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CLIMATE CHANGE FINANCE: PROVIDING ASSISTANCE FOR VULNERABLE COUNTRIES

HEARING

BEFORE THE

SUBCOMMITTEE ON ASIA, THE PACIFIC AND THE GLOBAL ENVIRONMENT

OF THE

COMMITTEE ON FOREIGN AFFAIRS
HOUSE OF REPRESENTATIVES

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CLIMATE CHANGE FINANCE: PROVIDING ASSISTANCE FOR VULNERABLE COUNTRIES

TUESDAY, JULY 27, 2010

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON ASIA, THE PACIFIC
AND THE GLOBAL ENVIRONMENT,
COMMITTEE ON FOREIGN AFFAIRS,
Washington, DC.

The subcommittee met, pursuant to notice, at 2:22 p.m., in room 2172, Rayburn House Office Building, Hon. Eni F.H. Faleomavaega (chairman of the subcommittee) presiding.

Mr. FALEOMAVAEGA. The subcommittee hearing will come to order.

This is the Subcommittee on Asia, the Pacific and the Global Environment of the Committee on Foreign Affairs. The topic of discussion this afternoon is Climate Change Finance: Providing Assistance for Vulnerable Countries.

As is the procedure in most hearings, I am going to give my opening statement; and then my good friend, the ranking member of the subcommittee, the gentleman from Illinois, Mr. Manzullo, will give his opening statement. He will be followed by my good friend from California, Congressman Rohrabacher, who will give his opening statement. Then we will invite our guests to give their testimony.

Today's hearing on climate change finance is the third in a series focused on the impact of global warming on the most vulnerable nations. Last December in Copenhagen, President Obama, along with other developed country leaders, pledged to raise $30 billion between 2010 and 2012 for "fast start" adaptation and mitigation efforts for countries most in need. Developed countries also committed to providing $100 billion annually by 2010 to developing nations, conditioned on all major economies agreeing to "meaningful mitigation actions and full transparency as to their implementation."

While the accord did not delineate precisely where the funds would come from or how they would be disbursed, Secretary of State Hillary Clinton said funding would be derived from public, private, bilateral, multilateral, and alternative sources.

The commitments made by the developed world to developing nations were essential to achieving the Copenhagen Accord during the much-anticipated 15th session of the conference of the parties. Negotiations nearly faltered until developed nations agreed to contribute resources to counter the effects of climate change in developing countries.

As the Copenhagen Accord itself states,

> "Enhanced action and international cooperation on adaptation is urgently required to ensure the implementation of the convention by enabling adaptation actions aimed at reducing vulnerability and building resilience in developing countries, especially in those that are particularly vulnerable, especially the least-developed countries, small island developing states and Africa. We agree that developed countries shall provide adequate, predictable and sustainable financial resources, technology and capacity building to support the implementation of adaptation action in developing countries."

The Accord was an important step forward in achieving a legally binding global agreement to limit greenhouse gas emissions, a step which is essential to avoiding the worst consequences of climate change. While the pledges made by developing countries are substantial, they are both necessary and very much in our own interest. Ironically, the poorest countries, those that have contributed the least to global greenhouse gas emissions, will suffer 75 to 80 percent of the cost of climate change-induced damages, according to the World Development Report of 2010.

Moreover, as Anthony Zinni, retired Marine Corps General and former Commander of the U.S. Central Command, succinctly stated,

> "We will pay for this one way or another. We will pay to reduce greenhouse gas emissions today, and we will have to take an economic hit of some kind; or we will pay the price later in military terms, and that will involve human lives. There will be a human toll."

General Zinni's views were confirmed by the 2010 Quadrennial Defense Review, which states,

> "While climate change alone does not cause conflict, it may act as an accelerant of instability or conflict, placing a burden to respond on civilian institutions and militaries around the world. Extreme weather events may lead to increased demands for defense support, to civil authorities for humanitarian assistance, or disaster response both within the United States and overseas."

Last week, I introduced House Resolution 1552 supporting finance for developing countries consistent with the Copenhagen Accord's goals and calling for enactment of comprehensive energy and climate change legislation that includes provisions for international finance.

Meanwhile, my good friend, Congressman Russ Carnahan from Missouri, is working on introducing the Global Climate Fund Act which will lay out a pathway for distribution of funding for mitigation and adaptation based on the Copenhagen Accord and modeled after the successful Global Fund to Fight AIDS, Tuberculosis, and Malaria, which received essential U.S. financial support under the George W. Bush administration.

In addition, Congressman Pete Stark introduced H.R. 5873, the Investment in Our Future Act, which would direct revenues from a small tax on all currency transactions involving U.S. purchases

to fund domestic child care programs and global health and climate change mitigation initiatives.

These legislative efforts will help us meet the pledges of the Copenhagen Accord, provide essential assistance to the countries most vulnerable to climate change, and help avoid the mass migration, diminished food production, and competition over resources that could lead to conflict and instability requiring costly international response.

Examples of the impact of developed countries' emissions on poorer countries can be found around the world, including the South Pacific, where my own home lies.

As Ambassador Marlene Moses of Nauru has said,

> "The Pacific island developing states bear almost no responsibility for the onset of climate change, yet we are suffering the consequences today. It is undermining our food security, water security and territorial integrity. Climate change is a man-made disaster, and redress for the damage being done to our island nations is long overdue."

We convene today's hearing as the Senate takes up energy legislation, albeit vastly diminished in scope from the Waxman-Markey bill that was passed last year by the House. Among many other issues, the Waxman-Markey bill included provisions for international finance. Senate legislation does not consider such funding, let alone a cap on greenhouse gas emissions. Indeed, as rolled out yesterday, the bill is simply focused on raising the liability caps on spills for oil companies and encouraging modest energy efficiency improvements.

The Senate's small bill is discouraging for those of us committed to addressing climate change, but we will not give up the fight. I hope that today's hearing will contribute in some small way toward that effort.

Today's hearing was organized by Melanie Mickelson-Graham, a presidential management fellow on rotation to the subcommittee from the Department of Energy. And I just want to note this personally. Melanie is a specialist on energy and climate change in Asia. She has lived and traveled in China and is fluent in Mandarin. She previously worked with the Cohen Group and the U.S. Department of Defense and the U.S. Senate. She graduated with distinction from the Nitze School of Advanced International Studies at Johns Hopkins University and received her bachelor's degree in economics with honors from my alma mater, Brigham Young University. She is also the proud mom of an active 1-year-old boy who is learning Chinese.

We deeply appreciate the work that Melanie has done for the subcommittee and look forward to the testimony from government officials and experts in the fields of climate change and finance who will share their thoughts on the Copenhagen Accord and on meeting its promise to raise and disburse funds for climate finance efficiently, effectively and transparently.

Given that we have eight witnesses testifying before us today, I ask that you limit your testimony to 5 minutes and submit your complete statements which will be made available for the record,

without objection. And I also ask members to limit their opening statements and questions to 5 minutes each.

I now recognize my good friend and ranking member from Illinois for his opening statement.

[The prepared statement of Mr. Faleomavaega follows:]

COMMITTEE ON FOREIGN AFFAIRS
U.S. HOUSE OF REPRESENTATIVES
WASHINGTON, D.C. 20515

STATEMENT OF
THE HONORABLE ENI F.H. FALEOMAVAEGA
CHAIRMAN

before the
SUBCOMMITTEE ON ASIA, THE PACIFIC, AND THE GLOBAL ENVIRONMENT

"Climate Change Finance: Providing Assistance for Vulnerable Countries"

July 27, 2010

Today's hearing on climate change finance is the third in a series focused on the impact of global warming on the most vulnerable nations.

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As the Copenhagen Accord itself states, "Enhanced action and international cooperation on adaptation is urgently required to ensure the implementation of the Convention by enabling and supporting the implementation of adaptation actions aimed at reducing vulnerability and building resilience in developing countries, especially in

those that are particularly vulnerable, especially least developed countries, small island developing States and Africa. We agree that developed countries shall provide adequate, predictable and sustainable financial resources, technology and capacity-building to support the implementation of adaptation action in developing countries."

The Accord was an important step forward in achieving a legally binding global agreement to limit greenhouse gas emissions, a step which is essential for avoiding the worst consequences of climate change. And while the pledges made by developing countries are substantial, they are both necessary and very much in our own interest. Ironically, the poorest countries, those that have contributed the least to global greenhouse gas emissions, will suffer 75 to 80 percent of the cost of climate change-induced damages, according to the World Development Report 2010.

Moreover, as Anthony Zinni, retired Marine Corps General and former Commander of U.S. Central Command, succinctly stated, "We will pay for this one way or another. We will pay to reduce greenhouse gas emissions today, and we'll have to take an economic hit of some kind. Or we will pay the price later in military terms. And that will involve human lives. There will be a human toll."

His views were confirmed by the 2010 Quadrennial Defense Review which states that, "While climate change alone does not cause conflict, it may act as an accelerant of instability or conflict, placing a burden to respond on civilian institutions and militaries around the world… extreme weather events may lead to increased demands for defense support to civil authorities for humanitarian assistance or disaster response both within the United States and overseas."

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These legislative efforts will help us meet the pledges of the Copenhagen Accord, provide essential assistance to the countries most vulnerable to climate change, and help avoid the mass migration, diminished food production, and competition over resources that could lead to conflict and instability requiring costly international response.

Examples of the impact of developed countries' emissions on poorer countries can be found around the world, including the South Pacific, where my own home lies. As Ambassador Marlene Moses of Nauru has said, "The Pacific [Small Island Developing States] bear almost no responsibility for the onset of climate change, yet we are suffering the consequences today. It is undermining our food security, water security, and territorial integrity. Climate change is a man made disaster, and redress for the damage being done to our islands is long overdue."

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Given that we have 8 witnesses testifying before us today, we would ask that you limit your oral testimony to 5 minutes, and submit your complete statements for the record. I will also ask all Members to limit their opening statements and questions to 5 minutes each.

Mr. MANZULLO. Thank you, Mr. Chairman, for calling this hearing on foreign assistance funding for climate change and the U.N. climate change negotiations.

This is an issue that generates a lot of strong feelings on both sides, and I know your keen interest in this matter. I applaud your passion for tackling challenging problems under the subcommittee's jurisdiction, but this topic has a lot of agreements and a lot of disagreements.

The current problem with addressing climate change through a massive cap and trade scheme and related energy tax is that it will do little to prevent the harm that is occurring to people on a daily basis. When the House of Representatives passed cap and trade legislation last year, supporters of that legislation included 1,000 pages of new government spending on programs that fail to stop global pollution.

I have long proposed that the best approach to addressing chemical pollutants is to attack the problem at its source: Work with foreign countries to stop emitting harmful pollutants into the atmosphere, the ground, and our water through practical and technical solutions. Unfortunately, the term "climate change" only encompasses narrowly what happens in the air and not on the ground and in the water. These pollutants do not respect boundaries and have found their way into our food system.

During the 110th Congress, I authored legislation to address this during the debate on the International Climate Reengagement Act in the Foreign Affairs Committee. Given the fragile state of our Nation's economy, particularly the unacceptably high unemployment rate, how can we seriously ask the American taxpayer to dig deeper into their pockets so that yet another government program gets funded? It is hard to tell good, hardworking Americans who have either lost their jobs or are in fear of losing them that borrowing money from China, which is now the world's largest consumer of energy and emitter of greenhouse gases, to provide climate change mitigation assistance to the foreign nations is a good idea.

The U.S. already provides over $23 billion a year on foreign assistance funding. Under the Obama administration, funding for climate assistance rose from $315 million in Fiscal Year 2009 to $1.3 billion in Fiscal Year 2010, and the Fiscal Year 2011 budget request for climate change assistance is over 40 percent above current levels, to $1.9 billion.

The unemployment rate in Rockford, the largest city that I represent, is officially 16.1 percent. Add 7 percent to that, and one out of four people are out of work. I know that cities across America are experiencing the same tragic job losses that my constituents are in Rockford.

Policies such as cap and trade will do nothing other than to push America's already fragile manufacturing sector over the cliff; and it will do nothing to reduce global levels of greenhouse gas emissions, because then other emerging economies would be doing the manufacturing in a less energy efficient manner that used to be done in our country.

Thus, I want the American people to clearly understand that the intention of the administration and the majority party in Congress is to contribute more funding toward the U.N.'s $200 billion green

climate fund. To underscore this point, the World Bank and Dutch Foreign Ministry sponsored a paper by renowned Yale economist Robert Mendelsohn confirming the largest threat to long-term economic growth is excessive near-term mitigation efforts.

The report also notes that the total cost for mitigation could top $2 trillion. That is almost equal to the total amount of foreign assistance funding that the entire developed world spent in 50 years.

In this document, Mendelsohn says grim descriptions of the long-term consequences of climate change have given the impression that the climate impacts from greenhouse gases threaten long-term economic growth. However, the impact of climate change on the global economy is likely to be quite small over the next 50 years. Severe impacts, even by the end of the century, are unlikely. The greatest threat that climate change poses to long-term economic growth is from potentially excessive near-term mitigation efforts.

We are looking at a marathon and not a short sprint. Thus, it is our duty to ensure that we do not waste precious resources. And I respectfully ask that this report be included in the record.

Mr. FALEOMAVAEGA. Without objection, so ordered.

Mr. MANZULLO. Finally, Mr. Chairman, I want to welcome Dr. Redmond Clark to testify before the subcommittee. Dr. Clark is a constituent from northern Illinois. It is an honor to have him here today. He is a business and community leader who has real-world insight on climate change, renewable energy, and global pollution; and he is my constituent.

Thank you for calling the hearing.

Mr. FALEOMAVAEGA. Thank you. I thank the gentleman from Illinois.

I recognize my good friend, the gentleman from California, for his opening statements.

Mr. ROHRABACHER. Thank you very much, Mr. Chairman.

Let us just note it is a bit unnerving that we are here at a time when we have such widespread economic hardship going on in our country and that we are seriously then talking about borrowing even more money from China in order to help other nations that might be affected by so-called man-made global warming.

Mr. Chairman, even if the whole concept of global warming was not fraudulent, we can't carry this burden for the whole world. And I happen to believe, of course, that the premise that we are talking about is wrong. I am a senior member of the Science Committee. I have gone through hearing after hearing on this, and it is evident to me that there are prominent scientists throughout the world who totally disagree with this concept that humankind carbon dioxide emissions are going to make the world warmer and warmer and that it is going to have such a deleterious effect and it is having a deleterious effect on the world.

For the record, I would like to place the names of at least 100 of the 1,000 prominent scientists, by the way, thousands of prominent scientists who put their names to petitions suggesting that the concept of man-made global warming is not correct.

Mr. FALEOMAVAEGA. Without objection.

Mr. ROHRABACHER. Thank you.

I would highlight three of these incredibly respected scientists who have been published in peer-reviewed research that contradicts the orthodoxy of man-made global warming.

By the way, these three scientists were recently included in a blacklist by the National Academy of Science in a last-ditch effort to save some vestige of their own credibility after the revelations that we found recently from purloined e-mails that underscore and tend to prove that there has been fraud involved in this whole effort.

The first one is Freeman Dyson, who is a professor of physics at the Institute for Advanced Study at Princeton and one of the world's most respected physicists. He was put on a blacklist for not going along with the man-made global warming theory.

Frank Tipler, a professor of both mathematics and physics at Tulane University and one of the leading cosmologists in the world.

Roy Spencer, a climatologist and a principal research scientist at the University of Alabama at Huntsville, and through his decades of work at NASA is a leading expert in the use of satellites to measure the temperature of the Earth.

Now as you review the blacklist, it becomes very clear that these are leading experts in every scientific and technological field, and they have been blacklisted because they disagree with the so-called consensus which we hear every time in discussing global warming.

The debate is over. Now how many times have we heard that? Debate over; case closed. For everybody who has heard that expression, which we have heard hundreds of times, it just underscores the fact that we have a con game going on, and people want to shut off debate, and there has not been an honest debate on this issue.

Let us note that the purloined e-mails that were made public about 6 months ago now did demonstrate that those climatologists and researchers who had very generous research grants, both at East Anglica and their communication with researchers here, had conducted themselves in a very unprofessional way. They had talked together about suppressing dissent. They talked about constructing data and building up fraudulent claims against people who disagree with them. They actually used data that was based on idle speculation by graduate students, rather than by research, especially when it came to glaciers retreating and rainforests that are supposedly disappearing. Sometimes, they actually used data and wildly misrepresented it.

And then there are actually e-mails suggesting that they are going to hide and destroy data if asked for it by people who were questioning their results.

This type of arrogance on the part of those engaged in global warming research should be an alarm bell for all of us. We should not be basing our policy on this type of scientist who has benefited from major research grants and would do anything to protect their turf because that is their rice bowl. We should make sure that we have an honest and open look at this issue before we commit billions and billions of dollars that should be going to help our own people in order to give to other countries in order to balance off the effects of something that these scientists believe doesn't really exist, and that is man-made global warming.

I thank you very much for permitting me to at least insert in this part of the debate, when we are talking about these issues, into this discussion. It is important for us to note that this is not a fait accompli and that all people agree that man-made global warming is the threat that justifies some of the actions that are being advocated.

Thank you, Mr. Chairman.

Mr. FALEOMAVAEGA. I thank the gentleman from California.

One thing I will say is that over the years, my good friend, the gentleman from California, and I have had healthy disagreement on certain issues. I think he was very poetic in his previous expression that global warming is global baloney, or something to that effect.

I do respect my good friend's opinion. It is unfortunate to hear that somebody blacklisted a group of scientists who may have differing views on global warming and climate change. The very reason we are having this hearing this afternoon is to have an open debate. I hope the gentleman will stay here so we will have this interesting dialogue with some of our expert witnesses and see how it goes.

We have invited a very distinguished panel of experts, in my humble opinion, in their given fields to be with us this afternoon, and to share with us their expertise and understanding of the issue before us.

With us this afternoon is Dr. Lael Brainard, the Under Secretary for International Affairs at the U.S. Department of Treasury, a position for which she was confirmed in the U.S. Senate. Dr. Brainard advances the administration's agenda of strengthening U.S. leadership in the global economy to foster growth, create economic opportunities for Americans and address transnational economic challenges, including development, climate change, food security and financial inclusion.

Most recently, Dr. Brainard was vice president and founding director of the Global Economy and Development Program at the Brookings Institution, where she held the Bernard L. Schwartz chair in international economics and directed the Brookings Initiative on Competitiveness.

Previously, Dr. Brainard was also an associate professor of applied economics at the Massachusetts Institute of Technology's Sloan School of Management. Dr. Brainard received her master's and doctoral degrees in economics from Harvard University, where she was a National Science Foundation fellow. She graduated with the highest honors from Wesleyan University. She is also the recipient of a White House Fellowship and a Council on Foreign Relations International Affairs Fellowship.

With us also is Dr. Jonathan Pershing, deputy special envoy for climate change at the U.S. Department of State. Dr. Pershing was appointed deputy special envoy for climate change last year. In his capacity he serves as the head of the U.S. delegation to the U.N. climate change negotiations and reports to Special Envoy Todd Stern, responsible for U.S. international climate change policy.

Prior to arriving at the State Department, Dr. Pershing was at the World Resources Institute, a non-profit think tank, where he headed their climate and energy program and undertook research

and policy analysis, and facilitated government, business and NGO climate efforts both domestically and internationally.

Dr. Pershing holds a Ph.D. in geophysics, has worked as an oil geologist, served as a faculty member at American University and the University of Minnesota and is the author of dozens of articles and a number of books on climate change and climate change policy.

There you go, Mr. Rohrabacher. I think we are going to have a very good dialogue this afternoon.

With us also is Rear Admiral David Titley, oceanographer and navigator of the U.S. Navy. A native of New York, Rear Admiral Titley was commissioned through the Naval Reserve Officers Training Commission in 1980. He has served several assignments on several ships.

Admiral Titley has commanded the Fleet Numerical Meteorological and Oceanographic Center in Monterey, California. He was the first commanding officer of the Naval Oceanography Operations Command. He served his initial flag tour as commander at the Naval Meteorology and Oceanography Command.

He has had assignments in Pearl Harbor and Guam—both very interesting. Admiral Titley also served on the U.S. Commission on Ocean Policy, as special assistant to the chairman, James Watkins, for physical oceanography, and as senior military assistant to the director of net assessment in the office of the Secretary of Defense.

Admiral Titley has a bachelor's degree from Penn State University, a master's in meteorology and physical oceanography and a Ph.D. in meteorology, both from the Naval Postgraduate School.

I am very glad to have you, Admiral, this afternoon.

Last but not least is Dr. Maura O'Neill. Dr. O'Neill is the senior counselor to the administrator and chief innovation officer of the U.S. Agency for International Development. In the public, private and academic sectors, Dr. O'Neill has focused on creating entrepreneurial and public policy solutions for some of the toughest problems in the fields of energy, education, infrastructure financing, and business development.

Before coming to USAID, she served as chief of staff and senior advisor for energy and climate at the U.S. Department of Agriculture, and before that as chief of staff for U.S. Senator Maria Cantwell from Washington State. Dr. O'Neill has started four companies in the field of energy, digital education and high technology. She received her MBAs from Columbia University and the University of California at Berkeley and currently serves on the faculty of the Lester Center for Entrepreneurship and Innovation at U.C. Berkeley. She earned her Ph.D. at the University of Washington.

I would like to have Dr. Brainard start us off with her testimony.

STATEMENT OF THE HONORABLE LAEL BRAINARD, UNDER SECRETARY FOR INTERNATIONAL AFFAIRS, U.S. DEPARTMENT OF THE TREASURY

Ms. BRAINARD. Thank you, Chairman Faleomavaega, Ranking Member Manzullo, and Congressman Rohrabacher. I appreciate the opportunity to discuss climate finance for vulnerable countries.

In his national security strategy, President Obama highlighted the national security imperative of global climate change. With en-

vironmental degradation fueling instability and conflict, addressing climate change in developing countries protects our national security no less than it promotes our national interest and values.

The President also noted there is no effective solution to climate change that does not depend upon all nations taking responsibility. Climate change is a global problem requiring a global solution.

Climate and development are increasingly two sides of the same coin. Choices surrounding climate will greatly determine the fate of the poor, just as choices on the path out of poverty will greatly influence the fate of the climate.

Let me make three brief observations about our work on climate and development, focusing on how Treasury directs and leverages multilateral financial tools to tackle these challenges.

First, we believe U.S. investments in the multilateral trust funds are highly efficient, effective, and transparent. The funds are highly leveraged, ensuring a high return for U.S. taxpayer investments. By leveraging other donors, these funds maximize contributions which amount to nearly $5 for every dollar the United States invests.

Moreover, because these investments are centered in the multilateral development banks, we utilize our leadership of those institutions to mainstream climate change considerations into their core lending portfolios in addition to the trust funds, which is a force multiplier. This is most evident in the more than tripling of World Bank core lending for renewable energy and energy efficiency over the last 5 years from $1 billion to nearly $3.5 billion a year. In short, these are wise investments at a time when we are faced with difficult fiscal choices.

The multilateralism of the funds also give the contributions to them additional legitimacy. The cooperative and inclusive nature of those investments where developing countries sit on the governing boards are valued in international negotiations, and we design the funds to be innovative. They include country-owned plans and flexible financing mechanisms that catalyze private-sector investment and civil-society involvement, which means more traction, more scale, and more sustainability for the people they are intended to protect and serve; and they focus tightly on results and impact.

Second, our investments in the multilateral climate trust funds strengthens the resilience of the most vulnerable nations. As this subcommittee recognizes, the countries most vulnerable to the impacts of climate change have the least capacity to respond. Therefore, one of our primary policy goals of our climate financing must be to help these countries climate proof.

The pilot program for climate resilience, for example, works to integrate climate adaptation into core development planning, coastal and water management, food security and production, risk management and early warning systems, and infrastructure adaptation. It does so in a number of the poorest countries and regions, including the South Pacific, Bangladesh, Cambodia, and the Caribbean, helping to restore livelihoods and protect against natural disasters.

Third, our investments in these funds promote low carbon development by protecting forests and promoting clean energy. Since emissions from deforestation constitutes about 17 percent of the

global greenhouse gas emissions, we must successfully protect forests if we are to successfully address climate change. The Forest Investment Program addresses the underlying causes of deforestation in places like Ghana that are especially dependent upon forest resources.

The Tropical Forest Conservation Act forgives official debt owed to the U.S. in return for local in-country conservation activities in places like Indonesia. In the area of clean energy, multilateral climate funds are focusing on spurring the development and deployment of energy efficiency in wind, solar, and geothermal technologies to help curb the growth of greenhouse gas emissions, spur private sector investment, and provide clean energy jobs into the future.

The Clean Technology Fund catalyzes shifts to cleaner energy in emerging economies while the Scaling-Up Renewable Energy Program helps the poorest countries grow on a cleaner path.

These activities supported our efforts to secure the deal in Copenhagen where we had the experience and the credibility to talk about future financing arrangements, providing resources for the most vulnerable nations and creating the Copenhagen Green Climate Fund in exchange for commitments to mitigation and transparency from key emerging countries like China.

So, in sum, congressional support of our efforts is vital to sustaining U.S. engagement leadership in the multilateral climate finance area.

For Fiscal Year 2011, the administration requested $830 million for Treasury programs to strengthen resilience and promote low-carbon development. We welcome congressional support of this request, which will help to galvanize action on adaptation and on mitigation by developing countries and leverage burden sharing contributions from other countries.

Thank you.

[The prepared statement of Ms. Brainard follows:]

Testimony of Lael Brainard
Under Secretary of the Treasury for International Affairs
Before the Subcommittee on Asia, the Pacific and the Global Environment
United States House of Representatives
July 27, 2010

Chairman Faleomavaega, Ranking Member Manzullo, and members of the subcommittee, thank you for the opportunity to discuss climate change finance and how it assists vulnerable countries.

Addressing climate change is one of the most critical policy imperatives of our time. Quantifiable data and qualitative experiences tell us we must act now to address it. In the absence of action to curb emissions, scientists project that global temperatures will rise several more degrees Celsius by the end of the century. And we can already observe today the growing impact of melting glaciers, rising oceans, endangered species, and increased pollution connected to a warming planet.

Each of these climatic and environmental impacts has a corresponding human cost. Water and food shortages can lead to hunger and conflict. Razed forests can threaten fragile and traditional populations. Rising oceans and constrained lands can motivate climate migrants. All of these and more can lead to energy and environmental shocks that exacerbate poverty and stymie health advances.

Increasingly, climate and development are two sides of the same coin. Those seeking a sustainable climate and broadly shared development must work with each other to succeed together—or risk failure apart. For choices surrounding climate will greatly determine the fate of the poor just as choices on the path out of poverty will greatly influence the fate of the climate.

In his National Security Strategy, President Obama highlights the national security imperative of global climate change, and notes that there is no effective solution to climate change that does not depend upon all nations taking responsibility. The Department of Defense also specifically addressed climate change in its 2010 Quadrennial Defense Review, citing it as a potential accelerant of instability or conflict. We must therefore act now and work in partnership to address these challenges. We must invest and engage globally and bilaterally to foster transition to a low-carbon growth trajectory and to support the resilience of the poorest nations to the effects of climate change.

This effort is central to Treasury's mission. We help develop, direct, and leverage the multilateral financial tools and international institutions that tackle these issues. Specifically, we focus on leveraging U.S. investments in partnership with other nations, finding innovative ways to finance actions necessary to help the most vulnerable adapt to climate change's irreversible effects, reduce emissions from deforestation, and use new energy technologies to generate clean economic growth.

Our investments in multilateral tools and institutions, such as the Global Environment Facility (GEF) and the Climate Investment Funds (CIFs), do just that in a way that is highly efficient for U.S. taxpayer dollars. By leveraging our contributions through these facilities, we maximize other donor contributions—nearly $5 for every $1 the U.S. contributes. Additionally, the funds themselves can further leverage other development bank, government, and private sector funds. For example, in the past year, the Clean Technology Fund (CTF), part of the CIFs, approved clean energy investment plans that blended $4.3 billion of CTF money with other financing to mobilize total planned investments of over $40 billion—leveraging nearly $10 from other sources for each CTF dollar spent.

Today, I will focus on three main areas of Treasury's climate finance agenda that tackle the twin challenges of climate change and development: financing climate resilience, promoting low carbon development, and establishing and governing tools for action.

Financing Climate Resilience

Around the globe, the countries most vulnerable to the impacts of climate change are those that contributed least to the problem and have the least capacity to respond. Many lack the financial resources and know-how to strengthen their resilience against the effects of climate change, even as they remain on the front lines of environmental changes. To help these nations prepare and adapt successfully, one of the primary policy priorities of the United States must be to help these countries "climate proof."

Through multilateral climate fund investments, we are addressing these priorities collaboratively and in concrete ways. In Cambodia, where extreme climate events such as floods and droughts are having increasingly adverse impacts and are now recognized as one of the main contributors to poverty, a program is under development to help stabilize and sustain livelihoods. This program will provide more accurate weather forecasting and reliable early warning flood systems, which will be critical to the social and economic development of the people living in the coastal regions as well as the floodplains and communities of the Mekong River Delta.

And in the Pacific Islands, which are considered by many to be a "bellwether" of climate change, nearly $60 million has been mobilized by the CIFs, to help governments integrate climate resilience and risk management into their economic and social policies. Through a focus on coastal and water management, as well as food security and production, the project is helping countries establish the local knowledge and capacity to adapt their infrastructure and prepare their communities.

Through these programs and other multilateral financing efforts, we are intensely working to strengthen resilience by pursuing innovative approaches, such as infrastructure investments to reduce risks from flooding and sea-level rise, and improvements in forest management and land-use planning to reduce carbon emissions and protect biodiversity. The Pilot Program for Climate Resilience (PPCR), within the CIFs, is exploring how we might integrate climate adaptation into core development planning in a number of the poorest countries and regions, including the South Pacific, Bangladesh, Cambodia, and the Caribbean. Lessons from this pilot program can inform the design of scaled-up investments in the future.

Promoting Low-Carbon Development

In addition to strengthening the resilience of the most vulnerable countries, we must also help them satisfy their economic growth needs while reducing the emissions and environmental impacts that have been associated with traditional development paths. Their communities must be able to seek sustainable livelihoods from forests while protecting biodiversity and carbon stocks. And their governments must be able to invest in and promote the clean technologies necessary to power modern economies.

Sustaining Forests and Protecting Biodiversity

Emissions from deforestation constitute about 17 percent of global greenhouse gas emissions and must be addressed if we are to successfully address climate change. Forests also play a vitally important role in the livelihood of people living in and around them in low-income countries. Through our low-carbon development efforts, we must find ways to improve forest management and address the drivers of deforestation while also supporting the economic development of local people.

Rwanda offers a good example of the positive impact of this type of effort. There, the Global Environment Facility's projects focus on protecting the Volcanoes National Park and Nyungwe National Park, both recognized sites of global importance for their biodiversity and forests, and help to build the capacity of local and national government to manage development activities next to these protected sites, while strengthening long-term protection and adaptation for local communities.

Additionally, Treasury helped to create the Forest Investment Program (FIP), also in the CIFs, in order to enhance the mitigation potential of forests in combating climate change. FIP addresses the key underlying causes of deforestation and builds on existing country readiness efforts to achieve net emissions reductions from deforestation. FIP programs focus on forest governance, forest mitigation measures, sustainable management of forests and landscapes, and on reducing deforestation drivers outside the forest sector in countries, such as Ghana, that are highly dependent upon their forest-related natural resources.

The United States also pursues the goal of protecting forests through the Tropical Forest Conservation Act, which allows eligible low- and middle-income developing countries with significant tropical forests to redirect certain official debt owed to the United States towards local, in-country conservation activities. Last year, we concluded an agreement with Indonesia, which will reduce the country's debt payments to the United States by nearly $30 million over eight years. Instead of paying off debt, those resources can be used to provide conservation support to Sumatra; beyond its impact on emissions, this will also help to support the habitat of many rare or endangered mammal, bird and plant species, including the Sumatran tiger, elephant, rhino, and orangutan.

Promoting Clean Energy

In the area of clean energy, multilateral funds are focused on spurring the development and deployment of a variety of technologies—including energy efficiency, wind, solar, and geothermal—that will help to curb the growth of greenhouse gas emissions and provide the clean energy jobs of the future.

The Clean Technology Fund, one of the CIFs, is advancing our low-carbon development agenda by helping to close the price gap between cleaner, transformative technologies and dirtier, conventional alternatives. The program's financing products are used to attract funds from other sources—such as the multilateral development banks, governments, and especially the private sector—in order to spur large-scale investment in clean energy, energy efficiency, and sustainable transport. By mobilizing this additional capital, the fund leverages nearly 10 times the initial investment for projects. Through a blend of targeted interventions, strong country leadership, and multilateral development bank expertise, the CTF is leading the way in the global shift towards clean energy.

The wind farm development ongoing in Mexico's Oaxaca region is one example of the strength of this program. In May 2009, the fund approved a small, but long-term loan for a 67.5 megawatt private-sector wind farm. The loan attracted commercial lenders because it offset the high costs of obtaining long-term financing and mitigated any perceived risks held by commercial lenders. By providing this initial investment, the CTF is helping to catalyze wind energy development in Mexico.

Indonesia's work with the GEF and the CIFs is another testament to the impact of these efforts. For decades, Indonesia held the world's largest potential for geothermal power but it was largely unsuccessful in promoting its development. Through the work of these two programs, one addressing the policy and investment environment, and the other mobilizing financing for large-scale demonstration projects, Indonesia is now on the way to unlocking nearly a gigawatt of this valuable renewable resource in the next few years for use as base load energy.

The Program for Scaling-Up Renewable Energy in Low-Income Countries, another one of the CIFs, began operations in February 2010, focusing on clean energy in the most vulnerable countries. It helps a small number of the poorest countries in their efforts to expand energy access and increase economic growth through the scaled-up deployment of renewable energy solutions. This program will help foster government support and know-how for the creation of markets for renewable energy, development of the right incentives for private-sector investment, and maximization of the productive use of renewable energy in support of broad country development goals.

Building Co-benefits: Resilience and Low-carbon Development

Among the many benefits of strengthening resilience while also promoting low-carbon economies is that economic and social development occur in tandem. Cleaner, more efficient energy infrastructure improves health and agriculture. Improved resilience promotes increased economic investment. And projects that protect forests and other critical environmental areas also help protect communities, and can improve a country's focus on education, gender equality, and capacity building at both national and local levels.

Establishing and Governing Tools for Action

Treasury plays an important role in helping to design, leverage, and govern the multilateral financial tools and institutions that address climate change around the world. Through leadership in the multilateral development banks (MDBs), and by representing the United States in the negotiation and development of new multilateral climate funds, we have pursued innovative agendas with a tight focus on maximizing results for taxpayer dollars and for the most vulnerable nations.

We developed multilateral climate programs that are particularly important to our efforts to help the most vulnerable nations because of their collaborative approach. These MDB climate programs leverage contributions from other donors, make capital investments in infrastructure, provide a range of tailored financial products, engage in long-term policy dialogues with recipient countries, and work across a large number of nations. Multilateral assistance also promotes institutional structures governed jointly by developed and developing countries. These structures are needed to ensure a coordinated global response to climate change, and our participation enhances U.S. credibility with our international partners. In fact, multilateral assistance gives the United States additional legitimacy in international negotiations because of the cooperative and inclusive nature of the investments.

To further the impact of the multilateral climate funds, Treasury actively promotes and pursues reforms and innovations at the funds. For example, Treasury played a critical role in the design and oversight of the two parts of the CIFs: the Clean Technology Fund and the Strategic Climate Fund, both of which seek to drive transformational change in developing countries by channeling scaled-up climate financing through the MDBs.

Through U.S. leadership and engagement, we helped incorporate several groundbreaking characteristics that will make the funds more effective at addressing climate needs than traditional development channels. Specifically, innovations include adopting country-owned plans, instituting flexible financing mechanisms, establishing partnerships with the private sector and civil society organizations, initiating equal representation between contributor and recipient countries, enhancing a strong focus on results and impact evaluations, and developing cross-MDB governance, which creates both cooperation between MDBs and healthy competition.

It is through our active participation in and contribution to these funds that the United States sustains its ability to help the funds innovate and reach more people. That is why our financial commitment to these funds, including the $830 million total requested in the President's FY11 Budget, are critical to our long-term capacity and capability to address climate change in our lifetimes. This Congress has proven to be a key partner in achieving these goals.

In addition, because the MDBs are the largest source of development finance in the world and therefore are centrally positioned to play a critical role in addressing the climate challenge in developing countries. They have fiduciary, procurement, and social and environment safeguard policies that are the best in the world. And their funding models provide significant leverage to U.S. investments as they incorporate existing MDB resources, and transform overall portfolios into cleaner and more sustainable projects.

Through our efforts on their boards, the MDBs are rapidly working to mainstream climate change considerations into their core lending portfolios. This is perhaps most evident in the more than tripling in the World Bank's lending for renewable energy and energy efficiency over the last five years—from $1 billion a year to nearly $3.5 billion a year. Included in this scale-up is an incredible twenty-fold increase in concessional International Development Association (IDA) investments in these sectors in the very poorest, low-income countries. The African Development Bank is moving forward with "climate proofing" of its current portfolio of projects, at an estimated cost of $800 million. We have also worked to encourage clean energy lending by providing guidelines on coal projects and through comments on the World Bank Energy Strategy.

Treasury works hard to ensure these multilateral investments complement U.S. bilateral programs. Together, this coordination and collaboration increase the impact we have from our investments around the world.

And, working collaboratively with our colleagues throughout the Federal Government, we continue to look for innovative ways to generate and deliver additional financing for the most vulnerable nations, as set out in the Copenhagen Accord. This includes advancing our priorities in the UN High Level Advisory Group on Climate Finance and working to design the Copenhagen Green Climate Fund, building on our experience and innovations in the GEF and CIFs.

A Common Agenda

In conclusion, we have a robust agenda ahead as the United States takes concrete action to aid the most vulnerable at the same time as we safeguard our own climate future. The Administration is committed to continuing international leadership on climate finance, as evidenced by President Obama's efforts in negotiating the Copenhagen Accord. From a joint commitment with developed countries to approach $30 billion in fast start funding over three years, to working together to mobilize a goal of $100 billion in public and private funding annually by 2020 in the context of meaningful mitigation actions and transparency on implementation, the United States is partnering with other countries to make a difference.

As we continue to address the climate change challenge, we must grapple with the need to safeguard taxpayer funding, develop stable sources of financing for developing countries, and establish incentives to promote climate resilience and green growth, all while tackling the twin challenges of climate change and development for the poorest.

We look forward to working with this subcommittee to develop additional solutions and leverage resources effectively to meet the climate change imperative.

Thank you.

Mr. FALEOMAVAEGA. Thank you, Dr. Brainard.

Dr. Pershing.

STATEMENT OF JONATHAN PERSHING, PH.D., DEPUTY SPECIAL ENVOY FOR CLIMATE CHANGE, U.S. DEPARTMENT OF STATE

Mr. PERSHING. Thank you very much.

Mr. Chairman, Mr. Manzullo, and Mr. Rohrabacher, thank you very much for taking the time for this hearing and your interest in this particular issue.

The reason for global change in my mind, notwithstanding what Mr. Rohrabacher has suggested, are I think quite clear. In spite of the minority views of a very few skeptics, the global community is in broad agreement that, left unchecked, climate change would lead to very dramatic shifts in the way the world lives. We understand that it will lead to significant population displacements and sea level rise. It will lead to a decline in global food supply. It will lead to massive losses in species biodiversity and to major shortages of water. These are quite fundamental elements of the way the economies of the world work.

And to solve this problem, we have to shift the way the economy works to a low-carbon structure, and we need to move quickly if we want to avoid the kinds of damages that are anticipated. And, unfortunately, we are late in getting going, and so we are going to have to develop strategies to adapt to the change that we already see and the anticipated change that will occur in the future.

While we know what needs to be done, we also know that there are limits to the capacity, particularly in developing countries and specifically among the most vulnerable and the poorest. These countries are going to need assistance to change their development trajectories and to adapt to the unavoidable consequences of climate change.

To this end, of course, all nations need to rapidly and substantially ramp up domestic investment. The wealthier countries are going to have to do some work providing new financing, along with technical and technological assistance to encourage new private investment in a more sustainable future.

It is unsurprising that mitigation and adaptation, as well as financing to help poor countries deal with both, have been the central themes in the Copenhagen Accord; and I note that no deal would have been possible without both elements.

First, on the action side. All majors economies in Copenhagen, both developed and developing, committed to take actions to limit their emissions, to list those actions in appendices to the agreement, and committed to implement those actions in an internationally transparent manner.

To date, 136 countries have associated with the accord; and more than 75, including all of the major economies, have inscribed domestic targets or actions. We in the United States have to do our part.

Second, the agreement included provisions for significant new financial assistance in the context of action by all major economies. And there were three elements in these financing components: First, developed countries committed to provide short-term "fast

start" finance approaching $30 billion over the period 2010 to 2012 to support adaptation and mitigation in developing countries. It is vitally important for our overall climate diplomacy goals and for the credibility of the accord that developed states make a strong contribution to "fast start" finance.

The President's Fiscal Year 2010 budget and the 2011 budget request puts us on track to meet our share, and we thank you here in the House for your support of the past budget and look forward to your support for the 2011 budget.

Second, although the goal of mobilizing long-term public and private finance of $100 billion per year by the year 2020, again in the context of meaningful action on mitigation and transparency implementation, is a package, it is part of a deal, the goal must be seen for what it is, a catalytic effort to help jump-start the world onto a pathway to a cleaner economy. It is a large figure, but a shift to a low-carbon global economy will only result from private investments in clean and sustainable energy and economic growth. This is a catalytic effort.

Third, we have agreed to establish a new Copenhagen green fund. Under Secretary Brainard spoke about it. The U.N. Convention already has one financial operating entity, the Global Environment Facility, to which the U.S. is a donor. And where the GEF might focus more on capacity building, the new fund could concentrate on financing larger-scale mitigation and adaptation investments.

Overall, our finances are divided among multilateral initiatives and institutions as well as bilateral programs and activities. The balance provides us with maximum value. Leveraging contributions in the global community and multiplying our finances, as Secretary Brainard suggested, and on the bilateral side, as Maura O'Neill is likely to speak to, targeting key allies, promoting specific initiatives, generated the most value in the policy arena.

Let me leave you with a couple of points in closing.

In our view, the U.S. and the world must act quickly and aggressively to curb our emissions if we are to avoid the most damaging effect of climate change. A key element will be robust actions here at home. For that, we need a combination of legislation, regulation, American ingenuity, and investments.

At the same time, we must assist the world's poorest and most vulnerable people to adapt to the effect of climate change and help support developing countries in setting low emissions and sustainable development pathways that are resilient to a changing climate.

Finally, I believe that taking domestic and international action are not choices we can politely turn down. Rather, they represent both an opportunity and a responsibility. We look forward very much to working with you here in Congress as we take on this task.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Pershing follows:]

Testimony by U.S. Department of State
Deputy Special Envoy for Climate Change Dr. Jonathan Pershing
U.S. House Committee on Foreign Affairs
Subcommittee on Asia, the Pacific, and the Global Environment
July 27, 2010
Financial Aspects of Global Climate Change

Chairman Faleomavaega, Ranking Member Manzullo, and members of the Subcommittee on Asia, the Pacific and the Global Environment, thank you for the opportunity to testify today. My name is Jonathan Pershing, and I am the Deputy Special Envoy for Climate Change, in which capacity I serve as the head of the U.S. delegation in negotiations at the officials level of the UN Framework Convention on Climate Change. I very much appreciate your holding this hearing, and your interest in this critical matter.

Addressing the climate challenge

Over the course of the past several decades, the world has been increasingly focused on the problem of climate change. While we in the U.S. continue to debate the importance of this issue and what kinds of policy approaches we will take, the rest of the world has decided -- and has consistently ranked it as one of its highest priorities. The rationale is straightforward: the issue is likely to affect how the vast majority of the world lives. There is broad agreement that, left unchecked, climate change will lead to significant population displacement from sea level rise, declines in global food supply (particularly in the most vulnerable countries of Sub-Saharan Africa and Southeast Asia), massive losses in species diversity, and major shortages of water – and this last is not only in the developing world, but very much a problem we will face here in the U.S.

As is frequently noted, the climate change problem is global; it is not one that we or any other single country can solve alone. Even the world's two largest emitters of greenhouse gases – the U.S. and China – combined account for less than half the global total. It is for this reason that the world has turned to the development of international instruments for a solution.

There have been a series of attempts to reach agreements over the past 20 years. Most notably, in 1992, under the auspices of the United Nations, the world adopted the UN Framework Convention on Climate Change, an agreement subsequently ratified by the U.S. with the advice and consent of the Senate. That agreement calls upon all countries to take policies and measures to mitigate and adapt to climate change. It also calls upon wealthier countries to provide assistance to developing nations to help them implement such policies, though it left the specifics of how such assistance would be provided to be agreed at a later date.

In the two decades since we negotiated the Convention, the scope and scale of the climate problem has become increasingly clear. We must shift to low carbon economics -- and we need to get started very quickly if we are to avoid tremendous damages.

While the past decades have given us a clearer understanding of the problem and possible solutions, we have also gained a better appreciation of the needs and capacities of the developing countries, particularly the most vulnerable and poorest nations, to take action. We know that a great many developing countries need assistance to change their development trajectories and to adapt to the unavoidable impacts of climate change.

This leads to the conclusion that the global community will need to rapidly and substantially ramp up financing, technical and technological assistance. Otherwise, the world will not be able to minimize global emissions or adapt to the ever increasing damages associated with climate change.

This is not a task that can be accomplished simply through foreign assistance or even foreign private investment. It will require domestic actions from all nations – a combined effort to change national policies in sectors as diverse as forestry and energy, and manage impacts and consequences as varied as species loss and sea level rise.

The Administration believes that a fundamental aspect of meeting the climate challenge is to scale up assistance for mitigation and adaptation actions in developing countries in the context of transparency and accountability regarding the use of funds.

As we work with developing countries to step up their efforts to adapt and reduce emissions, we hear many argue that tackling climate change will impede countries' capacity to develop and grow. This is a false choice. Development and the environment must go hand in hand and it is clear that a low-carbon future is the only sustainable option. We must manage our policy efforts to choose a sustainable path and provide assistance to the developing nations of the world to allow them their own sustainable trajectory.

Finance in the context of the negotiations and the Accord

Finance has been a pillar of the international negotiations for a post 2012 climate regime because of its inherently important role in addressing the climate challenge – nowhere more so than in Copenhagen at the climate summit last December.

At that session, the international community took a meaningful and unprecedented step forward in our collective effort to fight climate change with the negotiation of the Copenhagen Accord. The Accord embodies key elements that are essential to a long term solution to the climate change challenge.

First, all major economies – developed and developing – committed to take actions to limit their emissions, listed those actions in appendices to the agreement, and committed to implement those actions in an internationally transparent manner. In total, some 136 countries have associated themselves with the Accord, and more than 75 have also inscribed their domestic targets and/or actions.

Second, the agreement included provisions for significant new financial assistance. These far-reaching provisions on funding are required so that developing countries are given the kind of support they need for mitigation and adaptation, including assistance in acquiring and using technology as well as in avoiding deforestation.

Currently, negotiations are under way to move from the very brief language of the Accord (it is a mere 12 paragraphs) to a more operational set of implementing decisions. We hope that the next Conference of the Parties to the UNFCCC in Cancun this December will preserve the basic political agreement from Copenhagen: domestically derived mitigation commitments with robust transparency provisions on the one hand and significant financing commitments on the other.

Finance elements of the Copenhagen Accord

Let me describe the three main finance issues flowing from the Copenhagen Accord and what we are doing to implement them:

- First, the developed countries committed to provide short-term "fast start" finance approaching $30 billion in 2010-12 to support adaptation and mitigation in developing countries;
- Second, we undertook a global goal of mobilizing long-term public and private finance of $100 billion a year by 2020 in the context of meaningful action on mitigation and transparency in implementation; and
- Third, we decided to establish a new Copenhagen Green Climate Fund to channel a portion of this new scaled-up finance.

Fast start finance

Fast start finance represents a significant increase in international climate finance for developing countries, particularly the most vulnerable and least developed. It is important to emphasize that "fast start" is not an institution or a pooled fund, but rather relies on existing programs and institutions, such as the Climate Investment Funds, the Global Environment Facility, and bilateral programs to deliver these funds as quickly as possible.

In the short time since Copenhagen, developed countries have made significant strides in increasing budgetary allocations to climate finance. We are working together to promote the balanced disbursement of these resources to mitigation and adaptation, as the Accord calls for, to ensure support for thematic areas such as Reducing Emissions from Deforestation and Forest Degradation (REDD+), and to prioritize adaptation funding for the most vulnerable developing countries.

In expectation that we would need substantial new resources to get an agreement, the Administration proposed to triple international climate finance from 2009 to 2010. Congress appropriated $1.3 billion for 2010 including both the core climate budget and programs with strong climate co-benefits. The President requested an additional increase, to over $1.9 billion for Fiscal Year (FY) 2011 in further support of our fast start activities. We are now in the midst

of preparing for FY 2012. As part of our overall fast start contribution, the Administration has pledged to provide $1 billion for REDD+.

It is vitally important for our overall climate diplomacy goals – and for the credibility of the Copenhagen Accord – that the U.S. make a strong contribution to fast start finance. The President's FY 2011 request was designed to put us on track to meet our fair share of the fast start commitment, and we strongly urge the members of this subcommittee to support this request in full.

While the scale of our contribution is critical, it is no less important that we use our money to the best effect. To this end, we are targeting our resources to help address the most urgent and immediate needs of the most vulnerable developing countries and to help developing countries lay the groundwork for long-term, low-emission development.

We have divided our contribution among multilateral initiatives and institutions as well as bilateral programs and activities. We think the balance provides us with maximum value. On the multilateral side, we leverage the contributions of the global community to multiply our financing by a factor of ten or more and help shape these international institutional programs. On the bilateral side, we are targeting key allies, promoting specific initiatives that build on lengthy relationships between the U.S. and host countries, and focusing on specific activities that we think will generate the most value in multiple policy arenas, from food and climate, to forests and climate, to security and climate.

In her testimony, Under Secretary Brainard has described U.S. participation in multilateral climate funds. Let me briefly outline some of the activities on the State and USAID side of the account. In 2010, we are delivering $30 million for the Least Developed Countries Fund, $20 million for the Special Climate Change Fund, and $10 million for the Forest Carbon Partnership Facility. Nearly two-thirds of U.S. bilateral adaptation funding in 2010-11 is focused on Small Island Developing States (SIDS), Least Developed Countries, and Africa. For example,

- We are stepping up our assistance to Indonesia and the countries of the Amazon and Congo basins to protect those critical tropical forest systems that act as carbon sinks for the world.
- We will help countries like India, Pakistan, Haiti, the Philippines, and Kenya increase energy production from renewable sources and make more efficient use of existing energy sources.
- We are increasing bilateral adaptation programming for vulnerable SIDS in the South Pacific and the Caribbean.

Long-term finance

Beyond short-term financing, the Copenhagen Accord also contains a long-term objective, in the context of meaningful actions and transparency on implementation, of mobilizing $100 billion a year in public and private resources by 2020 to address the needs of developing countries in the context of meaningful action on mitigation and transparency of implementation.

The international community has already started tackling this issue since Copenhagen. The UN Secretary-General, taking his cue from the Copenhagen Accord, created a High Level Advisory Group on Climate Change Financing. This group assembles senior finance officials and top private sector experts and thinkers to analyze the combination of financial sources that could be drawn upon to meet the $100 billion goal. Larry Summers, director of the National Economic Council, serves as the U.S. representative on this panel, supported by the Treasury Department. The group will present its report at the end of October, in time for the 16th Conference of the Parties (COP-16) of the United Nations Framework Convention on Climate Change (UNFCCC), meeting in Cancun late this year.

I would like to emphasize several points with respect to the longer term goal. First, the sums, while very large, need to be understood in the context of the anticipated global expenditures to move to a clean, climate friendly future. According to a recent analysis by the International Energy Agency, the incremental cost to keep emissions at a level that would prevent global temperatures from rising more than two degrees Celsius is $10 trillion between now and the year 2030. The vast majority of that will need to come from countries' own public and private finances. The commitment to mobilize $100 billion must therefore be seen for what it is – a catalytic effort to help jump-start the world on the pathway to a cleaner economy, but quite small share of the total effort.

The second point is that the finance we are speaking of is to be a combination of public and private financing – and is anticipated to come from all countries around the world. Thus, it will include money not only from appropriated funds for USAID and other countries' development agencies, but also private investment that can be leveraged – profitably – with new policies. But we must begin now to consider how we will meet the need for substantially ramped up global support.

Copenhagen Green Climate Fund

Beyond the question of short-term and long-term resources, the Accord also addresses the question of how new financing will be delivered. As one element of the agreement, leaders decided to establish a new multilateral fund – the Green Climate Fund – as an "operating entity" of the financial mechanism of the UNFCCC. This means the fund would operate with an independent board, but would take political guidance on its program priorities from the Conference of the Parties.

The UNFCCC already has one financial operating entity, the Global Environment Facility (GEF), to which the US is a donor. The idea is not to replace the GEF, but rather to complement it with another funding mechanism that would be designed to address different kinds of funding needs. Whereas the GEF might focus more on capacity-building, the new fund could concentrate on financing large-scale mitigation and adaptation investments.

The new fund could serve as the keystone of the multilateral climate finance architecture. However, it would not be the only way developing countries could access climate finance, given the continuing role of the GEF and other multilateral channels as well as our vital bilateral climate assistance programs.

Conclusion

In closing, let me reiterate a few key points. The U.S. – and the world – must act quickly and aggressively to curb our emissions if we are to avoid the most damaging effects of climate change. A key element of this will be robust action at home. The United States has contributed more emissions to the atmosphere than any other country, and on a per capita basis, we are surpassed by very few others.

The world pays great attention to what we do and needs our leadership to solve this challenge, and our actions will bring enormous opportunities – for jobs, for trade, and for a better environment. We will need a combination of legislation, regulation and American ingenuity and investment – and we need to move quickly. With your support, I am confident we can do so.

We can and should assist the world's poorest and most vulnerable people to adapt to the effects of climate change and help support developing countries in developing low emission and sustainable pathways that are resilient to changing climate.

There will be serious consequences to the U.S. if we do not act. Inaction will affect our ability to achieve our larger diplomatic goals, as countries will point to the U.S. as forestalling progress on a global solution to climate change, and it will have a strong impact in terms of our ability to lead the world in generating green economic growth and technological innovation.

Conversely, if we do act, there are considerable benefits to the U.S. in terms of a more robust, stable and sustainable domestic and international environment and economy.

We do not see this as a choice, but as an opportunity and a responsibility, and we look forward to working with you to accomplish our task.

Thank you, Mr. Chairman. I look forward to answering any questions that you and the members of the committee might have.

Mr. FALEOMAVAEGA. Thank you, Dr. Pershing.

Admiral Titley.

STATEMENT OF REAR ADMIRAL DAVID W. TITLEY, OCEANOGRAPHER AND NAVIGATOR OF THE NAVY, U.S. DEPARTMENT OF THE NAVY

Admiral TITLEY. Mr. Chairman, Congressman Manzullo, Congressman Rohrabacher, I want to thank you for the opportunity to address you today regarding climate change and the military.

I am Rear Admiral Dave Titley, and I am the Oceanographer of the Navy, Director of the Navy's Task Force on Climate Change. The Chief of Naval Operations, Admiral Gary Roughhead, established the Task Force on Climate Change in May 2009 to address implications of climate change for national security and naval operations. Today I am speaking something about the impacts of climate change on the Navy.

Rather than read from my written statement, I would like to provide some introductory remarks on the topics and then invite any questions.

The 2008 National Defense Authorization Act, the 2010 Quadrennial Defense Review, and 2010 National Security Strategy all required the Department of Defense to take action regarding climate change by recognizing the effects climate change may have on the operating environment, roles, missions, facilities, and military capabilities. Taking into account this guidance, the Navy recognizes the need to adapt to climate change and is closely examining the impacts that climate change will have on military missions and infrastructure.

The Navy is watching the changing Arctic environment with particular interest. The changing Arctic has national security implications for the Navy. The Navy's maritime strategy identifies that new shipping routes have the potential to reshape the global transportation system, possibly generating sources of competition for access and natural resources. For example, the Bering Strait has the potential to increase in strategic significance over the next few decades, and China is actively exploring ways to increase its presence in the Arctic.

There are other impacts of climate change on missions that the Navy must consider, including water scarcity and fisheries redistribution that may influence future Navy missions regarding humanitarian assistance and disaster relief.

Conversely, some areas of the world such as Russia may benefit from longer growing seasons and an increase in water availability, providing opportunities for economic growth. Large-scale redistribution of fisheries is a concern in areas of the world that depend heavily upon this industry as a primary food source.

The Navy must understand where, when, and how climate change and its silent cousin, ocean acidification, will affect regions around the world and work to build resilience and partnerships with foreign militaries.

The Navy must also be aware of impacts to military infrastructure, both within and outside the continental United States, due to increased sea level rise and storm surge. The Navy's operational readiness hinges on continued access to land, air, and sea training

and test spaces; and many overseas bases provide strategic advantage to the Navy in terms of location and logistic support.

Any adaptation efforts undertaken are required to be informed by the best possible science and initiated at the right time and cost. The Navy is currently beginning assessments for areas of major potential funding that will inform Navy strategy, policy, and plans to guide future investments. The Department of Defense is already conducting adaptation efforts through a variety of activities, including two road maps on the Arctic and global climate change and the leveraging of cooperative partnerships to ensure best access to science and information.

The Navy understands the challenges and opportunities that climate change presents to its missions and installation. We are beginning to conduct the assessments necessary to inform future investments and are initiating adaptation activities in areas where we have enough certainty with which to proceed.

Thank you, sir. I stand ready to answer any questions the subcommittee may have.

[The prepared statement of Admiral Titley follows:]

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COMMITTEE ON FOREIGN AFFAIRS

STATEMENT OF

REAR ADMIRAL DAVID TITLEY

OCEANOGRAPHER OF THE NAVY

DIRECTOR, TASK FORCE CLIMATE CHANGE

BEFORE THE

HOUSE COMMITTEE ON FOREIGN AFFAIRS

SUBCOMMITTEE ON ASIA, THE PACIFIC, AND THE GLOBAL ENVIRONMENT
ON

CLIMATE CHANGE FINANCE:
PROVIDING ASSISTANCE FOR VULNERABLE COUNTRIES

IMPACT OF CLIMATE CHANGE ON THE MILITARY
AND NEED FOR ADAPTATION FUNDING

JULY 27, 2010

NOT FOR PUBLICATION UNTIL
RELEASED BY THE HOUSE
COMMITTEE ON FOREIGN AFFAIRS

Mr. Chairman, members of the subcommittee and distinguished colleagues, I want to thank you for the opportunity to address you today regarding climate change with regards to the military. My name is Rear Admiral David Titley and I am the Oceanographer of the Navy and the Director of Navy's Task Force Climate Change. The Chief of Naval Operations, Admiral Gary Roughead, established Task Force Climate Change in May of 2009 to address implications of climate change for national security and naval operations. Today I am speaking about the impacts of climate change on the Navy.

The 2010 Quadrennial Defense Review (QDR) identifies climate change as an issue that will play a significant role in shaping the future security environment, and names climate change as one of four specific issues requiring reform. Climate change is also addressed in the 2010 National Security Strategy, which states that the issue is a key challenge requiring broad global cooperation.

The QDR discusses how climate change will affect the Department of Defense (DoD) in two broad ways: first, by shaping the operating environment, roles, and missions that we undertake due to physical changes such as rising temperature and sea level, retreating glaciers, earlier snowmelt, and changing precipitation patterns; and second, the QDR describes the need for DoD to adjust to the impacts of climate change on our facilities and military capabilities by constructing a strategic approach that considers the influence of climate change on shaping operating environment, roles, and missions. In addition to the QDR, the 2008 National Defense

Authorization Act requires the DoD to consider the impact of climate change on its "facilities, capabilities, and missions." Taking into account this guidance, the Navy recognizes the need to adapt to climate change and is closely examining the impacts that climate change will have on military missions and infrastructure.

In terms of climate change impact on missions, the Navy is watching with interest the changing Arctic environment. September 2007 saw a record low in sea ice extent and 2008 and 2009 were the second and third lowest extents, respectively. Observations from the University of Washington's Applied Physics Lab show that September ice volume was the lowest in 2009 at 67 percent below its 1979 maximum. Reduction in ice volume means that thicker, multi-year sea ice is being replaced by first-year ice that is thin and more susceptible to melting or wave and wind influence. Regardless of changes to sea ice, the Arctic will remain ice covered in the winter through this century and remains a very difficult operating environment due to sea ice, freezing temperatures, and extreme weather. The changing Arctic has national security implications for the Navy. The QDR identifies the Arctic as the region where the influence of climate change is most evident in shaping the operating environment and directs DoD to work with the Coast Guard and Department of Homeland Security to address gaps in Arctic communications, domain awareness, search and rescue, and environmental observation and forecasting capabilities. The Navy's Maritime Strategy identifies that new shipping routes have the potential to reshape the global transportation system, generating potential sources of competition for access and natural resources. For example, the Bering Strait has the potential to increase in strategic significance over the next few decades, while China is actively exploring

ways to increase its presence in the Arctic and has applied for observer status to the Arctic Council.

While the Arctic is a bellwether for global climate change, there are other impacts of climate change on missions that the Navy must consider, including water resources, fisheries, and implication for humanitarian assistance and disaster relief. Availability of freshwater will change with the redistribution of precipitation patterns and saltwater intrusion resulting from sea level rise. Furthermore, alterations in freshwater systems will present challenges for flood management, drought preparedness, and water supply. On the other hand, some areas of the world, such as Russia, will likely see longer growing seasons and an increase in water availability, providing opportunities for economic growth. In addition to water supply, large scale redistribution of fisheries catch potential is a concern in areas of the world that depend heavily upon this industry as a primary food source. Leading fishery scientists estimate decreases of up to 40% in overall catch potential for most major fisheries near the tropics over the next four decades due to warming and changes in ocean chemistry, while the Arctic region may see a 30-70% increase in overall catch potential. As countries around the world experience challenges and opportunities related to global climate change, these scenarios have the potential to both accelerate instability, potentially leading to increased demands for Humanitarian Assistance and Disaster Relief (HA/DR), and reinforce the need for global cooperation. The Navy must understand where, when, and how climate change will affect regions around the world and work to build resilience and partnerships with foreign militaries.

In addition to impacts to Navy missions, we must also be aware of impacts to military infrastructure, both within and outside of the Continental United States. The recent National Research Council Report, "Advancing the Science of Climate," notes that many United States military bases are located in areas likely to be affected by sea level rise and tropical storms, and that future military operations may take place in areas subject to drought or extreme high temperatures. The Navy's operational readiness hinges on continued access to land, air, and sea training and test spaces. Coastal infrastructure is particularly vulnerable because it will be affected by changes in global and regional sea level coupled with storm surge and/or severe storm events. Overseas bases may also be impacted by sea level rise, changing storm patterns, and water resource challenges. Bases such as Guam and Diego Garcia provide a strategic advantage to the Navy in terms of location and logistics support.

The potential impacts of climate change on Navy missions and infrastructure require adaptation efforts that are informed by the best possible science, and initiated at the right time and cost. The Navy is currently undertaking assessments for areas of potential major funding. For example, the Strategic Environmental Research and Development Program (the DoD's environmental science and technology program) is leading a QDR-directed, comprehensive assessment of military installations to assess the potential impacts of climate change on DoD's missions. The project will result in impact and vulnerability assessment tools designed for military installations, regionally applicable climate change information, and adaptation strategies appropriate for DoD requirements. The Defense Science Board's Task Force on Trends and Implications of Climate Change for National and International Security is conducting a study on the impacts of climate

change on state stability in Africa, and will make recommendations on the role DoD should take in conjunction with other U.S. government agencies in limiting the adverse consequences of climate change in Africa. Lastly, the Navy has sponsored the National Research Council's Naval Studies Board to study the national security implications of climate change on U.S. Naval forces, and is currently conducting a Capabilities Based Assessment for the Arctic to identify capabilities required for future operations in the region and possible capability gaps, shortfalls, and redundancies. Assessments such as these will inform Navy strategy, policy, and plans to guide future investments.

The Department of Defense is already conducting adaptation efforts through a variety of activities. The Navy is conducting climate change wargames that include climate change impacts on future tactical, operational, and strategic Naval capabilities. Additionally, the Navy has, within the last year, promulgated two roadmaps concentrated on the Arctic and global climate change. The roadmaps guide strategy, future investment, action, and public discussion on the Arctic and global climate change. Also, the U.S. Army Corps of Engineers has official guidance to look at the effects of sea level rise on its installations in the Continental U.S., and is working with foreign countries on water availability and conflict resolution scenarios as well as water resource operations and infrastructure development in arid and semi-arid regions such as Afghanistan. This summer, the Navy will participate in Canada's largest annual Arctic exercise, Operation NANOOK.

Furthermore, the Navy is actively leveraging interagency, international, and academic partnerships to ensure it has access to the best science and information and to avoid duplication of efforts. We are participating in many of the interagency efforts being conducted on climate change, including the Interagency Climate Change Adaptation Task Force, co-chaired by the Council on Environmental Quality, the Office of Science and Technology Policy, and the National Oceanic and Atmospheric Association, and the U.S. Global Change Research Program's National Climate Assessment, which are coordinating agency climate science needs and adaptation efforts across the federal government.

In conclusion, I will borrow a quote from Dr. John Holdren, the President's Science Advisor who says, "We must avoid the unmanageable, and manage the unavoidable." The Navy understands the challenges and opportunities that climate change presents to its missions and installations. We are beginning to conduct the assessments necessary to inform future investments and are initiating adaptation activities in areas where we have enough certainty with which to proceed.

Thank you Mr. Chairman and I look forward to answering any questions the Subcommittee may have.

Mr. FALEOMAVAEGA. Thank you, Admiral.
Dr. O'Neill.

STATEMENT OF MAURA O'NEILL, PH.D., SENIOR COUNSELOR TO THE ADMINISTRATOR AND CHIEF INNOVATION OFFICER, U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Ms. O'NEILL. Thank you, Chairman Faleomavaega, Ranking Member Manzullo, and Congressman Rohrabacher. Thank you for the opportunity to testify today.

I will briefly summarize my written testimony, which I ask to be submitted for the record.

Mr. FALEOMAVAEGA. Without objection, all statements are made part of the record. If you have any additional materials that you want to include to be made part of the record, you are welcome to do so.

Ms. O'NEILL. I am pleased to be here today with my colleagues from State, Navy, and Treasury. Our agencies work closely to ensure a robust response on the part of the U.S. Government to the critical threat of global climate change.

In my role as Senior Counselor to the Administrator and Chief Innovation Officer, I have been working with the agency's significant technical expertise to spearhead our approach to innovative climate financing.

Climate change is one of the century's greatest challenges; and low-carbon, climate-resilient growth must be a priority for our diplomacy and development work for years to come. Climate change is not just an environmental problem but a problem with huge human consequences of hunger, poverty, conflict, water scarcity, infrastructure integrity, sanitation, disease, and survival in the region, as well as U.S. security.

It is imperative to address climate change in Asia and the South Pacific. Over half of Asia's 4 billion people live near the coast, and about 87 percent of the world's small-scale farmers operate in Asia. They are susceptible to sea level rise, stronger cyclones, changes in monsoon patterns, and either too much or too little water.

The small island states of the Pacific are among the world's most vulnerable to climate change. The small size of the islands and the concentration of their economies into a few climate-sensitive activities such as tourism and fishing limit the adaptation options of many of these states. However, by improving the management of the limited fishery and other resources and reducing the stresses within the island's control, the resilience can be greatly improved and with it the lives and livelihoods of the people.

USAID's expertise in agriculture, water, biodiversity, health, and other climate-sensitive sectors provide an opportunity to implement innovative cross-sectorial climate change programs in partnership with these countries.

Together with State and Treasury, USAID's climate programs are budgeted according to three climate change pillars: Adaptation, clean energy, and sustainable landscapes. We received $308 million in Fiscal Year 2010 appropriations and have requested $491 million for these efforts in Fiscal Year 2011 and appreciate your support.

The USAID is especially attuned to the unique threats small island developing states and other coastal areas face. We have developed tools for assessing their vulnerability and adaptation options at the national and local levels. For example, recently, we worked with the Marshall Islands group developing a guidebook for development planners to help them identify areas that are most vulnerable to extreme weather events.

The Asia Pacific region is of particular importance in conversations about climate impacts because of the vast wealth of highly sensitive coral reefs. These are among the most vulnerable ecosystems due to threats from rising surface temperatures and sea levels, increasing frequency of storm surges, and ocean acidification. Healthy and resilient coral reefs are vital to the well-being of many small island states and communities contributing to the food security of over 1 billion people around the world.

As you know, Mr. Chairman, the coral reefs are a critical spawning habitat for tuna and other profitable fisheries in the region. The United States was the first donor to support the Coral Triangle Initiative for Coral Reefs, Food Security, and Climate Change, and provide early and sustained support to this diplomatic and development initiative.

Investment by the private sector in the developing world, including foreign direct investment, plays a dominant role in whether these countries will have the infrastructure and economic basis to prosper or be damaged by climate fluctuations.

USAID seeks innovative approaches to climate change that draw upon scientific research, technologies, and strength in partnerships with the private sector. We have a number of ongoing efforts which I would be happy to elaborate on, either in this hearing or in follow-up.

In Indonesia in particular we are creating an innovative public-private partnership to develop new business opportunities at scale throughout the country and create good business and employment income for local people.

USAID Administrator Shaw, whether it is in his strategic direction on food security or governance and stability work or economic development assistance, has conveyed the importance to all of us of reducing emissions and increasing the climate resilience of all partner countries. He knows that the countries in which we work and the people who live there are the most vulnerable in the world to adverse effects.

In closing, I would like to emphasize the seriousness with which we view this threat both to U.S. national interests and to the prosperity of our future country partners around the world and the commitment we bring to the efforts to mitigate the worst impacts and improve resiliency of the most vulnerable.

Thank you. I am happy to take any questions.

[The prepared statement of Ms. O'Neill follows:]

Testimony by USAID Counselor for Innovation
Dr. Maura O'Neill
before the
U.S. House Committee on Foreign Affairs
Subcommittee on Asia, the Pacific, and the Global Environment
July 27, 2010
"Climate Change Finance: Providing Assistance for Vulnerable Countries"

Chairman Falcomavaega, Ranking Member Manzullo, and members of the Subcommittee on Asia, the Pacific and the Global Environment, on behalf of Administrator Shah and the U.S. Agency for International Development (USAID), thank you for the opportunity to testify on this important and timely topic. I appreciate the leadership on this issue demonstrated by Under Secretary Brainard of the Department of Treasury and Deputy Special Envoy Pershing of the Department of State. Our three agencies work closely to ensure a robust response on the part of the U.S. Government to the critical threat of global climate change. In addition, the U.S. military has historically been at the forefront of technological innovation, and I believe we should look for opportunities to collaborate even more closely on climate solutions in the developing world. In my role as Senior Counselor to the Administrator and Chief Innovation Officer at USAID, I have been working with the Agency's significant technical expertise to spearhead our approach toward innovative climate financing. I appreciate the opportunity to discuss key aspects of USAID's role and our response to climate change at this hearing.

The Climate Change Challenge

Climate change is one of the century's greatest challenges, and low-carbon, climate-resilient growth must be a priority of our diplomacy and development work for years to come. Climate change is not just an environmental problem, but a human problem with

direct implications for hunger, poverty, conflict, water scarcity, infrastructure integrity, sanitation, disease, and survival.

It is imperative to address climate change in Asia and the South Pacific because the region contains three of the world's largest emitters and approximately 60 percent of the world's population. By 2030, it is estimated that half of the world's carbon dioxide emissions will be generated in Asia, primarily as a result of surging coal and petroleum use for electricity generation, industry, and transport. Deforestation and land-use change are also significant contributors to greenhouse gas emissions in parts of the region. Over half of Asia's four billion people live near coasts and about 87 percent of the world's small-scale farmers live in Asia. They will all be affected by sea level rise, potentially stronger cyclones, changes in monsoon patterns and either too much or too little water.

Adaptation in Vulnerable Countries

The Small Island States of the Pacific are among the world's most vulnerable to climate change. The economies and livelihood activities of many people are dependent on natural resources, most of which are highly sensitive to the impacts of climate change.

Most of the islands are less than three meters in elevation and very small in area, making them highly vulnerable to sea level rise and storm surge. The majority of the population and infrastructure are on the coast. Currently, waves and storm surge damage infrastructure and sea level rise is expected to exacerbate storm surge and, over time, permanently flood parts of some islands. Higher seas will also affect freshwater supplies over time, as aquifers become infiltrated by seawater. This may affect the livability of islands. If islands and atolls are depopulated, there also will be implications for national boundaries and economic exclusion zones.

Most small islands have a limited water supply, and their water resources are especially vulnerable to future changes in the timing and amount of rainfall. In the Pacific, a ten percent reduction in average rainfall (by 2050) would lead to a 20 percent reduction in the size of the freshwater lens on Tarawa Atoll, Kiribati, for example. Many small

islands have begun to invest in the implementation of adaptation strategies, including desalination, to offset current and projected water shortages.

The small size of the islands and the concentration of their economies into a few climate-sensitive activities such as tourism and fishing limit the adaptation options of these states. However, by improving the management of their limited resources and reducing the stresses within the islands' control, their resilience can be improved greatly and with it, the lives and livelihoods of the people.

The next few years form a critical window for not only following through on the Copenhagen commitments, but also laying the groundwork for decades of climate-resilient and low-emission growth. Implemented effectively, these efforts will significantly increase our collective ability to adapt to climate change and prevent the worst of its impacts. As part of the foundational work particular to Small Island Developing States, USAID may begin adaptation programs for the South Pacific and will work on adaptation programs in the Maldives.

The importance of adaptation efforts

Our efforts support the development and implementation of adaptation strategies in countries critically affected by climate change. We are working with interagency colleagues to develop strategic approaches, decision-making tools, methodologies and institutional support for increasing the resilience of people and communities to anticipated climate change impacts on the highest priority sectors in the most vulnerable countries. Earth observations and information and communication technologies offer opportunities to leap-frog existing barriers and gaps to facilitate more resilient approaches to development.

USAID utilizes its experience in all of the climate-sensitive sectors, including agriculture, fisheries, conflict mitigation, water, health, and disaster risk reduction. Innovation, science and technology can be "game-changers" in areas such developing heat and drought tolerant crops, early warning systems and forecasting capabilities, and new

approaches to conservation. These and other innovations will enable better decision making in partner countries and also help the United States visualize climate impacts, utilize modeling for forecasting future scenarios, and integrate that knowledge into planning.

We are supporting the establishment Climate Change Centers of Excellence in Asia and have already conducted extensive consultations to determine the investments with the greatest impact across the Asia and Pacific region. On June 27, President Obama and President Yudhoyono of Indonesia jointly announced the establishment of a Center that will work closely with national, regional and local stakeholders in and out of government linking science to policy on strategic priorities and partnerships, including public-private partnerships in climate change. The larger SOLUSI partnership – which means "solution" in Indonesian, will represent an opportunity for increased bilateral and multilateral cooperation in the region.

USAID is ramping up a number of activities to improve information and strategies for the particular adaptation challenges of small island states. USAID and partners have developed tools for assessing vulnerability to climate change and climate variability. These tools are essential for developing and implementing adaptation options, and integrating options into programs, development plans, and projects at the national and local levels. They were piloted through technical assistance and training to people and institutions of the Marshall Islands and Micronesia this past year. Stakeholders worked with USAID's coastal experts to integrate climate change considerations into the Marshall Islands' resource management process, known as Reimaanlok. This process now is being rolled out across the Marshall Islands and has led to a call for a national freshwater strategy.

Coral Reefs

Coral reefs are one of the most threatened ecosystems by climate change impacts, from rising sea surfaces temperatures and sea levels, to increasing storm surges and ocean acidification. Healthy and resilient coral reefs are vital to the well-being of many small

island states and communities, often forming the island foundation and contributing to the food security of one billion people around the world.

The Coral Triangle – including the Solomon Islands, Papua New Guinea, Timor Leste, Malaysia, the Philippines and Indonesia - is the global center of marine and coral reef biodiversity. The Coral Triangle Initiative for Coral Reefs, Food Security and Climate Change - established in May of 2009 by the leaders of these six countries - is a country-led partnership to safeguard vital coastal resources for present and future generations.

USAID was the first donor to support this initiative starting in fiscal year 2007, and along with the Department of State, provided early and sustained support to enable this diplomatic and development initiative to unfold and gain momentum. To date, USAID has committed $42 million in support over five years to the regional initiative, which will be leveraged by over $350 million from other donors.

USAID has been an early supporter of innovative research, management and financing for climate change. Innovative activities under the USAID-supported Coral Triangle Support Program include a regional Business Roundtable that is catalyzing public-private partnerships around sustainable fisheries and tourism, and building corporate social responsibility in the region. Support to The Nature Conservancy and local partners in Papua New Guinea led to the first scientifically-designed, resilient network of marine protected areas. USAID is also supporting learning and capacity building for innovative financing mechanisms in carbon markets and payments for ecosystem services.

Financing through Reduced Emissions from Deforestation and Degradation

To help countries that put forward "ambitious REDD+[1] plans," the United States announced it would dedicate $1 billion[2] over the 2010-2012 timeframe as part of the U.S. contribution towards the "fast start financing" reflected in the Copenhagen Accord[3].

[1] Reducing emissions from deforestation and forest degradation, and the role of conservation, sustainable management of forests, and enhancement of forest carbon stocks in developing countries.
[2] Funding subject to appropriation by Congress
[3] Negotiated at the UN Framework Convention on Climate Change conference in December 2009.

The United States supports REDD+ activities because they offer cost-effective opportunities to reduce global greenhouse gas emissions while providing other sustainable development benefits. REDD+ aims to reduce the long-term global trajectory of forest-related emissions through a complementary set of REDD+ country commitments and external financing for emissions reductions. In addition, given the scale of the challenges, the United States seeks to support country capacity to mobilize financing from all sources, including private sector investment, and international carbon market engagement.

Climate Innovations

USAID is seeking innovative approaches to climate change that leverage scientific research and technologies and strengthen partnerships with the private sector. We must focus on creation of climate-friendly business models that create prosperous economic futures and good jobs for local and indigenous peoples. Often, private direct investment dwarfs public sector contribution to economic growth in developing countries, so our investments must serve a catalytic role through innovations that stimulate growth and development while also being protective of the climate. We seek partnerships that tap into the creativity, as well as human and financial resources of the private sector, in order to stimulate the identification and development of market-based, long-term solutions to climate change. Thank you.

Mr. FALEOMAVAEGA. I thank the members of the panel for their most eloquent statements.

Before I turn the time over to my colleagues for their questions, I just want to get a sense of your views. Do I get a strong feeling that all of you are very much in support of the climate change crisis that we are faced with?

Mr. MANZULLO. In support of the climate crisis?

Mr. FALEOMAVAEGA. Recognizing that there is such a thing as climate change—is that a better phrase?

Admiral TITLEY. I am not sure I would call it a crisis. It is a strategic challenge. It is a challenge that we have to understand better. It is always easy when looking back to say whether something was or was not.

Mr. FALEOMAVAEGA. So you are saying it with qualification.

I am going to let my colleagues ask the direct questions.

The gentleman from Illinois for his questions.

We will switch a little bit and start with the gentleman from California.

Mr. ROHRABACHER. Admiral, you mentioned the change that is taking place in the Arctic and the waters there are now navigable. Has that ever happened before in history?

Admiral TITLEY. It has not happened in the recorded history. If you talk to the tribal elders who were up there—I had the opportunity to ride the U.S. Coast Guard cutter Healy last year, and they had some of the tribal elders on board. They said in their oral history—the Native tribes——

Mr. FALEOMAVAEGA. Inuits or Eskimo?

Admiral TITLEY. Yes, from the Barrow area of Alaska. They in their time did not know of a time when the Arctic was navigable. So that goes back about 10,000 years.

Mr. ROHRABACHER. And 10,000 years is relatively short in the history of the world, of course.

At times, I know in the case of Greenland and Iceland, where there were dramatic changes—for example, when you talk about adaptation of different peoples, there were large populations in Greenland and Iceland, and they were farmers at one point, and that changed, did it not? At some point, it became not navigable anymore for people to live in Iceland; isn't that correct?

Admiral TITLEY. There were certainly times when people have lived in Iceland and Greenland. They continue to live there to this day.

Also, I believe what you are referring to, perhaps, is the medieval warming period, sir?

Mr. ROHRABACHER. Actually, I am referring to the period of cooling that happened after the medieval warming period. I am glad that you recognize that there was a medieval warming period. Because, as we know, one of the fraudulent attempts by the head researchers of this global warming effort was trying to erase that from the charts, that there had actually been a warming period and how high and what level of temperature that raised to. Because if indeed there was a warming back in medieval times, it would be hard to suggest that it was modern technology or carbon-related energy that was creating the change in the weather.

Dr. Pershing, do you discount or discard Richard Lindzen, who is one of the most distinguished scientists at the Massachusetts Institute of Technology, and these other thousands of scientists? Are they just a few skeptics, I think is what you called them? You don't pay attention to their arguments at all? You just sort of brush them aside?

Mr. PERSHING. No. I think you know I don't brush them aside. I have done a fair amount of work with Dr. Lindzen. I have had a number of opportunities to interact with him. My sense about it is that there are elements of his analysis that are certainly worth considering. He has done some of the best cloud seeding theory that is out there. Collectively, it is one of the unknown issues about the details.

But on the basic issue, I think he is wrong. My own sense about it is the skeptical scientists who you have been citing represent a very small minority.

I know that you commented in your opening remarks about the e-mails coming out of East Anglia. There have been a series of analyses done by the research community, both at the university and by others, and they have concluded resoundingly that there was no malfeasance. There was perhaps some inappropriate or inadequate release of data, and on that context we should be very careful, and we should hold the scientific community accountable to be transparent. But there is a different model here about the adequacy and results.

Mr. ROHRABACHER. Mr. Chairman, I would like to place in the record a column that was written for the Wall Street Journal about the point just made by our witness about the supposed investigation into East Anglia where it points out that this so-called investigation into the charges was done by people who they themselves had benefited from many of the research grants that they themselves were investigating and also that they neglected to call anyone as a witness who was a critic of those people who were being charged with wrongdoing. I submit this for the record at this point.

Let me just note that what we have heard time and again, even today, as we talk about climate change—and, first of all, we all remember for a decade it was global warming and now it is climate change. But even that isn't adequate to really lay the foundation. What we are really talking about is man-made climate change. Because there has been climate change throughout the history of the word. I mean, I was trying to review that with the admiral.

Clearly, we have cycles of warming and cooling, and the only question is whether or not, as is being proposed to us by this very what I consider to be fanatic clique of scientists who have big research grants, is that it is mankind's production of carbon dioxide which is causing this particular change in the climate. And up until 9 years ago the word was always global warming, but then it started getting cooler for a number of years, so they had to change it to climate change.

Mr. Chairman, people have always had to adapt to changes in climate; and that is why when we hear the testimony from some of our witnesses, all I am doing is calling into question basically the premise that humankind is causing this. We are going through a period of change in our climate, just as we have in the past. It

does not then justify the dramatic controls and taxation that are being proposed by this administration, but it does suggest that we should be working with peoples, vulnerable peoples, to help them adapt as the climate changes. Not that we can change. The climate will continue to change throughout our history.

But as we go through the hearing today, I would be in agreement with those who are saying how do we adapt, not how do we confront a change in the climate of the earth and how is mankind going to change the weather patterns. That is ridiculous.

But there is very substantial—when the Admiral talks about the changes in the Arctic and, as you are fully aware, the changes in what is going on among island life and the Pacific and various peoples who live along the oceans, I would suggest the best way is to focus on adaptation rather than trying to think that we are going to halt the climate evolutionary processes that have been going on for millions of years.

Thank you very much, Mr. Chairman.

Mr. FALEOMAVAEGA. I thank the gentleman from California.

The gentleman from Illinois.

Mr. MANZULLO. I thought we would get that out of the way at the beginning.

Thank you, Mr. Chairman.

Dr. O'Neill, let me ask you a question. Let's say that you were ambivalent on the question of whether or not the earth is warming. In other words, you didn't have an opinion one way or the other on it. I looked at your suggestions in your testimony. Am I incorrect in assuming that, even if you had that view, you would still promote many of the programs and adaptations that you state in your testimony?

Ms. O'NEILL. Thank you, Congressman.

There is clearly extreme weather conditions; and, as you say, one could debate exactly the causes, et cetera. But Asia and the island nations in particular are extremely vulnerable. So, yes, we would support the adaptation work and the planning work that goes on to assess that, to plan and to put these nations in the best position to be climate resilient or, as Under Secretary Brainard said, climate-proof their economies.

Mr. MANZULLO. I am looking at page three of your testimony, and you talk about—let me see—new approaches to conservation, including using genetically modified organisms (GMOs) on crops. Am I reading that correctly? Genetically modifying crops to withstand heat and insects and things of that nature?

Ms. O'NEILL. We do believe that new variates of drought-resistance agriculture is one of the key adaptation efforts available to, not only the U.S., but the rest of the world that can be quite effective.

Mr. MANZULLO. So the answer would be yes?

Ms. O'NEILL. Yes.

Mr. MANZULLO. Okay. I find that encouraging.

I guess what I am trying to—in the midst of this debate that is going on, and with all deference to my colleague, I don't think a person has to arrive at a decision as to whether or not global warming is, in fact, occurring to come to the conclusion that we

have to do everything possible to stop global pollution, regardless of the impact that one may see from it.

Would you agree with that statement?

Ms. O'NEILL. I would agree.

Mr. MANZULLO. And as I shared before we started, my brother is deeply involved in anti-litter, organized an entire county, of cleaning that up and that doesn't go into the waters, et cetera. I was just in Jordan last year, where they are having a lot of problems with the plastic grocery bag that they now call the "Jordanian state flower."

I am not trying to insult my friends in the plastic industries, but I am trying to find a way here where the emphasis can be upon remediation or attacking global pollution on a nonpartisan, nontheoretical level, to simply recognize that all the stuff we put in the air and bury and put into the waters somewhere along the line is going to have a significant impact.

Ms. O'NEILL. Could I add something?

Mr. MANZULLO. Sure.

Ms. O'NEILL. So, yes, I think you are absolutely right. And I also believe that in addition to GMOs or technology, we also have the opportunity to identify existing native plants or existing hybrids that actually perform much better under a range of climate conditions. So I think that both, in terms of new discoveries but also existing discoveries, are out there for us to help with this challenge.

Mr. MANZULLO. Admiral Titley, would you like to comment on that?

Admiral TITLEY. What the Navy is working on on their Task Force Climate Change—and I should mention that when I say the Navy is working on this, we are working with over 125 other Federal agencies, international partners, academic partners, NGOs—is primarily adaptation. It is kind of what you said, sir, in that, whether or not you believe or don't believe climate change is occurring, what we do see, the data tells us, not the models, not theory, but the observations are telling us that there are some very, very significant changes going on in the Earth's ocean atmosphere system. And it would, frankly, be negligent for the Navy not to plan for future contingencies or future states of the world if we just assume that, all of a sudden, the changes are just going to stop in 2010 or 2011.

So we are taking a look at these multiple types of adaptation. Where can we work with partners? The Quadrennial Defense Review states that, in many countries, the militaries, foreign militaries, are perhaps the one component of a country that really has the capacity and capability to adapt. So just right now, I mean, the United States Navy is working with Cambodia, with Vietnam, Indonesia, Thailand, we have done visits in Palau, Papua New Guinea, all at building partnerships. And those partnerships can, when and if required, lead to mutual cooperation on adaptation for climate change.

Mr. MANZULLO. Dr. Pershing, do you want to tackle that question?

Mr. PERSHING. Yes, thank you very much. I think there are two items that I would just like briefly to speak to.

The first one is that I certainly agree with the admiral and with Dr. O'Neill that there is a component that has a value both for climate and for local changes. And we can speak to both of them on the adaptation side. So I think there is not really a question about that.

But I want to come back a bit to the diplomatic side. Because, clearly, we are also immersed in a diplomatic conversation with countries around the world in the context of the international negotiations. And on that side, climate change is actually the basis for our effort. And if we are not acting on that basis as well as on other bases, we will be accused of gross negligence, of inadequate performance, and there are consequences to that.

So there has to be, I think, some balance——

Mr. MANZULLO. Well, I—let me—I mean, the issue is pollution. I mean, pollution is what causes this, correct?

Mr. PERSHING. I think the issue is more complicated than we think of, in terms of criteria pollutants like sulfur and——

Mr. MANZULLO. Well, I mean, it is something that is going into the air, the ground, or the waters that may or may not be causing the change in the climate. Is that correct, in your opinion?

Mr. PERSHING. That is correct.

Mr. MANZULLO. So my question is, I mean, it is the politics of polarization I think is very—it is very hurtful here.

Mr. PERSHING. I agree with that.

Mr. MANZULLO. And I am not being critical of you. I am just trying to find—not a middle ground, but there are a lot of us that are very concerned about global pollution. I mean, at one time, ships used to dump their waste and—I mean, you know the stories. And now they have equipment on the ships that discharge clean water, et cetera.

But I interrupted you, and I wanted to let Under Secretary Brainard also have a stab at that question.

Mr. PERSHING. No, I was going to say, I think that is completely correct, sir. And my sense is that, in the larger context of what we do, I think that we need to be bold and look at the opportunities for coexisting benefits, on climate, on security, on food and climate, on pollution and climate. They are a set of these pieces. But I am not clear that if we only do those pieces we would do enough on the climate side, and I think that is what we have to consider more extensively.

Mr. MANZULLO. Under Secretary Brainard, do you want to tackle that?

Ms. BRAINARD. I appreciate very much that I am hearing from all of the distinguished members here that there is a common concern, how do we frame it, about helping the poorest countries become more resilient to pollution of our climate. I mean, that is a common ground.

I think the question that we are all very seized with, is how best to work with other donors, to work with nations that are vulnerable to the effects of pollution of the climate, of climate change, to steer of course into the future that makes them more resilient, that allows them to adapt their food production systems, to engage in much more effective disaster preparedness, to grapple with a whole

host of existential threats that they are likely to confront into the future.

I also think it is very important for us to work to move our economy and the major economies of the world onto greener development paths. And so the tools that you are focusing on here in this hearing today I think are the right focus. How most effectively do we leverage very scarce resources to get the international commitment to action on the part of some of the largest emerging economies, which my colleague from the State Department is very focused on; how best to leverage assistance to help developing countries steer a path into the future that is less prone to conflict and more promising, both for their people but also for our national interests here.

Mr. MANZULLO. Thank you.

Mr. Chairman?

Mr. FALEOMAVAEGA. I thank my colleagues for their questions. I have a couple of questions myself that I would like to ask of the members of the panel.

Obviously, in our own country, we face some very tough economic times. How do I explain to my constituents that we should be adding to the U.S. Federal deficit by sending money abroad to our industrial competitors? How do we justify increasing the deficit and giving more money to help our competitors if we are to seriously address the question of climate change?

Dr. Brainard?

Ms. BRAINARD. For the most part, the clean energy programs that we are investing in through the Clean Technology Fund, through the multilateral development banks more generally, are really designed to address the needs of developing countries as they move onto cleaner energy paths. They are really not providing financing to industrial competitors in any direct way.

What we are doing is building legitimacy in the international community by helping those nations that need the most help, charting a more climate-resilient and a greener path into the future, and building agreement among those fastest-growing emerging markets that they, too, as they did in the Copenhagen Accord, for the first time need to take on commitments to reduce their carbon emissions, commitments that are verifiable by the international community.

So what we are trying to do is invest in climate resilience on the part of the poorest countries, invest in mitigation on the part of a set of developing countries who are moving onto cleaner energy paths, but build international legitimacy to get other of the fastest-growing emerging markets to take meaningful actions, which, of course, we will be taking here, as well.

Mr. FALEOMAVAEGA. Dr. Pershing?

Mr. PERSHING. Yes, thank you very much.

I think that is the question that I have also heard when I have been around the country and having conversations with people. I think there are two answers that are also compelling in addition to the ones that Dr. Brainard suggested.

The first is that there is a cost to inaction. And the cost comes in the context of climate change and its consequences. When we look at the world, we say, well, "if I don't pay anything now, what

is the alternative going to look like?" If nothing were to change, then my cost is a sunk cost with no value. But if I can prevent a damage—and that is a great deal of what I think we try do in the government collectively, is to manage damages and manage risks—then I have a clear value. So that is the very first point.

And the second one has to do with what kind of investments are we making, and where do they go, and can they redound to our benefit and our credit. And this is very much what I think Mr. Manzullo had suggested earlier in his question. Are there aspects of things that we are doing that we will start with that are good for our economy, that create jobs for us at home, that create political and diplomatic initiatives and tie-ins that we seek. I think the answer is yes.

If we can reduce the cost of energy around the world by lowering the price of solar, that is good for us as well as the world. If we can change the dynamics and the food issues that Dr. O'Neill was speaking to, that is good for the world by reducing security risks where there are tensions over food quality. The same for water, the same for disease. There is a set of those things that I think are part of the puzzle, as well, that we can address.

Mr. FALEOMAVAEGA. Transparency is always a beautiful word when we talk about the ability of governments to function. There was a recent report that our Government had spent about $100 billion that it cannot account for. This is our own Government. This is not a case of us telling other countries how terrible they have been operating their systems of government. It is within our own Government, $100 billion of waste. That is not pennies.

And I was wondering—I am sorry, I didn't mean to—I want to go to Admiral Titley and Dr. O'Neill for their response to the question that I raised.

Admiral TITLEY. Just very, very briefly, sir, I would absolutely concur with Dr. Pershing's response there. Whenever our country spends money, we need to understand what its return on that investment is, be it for security, be it for social means, be it for whatever.

The maritime strategy, our Navy's maritime strategy states that preventing wars is as important as winning them. Make no mistake, our Navy will prevail in any kind of conflict, but it is very, very important that we prevent wars. As the Quadrennial Defense Review states that climate change can be an accelerant to instability, it is therefore just logical that we would want to take a look at how can we minimize or lessen that potential or decrease that accelerant, if you will, minimize the destabilizing impacts of climate change.

Nobody wants additional conflicts, least of all anybody inside the Department of Defense. So it just makes sense that we would look at all options—all options—to minimize the chance of conflict over something whose cause could be climate change.

Mr. FALEOMAVAEGA. Dr. O'Neill, I know you are our expert this afternoon on our foreign assistance programs. We love to give money away to foreign countries, sometimes even to those countries that spit at us. I wonder if, in terms of your understanding, this proposed funding for addressing of the issue of climate change is fully justifiable.

Ms. O'NEILL. Thank you, Mr. Chairman.

I would say that I would second most, if not all, of what my distinguished panelists have said. So rather than repeat it, I would just add one note that hasn't been discussed yet, and that is that developing countries represent one of the most important emerging markets for U.S. goods and services.

And so, to the extent that these countries are functioning, that people are being fed, that economies are working——

Mr. FALEOMAVAEGA. I don't mean to interrupt you, but of the some 192 countries that make up the United Nations, how many are least-developed countries? What is the number? With a total number of countries before the U.N. at about 195 or 198, how many are LDCs? Anybody have that?

Ms. O'NEILL. We operate in 80 countries around the world and have non-presence relationships with about 20 others.

Mr. FALEOMAVAEGA. Dr. Pershing?

Mr. PERSHING. Yes, I think it is about 50 countries technically in the U.N. system are titled least-developed countries.

Mr. FALEOMAVAEGA. Okay. Would I be correct to say the least-developed countries are also identified as developing countries?

Mr. PERSHING. Oh, yes. The least developed tend to be about $1 a day of income.

Mr. FALEOMAVAEGA. Is one of the biggest problems that we have in providing funding the transparency of these least-developed countries? Some of these countries spend more money on their military budgets than they do in actually giving help to their citizens. How do we justify giving them money if the leaders turn around and spend it for programs that don't provide for the needs of the people?

Dr. Brainard and then Dr. Pershing.

Ms. BRAINARD. Yeah, just for most of these countries, when we are providing them climate financing, we also normally have multilateral programs with them through the multilateral development banks, through the World Bank, through the regional development banks, and also often with the IMF.

As a result of that, there are a lot of safeguards that are put around that financing. They are generally placed in the context of overall governmental budgets. And there is auditing and transparency requirements, procurement requirements. There are a whole host of safeguards that we built up through the multilateral institutions over the years that gives us a high degree of assurance, not a complete degree of assurance but a very high degree of assurance, that we can see that these funds do go to the adaptation programs that they are intended to fund and that they are additional to other efforts and that, more broadly, these are programs that the governments themselves and the people themselves are committed to and the priority of those governments.

So we have a broader architecture of assistance and engagement, diplomatic engagement, engagement through USAID as well as through the multilateral development institutions, so that these funds go into environments where we are broadly engaged with the governments on increasing transparency and effectiveness of our development funds.

Mr. FALEOMAVAEGA. Dr. Pershing?

Mr. PERSHING. No, that was excellent. I wouldn't add anything to that.

Mr. FALEOMAVAEGA. Are we realistic enough to suggest that by the year 2020 we could come up with $100 billion in funding for this climate change program, given the deficit problems we are having right now in our country? I am not an economist, so you are going to have to help me on this.

Ms. BRAINARD. So I think as Dr. Pershing was saying earlier, the size of the likely investments to transition to a greener economy worldwide is a large multiple of that number. And the $100 billion number itself, I think it is very important to recognize that that is a combination of public sources but also, importantly, we think the majority will be coming from private investment.

And that is why it is so critically important for us to be able to enable those market mechanisms to send the right price signal, to ensure that investments, private investments, are going to be the primary mechanism for moving us all onto greener development paths. Public financing will be very important, particular in the area of adaptation, but will not, we don't foresee, be the majority.

The other thing I think is very important is to remember that the point of working with other countries in the multilateral context, in the context of the Copenhagen Accord, is the burden-sharing. So this is not a burden that we plan to shoulder alone. We plan to shoulder it with other countries who have capacities and only in return for verifiable actions on the part of some of the largest developing emitters.

Mr. ROHRABACHER. Mr. Chairman, I am going to have to leave. We a vote on.

Mr. FALEOMAVAEGA. That is all right.

Mr. ROHRABACHER. I thank you very much for this hearing. I am sorry I won't be able to join you more.

Just one point. Pollution—I have always said that global pollution should be the focus of our efforts. However, let us note that where we disagree and where Dr. Pershing and I disagree and these very prominent scientists is whether or not CO2 is a pollutant, the CO2 that we pump into our greenhouses in California to grow bigger plants and things, that CO2 does not hurt human beings. Focus on those other pollutants, we have an agreement. Focus on CO2, that is another matter.

Thank you very much, Mr. Chairman.

Mr. FALEOMAVAEGA. No problem, Dana.

I think getting back to the basic arguments that we made since the time of the Kyoto Protocols, to such an extent that by a vote of 93 to 0 in our own U.S. Senate rejecting the Kyoto Protocols about the climate change issue, how serious is it in the private sector to realize that the more demands made to the private sector about gas emissions and all of this, that is really going to cause economic chaos in our own economy? Is that true? I mean, is there really a serious problem where the private-sector community, corporations and industries, are going to be so—you know, they are just not going to operate properly because of the expectations and demands made by this climate change issue?

Ms. BRAINARD. Well, let me just speak briefly, that I think the President has been very, I think, compelling on this point. I think

that a large majority, actually, of businesses here in the U.S. agree with this perspective: That the country that figures out how to produce and distribute energy in the cleanest possible ways, that country is going to be the most competitive nation of the next century; and that, for the U.S., it is critically important for us to be that nation, to be the most innovative, the most focused on cleaner energy, more cost-effective cleaner energy in the future. And so it is a huge competitiveness opportunity for us.

In order to get from here to there, we need to make sure that the investment environment is rewarding investments in those technologies of tomorrow, that the price signals are there. So I think there has been a huge change in our business community, and they are clamoring to be able to take full part in the opportunities presented by the transition to a greener future.

Mr. FALEOMAVAEGA. Well, this seems to be the other reason why the Senate has had a very difficult time working on the climate change issue—simply because the corporate community feels that there will be too much regulation, too many demands made of them, to the point where they can't make a reasonable profit. And so therefore kill the legislation.

And now we end up with a stalemate in the Senate. Of course, their rules are quite different from ours. This is what makes our democracy very unique.

Dr. Pershing, I am sorry, I didn't mean to——

Mr. PERSHING. Thank you. I wanted to add just one more point to the one that was just made, which has to do a little bit with certainty in the environment. We try on a regular basis to engage with the private community as part of our negotiations process. We do regular briefings to make sure people know where the administration is going and how the process is working. And there have been two consistent messages that have come back.

The first one is that, over the long term, the private sectors do expect action. They expect Congress to act, the United States to have laws in place that would move to us a lower-carbon economy. And they look at the rest of the world and expect to see the rest of the world acting. And the consequence of our inaction and other action is a degree of investment uncertainty, which they are concerned about. They come back and they say, "We would like to do something, but we don't know which way you are going to move, and therefore we can't invest without that greater certainty."

There is this hang-up in terms of where things are and a degree of tension around the domestic politics and domestic policy and domestic investment, and those same companies working very profitably in places around the world that have chosen to make those investments already.

Mr. FALEOMAVAEGA. I believe the latest reports now are that China is the largest consumer of energy, past us now, to the extent that, of course, providing for the need of 1.3 billion people. I also believe China is one of the leaders in such innovative technologies as wind power. And here we are still sitting, fighting with each other, wanting to know if we are going to excel and do more things to enhance the technologies of wind, solar, and other green technologies.

Dr. O'Neill?

Ms. O'NEILL. I would just add to what Dr. Pershing said about the value of policy and tax certainty with respect to this.

Prior to joining the administration, I was an entrepreneur and a technologist. And what you care about is building markets for the long term. We actually had all of the leadership in this country in solar. We have had the leadership in a number of electric technologies. And, yet, we have not always given policy and tax certainty as well as regulatory, and there are other countries that are bypassing us.

So I think that that speaks to the issue that Under Secretary Brainard talked about, is there is a choice that we have before us, whether to be a leader or a lagger in the new clean-energy economy. And I think that there is a huge prize out there for the ones who really go boldly into that future.

Mr. FALEOMAVAEGA. Well, the fact that we import over $700 billion worth of oil from foreign countries should tell us about the reality that we are faced with and why we have not really gotten off in doing what we should be doing and developing better sources of energy.

Admiral Titley, you mentioned—and I am very impressed in terms of how much the Navy has gotten into this. Do you work with the Coast Guard also? Or, this is a smaller branch, I suppose, and it doesn't deal that much with meteorological science?

Admiral TITLEY. Yes, sir, actually, we work very, very closely with the Coast Guard. When we stood up our Task Force on Climate Change back in May of last year, at the very initial meeting, in addition to having flag officers and Senior Executive Service from the Navy as my executive steering group, we have a Coast Guard senior officer and one from the National Oceanic and Atmospheric Administration. We realized from the very first start that we could not do this and should not do this by ourselves.

I have gone up to Juneau, Alaska, in addition to Barrow, talked to Admiral Chris Colvin. He is the commander of the 17th Coast Guard District, which is the Coast Guard district responsible for all the arctic waters. We have a good professional as well as personal relationship, because we really see the challenges in the arctic really as spanning the lower end of maritime security, which is very, very appropriately a Coast Guard mission—search and rescue, some of the humanitarian assistance. If, God forbid, there was a significant oil spill up in the arctic, the Coast Guard will be very involved.

The cruise ships which are going up there now—I mean, cruise ships go up there, and where do they go? They go to the most dangerous places, because that is what people want to see. They want to see wildlife and ice, and those are poorly charted regions.

So the Coast Guard has tremendous challenges. And we, in the Navy, are looking to see how we can assist them. And between NOAA, the Coast Guard, and the Navy, we can collectively show U.S. Government presence in an area that is rapidly growing in what we believe is strategic importance.

Mr. FALEOMAVAEGA. Don't get me wrong by thinking that I don't want a strong defense. I think we are now at about a $760 billion budget for expenditures of the entire military forces of our country for a period of 1 year. And I am told, according to reports, it is al-

most 50 percent of the entire military budgets of the entire world. Half, almost half of the entire world's budgets of their militaries is the U.S. budget on the military.

Do you think perhaps we can shave a little bit off some of those things that we might need in our military requirements, Admiral? Now, I am not suggesting that we ought to be passive. We want a strong military, but at $760 billion?

Admiral TITLEY. I think Secretary Gates has talked previously about how he sees the future of the Department of Defense's budget goes. I know he has publicly stated very strong support for the Secretary of State and their budget. But I really would defer to the Secretary of Defense on this specific budget.

But I believe the senior leadership is very aware of the size of the budget and the large-scale fiscal environment, sir.

Mr. FALEOMAVAEGA. 20,000 subcontractors in Iraq doing business for Uncle Sam—unbelievable.

Well, ladies and gentlemen, I know I have detained you long enough, and I do want to sincerely thank all of you for your statements. Thank you very, very much.

We now have on our next panel Ambassador Nancy Soderberg, Mr. Elliot Diringer, Mr. Reed Hundt and Dr. Redmond Clark.

See if we have the right parties there.

I really want to thank all of you for your patience. This is the problem with having hearings. Thank you very much for joining us this afternoon.

Our first witness this afternoon is Ambassador Nancy Soderberg, president of the Connect U.S. Fund. With well over 20 years' experience in foreign policy, Ambassador Soderberg has served in the United States Senate, the White House and in the United Nations. She has a deep understanding of policymaking negotiations at the highest level of the U.S. Government and at the United Nations.

She has promoted democracy and conflict resolution worldwide. She has achieved international recognition for her efforts to promote peace in Northern Ireland and advised the President on policies toward China, Japan, Russia, Angola, the Balkans, Haiti, and various conflicts in Africa.

Ambassador Soderberg is a distinguished visiting scholar at the University of Northern Florida in Jacksonville and president and CEO of Soderberg Global Solutions—quite a tremendous depth of experience that Ambassador Soderberg has. She served as president of the Sister Cities Program for the city of New York. And she earned a master's degree from Georgetown University's School of Foreign Service, a bachelor's degree from Vanderbilt University and speaks fluent French.

You certainly will be welcome in Tahiti, if you ever come there.

With us also is Elliot Diringer. Mr. Diringer is the director of international strategies at the Pew Center on Global Climate Change. He oversees the center's analysis of the international challenges posed by climate change and strategies for meeting them. And he directs the center's outreach to key governments and actors involved in international climate change negotiations.

Mr. Diringer came to the Pew Center from the White House, where he was deputy assistant to the President and deputy press secretary. In this capacity, he served as principal spokesman for

President Clinton and advisor to the senior White House staff on press and communications strategy.

Mr. Diringer holds a degree in environmental studies from Haverford College and also is a Nieman Fellow at Harvard University, where he studied international environmental law and policy.

Mr. Reed Hundt is the CEO of the Coalition for Green Capital, a nonprofit based in Washington, DC, as well as a principal at REH Advisors. He is the chairman of the International Digital Economy Accord Project and was a member of President Barack Obama's Presidential transition team where he was the economic agency review group head. Mr. Hundt is on the Board of Directors of Intel Corporation, a public company—a tremendous background here for this gentleman.

He graduated from Yale magna cum laude with a bachelor's degree. He also graduated from Yale Law School and is a member of the executive board of the Yale Law Journal.

Dr. Redmond Clark, whom I believe my colleague from Illinois had introduced earlier. I would like to welcome him as well. Dr. Clark completed both his master's and doctoral programs in human-induced climate change and the effects of climate change on natural systems.

He has served as an assistant professor at the college and university level, providing instruction and performing research in human-climate interactions. He is a graduate of Boston University, as well as Elmhurst College. He has a tremendous variety of experience in dealing both in the private as well as in the public sector.

Thank you very much for accepting this invitation to testify before the subcommittee.

And I would like to begin with Ambassador Soderberg.

STATEMENT OF THE HONORABLE NANCY E. SODERBERG, PRESIDENT, CONNECT U.S. FUND (FORMER ALTERNATE REPRESENTATIVE TO THE UNITED NATIONS)

Ambassador SODERBERG. Well, thank you very much, Chairman Faleomavaega, of an island that not only speaks French but also has really already been experiencing the damaging effects of climate change on your coral reefs.

And I commend the subcommittee for recognizing the economic, human, and national security implications of climate change and for giving me the opportunity to comment on how the U.S. can make smart public investments today and combat these threats tomorrow and to continue to grow the green jobs sector.

Investing in climate change in the developing world will benefit the American people and the world's most vulnerable populations. It will create jobs here at home, advance our national security, and reduce global poverty. These investments will also enhance our national security, as mentioned in the Defense Department's Quadrennial Defense Review and in your own resolution introduced last Thursday.

Climate change will contribute to food and water scarcity, will increase the spread of disease, and may spur or exacerbate mass migration. It may act as an accelerant of instability or conflict, placing a burden to respond on civilian institutions and militaries around the world.

And as someone who has worked at the National Security Council, as well as at the United Nations Security Council, I strongly believe the national security concerns of inaction on climate change are clear. In addition to the destabilizing effects of climate change in unstable countries, our reliance on fossil fuels adversely affects our foreign policy. Russia is playing hardball with its oil, our ongoing military presence in the Middle East, and the tragedy in the gulf near Louisiana is linked to our dependence on petroleum. And we need American leadership to change this dangerous course.

So what specifically can be done? One clear, far-reaching idea is for America to invest. In order to prevent the economic and security costs of current and future climate stresses and in order to ensure that the United States acts as a leader and standard-bearer for the new global energy economy, we need to invest in climate mitigation and adaptation solutions right now.

Investments in international climate financing, however, will not occur on the scale that is necessary without the support of public institutions, both domestic and international. And that is why public financing is critical.

There is a wide array of feasible innovative public financing sources being considered at the moment, which the U.S. could and should implement. Among other benefits, these financing options help reduce the amount of money the U.S. Government would need to appropriate from Congress to meet the administration's Copenhagen commitment. In a difficult fiscal environment, these are very attractive solutions. I will briefly just mention five of them and then be happy to go into any details during the questions.

The first is to redirect fossil fuel subsidies. The Obama administration has begun taking steps to phase out fossil fuel subsidies and has been a global leader in moving the G–20 toward that same goal. It has yet to embrace the opportunity, however, to move these revenues into climate and energy investments for the developing world. And in light of the tragedy on the gulf coast, this is a simple and politically powerful case of stop funding the problem and start investing in the solution.

Second is international aviation and shipping mechanisms. This proposal would raise revenue for climate financing from aviation and shipping through a variety of proposed mechanisms. And it would constitute a tiny cost compared to the overall cost of airline and shipping travel. And, furthermore, the political will exists. The Waxman-Markey bill approved by the House in June 2009 included a version of this proposal.

Three is special drawing rights. These are reserve assets that are created at no cost and issued by the International Monetary Fund to member countries. Philanthropist George Soros, the IMF, and a broad cross-section of the NGO communities have offered proposals for generating $100 billion worth of SDRs for capitalizing or collateralizing a green climate fund or regularly converting SDRs into hard currency for climate financing. These are an untapped resource that should be considered a boost, not a burden, for a struggling American public.

Fourth is a financial transaction tax. And this would entail a very small levy on the international financial transactions, such as currency exchanges, stock trades, and bond trades. And it would

take advantage of the current sentiments of regulating the finance sector.

Lastly is setting aside a dedicated portion of the emission allowances. And this would offer an important avenue for generating climate finances that is connected directly to the source of emissions and, therefore, the cost of the climate changes. There is also one included in the Waxman-Markey legislation.

In conclusion, a full range of sources of public investments are needed in order to meet and hopefully exceed U.S. Commitments made at Copenhagen and bring us closer to resolving a crisis which could put many Americans at risk. It is time to recognize that global warming is directly linked to our core national security interests and act accordingly.

Once again, let me commend you, Mr. Chairman, for your leadership on this issue and for the committee for taking on this important issue. And I would be happy to answer any questions. Thank you.

[The prepared statement of Ms. Soderberg follows:]

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Climate Investment Solutions that Benefit Americans and the World's Most Vulnerable Populations

Testimony of Ambassador Nancy E. Soderberg, President, The Connect U.S. Fund

Delivered to the U.S. House of Representatives Committee on Foreign Affairs Subcommittee on Asia, the Pacific and the Global Environment

July 27, 2010

I would like to thank the Chairman Faleomavaega of American Samoa, an island that is already experiencing the damaging effects of climate change on its valuable coral reefs. [1] I would also like to thank Ranking Member Manzulo and all the Members on this Subcommittee for recognizing the economic and national security implications of climate change, and for giving me the opportunity to comment on how the United States can make smart public investments today to combat these threats tomorrow and to continue growing the green jobs sector.

Investing in climate change solutions internationally will benefit both the American people and the world's most vulnerable populations. It will create jobs here at home, reduce global poverty and hunger, enhance our national security, lessen our global greenhouse gas emissions, and improve our moral standing in the world.

These targeted investments will transform young markets into tomorrow's booming markets creating American jobs and providing the needed outlet for the clean technologies and expertise we develop at home. Between now and 2050, it is predicted that 75% of the global energy increase will occur in developing countries. Thus, the developing world represents a potential market of $27 trillion over the next four decades – clearly a huge potential growth that would more than offset current economic issues within the United States.[2]

According to experts at the World Wildlife Fund, 850,000 new, permanent American jobs will be created if U.S. businesses capture 14% of the export market in just four clean energy technologies

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[1] U.S. EPA. Climate Change and Interacting Stressors: Implications for Coral Reef Management in American Samoa (Final Report). U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-07/069. <http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=173312>

[2] International Energy Agency, 2008. *Energy Technology Perspectives*. International Energy Agency, Paris.

(smart grid equipment, mass transit, wind turbines, and solar PV). In addition, investment in clean technology within developing countries created more U.S. jobs per $1 million investment than oil, natural gas, or coal industries. If the U.S. does not embrace the model of international investment for the good of our domestic industries, it cannot, and will not be victorious in the global clean energy race.

Furthermore, by investing in appropriate technologies and strategies to support developing countries to counter the disproportionately negative impacts from climate change on their vulnerable populations, the U.S. will not only help to reduce global poverty and secure our past development gains, but will also be protecting our national security. As mentioned in the Defense Department's Quadrennial Defense Review, and referenced in Chairman Faleomavaega's Resolution of last Thursday, "climate change will contribute to food and water scarcity, will increase the spread of disease, and may spur or exacerbate mass migration. While climate change alone does not cause conflict, it may act as an accelerant of instability or conflict, placing a burden to respond on civilian institutions and militaries around the world . . ." Furthermore, the assessment continues, "extreme weather events may lead to increased demands for defense support to civil authorities for humanitarian assistance or disaster response both within the United States and overseas." [3]

In short: we no longer have the luxury of doing nothing. As someone who worked as the third-ranking national security official in President Clinton's National Security Council, I agree fully with the national security concerns of inaction on climate change. The time for action is now. The security of the American people depends on it. Human burning of fossil fuels into the atmosphere is putting the planet and its people at risk. Unless we… and the world…change our energy policies, there is no doubt we will experience a rapid temperature rise, rising sea levels, greater storms, greater disruption, and greater conflict. Reliance on fossil fuels adversely affects our foreign policy as well. To meet its growing energy needs, China is investing heavily in the developing world – supporting corrupt and repressive regimes throughout Africa in its bid to secure long-term contracts. Venezuela's President is using his petro dollar wealth to push anti-American policies in Latin America. Russia is playing hardball with its oil, reasserting government control, keeping investors out, and making a play for the ocean floor of the arctic seabed. And of course, our military presence in the Middle East is related to our dependence on oil from that unstable region. We need smart government and American leadership to change this dangerous course. I commend this subcommittee for holding a hearing on such an important and critical issue for our national security.

The way ahead –invest in climate and energy solutions: So what, specifically, can be done? There is a whole range of things we as a nation must do to confront the climate challenge. However, one clear, far-reaching, and American solution is: "invest." In order to prevent the economic and

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[3] U.S. House of Representatives. H. Res. 1552. "Supporting a legally binding global agreement to reduce greenhouse gas emissions and provide financial assistance to the poorest and most vulnerable nations for adaptation and mitigation measures, and for other purposes." 111th Congress, 2nd Session. http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=111_cong_bills&docid=f:hr1552ih.txt.pdf

security costs of current and future climate stresses, and in order to ensure that the United States acts as a leader and standard-bearer for a new global energy economy, we need to make investments in climate mitigation and adaptation solutions right now. Lagging behind the rest of the world in supporting a new global energy infrastructure is unacceptable for a nation like ours – particularly when new solutions for jumpstarting our economy are needed more than ever. Significant investments today will also help reduce global dependence on fossil fuels (a dependence that, according to the Center for a New American Security, underpins a number of conflicts[4]), and jumpstart projects that will combat current and future threats emanating from more severe and frequent weather hazards, decreased agricultural production, increased water scarcity and insufficient food stocks. The economic and national security costs of the resource disputes and climate-induced migrations which may occur as a result of this climate instability will far outweigh the costs of investing in climate solutions today. [5]

Public financing – providing necessary and predictable resources and incentivizing private investments: Significant investments in international climate finance will not occur on the scale that is necessary without the support of public institutions – both domestic and international. [6] Public financing will play a critical role in underwriting climate adaptation at home and abroad, and will also help create a playing field that incentivizes and mobilizes private investments in North-South clean technology cooperation and reducing deforestation. Several legislative proposals, including the House passed American Clean Energy Security Act (ACES) H.R. 2454, set standards to ensure public investments are going to those countries that have the greatest need and can achieve the greatest reductions of global warming pollution. ACES included caps on allowances set aside for adaptation, clean technology cooperation and avoided deforestation. For example, no more than 10% of funds could go to any one country in any given year for adaptation purposes. Congress must include robust guidance for international investments to ensure that funds are used effectively to achieve the greatest mitigation of and resilience to climate change.

There is a wide array of feasible, innovative public financing sources being considered at the moment which the United States could and should implement, and which are clearly laid out in a recent U.S. Climate Action Network synthesis report; *"Investing in the Future: Options for Climate Finance the U.S. Can Support."* [7] The innovative sources that enjoy the broadest support include: 1) redirecting

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[4] Parthemore, Christine and Will Rogers. "Sustaining Security: How Natural Resources Influence National Security." Center for a New American Security. June 2010: p. 25.
<http://www.cnas.org/files/documents/publications/CNAS_Sustaining%20Security_Parthemore%20Rogers.pdf>

[5] Werz, Michael and Kari Manlove, "Climate Change on the Move: Climate Migration Will Affect the World's Security." Center for American Progress, December 2009.
<http://www.americanprogress.org/issues/2009/12/pdf/climatechangeonthemove.pdf

[6] UN Secretary-General's High-level Advisory Group on Climate Change Financing, "Report on the First Meeting." March 31, 2010: p. 1. <http://www.un.org/wcm/webday/site/climatechange/shared/Documents/LondonMeetingReport_31%20Mar%202010.pdf>

[7] U.S. Climate Action Network, "Investing in the Future: Options for Climate Finance the U.S. Can Support." May 2010.
<http://blog.usclimatenetwork.org/wp-content/uploads/2010/05/investing-in-the-future2.pdf>

fossil fuel subsidies, 2) international aviation and shipping mechanisms, 3) Special Drawing Rights, 4) a financial transaction tax, and 5) setting aside a dedicated portion of emissions allowances. These options are supported by a broad range of environmental, labor, business, faith-based and national security-oriented organizations across this country and internationally. Among other benefits, these financing options help reduce the amount of money the U.S. government would need to appropriate from Congress to meet the commitment President Obama and Secretary Clinton made in Copenhagen to raise $100 billion per year by 2020 for climate mitigation and adaptation. In a difficult fiscal environment, these are very attractive solutions.

1. Redirecting Fossil Fuel Subsidies: Building on the Obama Administration's leadership in advancing a G20 agreement to phase out fossil fuel subsidies, the United States has the opportunity to lead the international community in redirecting those subsidies towards clean energy, climate adaptation, and reducing deforestation. For years, fossil fuel subsidies have generated significant amounts of waste, drained national treasuries, and impeded the development of new markets in energy efficiency and renewables. In 2009, a report by the Environmental Law Institute found that shifting U.S. fossil fuel subsidies would generate at least $10 billion annually.[8]

Internationally, the U.S. sends an additional $4 billion in annual subsidies to fossil fuel interests around the globe from U.S. taxpayers via the U.S. Export-Import Bank, the Overseas Private Investment Corporation, the World Bank, and the regional development banks.[9] Furthermore, as expressed by World Bank Managers representing 90 countries in a letter to the U.S. Treasury Department regarding the financing of coal plants, the transfer of funds from fossil fuel subsidies to the development of clean technologies would serve to build trust between developed and developing countries and would be met with broad praise.[10] Finally, much of this finance will build global markets for American clean energy technology, thus supporting green jobs and the clean energy economy.

As mentioned previously, the Obama Administration has begun taking steps to phase out fossil fuel subsidies and has been a global leader in moving G20 nations toward that same goal. But it has not yet embraced the opportunity to move those revenues into financing adaptation and mitigation. In light of the tragedy in the Gulf Coast, this is a simple and politically powerful case of "stop funding the problem, and start investing in the solution." This is a proposal that the American public can enthusiastically support.

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[8] Environmental Law Institute, "Estimating U.S. Government Subsidies to Energy Sources: 2002-2008." September 2009. www.elistore.org/Data/products/d19_07.pdf

[9] International Institute for Sustainable Development, *The Global Subsidies Initiative*, "Defining Fossil-Fuel Subsidies for the G-20: Which Approach is Best?" March 2010. www.globalsubsidies.org/files/assets/pb5_defining.pdf

[10] Almofadhi, Abdulrahman et al, Letter to Robert Zoellick, President of the World Bank. January 13, 2010. <http://www.bicusa.org/en/Article.11758.aspx>

2. International Aviation and Shipping Mechanisms: This proposal addresses emissions from the aviation and shipping sectors -- which have been neglected by international agreements -- and would raise revenue for climate finance through a variety of proposed mechanisms. During the past two years, support for this concept has grown among countries, businesses (including major airline interests) and civil society. Multiple approaches have been proposed, from a carbon levy or other levies on these fuels to sectoral cap-and-trade mechanisms that would set limits on pollution and require the purchase of allowances for emissions that exceed the cap. Under the latter approach, which has the broadest support, revenue from allowance purchases would be used for climate finance. Ultimately, this mechanism could contribute between $19 billion and $35 billion to climate financing by 2020. [11]

This proposal has broad appeal for a number of reasons, including that it would constitute a tiny cost compared to the overall cost of airline and shipping travel. Furthermore, the Congressional will exists. The American Clean Energy and Security Act (ACES or Waxman-Markey) approved by the House of Representatives in June 2009 included an upstream cap on all aviation and shipping fuels – including those used for international trips. An international mechanism therefore would not impose an additional burden on U.S. carriers, but would promote a level playing field that would bring other emissions from this sector under a similar emissions limit.

3. Special Drawing Rights (SDR): Special Drawing Rights (SDRs) are reserve assets that are created at no cost and issued by the International Monetary Fund (IMF) to member countries. Their value is based on a basket of four currencies - the U.S. dollar, the UK pound, the Euro, and the Japanese yen - and they are issued in proportion to IMF quotas, which are determined by each member country's relative weight in the global economy. Governments can use their SDRs to build reserves or exchange them for cash. [12]

There are various proposals for how SDRs can be used for climate finance. In December 2009, philanthropist George Soros proposed that developed countries lend $100 billion worth of the SDRs from a 2009 allocation to capitalize a Green Climate Fund. He suggested that the surplus value of the IMF's gold reserves could cover the interest payments on these SDRs.[13] In March 2010, an IMF staff paper suggests that IMF-issued Special Drawing Rights could also be used to collateralize a Green Fund or be converted into cash that would be used for climate purposes. [14] In the collateralization proposal, existing developed country SDRs are used to underwrite private funds raised through the issuance of bonds while still being considered reserve assets by the IMF. Finally,

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[11] U.S. Climate Action Network: p. 10. <http://blog.usclimatenetwork.org/wp-content/uploads/2010/05/investing-in-the-future2.pdf>

[12] European Climate Foundation, "Climate Finance: Using SDRs to finance climate change mitigation and adaptation." December 2009. <http://www.connectusfund.org/files/SDR%20Briefing%20paper.pdf>

[13] Soros, George. "Using SDRs to Fight Climate Change." Speech at Copenhagen climate conference, December 2009.

[14] Bredenkamp, Hugh and Catherine Patrillo. "Financing the Response to Climate Change." International Monetary Fund Staff Position Note. March 25, 2010. <http://www.imf.org/external/pubs/ft/spn/2010/spn1006.pdf>

civil society has built on these proposals, suggesting new and regular allocations of SDRs that would be converted to hard currency and used for climate finance.[15] In the cash conversion proposal, the interest fee for converting from Special Drawing Rights to cash would be covered by the developed countries.

Among other benefits, the use of SDRs for climate finance would provide a simple and predictable framework which could help break the logjam in international climate negotiations, and get the U.S. closer to its Copenhagen commitment. As with the other the financing options detailed here, SDRs are an untapped resource whose use for climate financing would constitute no additional burden on a struggling American public. Put simply, these are dormant resources. In a situation of climate and economic stability, there is no excuse for keeping them out of the hands of people who need it.

4. Financial Transaction Tax (FTT): This proposal would entail a very small levy on international financial transactions such as currency exchanges, stock trades, and bond trades. It would take advantage of current sentiments in favor of regulating the financial sector, manifested most recently in the House and Senate's passage of comprehensive financial reform, as well as broad-based public campaigns for an FTT in several countries. This approach could be agreed to multilaterally and would be passed unilaterally by national legislatures. Ultimately, this would take the form of a set of coordinated domestic taxes, and not a global tax imposed by an international regulatory body, international financial institution, or international agency. Most importantly, an FTT could help us meet our finance commitments, while simultaneously providing funding for consumer rebates and green jobs. The Center for Economic and Policy Research estimates that a varied FTT (0.5% on stock trades; 0.01% on bond trades; 0.01% on swaps) would raise more than $175 billion a year in the U.S. alone, even with a 50 percent reduction in trading volume. [16] The North-South Institute estimates that a levy of 0.005% on only currency transactions in dealer markets would yield approximately $33 billion annually, assuming a 14.5 percent drop in trading. Of that total, $28 billion would be raised in the U.S. [17] Globally, an average tax of 0.05% on all financial transactions would generate an estimated $400 billion per year. Many international advocates for an FTT have proposed that revenues be split equally between domestic and international needs, with the international portion divided equally between climate and global health programs. Under this scheme, an FTT could generate the $100 billion per year in finance that governments have committed to spending to support developing country adaptation and mitigation. In an economy hampered by excessive speculation in currencies, this option represents an economically and politically sound solution.

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[15] See ActionAid factsheet: "What Are Special Drawing Rights and How Can They Be Used to Finance Climate Adaptation and Mitigation." <http://actionaidusa.org/assets/pdfs/climate_change/SDRFactsheet.pdf>

[16] Baker, Dean, et al., "The Potential Revenue from Financial Transactions Taxes." Center for Economic and Policy Research and the Political Economy Research Institute, Issue Brief. December 2009. <www.cepr.net/documents/publications/ftt-revenue-2009-12.pdf>

[17] Schmidt, Rodney, "The Currency Transaction Tax: Rate and Revenue Estimates." The North-South Institute, October 2007. See Abstract, also pp. 4-9. <www.nsi-ins.ca/english/research/completed_/03.asp>

While some consider this a politically difficult option, a strong American constituency that extends far beyond the environmental community supports this solution. A key anchor of U.S. civil society support for the FTT is Americans for Financial Reform, a coalition of more than 200 national, state, and local groups working to reform the financial industry in part through a financial transaction tax. Members of the coalition include consumer, labor, civil rights, investor, retiree, community, religious, and business groups as well as Nobel Prize winning economists.

This broad constituency has enhanced support for this financing option. As you may know, a piece of legislation calling for a currency transaction levy for climate finance and global health was introduced into the House last week by Representative Stark (D CA). The "Investing in our Future Act of 2010," HR 5783 would place a 0.005% levy on all foreign currency exchange transactions – including derivatives – by large-scale investors in the U.S. who trade more than $10,000 in currencies per year. HR 5783 directs the revenues from this levy – likely billions of dollars – to international climate adaptation and mitigation funds under the United Nations Framework Convention on Climate Change, in addition to funds to address the global health crisis and child care assistance in the United States.

5. Setting Aside a Dedicated Portion of Emissions Allowances: Lastly, emissions trading systems, whether at the national or the international level, offer an important avenue for generating climate finance that is connected directly to the source of emissions and therefore the cause of climate change. Using the proceeds from a pollution permit program to support achieving additional, cost-effective reductions and responding to climate change in developing countries makes sense as both a policy and political matter. Under this concept, money would be raised by setting aside a small portion of emissions allowances and using the revenue from the sale of the allowances for international climate finance. This could be implemented either under a global system (such as the Kyoto-style country-based trading mechanism) or through an agreement to raise these funds domestically. Under the latter approach, countries would commit to setting aside a portion of the allowances under their domestic emissions trading system (like the one included in the Waxman-Markey legislation) or to allocating a dedicated portion of revenues from domestic fees or taxes on greenhouse gas emissions for these purposes.

Conclusion: In conclusion, a full range of sources for public investments in climate adaptation, clean energy cooperation with the developing world, and reduced deforestation are needed in order to meet and hopefully exceed U.S. finance commitments made at Copenhagen and to bring the U.S. closer to resolving a crisis which could claim the lives of many and seriously upset our security as Americans. Making investments now in order to avoid paying significant costs, both financial and human, in the future, is a prudent and responsible position to take in this time of economic and financial crisis.

We have done it before, and we can do it again. Large-scale and forward-thinking public infrastructure projects played a significant role in the recovery of the U.S. and global economy after the Great Depression. Similar, although more modest investments, in climate and energy solutions today can also act as an engine of recovery and prosperity in a lagging economic environment.

Furthermore, the costs associated with the kinds of security threats that could result from further climate stresses will far outweigh the cost of reducing our emissions and investing in climate solutions today. Public financing mechanisms like the ones detailed in this proposal can lay the groundwork for U.S. fulfillment of its climate and energy mission, its job creation agenda, its commitment to achieve the Millennium Development Goals and reduce global poverty, its national security responsibilities, and its role in the world as a responsible, moral and forward-thinking nation.

Once again, let me commend the Subcommittee for taking on this important issue. It is high time for the American public and our government to recognize the urgency of this national security challenge.

Thank you.

Mr. FALEOMAVAEGA. Thank you, Madam Ambassador.
Mr. Diringer?

STATEMENT OF MR. ELLIOT DIRINGER, VICE PRESIDENT, INTERNATIONAL STRATEGIES, PEW CENTER ON GLOBAL CLIMATE CHANGE

Mr. DIRINGER. Thank you, Mr. Chairman, for the opportunity to appear before you today. I would like to begin by thanking you also for drawing attention to this critical issue and by voicing our full support, Mr. Chairman, for the resolution that you have introduced.

I would like to emphasize three points. We believe, first, that it is in the strong national interest of the United States to provide sustained support for climate efforts in developing countries; second, that Congress should consider a dedicated source of funding for this support; and, third, that stronger climate finance should be accompanied by stronger accountability from the major developing countries on their efforts to reduce greenhouse gas emissions.

Some developing countries have adequate resources to finance their own climate efforts, but most do not. You have heard already why supporting these countries is important from a national security perspective. It is also in our economic interest. Other countries, including China, are taking a lead in the global clean-energy market. As the United States positions itself to compete, U.S. assistance will help foster strong, stable markets for American technology.

Beyond that, sustained support for developing countries is essential if we are to achieve a meaningful global response to climate change. Strong action on a global scale requires durable agreements, ensuring that all major economies are doing their fair share. Developing countries will sign on to such agreements only with a reasonable assurance that the United States and other developed countries will significantly scale up their support. Stronger U.S. support is therefore essential for the global deal we need to reduce our exposure to potentially catastrophic climate impacts.

The Copenhagen Accord represents an important political consensus among leaders that provides a basis for negotiating a strong international framework. We believe our goal should be a binding

agreement with commitments from all major economies, but we will have to get there in stages. The objective for Cancun should be to build on the Copenhagen Accord, with operational decisions in key areas.

On finance, three steps are needed in Cancun. The first is creation of the new multilateral climate fund envisioned in the Copenhagen Accord. We favor a fund with an independent board, balanced between contributor and recipient countries. Contributions should be based on an indicative scale of assessment, establishing countries' relative shares, with an aggregate funding target set through periodic pledging. Donor countries should decide for themselves how to generate their respective contributions.

The second step is creation of a new finance body to advise the conference of parties on finance needs and policy and to promote coordination among the multilateral and bilateral programs providing climate finance.

The third priority in the finance area in Cancun is agreeing on ways to verify financial flows and the actions they are meant to support. Further agreement on this financial architecture must come, however, as part of a balanced package. An absolutely essential element of this package is a system to verify the mitigation actions taken by developing countries without international assistance. These unsupported actions represent a substantial majority of the efforts pledged by China and other major emerging economies. It was agreed in Copenhagen that these actions would be subject to international consultations and analysis. We need an open process that lets us see clearly whether countries are, in fact, doing what they have promised.

Progress in the negotiations depends heavily on action here at home. We recommend three specific actions on climate finance.

First, we strongly urge Congress to increase appropriations for climate assistance, as proposed in the President's Fiscal Year 2011 budget. These funds would help address urgent needs. They would enable the United States to provide a reasonable share of the $30 billion in "fast start" resources pledged by developed countries in Copenhagen. And, as an important signal of Congress's intent, they would help advance U.S. negotiating objectives.

Second, we urge Congress to consider a dedicated source of funding to maintain higher levels of support over the longer term. We believe the best source would be a set-aside of emission allowances under an economy-wide cap-and-trade system. Others that we believe are worth exploring include revenue generated through an agreement addressing emissions from international aviation and shipping, some redirection of U.S. fossil fuel subsidies or royalties, or a levy on international emission offsets.

Third, Congress should establish a standing body, comprised of Cabinet Secretaries, to coordinate U.S. climate assistance and to allocate funds across bilateral and multilateral programs, with appropriate congressional oversight.

In conclusion, Mr. Chairman, we believe sustained U.S. support for climate efforts in developing countries is a sound and prudent investment in the environmental, economic, and national security of the United States.

I again thank you for your attention to these issues, and I would be pleased to answer any questions.

[The prepared statement of Mr. Diringer follows:]

Testimony of

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

Submitted to
the Subcommittee on Asia, the Pacific and the Global Environment
Committee on Foreign Affairs
U. S. House of Representatives
July 27, 2010

Climate Change Finance: Providing Assistance for Vulnerable Countries

Chairman Faleomavaega, Ranking Member Manzullo, members of the committee, thank you for the opportunity to testify on the critical challenge of ensuring U.S. financial support for climate change efforts in developing countries. 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 policies to address global climate change. Our work is informed by our Business Environmental Leadership Council (BELC), a group of 46 major companies, most in the Fortune 500, that work with the Center to educate opinion leaders on climate change risks, challenges, and solutions. The Pew Center is also a founding member of the U. S. Climate Action Partnership (USCAP) , a coalition of 23 leading businesses and five environmental organizations that have come together to call on the federal government to enact strong national legislation to significantly reduce U.S. greenhouse gas (GHG) emissions.

Mr. Chairman, the Pew Center believes that providing sustained financial support to developing countries is in the U.S. national interest and an essential ingredient for a meaningful global response to the urgent challenge of climate change. While some developing countries have adequate resources to finance their own climate efforts, most do not. They need our help both in mitigation (deploying policies and technologies to reduce their rapidly rising greenhouse gas emissions) and in adaptation (coping with the unavoidable impacts of a warming climate). Delivering adequate support will require decisions here in Washington to mobilize the United States' fair share of the necessary resources. And it will require effective multilateral agreements ensuring that in return, all major economies – both developed and developing – contribute equitably to the global climate effort.

In my testimony, I would like to outline some of the reasons we believe it is in our strong national interest to provide sustained climate support to developing countries; suggest principles

to guide a U.S. climate finance strategy at home and abroad; and recommend domestic and international policy frameworks to generate and effectively deploy climate finance.

My principal points are as follows:

- There are strong environmental, security, economic, humanitarian and diplomatic rationales for supporting developing countries' climate efforts. Developing countries are unlikely to commit to strong climate action without assurances of sustained finance, severely weakening prospects for an effective global response to climate change. Providing this support will reduce the United States' exposure to climate impacts and related security risks, and will help ensure strong markets for U.S. clean energy technologies.
- In both domestic policy and multilateral negotiations, U.S. strategy on international climate finance should promote reliability, accountability, coherence, efficiency and the preservation of national sovereignty.
- Key international objectives should be the establishment of a new multilateral climate fund, as agreed in the Copenhagen Accord; creation of a finance body to promote coherence and coordination among multilateral and bilateral finance efforts; and adoption of clear guidelines for the verification of financial flows and supported actions.
- These steps should be agreed only in the context of a balanced package that includes effective international procedures to verify the mitigation actions of all major-emitting countries.
- Domestically, Congress should approve the Administration's request for increased international climate appropriations in FY 2011; establish a dedicated funding source, such as a set-aside of emission allowances, to sustain higher levels of finance in the future; and establish an interagency trust fund board to allocate these funds, subject to Congressional oversight.

Why the U.S. Should Provide Sustained Climate Assistance to Developing Countries

Climate change is a global predicament in which causes and effects are distributed unequally. All countries face the consequences of a warming climate. However, some countries, including the United States, have far greater capacity to cope with them. These same countries, by and large, also bear far greater responsibility for the cumulative greenhouse gas emissions that have begun to alter our climate.

For these reasons, the world's developed countries, including the United States, have committed to lead the global climate effort and to support the mitigation and adaptation efforts of developing countries. These general commitments are contained in the 1992 U.N. Framework Convention on Climate (UNFCCC), signed by President George H. W. Bush and unanimously ratified by the Senate.

Responsibility, however, is only one rationale for fulfilling these commitments. Sustained U.S. support for developing countries is in our national interest from multiple perspectives:

- *Environmental* – Dangerous climate change can be averted only with the concerted efforts of all major emitting countries. While some have begun to take action, and such unilateral efforts are likely to grow, achieving a critical mass of effort on a global scale will require durable multilateral agreements through which countries can be confident that all are undertaking their fair share. For developing countries to sign on to such agreements, they will need reasonable assurance that developed countries will significantly scale up their financial support. Sustained U.S. support is therefore essential for the global deal we need to reduce our exposure to potentially catastrophic climate risks.

- *National security* – The U.S. military now recognizes that unabated climate change poses rising risks to our national security and new demands on our military resources. In its latest Quadrennial Defense Review, the Pentagon says climate change may act as "an accelerant of instability or conflict, placing a burden to respond on civilian institutions and militaries around the world."[1] In strained regions, chronic drought, rising seas, extreme weather and other climate impacts could undermine weak governments, induce mass migrations, and trigger or heighten resource competition, contributing to social instability and, potentially, armed conflict.[2] U.S. support would mitigate these risks, first, by helping to reduce global GHG emissions, thereby limiting impacts, and second, by helping poor, highly vulnerable countries anticipate and manage the stresses of climate change.

- *Economic* – China, Germany and other countries are taking a lead in a global clean energy market projected to attract more than $1.5 trillion in investment over the coming decade.[3] As the United States positions itself to compete, it has a vested interest in ensuring that developing countries have the technical, institutional and financial capacity to adopt clean energy technologies. U.S. finance can help establish, and ease the entry of U.S. firms into, these new markets.

- *Humanitarian* – An important dimension of U.S. leadership is our readiness to assist those in need, whether the victims of Haiti's tragic earthquake or the millions in Africa suffering HIV/AIDS. Within 10 years, global warming may reduce crop yields in parts of Africa by as much as half; by 2050, rising seas could displace as many as 30 million people in Bangladesh, and receding glaciers could leave a billion

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[1] Department of Defense, 2010. *Quadrennial Defense Review Report*, Page 85. Available at http://www.defense.gov/qdr/images/QDR_as_of_12Feb10_1000.pdf.

[2] Fingar, T., 2008. *Testimony Before the House Permanent Select Committee on Intelligence and the House Select Committee on Energy Independence and Global Warming*, 25 June 2008 and; Center for Naval Analyses, 2007. *National Security and the Threat of Climate Change*, Military Advisory Board, Center for Naval Analyses (CNA), April 2007. Available at http://www.cna.org/sites/default/files/National%20Security%20and%20the%20Threat%20of%20Climate%20Change.pdf.

[3] Pew Center on Global Climate Change, 2010. *Clean Energy Markets: Jobs and Opportunities*, April 2010 Update. Available at http://www.pewclimate.org/publications/brief/clean-energy-markets-jobs-and-opportunities.

others across Asia facing chronic water shortages.[4] Increasingly, the United States' humanitarian record will be seen against a backdrop of worsening climate impacts.

- *Diplomatic* – A willingness to assist vulnerable countries is among the strongest levers available to the United States to secure meaningful climate commitments from China and other major developing countries. In Copenhagen, China showed flexibility on U.S. demands for transparency only after Secretary of State Clinton proposed a long-term finance goal, which fractured the developing country bloc by drawing support from many least developed and small island countries. With further progress on finance, this dynamic can be expected to continue as negotiations go forward.

Policy Context and Challenges

The Copenhagen Accord represents an important step toward an effective international climate framework. Although nonbinding, the Accord reflects a political consensus among world leaders on key elements, including: a goal of limiting warming to 2 degrees Celsius; a balanced but differentiated approach to mitigation, with economy-wide emission targets for developed countries and nationally appropriate actions for developing countries; and agreement in principle on how these efforts are to be verified.[5] To date, 109 countries have associated with the Accord. Fifty-six countries accounting for more than 80 percent of global emissions – including China and the other major emerging economies – have pledged specific targets or actions.[6]

In the area of finance, the Accord calls for a new Copenhagen Green Climate Fund; sets a goal of $30 billion in mitigation and adaptation assistance from developed countries in 2010-2012; and sets a goal of mobilizing $100 billion a year in public and private finance for developing countries by 2020, in the "context of meaningful mitigation actions and transparency in implementation."

Fulfilling the Copenhagen Accord requires action at home by the United States and other countries and further agreement among parties on operating rules and mechanisms. With respect to finance, the immediate priority is delivering on the goal of $30 billion in "fast-track" support. At President Obama's request, Congress increased international climate appropriations more than three-fold in FY 2010, to $1.3 billion. The President has proposed a further increase, to $1.9 billion, in FY 2011. These funds would help address urgent needs and, as an important signal of Congress' intent, would help advance U.S. negotiating objectives. The Pew Center strongly urges Congress to fully fund this request.

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[4] Intergovernmental Panel on Climate Change, 2007. *Summary for Policy Makers.* Available at http://www.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4-wg1-spm.pdf.

[5] *Copenhagen Accord.* Available at http://unfccc.int/resource/docs/2009/cop15/eng/11a01.pdf#page=.4.

[6] The 27 Member States of the European Union are counted here as a single entity. Emission reduction targets pledged by developed countries are available at http://unfccc.int/home/items/5264.php. Mitigation actions pledged by developing countries are available at http://unfccc.int/home/items/5265.php.

The broader challenge on climate finance is two-fold. First, the United States must establish a domestic strategy to generate and effectively manage its share of the long-term finance envisioned under the Accord. Second, the United States must work with other countries to establish multilateral financial arrangements compatible with this domestic funding strategy. I will offer recommendations in both of these areas later in my testimony.

The upcoming U.N. Climate Conference in Cancún presents a major opportunity to begin elaborating the international financial architecture. Any further agreement on finance, however, should come in the context of a balanced package also advancing other key issues. Chief among these is the issue of transparency. Having agreed in Copenhagen that all parties' actions are to be verifiable – and that developing country actions are to undergo "international consultation and analysis" – parties must now begin to establish this system of accountability.

We believe that in the long run the goal must be a comprehensive treaty with binding commitments for all major economies. We will likely get there, however, only in stages. For now, the objective should be to build on the Copenhagen consensus with nuts-and-bolts decisions on finance, transparency, and other key operational areas. As the architecture takes shape, and countries move forward with domestic implementation, they will hopefully gain the confidence needed to convert their current political pledges into more ambitious binding commitments.

Objectives of a U.S. Climate Support Strategy

The Copenhagen Accord, as noted, envisions a mix of public and private finance for developing countries. While there is no consensus on the appropriate mix, there is broad acceptance that the carbon market and other private finance will comprise a substantial portion. Indeed, with a strong carbon market, private finance could generate a substantial majority of needed flows. There is also broad recognition, however, that a significant increase in public finance is needed to build mitigation capacity, so that countries can establish the policies and practices necessary to attract private investment, and to support adaptation. Our recommendations focus primarily on the public finance portion.

We believe that U.S. strategy on international climate finance, both in domestic policy and in multilateral negotiations, should reflect the following objectives:

- *Reliability* – To be politically credible and effective, new support must be steady and predictable. Strong, stable climate agreements will not be feasible without reliable financial flows. Nor will developing countries be able to build the capacities needed to become more self-reliant in meeting the climate challenge.

- *Accountability* – Clear, workable guidelines are needed to verify the delivery of support and the performance of supported actions.

- *Coherence* – Support will flow through multiple channels – public and private, bilateral and multilateral – to address a wide range of needs. Mechanisms are needed to set priorities and to promote coordination and consistency.

- *Efficiency* – Rapidly scaling up support calls for fully leveraging, and not replicating, the capacities of existing institutions and for deploying public finance in ways that maximally leverage private flows.

- *Sovereignty* – National prerogatives must be respected and preserved. Donor countries should retain discretion on the means of generating, and avenues for delivering, increased finance. Recipient countries should be able to access finance directly (through national, rather than multilateral, implementing entities).

An International Climate Finance Architecture

Climate support is presently provided through an array of bilateral and multilateral channels, including a number of funds established under the UNFCCC and the Kyoto Protocol. In this largely ad hoc structure, funding levels are erratic and well below assessed needs, there is little coordination among the various funding entities, and developing countries frequently complain of difficulty in accessing those funds that are available.

A major aim of the ongoing UNFCCC negotiations is the establishment of new financial arrangements to ensure stronger, predictable flows and improved access to funding. Many developing countries have advocated a comprehensive new apparatus under the UNFCCC to centrally gather and disburse funding for the full range of mitigation and adaptation needs. We believe a more practical and politically viable approach is a finance framework that promotes adequate, reliable flows by encouraging a variety of funding mechanisms and channels, while ensuring greater consistency, coordination and accountability. The major elements of this enhanced architecture should include: a new multilateral climate fund, as agreed in the Copenhagen Accord; a new finance body to advise the UNFCCC Conference of the Parties (COP); and clear guidelines for the verification of financial flows and supported actions.

A New Climate Fund – Principal issues in the design of a new climate fund include its intended uses, its governance structure, and how it will be funded.

We believe a new multilateral climate fund should serve as a principal, but not exclusive, mechanism for delivering public finance to developing countries. It could support any or all of the following activities: capacity building (to help countries analyze mitigation potentials, develop national policies, and institute measurement and verification systems); adaptation planning and implementation; technology deployment; forestry-related measures; and other types of mitigation programs. In determining the fund's scope, countries must assess and modify existing UNFCCC funds accordingly to avoid funding gaps and redundancies.

The new fund should be governed by an independent board operating under the guidance of, and accountable to, the COP, but not under its direct authority. This would allow the COP to set broad policy directions and maintain oversight, while reducing the risk of procedural delays and political interference. For this arrangement to be acceptable to developing countries, many of which prefer that the fund be under the direct authority of the COP, it is essential that the board's composition and decision-making provide for balanced representation. These could be

modeled on the provisional Climate Investment Funds (CIFs) formed in 2008 by the United States and other major economies. The CIFs' Trust Fund Committees include equal representation from contributor and recipient countries and operate by consensus.

Another concern is the new funds' relationship to existing multilateral financial institutions, in particular the World Bank. Many developing countries object to the Bank's donor-weighted governance structure and feel it has been unresponsive to their concerns; stakeholder groups are critical of its historic support for carbon-intensive energy development. While both sets of concerns warrant continued reforms at the Bank, they should not preclude it from an appropriate role in a new climate fund. Given the urgency and scale of the climate finance challenge, countries must take full advantage of available capacities and expertise. The Bank should be a candidate to serve as the new fund's trustee, a strictly fiduciary role. And parties should explore seconding staff from the Bank and from other multilateral development banks and agencies to form an independent secretariat supporting the new climate fund.

A wide range of proposed funding sources are being examined by the Secretary-General's High-Level Advisory Group on Climate Change Financing, but near-term agreement on any particular revenue mechanism, particularly one at the international level, appears unlikely. In the absence of such a mechanism, countries should agree on an indicative scale of assessment establishing their relative contributions to the new climate fund and set funding targets through periodic pledging (every three to five years); each should decide for itself how to generate its respective contribution. This scale of assessment could take into account factors such as a country's total and per capita emissions and GDP, and should be evolving, so that emerging economies also contribute as they achieve higher levels of development.

A UNFCCC Finance Body – As noted, a new climate fund would be one among many means of delivering climate support. This disaggregated architecture has the advantage of encouraging multiple bilateral and multilateral channels, thereby achieving the highest feasible overall flow. A mechanism is needed, however, to promote some degree of coordination and coherence among these efforts.

We believe this role is best served by a new UNFCCC body appointed by the COP to advise it on finance-related issues. Specifically, this finance body, comprised of parties and independent experts, could:

- Recommend broad funding priorities to guide the allocation decisions of multilateral funds and bilateral donors;
- Continually assess finance needs and progress toward meeting finance objectives;
- Review the performance of, and recommend further guidance to, UNFCCC funds;
- Provide a forum where multilateral and bilateral donors could seek to coordinate their efforts;
- Promote harmonization of application procedures; and
- Recommend guidelines for the measurement and verification of finance.

Verification – Parties have agreed in principle that their mitigation actions – and that support for developing country actions – are to be measurable, reportable and verifiable (MRV). A goal

for Cancún should be agreement on the basic parameters of an MRV system so that detailed guidelines can then be developed.

Verification of finance will require stronger tracking and reporting of financial flows and some form of UNFCCC review. For the system to be credible, there must be some further delineation of what flows, both public and private, qualify as "climate finance."

Developing countries agreed in Copenhagen that "supported" mitigation actions would be subject to "international verification." In the case of bilateral finance, the United States and other donors can be expected to apply their own verification standards. But COP guidance is needed to ensure some consistency among them and to define how MRV applies to multilateral support.

A balanced agreement must also address MRV of the mitigation actions taken by developing countries without international assistance, which under the Copenhagen Accord are subject to "international consultations and analysis." This includes a substantial majority of the actions pledged by China and other major emerging economies. We believe that effective MRV of these unilateral efforts will require: biennial GHG inventories and implementation reports from developing countries; a technical review and report by experts; an open peer review based on the expert report and parties' inputs; and publication of all reports and the peer review conclusions. Similar MRV procedures should apply to the mitigation actions of developed countries as well.

Domestic Policy Issues

In the domestic policy context, there are two principal needs: a stable funding base enabling the United States to provide sustained support for developing country efforts; and a mechanism to allocate and coordinate those resources and ensure strong Congressional oversight.

A Stable Funding Base – Unless it is prepared to support some form of international revenue-generating mechanism, the United States must rely on domestically generated resources for its share of future international climate finance. Past U.S. climate support has come through appropriations by Congress to multiple agencies, including the Departments of State, Treasury, Energy, Commerce and Agriculture, the U.S. Agency for International Development (USAID), and the Environmental Protection Agency (EPA). The core climate assistance budget averaged $237 million a year from 2001 to 2009,[7] before rising to $1.3 billion in FY 2010.

We urge Congress to approve the President's request for increased appropriations in FY 2011, and to consider a further increase in FY 2012, enabling the United States to provide a reasonable share of the $30 billion in "fast-start" resources pledged collectively by developed countries in Copenhagen. However, looking toward 2020, with competing demands on the federal budget and the growing imperative of deficit reduction, there is no certainty that appropriations alone can provide the level of sustained support that is needed. We believe that the United States will prove a more reliable partner in the global climate effort, and that the

[7] Office of Management and Budget, *Federal Climate Change Expenditures, Report to Congress* for Fiscal Years 2003-2008 and 2011.

prospects for effective climate agreements will be greatly enhanced, if Congress establishes a dedicated source of funding.

Ideally, this source should derive from GHG-generating economic activities, and thereby help to correct the market failures that contribute to climate change. Our first choice would be a set-aside of emission allowances in an economy-wide cap-and-trade system regulating U.S. greenhouse gas emissions. While there now appears little prospect of cap-and-trade legislation in this Congress, we continue to believe strongly in the value of a market-based approach to reducing U.S. emissions. Properly designed, a cap-and-trade system can minimize the costs of meeting our environmental goals, create an ongoing incentive for technological innovation, and generate resources for critical climate investments, including international finance.

We commend the House for its approval of H.R. 2454, the American Clean Energy and Security Act of 2009, and the inclusion of specific set-asides to support adaptation, reduced deforestation and technology deployment in developing countries. At projected allowance prices, these set-asides would generate about $8.5 billion in public finance for developing countries in 2020.[8] According to EPA's analysis, the purchase of international emission offsets authorized under H.R. 2454 could also generate on the order of $20 billion of private investment in developing countries in 2020.[9] Combined, these set-asides and offset purchases would meet or exceed the presumed U.S. share of the $100 billion goal set under the Copenhagen Accord.

Other potential sources of public finance that we believe may be worth exploring include:

- International shipping and aviation – Two sectors drawing particular attention from the international community because of their trans-boundary nature and rising emissions are international shipping and aviation. A number of the proposals by countries to limit or reduce their emissions could serve simultaneously to generate finance for developing countries. Some parties have proposed international levies on bunker fuels or other forms of emission charges. Alternatively, countries could agree to apply such charges nationally and to dedicate a portion of the proceeds to international climate finance. In such an approach, the United States would directly administer any charges at domestic ports and decide how to apportion the resulting revenues.

- Fossil fuel subsidies/royalties – Another option is to redirect some of the federal tax subsidies provided for fossil fuel production, or of the federal royalties it generates. The United States and other G20 countries agreed last year in Pittsburgh to phase out "inefficient fossil fuel subsidies."[10] The President's proposed FY 2012 budget calls

[8] Purvis, N. and Stevenson A., 2010. *International Provisions in U.S. Climate Legislation.* Available at http://www.climateadvisers.com/pdf/International%20Provisions%20in%20U.S.%20Climate%20Legislation.pdf.

[9] Environmental Protection Agency, 2009. *EPA Analysis of the American Clean Energy and Security Act of 2009—H.R. 2454 in the 111th Congress*, 23 June 2009. Available at http://epa.gov/climatechange/economics/pdfs/HR2454_Analysis.pdf.

[10] *G20 Leaders' Statement*, The Pittsburgh Summit, 24-25 September 2009. Available at http://www.g20.org/Documents/pittsburgh_summit_leaders_statement_250909.pdf.

for ending a number of oil and gas subsidies, generating an estimated $39 billion in revenue through 2020.[11]

- Levy on international offsets – Another potential source, assuming the establishment of a federal cap-and-trade system, would be a levy on international emission offsets entering the domestic market. A similar levy on the international Clean Development Mechanism presently supports the Adaptation Fund under the Kyoto Protocol.

Coordinating U.S. Support – Regardless of the source of finance, a coherent strategy for sustained U.S. support requires a mechanism to coordinate across federal entities. Ideally, Congress should establish a trust fund to receive appropriated or dedicated funds and a board to oversee it. The board would develop a long-term climate support strategy and, on that basis, make annual allocations to bilateral and multilateral programs.

To best align the funding strategy with broader U.S. diplomatic objectives, the board should be chaired by the Secretary of State. Other members should include the Secretaries of Treasury, Energy, Agriculture and Commerce, and the Administrators of USAID and EPA. The board should report regularly to Congress, its executive director should be Senate-confirmed, and Congress should use other means at its disposal to ensure strong oversight

In conclusion, Mr. Chairman and members of the committee, we believe sustained U.S. support for climate efforts in developing countries is a sound and prudent investment in the environmental, economic and national security of the United States. We strongly urge Congress to increase appropriations for "fast-track" finance, and to establish the means for providing long-term support in the context of agreements ensuring that all major economies contribute equitably to the global climate effort. I would be pleased to answer your questions.

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[11] Office of Management and Budget, 2010. *Budget of the U.S. Government, Fiscal Year 2011*. Available at http://www.whitehouse.gov/omb/budget/fy2011/assets/budget.pdf

Mr. FALEOMAVAEGA. Thank you, Mr. Diringer.
Mr. Hundt?

STATEMENT OF THE HONORABLE REED E. HUNDT, CEO, COALITION FOR GREEN CAPITAL (FORMER CHAIRMAN OF THE FEDERAL COMMUNICATIONS COMMISSION)

Mr. HUNDT. Thank you very much, Mr. Chairman. It is an honor to be here.

The Coalition for Green Capital comprises business investors, financiers, project developers, and technology companies that are involved in either the production or the consumption of clean energy.

There are, in our view, three fundamental inputs to global development. They need to be affordable, they need to be universal, and they need to be continuously available. And they are communications, finance, and energy. No economy in the world can develop without these three inputs; no economy that has developed has been able to do so without them.

We urge Congress to create, as a vehicle to facilitate the development all around the world of clean energy, something called the Energy Independence Trust. It would be what the law recognizes as a patriotic organization. An example would be the Red Cross. There are more than 90 such examples. The Boy Scouts of America is an example. Congress, from time to time, has created these corporations for special purposes.

They are typically charitable organizations, and so they are used to aggregate charitable contributions from all around the world. Like the United States Postal Service, we would urge that Congress permit the Energy Independence Trust to borrow from the United States Treasury. It is also the case that the Energy Independence Trust, while it would not seek regular annual appropriations, could on an ad-hoc basis be the subject of specifically designated appropriations.

Most importantly, on an international level, this would be a vehicle to complement and supplement the multilateral development banks that already exist, so that we would have another institution on the landscape but one that was not an agency or instrumentality of the United States Government.

The reason we are urging a new institution is because the status quo is not adequate. The global need for sustainable and affordable electricity is staggering. Roughly 3 billion people in the United States burn wood products in order to live day to day. About half of those people, about 1.5 billion, have no access to electricity at all.

The problem in the developing world is that electricity is not affordable, and that is the reason that it is not available. The problem in the developed world, in many cases, is that it doesn't contain a price for carbon. It is a very, very different problem. In Kentucky, electricity is all based on coal, or almost all based on coal, and is very, very cheap. But when we turn to the developing world, it either doesn't exist at all or the only source of it is going to be some carbon-emitting and nonsustainable resource.

Roughly speaking, the total amount of foreign investment that occurs from one country into another on a global basis every year, even in the downturn that we are now in, is about $1 trillion. And

it is more than that when the global economy is growing faster. We need, in order to have the world wrapped in affordable and sustainable electricity, we need about 10 percent of that $1 trillion every year to be dedicated to clean electricity. Instead, less than 1 percent is dedicated to that purpose. And that number has fallen as the global economy has dropped.

So that gap between 1 percent of total FTI and 10 percent of FTI has to be met by some set of governmentally led actions and, most importantly, private-sector-led actions. So Ambassador Soderberg has suggested a number of very, very creative ideas for how money could be obtained. I have just heard testimony that also supports this basic idea. And what I am suggesting, Mr. Chairman, is a legal framework for receiving, aggregating, and mobilizing the kinds of capital that is necessary.

Just 2 weeks ago, the United Nations, in a meeting hosted by the richest man in the world, Carlos Slim, in Mexico City, said that it is clear now that the private sector has do more and that governments are unfortunately going to be constrained and are going to end up doing less to meet the funding gap.

Just within the same month, the 11 nations in the Pacific Small Island Developing States said that they were worried about the bureaucratic red tape that is already ensnaring the fairly limited government funds that are available, as they think about their threatened future.

So what we are suggesting here is this new institution that can provide a new channel for low-cost, long-term financing of clean energy in the developing world.

Thank you very much.

[The prepared statement of Mr. Hundt follows:]

Testimony of Reed Hundt

Chief Executive Officer

Coalition for Green Capital

Before the

Committee on Foreign Affairs

Subcommittee on Asia, the Pacific and the Global Environment

United States House of Representatives

July 27, 2010

Thank you Chairman Faleomavaega, Ranking Member Manzullo, and members of the Committee. Mr. Chairman, I am Reed Hundt, CEO of the Coalition for Green Capital (the "CGC"), a non-profit formed for the purpose of developing and advocating tax and finance policies to catalyze private investment that leads to universal, affordable, sustainable, and efficient production and consumption of electricity. The CGC believes that this goal can best be accomplished through a robust network state, national and international banks, financing authorities or trusts that provide long-term, low cost financing for clean energy and energy efficiency projects. Our goal is to allow the private sector to greatly expand its ability to undertake these projects and to create millions of private sector jobs.

I am here today to discuss the need for an international green bank (the "IGB") to complement and support existing governmental and non governmental financing authorities. Before I proceed any further, I would like to commend you Mr. Chairman and the members of the Committee for proposing H. RES. 1552 which brings much needed attention to the critical need to details and implementation

of the commitments made by the United States and others under the Copenhagen Accord.

On the national level, the American Clean Energy Security Act of 2009 (also known as the Waxman-Markey bill), passed last year by the House of Representatives, includes sections (182-191) establishing an independent corporation known as the Clean Energy Development Authority ("CEDA") that would provide loans, letters of credit, loan guarantees and other credit support to deploy clean energy and energy efficiency projects and technologies. CEDA received very strong bipartisan support, having been approved in Committee by a vote of 51 to 6.

In the Senate, we are supporting a bill to establish CEDA that would be established in the Department of Energy ("DOE") to support innovative clean energy and energy efficiency technologies and a proposal to establish a not-for profit 501(c)(3) patriotic corporation called the Energy Investment Trust or "EIT" to support the deployment of commercially ready clean energy and energy efficiency projects which will be included in title 36 of the United States Code which covers patriotic societies and similar organizations like the Red Cross and the Boy Scouts. The EIT would not receive any federal appropriation, but it could borrow funds from the Treasury and would, we believe, be scored as having zero budgetary impact because the investment risk would be covered by a credit subsidy fee paid by the borrower. EIT financing would not be backed by the full faith and credit of the federal government. The EIT would cover its initial overhead costs through funding sources other than the federal Treasury, such as from charitable contributions, and would not be a instrumentality of the US government and would not be funded with taxpayer appropriations since its loans are repaid. The EIT would help channel charitable contributions and would be able to loan to state commercial banks in an ear when credit for small projects is evaporating. We think both the CEDA and the EIT are needed but they serve different purposes and fully complement each other.

We have learned that very significant benefits would flow from establishing authorities and trusts like CEDA and the EIT on both a domestic and an international level.

First, the EIT and CEDA would address in whole or in part the cost disadvantages of clean energy verses conventional energy that does not internalize the cost of carbon emissions. It would do so by providing low cost financing that would very substantially reduce the cost of such projects and which would make them cost competitive or much more cost competitive with high carbon emission technologies. This would not be a subsidy and it would not cost the American taxpayer a penny since the financing would be repaid by the borrower.

This would help solve one of the key challenges of developing clean energy and energy efficiency projects. No one wants to drive up the price that people pay for heating, lighting, and air-conditioning, or to deny shareholders of energy companies the capability of sustaining clean investment. During an economic downturn, no one wants to inflict increases in what businesses pay to keep their lights on, do dry cleaning, design software, run computers, or engage in all the myriad activities that our high value-added economy requires to create wealth.

Our studies have shown, for example, that low cost financing of wind projects 4.5% interest rate and 20 year maturity assumed for a loan supported by government guarantee compared to a conventional loan- with a 8.5% interest rate and a 10 year maturity reduces the delivered cost of wind energy by about 40%. This triples the areas of the country that could deliver wind energy at a rate consistent with the existing cost of electricity in the affected areas. I have attached charts explaining these points in much more detail in Attachment A.

Second, a CEDA or EIT would support a very large number of new private sector projects that otherwise would not be built because they are not cost competitive. These projects would benefit private sector investors, utilities, merchant power companies, energy service companies, transmission line builders, contractors, construction companies, and firms with many other skill sets. All of this could be accomplished with a negligible cost impact on the U.S. government.

Third, as the charts in Attachment B show, the domestic projects supported by EIT or CEDA could create millions of new jobs. This job creation benefit will also accrue when an international green bank supports projects outside the U.S. if, as will be the case, the U.S. provides the equipment and some of the personnel for many of these projects.

Fourth, it will take very substantial investments to deploy clean energy and energy efficiency technologies on a meaningful basis. Using an EIT or a CEDA enables small amounts of funds to support large amounts of funding since institutions like an EIT or CEDA could leverage their funds and thus provide far more support for projects than the federal government can afford through direct grants or subsidies. For example, using conservative leverage modeling, we believe CEDA could support $100 billion of clean energy projects based on $10 billion of funding. The EIT and CEDA would employ strict risk control measures and adequate reserves to cover any losses, and because they are non-profit institutions, they would have no motive to undertake more risky financing.

Very early into our work on the EIT and CEDA, we realized that all of the efforts to negotiate reductions in the carbon emissions in developed countries would be undercut if the potential growth in carbon emissions in developing countries was not addressed. In that regard, we know that there has been a great deal of debate in Congress over whether the U.S. should address climate change if the rest of the world fails to act since by 2030, global energy demand is expected to be 40% higher than it was in 2007 – and 90% of that increase will come from non-OECD nations [1] These figures suggest that even if developed nations are able to significantly reduce their levels of carbon emissions the overall impact on climate change may be outweighed by the contribution of developing countries to global

[1] See Int'l Energy Agency, World Energy Outlook 2009 at 47 (2009). More recently, the U.S. Energy Information Administration (the "EIA") has affirmed these estimates by predicting that global energy demand is expected to be 49% higher by 2035 than it was in 2007 and that 84% of the increase by 2035 will be attributable to non-OECD countries. See, EIA, International Energy Outlook 2010 Highlights (May 2010).

carbon emissions. However, as has already been evidenced in the difficult discussions on carbon emissions targets, developing countries have a legitimate interest in ensuring that any global targets to not come at the expenses of their future development and need to satisfy energy demands. As a result, it is critically important that efforts to reduce carbon emissions focus on providing developing countries with the right combination of incentives, financial resources and technical assistance to encourage less carbon-intensive means to securing energy supplies for growth and development without compromising meaningful economic development.[2] Unlike the developed world which often faces the more costly challenge of trying to subsidize or otherwise create incentives for retrofitting existing installed capacity to be less carbon intensive and investing in new infrastructure to incorporate renewable energy sources into the existing grid in an environment of surplus capacity and declining aggregate demand, developing countries by in large need to make new investments in both generation capacity and infrastructure in the coming decades in order to meet their growing energy demand. This presents a tremendous opportunity to more successfully achieve long-term carbon emissions abatement and reduction goals by promoting the least carbon-intensive options for the energy matrices of developing countries. Conversely, the lack of a timely intervention to create incentives for those more optimal choices will mean a far more costly problem in the long-term. Of equal importance, access to a reasonably priced, reliable supply of electricity has long been identified as an essential key to the economic and social development of countries.[3] Again, the CGC saw an opportunity and a challenge. As previously noted, the critical link between access to reasonably priced, reliable electricity and development means that developing countries have

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[2] This concern was recently echoed in the U.N. high-level Advisory Group on Energy and Climate Change ("AGECC") call to U.N. members to commit themselves to ensuring universal access to modern energy services to meet basic needs by 2030. See AGECC, "Energy for a Sustainable Future," Summary Report and Recommendations, April 28, 2010.

[3] See, e.g., AGECC, *supra*, note 2.

a legitimate concern that global efforts to cap carbon emissions could result in mitigation measures that impact the cost and technologies needed for the supply of electricity and therefore impact their development. On the other hand, policy interventions and instruments that allow for greater investments in electricity generation and infrastructure in developing countries, but with technologies that do not increase (and may in fact reduce) overall carbon emissions would be a win-win. We therefore believe that establishing an international green bank like the IGB, that provides significant amounts of low cost financing to projects that guarantee a clean, sustainable, and affordable energy supply in developing countries is an essential element of any global strategy to ensure that growth in developing countries is compatible with the goal of reducing carbon emissions on a worldwide basis.

Understanding the need for the IGB, the key question remains how such an institution should be funded and operated. As this Subcommittee cited in H. RES. 1552, the Copenhagen Accord represented a critical commitment by the signatories to mobilize $30 billion for the period 2010-2012, growing to $100 billion a year by 2020 for climate mitigation and adaptation in developing countries. [4] Unfortunately, serious budgetary constraints in the United States and Europe have called into question how those goals will be achieved, particularly if the original intent was to commit to new, direct funding by developed country governments through direct cash grants or other foreign assistance to developing countries. We have therefore not been surprised by the news that developed countries are seeking to have existing foreign assistance commitments counted towards those goals, and perhaps most significantly, the recent emphasis by many, including the U.N. Secretary-General's own advisory group on the topic on the need to mobilize the private sector to fill the gap.[5] We therefore see the IGB

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[4] See Report of the Conference of the Parties (COP) on its fifteenth session, held in Copenhagen from December 7 to 19, 2009, FCCC/CP/2009/11/Add.1, March 30, 2010 (Copenhagen Accord), at 7.

[5] See "UN Advisory Group seeks to enhance public-private links to boost access to energy," U.N. News Service,

as addressing these challenges by serving a crucial role in leveraging limited government funds to mobilize private sector financing and investment towards achieving these goals and making those targets far more feasible and realistic.

In fact, one of the consistent themes in our research and analysis has been that the sums of investment that will be necessary to satisfy the increasing need and demand for reliable electricity in developing countries is vast and the corresponding need to fulfill that demand in a way that neither the public sector nor development aid can satisfy alone.[6] Before concluding that there was a need for a new institution, we set out to assess what existing sources of financing, particularly climate financing, might be available to fund the goals that we had identified for the IGB. Our research also indicates that the current international financing mechanisms will be unable to provide the needed funding for clean energy projects in the developing world. While the Clean Development Mechanism ("CDM") has been a source of funding for energy projects, we found that funding from the CDM has been significantly concentrated on investments in just three countries and in a narrow sector and that the selection and impact of projects funded by the CDM had come under increasing scrutiny.[7] In addition to the CDM, there are a series of multilateral and bilateral trust funds in addition to the CDM which have historically been the primary source of funding for clean energy and climate mitigation and adaptation projects.[8] However, these existing

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[6] The AGECC estimates that capital investment of $35-$40 billion of capital will be required on average per year in order to meet the commitment of universal access to modern energy services to meet basic needs by 2030, See AGECC, supra, note 2. See, also,, Jamal Saghir, "Finance boost is needed to achieve countries' infrastructure goals," Fin Times, June 7, 2010. Mr. Saghir is a member of the AGECC and also the Director, Energy, Water and Transport at The World Bank.

[7] Id. at 265-266 (stating that 75% of sales revenues from offsets accrue to Brazil, China and India and only 3% of carbon revenues go to low-income countries and abatement action has been concentrated in a small number of industrial gas projects).

[8] See World Bank, World Development Report 2010: Development and Climate Change, 258 & 263, tbls. 6.1 & 6.4 (2010) available at http://go.worldbank.org/BKLQ9DSDU0.

sources of climate finance have proven to have certain limitations, particularly as it relates to the types of energy projects that we would anticipate to be funded by the IGB. The various climate funds have created a fragmentation of funding that adds transactions costs, leads to inefficient allocations and limits the scalability of projects.[9] More importantly, these existing sources of climate finance have not had a significant impact on addressing the need for less carbon-intensive sources of energy in developing countries or in mobilizing the significant amount of private sector investment estimated to be necessary to achieve that goal.[10]

Similarly, while The World Bank, the regional development banks and the bilateral development agencies have also been an important source of financing for a range of clean energy and climate mitigation and adaptation projects, the amount of financing that they have provided has been limited when compared to the need. Moreover, these funds have been spread over a very broad range of projects and programs, which have been mostly unrelated to energy issues, and have been largely directed to the public sector.[11] Finally, and perhaps most

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[9] See World Bank, supra note 8, at 263-264.

[10] See International Energy Agency, World Energy Outlook 2009 at 47 (2009) (citing the 450 Scenario as requiring US $10.5 trillion in investment in low-carbon energy technologies and energy efficiency by 2030 including US $1.7 trillion for energy-related investments and citing the importance of private sector investment to achieve those investment levels). See, also, AGECC, supra, note 2. "Energy for a Sustainable Future," Summary Report and Recommendations, April 28, 2010.

[11] The Clean Technology Fund ("CTF"), a relatively new trust fund administered by The World Bank, has the potential to address some of the issues that we have identified, but it is still too early to assess how successful it will be in the medium to long term. For example, the CTF program documents expressly contemplate the possibility of extending financing to the private sector and to energy projects. A country's investment plan can designate a portion of funding to be channeled to the private sector and to energy projects (as Mexico has done), but the CTF has a broad mandate, relies on recipient countries to designate investment targets and projects, etc. Moreover, while the amount of work necessary to develop an investment plan should not be underestimated, only eight CTF-co-financed projects had been approved as of July 23, 2010, with one project listed as pending approval (Climate Investment Funds, Project Proposals web page http://www.climateinvestmentfunds.org/cif/current_information_documents). A total of thirteen investment plans from around the world have been endorsed and some $4.3 billion of CTF co-financing has been allocated to these projects. It is estimated that an additional US $36 billion will be leveraged in the coming years from

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importantly, these institutions and agencies have a broad mandate to promote development. While they have clearly endeavored to increase their funding and support for increasing access to energy, including clean technology, they must allocate their resources, particularly their management and staff, among a broad range of issues and engagements that are critical to the range of issues that must be addressed. It is unrealistic, impractical to expect these institutions to solve these issues alone or to be singularly focused on the energy gap and the need to reconcile it with a global strategy to abate carbon emissions.

Given the overall opportunity identified by the CGC and the perceived limitations of the existing funding sources and institutions, our Coalition believes that there would be tremendous value in forming the IGB as a non-profit institution similar to the EIT, CEDA and green banks proposed in Great Britain[12] and other countries that would focus specifically on mobilizing low-cost financing for high-impact, national and regional energy projects in developing countries. The IGB could be organized as an international affiliate of national green, infrastructure or development banks or as a stand-alone organization. It would focus on projects that would include (i) investments in clean energy, energy efficiency and other low-carbon alternatives for new generation capacity [13], (ii) replacing and

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other sources, including the private sector, bringing the total to approximately US $40 billion. See "Climate Investment Funds set to mobilize US $40 billion for country-led low carbon growth," The World Bank, March 19, 2010 and "Making the Most of Public Finance for Climate Action," Issues Brief #2, The World Bank, May 2010. For a description of the CTF program, see The World Bank Climate Investment Funds http://www.climateinvestmentfunds.org/cif/.

[12] Since February 2010, the U.K. Green Investment Bank Commission has been working to identify how Britain can better support and accelerate the private sector investment required to deliver the U.K.'s transition to a low carbon economy. See "Unlocking investment to deliver Britain's low carbon future," Report by the Green Investment Bank Commission, June 2010, http://www.bobwigley.co.uk/wp-content/uploads/2010/02/Unlocking-investment-to-deliver-Britains-low-carbon-future-Green-Investment-Bank-Commission-Report-final-June-2010.pdf

[13] In his remarks, Senator Kerry cites a recent sub-critical coal-fired power generation project in Brazil. Senator John F. Kerry, U.S. Senate, Building a Twenty-First Century Development Bank: New Challenges, New

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retrofitting existing carbon-intensive generation and buildings with renewable energy sources or equipment that significantly reduces or eliminates carbon emissions, (iii) investments in transmission and other infrastructure to allow the adoption of renewable energy sources, regional energy solutions and integration which can reduce the need for new investments in capacity[14], (iv) investments in technologies that reduce oil use and (v) other transformative investments that address electricity needs while reducing carbon emissions.[15]

We have been working with like-minded groups in China, Brazil and Europe to develop this concept and to think through how the IGB could best be funded. Ideally, the IGB would receive initial funding by borrowing from the U.S, Europe, China, Brazil and other large countries and would fund projects in less developed countries. The IGB would provide financial support so that clean energy and energy efficiency projects are able to attract a wide range of private sector lenders including financial institutions, pension funds and insurance companies,

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Priorities, Remarks at the World Bank (Nov. 18, 2009) (remarks as prepared for delivery available at http://go.worldbank.org/KL290KV1L0). In addition, developing countries like Botswana, Guatemala, India and Oman have announced projects to develop new coal-fired power generation plants in the past couple of years and Syria announced a new 250 MW oil and gas project. More significantly and recently, Eskom, the South African state-owned electricity utility has recently mandated J.P. Morgan and Credit Suisse to help it in the financing of two US $15 billion coal-fired generation plants.

[14] One example of a regional energy project intended to promote integration to address energy needs is the Electric Interconnection System for Central American Countries (known as SIEPAC, for its initials in Spanish), a 1,800-kilometer network of transmission lines that stretches from Colombia to Mexico and which is nearing completion, was intended to facilitate regional power generation projects. See, generally, Inter-American Development Bank, SIEPAC Fact Sheet available at http://www.iadb.org/news/docs/Fact_Sheet_SIEPAC.pdf. Similarly, regional energy projects have been suggested as an approach to addressing energy needs in Africa. See, Agence Française de Développement and World Bank, Africa's Infrastructure: A time for transformation, at 181 (Vivien Foster and Cecilia Briceño-Garmendia, eds., 2010) https://www.infrastructureafrica.org/aicd/documents

[15] For example, this "green bank" could provide low-cost financing for the infrastructure necessary to use the natural gas currently being flared in Nigeria for local electricity generation. See, generally, Fiona Harvey, "Heating Up", FIN. TIMES. Nov. 2, 2009.

which in turn would serve to lower the cost of financing to project developers and increase their return. As has been shown in various studies, there is a class of institutional investors, including pension funds and insurance companies, whose long-term liabilities allow them to have longer investment horizons and to desire fixed-income assets, which are a good match for the longer tenors sought by the developers of infrastructure projects. Using capital provided by the contributing countries and from public sector investors which would have no or low return requirement, the IGB would have the ability to provide the required credit enhancements discussed above and lower the cost of financing to project developers. As with the EIT, IGB loans, guarantees and other credit support would not be backed by the full faith and credit of the countries from which it borrows. Given that the cost of financing to these types of projects is strongly tied to the potential credit risk of the borrower and the quality of its offtake contracts, the CGC would anticipate that the IGB would provide a range of credit enhancements to make these targeted projects financeable, including loan guarantees, partial risk and credit guarantees, and insurance products that "wrap" bonds and other debt securities issued by the project company. Generally speaking, the CGC expects that the models for these types of instruments include the products of multilateral development banks (MDBs), like the Multilateral Investment Guarantee Agency (MIGA), credit guarantees provided by export credit agencies, the DOE loan guarantee programs, and others.

The IGB would differ from existing proposals in two important respects. First, it would have the institutional independence necessary to focus on this specific set of investment objectives. Second, it would have to have the flexibility of working with a broad range of partners, including development banks, existing climate financing sources as well as the ability to attract private and public donors and institutional investors. To achieve its mission of providing low-cost financing to mobilize private sector investment, the IGB would (i) leverage the analytical work of other institutions, like The World Bank, International Renewable Energy Agency (IRENA) and the International Energy Agency (IEA), (ii) use a range of financial instruments and techniques to mobilize financing from commercial

banks and international capital markets, (iii) partner and coordinate with MDBs and bilateral aid agencies, particularly on development strategies and projects that ensure the sector reforms and public sector engagement and support that are essential for the success of an IGB-funded project, (iv) develop and pursue complementary investments with MDBs, bilateral aid agencies, existing climate funds, and private donors, and (v) develop specialized expertise in clean energy and energy efficiency projects in developing countries.

To summarize, we see the IGB as enabling the private sector to develop countless clean energy and energy efficiency projects in developing countries. It would effectively leverage funds to create the liquidity needed to bring these projects to scale around the world. These projects would benefit the U.S. companies and workers that produce the needed equipment and which undertake the projects. It would enable the U.S. to partner with countries like China and Brazil in reducing carbon emissions. It would be a partner to the existing international financial institutions whose engagement is primarily focused on the public sector in developing countries.

We are in the early stages of developing the IGB concept and structure and hope that we can seek the support, input and advice of this Committee and its members and staff in bringing an IGB to fruition.

Mr. FALEOMAVAEGA. Thank you, Mr. Hundt.
Dr. Clark?

STATEMENT OF REDMOND CLARK, PH.D., CHAIRMAN AND CEO, CBL INDUSTRIAL SERVICES

Mr. CLARK. Thank you, Mr. Chairman. Thank you for inviting me back again. You are showing extraordinary patience in that regard.

When I listen to all the comments that have been made here, a number of points that I wished to make have been covered, so I will excerpt remarks from some of the written testimony I have supplied.

In terms of my background, I am different, I think, than a number of people who have testified today because I am at the other end of the feeding chain. I am one of the doers. We are the people that actually go out, if you will, and execute on a whole host of different policies. In that regard, our view is a little bit different; perhaps the way we look at these problems is, as well.

I would like to touch on the fact that there are a number of different definitions of adaptation that are being used today. Mine is narrower. I am simply talking about the measures necessary to reduce vulnerability, primarily focused on natural hazards. And when I use the term "mitigation," I am not talking about cutting down on carbon emissions; I am just talking about responses to natural hazards.

Well, climate change—if and when it happens and wherever it occurs—means that the local climate is going to change. Distributions are going to change. And, as a result, it changes risk that we are all exposed to. Ultimately, therefore, adaptation to these new hazards or newly defined hazards is local. The idea of adaptation/response to climate change is not a single problem. It is from a policy standpoint and from a financing standpoint. But from an operational standpoint, it is not one problem, it is 10,000 different problems, all culture-, location-, and climate-specific.

Here in the U.S. over the last 40 or 50 years—which, unfortunately, has been the bulk of my career—we have hammered out a way to deal with environmental hazards. We study the magnitude and frequency of the risk; we quantify them. We develop options. We look at cost-efficiency of those options and try to come up with a priority methodology for dealing with those hazards, and then we execute those plans. We try to spend the least amount of money and get the most amount of coverage. We don't do a perfect job, and we don't come up with a way of climate-proofing anything. We reduce risk.

If you look at the literature surrounding estimates of the cost of global adaptation, you come up with extraordinary ranges of numbers. In the past 5 years, I have run across studies that talk about a $9–109-billion-a-year cost. The ranges that we see here are important because of the differences that we see. Each report is assuming a different discount rate to look at future damages. They range upwards from 0 percent, and, therefore, they look at problems very differently and over- or understate problems as a result. Secondly, everyone is looking at a different universe of impacted systems, of cities, countries, at different stages of preparation and

evolution, and all dealing with different hazards. Third, we don't have an inventory of problems at the project level yet. Everyone is still feeling their way forward. And, finally, there is no clear climatic path ahead.

When we talk about the climate change issue—and you are going to ask me a question, as you have, Mr. Chairman, in the last two sessions that I attended. You asked the same question about whether we are comfortable with climate change. I held my tongue before, and now I will say: I don't know, because I don't know which change we are talking about.

The IPCC has said we have a vast array of possibility out there to deal with. Well, when you talk about hazard quantification, identification, and response, ranges aren't good. They increase risk, and they increase cost. If you will, uncertainty equals height in a seawall. Uncertainty equals increasing cost. And when we don't know what the future holds and we have to design today, we build and waste extraordinary amounts of money as a result.

If we look at New Orleans, they are estimating $15 billion just to bring the levees up to a Category 3 hurricane capacity. I think the costs are in the area of $100 billion to get the city ready for a Category 5 storm. They are not talking about spending that kind of money.

My point is that figuring out what we are responding to is going to be a big, big deal when we try to figure out where money goes. Spending on structures in addition to all the other developmental dollars that out there is going to be a major sink for money in this area.

So how does that tie back to financing? Well, if we look at what the private sector is doing in this area—and I am by no means capable of covering every element of this—what I see is that there isn't a lot of investment happening right now for one very simple reason: Risk. There is too much risk. Not only the risk that the companies have the ability to pay back any money that they would borrow from the private sector, but we don't know what we are spending the money on. When it comes to climate response, we don't know what we are responding to. And that is probably a single largest issue that we are going have to get past sometime in the next decade.

Earlier this week, the U.N. Secretary-General's High-Level Advisory Group on Climate Change Financing Report came out, and one of the members of the committee, Koch-Weser from Deutsche Bank, indicated $400 billion a year is available right now from the private sector in Europe, but they can't put the money in because the risks are too high. There is no insurance. They are not prepared to put the money forward, as a result.

So one of the questions we may want to consider from a policy standpoint is, what can the government do to reduce risk? And I am over time here, but I will just briefly run down a list.

First and foremost, we have to improve the accuracy of our models. We have to make them more local and not so much global in scale. We have to slow our heavy-lift investments. We are not in a position to invest widely in large-scale construction from a hazards-management standpoint because we don't have the data in most of the areas that we are concerned about. And then, finally,

of course, we are going to prioritize our projects and standardize our evaluation criteria, as I know agencies have a desire to do at any rate. And, finally, develop some level of guarantees, which a number of the other panelists here are, I think, already taking about.

Thank you.

[The prepared statement of Mr. Clark follows:]

CLIMATE CHANGE FINANCE:
Providing Assistance for Vulnerable Countries

TESTIMONY PREPARED FOR THE HOUSE FOREIGN AFFAIRS COMMITTEE'S SUBCOMMITTEE ON ASIA, PACIFIC AND THE GLOBAL ENVIRONMENT
July 27, 2010

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INTRODUCTION

I do not come before this committee as an operating public policy-maker, although I have served in that capacity in the past. I have received extensive training in climatology and in climate model development; I have developed or supported the development and evaluation of hazard warning systems for large urban areas; and I have performed extensive hazard risk assessments for large areas of the US, including hurricanes, riverine flooding, droughts and low flows. In addition, I have performed a series of analyses regarding interaction between extreme environmental events and toxics management. In short, I would not presume to tell this committee that I am fully versed in the foreign policy and treaty complexities associated with climate change. But when policy is converted into a specific action plan and funded, someone with my background may well be responsible for implementing those plans.

With that background in mind, this committee has gathered to discuss adaptation funding for developing nations. In particular, the committee wishes to consider finance mechanism and governance issues associated with climate change adaptation and mitigation funding provided to vulnerable countries. I would like to offer a few thoughts and observations regarding US and international options for vulnerable/developing nation adaptation support.

ADAPTATION

When we speak of adaptation, there are a number of different meanings that are used in science and policy circles. For the purposes of this testimony, I use the term "adaptation" as the initiatives and measures necessary to reduce the vulnerability of natural and human systems against actual or expected climate change effects. Within that meaning, I use the term "mitigation" to refer to efforts to reduce the impact of climate changes. Such efforts do not include any consideration of the costs, means or methods for reducing the amounts of GHG emissions into the atmosphere.

"Adaptation" sounds straightforward, but it is not. Natural climate is variable, both over space and over time. If we consider historical climatic data, we see that the world has experienced markedly different climates over time (ice ages, climatic optimums, etc). At any given location, we expect to see wet and dry years, as well as warmer and cooler years. Wealthier nations have developed a host of technologies for dealing with extremes of climate variability, especially when those extremes threaten human and natural systems. We call those extreme events natural hazards (floods, hurricanes, droughts, infestations, etc), and although the management alternatives will vary by hazard, the methods for dealing with those hazards have several common threads:

- We study the magnitude, (size, impacted area, severity of conditions) and frequency of those events for each location over extended periods of time
- We define a series of options that will manage or mitigate the effects of the specific natural hazard (A Range of Choice)
- We assess the benefits, costs and effectiveness of each option, and design a program or plan to manage risk at an acceptable cost. Such evaluations typically include consideration of fiscal, social and environmental impacts

Implementation of such a hazard management plan here in the US typically involves some combination of various structural (dams, levees, flood barriers, etc) and non-structural (land use restrictions, building codes, hazard insurance) options. The plan is based on a careful study of local conditions, past climatic data and historic hazard events, not to mention the current extent and condition of local human and natural systems. Although protection will vary based on the selected management tools and hazard characteristics, typical domestic hazard mitigation plans are designed to minimize losses during events with a recurrence interval in the range of 100 to 500 years. In short, based on a *known* range of conditions, we selectively manage risk.

"Climate change" means that we no longer face a known risk. If local precipitation and temperature patterns change, they will change the magnitude and frequency of previously understood hazards. Climate change therefore requires *all* nations, communities and individuals to adapt to a new, partially unknown distribution of hazards. It means that developed nations will have to potentially modify past efforts to manage environmental hazards, and it increases the risks of unprotected and partially protected populations in developing nations.

CLIMATE FORECASTING UNCERTAINTY

If an understanding of the magnitude and frequency of natural hazards for any location is a key element in mitigating risk, and since climate change suggests that such risks will be altered for all places on the globe over time, perhaps the first and most relevant question we might ask is: adaptation to what? The IPCC (2007) acknowledges that there are substantive forecasting inconsistencies between a host of climate modeling and forecasting efforts, but the IPCC research in aggregate suggests that human-caused climate changes are already upon us. The consolidated IPCC climate forecasts for the upcoming century suggest that continued global warming is all but certain, and they

suggest that the climates of vast areas are expected to change, with altered precipitation and temperature distributions forecast for many parts of the globe. Those "altered distributions" may translate to more frequent and greater magnitude natural hazard events (including floods, droughts, heat waves and hurricanes) globally.

To date, there is no global agreement on limiting carbon emissions, so one of the primary model inputs – the levels of GHGs stored in the atmosphere - is expected to increase, but by an unknown amount. The absence of any global GHG emission controls also means that the forecast magnitude and frequency of expected impacts (read environmental hazards) is also substantively uncertain. A quick review of the IPCC AR4 underscores that fact, as 6 emission scenarios have been developed to provide a range of expected temperature impacts based on the global release rates of GHGs (See Figure 1). Depending on the amounts of GHGs released to the atmosphere, the combined models suggest that we could see a 15-fold range of temperature changes (increases from one to fifteen degrees Fahrenheit) over the next 100 years depending on GHG accumulation rates in the atmosphere.

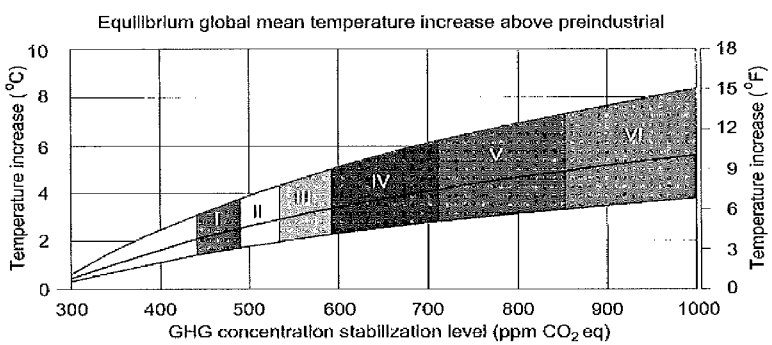

Figure 1: Forecast Changes in Global Mean Temperature with Modified Levels of Atmospheric GHGs. Source: IPCC AR4, 2007

Similar efforts to forecast changes in the amounts and timing of precipitation reveal multiple relationships between atmospheric GHG levels and precipitation distributions, and the latest IPCC published modeling efforts suggest that higher levels of GHGs will substantively change precipitation amounts and extreme event frequencies. Without hard information on atmospheric GHG levels in the future, we will not be able to fully and accurately forecast global climate changes. For any given location, this also implies that we will not be able to forecast natural hazard magnitudes and frequencies, and those forecasting uncertainties will limit the utility and reliability of existing hazard management programs (including sea walls, levees, coastal barriers, dams, insurance, warning systems, etc). **Our current forecasting tools cannot give us a clear sense of the climatic conditions that will drive adaptation efforts.**

MODEL SCALES DO NOT SUPPORT LOCAL HAZARD MANAGEMENT EFFORTS

In addition to model input uncertainties, there is a second model-related issue: the models used to produce the IPCC forecasts are at a scale too large to support local hazard management programs. At present, the model scales may use model cell sizes that are substantially larger than useful for hazard identification and mitigation. For example, typical global circulation models use grid sizes that range between one and five degrees of latitude and longitude (4,400 to 111,000 square miles in size at the equator). This is the size range equivalent of the state of Connecticut (4,400 square miles) to Arizona (113,000 square miles). In many areas of the world, there are multiple sets of climatic conditions present within a single cell. (For example, the state of Colorado has arid, semi-arid, humid mid-latitude and alpine climates within its borders.) In addition, local conditions will act to amplify or suppress changing climatic conditions. (For example, areas now served by streams fed by glaciers will experience significantly different riverine flooding hazards if the glaciers melt away and precipitation patterns change. Both are predicted in the IPCC AR4.) Forecasts of changing climate at the individual cell level do not necessarily translate into useful information when trying to understand local environmental hazards. There are significant efforts under way to regionalize those models, but useful, long-term regional forecasts appear to be at least a decade away. **Our forecasting tools do not provide meaningful, localized data that would be useful in many hazard management efforts.**

LOCAL CLIMATIC DATA COLLECTION EFFORTS

Many less developed countries do not have the resources to develop and manage climate data collection programs that could be used for local hazard model development, nor do they have regionally representative historic records of climatic data. In developed nations, engineering design efforts are typically based on local historic climate records and hazard records/experience that extend over the 50 years or more. This allows a project designer to identify the probability of various extreme events, and allows the designer to select a risk management target for any hazard mitigation program design. For example, a dam designer might want to develop a capacity to manage a 100-year drought and a 100-year storm. Extreme high and low flow records along with historic climate records allow the project designer to develop a frequency distribution of events that will define the performance standards for a hazard mitigation program (the height of the dam, the size of the spillway and the size of the water supply that can be safely distributed from the reservoir). In the absence of historic data, information can be transposed or modeled from more distant instrumentation, but such efforts degrade the accuracy of a local natural hazard magnitude and frequency analysis.

Forecast uncertainties, difficulty in translating global-to-regional model outputs and local data limitations all reduce the quality of the information that is the foundation of a natural hazard mitigation/adaptation analysis.

THE SIZE OF THE ADAPTATION PROBLEM

How large is the adaptation problem? The numbers vary dramatically depending on the estimation processes used. For example, the following estimates have been prepared by a number of respected individuals and agencies around the world:

- World Bank (2006) $9 to $41 Billion per year
- Stern (2007) The Stern Report: $4 to $37 Billion per year
- UNDP (2007) Human Development Report 2007/2008: $47 to $109 Billion per year
- Oxfam International (2007): >$50 Billion per year based on a low warming estimate (2 Degrees C)
- UNFCCC (2007): $26 - $67 Billion per year by 2030
- Climate Works (2009) Project Catalyst: $15 to $30 Billion per year through 2020, $30 to $90 Billion per year after 2030.

The wide (ten-fold) variances in estimates ($9 to $109 Billion per year) are based on a number of factors, but I would call attention to four observations:

- Each report assumes a different discount rate in order to set a present day value for anticipated losses from climate change, and many analyses use a very low number (less than 2%), which tends to variably overstate the present value of future damages and the possible size of the problems we face. This may distort both need estimates and the necessary timing of responses.
- Each study looks at a different universe of impacted systems
- All studies include variably accurate assemblages of analyses regarding the current conditions of environmental and economic systems in each developing nation, not to mention incomplete data regarding the presence and status of natural hazard management/mitigation systems
- There is no clear climatic path ahead. For reasons enumerated earlier in this testimony, policy-makers can only make an educated guess at what might lie ahead, and their range of climate choices is exceptionally broad.

We do not have a clear definition of the adaptation problem, and any attempt to get a better feel for the problem magnitude will be further confounded by the reality that economic development and adaptation are intertwined with each other. For example, poor housing quality will be more readily damaged in a storm when compared to better housing quality. Improving the housing stock could be considered a product of an economic development program, but it will be also impact future adaptation costs.

CLIMATE FORECASTING CAPABILITIES AND HAZARD MITIGATION SPENDING

Why are issues of model accuracy, environmental data adequacy, the status of national adaptation programs, and economic analyses relevant? If the scientific community cannot provide the levels of accuracy and detail required for effective hazard definition

and analysis, then the global community runs the risk of wasting substantial amounts of limited adaptation aid funding. In fact, with a substantively inaccurate climate forecast used to build hazard mitigation structures, it is possible that we could make some climate change adaptation problems worse.

Expected Areas of Greatest Capital Investment

Whatever amounts of money are allocated by wealthier nations, the bulk of those funds in the next few decades will likely be spent on structural programs for hazard management (dams, levees, hurricane barriers, water supply management systems, etc) over the next few decades. Ten of the 15 largest cities in the developing world – including Shanghai, Mumbai and Cairo – are currently vulnerable to coastal storm surges and/or riverine flooding. In addition, the floodplains of the great rivers in South and East Asia are filled with people and cities that are variably protected from environmental hazards within the current climate typical for each location. In those areas, past attention to natural hazard mitigation has often been seconded to other, more critical social needs. Whether the current protection systems are adequate or not, preparation for projected climate changes means that we will have to bring the entire system up to a new – and as yet undefined – standard. In any number of cases, a global adaptation program for developing nations may include full construction of natural hazard mitigation systems, not just improvements. With an uncertain climatic future, structural options may be one of the primary sinks for capital expenditures and they may also represent one of the greater risks for inefficient allocation of development capital.

[As a cost reference, the US Army Corps of Engineers (2008) estimates that basic improvements to the levee system in New Orleans (just the levee improvements for one city before the effects of climate change are considered) will cost approximately $15 Billion to complete. The barriers and levees were originally designed to manage the expected impacts of a category 3 hurricane. Some portions of the city could see a >8 foot increase in storm surge potential between a category four and five hurricane. An increase in the severity and frequency of Gulf hurricanes would suggest the need for vast additional expenditures in order to improve the protective capabilities of the levee system.]

A focus on structural protection against natural hazards does not exclude the importance of non-structural alternatives like building flood-proofing, land use restrictions, insurance, modified construction standards, etc. Often, these programs can be far more efficient in reducing natural hazard losses and they should be an integral part of any comprehensive hazard management plan. Given the uncertainties of expected climate change, non-structural options may well be the first priority in mitigating poorly understood hazards.

The Relationship of Hazard Magnitude, Frequency and Cost

In hazard mitigation structural design, structures are built to a design standard. That standard is informed by a valuation of the assets requiring protection (people, structures

and economic activity). If we do not understand the physical dimensions and probabilities of a hazard, then we run the risk of over or under-design. Forecasting uncertainty can be translated into structural elevation uncertainty. If the level of protection is too low (a levee is undersized, for example) then the structure will be overtopped with greater frequency and damages in excess of expectations will be experienced. It is not unusual to find that an under-designed structure will actually attract settlement and economic activity because of the illusion of safety. In those cases, the structure can actually increase the damages from natural hazards. In addition, a failure to properly protect an area from natural hazards may also undermine other investments in economic development. If the level of protection is too high, substantial sums may be wasted in construction with little or no additional benefit. **Better estimates of climatic variability translate into better allocations of aid and more efficient expenditures of available funds.**

Cost – Efficiency, Benefit Cost or Risk-Based Analysis

We need to be both careful and thoughtful in allocating resources to address current and possible future problems associated with climate change. *These uncertainties do not immediately imply that all efforts to manage developing nation environmental risk should cease.* It does suggest that such efforts be approached with a good deal of caution and forethought. The method for addressing the adaptation issue is not a simple matter of international obligation. Our nation has agreed to apply the "precautionary approach" in matters like these. The precautionary approach is defined in the Rio Declaration of 1992 (Principal 15 as endorsed by the United States), and it states that: "in order to protect the environment, the precautionary approach shall be widely applied by States (read signatory nations) according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall be not used as a reason for postponing cost-effective measures to prevent environmental degradation." The reader might note the phrase "cost-effective measures" in that declaration, as it should have implications for any adaptation aid forthcoming from the United States.

The US will want to maximize returns on any aid investments made to developing nations. Whether cost-efficiency (lowest-cost options for achieving supply of key services), cost-benefit (including some cost associated with loss of life) or risk-based (achieve an acceptable risk at a minimum cost) analyses are used, the analytical and policy-making challenge remains the same: efficient allocation of limited climate change funding in the face of a substantively uncertain climatic future. (It should be noted that the selection of screening and evaluative tools by each developing nation will reflect the cultural values of that nation. Assignation of value for human life will be a key determinant in the justification of many hazard control structures and programs.) Unless the US joins a group of funding nations and opts to lose direct control of investment, all US investments should be based on a thoughtful analysis of each planned project with careful quantitative attention to the risks associated with climatic and analytic data uncertainties.

SUMMARY AND RECOMMENDATIONS

Over the last decade, as more information has accumulated regarding the issue of climate change and as we better understand the potential environmental and economic impacts associated with such changes, there has been a growing call for immediate action to prepare for the effects of coming climate changes in developing nations. At the same time, we are experiencing a significant economic contraction within the global economy. Although some nations – especially China – are experiencing rapid economic growth, most of the developed nations are experiencing sluggish growth at best, and many of the developed nations face substantial amounts of accumulated deficits and under-funded future obligations that are impacting efforts to encourage economic expansion. Managing and reducing carbon emissions is a politically charged issue in the US, in part because a transition to a low-carbon economy has the potential to significantly impact elements of domestic economic activity. Allocation of additional aid dollars will come at some domestic cost, and we need to use care to maximize generated benefits on such investments.

The US has already committed to adaptation aid – both in concept and in treaty. We are also committed to the best use of limited aid dollars. There are a number of potential issues that should be addressed carefully in aid decisions:

- Significant uncertainties in longer-term climate forecasts
- A lack of regionally specific forecasts for many regions of the world
- In a number of developing nations, limited historic climatic and hydrologic data

When developing structural natural hazard mitigation programs – the likely area of greatest adaptation aid investment – poor forecasts and inadequate historical climate data can cause structural design error. Design errors either cause substantial cost overruns or higher than anticipated damages. The uncertainties we see in the data are in part reflected in the substantial variations in expected climate change adaptation costs seen in a number of loss projection analyses.

If funds are to be invested in any given project, a careful economic and risk-management analysis should be performed, and projects should be screened and funded based on their ability to meet a broad set of criteria, including:

- Consideration of a wide range of potential climatic outcomes over the life of the proposed project
- Definition of a range-of-choice for hazard management
- Quantified analysis of both risk-reduction and cost-efficiency associated with selected options
- First attention and priority to risk reduction before structural options are pursued
- Structural design proposals that include contingency plans for unanticipated climatic evolutions

In addition to direct financial aid, there may be several opportunities for indirect adaptation assistance. Climate forecast uncertainty and data limitations represent a critical choke point for definition of hazard mitigation programs. There is substantial international scientific attention to try and improve the quality and utility of such forecasts, but substantive improvements are probably a decade off (author's estimate). The US might consider developing an assistance center for climate/hydrology/hurricane science that develops the best and most current forecasting and analytical scientific services to support the development of a proposal for developing nation adaptation support. This would provide some continuity in proposals which would improve the aid proposal evaluation process. It would also employ domestic scientists while providing a politically stable platform for future adaptation analysis. Similar support could be offered for land use planning, non-structural engineering services and economic impact evaluation. Finally, the substantive climatic uncertainty may be partially managed by an insurance fund that offsets a specific fraction of the risks associated with adaptation.

Lastly, the US should give careful consideration to timing of adaptation investments. I think it would be safe to observe that we face maximum uncertainty at the present, and additional research and data collection should act to reduce uncertainty. That would suggest that first adaptation investments focus on analysis and modeling, followed by a heavier investment in non-structural adaptation programs with particular attention to minimizing future at-risk development (don't make the current problems worse).

Should the Committee wish to evaluate elements of this report in greater detail, I will be happy to support such efforts.

Redmond Clark, PhD

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Mr. FALEOMAVAEGA. Thank you very much for your statements.

Without objection, all your statements will be made part of the record. If there are additional materials you want to add to your statements, please do so. I will be more than happy to receive them.

You have already heard some of the dialogue and opinions that were given by my colleagues before they left. This is not new. I have always had a healthy disagreement with my good friend from California over whether there is such a thing as climate change and whether it really is affecting our own national interests.

I think, Ambassador Soderberg, with your background at the National Security Council and the White House, security issues seem to be another factor mentioned quite often when we talk about climate change. Is this really a matter that should be part of the debate and part of our substantive review of the issue of climate change? It does have serious implications about our national security, does it not?

Ambassador SODERBERG. Thank you, Mr. Chairman.

In my opinion, and this is based on decades of experience in national security issues, it is absolutely a key challenge for our national security officials. And I was pleased to see the Pentagon officials are in fact a little ahead of the game in some cases on thinking and planning about this.

I did have the opportunity to hear a little bit of the debate in the last panel; and I just find it perplexing that those would question, first of all, the science and, second of all, the need to move and move quickly on this issue. We are behind the curve. If we fail to act, fail to come up with creative solutions and fail to have the United States in a leadership position there, we will not meet this challenge.

If we fail to do so, the facts are simply very clear. We will have more violence, more poverty, more race to scarce water, which is already becoming a source of conflict in central Asia, and I think we need to show U.S. leadership in a much stronger level than we have to date. I commend your leadership on this issue and am happy to continue to make the case that we need to act and act now.

Mr. FALEOMAVAEGA. Over the months following the Kyoto Protocols, I always felt there was no question about the understanding and the technology for the developed countries. They know what is going on.

But what I am more concerned about is, if we are focusing also on the needs of some 50 least-developed countries and if they are impacted also by climate change, and I think if some of you were here and heard from witnesses from State, Defense, Navy, and from USAID, this is what the focus of this subcommittee is trying to bring out. I let Congressmen Henry Waxman and Markey and Senator Kerry and the others take on as a policy what is being developed in our country. My concern is should we also focus on the situation dealing with the least-developed countries? Because it seems that they are the ones crying for help. I am sure that the developed countries have the resources. But what do we do with those that are not at the same level of development technologically, socially, economically, and all of that? Where does it leave us? This

is where we are trying to keep plugging along and trying to see—this $30 billion that seems to be a commitment among the Copenhagen member countries of the accord, any comments on this amount that has been deliberated? Is $30 billion a good amount to consider or should it be more? Obviously, it should be more, but what can we do, given the economic straits that we face right now in our own country?

Ambassador SODERBERG. I believe it is actually $100 billion. The commitment in Copenhagen was to come up with $100 billion to help address the cost of climate change by 2020, and a lot of estimates believe the actual figure will be much higher than that.

Initially, advocacy groups were calling for $150 billion. They came up with 100, and other estimates say it will be five times that. But we cannot expect others to pay for this and shoulder the burden on their own. We simply have to do it or they will not be able to do it.

I have laid out some financing. We need both a public and private commitment to that. There is concern that the administration, while strongly committed to it, has not figured out the financing of it and is relying very heavily on the private sector to come up with the $100 billion, which is highly unlikely.

I was encouraged to hear the comments from my colleagues at the table for some additional ideas, but unless we come up with some creative solutions to come up with that, and probably more, we will be failing in that challenge.

Mr. FALEOMAVAEGA. I think Mr. Diringer made some recommendations to Congress to increase the funding.

Mr. DIRINGER. Yes. The goal of $30 billion you referenced with respect to the fast track funding from now through 2012, I think that is an achievable goal. Should it be more? Perhaps. But it reflects a significant political consensus, and I think the objective of the moment should be to ensure that we deliver on that promise.

If one looks at the pledges on the table from the developed countries, I think we are approaching $30 billion. But I will emphasize the word "pledges." The delivery over the next couple of years will be vitally important.

The European Union has pledged on the order of $9 billion, Japan on the order of $14 billion, and with the increase of appropriations approved by Congress for Fiscal Year 2010 and with the proposed increase for Fiscal Year 2011 that the President has proposed, the U.S. contribution would be on the order of $3 billion. So, together with some others as well, that is beginning to approach $30 billion.

We have talked a lot about why this type of funding is in the U.S. interests from an economic perspective, security perspective, and diplomatic perspective. I think it is worth noting that it is also quite consistent with some of our cherished American values, and here I would emphasize our humanitarian values. Time and again we have seen the generosity of the American people when others around the world are in need. Most recently, the earthquake in Haiti, for instance. Increasingly, I think the U.S. humanitarian record will be seen against the backdrop of increased climate impacts. So I think it is not only in our interest but very consistent

with our values to step up and to provide the increased support that is needed.

Mr. FALEOMAVAEGA. Mr. Hundt.

Mr. HUNDT. I think that it is going to be necessary to supplement these government commitments by something like the energy independence trust which would aggregate charitable contributions from many sources, the exact same way that the Red Cross currently operates and does so in an international concert of similar institutions created in other countries.

The reason is that the essential problem here is a great deal more has to be invested in alternative energy production and consumption everywhere in the world.

In addition to the fact that this is consistent with American values, as Mr. Diringer has correctly said, it is also the case that when we mobilize resources to create alternative energy markets in the developing world we are creating markets for the export of some our highest value goods and services.

We are right now a significant exporter to China of solar technologies. We are a significant exporter and we are a significant investor in R&D in alternative energy. In fact, we are probably leading the world right now in the wake of the Stimulus Act in investment in research and development in alternative energy. So if we create in new, developing economies growth markets for alternative energy, we are not only doing the right thing for the world and the right thing for the climate, but we are also doing the right thing for American businesses and American workers.

Everywhere in the world the imperative is to have scale, massive investment and massive deployment in wind and sun and all other alternative energies. If we have that scale built in part of the developing world, it will lower the overall cost and make it easier for us to deploy those exact same products and technologies here in the United States.

Mr. FALEOMAVAEGA. Dr. Clark.

Mr. CLARK. I have to agree with the comment Mr. Diringer made about American values. Ranking Member Manzullo brought up the counterpoint, which is an extraordinary challenge for us right now. We have people here that are also in need, people that are today feeling a great deal of pressure.

I don't envy your position. I know that simple spending, simple additional spending without a larger plan, without a larger context I think is, from a taxpayers' perspective, is going to be very, very difficult to push in this country.

It is worth the effort. I certainly agree it is worth the effort. I don't see an immediate solution, but the one item of hope I guess that I would bring and the comments I made were these changes that we are looking at are—the changes now, not preventive action—are gradual. They are not going to be upon us in a matter of 3, 4, or 5 years. There are a number of other significant economic forces that are at work right now that may come in and significantly alter our plans. I have spoken to this committee before about some of the issues of energy supply and the importance of alternatives within that context.

So we face a significantly uncertain future. I don't see a clear path through. But I understand the effort that you are at least in concept committing to, and I certainly support it.

Mr. FALEOMAVAEGA. Do you agree with the administration's initiative in making more investments into the alternative energy sources other than just our dependence on fossil fuels as we have been for all of these years? And I guess your talk about green energy seems to be the spoken word and that we are doing this. It seems we are not moving fast enough, or am I wrong on this? Any comments on this?

Mr. HUNDT. I will say one thing, if I might.

The Department of Energy is making the single largest focused commitment of funds and brain power to alternative energy that any government in the world has ever done, and I am talking about over the last 2 years and on into the next year. The central problem is we actually don't have a large market for alternative energy here in the United States. The reason we don't is because of the economic slump. The overall demand for electricity in the United States dropped in 2009, and it will be down in 2009 and 2010, the only 2 years since World War II that demand for electricity in the United States is down.

And because we haven't taken the measures that encourage people to phaseout their existing generation sources based principally in coal, since we haven't taken those measures, people are not phasing out and moving to alternative; and they are not turning to their customers and saying I guess I need to get new electricity for you.

The last couple weeks in Washington have been an exception in the local area, but, in general, this is the big truth: Where is demand? It is in China, and it is in the developing world. We need to recognize that the Chinese Government is awake and alert and is meeting that demand, and they are bringing low-cost financing tools to the whole rest of the world with this one little proviso: You have to buy the Chinese products in order to have the financing.

So as a matter of geopolitical strategy, as a matter of opening export markets and as a matter of having markets to sell our wonderful taxpayer-paid research into, we have to have a plan to create alternative energy markets all around the world.

Mr. FALEOMAVAEGA. You might also be interested to know that, as of March, 2010, China has a foreign exchange reserve of almost $2.5 trillion. I don't know how this compares to us.

I turn the time to my good friend, Congressman Inglis, for his set of questions.

Mr. INGLIS. Thank you, Mr. Chairman.

I was interested in that last exchange and wondering whether you all might want to comment on this. It seems to me that, broadly speaking, there are three approaches we can take. One is to subsidize various technologies by having the government basically pick winners or losers. The second is to mandate certain technologies, which is sort of like the first except it is a more direct mandate. And the third is just to set an elegant price on carbon and watch the free enterprise system in all of its creativity solve the problem.

The third, obviously, the way I am describing it, is what I prefer. I wonder whether you might want to comment.

My sense is cap and trade soon is going to have a death certificate. When that death certificate is issued, and it seems to be in the process of being issued now, we have an alternative; and the alternative is a revenue-neutral tax swap. Basically, what you do is reduce payroll taxes or marginal rates or corporate taxes, pick one, but the one that I picked in a bill was FICA taxes. Reduce FICA taxes, and then in equal amount shift the tax to emissions so that it is revenue neutral. The government is not taking any additional money out of the economy, and then you apply that mixture to imported goods as well as domestically produced, and it is a border adjustable tax. It is removed on export and imposed on import, we think in a WTO-compliant way.

What I think would happen is the free enterprise system would figure out all kinds of ways to fix this problem. But the challenge is you can't get there from here because the incumbent fuels, being petroleum and coal that we are mostly concerned about, natural gas to some extent—when it comes to petroleum, we are concerned about it for national security reasons. When it comes to health indicators, we are concerned about coal, very much concerned about coal. But the negative rationalities are not recognized, and, therefore, there is a market distortion, and fixing that market distortion is what we should be about. It seems to me that is a key role of government.

Does anyone want to comment on that, that the pricing of carbon is really the thing that would cause the free enterprise system to deliver a solution?

Mr. CLARK. I appeared before the committee about a year ago, and a year before that, and in the course of those discussions, especially in the Q&A afterwards, one of the comments that I made—which is in line with Congressman Manzullo's comments earlier today—was that there is a presupposition here when we talk about policy: The price of carbon is going to remain relatively stable. In the past roughly 12 to 14 months, data that has been coming out of the IEA and other like agencies indicates that oil may very well be the first of the global fuels that may experience some form of supply-related upset. Their suggestion was that as early as 2016 we could, in theory, have some supply-side problems where supply can't meet demand, in which case we would have an insertion of an "elegant price for carbon," I think you called it. It would be something more than elegant, I suspect. And one thing we want to avoid is speed of onset.

Obviously, what you are talking about is not fundamentally different than other approaches that look at ways of putting a price on carbon, that buys us time to begin to adjust away from that.

My second comment would be, in 1980, U.S. EPA designated a category of waste as hazardous waste, and the market that evolved from that regulation drove the cost of treatment and disposal to somewhere in the 400 to $1,200 a ton range. At that time, the U.S. was generating 300 million tons of hazardous waste a year. Today, the U.S. generates 4 million tons of hazardous waste, and the disposal price for most of it is now under $50 a ton. It is precisely the kind of model that you are talking about, and the question is, how do we do it in a way that is economy-neutral?

One other point I would make is, today, the greatest negotiating lever the U.S. has is access to its own markets. We are a necessary part of China's economic renaissance, and we are a necessary part of the European Union's economic activities. As long as we limit access to our market and as long as China doesn't fully swing over to more of an internalized demand and supply system, we have an opportunity to use that lever in a manner that you are describing. If we don't take that step probably within the next decade, I expect that China will simply be immune to that influence. But since China is now the leading energy consumer and expects to continue to grow through 2030 in terms of energy demand, if we are going to deal with the problem, we have to start there.

Mr. FALEOMAVAEGA. Go ahead, Mr. Diringer.

Mr. DIRINGER. Mr. Inglis, we would wholeheartedly endorse your preference for choice number three, the use of market-based mechanisms to price carbon for a wide range of reasons, first because we believe that they would provide for the most cost-effective means of reducing our emissions but also because the pricing mechanism provides an ongoing incentive to companies to innovate and to develop the technologies that would be needed to cost-effectively reduce emissions and thereby allow the market to pick the winners, as you say.

I am not sure that we are quite prepared just yet to join in signing the death certificate on cap and trade, but we would certainly be happy to explore with you any alternative market-based mechanisms that you think might find some favor in the near future in the Congress.

Beyond pricing mechanisms, though, we believe there are probably some other targeted policies that we would need to ensure that certain types of technologies that might not get the necessary incentive through a pricing mechanism are developed and demonstrated and deployed, in particular, carbon capture and storage.

Mr. INGLIS. Thank you, Mr. Chairman, for the time.

I might just point out that cap and trade is 1,200 pages. The bill I just described is 15 pages, 15 pages. So it can be done much more elegantly than 1,200 pages.

Thank you, Mr. Chairman.

Mr. FALEOMAVAEGA. Thank you.

I yield to my good friend, the gentleman from Illinois, for any further questions.

Mr. MANZULLO. Thank you, Mr. Chairman.

I am concerned by statements by Ambassador Soderberg quoting the World Wildlife Fund that 850,000 new permanent jobs will be created if U.S. businesses capture 14 percent of the export market in just four clean energy technologies. Then they are laid out there.

Government doesn't create jobs. The cap and trade, even the threat of it, cost a $1-billion investment in Rentech over on the Mississippi River in East Dubuque, Illinois, in my district. They were going to have the first Fischer-Tropsch conversion in the United States, using coal coming up the Mississippi River as a feedstock for anhydrous ammonia, urea, and other agriculture application products. When then-candidate Obama in June 2008 made the statement about taxing carbon emissions, the banks pulled the plug on that.

You would have had diesel fuel. Airplane fuel would have been a by-product of that. It would have triggered a green technology revolution across the top part of the State of Illinois.

There wasn't a time when 535 Members of Congress woke up at 6 o'clock on a Tuesday morning and decided that Congress knows how to invent green technology. Green technology is nothing more than what is called productivity; and, given to its own devices, the private sector can well take care of that. Let me just give you an example of that.

Epson is a German-equity-owned company in the congressional district that I represent. They make the world's only vacuum hardening machine. It sells for less than $20,000. It is very efficient. It is portable. It is programmable in different languages. Their issue is not getting Congress involved in more tax breaks, because it is a very efficient machine, but a free trade agreement with Brazil.

Danfoss is a Danish firm that has about 400 jobs in the congressional district that I represent. They make a machine that hooks onto other machines that modulates the exact amount of electricity that goes in to run a power system.

All World manufacturing in Harvard, Illinois, makes a machine that replaces a tank into which you pump air to run a hydraulic pump, whereby the amount of electricity is reduced by 80 percent.

This goes on all the time in manufacturing; and manufacturers are really upset, very upset when Congress says it can create jobs. Congress is destroying jobs in manufacturing. This cap and trade and the health care bill that we passed have made the manufacturers so jittery about business expansion that jobs are going to China. I mean, if you really want to help out manufacturing to make us in a better position, then we need to back off things such as cap and trade and get back with more expensing and more bonus depreciation and items like that.

If anyone wants to comment, that is fine. And I picked on you, Ambassador, so you have the first response. I did withdraw the word "bothered" and substituted "concerned." The record will note that.

Ambassador SODERBERG. Thank you very much.

I appreciate being both bothered and concerned, particularly when you represent a district that gets so directly impacted by many of the decisions in this issue. Any government approach for trying to change the mix that is used to address the problem of climate change has to take into effect the impact on real people whenever you change industry approaches. And that is real, the stories are real, those people are real, and I think that is an impact that has to be taken into account in any public decision. So I understand your concerns about the impact of some of these decisions on your constituencies.

I look at it as a national security expert, and as a national security expert I don't have to represent people in your home district or any home district. But I look at the U.S. national interest as a country.

Mr. MANZULLO. Well, my district isn't much different than the other congressional district with regards for the need for national security.

Ambassador SODERBERG. That is true. And I would argue that the national security of this country has to take a hard look at our dependence on fossil fuel in terms of the national security both on the countries on whom we rely for those fossil fuel imports, which will not change even if we increase our domestic energy sourcing exponentially in any significant way in the next decade or several decades, probably a generation, and the climate change impact for our reliance on fossil fuel from a national security perspective is something that we need to address.

Mr. MANZULLO. But the coal comes up the Mississippi River from central Illinois, that is not being imported.

Ambassador SODERBERG. No, but what we are talking about here is how to address the issue of our reliance on fossil fuel for our main sourcing of energy and how can we expand that so we are not reliant on the most polluting sources of energy. That is what all of us are trying to address.

To do that, we are going to have to have a shift away from the fossil-fuel reliance on our industry. The way we can do that is there are elegant ways. The pricing of the carbon tax is one way to do it, I would argue.

Mr. MANZULLO. But that destroys jobs. You go out there and you tax people for using carbon-based energy. Solar and wind power make up about 1 percent of our energy today in the United States, 1 percent.

Ambassador SODERBERG. The challenge is, if you can invest more in some of these alternative energies, people in your district may have alternative options of job-creating sources.

Mr. MANZULLO. But the government cannot create jobs. That is theory.

Ambassador SODERBERG. I am not saying that the government should create these jobs. But the government can, for instance, stop supporting fossil fuels with subsidies, which it is already very much involved in supporting that industry.

Mr. MANZULLO. So that would do away with ethanol.

Ambassador SODERBERG. The point is the government is already very involved in some of these issues, and the question is can you come up with a mix that is both promoting less reliance on fossil-fuel industries and creating jobs in other areas. I am convinced there is a mix there.

Mr. MANZULLO. At the same time, the government—to use that term—is in the process of shutting down offshore drilling where we get the source of 30 percent of our oil, will not allow drilling to take place in the ANWR, will not allow the new pipe to come through Canada to the United States, and has a moratorium on offshore drilling in a good part of Alaska. So where is the energy supposed to come from?

Ambassador SODERBERG. Well, that is our point, is we are supposed to try and invest, as we have heard today, in ways of getting past—and you can look at what is happening in the Gulf—and there are lots of problem with offshore drilling, and this is not a hearing on offshore drilling, nor am I an expert on that—but I believe we need to look at a creative mix of how you get past it.

Mr. MANZULLO. But it won't work. If you take all of the windmills that are going to go up on Cape Cod, they will put out as

much energy as an oil well that is pumping about 10 barrels a day. It is not very much. I mean, wind power is fine, but there is never going to be enough wind power and never enough solar power, maybe 100 years down the line, to be able to compensate for arbitrarily in my opinion shutting down offshore drilling.

Ambassador SODERBERG. Let me just close and give my colleagues a chance to respond.

On your original point on investment, I think it is important to just come back to you on the 14 percent of the export market. The fact is, if we can invest in smart grid equipment, mass transit, wind turbines, solar, investing in the technology, we will——

Mr. MANZULLO. But the technologies are there. Why is the government investing in technologies that the private sector has already developed? I mean, Nissan has the Leaf and GMC has the Volt; and now the President was in Holland, Michigan, opening up a factory to invest in developing an automobile battery. I mean, what these manufacturers want is just to be left alone. They don't want the help of Washington.

I have to go vote in Banking in about 3 minutes.

Mr. DIRINGER. Before you go, Mr. Manzullo, I agree completely with you that it is the private sector that we have to look to to deliver, whether it is jobs or technology. But when we have important social priorities, I think that the market may need some regulatory incentives and some regulatory certainty.

You cited the example of a Danish firm. I am not familiar with the particular example, but I do know when we look globally at the countries that have established themselves as leaders in the clean energy marketplace, each of them has accomplished that by adopting policies at home to create incentives for those technologies. They have provided their private enterprises with the incentive to develop those technologies, to market those technologies, and now they have surpassed the United States in that marketplace. Whether we are talking about Denmark or Germany or China, each of them has quite strategically made use of public policy to advance those technologies and to advance their economic position globally.

I think it is important for us to look at the policy choices. Our preference among instruments would be a market-based approach that in fact harnesses market forces to achieve our objectives as cost effectively as possible.

Mr. CLARK. Congressman Manzullo, as you know, among other things, I have manufacturing operations inside your district. It is very easy to operate at a policy level and lose sight of the fact that there is trench warfare going on right now for all our manufacturers. What we are all struggling with—and I heard some very impressive things said about an hour ago when people were talking about getting beyond the gridlock, the problem—the transition we are talking about today is if a laborer in China is put into the appropriate factory resources and is satisfied living at $5 a day in salary—compared to a laborer here in the U.S. that is barely getting by with $30 or $40 an hour in total cost—it is extraordinarily difficult for a U.S. company to compete. We are at that point in many of our manufacturing industries, and we cannot look at the U.S.

economy as a functioning entity absent manufacturing. That is a simple truth. There is no easy way through this transition.

I truly believe that—looking 60, 70 years down the road—we are going to be looking at a fundamental energy transformation globally. It has to happen just because the way energy supply and demand is working right now. It is coming. Whether we deal with climate change or not, it is coming. So the question is how effectively can we maneuver our way through this.

I don't have a lot of answers, but I can you this: China is dominating in solar cell production because they are well on their way to turning it into something that is not different than making hamburgers. They are talking about making incredibly low-cost cells in order to justify the technology and make it work.

Their operating plan is no different than any other manufacturer: Find a way to make it as incredibly cheap as possible, utilize your domestic resources as much as you can, and the chances are you are going to win. That is exactly what they are doing.

So we are fighting them directly and indirectly in a number of different industries. They are all playing the same game. Right now, they have fewer regulations, lower labor costs and fewer taxes from their government, and it gives them a competitive advantage that is greater than the freight cost to ship their goods into the United States.

If we are going to legislate, if the legislature is going to get involved and do anything at all, they had better take real care and pay real attention to the impact on this major portion of the U.S. economy.

Congressman Inglis, you were referring to an idea where there would be effectively a carbon tax that would equalize energy costs. Well, that doesn't cut both ways, because a carbon tax equalizes imported products, but it doesn't equalize exported products. What we have to do is we have to get to a uniform global price for carbon. We are not there yet. We want the price to be very high because of the environmental ramifications. The rest of the globe—Europe aside—generally does not want that to occur.

China is engaging in neocolonial activities right now by going out and buying out vast amounts of energy—carbon energy resources—because they fully intend to use those to fund the expansion of their economy.

I mean, this is a trade war—if you will—that is evolving, and our challenge isn't just to find a way to make a technology operate so it can generate energy. Our challenge is to find a way to deal with the international trade implications of a transfer away from carbon fuels in a way that doesn't destroy our economy.

Mr. INGLIS. Just to follow up on that briefly, actually, my idea is a border adjustable tax. So it is removed on export, imposed on import. So it is like the VAT in Europe. The European VAT is removed on export, imposed on import. So your goods would actually leave here without the revenue-neutral carbon tax attached to them.

Mr. CLARK. That is a great step in the right direction.

Mr. INGLIS. Then you don't decimate American manufacturing. That is the problem with cap and trade, it seems to me. It deci-

mates American manufacturing. That is the problem with cap and trade. That is where I agree with Mr. Manzullo.

Where I disagree with Mr. Manzullo is that he is overlooking the fact that in South Carolina we would love to have more nuclear power plants, but the Public Service Commission probably wouldn't approve a private investor-run utility constructing a nuclear power plant because it is more expensive. It is more expensive power. It is a great source of power, in my view. It is very clean, but that is because coal doesn't have to be accountable for all of its emissions. If you force that recognition, you force the accountability, coal is nowhere near as cheap as it looks. Talk to the pulmonologists about that. The small particulates involved in coal, even if you think climate change is hooey, the small particulates associated with hospital admissions that the pulmonologist would tell you about, it is a real and quantifiable cost.

So force that recognition and say to coal, be accountable. Then all kinds of other technologies become possible. Nuclear becomes possible. Right now, it is not possible.

The same with petroleum. If you did just a little bit of cost accounting and said, listen, some of the costs that we are spending right now in the Straits of Hormuz to keep that supply line open for that product that we have to have, that we are absolutely addicted to, just attribute some of it to gasoline.

Gasoline is not $2.50 a gallon. It is way higher than that. It is just it is hidden from the consumer. So the consumer can't make a choice. It makes a logical choice, because it is a subsidized price. It is hidden. But if you force that recognition, wow, all things would start happening.

We would be doing what Israel is doing. We would be trading out batteries in cars, right? The reason we don't do batteries, as Mr. Manzullo mentioned, is it is expensive and cumbersome. But if you are in need, like Israel is, then you figure out a way to swap out battery packs, and it becomes cost effective in a situation where you force the recognition of all of these negative externalities.

Thank you, Mr. Chairman. I am going on and on. I am preaching about my bill. I hope you will take a look at it. It is 15 pages. It is a quick read.

Mr. FALEOMAVAEGA. I thank my colleague and friend for his line of questions.

I just want to comment on Dr. Clark's earlier statement about China's development. I think it is not so much out of greed but out of necessity that we find that China has no choice. To provide for the needs of some 1.3 billion, we have to give those people some sense of credit. How is it possible that they have to feed some 1.3 billion people? We can't even feed our own 300 million that we have here in our own country, it seems like.

But I want to thank all of you for your participation. We kind of nibbled at how to come up with better ideas for financing the needs of least-developed countries in terms of climate change. But I think we were able to discuss quite well issues related to climate change. I think it was very productive.

So I sincerely want to thank you for your patience and for your being here to testify before the subcommittee.

With that, the subcommittee is adjourned.

[Whereupon, at 5:03 p.m., the subcommittee was adjourned.]

APPENDIX

Material Submitted for the Hearing Record

SUBCOMMITTEE HEARING NOTICE
COMMITTEE ON FOREIGN AFFAIRS
U.S. HOUSE OF REPRESENTATIVES
WASHINGTON, D.C. 20515-0128

SUBCOMMITTEE ON ASIA, THE PACIFIC AND THE GLOBAL ENVIRONMENT
Eni F.H. Faleomavaega (D-AS), Chairman

July 26, 2010

TO: MEMBERS OF THE COMMITTEE ON FOREIGN AFFAIRS

You are respectfully requested to attend an OPEN hearing of the Subcommittee on Asia, the Pacific and the Global Environment, to be held in **Room 2172 of the Rayburn House Office Building (and available live, via the WEBCAST link on the Committee website at http://www.hcfa.house.gov)**:

DATE: Tuesday, July 27, 2010

TIME: 2:00 p.m.

SUBJECT: Climate Change Finance: Providing Assistance for Vulnerable Countries

WITNESSES:

Pael I
The Honorable Lael Brainard
Under Secretary for International Affairs
U.S. Department of the Treasury

Jonathan Pershing, Ph.D.
Deputy Special Envoy for Climate Change
U.S. Department of State

Rear Admiral David W. Titley
Oceanographer and Navigator of the Navy
U.S. Department of the Navy

Maura O'Neill, Ph.D.
Senior Counselor to the Administrator and Chief Innovation Officer
U.S. Agency for International Development

Panel II
The Honorable Nancy E. Soderberg
President
Connect U.S. Fund
(*Former Alternate Representative to the United Nations*)

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

The Honorable Reed E. Hundt
CEO
Coalition for Green Capital
(*Former Chairman of the Federal Communications Commission*)

Redmond Clark, Ph.D.
Chairman and CEO
CBL Industrial Services

By Direction of the Chairman

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COMMITTEE ON FOREIGN AFFAIRS

HEARING MINUTES OF THE SUBCOMMITTEE ON ASIA, THE PACIFIC AND THE GLOBAL ENVIRONMENT

Day: Tuesday

Date: July 27, 2010

Room: 2172 Rayburn House Office Bldg.

Start Time: 2:22 p.m.

End Time: 5:03 p.m.

Recesses:

Presiding Member(s): Chairman Eni F.H. Faleomavaega

CHECK ALL OF THE FOLLOWING THAT APPLY:

Open Session	X
Executive (closed) Session	
Televised	X
Electronically Recorded (taped)	X
Stenographic Record	X

TITLE OF HEARING: "Climate Change Finance: Providing Assistance for Vulnerable Countries"

COMMITTEE MEMBERS PRESENT: Ranking Member Manzullo, Rep. Rohrabacher, Rep. Inglis

NONCOMMITTEE MEMBERS PRESENT:

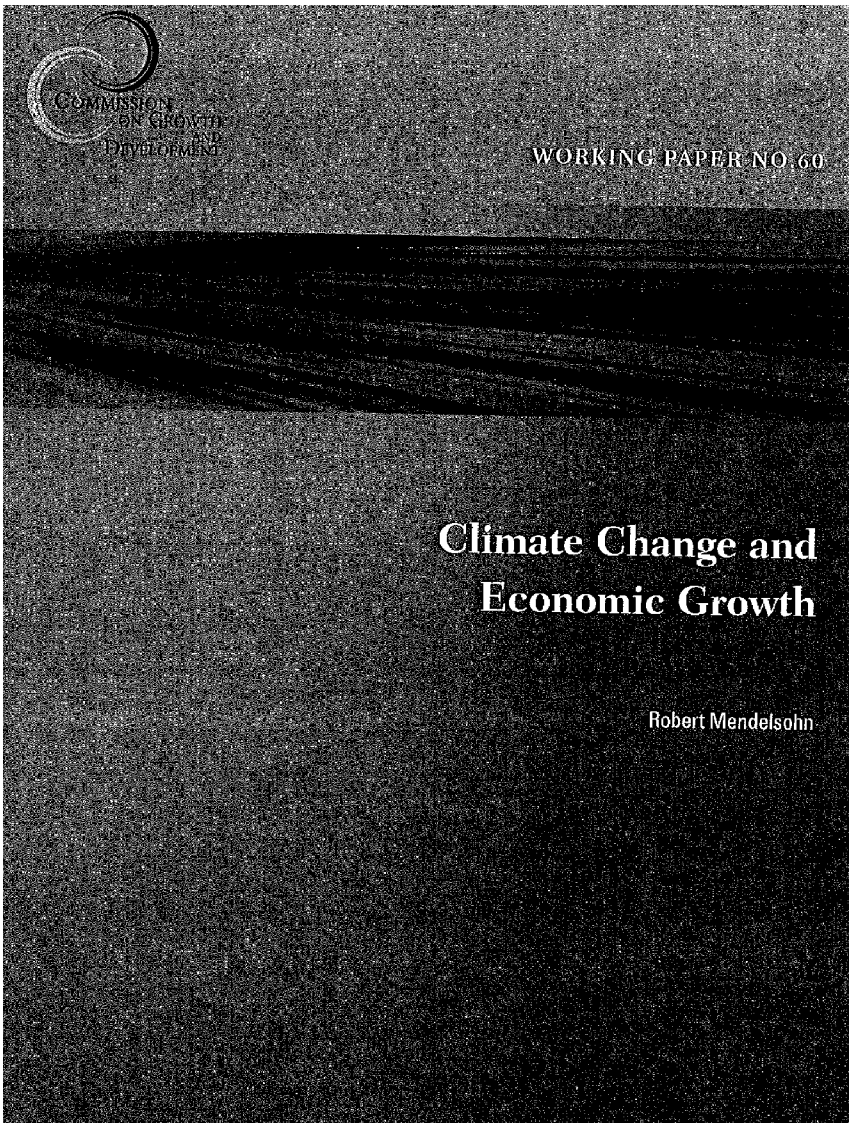
WITNESSES: Same as meeting notice attached? Yes X No ____ *(If "no", please list below and include title, agency, department, or organization.*

ACCOMPANYING WITNESSES: *(Include title, agency, department, or organization, and which witness the person accompanied*

STATEMENTS FOR THE RECORD: *(List any statements submitted for the record)*
Chairman Faleomavaega, Under Secretary Brainard (witness), Dr. Pershing (witness), Rear Admiral Titley (witness), Dr. O'Neill (witness), Ambassador Soderberg (witness),Mr. Diringer (witness), Mr. Hundt (witness), Dr. Clark (witness)

Lisa Williams
Staff Director

MATERIAL SUBMITTED FOR THE RECORD BY THE HONORABLE DONALD A. MANZULLO, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ILLINOIS



WORKING PAPER NO. 60

Climate Change and Economic Growth

Robert Mendelsohn

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About the Series

The Commission on Growth and Development led by Nobel Laureate Mike Spence was established in April 2006 as a response to two insights. First, poverty cannot be reduced in isolation from economic growth—an observation that has been overlooked in the thinking and strategies of many practitioners. Second, there is growing awareness that knowledge about economic growth is much less definitive than commonly thought. Consequently, the Commission's mandate is to "take stock of the state of theoretical and empirical knowledge on economic growth with a view to drawing implications for policy for the current and next generation of policy makers."

To help explore the state of knowledge, the Commission invited leading academics and policy makers from developing and industrialized countries to explore and discuss economic issues it thought relevant for growth and development, including controversial ideas. Thematic papers assessed knowledge and highlighted ongoing debates in areas such as monetary and fiscal policies, climate change, and equity and growth. Additionally, 25 country case studies were commissioned to explore the dynamics of growth and change in the context of specific countries.

Working papers in this series were presented and reviewed at Commission workshops, which were held in 2007–08 in Washington, D.C., New York City, and New Haven, Connecticut. Each paper benefited from comments by workshop participants, including academics, policy makers, development practitioners, representatives of bilateral and multilateral institutions, and Commission members.

The working papers, and all thematic papers and case studies written as contributions to the work of the Commission, were made possible by support from the Australian Agency for International Development (AusAID), the Dutch Ministry of Foreign Affairs, the Swedish International Development Cooperation Agency (SIDA), the U.K. Department of International Development (DFID), the William and Flora Hewlett Foundation, and the World Bank Group.

The working paper series was produced under the general guidance of Mike Spence and Danny Leipziger, Chair and Vice Chair of the Commission, and the Commission's Secretariat, which is based in the Poverty Reduction and Economic Management Network of the World Bank. Papers in this series represent the independent view of the authors.

Abstract

Grim descriptions of the long-term consequences of climate change have given the impression that the climate impacts from greenhouse gases threaten long-term economic growth. However, the impact of climate change on the global economy is likely to be quite small over the next 50 years. Severe impacts even by the end of the century are unlikely. The greatest threat that climate change poses to long-term economic growth is from potentially excessive near-term mitigation efforts.

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Climate Change and Economic Growth

Robert Mendelsohn[1]

Introduction

There is no question that the continued buildup of greenhouse gases will cause the earth to warm (IPCC 2007a). However, there is considerable debate about what is the sensible policy response to this problem. Economists, weighing cost and damages, advocate a balanced mitigation program that starts slowly and gradually becomes more severe over the century. Scientists and environmentalists, in contrast, advocate more extreme near-term mitigation policies. Which approach is followed will have a large bearing on economic growth. The balanced economic approach to the problem will address climate change with minimal reductions in economic growth. The more aggressive the near-term mitigation program, however, the greater the risk that climate change will slow long-term economic growth.

It should be understood that climate is not a stable unchanging phenomena even when left to natural forces alone. There have been several major glacial periods in just the last million years. Much of this period has been significantly colder than the climate in the last 20,000 years. Ice covered most of Canada and Scandinavia and frozen tundra extended well into New Jersey and the Great Plains in the United States. These cold periods have been quite hostile, discouraging humans from living in much of the northern parts of the northern hemisphere. In addition, within these long glacial swings, there is also increasing evidence that there have been many examples of abrupt climate change (Weiss and Bradley 2001). These natural changes have had major impacts on past civilizations causing dramatic adaptations and sometimes wholesale migrations. Climate change is not new. Human-induced climate change is simply an added disturbance to this natural variation.

The heart of the debate about climate change comes from a number of warnings from scientists and others that give the impression that human-induced climate change is an immediate threat to society (IPCC 2007a,b; Stern 2006). Millions of people might be vulnerable to health effects (IPCC 2007b), crop

[1] Robert O. Mendelsohn is Edwin Weyerhaeuser Davis Professor, Yale School of Forestry and Environmental Studies, Yale University. Professor Mendelsohn studies a range of economic and environmental issues, from measuring hazardous waste damages to estimating welfare costs, from timber harvesting with fluctuating prices to measuring the economic value of traditional medicine from tropical rain forests.

production might fall in the low latitudes (IPCC 2007b), water supplies might dwindle (IPCC 2007b), precipitation might fall in arid regions (IPCC 2007b), extreme events will grow exponentially (Stern 2006), and between 20–30 percent of species will risk extinction (IPCC 2007b). Even worse, there may be catastrophic events such as the melting of Greenland or Antarctic ice sheets causing severe sea level rise, which would inundate hundreds of millions of people (Dasgupta et al. 2009). Proponents argue there is no time to waste. Unless greenhouse gases are cut dramatically today, economic growth and well-being may be at risk (Stern 2006).

These statements are largely alarmist and misleading. Although climate change is a serious problem that deserves attention, society's immediate behavior has an extremely low probability of leading to catastrophic consequences. The science and economics of climate change is quite clear that emissions over the next few decades will lead to only mild consequences. The severe impacts predicted by alarmists require a century (or two in the case of Stern 2006) of no mitigation. Many of the predicted impacts assume there will be no or little adaptation. The net economic impacts from climate change over the next 50 years will be small regardless. Most of the more severe impacts will take more than a century or even a millennium to unfold and many of these "potential" impacts will never occur because people will adapt. It is not at all apparent that immediate and dramatic policies need to be developed to thwart long-range climate risks. What is needed are long-run balanced responses.

In fact, the mitigation plans of many alarmists would pose a serious risk to economic growth. The marginal cost function of mitigation is very steep, especially in the short run. Dramatic immediate policies to reduce greenhouse gas emissions would be very costly. Further, by rushing into regulations in a panic, it is very likely that new programs would not be designed efficiently. The greatest threat that climate change poses to economic growth is that the world adopts a costly and inefficient mitigation policy that places a huge drag on the global economy.

Efficient Policy

The ideal greenhouse gas policy minimizes the sum of the present value of mitigation costs plus climate damages (Nordhaus 1992). This implies the marginal cost of mitigation should be equal to the present value of the marginal damages from climate change. The magnitude or severity of mitigation programs depends on the magnitude and severity of climate impacts. Mitigation also depends upon how expensive it is to control greenhouse gas emissions.

Because marginal damages rise as greenhouse gases accumulate, the optimal policy is dynamic, growing stricter over time (Nordhaus 2008). Emission limits should be mild at first and gradually become more severe. Over the long run,

[Note: The full report is not reprinted here but is available in committee records.]

MATERIAL SUBMITTED FOR THE RECORD BY THE HONORABLE DANA ROHRABACHER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

List of 100 scientists who agree that:

- The case for alarm regarding climate change is grossly overstated;
- Surface temperature changes over the past century have been episodic and modest;
- There has been no net global warming for over a decade;
- The computer models forecasting rapid temperature change abjectly fail to explain recent climate behavior; and
- Characterization of the scientific facts regarding climate change and the degree of certainty informing the scientific debate is simply incorrect.

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The Climategate Whitewash Continues

Global warming alarmists claim vindication after last year's data manipulation scandal. Don't believe the 'independent' reviews.

By PATRICK J. MICHAELS

Last November there was a world-wide outcry when a trove of emails were released suggesting some of the world's leading climate scientists engaged in professional misconduct, data manipulation and jiggering of both the scientific literature and climatic data to paint what scientist Keith Briffa called "a nice, tidy story" of climate history. The scandal became known as Climategate.

Now a supposedly independent review of the evidence says, in effect, "nothing to see here." Last week "The Independent Climate Change E-mails Review," commissioned and paid for by the University of East Anglia, exonerated the University of East Anglia. The review committee was chaired by Sir Muir Russell, former vice chancellor at the University of Glasgow.

Mr. Russell took pains to present his committee, which consisted of four other academics, as independent. He told the Times of London that "Given the nature of the allegations it is right that someone who has no links to either the university or the climate science community looks at the evidence and makes recommendations based on what they find."

No links? One of the panel's four members, Prof. Geoffrey Boulton, was on the faculty of East Anglia's School of Environmental Sciences for 18 years. At the beginning of his tenure, the Climatic Research Unit (CRU)—the source of the Climategate emails—was established in Mr. Boulton's school at East Anglia. Last December, Mr. Boulton signed a petition declaring that the scientists who established the global climate records at East Anglia "adhere to the highest levels of professional integrity."

This purportedly independent review comes on the heels of two others—one by the University of East Anglia itself and the other by Penn State University, both completed in the spring, concerning its own employee, Prof. Michael Mann. Mr. Mann was one of the Climategate principals who proposed a plan, which was clearly laid out in emails whose veracity Mr. Mann has not challenged, to destroy a scientific journal that dared to publish three papers with which he and his East Anglia friends disagreed. These two reviews also

saw no evil. For example, Penn State "determined that Dr. Michael E. Mann did not engage in, nor did he participate in, directly or indirectly, any actions that seriously deviated from accepted practices within the academic community."

Readers of both earlier reports need to know that both institutions receive tens of millions in federal global warming research funding (which can be confirmed by perusing the grant histories of Messrs. Jones or Mann, compiled from public sources, that are available online at freerepublic.com). Any admission of substantial scientific misbehavior would likely result in a significant loss of funding.

It's impossible to find anything wrong if you really aren't looking. In a famous email of May 29, 2008, Phil Jones, director of East Anglia's CRU, wrote to Mr. Mann, under the subject line "IPCC & FOI," "Can you delete any emails you may have had with Keith [Briffa] re AR4 [the Intergovernmental Panel on Climate Change (IPCC) report]? Keith will do likewise . . . can you also email Gene [Wahl, an employee of the U.S. Department of Commerce] to do the same . . . We will be getting Caspar [Amman, of the U.S. National Center for Atmospheric Research] to do likewise."

Mr. Jones emailed later that he had "deleted loads of emails" so that anyone who might bring a Freedom of Information Act request would get very little. According to New Scientist writer Fred Pearce, "Russell and his team never asked Jones or his colleagues whether they had actually done this."

The Russell report states that "On the allegation of withholding temperature data, we find that the CRU was not in a position to withhold access to such data." Really? Here's what CRU director Jones wrote to Australian scientist Warrick Hughes in February 2005: "We have 25 years or so invested in the work. Why should I make the data available to you, when your aim is to try and find something wrong with it[?]"

Then there's the problem of interference with peer review in the scientific literature. Here too Mr. Russell could find no wrong: "On the allegations that there was subversion of the peer review or editorial process, we find no evidence to substantiate this."

Really? Mr. Mann claims that temperatures roughly 800 years ago, in what has been referred to as the Medieval Warm Period, were not as warm as those measured recently. This is important because if modern temperatures are not unusual, it casts doubt on the fear that global warming is a serious threat. In 2003, Willie Soon of the Smithsonian Institution and Sallie Baliunas of Harvard published a paper in the journal Climate Research that took exception to Mr. Mann's work, work which also was at variance with a large number of independent studies of paleoclimate. So it would seem the Soon-Baliunas paper was just part of the normal to-and-fro of science.

But Mr. Jones wrote Mr. Mann on March 11, 2003, that "I'll be emailing the journal to tell them I'm having nothing more to do with it until they rid themselves of this troublesome editor," Chris de Freitas of the University of Auckland. Mr. Mann responded to Mr. Jones on the same day: "I think we should stop considering 'Climate Research' as a

legitimate peer-reviewed journal. Perhaps we should encourage our colleagues . . . to no longer submit to, or cite papers in, this journal. We would also need to consider what we tell or request our more reasonable colleagues who currently sit on the editorial board."

Mr. Mann ultimately wrote to Mr. Jones on July 11, 2003, that "I think the community should . . . terminate its involvement with this journal at all levels . . . and leave it to wither away into oblivion and disrepute."

Climate Research and several other journals have stopped accepting anything that substantially challenges the received wisdom on global warming perpetuated by the CRU. I have had four perfectly good manuscripts rejected out of hand since the CRU shenanigans, and I'm hardly the only one. Roy Spencer of the University of Alabama, Huntsville, has noted that it's becoming nearly impossible to publish anything on global warming that's nonalarmist in peer-reviewed journals.

Of course, Mr. Russell didn't look to see if the ugly pressure tactics discussed in the Climategate emails had any consequences. That's because they only interviewed CRU people, not the people whom they had trashed.

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