIRMAN. Ms. Harbert.

Ms. HARBERT. I think there are three things. First of all, the United States has already put on the table the International Clean Energy Fund. They were joined by the U.K. and Japan for a facility housed at the World Bank that would provide concessionary financing to the developing world for clean energy projects.

That would do a lot for us in this economy and generate jobs here at home, and it would do a lot to have commercially viable projects built on the back of the private sector, rather than on governments around the world that would distribute clean energy. We should fund that effort.

Secondly, we should be serious about reducing tariffs on clean energy goods and services around the world that reduces the cost of clean energy. And if the priority is economic growth in Bangalore and Shanghai, that will reduce the cost of providing that.

And we have to recognize that the technologies are not owned by governments. The United States government can't just go over to the Chinese government and give it away. They don't own it. GE does. Dow does. Dupont does. And they are not going to give it away. That is not the way that our system works.

And so we need to have very strong intellectual property protections in place so that we can cooperate with China, but we're not. We should disabuse ourselves. And we should stop using the words "tech transfer" in the negotiations.

The Chinese, the Indians, and the others are expecting to receive a big bundle of technology one day. And it's not forthcoming that way. It just doesn't work. And so we have to find a way to make it work and for that technology commerce to be technology transfer.

The CHAIRMAN. Mr. Bradley, let's go to Mexico for a second. They are talking about a cap-and-trade system. That would come as kind of a shock to most people, I think. Mexico has decided to take a leadership role.

How realistic is it for us to expect that Mexico would adopt a meaningful cap-and-trade system that could be looked to with some confidence as something which is binding, enforceable, confidence-building?

Mr. BRADLEY. Thank you. I will certainly address that question. I wonder if I could ask your indulgence just to make one comment on the China and technology question?

The CHAIRMAN. Please do so.

Mr. BRADLEY. The Chinese government strong-armed Huaneng Power, which is China's largest power utility, into setting aside capital to put into the FutureGen project. In other words, the Chinese were proposing to pay money towards the construction of a power project in Illinois.

The project was canceled by the Administration. And the Chinese found out about it in the Washington Post. They have repeatedly emphasized that in many contexts. And it is true that in the negotiations, they do have some very, I would say, unrealistic sort of starting negotiation positions about financial transfers.

In many cases, they are seeking to jointly and equally co-fund research and development and to share the intellectual property that arises from it.

The CHAIRMAN. And that is a good model, Ms. Harbert?

Ms. HARBERT. To share the intellectual property?

The CHAIRMAN. Jointly fund and develop.

Ms. HARBERT. To the extent that the intellectual property that is generated there can be common and differentiated benefits, sure.

Mr. BRADLEY. On the question of Mexico, I don't want to imply a cap-and-trade bill. My colleagues have been working in Mexico now for seven or eight years helping build up the databases and inventories necessary for some key sectors to monitor and verify their emissions effectively.

The climate change strategy that the Mexican government came up with last year has talked about setting targets for specific sectors. It probably would not be economy-wide in the first instance. Mind you, neither is the EU's emissions-trading system economy-wide. The kinds of sectors that we are talking about are similar to those in the EU sector, heavy manufacturing and the power sector.

The dynamic by which that will be put in place may be a little bit different than in the United States. So, for instance, in many instances, the companies involved actually stayed home, most particularly, for instance, the refining sector and some of the power generation.

So I would say that Mexico is not on the brink of a cap-and-trade bill, as we would recognize it here, but I would say that there is a very realistic prospect that significant sectors will have a cap-and-trade-type policy applied to them in the kind of time scale which we will be bringing in the timed agreement.

The CHAIRMAN. Thank you.

There is a national teach-in today on global warming that is taking place on hundreds of campuses, in college and high school alike, all across the country. In my district, Brandeis University has asked me to participate. But, rather than me teaching them, I thought it would be important to let Congress hear from the students. So today at this hearing, I am going to put Brandeis University in the chairman's seat and ask a question sent to me by Matthew Schmidt, who is a sophomore, who heads the Students for Environmental Action at Brandeis.

Here is the question. After World War II, the United States played a crucial role in the rebuilding of Europe. Has the time come for the United States to consider a similar role in spreading clean energy technologies throughout the world?

Mr. Diringer.

Mr. DIRINGER. I would say absolutely, but the United States will not be in a position to do that on its own, obviously. It will need to work in partnership with other developed countries and potentially with other developing countries, who increasingly have the financial and technological wherewithal to assist in the diffusion of technology worldwide.

I think it is also interesting to reference the institutions that emerged in the post-World War II environment. We are now approaching a point where it is time to reconsider the mission of those institutions.

And I think that in moving forward on technology to address climate change, it is worth considering reinvention of the Bretton Woods institutions and making this one of their missions going forward so that we can move beyond the traditional donor-recipient model, as Ms. Harbert put it, to a new model in which countries work in partnership to advance the types of technologies we need.

The CHAIRMAN. Mr. Bradley.

Mr. BRADLEY. I think a sort of reservation on that model is that, as Ms. Harbert has been saying, it is not as though the U.S. sort of owns all of these technologies and it is a question of transferring them overseas.

I do think that some of our international partners don't completely understand that. And certainly I think some commentators and certainly some climate negotiators imagine that we have a lot of great technologies in a basement somewhere that we are deliberately not sharing. This is more of a collaborative effort.

I do think that the model that is going to work and the model that ultimately will invalidate some of the longer projections that we see in models, the thing that isn't captured in models is that we must get to a point where some of the technologies that are going to let us have zero carbon energy really break through to the point of competitiveness.

The one thing that can do more than anything else in the world to drive that is by setting a carbon regime in the United States which will allow the world's biggest, most technologically advanced, and most innovative economy to start really pushing those technologies forward. That will be America's biggest gift to the world.

Those technologies that ultimately will drive that revolution will come from all kinds of places, but they will come from America more than from any other single place.

So does America play a role in a way that looks exactly like the Marshall Fund? Not quite. But does America play that incredibly important core role in driving an energy technology revolution? I certainly hope so.

The CHAIRMAN. Ms. Harbert.

Ms. HARBERT. I guess I would make three comments to the wonderful question posted by the student. First, you know, we are investing less in clean energy R&D in this country than we did since the 1970s.

So we have not put our money where our mouth is. And we need to be serious about not just the R&D but, as you said, in the deployment and providing the incentives out there to actually have these technologies penetrate the marketplace, which will generate exports and generate innovation revolution of clean energy.

To do that, we need sufficient loan guarantees in this country. We need a clean energy bank. We need production tax credits that will incentivize. There are a lot of financial instrumentation that is very valuable that could be put in place absent having an overarching mandate.

Secondly, he brought up World War II. Our infrastructure in this country was built right after World War II. And we really haven't done anything to modernize it since.

And if we are going to have a growing economy and fuel an economic recovery, we have got to get serious about infrastructure in

this country. Otherwise we are going to have brownouts that certainly would not do anything for our economic recovery. And we can demonstrate huge leaps of technology in our electricity grid since it has not really been modernized since World War II.

And that will certainly help with the 1.6 billion people that don't have electricity around the world to have it in the advanced technology state.

Last, but not least, and maybe the most important is this question from a student at a university. And we are not graduating enough scientists, enough engineers, enough math students to actually have the intellectual feedstock we need for the innovative transformation that we need.

We need more engineers. We need more scientists. We need more academic institutions that have teachers that are capable of doing it. It starts in pre-kindergarten all the way through Ph.D. So we have got to get serious about the intellectual foundation of what we are talking about here because we don't have the people that we need for all of these goals that we are talking about.

So we talk about importing oil all the time. We are going to be talking about importing all of our intellectual feedstock to feud this revolution. And that really won't sit well here at home.

The CHAIRMAN. Thank you, Ms. Harbert, very much. And we thank the Brandeis student for his question.

You know, President Kennedy in his inaugural obviously uttered that famous statement, "Ask not what your country can do for you, but what you can do for your country."

He also then followed it by talking to the world and saying to the citizens of the world, "Ask not what the United States can do for you but what we can do together working for the goal of freedom and progress in the world-at-large."

I think here we have many countries that will be able to contribute. Germany is the leader in photovoltaic solar technology, and Denmark the leader in wind. And obviously there are many parts of the world that can play leadership roles with the United States, of course, as the largest industrialized county, hopefully playing the largest role of them all.

In the stimulus package that is now under consideration between the House and Senate, there is a large, large infusion of funding for education. We agree with that insight that you made, Ms. Harbert, that we have fallen behind. We have to make the investment in education because without that in the long run, we cannot be leaders.

To a very large extent, our leadership now is based upon the huge investment, which we made a generation ago. That is why we win the Nobel Prizes now. That is why we are the leaders. But we can't know 30 years from now whether or not we are going to be the winners over India and China and Germany and other countries until we first determine how much we want to invest once again in our technologies and our young people to make sure that they are competitive. That is still an unknown result because we have yet to make those decisions.

However, a renewable electricity standard would give an incentive for the development of new technologies, the tax breaks, the

incentive for the development of a new modern technology-driven, telecommunications-driven grid is also a part of the solution.

We have to get to the business of developing those new technologies. And then the United States will be the leader amongst other countries, as well, in solving this problem.

Does the gentleman from Missouri have any other comments?

[No response.]

The CHAIRMAN. This has been a fabulous introduction where we now stand in the world on these issues. It is going to be a very, very fast-paced race for 305 days to Copenhagen. And we intend to ensure that this Congress and the American people are informed of all of the choices which we have to make this year if the United States is to be the leader when that meeting is convened.

Thank you all so much for your testimony.

[Whereupon, at 12:08 p.m., the committee was adjourned.]



COMMISSION OF THE EUROPEAN COMMUNITIES

Brussels, 28.1.2009
COM(2009) 39 final

COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

Towards a comprehensive climate change agreement in Copenhagen

{SEC(2009) 101}
{SEC(2009) 102}

COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

Towards a comprehensive climate change agreement in Copenhagen

1. EXECUTIVE SUMMARY

The successful conclusion of the international climate change negotiations at Copenhagen at the end of 2009 is a key priority for the EU. Now that the Climate and Energy package has been adopted, the EU must step up its contacts with third Countries, both in the UN context and beyond.

This Communication sets out concrete proposals to achieve this goal. It addresses three key challenges: targets and actions; financing; and building an effective global carbon market. It also responds to the request made by the European Council in June 2008 to present a comprehensive strategy for scaling up finance and investment flows for both emission reduction and adaptation.

In order to limit the global average temperature increase to not more than 2°C above pre-industrial levels, developed countries as a group should reduce their emissions to 30% below 1990 levels in 2020. The EU has set the example by committing to a 20% reduction in its emissions compared to 1990 levels by 2020, irrespective of whether or not an international agreement is concluded. This is by far the most ambitious commitment by any country or group of countries in the world for the post-2012 period.

The EU is willing to go further and sign up to a 30% reduction target in the context of a sufficiently ambitious and comprehensive international agreement that provides for comparable reductions by other developed countries, and appropriate actions by developing countries. Developing countries as a group should limit the growth of their emissions to 15 to 30% below business as usual. Significantly increased financial resources will be needed to support the necessary action in developing countries: this should come from domestic sources, from the global carbon market, but also by contributions from developed countries. Much of these investments will have both rapid and long term benefits in terms of climate change, economic recovery and should in any case be less than the costs of inaction.

A global carbon market can and should be built by linking comparable domestic emissions trading systems. This will promote cost-effective emission reductions. The EU should reach out to other countries to ensure an OECD-wide market by 2015 and an even broader market by 2020.

2. INTRODUCTION

The EU's agreed objective is to limit the average global temperature increase to less than 2°C compared to pre-industrial levels. Going beyond 2°C will mean increasing food and water scarcity and severe weather events and significantly increase the threat to unique ecosystems. If current emission trends continue, the 2°C threshold may already be crossed in 2050. Even staying below 2°C would still require significant adaptation efforts. In the light of some new research findings, an increasing number of scientists are calling for the level of greenhouse gases (GHG) in the atmosphere to be stabilised at a significantly lower level than previously recommended, i.e. as low as 350 ppmv CO_2 equivalent. It is imperative to secure an ambitious outcome in Copenhagen that leaves the door open for a lower stabilisation level.

The basic physical inertia of the global climate system means that ignoring scientific warnings will lead to unprecedented, costly and potentially unmanageable consequences. At the same time, there is an opportunity to address climate change, energy security and the current economic recession together. Tackling climate change will necessitate significant private and public investment, and will help secure the transition to the low-carbon economy, opening up new possibilities for growth and jobs and promoting sustainable development. Globally, governments are announcing major investment programmes that encourage low-carbon investments, foster innovation and growth and increase energy security, such as the recently adopted European Economic Recovery Plan. Actions to tackle the financial crisis can help to use the narrow window of opportunity that remains to stay below a 2°C increase.

At the **international level**, the 2007 Bali Action Plan started a process to conclude a new international climate agreement for the period after 2012 at the UN conference in Copenhagen in December 2009. This agreement needs to set concrete new targets and actions to reduce GHG emissions and to provide the basis for sustainable development by strengthening countries' ability to adapt to inevitable climate change while triggering innovation and economic growth, reducing poverty and providing access to sustainable energy services (the 'shared vision'). Following the UN conference in Poznan in December 2008, talks have shifted into full negotiating mode.

At the **domestic level,** both developed and developing countries are stepping up action. Targets are being set and carbon markets are being established. In December, the EU adopted its ambitious climate change and energy package, implementing the EU's independent target to reduce its GHG emissions to 20% below 1990 levels by 2020 and expanding and improving the EU emissions trading system (EU ETS). The new US Administration has made tackling climate change a major priority. At the same time, Australia has also announced its mid-term climate commitments, with a strong focus on emissions trading. These trading systems could form the nucleus of a truly global carbon market.

3. TARGETS AND ACTIONS

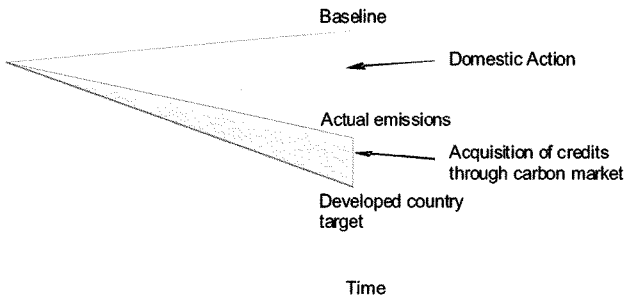
To have a reasonable chance of staying below the 2°C threshold, global GHG emissions must be reduced to less than 50% of 1990 levels by 2050. In addition, global GHG emissions, excluding emissions from land use, land-use change and forestry, will have to peak before 2020. Developed countries must lead in meeting this global goal and demonstrate that a low-carbon economy is possible and affordable. A significant contribution from developing countries, and in particular from economically more advanced developing countries, is also essential, as many of them are quickly becoming important emitters. To this end, cooperation must be significantly boosted to provide the necessary capacity, technology and finance.

3.1. New GHG reduction targets for developed countries

The Copenhagen agreement should set further absolute economy-wide emission reduction commitments for developed countries. The EU has set the example by committing to an autonomous 20% reduction in its emissions compared to 1990 levels by 2020. This is by far the most ambitious commitment made by any country or group of countries for the post-2012 period. The EU is willing to go further and sign up to a 30% reduction target in the context of an ambitious and comprehensive international agreement if there are comparable reductions by other developed countries and appropriate contributions by the economically more advanced developing countries based on their responsibilities and capabilities.

The EU has proposed that developed countries, as a group, should reduce their emissions by an amount consistent with the 2° objective. The 4th Assessment report by the Intergovernmental Panel on Climate Change (IPCC) indicates that this would require emission reductions for developed countries in the range of 25-40% by 2020 and 80-95% by 2050. Developed countries should be able to achieve their reduction targets in part through domestic action and in part by using credits resulting from emission reductions in developing countries, as illustrated in Figure 1.

Figure 1: Developed Countries Emissions



The developed countries' overall target must be distributed in a manner that is fair and ensures comparability of efforts. The following parameters are considered as key:

- GDP per capita: reflecting the capability to pay for domestic emission reductions and to purchase emission reduction credits from developing countries;
- GHG emissions per unit of GDP: indicating the domestic GHG emission reduction potential;
- Trend in GHG emissions between 1990 and 2005: recognising domestic early action to reduce emissions;
- Population trends over the period 1990 to 2005: taking into account the link between the size of the population and total GHG emissions.

The accepted Kyoto base year, 1990, should be used as the historical reference point when determining further contributions to the global emission reduction effort after 2012. The total effort for the group of developed countries should amount to 30% below 1990 levels in 2020. In determining the future emission targets of individual countries, more recent years could be used to take advantage of more accurate statistics, as the EU has done in its climate and energy package which uses 2005. However, this should not be used to water down emission reduction efforts.

Binding emission reduction commitments should not be limited to the countries that have targets under the Kyoto Protocol. The Copenhagen agreement should set emission reduction commitments for at least all countries listed in Annex I to the UNFCCC, all OECD member countries and all current EU Member States, EU candidate countries and potential candidates.

When setting targets for the post-2012, possible surpluses of emission rights from before 2012 need to be taken into account in order to ensure that the 30% target is met through real reductions after 2012. Similarly, the rules for land use, land-use change and forestry should not undermine the environmental integrity of the 30% target. Monitoring, reporting and verification of reductions as wells as regular peer reviews of climate policies should be improved.

3.2. Action to curb rising GHG emissions in developing countries

It is becoming increasingly clear that climate change is going to have the most serious impacts in developing countries, faced with problems like flooding, drought and deforestation. So, although developed countries should continue to take the lead in reducing emissions, in particular in the immediate future, contributing to the 2°C objective is in the interest of developing countries too.

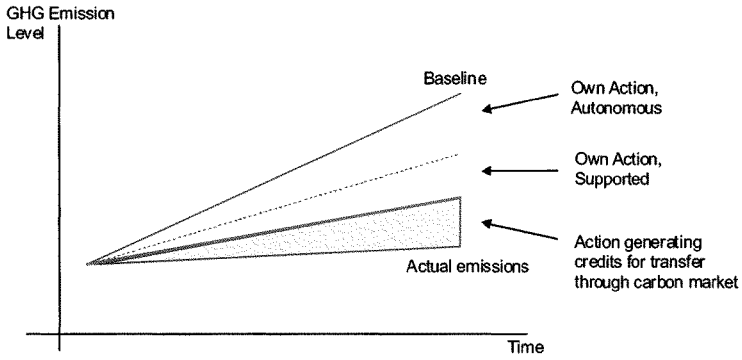
However, developing country GHG emissions are increasing rapidly and, if not addressed, will outweigh developed country efforts to reduce their GHG emissions. To meet the 2°C objective, a recent scientific report indicates that developing countries, as a group, will need to limit the rise in their GHG emissions through nationally appropriate actions to 15-30% below baseline by 2020. These estimates exclude the impact of reductions that result in the transfer of carbon credits to developed countries as illustrated in Figure 2. Appropriate actions should include a rapid decrease in emissions from tropical deforestation. By 2020, gross tropical deforestation should be reduced by at least 50% compared to current levels and by 2030 global forest cover loss should be halted.

Differing national circumstances and stages of development in developing countries require differentiated actions and the levels of ambition. This can be achieved by building on national climate change strategies. Over the past few years, a number of developing countries have formulated national mitigation strategies in the context of development, including China, India, South Africa, and Brazil. During the course of this year, these and other economically more advanced developing economies should update their strategies indicating the overall level of ambition up to 2020.

Under the Copenhagen agreement, all developing countries, except least developed countries (LDCs), should commit to adopting low-carbon development strategies by the end of 2011. These strategies should set out a credible pathway to limit the country's emissions through nationally appropriate mitigation actions that cover all key emitting sectors, especially the power sector, transport, major energy-intensive industries and, where significant, forests and agriculture. The strategies should identify the support required to implement the proposed actions resulting in incremental costs that cannot be sustained by the country itself. Robust and verifiable low-carbon development strategies should be a prerequisite for access to

international support for mitigation action. Further to funding, fostering capacity building in many developing countries will be necessary in order for them to prepare and implement their low-carbon development strategies.

Figure 2: Developing Country Emissions



To ensure a sufficient level of ambition, discussions on concrete strategies, proposals for action and support should be linked to and facilitated by an independent technical analysis. Sectoral approaches could be used as a tool in the analysis and development of mitigation options, taking into account technical information from the private sector. A new Facilitative Mechanism for Mitigation Support should provide a platform to match proposed action with appropriate bilateral and multilateral support mechanisms, based on a technical assessment. It should also assess whether the overall level of ambition pursued in the plan is in line with the capacity of the country to take action and appropriate for achieving the overall emission reduction compared to baseline of the group of developing countries. Where necessary, it should explore options to raise the level of ambition.

Developing country action should be entered into an international registry. This registry should list the action taken and show the mitigation benefits, using transparent and robust measurement, reporting and verification methods. The UN climate change conference will review the resulting mitigation efforts of the group of developing countries as a whole and may decide to request developing countries to strengthen their mitigation efforts and developed countries to increase their support.

3.3. Addressing emissions from international aviation, maritime transport, and fluorinated gases

International aviation and maritime transport

International aviation and maritime transport are large and rapidly growing sources of greenhouse gas emissions, but have so far been left outside the international climate change framework and the Commission believes that the emissions from these sectors should be included.

As part of the Copenhagen agreement the UNFCCC should set targets for reducing the climate impact of these sectors below 2005 levels by 2020, and significantly below 1990

levels by 2050. Due to the global nature of international aviation and maritime transport, global measures should be taken to address their climate impact. The International Civil Aviation Organisation and the International Maritime Organisation have a responsibility to facilitate the development and adoption of such global measures by the end of 2010. Market based measures, including emissions trading, can ensure cost-effective emission reductions. Action to reduce emissions should take into account the possible net negative impact on isolated regions, remote islands and LDCs. If at the end of 2010 there is no agreement in ICAO and IMO, emissions from international aviation and maritime transport will be counted towards national totals under the Copenhagen agreement which will ensure comparable action by all developed countries.

The EU has included CO_2 emissions from aviation in its emissions trading system. As regards maritime transport several market-based measures are currently being examined. If no effective global rules to reduce GHG emissions from this sector can be agreed upon, the EU should agree its own measures.

Addressing fluorinated gases

The accelerated phase-out of HCFCs over the coming decade under the Montreal Protocol may lead to a rapid increase in HFC emissions, many of which are very potent GHGs. Part of the Copenhagen agreement should include an international emission reduction arrangement for HFC emissions. This will encourage industry to step up intensified research into and development of HFCs with low global warming potential and HFC-free alternatives.

4. FINANCING LOW-CARBON DEVELOPMENT AND ADAPTATION

A comprehensive Copenhagen agreement must be underpinned by adequate financial resources to enable its implementation. Especially in the current economic situation, the Copenhagen agreement must ensure that climate change goals are delivered cost-effectively. Commission analysis shows that an effective global carbon market can greatly reduce costs in developed and developing countries, but there is a need to significantly scale up, redirect and optimise finance and investment. The international financial architecture to support efforts to tackle climate change must follow principles of sound governance maximising effectiveness, adequacy, efficiency, equity, accountability, coherence and predictability. Spending priorities in the context of the Copenhagen agreement should focus on effective mitigation action through performance-based incentives and on adaptation in developing countries. Potential sources of financing include for instance private and public funding and the use of grants and loans under international, bilateral and multilateral efforts. EU contributions will be at both Community and Member States level. Financing instruments and institutions to fight climate change should be coherent and complementary to existing international bodies and financial institutions and take account of the current debate about their respective roles and responsibilities.

4.1. Financing the reduction of emissions

Global

Investments to reduce global emissions will need to see year-on-year rises. Recent research by JRC and other independent institutes estimate the net global incremental investments in the order of € 175 billion by 2020. It is estimated that more than half will have to be invested in developing countries, including the forestry sector. Investment in areas such as energy efficiency and low-carbon technologies will spur innovation and growth and enhance energy savings and security. Investments in reduced deforestation will safeguard global biodiversity

and ensure local long-term sustainable development. This should also be seen against the costs of non-action (between 5 to 20 % of global GDP according to the Stern report).

Developing countries

National low-carbon development strategies will have to provide an estimate of additional net investment costs for mitigation and the viable financing and mitigation policy options to leverage such investments.

The following sources of funding for developing countries exist:

- **Domestic:** Until 2020, most actions identified in national low-carbon development strategies have low incremental costs or even generate a net benefit in the mid term, but require up-front investment. For instance, it is estimated that more than half of the reductions in the energy sector can be realised through energy efficiency measures. Financing of these measures will primarily need to come from the private sector and households, and government policies can leverage this finance. This will trigger substantial domestic investment and boost energy secure economic growth. International loan programmes could also help to tap into international private capital.
- **External:** The low-carbon development strategies will need to identify mitigation action that goes beyond low cost/short term net benefit options and that require financing beyond the domestic capabilities of the respective developing country. Support for the incremental costs of such investment must come from the full range of sources and innovative financing mechanisms, including public funds and international carbon crediting mechanisms. It is estimated that these crediting mechanisms can provide one third or more of the additional investments in developing countries.

4.2. Addressing and financing adaptation to inevitable climate change

The Copenhagen agreement should provide a framework for action on adaptation, which should include the following elements:

- The need for all to adapt: Support for doing so should be provided to the most vulnerable and the poorest. Only by anticipating potential adverse effects early enough and adapting accordingly can very costly damage be avoided.
- A commitment to systematically integrate adaptation into national strategies: This should be a shared responsibility for both developed and developing countries.
- Improving the tools to define and implement adaptation strategies including methodologies and technologies for adaptation, capacity building and a strengthened role for the UNFCCC process by mobilising stakeholders, including international organisations, and ensuring a more coordinated approach to risk management/disaster risk reduction.

To pool experience, the EU should recommend that a technical panel on adaptation be set up under the UNFCCC. All countries should be required to draft comprehensive national adaptation strategies. Efficient adaptation policies will need to move beyond the urgent and immediate adaptation needs. There should be a transition from project based approaches towards a long-term strategic integration in a country's broader planning and development strategy. Experience gained in this respect through the Global Climate Change Alliance (GCCA) will be useful. Financial and technological support should be provided to the most vulnerable countries, in particular LDCs and Small Island Developing States.

The costs of capacity building and priority action in most vulnerable countries could, to a large extent, be covered by the existing Adaptation Fund. But although estimates of additional costs for adaptation vary widely, the Adaptation Fund will be insufficient to support adaptation in all developing countries. Hence innovative sources of finance will have to be utilised to match adaptation needs. Similarly to mitigation, the financing options need to be tailored to actual investment. The UNFCCC Secretariat estimated that adaptation costs in all developing countries could range between € 23-54 billion per year in 2030. A large number of early measures will even generate a net benefit to the economy, for instance measures to improve water use efficiency in areas that will suffer from water shortages. A multilateral insurance pool to cover disaster losses should be explored to complement existing funding mechanisms in case of climate related natural disasters. The European Commission is already involved in piloting such schemes.

4.3. Financing global research, technology development and demonstration

A major boost must be given to research, development and demonstration of low-carbon and adaptation technologies in all economic sectors and activities. This should build on the needs identified in national low-carbon development strategies and assessments made by the Facilitative Mechanism for Mitigation Support, and could include capacity building, science and technology-oriented cooperation, reducing market access barriers on environmental goods and services and improved global research coordination.

For all these activities, additional public financing will be needed. Globally, it would be desirable to at least double energy-related RD&D by 2012 and increase it to four times its current level by 2020, with a significant shift in emphasis towards low-carbon technologies, especially renewable energy sources. Likewise research on impacts, adaptation and other mitigation options to climate change need to be strengthened at the international level. A commitment to do so should form an integral part of the Copenhagen Agreement. The Commission should work with Member States to promote, in a coherent way, international science and technology co-operation for all climate-related research, including low-carbon technologies, across all sectors.

To accelerate the development and kick-start deployment of strategically important low-carbon technologies, the EU is implementing the European Strategic Energy Technology Plan (SET-Plan). The EU is also planning to create one of its first Knowledge and Innovation Communities on climate mitigation and adaptation as part of the European Institute on Innovation and Technology (EIT), in line with the broader RD&D policy objectives of the EU. Under the revised EU ETS, 300 million allowances are set aside to help stimulate the construction of carbon capture and geological storage demonstration plants as well as innovative renewable energy technologies. Moreover, the Commission is preparing a Communication on the financing of low-carbon technologies.

Finally, more efforts, including via all forms of education, need to be made to advance the understanding of the evolution of climate and its impacts to society, economy and ecosystems.

4.4. Innovative international funding sources

Developed countries will contribute via public funding and the use of carbon crediting mechanisms. Public financial contributions should be comparable and be based on the polluter-pays principle and each country's economic capability. The scale of contributions should be negotiated and form an integral part of the Copenhagen Agreement.

Two principal options to generate innovative funding have been identified. The first option determines the annual financial commitment of developed countries on the basis of an agreed

formula. Such a formula could be based on a combination of the polluter pays principle (i.e. total amount of allowed emissions) and its ability to pay (i.e. GDP/capita). Under the second option a certain percentage of the allowed emissions would be set aside from each developed country. These emissions are then auctioned to governments at the international level. This percentage could increase progressively in line with the per capita income.

The first option provides certainty as to the total amount of funding committed. Countries could raise financial contributions individually, and spend them in a decentralised manner using all the existing bilateral and multilateral channels. This would, however, require a robust and transparent system for monitoring, reporting and verification of additional public funding for climate-related actions. To ensure compliance with funding commitments, a corresponding number of emission rights could be withheld for those countries that do not provide the agreed amount. The second option would not necessarily generate predictable levels of funding as governments could instead also use carbon credits from the Clean Development Mechanism. It would also require a centralised governance structure at UN level in order to organise the auctioning process, to set spending priorities and to channel the funds for mitigation and adaptation.

For the EU, significant additional public revenue will be generated by auctioning allowances in the EU ETS. Member States could use some of this revenue to honour their international financial obligation under the future climate change agreement under both options.

Both instruments can be combined with funding that could come from a global instrument to address international aviation and maritime transport (e.g. the proceeds from auctioning allowances under a global cap and trade system applying to those sectors).

It should be explored how developing countries, except the LDCs and Small Island Developing States (SIDS), could also make increasing contributions over time, in line with their financial capability.

4.5. Funding early action

Capacity building in order to ensure that the institutional capacity is developed to mobilise efficient reduction and adaptation will be key in the years immediately after a new agreement is reached.

Early action makes adaptation and the transition towards a low-carbon economy smoother. The EU should explore the possibility of developing a frontloading mechanism to rapidly deliver substantial funding in favour of the most vulnerable and poorest developing countries. This would be a bridging initiative in the transition period between 2010 and the full scale implementation of the new financial architecture to be agreed in Copenhagen. Based on the issuance of bonds, the proposed Global Climate Financing Mechanism (GCFM) would allow early spending on priority climate-related actions. These funds would in particular allow for an immediate reaction to urgent adaptation needs with a high return such as disaster risk reduction. A share of the funds raised could also support mitigation activities, in particular, those that generate synergies between mitigation and adaptation such as reducing emissions from deforestation. The GCFM aims at raising around € 1 billion per year for the period 2010-2014, provided that Member States make appropriate pledges.

4.6. Governance of international financial flows for climate change

As the sources of funding for adaptation and mitigation are likely to be multiple, coordination and cooperation will need to be improved. A high-level forum on international climate finance should bring together key decision makers from the public and private sectors and international financial institutions. It would regularly review funding availability and

expenditure and provide recommendations for improvements. This forum should cooperate closely with the Facilitative Mechanisms for Mitigation Support.

5. MITIGATING GHG EMISSIONS AND RAISING REVENUE ON A GLOBAL CARBON MARKET

5.1. Domestic cap and trade systems

Domestic cap and trade systems are one of the most promising instruments at the disposal of countries to reduce GHG emissions, in particular in sectors with relatively large emitters. The emissions cap ensures these systems are environmentally effective and the flexibility offered by trading allowances makes them cost efficient. Domestic carbon markets can and should be linked to build an effective global market, reducing the cost of mitigation. The Copenhagen agreement can support the emerging carbon market through global and country target setting.

The EU has "first mover" experience in setting up the EU ETS as the world's largest cap and trade system. Interest in this system is growing rapidly in a number of other developed countries. In parallel to the UN negotiations, the EU should promote the creation of a robust OECD-wide carbon market by 2015, to be further extended to economically more advanced developing countries by 2020.

As an important step towards this goal, the EU should actively engage with the new US Administration and legislators. President Obama has already indicated his intention to establish a strong US cap and trade system. The Commission will seek to put in place an EU-US working group on the design of carbon markets. Similar bilateral processes should be set up with other developed countries and with economically more advanced developing countries.

Developing countries will need to make increasing contributions to global mitigation efforts and should therefore, over time, adopt and implement domestic cap-and-trade systems that can spur efficient own action. The EU should help interested developing countries gain experience in emissions trading, in particular to set up sound governance structures and strong domestic institutions and to boost their capacity to monitor and report emissions. Private sector and other stakeholders should be consulted in this context.

5.2. Improving UN-based offsetting mechanisms

The Kyoto Protocol's Clean Development Mechanism (CDM) has enabled developing countries to participate in the carbon market. It is currently designed as a project-based offset mechanism in which developing countries can sell credits that represent emission reductions achieved by a specific project. These credits can then be bought by a developed country in order to comply with its national reduction target. CDM projects provide financing for clean technology and build capacity for climate policies in developing countries.

In order to ensure that a large part of EU emission reductions is done domestically, and to enhance environmental integrity, the EU ETS limits the use of CDM credits based on quantitative and qualitative criteria. In the UNFCCC context, the CDM should be reformed, crediting only those projects that deliver real additional reductions and go beyond low cost options. In addition, for advanced developing countries and highly competitive economic sectors, the project based CDM should be phased out in favour of moving to a sectoral carbon market crediting mechanism. Such mechanisms can be an efficient tool to drive development and deployment of low-carbon technologies in developing countries, and pave the way for the development of cap and trade systems. To ensure a coherent transition, the EU should seek

common ground with the US and other countries implementing cap-and-trade systems and generating demand for offset credits in a coordinated manner.

6. COPENHAGEN AGREEMENT, A BASIS FOR LONG-TERM POLICIES

The EU should aim to ensure that the Copenhagen agreement lays the basis for a long-term international framework that raises overall ambition and increases contributions from both developed and developing countries, guided by scientific knowledge. A periodic review of overall progress and the adequacy of commitments and action should therefore form an integral part of the agreement, including a comprehensive review in 2016. On this basis, the global goal should be reassessed and further mid-term commitments, action and financial flows set in line with the latest scientific findings. If, in the context of a comprehensive review of the Copenhagen agreement in 2016, the combined mitigation efforts of developed and developing countries are insufficient, the UN climate change conference should set new national ambition levels for the subsequent commitment period.

7. NEXT STEPS AND CONCLUSIONS

Over the coming months, the EU will have to mobilise all available resources to ensure intensive dialogue and cooperation with third countries. One of the key challenges for the 2009 negotiations will be to ensure the adequate and comparable effort from developed countries plus a meaningful contribution from developing countries, supported by developed countries. This is essential to achieve overall environmental effectiveness and to address competitiveness concerns. Bilateral contacts within the UNFCCC process, the upcoming G8 meetings, follow-up of the Major Economies process and bilateral discussions between the EU and key third countries should explore concrete contributions to the Copenhagen agreement from both developed and developing countries. The result of these discussions should enable developed countries to commit to sufficiently ambitious reduction targets in Copenhagen and economically more advanced developing countries to propose ambitious low-carbon development strategies, or meaningful action that will form part of those strategies. The shaping of the EU contribution to these processes should also be discussed at the March 2009 European Council.

In conclusion, it is proposed that the EU should:

1. Reaffirm its determination to reach a comprehensive and ambitious international agreement in Copenhagen in December 2009;
2. Engage with other developed countries with a view to agreeing on a set of GHG reduction targets, ensuring comparable efforts, based on the criteria in this Communication, in order to collectively deliver 30 % emission reductions in 2020 compared to 1990.
3. Engage with developing countries, especially with the economically more advanced, so that they take appropriate actions that will deliver collectively a deviation of 15-30 % below business as usual in 2020;
4. Acknowledge that staying below 2°C will require significant financial resources for emission reductions and adaptation, but that this will also stimulate innovation, economic growth and lead to long-term sustainable development. Express readiness to provide a substantial financial contribution in support of actions by developing countries, in particular for the most vulnerable and poorest, for instance through the Global Climate Financing Mechanism.

5. Propose to enter into bilateral partnerships with the US and with other developed countries to share experience on designing domestic emissions trading systems and to facilitate the creation of a robust OECD-wide carbon market by 2015. This market should be further extended to economically more advanced developing countries by 2020.

The Commission invites the Council to approve the above conclusions and take note of the orientations set out in this Communication. It stands ready to pursue discussions in the Council and to make all appropriate proposals.