

COMBATING CLIMATE CHANGE IN AFRICA

HEARING
BEFORE THE
SUBCOMMITTEE ON AFRICA AND GLOBAL HEALTH
OF THE
COMMITTEE ON FOREIGN AFFAIRS
HOUSE OF REPRESENTATIVES
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CONTENTS

	Page
WITNESSES	
Jonathan Pershing, Ph.D., Deputy Special Envoy, Office of the Special Envoy for Climate Change, United States Department of State	8
Mr. Franklin Moore, Deputy Assistant Administrator, Bureau for Africa, Office of the Assistant Administrator, United States Agency for International Development	16
His Excellency Leon M. Rajaobelina, Chairman of the Board, Madagascar Foundation for Protected Areas and Biodiversity (Former Malagasy Ambassador to the United States)	45
Fred Boltz, Ph.D., Senior Vice-President, Global Strategies, Conservation International	52
Kenneth P. Green, D.Env., Resident Scholar, American Enterprise Institute ...	58
LETTERS, STATEMENTS, ETC., SUBMITTED FOR THE HEARING	
The Honorable Donald M. Payne, a Representative in Congress from the State of New Jersey, and Chairman, Subcommittee on Africa and Global Health: Prepared statement	3
Jonathan Pershing, Ph.D.: Prepared statement	11
Mr. Franklin Moore: Prepared statement	18
His Excellency Leon M. Rajaobelina: Prepared statement	48
Fred Boltz, Ph.D.: Prepared statement	55
Kenneth P. Green, D.Env.: Prepared statement	61
APPENDIX	
Hearing notice	80
Hearing minutes	81
The Honorable Diane E. Watson, a Representative in Congress from the State of California: Prepared statement	82
The Honorable Donald M. Payne: Material submitted for the record	85
Questions submitted for the record by the Honorable Earl Blumenauer, a Representative in Congress from the State of Oregon (responses not received prior to printing)	91

COMBATING CLIMATE CHANGE IN AFRICA

THURSDAY, APRIL 15, 2010

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON AFRICA AND GLOBAL HEALTH,
COMMITTEE ON FOREIGN AFFAIRS,
Washington, DC.

The subcommittee met, pursuant to notice, at 10:02 a.m. in room 2172, Rayburn House Office Building, Hon. Donald M. Payne (chairman of the subcommittee) presiding.

Mr. PAYNE. Good morning. The hearing will come to order. Let me thank you for joining the Subcommittee on Africa and Global Health here this morning for this critically important hearing entitled Combating Climate Change in Africa.

The threat of climate change is serious and extreme, and it is very urgent that we take a look at it. While the impact is felt in every country around the world, developing countries have disproportionately experienced the devastating effects of climate change.

The United Nations Intergovernmental Panel on Climate Change, the IPCC, has reported that in 2008 alone more than 20 million people were displaced by sudden climate-related disasters; an estimated 200 million people could be displaced as a result of climate impact by 2050; climate change currently contributes to the global burden of disease and premature deaths, and adverse health impacts from diseases like malaria, dengue and diarrhea will be greatest in the low-income countries.

African countries in particular are most vulnerable to the impacts of climate change, such as desertification. Many countries—for example, Kenya and Ethiopia—increasingly face extreme droughts and serious floods, making their population more food insecure and more prone to diseases associated with malnutrition. The United Nations reported in 2009 that approximately 23 million people in seven East African countries relied on food aid due to decimated crops from a decade of poor rains.

Addressing climate change is a vital component of development, and we must devise cost-effective adaptation assistance targeted at the most vulnerable communities in Africa. Conservation farming, storing water in time of drought and early warning systems can have a tremendous impact in preparing communities for disasters. Strengthening methods of assessment of adaptation, providing education and training for public awareness and building capacity are also critical components of combating climate change.

The United States has committed to providing technical support and financial assistance to combat climate change. In the fiscal

2010 Congressional Budget Justification for Foreign Operations or CBJ, President Obama requested funding for global climate change and related clean energy assistance for Africa totaling \$104.6 million, \$95 million in development assistance and \$9.6 million in economic support funds.

In addition to adaptation programs, strong mitigation policies are essential to combating this global crisis. We must begin to reverse the damage that has been done by reducing growth in greenhouse gases emissions while promoting energy efficiency, forest conservation and biodiversity.

African countries contribute comparatively low levels of greenhouse gas emissions, the GHGs. The International Energy Agency estimates African nations emitted only 3 percent of world carbon dioxide, CO₂, from human-related sources in 2007. However, Africa is likely to warm more than the global average. That is not fair.

Without policies to significantly reduce global GHG emissions, most climate models project the global average temperature to rise above natural variations by at least 2.7 degrees Fahrenheit above the 1990 levels. The current global rates of deforestation contribute to more than 20 percent of human-caused greenhouse gas emissions, which makes deforestation a considerable contributor to human-induced climate change.

The African Union's common African position has given priority to adaptation, but African nations must also develop policies now that will reduce carbon emissions in the future. The United Nations Climate Change Conference in Copenhagen was an historical first step in the global effort to aggressively combat climate change.

The Conference was attended by 120 heads of state and laid out ambitious points of action. Although it fell short of legally binding agreements, countries made significant financial commitments, and we must follow through on those commitments and work toward a legally binding agreement sometime in the future.

Climate change impacts every aspect of development, from reducing poverty, to economic growth, to peace and stability. The challenges are great indeed. However, combating climate change can be an opportunity. African nations can leapfrog some of the steps western nations took and mistakes that they made in their development.

The 2004 Nobel Peace Prize winner, Wangari Maathai of Kenya, said,

“We have a responsibility to protect the rights of generations, of all species, that cannot speak for themselves today. The global challenge of climate change requires that we ask no less of our leaders or ourselves.”

We in the United States must work with the leaders and civil society of African nations to combat climate change and its effects and infuse these efforts into our development framework. I sincerely thank the panel of esteemed witnesses for testifying before us today and sharing their insights on what we as a nation are doing and what more must be done to address this critical issue.

I will now turn to our ranking member, Mr. Smith, for his opening remarks.

[The prepared statement of Mr. Payne follows:]

**"Combating Climate Change in Africa"
Chairman Donald M. Payne
Subcommittee on Africa and Global Health
Thursday, April 15, 2010
10:00 AM in 2172 RHOB**

Remarks

Good morning. Thank you for joining the Subcommittee on Africa and Global Health for this critically important hearing entitled "Combating Climate Change in Africa."

The threat of climate change is serious and extremely urgent. While the impact is felt in every country around the world, developing countries have disproportionately experienced the devastating effects of climate change.

The United Nations Intergovernmental Panel on Climate Change (IPCC) has reported that, in 2008 alone, more than 20 million people were displaced by sudden climate-related disasters; an estimated 200 million people could be displaced as a result of climate impacts by 2050; climate change currently contributes to the global burden of disease and premature deaths, and adverse health impacts from diseases like malaria, dengue and diarrhea will be greatest in low-income countries.

African countries in particular are most vulnerable to the impacts of climate change, such as desertification. Many countries, for example, Kenya and Ethiopia, increasingly face extreme droughts and severe floods, making their populations more food insecure and more prone to diseases associated with malnutrition.

The United Nations reported in 2009 that approximately 23 million people in seven East African countries relied on food aid due to decimated crops from a decade of poor rains.

Addressing climate change is a vital component of development, and we must devise cost-effective adaptation assistance targeted at the most vulnerable communities in Africa.

Conservation farming, storing water in times of drought, and early warning systems can have a tremendous impact in preparing communities for disasters. Strengthening methods of assessment of adaptation, providing education and training for public awareness and building capacity are also critical components of combating climate change.

The United States has committed to providing technical support and financial assistance to combat climate change. In the FY2010 Congressional Budget Justification for Foreign Operations (CBJ), President Obama requested funding for Global Climate Change and related Clean Energy assistance for Africa totaling \$104.6 million (\$95 million in Development Assistance and \$9.6 million in Economic Support Funds).

In addition to adaptation programs, strong mitigation policies are essential to combating this global crisis. We must begin to reverse the damage that has been done by reducing growth in greenhouse gas (GHG) emissions while promoting energy efficiency, forest conservation and biodiversity.

African countries contribute comparatively low levels of greenhouse gas (GHG) emissions. The International Energy Agency estimates African nations emitted only about 3% of world carbon dioxide (CO₂) from human-related sources in 2007. However, Africa is likely to warm more than the global average.

Without policies to significantly reduce global GHG emissions, most climate models project the global average temperature to rise above natural variability by at least 2.7 degrees Fahrenheit above 1990 levels. The current global rates of deforestation contribute to more than 20% of human-caused greenhouse gas emissions, which makes deforestation a considerable contributor to human-induced climate change.

The African Union's Common African Position has given priority to adaptation, but African nations must also develop policies now that will reduce carbon emissions in the future.

The United Nations Climate Change Conference in Copenhagen was an historic step forward in the global effort to aggressively combat climate change. The Conference was attended by 120 Heads of State and laid out ambitious points of action. Although it fell short of a legally binding agreement, countries made significant financial commitments, and we must follow through on those commitments and work towards a legally binding agreement in the future.

Climate change impacts every aspect of development – from reducing poverty, to economic growth, to peace and stability. The challenges are great, indeed. However, combating climate change can be an opportunity. African nations can leapfrog over some of the steps Western nations took in their development.

The 2004 Nobel Peace Prize Winner Wangari Maathai of Kenya stated, “We have a responsibility to protect the rights of generations, of all species, that cannot speak for themselves today. The global challenge of climate change requires that we ask no less of our leaders, or ourselves.”

We in the U.S. must work with the leaders and civil society of African nations to combat climate change and its effects and infuse these efforts into our development framework.

I sincerely thank the panel of esteemed witnesses for testifying before us today and sharing their insights on what we as a nation are doing and what more must be done to address this critical issue. I will now turn to our Ranking Member for his opening remarks.

Mr. SMITH. Thank you very much, Mr. Chairman, and thank you for calling this very important hearing. In the past year and particularly since the British climate-gate scandal of last November, the debate on climate issues has been more vigorous than ever.

Whereas in the past the views of some climate scientists were ignored or suppressed, that is changing dramatically, and I for one welcome this. I have been following the arguments closely and believe that this debate must continue in light of concerns of manipulated data and efforts to suppress dissenting views within the scientific community, and we need to re-examine all the relevant questions with an open mind.

I look forward to going over some of those fundamental questions with our witnesses. Is the climate really changing and how significantly? To what extent are the changes caused by human behavior? What can we reasonably expect the consequences to be, and how can we best respond?

One of our witnesses today who is an expert on climate change and on issues related to it, Kenneth Green, was resident scholar at the American Enterprise Institute for Public Policy Research. He is a man who has served as Executive Director of the Environmental Literacy Council, Chief Scientist for the Center for Studies and Risk, Regulation and Environment at the Fraser Institute, and he has also been an expert reviewer on the U.N. Intergovernmental Panel on Climate Change Working Group in 2001.

He makes a very important point in his piece, and I would ask unanimous consent that it be made a part of the record—

Mr. PAYNE. Without objection.

Mr. SMITH [continuing]. Called Climate Change: The Resilience Option, by Kenneth Green, which was published in October 2009.

[NOTE: The information referred to is not reprinted here but is available in committee records.]

Mr. SMITH. I would hope that members would take the time to read it, but one question that he asks is, “What is better,”—this is his quote—“climate resilience or climate stasis?”

In general, the mainstream response to the issue of climate change has been reactive, pessimistic, authoritarian and resistant to change. Those alarmed about changing climate would stand earthward the stream of climate history and cry stop. Enough. Rather than working to cease human influence on climate, they want to find a way to make the climate stand still.

This focus on creating climate stasis has led to policy proposals that would have been laughed at or dismissed as wacky conspiracy theories in the 1980s, but mainstream antclimate change activists are proposing nothing less than the establishment of global weather control through energy rationing, regulations and taxes, all managed by a global bureaucracy with a goal of leading humanity into a future that will become smaller, more costly and less dynamic over time. Throughout his piece he makes a point talking about the resilience option, and I hope that he will expand upon that during his testimony.

Mr. Chairman, much is at stake for Africa. Home to hundreds of millions of people who at present are ill-equipped to deal with any of the potentially bad side effects of climate change that some Afri-

can experts fear—crop failures, drought, desertification, disease, flooding in the coastal cities and mass migration.

Most experts see Africa because of its developing economy as more vulnerable than any other continent to the risks of climate change. Mr. Chairman, because of its emerging development, Africa creates relatively little of the greenhouse gases some experts blame for the climate change, and there is little the policies of the African Governments can do to affect the African climate per se.

This means we have a responsibility, in concert with real risk, to bear in mind that the people of Africa with whom we share our planet as we consider questions regarding climate change and, most importantly, the appropriate response, a responsibility we can perhaps meet best by helping African countries to become more resilient.

But most of all, I believe Congress has to get this right and right now. This means we need to re-engage in the scientific and policy debates over climate change. Those debates are far from over. Again, I thank you for calling this very important hearing and yield back.

Mr. PAYNE. Thank you. Congresswoman Woolsey?

Ms. WOOLSEY. Thank you, Mr. Chairman. I am going to be very quick. As CRS has noted, induced climate changes are expected to increase water stress, reduce arable land areas and crop productivity, reduce fishery productivity, increase malnutrition, increase coastal hazards and expand disease vectors. So all of this means fewer jobs, more pandemic illness, more displaced people, and it will undoubtedly lead to political and social instability.

So my ears will be open. My questions today will be about how is climate change directly related to Africa's and by extension the United States' own security and what can the United States do to help Africa in that regard. So thank you, Mr. Chairman.

Mr. PAYNE. Thank you very much. Our first panel we will hear from Dr. Jonathan Pershing, deputy special envoy for climate change. Dr. Pershing has served as deputy special envoy for climate change since March 2009. In this capacity as deputy special envoy, he is the head of delegation for the United Nations Climate Change Negotiations.

From 1990 to 1998, he served as deputy director and science advisor for the Office of Global Change at the U.S. Department of State. Before joining the State Department, Dr. Pershing headed World Resources Institute's Climate and Energy Program and was a faculty member at American University and the University of Minnesota.

From 1998 to 2004, Dr. Pershing headed the Energy and Environmental Division of the International Energy Agency headquartered in Paris, France. Dr. Pershing earned a doctorate of philosophy in geophysics and is the author of many articles and books on climate change and climate policy.

Also joining our first panel is Mr. Franklin Moore, deputy assistant administrator for the Bureau of Africa at the United States International Development Agency (USAID). A career member of the Senior Executive Service, Franklin C. Moore was appointed as deputy assistant administrator for the U.S. Agency for International Development's Africa Bureau in January 2008.

Previous to his appointment, Mr. Moore served as director of the Office of Environmental and Science Policy within the Agency's Bureau for Economic Growth in Agriculture and Trade since October 2002. Additionally, Mr. Moore has served as acting deputy assistant administrator and director for the Agency's Global Center for the Environment. He received a master's degree in agricultural economics, as well as a certificate in African Studies from the University of Wisconsin at Madison. Mr. Moore also studied for his Ph.D. in development studies at the University of Wisconsin-Madison.

Mr. Moore has lived in both Western and Southern Africa. He has worked in approximately 40 countries overseas and was instrumental in getting the United States to join the Convention on Desertification, which was approved by the Senate about 8 or 9 years ago. It is really a pleasure to have both of you with us.

Dr. Pershing?

STATEMENT OF JONATHAN PERSHING, PH.D., DEPUTY SPECIAL ENVOY, OFFICE OF THE SPECIAL ENVOY FOR CLIMATE CHANGE, UNITED STATES DEPARTMENT OF STATE

Mr. PERSHING. Mr. Chairman, Ranking Member Smith and Representative Woolsey, thank you very much for having a chance to testify before you today. I have provided a longer version of my testimony for the record, which if it would be okay I would like to summarize here in just some brief comments.

Mr. PAYNE. Without objection.

Mr. PERSHING. This is my first appearance before this subcommittee, and I very, very appreciate your holding this hearing and indeed your interest in the issue. It is one which I think you all have noted will affect the entire world, but which you have also noted will affect the poorest and the most vulnerable, a great many of whom are in Africa, perhaps the soonest and the most severely.

Let me echo some of the comments that you have each made about the severity of the problem. It is an issue which has garnered unprecedented international attention. At the U.N. Climate Convention session in Copenhagen in December, as you noted, Mr. Chairman, more than 120 heads of state participated—unprecedented—including 23 from Africa. At that meeting, due in no small part to the personal participation of President Obama and Secretary Clinton, we adopted the Copenhagen Accord.

The Accord does a number of key things. It calls for countries to limit greenhouse gas emissions to a level that would avoid some of the damages that we have been talking about, a rise of less than two degrees Celsius. It calls for both developed and developing countries to list the specific actions or targets they intend to set toward a take to cut their emissions.

It calls for full transparency in that process and it sets some provisions for financing, globally approaching \$30 billion over the next 3 years and setting a goal of mobilizing \$100 billion a year from both public and private sources by 2020. And finally it calls for establishing some new technology mechanisms, enhanced action on adaptation, key for this region in particular, new incentives for forest protection, also critical for this particular reason.

African nations were extremely active in the negotiations of the agreement in Copenhagen. The session marked the first time that

the region had a common position, and the African Union subsequently endorsed the Accord at its summit earlier this year.

I want to make one additional point, which has to do with U.S. activities. The world pays enormous attention to what we do, and your own efforts here in Congress are closely watched. I wanted to warmly commend and thank the House of Representatives for moving our country one vital step forward by passing the American Clean Energy and Security Act.

The passage of this bill had a major impact on the nature of our international discussions and demonstrated that the U.S. is serious about climate change and clean energy. It is clear from the ongoing international negotiations that the world eagerly awaits similar progress on legislation in the Senate.

Let me turn to Africa for a moment then. Africa's share, as you noted, Mr. Chairman, of greenhouse gas emissions is very small. Sub-Saharan Africa, only about 6 percent of global emissions of the six greenhouse gases, and as was also noted about 3 percent of the CO₂ on the energy side, but it encompasses about 12 percent of the global population.

But as you have also noted, if emissions are relatively modest, the impacts are not. Africa is one of the most vulnerable continents to climate change, and the vulnerability is exacerbated by a range of challenges such as poverty, governance and the all too frequent natural disasters and conflicts.

The litany is sobering. Just a few. Seventy percent of families are dependent on agriculture. The Intergovernmental Panel on Climate Change projects that agricultural production and food security is likely to be severely compromised. Also according to the IPCC, the population at risk of increased water stress—something that you have done a great deal of work on—is projected to rise by between 75 and 250 million people due to climate change. That is by 2020. By 2050, water stress could affect 350 to 600 million people in Africa.

Climate change may also contribute to conflict. A recent report co-authored by the Institute for Sustainable Development and the Institute for Security Studies identifies links between climate change and conflict in Africa due to water scarcity, limited arable land, increasing floods and droughts.

We recognize that successfully addressing climate change in Africa will acquire political commitment on the part of leaders, broader engagement by local communities and civil institutions and practical results-oriented activity on the ground. To support that, we have proposed substantial increases in foreign assistance.

The Fiscal Year 2010 appropriation includes approximately \$1 billion for international climate efforts to the Department of State, the Department of Treasury and the U.S. Agency for International Development. The President's Fiscal Year 2011 budget of about \$1.4 billion targets these same agencies, and the contribution is split between bilateral assistance and contributions to multilateral climate change programs.

In addition, the Fiscal Year 2011 budget request would allow several other agencies to provide technical and financial assistance with a climate focus, approximately \$100 million, and would pro-

vide an additional approximately \$400 million from nonclimate specific activities that have climate benefits.

The fact that our climate assistance goes through a variety of mechanisms makes it a bit hard to say exactly how much goes to every specific recipient, but we estimate about 20 percent of the State and USAID climate assistance in 2010 and around 30 percent of the total in 2011 would benefit African countries.

In closing, let me raise just a few points. Climate change is a both real and an unfortunately accelerating threat. The U.S. and the world must act quickly and aggressively to curb our emissions if we are to avoid the most severe damages. We can and we should assist the world's most vulnerable to adapt to the effects of climate change and to help support developing countries in building their capacity to develop low emissions and sustainable pathways that, as Mr. Smith has stated, need to be resilient.

Efforts to address the impacts of climate change and support low carbon development in Africa will serve U.S. strategic priorities. It will strengthen democracy, increase investment, improve health, help present conflict and effectively address transnational challenges.

Thank you again, Mr. Chairman, and I look forward to answering any questions you and the members of the committee may have. Thank you very much.

[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 African Affairs and Global Health
April 15, 2010**

Chairman Payne, Ranking Member Smith, members of the Subcommittee – thank you for the opportunity to testify before you today. This is my first appearance before this subcommittee, and I very much appreciate your holding this hearing, and your interest in this critical issue. It is one that will affect the entire world – but which the poorest and most vulnerable, a great many of whom are in Africa – will feel the soonest and the most severely.

Your session is also very timely: I have just returned from the most recent round of UN Climate Convention Negotiations, at which it was decided how the international community will proceed with next steps under the UN Climate Convention. It was a meeting in which the Africans played an important role. From my meetings with the African delegates there, it is clear that policy making on climate and its related energy and land use issues is in flux. Countries are grappling with both opportunities and challenges – and very much looking to the US for our engagement and support in working with them in a global effort to address the climate problem.

The Copenhagen Accord and the International State of Play

Let me start with a few brief words of background. We are all aware of the seriousness of the climate problem. It is an issue which has garnered an unprecedented level of international attention. This is perhaps most tellingly represented by the session in Copenhagen this past December: more than 120 heads of state participated – including 23 from Africa.

At that meeting, due in large part to the personal participation of both the President and Secretary Clinton, we adopted the so called “Copenhagen Accord”. This agreement represents a significant milestone in our collective effort to address the critical problem of climate change. It is a straightforward and direct text – providing high-level guidance rather than technical guidelines. For the first time, it gives formal recognition to the level of effort needed to address the climate problem, calling for countries to limit greenhouse gas emissions to a level that will hold global temperature rise to less than 2 degrees C. It calls for both developed and major developing countries (and others who wish to do so), to list—or inscribe—the specific actions or targets they intend to take to cut or limit their emissions. It calls for full transparency, requiring the development of specific guidelines for measurement, reporting and verification, as well as analysis and consultation on policies and measures, giving all countries confidence that we are all carrying out our commitments, and enabling us to assess our efforts to control emissions. It sets landmark financing provisions: for total prompt start financing among international partners approaching \$30 billion over the next three years, and a goal of jointly mobilizing \$100 billion a year by 2020 from public and private sources, in the context of meaningful implementation of the Accord. It calls for the establishment of a new Technology Mechanism, a new climate fund, enhanced action on adaptation, and creates new incentives for forest protection.

African nations were active in the negotiations of the agreement in Copenhagen. The session marked the first time the region had a common position, developed by the African Union. The Copenhagen Accord specifically mentions Africa among the target regions in its adaptation and finance provisions. The African Union endorsed the Accord at its Summit in early 2010, and encouraged member states to associate themselves with it. We have been working actively to encourage all African countries to formally associate with the Accord, and to date 31 have done so.

The US Role

President Obama is unwavering in his commitment to combating global climate change. He and Secretary Clinton have stated that the United States has a responsibility to address the global climate crisis by taking robust action at home and assisting the countries that are most vulnerable to the adverse effects of climate change. We are the world's largest historic emitter, and after China, the world's largest current emitter. We are also the biggest and wealthiest economy in the world – and we are looked to provide solutions and to harness our incredible domestic ingenuity and technological know-how to make a difference. The world pays attention to what we do and with our responsibility comes an enormous opportunity. I want to commend the House of Representatives for moving our country one vital step down the right path by passing the American Clean Energy and Security Act. The passage of this bill has had a major impact on the nature of our international discussions and demonstrates that the United States is serious about climate change and clean energy. It is clear from the international negotiations that Congressional efforts are closely watched and the world eagerly awaits similar progress on forward looking energy and climate legislation in the Senate.

Climate Change and Africa

Africa's share of global greenhouse gas emissions is currently small – Sub-Saharan Africa has only about 6% of global emissions, while encompassing about 12% of the world's population. But in many parts of the continent, emissions are rising rapidly. For example, South Africa, as it has electrified its communities and grown its economy, has seen its emissions rise about 30% between 1990 and 2005. Deforestation in the Congo Basin is increasing with growing population and the demand for agriculture and wood products which also adds to increased emissions as this carbon sequestration source is destroyed. Avoiding future emissions growth while continuing to improve living conditions, national welfare and productivity will be a real challenge. We are already working aggressively through the Congo Basin Forest Partnership to prevent this.

However, there is enormous untapped potential to control emissions growth on the continent. On the land use side, there are significant opportunities in improved agricultural practices, and forest conservation and sustainable management, as well as agroforestry, reforestation, and rehabilitation of degraded lands. Countries in the region are already actively examining

alternative energy resources, particularly geothermal and wind energy as well as hydroelectric power and biofuels.

But if emissions are relatively modest, climate impacts on Africa are unfortunately not commensurately limited.

Africa is one of the most vulnerable continents to global climate change and climate vulnerability. Climate vulnerability is the degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change. Americans must understand that, as challenging as addressing climate change will be for us, it will be a far greater challenge for countries that are still developing, and that in many cases, have only very limited technical and financial capacity to cope with damages. In Africa, vulnerability is exacerbated by a range of multidimensional challenges. These include endemic poverty; complex (and too often non-functioning) governance and weak or non-existent civil and government institutional systems; uncompetitive investment environments and limited access to capital, including markets, infrastructure and technology; ecosystem degradation; and frequent natural disasters and conflicts.

As you know, the President has said repeatedly that the United States views Africa as our partner and as a partner of the international community. As partners then, we must work together to address the impacts of climate change and support low-carbon development.

The litany of climate impacts on the region makes for very sobering listening – and I will only highlight a few to give you a flavor:

- Approximately 70% of families in Africa are dependent on agriculture in one way or another. The Intergovernmental Panel on Climate Change (IPCC) projects with high confidence that agricultural production and food security in many African countries and regions are likely to be severely compromised by climate change and climate variability. Significant reductions in yield are expected to be seen by 2020 in some countries – and without major new programs, net crop revenues could fall by as much as 90% by 2100, with small scale farmers being the most affected.
- About 25% of Africa’s population currently experience water stress. Also according to the IPCC, by 2020, the population at risk of increased water stress is projected to increase to between 75-250 million people due to climate change – and by 2050, water stress is projected to affect 350-600 million people. And this is only if water demand stays at the relatively modest current levels. If coupled with the increased demands for water from irrigation and industry, things get worse.
- Towards the end of the 21st century, projected sea-level rise will affect low-lying coastal areas with large populations. Adaptation costs for sea level rise are projected to amount to 5-10% of GDP or more. And much of the natural protections provided by mangroves and coral reefs are projected to be further degraded, with additional consequences for fisheries, coastal communities, and tourism.

- The health of the population is also at risk. Projected climate change-related exposures are likely to affect the health of millions through increased malnutrition, increased deaths, disease and injury due to heat-waves, floods, storms, fires and droughts, increased burden of diarrheal diseases and changes in the distribution of some infectious diseases.
- Climate change may also contribute to the emergence and longevity of conflict. A recent report co-authored by the International Institute for Sustainable Development and the Institute for Security Studies identifies four major links between climate change and conflict in Africa: competition for ever more scarce water supplies; reductions in crop yields and efforts to control the use of productive arable land; displacement of populations threatened by rising sea levels and increasingly frequent and severe floods and droughts ; and the already prevalent poverty and limits to governing capacity. Climate change could tip fragile states towards socio-economic and political collapse.

Support for Africa to Meet the Challenge of Climate Change

We recognize that success in Africa will require more effective political commitment on the part of African leaders, broader engagement by local communities and civil institutions, and practical, results-oriented action on the ground. To support such action, we have proposed substantial increases in foreign assistance to help countries reduce greenhouse gas emissions and adapt to the impact of climate change, with a particularly emphasis on the most vulnerable states, such as those in Africa. But we know that additional assistance will not, by itself, automatically produce success.

The FY2010 appropriation includes approximately \$1 billion international climate efforts through the Department of State, Department of Treasury, and the U.S. Agency for International Development. The President's FY2011 Budget requests about \$1.4 billion, a further increase of 38% over FY2010 for these three agencies. The US contribution is split between bilateral assistance (largely through USAID), and contributions to multilateral climate change programs through the World Bank and the Global Environment Facility, and their related climate change funds (through the Treasury and State budgets.) In addition, in FY 2011, several other agencies across the USG provide technical and financial assistance with a climate focus (approximately \$100 million), and there is an additional approximately \$400 million from non-climate specific activities that none-the-less have substantial climate co-benefits.

The fact that our climate change assistance goes through a variety of mechanisms makes it a little hard to say how much will flow to a given recipient. Nevertheless, we estimate that around 20% of our State and USAID climate assistance funds in FY2010, and around 30% of the total in the FY2011 Budget will benefit African countries. This includes bilateral, regional, and centrally managed programs, as well as contributions through multilateral funds.

When it comes to our assistance to help vulnerable countries adapt to and build resilience to the impacts of climate change, we estimate that at least 1/3 of our State and USAID adaptation assistance programs in FY2010 and our FY2011 request will support African countries in such areas as science and analysis for decision making; improved governance; and integrating adaptation into other development activities that are compromised by climate change. For

example, USAID missions in Tanzania and Rwanda are planning to integrate climate into their water programming, and a regional program working on the Okavango River basin in southern Africa will do the same.

Reducing greenhouse gas emissions from deforestation and degradation, or REDD is another crucial component of the climate change challenge, and that challenge cannot be met without addressing deforestation in Africa. The Congo Basin is the world's second largest expanse of tropical forest, and a critical carbon "sink." The \$20.5 million that Congress directed be used for biodiversity programs in the Congo basin in FY2010 will help protect this resource, and help build REDD programs. But we recognize that our need to protect Africa's carbon "sinks" must be balanced by Africans' needs for affordable and reliable energy and building materials which the forests have traditionally provided, as well as land cleared for agriculture to feed growing populations. So our climate change and biodiversity assistance programs will help local communities grow and sustainably manage community woodlots to provide for those needs while preserving natural forests.

In concert with those efforts, our clean energy assistance programs in Africa will provide renewable energy alternatives to traditional wood burning and fossil fuels and improve energy efficiency in buildings and electrical transmission. For example, in FY2010 our USAID technical assistance programs plan to support wind energy projects in Namibia and Mozambique, geothermal power in the rift valley countries, and regional electricity grids in southern Africa. In 2008, USAID, working with the National Aeronautics and Space Administration, established a satellite data distribution portal in Kenya, called SERVIR, to provide information to improve environmental forecasts in Africa. Our programs will also help some countries that reduce emission from forests and energy use to monitor and verify those reductions, in preparation for their possible utilization in carbon trading markets being established by developed countries. In this way, our programs are designed to lead to much greater financial flows to help African nations grow their economies and provide a better future for their people.

Conclusion

In closing, let me reiterate a few key points. Global climate change is both real, and an ever accelerating threat. The US – and the world – must act quickly and aggressively to curb our emissions if we are to avoid its most severe damages. But we also have a responsibility to help those who are the least responsible and most vulnerable. We can, and should assist the world's most vulnerable people to adapt to the effects of climate change and to help support developing countries in building their capacity to develop along low emission and sustainable pathways that are resilient to changing climate. Our efforts to address the impacts of climate change and support low-carbon development in Africa will serve U.S. strategic priorities to strengthen democracy, increase investment, improve health, prevent conflict and effectively address transnational challenges in Africa.

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

Mr. PAYNE. Thank you very much.
Mr. Moore?

**STATEMENT OF MR. FRANKLIN MOORE, DEPUTY ASSISTANT
ADMINISTRATOR, BUREAU FOR AFRICA, OFFICE OF THE AS-
SISTANT ADMINISTRATOR, UNITED STATES AGENCY FOR
INTERNATIONAL DEVELOPMENT**

Mr. MOORE. Good morning, Chairman Payne, Ranking Member Smith and Representatives Watson and Woolsey. Thank you for the opportunity to testify before you again. I have submitted testimony for the record, but with your concurrence would like to make a short statement.

Mr. PAYNE. Without objection.

Mr. MOORE. Climate change is one of the premier development challenges of our generation. In my statement I will concentrate on two points: Adaptation because of its relationship to resiliency and our interaction with African organizations, including the African Union.

If climate risks and opportunities are not taken into account across the entire portfolio of the United States' development efforts, if we continue what is called business as usual, if there is not a twinning of climate and development, then we risk making investments that will fail to meet long-term development objectives or, worse, make Africa even more vulnerable to the effects of climate change.

For example, coastal development pursued without consideration to a long-term rise in sea levels can put human lives and economic endeavors at risk. Populations that are not the most vulnerable now may become more vulnerable 20 to 30 years from now because of the results of climate change. Twenty to thirty years from now the route into and out of poverty may change. Access to food and water may change, and burdens of disease may change.

As you have mentioned, Mr. Chairman, as Dr. Pershing also mentioned, in particular for Africa the reductions in soil moisture, changes in water cycles and the effect that has on a continent where 71 percent of the land is arid, semi-arid or dry subhumid will be tremendous. We can come back to that in questions if you would like.

Adaptation to climate change is about proactively taking these expected shifts into account in our development planning rather than responding later when we will not be as effective, adaptations to actions taken to help communities and ecosystems cope with actual and expected changes in climate by building resilience. This adaptation can be achieved by first reducing exposure, establishing disaster plans or building codes that prevent construction in highly vulnerable places.

Second, reducing sensitivity, planting better adapted crops or building more robust infrastructure and, third, increasing adaptive capacity, diversifying economic activities, building human capacity, improving access to information and early warning systems.

How do we make adaptation investments? USAID is taking three routes. First, science and analysis for decision making. USAID will make investments in scientific capacity to improve climate informa-

tion predictions and analysis to identify vulnerable populations, sectors, ecosystems, regions and activities.

Second, effective governance for climate resilience. USAID will invest in diffusing this information and improving the capacity to use climate information in an analysis and decision making, including improving public communication and education, the strengthening of communities and civil society and private sector engagement to improve our performance in implementing climate-proof activities.

This will lead to the integration of adaptation strategies into development solutions across the broad range of the development portfolio. In some cases, the insertion of business as usual will need to be reversed through examples, so our third group will be in some cases to implement climate solutions.

Let me turn briefly to the subject of organizations. The African Union is increasing its capacity to become operational. Next week, during consultations between the AU and the United States, USAID will begin a discussion leading to a formal memorandum of understanding that will assist our ability to provide more operational support in a variety of areas, including climate change, in particular the African Union's ClimDev Program.

However, AID has long worked with a number of African sub-regional organizations. With the Economic Community of West African States, ECOWAS, we have worked on access to energy, including reducing the flaring of natural gas associated with oil production.

We are working with the Secretariat of the Southern African Development Community, SADC, to assist and facilitate investments in energy infrastructure projects that also lower the carbon footprint.

We have worked with the Common Market for Eastern Southern Africa, COMESA, its Working Group on Climate, Agriculture, Forests, Land Use and Livelihoods, to highlight best practices, create enabling conditions and highlight innovative sources of finance.

Our broadest and most useful impacts have been with SILS in West Africa where we focused on food security and natural resource management and with COMESA where we focused on conservation farming, as mentioned by you, Mr. Chairman.

We must act quickly and effectively to help Africa prepare for the wide ranging, long lasting environmental and human challenges that climate change will bring. Without effective adaptation, Africa will only see the threats that cause hunger, disease and conflict increase, but if we work together to address climate change across every sector we can forge a way forward that not only prepares Africa's most vulnerable people to cope with new pressures, but also creates better opportunities, better living conditions and better lives.

Thank you, Mr. Chairman and Ranking Member Smith and members of the subcommittee for your support. I look forward to the questions.

[The prepared statement of Mr. Moore follows:]

**Testimony by U.S. Agency for International Development
Deputy Assistant Administrator for Africa Franklin Moore
U.S. House Committee on Foreign Affairs
Subcommittee on African Affairs and Global Health
April 15, 2010**

Good morning, Chairman Payne, Ranking Member Smith, and members of the Subcommittee. Thank you for the opportunity to testify before you today.

Climate change is one of the premier challenges of our generation. No nation, large or small, rich or poor, is immune to its impact, and no nation can afford to sit idly by while its effects unfold. Around the world, climate change is another factor that will exacerbate existing development challenges such as poverty, hunger, disease, and conflict, and may begin to erode the progress we have made toward improving the lives of people in developing countries.

Despite a lack of extensive data in many countries, the effects of climate change have been clearly visible in Africa. Because of Africa's heavy dependence on natural resources and agriculture, and because of limited capacities in many African communities, the repercussions of climate change are particularly ominous. Fluctuations in rainfall and an increase in the frequency and severity of extreme weather events—particularly floods—are projected to put many people at risk in urban areas, while in rural areas, weather events—particularly droughts and increasing temperatures—are projected to significantly hurt crop production. According to the Intergovernmental Panel on Climate Change 2007 report, yields from rain-fed farming may drop in some African countries by as much as 50 percent by 2020, and wheat could disappear from the African continent entirely by 2080. The range and timing of vector-borne diseases, such as malaria and yellow fever, may also shift, which would have serious consequences for public health. Climate change is also expected to exacerbate conflicts over resources, while contributing to increases in local and regional migration that will place further demands on ecosystems, governments, and societies.

The United States is resolute in its commitment to forge a truly global solution to climate change. Through the Copenhagen Accord and a range of international collaborations we are working with the poorest, most vulnerable nations to help them adapt to climate change and chart a future of sustainable growth and development. USAID's climate change programs in Africa focus on three areas—adaptation, energy, and landscapes—while addressing each of the sectors where the effects of climate change will be the most pronounced: food security, health, and social and political stability.

Adaptation

The extent of the effects of climate change depends not only on how much an area will be affected, but also on its ability to adapt to new conditions. To lessen the human and economic costs of climate change, USAID is helping countries reduce risk to changing climatic conditions. The coming years are projected to see an increase in weather extremes and incremental changes,

like shifting rainfall patterns, around the world, and countries and their economies must be able to make informed decisions to increase their capacity to tolerate and withstand those changes.

Africa has the highest proportion of arid, semi-arid, and dry sub-humid lands of any continent; they make up 71 percent of Africa's total land mass. Farmers across the Sahel have had to adapt to climatic variability for decades, and their partnership with USAID has been a model for how we could develop and scale-up adaptation techniques. Over the last 25 years, as land pressure and variability increased, Sahelian farmers adapted by turning to land management that includes forests and trees. Trees are less susceptible to rainfall fluctuations than typical crop systems, and tree products such as fruits, gums, and wood can find ready domestic and export markets. Niger's farmers are managing nearly 5 million hectares of farm forests, which are simultaneously yielding tree products and improving soil productivity for crops. During the aftermath of Niger's 2005 drought and food crisis, one study found that villages that had established farm forests suffered no increase in child mortality, and while unable to produce grains, these villages were still able to sell tree products to purchase food. By adapting to their changing environment, Niger's tree farmers found a way to survive through a drought crisis—which, in the coming years, may unfortunately become less of an anomaly and more of a regular cycle.

In southern Africa, many of USAID's community-based natural resource management programs were initiated as integrated conservation, governance, and economic growth programs. However, at the same time, these programs have been able to increase resiliency by combating land degradation and the threat of desertification.

In arid regions like Namibia, wildlife programs provide greater economic benefits for local communities and are more durable during droughts than other, less suitable land uses, such as crop agriculture and livestock. They also build the resilience and adaptive capacity of the land to respond to changing climatic conditions. With funding from the regional Southern Africa program, one of USAID's most successful conservation programs devolved authority for managing Namibia's dryland natural resources to local conservancies, creating a financial boon for participating communities. Conservancy incomes rose from \$165,000 in 1998 to \$5.7 million in 2008, with returns to the Namibian economy exceeding \$34 million. Community conservancies have overseen dramatic increases not only in local standards of living but also in numbers of important game species. In the meantime, the quality of land has recovered and the land's resilience to climatic variation has increased, while communities have reduced their dependence on livestock and unsustainable agricultural practices that can collapse during droughts. In 2008, the Millennium Challenge Corporation signed a five-year, \$304.5-million compact with the Government of Namibia that is building on the USAID program and includes tourism development, communal land reform, and management of natural products and rangelands.

Niger's tree farmers and Namibia's conservationists are good examples of local approaches to adapt to climate variability, but they do not represent full adaptation strategies. Significant further work will be required to help countries pursue comprehensive adaptation responses that are appropriate to their specific circumstances.

Energy

Although Africa only produces 6 percent of global greenhouse gas emissions, no country has developed without a parallel increased use of energy, which is why developing economies are projected to account for over 80 percent of the growth in emissions by 2030. These countries can and should play a major role in reducing emissions of greenhouse gases in a way that is consistent with robust and sustainable growth. USAID investments to promote low-carbon economic growth are designed to demonstrate and motivate significant reductions in greenhouse gas emissions as land use and energy patterns change with economic development.

To mitigate emissions from energy use and generation, USAID is pursuing activities that encourage clean energy projects, energy efficiency, low-carbon energy development, and energy sector reforms, including capacity building and technical assistance in demand-side management techniques, supporting regional power pools, and the creation of infrastructure networks with a greater ability to distribute output from clean energy facilities. USAID has recently created the Africa Infrastructure Program to support the development of clean energy projects in Africa.

USAID also has active programs to help end extensive gas flaring in the region. In Nigeria, offshore oil platforms flare large amounts of associated gas, a byproduct of crude oil extraction, which causes 36 million tons of carbon dioxide emissions to escape into the atmosphere every year. Capturing and using this gas in the power sector would result in an enormous reduction of existing emissions, and its use would go a long way toward meeting on-shore energy needs. Over the last decade, the lack of domestic markets or a clear political commitment within Nigeria to end gas flaring resulted in little progress toward that goal. Recently, however, due to increased interest by the Nigerian government, USAID has undertaken a new program of assistance in which it is helping Nigeria to reduce gas flaring through programs that monetize and help to create domestic markets for this associated gas. The goal is to help eliminate gas flaring in Nigeria by advancing the development of a domestic Nigerian natural gas market, attracting outside capital, supporting renewable energy programs, and contributing to the creation of thousands of new jobs. Simply reducing gas flaring could reduce Nigeria's greenhouse gas emissions by 34 million tons a year; in addition, the use of this gas locally using state-of-the-art technology has the potential to displace an additional 30 million tons of carbon dioxide a year by replacing existing, higher polluting sources.

Landscapes

To mitigate emissions caused by land degradation, deforestation, and desertification, USAID is working to change the economic circumstances that drive emissions, improve land management, conserve important carbon "sinks" in forests, promote reforestation and afforestation, and promote improved agricultural and agroforestry methods to increase carbon sequestration. Many of our biodiversity programs also address critical goals for climate change mitigation.

The Central African Regional Program for the Environment (CARPE) is a long-term USAID initiative that has been addressing deforestation and biodiversity loss in the Congo Basin of central Africa since 1995. One of the least developed regions in the world, the Congo Basin is home to a massive expanse of closed-canopy tropical forest, second in area only to the Amazon Basin. Central Africa is the continent's most important carbon sink—an area that stores carbon and mitigating carbon dioxide emissions. However, the unsustainable extraction of natural

resources, shifting cultivation practices, poverty, and urban expansion at the forest margin pose increasing threats to this globally significant forest resource.

Maintaining the carbon sink potential of the Congo Basin is a key objective of USAID's climate change program, and the CARPE program is increasingly focused on this goal. CARPE aims to create and execute land-use management plans coupled with a satellite imagery monitoring system to identify ways to limit deforestation and retain the forest as a significant global carbon sink. As a result of these initiatives, 45 million hectares of land—mostly forest—and marine habitats of biological significance are under improved management.

Food Security

Because of its wide-reaching impact on agriculture and landscapes, climate change is inextricably linked to food security. Studies carried out by USAID's Famine Early Warning System Network (FEWS NET) have found that, since the early 1980s, total rainfall in east Africa has seen a sequence like the last five consecutive poor years. Since 1980, total rainfall during east and southern Africa's long rainy seasons has declined an estimated 15 percent. Extreme heat and flooding sparked by climate change will also reduce crop productivity or increase the risk of crop failure.

Ethiopia, one of the most food insecure countries in the world, sits in the cross-hairs of these changing climate patterns, and is struggling to cope with the multiple threats to food security, access to water, and even certain livelihoods. The productivity—and soon, even the basic viability—of its long-cycle crops is at risk. These crops, which provide up to 85 percent of the food grown in Ethiopia, are planted in the same April-May period that has seen 15-percent declines in rainfall. The interaction between drought and declining agricultural capacity could be explosive, dangerous, and costly. Under the most likely scenarios, cereal production in Ethiopia—and, indeed, much of east Africa—may drop 30 percent by 2030, thus requiring equivalent—and unlikely—increases in area used for agriculture or large increases in food aid to make up for the shortfall.

USAID's Regional Enhanced Livelihoods in Pastoral Areas (RELPA) program has sought to counter the effects of declining rainfall in cross-border region of southern Ethiopia, northern Kenya, and southern Somalia. Launched in 2006, the program focuses on pastoralists and agro-pastoralists, whose entire livelihood system was threatened by three consecutive years of failed or insufficient rains. Through this program, USAID has sought to increase the capacity of pastoral communities to adapt to climate variability and cope with its impacts through improvements in land, vegetative cover, and water management, and through provision of alternative, complementary, and enhanced livelihood options such as fodder production, rangeland management, and rehabilitation of water points. RELPA has not only begun to help pastoralists regain their livelihoods, but it has also focused the attention of the Common Market for East and Southern Africa and other donors to increasing threats to pastoralist livelihoods and food security.

Stability

The increasing scarcity of arable land, water, and food will affect hundreds of millions of people, including, most seriously, the world's poorest. However, while climate change will be one of the

factors that can contribute to emerging or reemerging conflicts in the near term, the underlying political, economic, social, and cultural context will remain of ultimate importance. Governments that do not or cannot respond adequately to climate-related challenges will erode the perception of their effectiveness and legitimacy and undermine their own stability, while a steady buildup of environmental problems coupled with ongoing social or economic challenges may trigger instability and population movements. Conflict could stem directly from corrupt, fragile, or failed governments that are unable or unwilling to respond to their people's needs.

Every year, USAID compiles the Alert List, which ranks countries based on their fragility and risk of instability; in 2009, 23 of the 29 most vulnerable countries were in Africa. Conflict analysis must inform all of our programs in Africa, including climate change. And vice versa: the 2010 USAID Alert List will for the first time include research on vulnerability to climate change, as well as conflict.

In addition to our continuing analytical work on the nexus of climate and conflict, in the coming year, USAID plans to develop a pilot project to study vulnerability and resilience in Africa. This project will help us begin to understand local risks and resources related to climate change, and assist us in developing and prioritizing policy interventions. In addition, FEWS NET compiles comprehensive information on how people in food insecure countries live their lives, which can then be used to help us predict any social and economic impacts climate change could bring about. FEWS NET is currently providing its data to an Organization for Economic Cooperation and Development study that is attempting to identify the security impacts that may be seen in the greater Sahel region as a result of climate change. One of the things the study has already taught us is that the accuracy of climate change forecasts is to a great degree contingent on human reactions to forecasts over time. That will mean that one of the primary adaptations humans will have to make is an increased willingness to make the best decisions possible under inherently uncertain conditions.

In addition, USAID's democracy and governance programs that support public awareness, research, public administration, advocacy, and the adoption and enforcement of laws and policies can help countries prepare for and cope with climate change. These existing programs will inform and be informed by USAID's climate change assistance. For example, it will be critical to build on USAID's previous work with civil society groups across the continent, as we look to both raise awareness about the negative effects of climate change and exchange information on adapting to climate impacts.

Health

Health is another area where we are beginning to see climate change take a toll, especially in Africa, where health threats are already chronic and powerful. An increase in the severity and frequency of extreme weather events can not only cause human injury, but also damage water and sanitation systems, which in turn can spark an increase in infectious disease. Changing temperatures could alter the geographic range and vectors of diseases like malaria and yellow fever, and cholera epidemics have been shown to be correlated with higher sea-surface temperatures. Declining food supplies arising from shifting climate patterns or other considerations can lead to adverse health impacts, and even small increases in malnutrition can

have multiple health impacts. Meanwhile, weak health infrastructures have very limited capacity to predict, prepare for, or respond to an exacerbation of health risks caused by climate change.

To help begin to address these health impacts, USAID is working with the National Aeronautics and Space Administration (NASA) to support the health-related capabilities of *Servir*, a NASA-developed monitoring system that established a hub in Nairobi, Kenya, in 2007. *Servir* integrates satellite and geospatial data to improve our knowledge and observation of weather and climate factors that affect health, including air quality, water quality, and extreme weather. *Servir* will pilot early warning systems for meningitis, malaria, and locust infestations. As part of our expanding strategy to address climate change, we hope to include more health indicators into monitoring systems like *Servir* and FEWS NET so that we can better understand, prepare for, and mitigate emerging health threats.

The Way Forward

Many development activities can reduce vulnerability to climate change, but if risks and opportunities are not taken into account, if we forge ahead with “business as usual,” then we risk making investments that will fail to meet long-term development objectives or, worse, exacerbate vulnerabilities. For instance, coastal development pursued without consideration to long-term changes in sea level or storm surges can put human lives, infrastructure, and industries at risk.

Adaptation. Adaptation is about building capacity to understand likely climate change impacts and strategically planning investments to increase resilience to shocks felt by communities and economies. Activities can range from integrating knowledge of climate change into activity planning (for example, identifying the crops most vulnerable to climate change in a development program designed to increase food security) to implementing programs that explicitly target climate change issues (increasing availability of predictions and scientific information).

Integrating climate change adaptation into development investments begins with understanding vulnerability, which itself is a product of understanding how the climate is changing and related underlying socioeconomic factors. Understanding vulnerability does not mean that our information about the future is flawless, but rather that we have sufficient knowledge to identify larger trends and consider a range of options to manage risk.

Identifying new adaptive strategies involves a broad-reaching phase during which we examine our development portfolio and our partner countries’ priorities, consider indigenous knowledge and existing practices, and build the involvement of stakeholders, communities, and partners. Results of assessment and planning efforts must inform decisions and practices to reduce risks and manage resources sustainably. We must take advantage of opportunities presented by new technologies and targeted research to advance our development efforts. Actions should then be flexible, forward-looking, and diverse, with the ability to accommodate incremental changes as our knowledge improves.

Energy. USAID is pursuing several objectives to help support clean energy and build countries’ capacities to participate in future international carbon markets. First, we are assisting developing countries in creating the policies and investment environments for attracting capital that will

finance low carbon growth. Second, we are helping improve developing countries' capacities to measure and report greenhouse emissions to provide international transparency and support access to future funding streams.

As we develop and implement low carbon development strategies, USAID investments will support the creation of national economic growth strategies, parallel with reduced greenhouse gas emissions. Integral to the success of these strategies is an open, participatory design process that raises awareness among all sectors of society and that fosters dialogue and shared commitment to the objectives in the strategies.

In addition, through our Africa Infrastructure Program, USAID is actively supporting efforts by African governments to implement low-carbon development strategies by helping to create enabling environments and to finalize clean energy projects currently under development. USAID assists African countries in creating policies, regulations, and legal frameworks that will attract private capital to clean energy investments, and addressing problems and barriers preventing the short-term closure of clean energy projects under development. USAID is currently supporting the development and execution of over 500 MW of wind and renewable energy projects, and we are assessing future assistance to even more wind, water, solar, geothermal, and other clean energy projects in the region.

Landscapes. USAID's landscapes programs will address several priorities, including implementation of national or sub-national strategies to reduce emissions from deforestation and degradation, greenhouse gas inventories and accounting, forest carbon market readiness, and targeted field demonstrations and investments.

To help us prioritize our investments, USAID spearheaded an analysis of the carbon storage potential of landscapes, threats to carbon stocks, and the strength of the enabling environment. Now we are in discussions with countries such as Malawi to develop a land use inventory and accounting system that would allow forestry departments to track improved land management practices and begin to access carbon finance. We are shifting the focus of the CARPE program from implementation to institutionalization, with the goal of phasing out U.S. support by 2016. Building on CARPE's strengths in linking satellite remote sensing data to on-the-ground information about land management practices and improved environmental governance to help monitor, report, and verify increases in carbon storage, we are exploring how to tap into private sector financial support through carbon markets for improved forest management practices. Our goal is to make tropical forest conservation sustainable, reaping the climate change benefits of increased carbon storage as well as improvements in the lives of the 80 million people who depend on these forests.

The greatest potential for carbon uptake is through the conversion of previously degraded lands into well-managed agroforestry systems. Africa has great potential in this area. The Common Market for Eastern and South Africa (COMESA) has been taking a leading role in building local capacity to engage in carbon finance markets and receive international financial flows from increased carbon storage. African countries face serious barriers in entering these markets, including a lack of inventories of land use and emissions, weak financial systems, and slow adoption of improved land management practices. With USAID support, COMESA is seeking

ways to reduce these barriers and help African countries invest in improved land management techniques while also tapping into international markets to provide finance to support this work.

The African Union, the New Partnership for Africa's Development, and the Common Market for Eastern and Southern Africa have created a working group on climate, agriculture, forests, land use, and livelihoods. Recognizing that climate change magnifies, intensifies, and speeds up already serious threats to ecosystems and the people who depend on them, the working group seeks to promote and support adaptation, mitigation, and related agricultural, land use and livelihood strategies in East and Southern Africa.

Our key priorities—in adaptation, energy, and landscapes—require a cooperative approach. USAID is supporting regional African organizations, including regional economic commissions, river basin organizations, and regional scientific organizations. We will be helping these organizations build local capacity to engage with international carbon finance markets, build regional power grids, and provide climate data and information. In addition, we are currently in talks with the African Union and other donors to discuss how we can best support climate change efforts on the continent.

Africa is a vital part of the global solution to climate change. We do not need a crystal ball to tell us that we must act quickly and effectively to help the continent prepare for the wide-ranging, long-lasting environmental challenges. Without effective adaptation to climate change, Africa will only see the contributors to hunger, disease, and conflict increase. But if we work together to address climate change across every sector, we can forge a way forward that not only prepares Africa's most vulnerable people to cope with new pressures, but also creates better opportunities, better living conditions, and better lives.

Thank you, Mr. Chairman, Ranking Member Smith, and members of the Subcommittee for your continued support for USAID and our programs.

Mr. PAYNE. Thank you very much. I thank both of you for your very interesting testimony.

Dr. Pershing, in your opinion what are the main pillars of the Africa Union's (AU) common position, which defines Africa's collective agenda in the international climate change talks?

Mr. PERSHING. Thank you very much, Mr. Chairman. There are a number of elements to it. They have talked about looking for equity. Their view is that at the moment the process is one which I think you have pointed out. They are a very small share of the total contribution to global emissions, but a disproportionately large share of the impacts, and they are looking really at the inequity of that kind of circumstance.

They are looking for assistance. They are looking to find themselves ways that we, the world—not just the United States, but other donor nations around the world—can help them emerge from this period of development with a more sustainable pathway. That includes efficiencies in the energy sector. That includes improvements in the land use and forestry sector, and it also includes resilience and adaptation capacity for the damages that we all see coming and can't avoid.

And then finally they would like to have a more significant voice in the negotiations. Their view is that historically they have been really underrepresented in the process. There has been a concern that the African community more widely doesn't tend to have a voice at the small tables, and if they do that voice is a single individual who is vastly outnumbered by others from the developing world, as well as the developed world, and so part of their hope is to be more active.

They have been living up to this. I came back from the most recent round of negotiations just on Monday, and over the course of the weekend, in which we had a short discussion, the Africans played a much more active and very constructive role.

Mr. PAYNE. Thank you. How would you actually characterize the U.S. response to the AU's common position?

Mr. PERSHING. We have been quite supportive of it. There are a number of key elements, and I just list the three that I walked through.

With respect to the issue of this equity problem, we have made a clear case that we expect a great deal more from the major economies than we expect from the poorest and the least capable ones, many of those in Africa.

It doesn't rule out all of the Africas. We actually have expectations for South Africa that are quite substantial, and they are living up to them, but we make a distinction between those who don't have capacity and need assistance and those who do have capacity and should be pressed to move forward.

We have been working with them. We had some very extensive consultations with them in the run-up to Copenhagen and since then in the context of the negotiations to help elicit the positions that they are worried about and to help them both frame them and bring them into the mainstream of the discussion.

And we have been focused very extensively in our financial dealings and in our financial efforts both in terms of the development of our administration's budget, as well as in considering the multi-

lateral financing on the needs of this community as they have been articulating themselves.

Mr. PAYNE. And finally, although the Africa Union's common African position has given a priority, as we mentioned, to adaptation, are there appropriate ways for African nations to contribute to greenhouse gas emissions mitigation as well?

Mr. PERSHING. Thank you very much. Yes, there are quite a number and some very significant.

If we take a look at the major forest basins around the world, there are three that we probably are most focused on. We all think often about the Amazon Basin. We think about Southeast Asia. Many people don't think so much about the Congo River Basin. It is an extraordinary resource. It is a part of I think people often refer to those communities as the global lungs of the planet.

If we can't work aggressively and successfully to reduce deforestation we can't succeed, and the countries in that region are actively working with us and together among themselves and with other donor countries to build that capacity, so an enormous effort there.

The South Africans in parallel, big energy issues there. The Nigerians, significant energy issues on their side, land use change across the board not just in the Congo Basin, but an extensive series of opportunity in the energy sector and the land use sector on global mitigation.

Mr. PAYNE. Thank you very much. Mr. Moore, let me ask you. In your opinion, how can we use our efforts to fight climate change in Africa as an opportunity to sort of see how we can move in that direction?

Mr. MOORE. Thank you, sir. Let me start by adding a piece to what Jonathan has just said in terms of mitigation because he talked about deforestation, but another critical aspect of mitigation has to do with that land degradation, which is desertification.

And in this case, as we look at land management practices and as we work with farmers and communities moving from current practices which release greenhouse gases, the conservation farming which does not and helps to sequester greenhouse gases better, we also have some possibilities with new crop varieties to also improve their ability in terms of what they produce and improve their productivity in producing it so they actually can earn more money per hectare rather than just producing more crops.

There is an example where I think we can see some differences in the way in which Africans respond to climate change.

Mr. PAYNE. I didn't know if Africans were listening and were trying to call you to put in some additional points.

You mentioned something. Offhand, can you think of any African country that in the past 3 or 4 or 5 years because of assistance from USAID or different kinds of farming techniques—fertilization or irrigation—have gone from a negative agriculture production to a positive one? Is there any example you can think of offhand?

Mr. MOORE. I can give you two countries where through conservation farming we see not only an increase in their production, but also probably a higher payoff to their individual farmers. Those would be in Zambia and Malawi.

As I mentioned, we have done some work with COMESA at looking at a combination of USAID, COMESA and the World Agro-

forestry Center in Nairobi looking at some different schemes that look at conservation, farming and the integration of tree crops in those farming areas that we are beginning to see some exciting responses.

If one wants to look historically, one could look at the world that USAID engaged in with Niger 30 years ago, and it was work that we engaged in with them over forest tenure and land tenure and moving that tenure from the government to communities.

Interestingly enough, 30 years later we are beginning to see a tremendous response in the resiliency of those farmers as they face different periods of drought and floods and their ability to diversify their income from only agriculture from crops to agriculture from crops and fruit trees.

So that is the best long-term case, and the short-term, the last 4 or 5 years, Zambia and Malawi would be cases I would point to.

Mr. PAYNE. Just finally, and then we will have our ranking member. The land issues are big issues in Africa—Kenya, Ethiopia, throughout Zimbabwe: How does the land issue factor into Africa's overall development in the area of agriculture or climate change and the whole desertification question?

Mr. MOORE. I would say the land issue and land tenure is probably the most critical issue as one looks at not only how one responds in the short term, but how one responds in the medium and long term.

In the case of Niger, as I pointed out, farmers were not prepared to plant trees and go through the work of planting trees on land that the tenure and the benefit of the tenure was going to to the government. They were prepared to do that on land where the tenure and the benefit from that tenure went to those farmers.

That is a classic case of being able to establish either ownership rights or long-term use rights in tenure schemes that allow those individuals who are working the land to reap the benefits. If one is moving to things like conservation farming, again there is a strong link between how long do I have rights to benefit from this new technology and my implementation of the new technology, so it is critical.

Mr. PAYNE. Thank you very much. I know that on the utilization of land, for example, in Namibia before the independence you would have large tracts of land that the white settlers owned. One perhaps would be used for farming. The other would just be laying dormant and not productive.

We would find the same thing I think in Zimbabwe to some extent and in South Africa. So I know that the land issue is really a major, major issue, as you have mentioned, and I appreciate your comments.

Mr. Smith?

Mr. SMITH. Thank you, Mr. Chairman. Dr. Pershing and Mr. Moore, thank you very much for your testimony today and for your work.

You know, both Chairman Payne and I come from a state that has been very much challenged over the last three or four decades on environmental issues, so we I think share a deep concern for whether it be ocean dumping, pollution, toxic waste cleanup, all the issues that we have had to face because of irresponsibility that

went on for decades that preceded it, and certainly we are not out of the woods yet.

So when you talk about a cleaner development in Africa, being able to get it right, I would suggest that the more we can do along those lines the better so that they are more eco friendly.

And their people. You know, I actually chaired the Autism Caucus and have come to the agonizing conclusion that the triggers, and there are many potential triggers, are not just something that America is dealing with. I have been in Nigeria. I know that there is one estimate. It may be a high estimate. I don't know that, but I know a number of the NGOs there. They are concerned about autism in Nigeria.

And one estimate was 1 million children suffer from that developmental disease or disability and could that be because of flaring or could that be because of a lot of other issues that are connected to fossil fuels. It could be because mercury is certainly one of the expected triggers. So I thank you for your testimony.

I do have a couple of questions I would like to ask. Dr. Green has written, and I quote, "It is fair to say that scientific understanding of which factors contribute to change in the earth's climate is still in a very early stage. Even the experts at the IPCC acknowledge this to be the case." Do you gentlemen agree with that? If so, or not, how early of a stage are we in in that actual fundamental understanding about is this manmade?

Mr. PERSHING. Let me start with that particular question. My own thinking about this is that we are not all that early. If we take a look at the science of climate change, the issue has been around now for, give or take, about 130 years.

Some of the first work was done at the turn of the last century—not the most recent one, but the previous one, the late 1800s—in Sweden, a lot of work in Europe, looking at the consequences and where people thought things were. The physics of the basic understanding of black body radiation and how that proceeds is quite well understood, the physics of the change in atmospheric concentrations also quite well understood.

I think where the issue lies is our ability to predict what will happen in the future and to make any serious assessment about the precision of the impacts in a specific location, and what we are seeing now is an effort to try to expand that capacity.

So, for example, if you are interested in knowing whether or not the next raft of hurricanes will come through and batter the New Jersey coast, I would give you very low odds. If you wanted to look at it in the same way as to whether or not it would affect the central part of Africa or in fact look at storms coming through the Indian Ocean, I would give you very low odds.

If, however, what you want to say is that the consequence of climate change is going to be a warming of the oceans and the change in the warming of the oceans leads to an increased probability of intensity of storms, high odds. Very reasonably good probability.

So it is then about where we are in that sequence. I would say we are well beyond the basic science into a determination of the specifics, but we can make some quite strong policy analyses and justifications for action based on what we know.

Mr. MOORE. Very quickly, sir, I actually don't deal so much with the science of the climate change part. I leave that to Jonathan, but I would say from a development point of view it doesn't matter whether it is human or not. The reality is one has to look at adaptation to vulnerabilities, and we realize that they are increasing, and we must build in resilience. So that is true no matter what the cause is.

Mr. SMITH. You know, in reading both of your statements the whole idea of hypotheses versus real science and whether or not we are dealing with something that is provable or at least with realistic expectations.

Mr. Moore, you said that rain fed farming may drop in some African countries by as much as 50 percent by 2020, and wheat could disappear from the African continent entirely by 2080. I know you attribute that to the IPCC 2007 report. And in like manner, Dr. Pershing, you said that crop revenues could fail by as much as 90 percent in 2100. These are really long-term projections. You know, to make decisions based on something, I mean, how strong is the science that this is likely to happen?

I remember when Paul Erlich did his population bomb, and frankly it unleashed some very Draconian responses, including the one child per couple policy in China, which has made brothers and sisters illegal, has led to forced abortion, all kinds of deleterious and I think catastrophic consequences.

It was based on those longer term projections. We would be out of energy, remember they were saying, by the year 2000. Well, that certainly hasn't happened. So I am just wondering how much reliability is there to those kinds of what is going to happen in the year 2100?

Mr. PERSHING. Let me make a couple of points about it. I think that the analysis of the IPCC should be taken for what it is. It is a series of scenarios that try to project forward based on expected policies that are currently in place. It doesn't include climate policy.

So, for example, if we were to try to do something about this problem—and the doing something could range from reducing greenhouse gas emissions to finding crops that could withstand additional salinity or tolerate drought or tolerate additional heat—we would have a different model and those kinds of statistics would not be borne.

At the same time, it is very clear that we are already beginning to see certain kinds of impacts. The statistics suggest without in my mind much doubt at all that we are well beyond a simple variable, that we are beginning to see these damages and that they look increasingly severe because of existing stresses in the environmental arena. That means water stresses, temperature stresses, population stresses, needs for arable land, that whole series of things.

So we are at the tipping point in some of the places, and Africa in particular is incredibly vulnerable to very small changes. Whether wheat disappears or not, and here I fully agree with Franklin. Whether wheat disappears or not, the odds of it being much, much more difficult to sustain a family with much less water is real, and we understand that.

Mr. SMITH. Okay. I did note, Mr. Moore, that you had said despite a lack of extensive data in many countries, so I am always concerned when we have very little data and we make huge extrapolations from the little data that we have.

Let me ask another question with regards to the population control issue you just mentioned, Dr. Pershing. Population pressures was the word you used. Is the Obama administration seeking to combat climate change in Africa by reducing the number of African children? I would hope that this is not going to become a pretext for population control, which we have seen.

You know, there have been many pretexts for it in the past. Even the U.N. Population Fund, which is now trying to piggyback its agenda with climate change, said for the most part—this is right off their Web site—countries with high rates of population growth contribute relatively little to greenhouse gases and other irreversible global ecological threats.

But I have reviewed much of the other pro abortion organizations' and population control organizations' statements, including those on the Web sites, and they see this as an engraved invitation to say Africa needs more population growth.

As you point out, 12 percent of the world's population contributes 6 percent of greenhouse gases. Again, I am not sure how that is all arrived at. I know the numbers probably, but how do we determine 6 percent? But it is very little. We know that, and I think that is a good given.

Could you answer that? Is this going to be another? I say that because people like Paul Kagame in Rwanda have now said we need child limitation policies of a three child per couple policy. He got that from the U.N. FPA and China. His people visited Beijing 2 years ago, came back, as did other African leaders, and said we need child limitation.

And if we blame the victim, the child, as a carbon breather for climate issues, I think we are going down the wrong street, and it is antithetical to respect for human rights and children in Africa. You know, I believe in adaptation. I believe in resilience, but it shouldn't put children at risk and in harm's way. Dr. Pershing?

Mr. PERSHING. Let me just very briefly answer the question with one word. No, that is not the policy.

Mr. SMITH. I appreciate that. And I will ask one final question, Mr. Chairman. The issue of unintended consequences.

I read Dr. Molly Brown of NASA's Goddard Space Flight Center's statement. I am sure you have read it as well. She talks about and we all remember when ethanol was all the rage. I was for it. We were all for it because we do want biofuels. We want alternatives to fossil fuels.

But then all of a sudden there was a huge spike in food that was unanticipated. The response was a little bit weak at first, but I think with switchgrass and other alternatives I think we have gotten to a better place, but I am worried about what she said in her conclusions. She said increased temps and change in water cycle are likely to require adaptation in local agricultural systems in Africa.

She says, Dr. Molly Brown, that cap in trade are likely to increase every price, which will have a spillover effect—energy prices,

I should say—on food prices due to the coupling of the food and energy markets. She also said that use of biofuels will put direct upward pressure on food pricing, which is the last thing on earth that Africa needs.

I am just wondering how you work through that in terms of that unintended consequence of spiking food prices in Africa.

Mr. PERSHING. I would say we work through that by looking at those systems that increase the production and productivity in an agricultural sector, whether that agriculture is intended for food or it is intended for fuel.

When you couple it with climate, it means that one begins to look at some of those potential tree crops that can be biofuel tree crops that survive well on degraded lands and begin to make sure that the research that is done on them allows them down the road to be released to fill that need.

But a large portion of the response is increasing the production and productivity across a whole range of crops and livestock so that one is able to meet not only the food needs, but the fuel needs and other needs that agriculture provides for.

I would just say quickly as we look at wheat, whether or not that comes to bear is partly dependent upon the research that goes into wheat crops that looks at how do we create wheat crops that flower, for example, at a higher temperature? How do we create wheat crops which are resistant to stem rust or leaf rust, because that may be climate change, but they may occur for a whole variety of other reasons.

It could occur in a year where your climate variability is quite different and one would want to be able to meet that need. So I think in part some of it is research for the scenarios because whether they are climate change scenarios or other scenarios, we need to be prepared for them

Mr. SMITH. Thank you. Thank you, Mr Chairman.

Mr. PAYNE. Ms. Woolsey?

Ms. WOOLSEY. Thank you, Mr. Chairman. I have to ask a direct question in response to Congressman Smith.

My question to both of you would be isn't it true that giving women the ability to control the size and timing of their families through family planning and pregnancy prevention, that given these resources there is a direct impact on the health of the family and the economy of that family and of the communities, which in turn—

How does this get to you? I am not trying to make this political. Which in turn allows these communities to respond to the environmental needs that will be forced upon them or prevention needs that we need to be helping them with.

Mr. MOORE. I guess my one word answer would be yes.

Ms. WOOLSEY. Yes.

Mr. MOORE. I would expand on that by saying you have talked about two things, economic opportunity and women and their desire to do child spacing, the size of their families, et cetera, and those are highly tied.

The piece you didn't point out is that to the degree that we make economic opportunity and education available to women that that tends to have an effect on family size, child spacing, et cetera, in

ways that help for Africa, which faces a tremendous youth bulge and a tremendous growth in population currently in some countries that provide alternatives and I think do not lead one to some of the problems that Representative Smith pointed out because women are spacing their children, as opposed to some other particular means.

Ms. WOOLSEY. But if you would yield to just one more little question on this? If they don't have available to them the education for family planning and the ability to prevent pregnancy—I know it is because they are insisting on it the more educated and the more independent they become, but we still need both parts.

Mr. MOORE. I agree with that.

Ms. WOOLSEY. Thank you. All right. So then I have two questions, one to you, Mr. Moore. You cautioned us about business as usual, and then you began speaking of USAID studies, and I immediately responded oh, yes. Business as usual. Let us study something that we already know there are things we should be doing.

Maybe we need more studies, but what do we already know and where is the support missing and the funding for USAID and other NGOs and through the United States of America? What programs should we be working on that we already know that we are short-changing, or are there any?

Mr. MOORE. I tend to think that we are beginning to work on many of the programs where the shortchange may be, but let me give you an example. We know that water cycles will change. We know that there are some areas, and we have seen this through climate variability to date, that will echo between having drought and having flood.

As we look at water management, and it is something that we are very actively looking at with the State Department now. As we look at water management, those are the types of things that we need to bring on board as we look for those activities and the design of those activities not just now, but how we see them in the future.

The same would be true with community location. As I tried to highlight in my testimony, we do expect sea levels to rise, so how one deals with communities that are at or below sea level currently is something that we need to take a look at and make sure we are managing.

Certainly in developed countries like the Netherlands they are well down the road in looking at things like that, so it is just things like that that need to be more fully integrated into our portfolio, and I think we have begun to do that.

Ms. WOOLSEY. Mr. Chairman, I am beyond my 5 minutes. Can I match you guys?

Mr. PAYNE. Certainly. We don't discriminate against women.

Ms. WOOLSEY. Oh, yes. Oh. So, Dr. Pershing, you mentioned that we need to increase foreign aid, and of course we all agree with you on that, but would you suggest that we just increase it in general, or do you think it is important that we increase the percentage of foreign aid that be directed to Africa or both, and how would you use those funds if we direct them to Africa?

Mr. PERSHING. So I think the answer to the first is yes, in general. I think the United States doesn't live up to what I think it could do.

I think that we have an overall obligation or responsibility, if you will, but also a self interest in that increase, and I think it behooves us to think about all aspects of that as we look at our foreign assistance package, and I think part of this process that we are all involved in is to think about what priorities we design with that increased assistance.

With respect to it, I think that in my world the climate change issue is one that needs to be integrated across the board, and Franklin spoke to this about the fact that we have substantial assistance programs already underway, many of which could well be undercut because we have not paid attention to the climate change consequences in development programs.

If you take a look at a water program, one can think easily of the example that you put funding into building hydroelectric systems, but you didn't pay attention to the fact that you are going to lose the river flow, and all of a sudden that perfect dam is now standing in the middle of a dry bed. It is not exactly a good spend for your financing.

When you don't have enough, you want to use it as well as you can use it. That kind of integration seems to be at the heart of what I think we are proposing in the budget and the finance. There are also key pieces that specifically focus on the climate change aspects, things that are not general development assistance that would not happen but for climate change, things that really speak to a change in fundamental long-term trends that we have to manage.

So I can look at variability in the system. I can be resilient against that, but what if I am at a place where I am looking at a complete loss of water supply or a place that is a coastal development where sea level rise will inundate the entire shore? I have a very different model there. That is a really specific climate model that I think we need explicitly to be working on.

Africa is one of those places that I think has been low and needs to be raised, and in that context I am delighted that you guys are thinking about this.

Ms. WOOLSEY. Thank you.

Mr. PAYNE. You don't have a second question? Okay. Mr. Flake?

Mr. FLAKE. I thank the chairman. I apologize if this ground has already been plowed, but has there been any mention of the Eskom application or South Africa application for the World Bank loan just approved? Can you tell me what the U.S. position on that has been, Dr. Pershing?

Mr. PERSHING. Yes. Thank you. No, it did not come up yet, Mr. Flake, and thank you for the question. It was an internal discussion of quite some extent. We looked carefully at, in fact, the conversation that you had with Assistant Secretary Carson when he was here where I think you also raised a great deal of concern about it.

We ultimately abstained in that vote, and the reason we abstained was the following: The first is that on the basis of a number of factors which govern the individual project acceptance in our

internal process, they didn't quite meet those standards. In fact, they didn't meet those standards. There were questions about how the product was managed.

There were questions about the greenhouse gas emissions associated with an effort to create a substantial amount of electricity, 4,800 megawatts. It is a huge plant. It is an enormous plant, which had a very small ancillary component that dealt with renewable energy, but didn't in any fashion address the greenhouse gas emission to the Center.

But why did we not just vote no? We didn't vote no because at the end of the day there is a very clear, ongoing development need in the continent and in South Africa particularly where they have a concern about the adequacy of electricity supply, about the interruptability that we have seen because they have reduced capacity and had additional growth in demand and that that meant that we needed to give them some flexibility and some leeway.

We are trying to make clear as we work forward with the South Africans that this is going to be an evolving policy for us; that we do intend to hold people accountable for the greenhouse gas emissions associated with these kinds of projects. We can't dismiss that in a long-term trend, but neither are we going to be categorical and say it is you or nothing and we will block things that don't make sense.

In this instance, there is a balance that we could achieve if the product did go forward. We understand that it would go forward. The abstention was meant to reflect our concern about the process, but also our understanding of the dynamics inside of the country.

Mr. FLAKE. Mr. Moore, do you want to add anything to that?

I read that the U.S. Treasury put out a statement basically saying we oppose this, but we are not going to oppose it. I just want to express my concern that it seems, and I myself lived in South Africa for a while, Namibia as well, Zimbabwe as well. The needs are certainly there.

And South Africa obviously wants a nuclear future. They have one plant now, but certainly that is where they see themselves over the next several decades and that is where they want to go, and I hope they do. I hope we go a lot further in that direction.

But in the meantime, it is very difficult for them, given what they have, to do anything but what they proposed, and I hope that it is understood—this is putting aside all questions about World Bank loans and everything else—that if we try to dictate policy to countries, developing countries in this fashion, and simply say that despite what your energy needs might be and the expense were you to go to another energy we simply aren't going to support you, that is difficult I think on not just South Africa, but certainly all of sub-Saharan Africa.

I would just caution that we ought to tread lightly there and recognize the needs that are there and the capacity that they have financially. So with that, I yield back.

Mr. PAYNE. Thank you. Ambassador Watson?

Ms. WATSON. Thank you, Mr. Chairman. The President's budget requested \$408 million for the Global Food Security Fund, and global hunger and food security is clearly a priority for the admin-

istration as it is among its three initiatives for the foreign aid budget.

However, the administration has not set specific policies, even though the need for attention to growing food insecurity is quickly becoming apparent. In April 2008, a culmination of drought and failed harvest and the continued rise in global food prices has left at least 7 million people facing hunger in Ethiopia, Kenya, Somalia and Somaliland.

According to the USAID Food Security Assessment for 2008 and 2009, growth in the number of food insecure people is highest in sub-Saharan Africa. Food security has ties to climate change, as you have been mentioning all along, and climate adaptation must be a strong undercurrent of any food security initiative. We have been addressing that most of the morning here.

So how will the administration balance providing food assistance to African nations with establishing food security through climate adaptation in African nations, and does the administration plan on advocating for the use of genetically modified plants and how do you plan to encourage use, especially since the overuse of GMOs is being called into question here in the United States? Either one of you or both of you, please.

Mr. MOORE. It will take me just a second to think to weave the number of pieces together. I would start by saying that if you look at what is coming out as the response for food security you will see that in terms of focus countries there are far more African focus countries than anywhere else.

In terms of how that focus manifests itself and your discussion on some of the problems that face security, I think that Africa is one of the areas where increasingly research is being focused down on farming systems and focused on the ability of those farming systems to respond to a variety of changes, whether they are long-term or whether it is just climate variability. One of those is the use of biotechnology.

I would point out that when biotechnology generally is used to respond to problems of Africa, it is used in a very different way than biotechnology is used in agriculture in the United States. Let me give you a fast example. When one looks at Africa and the application of biotechnology, what one tends to concentrate on is a crop's reaction to flowering time or flowering temperature, so one may want to engineer a crop that flowers at a higher temperature. One may want to highlight a crop's ability to survive in drought or a crop's ability to survive in flood.

Those are very different biotechnology applications than applying biotechnology for a mechanized farm so that when one weeds on that farm one can use a herbicide that kills weeds, but allows the plant to remain. So biotechnology often is characterized as a single type of technology. It is a technology that responds to a wide range of agricultural problems.

Yes, we tend to advocate biotechnology as being potential to solve the problems I highlighted early on, and I think over time you see that a larger number of Africans and, more importantly, African farmers are making use of biotechnology in their production mix. I hope I have answered all of your question.

Ms. WATSON. Yes. You are alluding to most of my concerns. I just returned from Ethiopia, and I have been working with a group called Light Years Intellectual Property because there, as you know, in the northern part of Ethiopia they grow one of the finest coffee beans that has contributed to the massive success of Starbucks.

Mr. MOORE. Yes.

Ms. WATSON. However, the return, the value of return to the farmers was very nil. I do believe in climate change. I have seen it. I come from southern California. You know, it never rains in southern California. Are you kidding? Constantly it has been raining. And so climate is indeed changing.

What we realized there in the part of Ethiopia—we were in Addis Abeba, but we were talking about where the farmers live—is that they really lacked a lot of the information necessary to continue to grow the kind of fine crops. They have four different levels of coffee beans.

And so we found that helping them brand, patent, copyright and promote and bargain so they can get a return and then improve and continue to farm, that a lot of education was necessary and so we were talking about USAID and how we can help these farmers not only in that area of Africa, but in other countries and particularly the underdeveloped countries.

The International Relations Committee has been looking at ways we can improve not only in the USAID programs, but in other programs as well. And so in terms of climate change and in terms of the knowledge that the farmers have the things they grow and not only grow, but make naturally, what are your plans in terms of really helping the individual farmers?

Now, this particular program, IP, Light Years IP, will continue to do what its mission is. And so what kind of support can we expect from the administration?

Mr. MOORE. I would say that one of the things we are doing as we look at that sort of agricultural support is not only looking at the production of crops, but looking at the crop throughout its entire value chain.

You have mentioned coffee. One of the interesting things about coffee, you know it is graded in the 100 points and once you get above 80 points each point that you gain the coffee goes up geometrically, not arithmetically, in terms of price, but by not focusing on the value chain we miss many of the prime opportunities.

If a coffee cherry is harvested and it is gotten to a washing station in under 4 hours rather than the average 4 hours then that coffee will tend to grade five points higher. That has nothing to do with the growing of the cherry. That has to do with the movement of the cherry from the farm to the washing station.

So in many cases what we are looking at is what is taking place across the value chain and where are the areas of the value chain where a farmer is missing the opportunity to improve the quality of the crop from the consumer's perspective and therefore missing out on price.

Much of that low-priced coffee that you talk of occurs because farmers are harvesting that coffee and walking it to a washing station and taking 10 hours to do that. If they are provided with a

bicycle and can get it there in 2 hours, there is five points right there and an increase in price, so one of the things we are doing is looking at value chains more completely and trying to capture opportunities that can provide payback to farmers.

Ms. WATSON. Yes. Who has that responsibility? Where does it reside?

Mr. MOORE. The responsibility for?

Ms. WATSON. You are saying what we are looking for. What department?

Mr. MOORE. Well, we have been working on that directly with coffee producers and coffee firms in the middle. I have not done anything directly in Ethiopia, but I have done things directly in Rwanda where we have worked with a crew that has come in and designed a bicycle that can actually carry bags of freshly harvested coffee and get them to washing stations in half of the time, enabling those farmers to benefit.

So that is something that we and AID have been looking at with both the farmers and with the middle persons who are involved in the washing and the further production of the coffee.

Ms. WATSON. Thank you so much. Thank you, Mr. Chairman.

Mr. PAYNE. Thank you. Ms. Lee?

Ms. LEE. Thank you very much, Mr. Chairman. I apologize for not being here during your testimony, but I have been looking through it and am really delighted to see you here and welcome.

I hope my question is not redundant. I know at least with regard to my resolution it probably isn't. I introduced H. Con. Res. 98, which is a congressional resolution that recognizes the disparate impact of climate change on women and efforts of women globally to address climate change.

This resolution affirms the commitment of Congress to support vulnerable populations, including women, to prepare and to build and adapt to the impacts of climate change. Of course, we know that women are particularly vulnerable to the impacts of climate change and are often responsible for those tasks that are climate sensitive—gathering fuel wood, water, producing food for the family. Women produce over 50 percent of the world's food. In Africa it is up to 80 percent.

At the same time, because women play such a vital role, it is essential in engaging them in a community's effort to adapt, so I want to find out, first of all, if you are doing anything and what you are doing to ensure that women are engaged, as well as what we are doing to respond to their unique needs as we move in this direction.

And then secondly, many of us were quite concerned about the Bush administration's decision to walk away from the Kyoto Protocol in I guess it was 2001, how critical now is the United States' legislation to garnering the full participation of major and emerging economies around the world and how do we get back into Kyoto?

What do we have to do in this regard and the impact of delaying the legal codification of the United States' climate commitments through such legislation. What are the impacts of that?

Thank you again, Mr. Chairman. Thank you.

Mr. MOORE. Why don't I start with the women portion and turn it over to Jonathan for the remaining portion.

As you have laid out, we have a clear understanding of the disproportionately large role that women play, particularly in production and particularly in agriculture, and as we have been designing the Feed the Future Initiative have tried to highlight both how one works with women and meets the unique needs of women.

Let me give a couple of examples. If one is working on how one conveys a new technology and the use of new seeds and an increasing use of fertilizer, and let us say one has generally for the world looked at designing that technology for communication for someone with a sixth grade education and one comes into an area where women only have a third grade education, then the design of how one conveys that information has to be changed, so we are actively looking at things like that.

We are actively looking at how do we increase the number of women who are working on agricultural research and development because we find they communicate to other women better in conveying some of those technologies. When one looks at water and the application of water, one has to look at what are technologies that women actually can employ in supplementing radon fed agriculture with other forms of water.

So I think that as we look at some of the major areas where climate change intersects with women such as agriculture that people have finally got it that one has to quite consciously target responses that are responses targeted for women so that women, whatever their differences are, are able to respond and increase their production and productivity.

With regard to Kyoto and the other parts, I will turn it over to Jonathan.

Mr. PERSHING. Thank you very much, and thank you for the question. I just wanted to add one point to what Franklin said about the women's issues.

Secretary Clinton has been extremely engaged in this, and Miland Revere, who I am sure you work with quite a lot, is extremely active not broadly only in the women's issues, but also specifically in the questions of women and climate change. We have had a series of discussions with her. It has been on the agenda.

There are now a series of women's groups and it is a separate coalition that engages in international negotiations, so at the international level there is also an increasing understanding that we have to address specific populations, not merely collective—

Ms. LEE. Sure. And let me just say I hope you all would look at this resolution because I would like Congress to be on record supporting this, and that is exactly what H. Con. Res. 98 would do.

Mr. PERSHING. So I look forward to seeing that. The second question that you asked really is with regard to the international process and how Congress is received. Let me just reiterate a point I made, which is that it is incredibly helpful that you collectively on the House side did do the American Energy and Climate Act. It has an enormous impact. It changed the dynamic.

We had come to the negotiations with a history that was of disavowing the reality of the issue, and the fact that we could have Congress standing behind the President saying it is real, it is ur-

gent and we are beginning to move forward made an enormous difference.

We will still see enormous frustrations if there is not legislation, and that means clearly that both houses have to move. I think there has been a great deal of discussion in the international arena by other countries waiting on us and so I think we will continue to see that as long as we don't have a coherent and a visible strategy.

With regard to Kyoto, Kyoto expires in some fundamental sense at the end of the first commitment period unless it is continued, and we are not a party to the Kyoto Protocol. I don't believe it is likely we will become a party based on what is currently going forward from Congress and the recommendations being made, but we have got other proposals that I think would do some of the critical things that the idea of an international agreement would solve.

In particular, we would like to set some goals for where we want to be. The Copenhagen Accord gave us a scientific number that said let us try to keep below a two degree warming. We want to set countries with flexibility for what they can do most effectively at home and urge them to do that in the context of a long-term, low emissions development strategy.

So now your development programs with a footprint that is sustainable, which means substantial reductions globally, but think about those in terms of policies and individual measures. Don't dictate from some center, but give countries the capacity and then help them in producing, and that is going to require some assistance.

Ms. LEE. Sure.

Mr. PERSHING. So on the assistance side—

Ms. LEE. And finally, Mr. Chairman, let me just say, though, I think what you said makes a heck of a lot of sense that we will do this anyway, what Kyoto requires, but the symbolism and the principle of the United States being part of Kyoto and the Protocol and going back into that, that overall effort to me just makes a heck of a lot of sense.

I wish we could figure out a way that the United States could once again be part of the global community and be part of the Kyoto Protocol. Thank you, Mr. Chairman.

Mr. PAYNE. Thank you very much. Mr. Smith wanted a quick question.

Mr. SMITH. Thank you, Mr. Chairman. The information or the ability to predict with some certitude is an important question. I met with the people who did the number crunching for CBO when H.R. 2454, the cap in trade bill, and asked them their methodology, how they came to their conclusions. I met with them for about 1½ hours on February 4 in my office.

And they, and they have done this in their CRS report, have said that CRS focuses on estimates for the year 2020. Any estimate beyond that point or any cumulative estimate to 2030 or beyond should be viewed with the utmost skepticism. I do believe that our policies need to be grounded in a transparent, science-based approach to enhance our understanding of methodology employed.

I would ask both of you if you would to elaborate on exactly—please, exactly—and maybe you need to do this for the record be-

cause both of you have information. You quote the IPCC panel, its findings that rain-fed farming may drop in some African countries by 50 percent by 2020.

How is that arrived at? The details. I mean, in reading that panel's report I was struck by how many times the word could was used over and over. Now, of course science is not hard and fast sometimes in terms of its predictions, but that word needs to be emphasized I think if we are going to make policies based on it.

And then the idea that we could disappear from the African continent, as I mentioned before, entirely by 2080. You know, CBO would say at least on terms of some of its predictions after 2030 we are rolling the dice. How was that arrived at, the exact methodology if you could?

Dr. Pershing, your point that South Africa, and this is looking back, has electrified its communities and grown its economy, has seen its emissions rise above 30 percent between 1990 and 2005. Who did that study? Was it peer reviewed? How credible is that study?

And then finally, when you say that net crop revenues could fall by as much as 90 percent by 2100. Again, we are looking 90 years out. I really want to know, and I think everything has to be science based. Who did that work? Was it transparent? Somebody conflicting views, were they shown the door, because that is something that is coming out after those emails have surfaced.

I want good policy—I think we all do—in a bipartisan way, but it has to be based on science, and exaggerations do the cause of environmental protection a great disservice. So if you could give us the specific facts of how that was arrived at?

Mr. PERSHING. Let me just say a few things. The first one is that with regard to the South Africa numbers, those come from South Africa, so they are governmental numbers.

They are drawn from and corroborated by sources of the International Energy Agency, which puts out carbon numbers, as well as by a program at MIT that puts out land use and forestry numbers. They have been amalgamated, but the South African Government has those same numbers, so that is where those particular ones come from.

With regard to the long term, I think that is a——

Mr. SMITH. Do you believe they are accurate?

Mr. PERSHING. I believe they are the best we have. They are consistent with numbers that the U.S. Government puts together through the Energy Information Administration, and they seem to be based on a variety of factors such as global trade in certain kinds of commodities. In the case of South Africa where a non-trivial share is actually a local commodity like the coal side it is a bit more difficult, but we have pretty good information based on the electricity sales, which is often where these are derived from.

My guess is, yes, they are pretty accurate. Is it accurate to within a tenth of a percent? I wouldn't bet on that. Is it accurate within a percentage or two? I probably think it is. It is probably pretty good in that regard. There are interesting questions, of course, about intensity numbers, which are based on the economic quality of a country, and an informal and a formal economy certainly enter

in there so you have some uncertainty, but that is where those come from.

With regard to the larger set of numbers, there is a great deal of literature that has been reviewed. I am very happy, and we will arrange to make sure that you get a copy of the material that supported it. The IPCC does this work through a process where you have a committee that is selected by an international group with all countries weighing in—the U.S. also weighs in—where you select authors, and the authors are then tasked with the job of finding and collating material from the literature.

That literature has certain restrictions. It must be available to the public. It must have been peer reviewed, although in some cases they also use governmental literature which has been reviewed within a government, but has a different kind of a status than one reviewed in a scientific journal. Both of those tend to be used.

That then goes to an international review where the governments around the world and private scientists around the world are invited to provide feedback. In the current rules and practices of the IPCC, every single comment must have a response, and that is made public as well, and that is on the Web site of the IPCC. It is pretty extensive.

One last thing, the email controversy that has erupted that has been really quite significant over the course of the last 6 to 8 months. There was a report that was released yesterday that was undertaken by the U.K. Government to evaluate this university in the U.K. that was deemed to have done some bad work. They have completely been exonerated. Their view is that it was good science. The comment that was made was that there needs to be more care taken in the writing of emails.

There have been two detailed reports. This is the second of the two, both of which cleared them of wrongdoing, but we would be very happy to send you, because I think the point you are raising is one that we want to be airing and make very explicit. Bad science leads to bad policy.

Mr. SMITH. Especially those longer term predictions, which our own CBO, we have a great deal of confidence that they try to do an honest job, yet they say after 2030 forget it.

Mr. PERSHING. Maybe I could add one point if I could, sir.

Mr. SMITH. Yes.

Mr. PERSHING. The issue of the long term I think speaks to two questions. I would take with an enormous dose of salt the precise number. What I would take with a great deal more worry is the trend, and that trend is consistent in the CBO studies, as well as in these.

So if I say it is 90 percent or it disappears or I say it is down by 50 percent and it is really devastated, they both are trends that I worry about based on today's numbers, and those are the kinds of things that I think we have to be planning for.

A lot of our infrastructure has a much longer lived timeframe than just 10 years out. It has a farming community program, an urban development program and a transport program that is 30 and 40 and 50 years into the future, so that larger framework does have a value even if the precision is certainly questionable.

Mr. SMITH. Great.

Mr. PAYNE. Thank you very much, both of you. I concur with Mr. Flake—that is interesting—on the Medupi coal fired plant. There was a lot of controversy regarding the coal fired plant in South Africa to loan before the World Bank the \$3.7 billion loan.

However, many of us interested in Africa, interested in the environment, sort of 100 percent of environmental issues, however, did feel and wrote the World Bank and actually personally spoke to Mr. Zoellick and our Members of Congress about the United States not opposing the loan from the World Bank because if there will be development and the cleanest type of technology is going to be used in this plant and also there are renewable energies included in that loan such as wind and solar, we felt that it would hamper development not only in South Africa, but this plant will have an impact on Southern Africa countries around South Africa that we should support the plant. I kind of agree. I was glad that the United States decided to abstain at the most because I think there was a leaning toward perhaps voting against it.

I just also agree with Representative Smith that I certainly don't feel that abortion has any place in any country's policy as a way of controlling population, and I don't think anyone here supports that. However, I do feel that there does have to be some consideration for family planning, family spacing.

Using the case of Rwanda, Rwanda is a little bit smaller than Maryland. Rwanda has twice as many people as Maryland, about 10.5 million people. Maryland has about 5.5 million. The difference in Maryland and Rwanda is that only about 40 percent of the land, 50 percent of the land at the most, is where people live. Much of it is forest, hills, and therefore if you take the population of Rwanda and compare it to the density of Maryland you would find that it is probably about four times as dense as Maryland or higher, perhaps even five times more people in the land space in Rwanda than is in Maryland.

Now, I think that a President is going to have to decide, especially since over 50 percent of the population is under 18, what will be the situation 20 or 30 years from now if family planning and family spacing by economic development, by education is not promulgated, and so these are some real problems.

As we know, close to 1 million people were killed in 100 days in Rwanda with the genocide. Now, that was other issues. However, many issues were kind of involved in that close to 1 million people in 100 days. So I think that we really have to encourage family planning and work with, like I said, economic development, empowerment of women, education of women, those issues that will tend to strengthen the family.

Just finally, not that there is anything that has to do primarily with what we are talking about, but I just thought you might be interested in the fact that the European countries are shutting down their airspace and canceling flights because of what is reported as a massive cloud of volcanic ash, which has been morphed over the western and northern European countries, posing a danger to flights. They have canceled flights in the U.K., Ireland, Sweden, Belgium, Denmark and the Netherlands because of the volcanic eruption, which broke through the icecap and has this ash.

So this world is becoming much more fragile, and this whole question of the environment is something that we are really going to have to I think pay more attention and invest more financially in. But let me thank this panel. It was a very interesting discussion, and we appreciate your participation.

We will now bring up the second panel.

[Pause.]

Mr. PAYNE. Thank you. We will now have our second panel. We welcome you here. We would like to certainly welcome Ambassador Leon Rajaobelina, chairman of the board of the Madagascar Foundation for Protected Areas. Ambassador Rajaobelina had extensive experience and public service in the financial sector around the world before assuming the position as chairman of the board for the foundation.

Ambassador Rajaobelina served on the Conservation International Board of the Directors. He has held multiple positions with Conservation International, including his current position as regional vice president for African programs.

From 1991 to 1994, Ambassador Rajaobelina worked for Sanapar, a public investment company, as the chief executive officer. He was later appointed as the Ambassador from Malaysia to the United States in 1983 and completed his ambassadorship in 1989. He also served as executive director of the International Monetary Fund.

Ambassador Rajaobelina is a member of a number of projects and groups, including the World Bank Group's Extractive Industries Advisory Group promoting best practices in extractive industries, as well as a Trustee to the American World Heritage Fund. The Ambassador holds a degree from the Institute of Political Affairs in Paris, France.

Next we have Dr. Frederick "Fred" Boltz, senior vice president for global strategies at Conservation International. Dr. Boltz has served as senior vice president since 2009. He has held several posts while at Conservation International, including vice president of CI's Conservation Strategies Division from 2003 to 2009 and senior director of the Peoples in Protective Areas Department from 2003 to 2005. He also served as a CI technical advisor for the Zahamany Integrated Conservation and Development Project.

Prior to joining Conservation International, Dr. Boltz was a consultant for Forest Economies and Management at the Rwandan Association for Environmental and Integrated Development and as a program officer for the Forest Management Trust, Inc. Madagascar's Protected Area Systems from 1997 to 1999.

Dr. Boltz holds a Ph.D. and master's in science and natural resources economies from the University of Florida. He has authored and co-authored several works and publications, including *A Climate for Life, Meeting the Global Challenge*, *Journal of Forest Economies*, *Forest Policies and Economics*, and *The Wealth of Nature: Ecosystem Services, Biodiversity and Human Well-Being*.

Finally, we have Dr. Kenneth Green, resident scholar at the American Enterprise Institute. Dr. Green is an environmental scientist and has over 10 years of environmental policy experience at various institutions in California and in Canada.

Prior to joining AEI, Dr. Green served many posts in environmental science and policy, including his work as executive director for the Environmental Literacy Council from 2005 to 2006, chief scientist and director of the Center for Studies in Risk, Regulation and Environment at the Fraser Institute, from 2002 to 2005, and was an expert reviewer for the United Nations Intergovernmental Panel on Climate Change.

Dr. Green holds a doctorate of environmental science and engineering from the University of California-Los Angeles and a master's of science in molecular genetics from San Diego State University. In addition, Dr. Green has authored various works and publications including National Review Online and the American and the Wall Street Journal Europe, as well as a secondary school textbook entitled Global Warming: Understanding the Debate.

Thank you very much. We will start with you, Your Excellency.

**STATEMENT OF HIS EXCELLENCY LEON M. RAJAOBELINA,
CHAIRMAN OF THE BOARD, MADAGASCAR FOUNDATION
FOR PROTECTED AREAS AND BIODIVERSITY (FORMER MAL-
AGASY AMBASSADOR TO THE UNITED STATES)**

Ambassador RAJAOBELINA. Thank you, Mr. Chairman. Mr. Chairman, I have prepared a summary of my testimony, and I respectfully ask that my complete testimony be entered into the record.

Mr. PAYNE. Thank you. Without objection.

Ambassador RAJAOBELINA. Chairman Payne, Ranking Member Smith, honorable members of this committee, thank you for the opportunity to appear before you today to discuss the current and prospective impacts of climate change in Madagascar and other African countries.

It is true that I come today here on behalf of the Madagascar Foundation for Protected Areas and a former Ambassador to the United States from Madagascar. However, especially following the presenters of this morning, I am convinced that my testimony represents the common dilemma faced by other African nations.

In Madagascar, as in other African countries, we are greatly concerned by climate change and believe that we are already living with its impacts. Average surface temperature of the African continent has increased by about .5 degrees Centigrade over the last century, and climate change models suggest that Madagascar, as well as all of Southern Africa, are going to be among the most affected regions on the planet by climate change.

In Madagascar, over the last decade we have experienced severe droughts in the south of the country and intense cyclones followed by rain, heavy rain, in the north and east. Studies throughout Africa show that rural communities are experiencing local changes in climates that are shortening growing seasons and thus impact crop yields.

For people in poverty and simply trying to survive on a daily basis, even small climatic changes that affect a harvest can be catastrophic. Adaptation response that improves the ability of the rural poor to cope with events for which they cannot plan are clearly going to be needed to create social and economic resilience—developing is the key word—to climate change.

For example, in the dry south of Madagascar USAID programs are already working to introduce drought-resistant crops that are better suited to new or more variable climate conditions that have been mentioned this morning by my friend, Franklin Moore. These types of programs show great promise, but the reality is that decision makers do not yet have the tools to precisely predict the changes that will occur, and planning around this uncertainty is indeed difficult.

Building resilience to climate change impacts will therefore be a fundamental element of addressing rural development in African countries. We need to learn from past agricultural project failures and go beyond cookie cutter solutions. Rural communities have a better understanding of local challenges and resources that are unique to their region, and when given the right resources they are often the best placed to develop successful solutions.

I believe that much of the adaptation responses that we need for rural communities can be achieved through the provision of resources to allow for flexible and simple mechanisms such as small grants, microcredit, training, information or access to good quality crops. Through a participatory process that includes community and government we can better address climate challenges that are hard to plan for and address key development needs of these communities.

Moreover, healthy ecosystems and biodiversity underpin a community's ability to adapt to climate change. Human well-being, functioning ecosystems and climate change are intimately inter-linked. Natural ecosystems provide many of the basic materials of life for rural, poor and vulnerable communities in Africa, including fresh water, food and renewable natural resources that often provide incomes.

In Madagascar, it has been shown that most of the important sites for ecosystem services, as I will mention, are also the most important area for biodiversity. To repeat, ecosystem services, their health and the biodiversity that maintains them are essential for human well-being and critical for the sustained long-term development needs of rural communities in Africa in the face of climate change. So understanding climate impacts and the adaptive strategy engaging communities and valuing ecosystem services will be critical for tackling climate change in rural Africa.

The Copenhagen Accord, which has been referred to this morning, explicitly recognizes that reducing the loss of tropical forest is critical if we are to reduce the carbon dioxide emission. Conservation and natural resource management programs have achieved notable success and developed most of the tools needed to halt deforestation.

For example, in Madagascar the actions to combat deforestation of which the United States Government has been a key supporter have managed to reduce national carbon dioxide emissions by over 10 million tons per year over the last 15 years, so funding for REDD+ would provide the boost that we need to allow us to scale up our localized successes.

Regarding the important commitments that were made in Copenhagen, I want to come back to what has been said this morning by Dr. Pershing. It is vital that the pledges made in Copenhagen are

acted upon urgently and that the money is used in part for better planning and the preparation of national strategies for REDD, as well as monitoring and verification of carbon dioxide emissions.

Finally, it is key that the United States strengthen their past and current investments with a predictable stream of long-term funding as was proposed in the House passed climate and energy bill as mentioned this morning. For instance, since 1990 USAID has invested in Madagascar more than \$120 million in well-targeted environment and development activities that most demonstrably reduced deforestation while at the same time supported the sustainable livelihoods of hundreds of thousands of poor rural Malagasy people. The same is true throughout Africa.

The lessons, experience and human capacity that have resulted from such programs can and should be immediately put to work to combat greenhouse gas emissions from the destruction of natural ecosystems. Harnessing nature's ability to provide such solution will help vulnerable communities deal with the impacts of climate change and their development needs.

I am pleased that the proposed United States budget recognizes urgency for immediate climate change funding for developing countries such as Madagascar. I do hope that the U.S. Congress will maintain this level of funding for climate change while at the same time protecting existing funding needed for other critical areas, such as development, education, health and conservation.

Chairman and honorable members of the committee, I thank you for the opportunity to submit my statement.

[The prepared statement of Mr. Rajaobelina follows:]

Statement on Climate Change and Development in Africa

His Honorable Leon M. Rajaobelina

Chairman of the Board, Madagascar Foundation for Protected Areas and Biodiversity

April 15, 2010

House Committee on Foreign Affairs, Subcommittee on Africa and Global Health

Chairman Payne, Ranking Member Smith, and Members of the Committee: Thank you for the opportunity to appear before you today to discuss the current and prospective impacts of climate change in Madagascar and other African countries. I come here today on behalf of the Madagascar Foundation for Protected Areas and Biodiversity and as former Ambassador to the United States from Madagascar. I would like to note that the examples I highlight in my testimony from Madagascar should be taken as a microcosm of the larger issues in Africa.

In Madagascar we are greatly concerned by climate change and believe that we are already living with its impacts. Average surface temperature of the African continent has increased by about 0.5°C over the last century (Hulme *et al.* 2001) and climate change models suggest that Madagascar as well as the whole of Southern Africa are going to be among the most affected regions on the planet (IPCC, 2007). In Madagascar, over the last decade, we have experienced severe droughts in the south of the country and intense cyclones in the north and east. These patterns are consistent with projected changes in rainfall across Africa that suggest that already wet areas will have higher rainfall while already dry areas will become even drier. Studies in Madagascar, and throughout Africa, show that rural communities are experiencing local changes in climate that are shortening growing seasons (Thornton *et al.*, 2006), which impact crop yields. Although the causes of these changes are often poorly understood by these communities, they are already forced to adapt to the impacts of these changes. For people in poverty and simply trying to survive on a daily basis, even small climatic changes that impact a harvest can be catastrophic. Adaptation responses that improve the ability of the rural poor to cope with events for which they cannot plan are clearly going to be needed to create social and economic resilience to climate change. For Madagascar, this will require a strong focus

on improving household level food security by facilitating the adoption of improved, appropriate agricultural techniques and sometimes even new crops or crop varieties that are better suited to new or more variable climatic conditions. In the dry south of Madagascar, USAID programs are already working to introduce drought resistant crops. These types of examples show great promise, but the reality is that decision-makers do not yet have the tools to precisely predict the changes that will occur, and planning around this uncertainty is difficult.

Building resilience to climate change impacts will be a fundamental element of addressing rural development in African Nations. We need to learn from past agricultural project failures, and go beyond cookie-cutter solutions. Rural communities have a better understanding of local challenges and resources that are unique to their region, and when given the right resources, they are often the best placed to develop successful solutions. I believe that much of the adaptation responses that we need for rural communities can be achieved through the provision of resources to allow for flexible mechanisms, such as small grants, microcredit, training, information or access to good quality crops. Through a participatory process that includes communities and government we can better address climate challenges that are hard to plan for, and address key development needs of these communities.

Healthy ecosystems and biodiversity underpin a community's ability to adapt to climate change. Human well-being, functioning ecosystems and climate change are intimately interlinked. Protecting forests and other natural ecosystems is essential to protect the free services that nature provides to mankind. Conserving biodiversity moderates the impacts of climate change on human communities by maintaining those ecosystem functions and services. Natural ecosystems provide many of the basic materials of life for rural, poor and vulnerable communities in Africa and Madagascar, including freshwater, food and renewable natural resources that often provide incomes. Large intact natural ecosystems stabilize local climate conditions, play a key role in the nutrient cycles that are the basis of food production systems and store large stocks of carbon. In Madagascar, we recently mapped the most important sites for the provision of major ecosystem services – carbon

storage, freshwater provision and sources of rivers feeding into important agricultural lands – and found that most of these important sites for ecosystem services are also the most important areas for biodiversity. Ecosystem services, their health and the biodiversity that maintains them, are essential for human well-being, and critical for the sustained long-term development needs of rural communities in Africa in the face of climate change.

Understanding climate impacts and adaptive strategies, engaging communities, and valuing ecosystem services will be critical for tackling climate change in rural Africa. Good progress has been made over the last few years under the UN Framework Convention on Climate Change on developing REDD+, the Reduction of Emissions from Deforestation and Degradation, as a mechanism for mitigating carbon dioxide emissions. The Copenhagen Accord, which the US secured as the most important outcome in Copenhagen, explicitly recognizes that reducing the loss of tropical forests is critical if we are to reduce carbon dioxide emissions. Slowing forest loss is also one of the cheapest and easiest issues to address to reduce emissions immediately. Despite the challenges that deforestation poses, conservation and natural resource management programs have achieved notable success and developed most of the tools needed to halt deforestation. For example, in Madagascar the actions of the National Environment Program, of which the US government has been a key supporter, have managed to reduce the national deforestation rate from 0.83% per year to 0.53% over a fifteen year period. This translates to a reduction of national carbon dioxide emissions of over 10 million tons per year by comparison to 1990 levels. Funding for REDD+ would provide the boost that we need to allow us to scale up our localized successes to the national scale. However there is an added importance to REDD+ in that it is not just a climate change mitigation measure but also an essential adaptation strategy since it leads to the maintenance of ecosystem services.

In Copenhagen, important commitments were made to rapidly move forward with implementing REDD+, most notably \$3.5 billion dollars in pledges, including \$1 billion from the US, for immediate action up until 2012. It is vital that these pledges are acted

upon urgently and that the money is used in part for better planning and the preparation of national strategies for REDD as well as monitoring and verification of carbon dioxide emissions. Equally important is that some of those funds be used for immediate action to curb deforestation now. We already have effective approaches to reduce deforestation; what we have lacked in Madagascar in the past is adequate funding to implement them on the scale required. It is key that the US strengthen their past and current investments with a predictable stream of long-term funding, as was proposed in the House-passed Climate and Energy bill. I would also urge that a variety of approaches be used to disburse funds. International mechanisms for disbursing funds through the World Bank and GEF are already in place and could be used relatively quickly to scale up efforts to reduce deforestation and protect essential ecosystem services. Multilateral and bilateral funding will be critical to African nations implementing mitigation and adaptation activities. Existing bilateral efforts show that success can be achieved. In Madagascar, the US, through USAID, has played a leadership role in supporting efforts to reduce deforestation and protect the environment. Since 1990, USAID has invested \$120 million in well-targeted environment and development activities that have demonstrably reduced deforestation while at the same time supported the sustainable livelihoods of hundreds of thousands of poor rural Malagasy people. The same is true throughout Africa. The lessons, experience and human capacity that have resulted from such programs can and should be immediately put to work to combat greenhouse gas emissions from the destruction of natural ecosystems. Furthermore, these solutions must harness nature's ability to provide such solutions to how vulnerable communities deal with the impacts of climate change and their development needs. I am pleased the proposed U.S. budget recognizes the urgency for immediate climate change funding for developing countries, such as Madagascar. I do hope that the U.S. Congress will maintain this level of funding for climate change while protecting existing international funding needed for other critical areas, such as development and conservation.

Chairman and Honorable Members of the Committee, I thank you for this opportunity to submit my statement.

References

Hulme M., Doherty R. and Ngara T. 2001. African Climate change: 1990-2100. *Climate Research* 17: 145-168.

Thornton P.K., Jones P.G., Owiyo T.M. and others 2006. Mapping Climate Vulnerability and Poverty in Africa. Report to the Department for International Development. Nairobi, Kenya" ILRI

Intergovernmental Panel on Climate Change 2007. "Climate Change 2007: The Physical Science Basis" Contribution of Working Group I to the Fourth Assessment Report of the IPCC. Cambridge, UK: Cambridge University Press.

Mr. PAYNE. Thank you very much.
Dr. Boltz?

STATEMENT OF FRED BOLTZ, PH.D., SENIOR VICE-PRESIDENT, GLOBAL STRATEGIES, CONSERVATION INTERNATIONAL

Mr. BOLTZ. Chairman Payne, thank you very much. Chairman Payne, Ranking Member Smith and esteemed committee members, thank you for the opportunity to appear before you today to discuss the important challenge of climate change in Africa, the solutions within our reach and the key leadership role that the United States has played and remains poised to fulfill across the African continent and to the majestic island of Madagascar.

Please permit me today to present a brief summary of my submitted testimony.

Mr. PAYNE. Without objection.

Mr. BOLTZ. I would like to begin by saluting the testimony provided by Ambassador Rajaobelina. The social, economic and environmental challenges faced in Madagascar are mirrored across the African continent and indeed throughout the developing world and will only be exacerbated by climate change. The opening remarks that you made, Mr. Chairman and Ranking Member Smith, eloquently describe these important challenges that we face as a global community.

The urgency of climate change as a global security issue has been highlighted in studies and public statements by leading U.S. military intelligence and security agencies, which consistently point out that climate change could have significant geopolitical impacts around the world, contributing to poverty, environmental degradation, spurring conflict and further weakening fragile governments. This is of particular relevance across the African continent.

Current science reveals the potential magnitude of challenges that Africa will face. A consensus model, for instance, of climate change developed under the IPCC and downscaled to the African

continent suggests that under present trajectories Rwanda's current climate conditions will disappear entirely and that mean temperature temperatures in west Africa may increase some five degrees Celsius by the end of this century.

The already stressed natural resource sector across Africa will be further complicated by climate change, which threatens to exacerbate the scarcity of fresh water, endanger food security, increase extreme natural events such as floods and droughts and heighten the vulnerability of local populations to poverty, disease and conflict.

Further complicating the daunting challenges of reducing poverty, conserving natural ecosystems and sustaining peace, as the U.S. has been invested for decades, climate change moves the goalpost for sustainable development and security, and on global security issues like climate change the U.S.'s continued leadership will be critical.

The U.S. Government has led the world in promoting sound governance and sustainable management of natural resources throughout its many agencies working internationally. Throughout much of the developing world, the U.S. Government programs have reduced poverty, sparked economic development, increase biodiversity and natural resource conversation, strengthened institutions and governance and reduced conflict.

The knowledge, stability and investment that the U.S. Government has fostered in places like Namibia, Madagascar, the Congo Basin, through its flagship projects truly have no equal. Through these efforts and building upon sound science and practical field experience, the United States and NGOs like Conservation International and our 1,200 partners globally have the tools necessary to confront the challenges posed by climate change.

For instance, scientific capacity to diagnose the vulnerability of natural ecosystems to climate change provides a basis for understanding and acting in a very cost effective manner to mitigate the catastrophic impacts of climate change and to build the climate resilience and adaptive capacity of human and natural communities. Productive and resilient natural ecosystems are essential to adapting to climate change.

Measures to ensure the conservation of these natural ecosystems and their services such as freshwater provision, pollination, mitigation of natural disasters, et cetera, will moderate the impacts of climate change on human communities. Natural ecosystems are the source of livelihoods for the rural, poor and vulnerable communities throughout Africa, providing drinking water, food, fuel and fiber, fertile soils and productive fisheries.

CI's long history of conservation success in Africa, supported by U.S. Government efforts from Liberia to Madagascar, provides this very basis for securing the natural ecosystems critical to maintaining climate resilience and adaptive capacity of communities and confronting the global climate change mitigation challenge.

Countries across the globe are considering measures to transition to low carbon development for a sustainable future. Throughout Africa, from war torn developing states such as Liberia to emerging leaders such as Rwanda and South Africa, national governments and civil society are working jointly to forge a path to sustainable

green economies. And a global solution to the climate crisis, which Dr. Pershing referred to earlier, offers an immediate entry to this green sustainable development pathway.

Reducing emissions from deforestation and logging, or REDD+, constitutes approximately one-sixth of annual greenhouse emissions globally. Cutting deforestation in half offers about one-third of the cost effective technologically available solutions by 2020 to meet global stabilization targets to keep temperature rise below two degrees Celsius. In addition, REDD offers an unprecedented economic opportunity providing capital for national development based upon a global willingness to pay for preserving forests.

A case in point. At the request of the Government of Liberia, CI conducted an analysis of the potential for REDD to contribute to Liberia's economy and found that net revenues of \$30 million per annum can be generated over a 25 year period at a modest payment of \$5 per ton CO2 emissions avoided.

But this requires up front costs of building the systems of governance, retooling the forestry and agricultural sector and aligning investment to secure this conservation of these important areas, while improving livelihoods of those securing the permanence of those emissions reductions.

The U.S. Government is presently contemplating a \$120 million investment in the agricultural sector in Liberia, which in combination with a bilateral program supporting REDD would provide the platform for stimulating a transition to this low carbon development and green economy, a development model on which green means not only ecologically friendly, but also economically prosperous, and that is fundamental.

These measures are within our immediate reach. We have the knowledge and capacity, and the U.S. Government has built a track record of success in conserving natural ecosystems, stimulating economic growth, sound governance and market solutions to development crises. With resolute action to provide technical and financial assistance, the United States can again lead African nations on their transition to low carbon economies and great global security.

Distinguished Chairman, committee members, please accept my thanks again for this distinct honor of addressing you today.

[The prepared statement of Mr. Boltz follows:]

House Committee on Foreign Affairs, Subcommittee on Africa and Global Health
15 April 2010

Testimony by Dr. Fred Boltz
Senior Vice President, Conservation International

Chairman Payne, Ranking Member Smith, and Esteemed Committee Members: Thank you for the opportunity to appear before you today to discuss the important challenge of climate change in Africa, the solutions within reach, and the key leadership that the United States has played and remains poised to fulfill across the African continent and extending to the majestic island of Madagascar.

I have the honor of speaking today on behalf of Conservation International (CI), where I serve as Senior Vice President overseeing our global initiatives in Climate Change, Freshwater Conservation, Food and Health Security. Conservation International is a U.S.-based non-governmental organization with some 23 years of experience developing and achieving sustainable conservation and development solutions in over 40 countries throughout the developing world. Conservation International is committed to helping societies adopt a more sustainable approach to development – one that considers and values nature at every turn. Building upon a strong foundation of science, partnership and field demonstration, CI empowers societies to responsibly and sustainably care for nature for the well-being of humanity. We have achieved our success in close partnership with African nations, local communities, scientific and civil society partners – and with the US government, which has been at the forefront of conservation and development progress in Madagascar, nations of the Congo Basin, and Southern and West Africa.

I would like to salute the testimony provided by Ambassador Rajaobelina. The social, economic and environmental challenges faced in Madagascar are replicated across the continent. Crises in food and water scarcity, health and conflict will be further exacerbated by climate change, leading to substantial humanitarian impacts that will have profound implications for regional and global security.

The urgency of climate change as a global security issue has been consistently highlighted in recent studies and public statements by leading military, intelligence, and security agencies. Climate change could have significant geopolitical impacts around the world — contributing to poverty, environmental degradation, spurring conflict and further weakening fragile governments (DoD 2010, NIC 2008, CNA 2007). “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” (DoD 2010).

Recent science highlights the magnitude of the challenges that Africa will face. A consensus model of climate change suggests that Rwanda’s current climate envelopes will disappear entirely by 2100 (Tabor and Williams 2010). Under “business as usual,” mean temperature changes in West Africa are projected to increase some 5 degrees Celsius above 2000 levels by the end of this century (IPCC 2007). The already-stressed natural resource sector across Africa will be further complicated by climate change, which threatens to exacerbate resource scarcity, endanger food security, increase extreme natural events such as droughts, and heighten the vulnerability of local populations, particularly the rural poor.

By increasing the daunting challenges of reducing poverty, conserving natural ecosystems and sustaining peace, climate change moves the goalposts. On security issues like climate change, U.S. leadership will be critical to leveraging competing and divisive views to find solutions (NIC 2008).

The U.S. government has led the world in investing in the fair and sustainable management of natural resources, through its many agencies working internationally. Throughout much of the developing world, U.S. government programs have reduced poverty, sparked economic development, increased biodiversity and natural resource conservation, strengthened governance, and reduced conflict. The knowledge, practice and stability that the USG has created in Namibia, Madagascar, the Sahelian countries, and the Congo Basin through its flagship projects has no equal.

Through these efforts, as well as sound science and practical field experience, the United States and NGOs like Conservation International (with its more than 1200 global partners) have the tools necessary to help countries across the African continent adapt to these changes.

Scientific assessment of the vulnerability of natural ecosystems and biodiversity provides a basis for understanding and acting to mitigate the most catastrophic impacts of climate change and to build the adaptive capacity of human and natural communities. Productive and resilient natural ecosystems are essential to adapting to climate change – measures to ensure the conservation of natural ecosystems and their vital services, such as freshwater provision, pollination, and natural disaster mitigation will moderate the impacts of climate change on human communities. Natural ecosystems are the source of livelihoods for rural, poor and vulnerable communities throughout Africa – from drinking water, and food products to fertile soils and productive fisheries. CI's long history of conservation success in Africa, supported by U.S. government efforts from Liberia to Madagascar, provides the very basis for securing the natural ecosystems critical for climate adaptation. We have the knowledge and the experience. U.S. leadership can ensure that this urgent, cost-effective climate solution is seized this decade—not through massive investment in infrastructure or relief efforts, but by sustaining a successful track record of nature conservation across the continent.

Countries across the globe are considering measures to transition to low carbon development for a sustainable future. Throughout Africa, from war-torn, developing states such as Liberia to emerging leaders such as Rwanda and South Africa, national governments and civil society are working jointly to forge a joint path to sustainable, “green” economies. A global solution to the climate crisis offers an immediate entry to this sustainable development pathway for developing economies. Reducing emissions from deforestation and logging (REDD+) constitutes approximately 1/6 of current greenhouse gas emission globally – and cutting deforestation in half by 2020 offers 1/3 of the cost effective, technologically available emissions reduction options.

In addition REDD+ offers an unprecedented financial opportunity, providing capital for economic development based upon a global willingness to pay for preserving natural forests. A case in point -- at the request of the government of Liberia, CI analyzed the potential for REDD+ to contribute to their national economy. The net benefits of ~30 million USD per year (about 3% of GDP) at very modest prices of (5 USD/ton CO₂e) is only feasible if upfront costs of ~30 million USD /yr over the next few years are covered from external sources. These costs relate to retooling the forestry and agriculture sectors and, importantly, establishing governance structures that will allow development benefits to be delivered at scale. The U.S. Government is contemplating a 120M USD investment in agriculture in Liberia which, in combination with a bilateral program supporting REDD+, would provide the platform

for stimulating a transition to low carbon development and a green economy, in which green means not only ecologically friendly, but also economically prosperous.

Elsewhere in Africa the U.S. private sector is already engaged in providing a solution. CI has secured agreements with two major U.S. companies—Dell and The Disney Corporation—to support communities in delivering forest-based CO₂ emissions reductions in DRC and Madagascar. Dell is able to provide this support, in Madagascar, through the service that CI has given to the communities and government in establishing local governance structures. The Disney Corporation is investing in eastern DRC, through the same relationship. Public-private partnerships offer important means of stimulating investment by building robust governance, mitigating investment risk and enhancing market security. The support of the USG through instruments such as the Global Development Alliance would greatly enhance development of this emerging market, building conformity and integrity of emissions reduction assets, controlling harmful speculation and corruption, and stimulating private investment at a scale necessary to establish a path towards sustainable development in these and other African economies. Ultimately, through both government and the private sector, this will pave the way for U.S. participation in a robust and fair emissions reduction market that will simultaneously provide major development opportunities for some of the poorest people on earth.

These measures are within our reach. We have the knowledge and capacity, and the U.S. government has built a track record of success in conserving natural ecosystems, stimulating economic growth, sound governance and market solutions to development crises. With resolute actions to provide immediate technical and financial assistance, U.S. partnership can assist African nations to resolutely confront an uncertain future with less risk and greater resilience, built upon the conservation of natural ecosystems that underpin their cultures, economies and security. Chairman and honorable members of the committee, I thank you for this distinct opportunity.

Citations:

Department of Defense (DoD). 2010. *Quadrennial Defense Review Report: February 2010*. Retrieved from <http://www.defense.gov/qdr/QDR%20as%20of%2026JAN10%200700.pdf>

Intergovernmental Panel on Climate Change (IPCC). 2007. *IPCC Fourth Assessment Report: Climate Change 2007*.

Karyn Tabor, John W. Williams. (2010). *Globally downscaled climate projections for assessing the conservation impacts of climate change*. Ecological Applications: Vol. 20, No. 2, pp. 554-565. doi: 10.1890/09-0173.1

National Intelligence Council (NIC). 2008. *Global Trends 2025: A Transformed World*. Retrieved from http://www.dni.gov/nic/PDF_2025/2025_Global_Trends_Final_Report.pdf

The CNA Corporation. 2007. *National Security and the Threat of Climate Change*. Retrieved from http://www.cna.org/nationalsecurity/climate/report/SecurityandClimate_Final.pdf

Mr. PAYNE. Thank you.
Dr. Green?

**STATEMENT OF KENNETH P. GREEN, D.ENV., RESIDENT
SCHOLAR, AMERICAN ENTERPRISE INSTITUTE**

Mr. GREEN. Yes. Thank you, Chairman Payne. Thank you, Ranking Member Smith. Good to see you again, Representative Flake. Thank you all for inviting me here to speak today. Along with my remarks I have submitted a pertinent study to the record called Climate Change: The Resilience Option, that I would like accepted into the record.

To conceptualize my remarks, I will offer a bit of background. As was mentioned, I am an environmental scientist and policy analyst by training, having spent the last 20 years studying environmental policy at research institutions in Canada and the United States. My beliefs regarding climate change are based on what I learned in my doctoral studies, supplemented by another 20 years of reading in the scientific literature, as well as the reports of the IPCC, two of which I appraised as an expert reviewer for the United Nations Intergovernmental Panel on Climate Change.

For all of that time, I believe that manmade climate change is real and climate signs both legitimate and important. I believe that all things being equal, doubling of the concentration of greenhouse gases in the atmosphere would likely raise the global average temperature by about one degree Centigrade, posing a mixture of moderate risks and moderate benefits.

I am not convinced that strong positive feedbacks will boost global warming to extreme levels. As physicists such as Richard Lindzen of MIT pointed out, the opposite in fact seems to be true. Negative feedbacks, as are the norm in nature, seem to be canceling out some of the expected impact of humanity's greenhouse gas emissions.

This comports with both common sense and an understanding of the biological concept of homeostasis. The earth has been hotter and cooler in the past, greenhouse gas levels have been higher and lower in the past, but the earth has never run away into a permanent swelter or a permanent deep freeze. Feedback mechanisms tend to keep the earth's climate at a reasonable midpoint, subject to ice ages and warm periods.

If the climate were so unstable that sudden pulses of greenhouse gases such as recent human emissions or volcanic emissions could easily make it run away we would not be here. So while I do not and never have denied the reality of climate change, I do believe it is more moderate than people have been led to believe, and I believe the institution of climate science has been badly perverted—no offense intended—by its entanglement with government.

In particular, the priority the government has placed on having predictions of the future in order to execute long-term plans has led to far too much emphasis placed on computer models that in reality are little more predictive than computerized horoscopes. Trying to plan national economies and a global economy have wasted vast amounts of time and money that could have done much more good invested elsewhere.

Now, the issue du jour. How do we help Africa manage its climatic risks, which again are real and can be significant, depending on where it is you happen to be on the African continent. First, the single most helpful thing we can do for Africa is to help her people become wealthier.

Wealthier societies, especially those with democratic institutions and market economies, are naturally resilient to environmental variability and disasters of all sorts. Promoting the development of liberal democratic and market economic institutions in Africa should be our country's primary focus.

Second, we should stop trying to impose expensive and immature technologies on ourselves or on others. Despite the optimistic chatter of would-be rent seeking wind and solar energy tycoons, we do not currently have the technologies needed to curb greenhouse gas emissions significantly without breaking the bank. To the extent we deploy those technologies, we will slow our rates of economic growth and technological development while raising the costs of our exports, including food, medicinal exports and biotechnology and agricultural exports.

To the extent we impose such technologies on developing countries, all we will do is slow their development and hinder their most urgent mission of lifting their people out of poverty. It is hard to see how any of that helps the people of Africa or anyone else. In any event, serious people must recognize that any near term greenhouse gas emission reduction we might achieve will be swamped by Chinese emission growth, making the actions all pain for no gain.

Finally, we need to avoid making things worse by inadvertently encouraging climatic risk taking. When governments get involved in infrastructure development and disaster relief, they can often unintentionally promote risk taking by members of the public.

For example, here in the United States when people who live at the water's edge or in floodplains are hit by storms or floods, our government intervenes not only to help them avoid harm, but to keep them financially whole as well, including the property that they have invested in, so we see them build back over and over again in climatically fragile areas. That describes most of the history of the state I grew up in, California, where if it doesn't burn down, slide down or shake down, it gets built up right where it was.

And too often government actions lead people into harm's way through infrastructure creation that leads them to climatically fragile areas or facilitating a dependency on a particular type of climatically sensitive resource flow, such as water. As Dr. Pershing pointed out, previous government efforts didn't take climate variability into account so they would build a hydro station not thinking that that water may not always be there.

The government action of building the hydro station is what moved the people into the climatically dangerous place, and government infrastructure development is chronically bad at this in terms of developing highways that lead people to spread out in urban sprawl, developing water systems that substitute water rates for farming so that we wind up farming in places people really should not be farming, like the California desert for that matter, and so

it is very important that we not make things worse, which we have a history of doing.

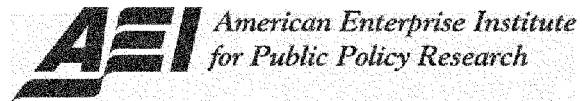
Finally, I believe and trust in social resilience and building wealth, but I think that there is a reasonable desire to ensure against the possibility of higher levels of warming so we should trust in resilience, but tie up our camel. We should do increased R&D funding to look for inexpensive, easily deployed, low greenhouse gas power sources to make people more adaptable to climate fluctuations.

If you have a functioning HVAC unit, you can deal a lot more with fluctuations in the climate than if you have none, but if you have that HVAC unit you have electricity, and in many cases in Africa they have none, so it is very important to electrify and give people the ability to respond.

We should also do research in geoengineering in case we need to physically engineer the climate locally or globally if in the rare case or unlikely case the models get it right of extreme predictions in the future. Those tools are the things we can best do. Fallback tools like that are the best things we can do for Africa and ourselves as well, as well as helping them develop economically and with democratic institutions.

I thank you for your attention and look forward to your questions.

[The prepared statement of Mr. Green follows:]



STATEMENT BEFORE THE COMMITTEE ON FOREIGN AFFAIRS
SUBCOMMITTEE ON AFRICA AND GLOBAL HEALTH
ON COMBATING CLIMATE CHANGE IN AFRICA

MANAGING CLIMATIC RISK IN AFRICA

DR. KENNETH P. GREEN

RESIDENT SCHOLAR

AMERICAN ENTERPRISE INSTITUTE

APRIL 15, 2010

The views expressed in this testimony are those of the author alone and do not necessarily represent those of the American Enterprise Institute.

Chairman Payne, Congressman Smith, Members of the Subcommittee:

Thank you for inviting me to testify today. Along with my remarks, I have submitted a pertinent study entitled “Climate Change: The Resilience Option.”

To contextualize my remarks, I offer a bit of background.

I am an environmental scientist and policy analyst by training, having spent the last 20 years studying environmental policy at research institutions in the US and Canada.

My beliefs regarding climate change are based on what I learned in my doctoral studies, supplemented by an additional 20 years of reading in the scientific literature as well as the reports of the IPCC, two of which I appraised as an expert reviewer.

For all of that time, I have believed that manmade climate change is real, and climate science both legitimate and important.

I believe that, all things being equal, doubling the concentration of greenhouse gases in the atmosphere would likely raise the global average temperature by about one degree Centigrade, posing a mixture of moderate risks and benefits.

I am not convinced that strong, positive feedbacks will boost global warming to extreme levels. As physicists such as MIT's Richard Lindzen have observed, the opposite seems to be true: negative feedbacks seem to be cancelling out some of the expected impact of humanity's greenhouse gas emissions.

This comports with both common sense and an understanding of homeostasis: the Earth has been hotter and cooler in the past, with higher and lower greenhouse gas levels than at present, but it has never "run away" into a permanent swelter or deep freeze.

If the climate were so unstable that sudden pulses of greenhouse gases, such as recent human emissions or previous volcanic emissions could easily make it "run away," we would most likely not be here.

I also believe the institution of climate science has been badly perverted by entanglement with government.

In particular, the priority governments have placed on getting climate scientists to offer up predictions in order to facilitate planning has led to far too much emphasis placed on computer models with little more predictive capability than computerized horoscopes.

Trying to plan national economies - and the global economy - have wasted vast amounts of time and money that could have done much more good invested elsewhere.

Now, to the issue *du jour*: how can we help Africa manage its climatic risks?

First, the single most helpful thing we can do for Africa is to help her people become wealthier.

Wealthier societies, especially those with democratic institutions and market economies, are naturally resilient to environmental variability and disasters of all sorts.

Promoting the development of liberal democratic and market-economic institutions in Africa should be our country's primary focus.

Second, we should stop trying to impose expensive and immature technologies on ourselves, and on others.

Despite the optimistic chatter of would-be rent seeking wind or solar tycoons, we do not currently have the technologies needed to significantly curb greenhouse gas emissions without breaking the bank.

To the extent we deploy costly and immature technologies we will slow our rates of economic growth and technological development, while raising the costs of our exports, including our food and medicinal exports.

And to the extent we impose such technologies on developing countries, all we will do is impede their development and hinder their most urgent mission of lifting people out of poverty.

It's hard to see how that helps the people of Africa, or anyone else.

In any event, serious people must recognize that any near-term greenhouse gas emission reductions we might achieve will be swamped by Chinese emissions growth, making the actions all pain, for no gain.

Finally, we should avoid making things worse by inadvertently encouraging climatic risk-taking. Subsidizing risk-taking is a common side-effect of governmental intervention in disaster relief as well as infrastructure development.

Too often, government *actions* unintentionally tell people not to worry about climatic risk, as they will be bailed out.

An example from here in the U.S.: when people who live at water's edge or in floodplains are hit by storms or floods, our government intervenes, not only to rescue them and their property, but to keep them financially whole as well. Hence, we encourage people to ignore climatic risk, and help them rebuild in the same fragile areas.

And too often, government actions actually lead people into harm's way through infrastructure creation that guides people to living in climatically-fragile areas, or facilitating dependency on climatically-sensitive resource flows. An example would be the construction of subsidized water systems that let people farm or build massive cities in deserts and drought prone areas. Or the construction of un-priced highways that let people live far from where they work.

U.S. assistance to Africa should be scrutinized to ensure that we are not making things worse by creating incentives for African people to live in climatically delicate areas, whether through our assistance with infrastructure development, or the nature of disaster relief we offer.

Finally, I suggest we trust in resilience, but tie up our camel. In case climate change does turn out to be a more serious threat, we should try to give ourselves options to deal with that unlikely risk cost-effectively not only for ourselves, but for other countries as well.

In that regard, we should increase research funding to look for inexpensive, easily-deployed low-GHG power sources that can make people more able to adapting to climate fluctuations.

We should also increase research into geo-engineering in case we decide we need to physically alter the climate locally or globally.

Developing such fallback tools is one of the best things we can do for Africa and ourselves as well.

Thank you for your attention, I look forward to your questions.

Mr. PAYNE. Thank you very much. Let me thank the entire panel for your testimony.

And let me begin, Mr. Ambassador, by asking you about your country in particular. If you would describe the current and prospective impact of climate change in Madagascar and what kind of adaptation and mitigation needs exist in order for you to keep on top of the issue?

Ambassador RAJAOBELINA. Okay. Thank you, Mr. Chairman. As I mentioned, we have been very concerned about this climate change in Madagascar for the last 4 or 5 years. As a matter of fact, we are one of the countries which have really been a pioneer in establishing scientific bases on the impact of climate change, both on social, on the economy and also in devising adaptation and mitigation.

In terms of mitigation, as I said we are one of the pioneering countries in developing pioneer projects or pilot projects to mitigate the impact of climate change, the projects some of which is being funded by USAID. In terms of adaptation, we have also been a pioneer. For instance, we are amongst the few countries in the world which have already developed what is called the REDD preparation plan, which is a condition for to receive REDD funding in the future.

So I would say that on the whole we have not yet reached a point where we have already established a full-fledged strategy for adaptation and mitigation, but we are on the way to develop such a strategy. Thank you.

Mr. PAYNE. Thank you very much. Would you also describe the role of Africa's National Adaptation Programme of Action, the NAPA, in allowing African countries to tap into national climate change funding streams? How has the development of these NAPAs impacted Africa's perception and its policies toward climate change adaptation?

Ambassador RAJAOBELINA. As Dr. Pershing has mentioned, you know that we came to Copenhagen, all African countries united around a common strategy led by the Prime Minister of Ethiopia, and there is I think a common consensus view that we should approach these climate change problems united and using all the avenues in terms of negotiation as well, but in terms of securing funding for the climate change programs.

I don't know if you are aware that following the Copenhagen Accord the core group—the emergency fund, the \$3.5 billion. There was a core group of contributors that has been established on which Congo and Niger are the members who represent Africa in precisely developing ways and the process through which these funds could be used as quickly as possible, the \$3.5 billion.

Because you know the problem is that commitments are there, but we don't know yet how they are going to be used, through what channels they will be used, bilateral or unilateral, and the African countries have decided to take a common view on that and to be very active on this core group, which will meet in Oslo in May again in parallel with the negotiation on UNF.

Mr. PAYNE. Thank you. And finally, in your opinion do you believe that there been adequate broad public and civil society input in development of Africa's NAPA programs to date?

Ambassador RAJAABELINA. To be very frank, Mr. Chairman, I don't think so. Not yet. We still need education. This is still a learning process, and we have to develop good communication to alert people. From what I have seen in my own country, clearly the people, the entire population, are not fully aware of the impact of climate change. They know the impacts. They know, but they don't know what comes from that.

The level of the rural communities, they see the changes in weather, the changes in the water, the water regime and so on, but they don't know exactly. They don't link that with what is climate change, for instance. That is why we have so much problem in linking, in your opinion, the factors. Deforestation is a key to attenuate and mitigate the climate change impact.

Mr. PAYNE. Thank you very much. Dr. Boltz, the Africa Carbon Credit Exchange is aimed at providing a vehicle for generating economic growth and facilitating funds for the development of environmental protection and climate change mitigation projects.

Can you describe how the ACCE can impact mitigation of GHG emissions and, secondly, how can the U.S. better support the development of the ACCE?

Mr. BOLTZ. Thank you, Mr. Chairman. I cannot speak directly to the ACCE. I am not familiar with that mechanism.

Mr. PAYNE. Okay.

Mr. BOLTZ. My apologies.

Mr. PAYNE. All right. Let me ask you then. In your opinion, what climate change adaptation technology, development and transfers, capacity building and research do you view as the most pressing continent-wide in Africa?

Mr. BOLTZ. Thank you, Mr. Chairman.

Mr. PAYNE. Why don't you push that button?

Mr. BOLTZ. Okay. Thank you. How is that?

Mr. PAYNE. Great.

Mr. BOLTZ. Thank you, sir. Thank you, Mr. Chairman. The adaptation needs across Africa, and we found this in a study conducted in Madagascar particularly, as a top line priority relate to the water stresses that may occur under different scenarios of climate change.

As we know, much of Africa is an arid environment already. Regions are water stressed, and many areas, especially areas that are more degraded and fragmented, are reliant upon conserved riparian forests surrounding rivers and the conservation of watersheds for the sustained provision of flows for drinking water, agriculture, et cetera.

Without question, the most fundamental adaptation need is to understand how these water systems may change and what measures need to be taken in terms of restoring and maintaining natural ecosystems that are capturing and providing water to the African community at large.

Mr. PAYNE. Okay. Thank you very much. Dr. Green, you mentioned several things. You say that too often government actions unintentionally tell people not to worry about climate risks as they are being bailed out. A number of issues you bring out certainly make a lot of sense as you talk about southern California.

In your opinion, in general do you feel, just generally speaking, that the question of climate change and global warming is exaggerated not based on total good science? I have an idea of where you stand, but could you just elaborate on that a bit?

Mr. GREEN. Sure. I will try not to go very long. Basically the core of climate science is the understanding that greenhouse gases trap outgoing radiation from the earth's surface.

As Dr. Pershing alluded, that has been known for a very long time and that humans can change the climate has been known for a very long time as well. Thomas Jefferson wrote about it, for example, at the local level how agriculture can change local climates. So that part of climate science is and always has been real and is, generally speaking, solid.

But the basic physics, those basic physics suggest about a one degree Centigrade rise in temperatures for a double of atmospheric CO2 levels. To get anything higher than that, you leave the realm of what I consider to be normal science and you start having to make assumptions. You make assumptions about feedback loops. You make assumptions about future growth and development patterns and how many greenhouse gas emissions, how many tons there will be in the year 2075.

You make predictions about economic growth, which of course look at the recent economic recession. I can guarantee you every IPCC document had the economic trajectories of the United States and the European countries dead wrong for the last 10 years. Just wrong.

And so the prediction aspect, I do not consider that to be science. I consider that to be modeling or estimating or guesstimating in many cases. It is not something that can be demonstrated and boiled down to a chemical in a glass case that you shine the light through and show how it traps heat.

And so my basic opinion is the actual real science is sound and robust, but it has been exaggerated partly by governments, partly by the media, partly by environmental groups, and they have folded into their word science what historically speaking has never been part of science, but instead has been part of governance, which is—government—predicting things and projecting things. That is not really science. We can't foretell the future. We can't forecast the future.

Mr. PAYNE. And why do you think they do that? I mean, what is the overall goal and objective of that, in your opinion?

Mr. GREEN. Well, it is an understandable thing. As Dr. Pershing also pointed out, governments act over very long timeframes. Because they are so large, they are one of the only entities that can do that. Only the government could say we are going to build an entire Federal highway system for the national defense.

They act on long timeframes and they would like to have some certainty about what they are doing, and so they ask scientists for information. The problem is that those scientists who give them sort of weasel word things and say well, I don't really know and I can't really tell you, those scientists don't get much attention. They don't get much in the way of publications, and they certainly don't get called to testify at hearings very often.

And so the scientists who have been willing to most exaggerate their ability to predict the future have been the ones woven most intimately into the climate negotiation process leading to this over-reliance on mathematical climate models that predict the future.

Mr. PAYNE. Thank you. Dr. Boltz, do you concur in the opinion given by Dr. Green in general?

Mr. BOLTZ. There are many elements of Dr. Green's testimony and opinion that—

Mr. PAYNE. You probably need to put that mic a little closer to you.

Mr. BOLTZ. Dr. Green points out an important consideration which Dr. Pershing also pointed out, which is that we can have greater certainty of the trends in greenhouse gas accumulation and climate change than in the precision of long-term magnitude of change.

I would disagree with or contest, as Dr. Green has posited, the belief that climate change will be retained within a one degree increase with a doubling of concentrations is more credible than any other projection that has been presented.

I think he has stated it as a belief, and I think that we should take it as such. I think he does acknowledge the uncertainties underlying his own ability to say with certainty and confidence what is likely to happen.

I think fundamentally, though, we should not be designing our own strategies as a global community and as a leading nation in that global community based upon the least likely risk, but rather understand what are the magnitudes of risk that we may confront given trends in climate change, in atmospheric greenhouse gas cumulation and both short-term higher probabilities of impacts related to the vulnerability of communities, the increased water scarcity, et cetera, and potential long-term impacts.

I think that if we act on a presumption of relative security that we are acting in error and not taking into account the measures that we need to take short-term on the basis of a precautionary principle to prevent the most catastrophic consequences.

Mr. PAYNE. Thank you. Thank you very much. Mr. Smith?

Mr. SMITH. Thank you very much, Mr. Chairman. Let me just again pick up on the earlier conversation we had with Panel 1.

Dr. Green, you had said in your writings, especially the AEI report, that it is fair to say that the scientific understanding of which factors contribute to change in the earth's climate is still in a very early stage. Even the experts at the IPCC acknowledge this to be the case.

You know, when the general media picks up and says the science is settled, we are causing it and that is the general impression that has been created both pre Copenhagen and post, could all of you speak to that issue of do you agree and how early in the stage are we about manmade climate change?

Mr. GREEN. May I? At least since you named me I will go first if you don't mind, gentlemen.

Ambassador RAJAOBELINA. Please.

Mr. GREEN. In the IPCC reports and I think in that study there is a very interesting chart that everyone should see that reflects the level of scientific understanding of the different factors which

can move the climate, which can influence the climate. They are called forcings in the scientific parlance.

Some of those forcings are considered well understood such as the actual greenhouse—CO₂, nitrous oxide and a few others—but for many of them the actual level of scientific understanding listed is either somewhat low, low or very low. Now, that has moved up over time. Each of the succeeding IPCC reports has had a similar chart.

But if you look at the possible range of those influences, some of them are so broad as to be able to swamp out much of what the human greenhouse gases can do, and that is where the understanding sort of comes off of the rails is what we don't know about particulate matter, what we don't know about clouds especially, what we don't know about water vapor and its role on mitigating or accelerating greenhouse gas induced warming.

Airplane contrails, which amazingly enough cover enough of the earth's atmosphere to influence the global climate. The contrails are the bright lines left behind the airplanes, right? And so those levels of scientific understanding are admittedly low by the United Nations modelers, and that is what goes into these questions of for a given amount of increasing greenhouse gases how much warming do you get out the other end.

When you strip away the things we are making assumptions about, the basic physics—and this is my belief, but it is also simply what you get when you work through the equations of heat retention in the atmosphere. You get about one degree Centigrade. And so that is where I believe we need to improve our level of scientific understanding, especially regarding water vapor and clouds, which are just overwhelmingly dominant influences on the climate.

Mr. SMITH. Would anybody else want to touch it? Ambassador?

Ambassador RAJAOBELINA. I am not a scientist, so I am not going to debate a scientific question. Dr. Green is much more qualified.

But I am coming back to what Franklin Moore said that as far as we are concerned there are two things. One is the trend is there. We see that. We saw that in the past periods, and if the trends are continuing we will have one to two degrees increasing. Dr. Green has accepted that.

And that will impact on our daily life as the committee through the water regime, rain regime and the drought and the recurrence of very tough cyclones and so that is what we are fixing on the ground, so how to prepare people and to make people resilient to the changes we are witnessing in our daily life.

Mr. BOLTZ. Thank you, Mr. Smith. I am sorry. I am still not quite accustomed to this. Thank you for the question. It is an important question.

And I think that to me fundamentally the issue is do human activities result in greenhouse gas emissions? Yes. Does the increase in the concentration of greenhouse gases in the atmosphere result in a warming effect? From what we are seeing, yes? How do other influences—the albedo effect, et cetera—offset that? Great uncertainties.

But we have two certainties implicit, one that human activities are a current source of emissions and that increases the risk of global warming due to an enhanced atmospheric greenhouse gas

concentration, implying that we should be cognizant and concerned with efforts to mitigate the emissions from human activities to again increase that risk of increasing atmospheric greenhouse gas concentrations leading to catastrophic climate change.

I think the physics are clear related to emissions and greenhouse gas concentrations, the predictions less so, but fundamentally is that causal relationship that we have an opportunity to influence. Thank you.

Mr. SMITH. Let me ask a couple of questions and then yield to the gentlemen to respond. I wonder if it is prudent for people, very heavily credentialed people like Dr. Pershing and Franklin Moore, to quote the IPCC when they make these Draconian predictions of net crop revenues could fail by as much as 90 percent by 2100.

You heard the preceding conversation. I mean, I just want to get to the truth and I really want to get there as quick as we can. If we don't know it, we ought to admit we don't have the clarity that we purport to have, and that is why my conversations with the CBO and others have been discouraging as to how much they don't know, and yet they put on paper numbers that then become branded that this is what the cost will be, this is what the consequences will be.

Even the idea that we could disappear from the African continent entirely by 2080. You know, I see that, and not knowing how that was arrived at and Dr. Pershing said and Mr. Moore that they will get back to us on that. The methodology is extremely important to know whether or not if that were something that is real we need to be obviously taking more aggressive action.

Secondly, I was very encouraged in direct answer to my question is the Obama administration seeking to combat climate change in Africa by reducing the number of African children by way of population control. Dr. Pershing said in a word no.

I raise this issue because there are a number of groups, as I said earlier, who just see the number of African children being born as a negative. The U.N. Population Fund in mid November came out and said that the battle against global warming could be helped by slowed population growth, and then they said the U.N.—this is an AP story. The U.N. Population Fund acknowledged it had no proof the effect population control would have on climate change.

As a matter of fact, two WHO leaders, experts, warned about the dangers of linking fertility to climate change and they said, "Using the need to reduce climate change as a justification for curbing the fertility of individual women at best provokes controversy and at worse provides a mandate to suppress individual freedoms," wrote WHO Diarmid Campbell-Lendrum and Manjula Lusti-Narasimhan, two WHO experts, and that is in the AP story.

Why do I raise this? Because there are people who are trying to link the one child per couple policy with its Draconian effects on women. Five hundred women commit suicide every day—every day; not week, month; every day—in China because the invasion of the state into their private affairs is so huge. Of course, they are missing at least 100 million girls in China as a direct result of sex selection abortion and the requirement of only one child per couple.

The Financial Post in Canada, the editor in chief, as a matter of fact—her name is Diane Francis—wrote an opinion piece called

The Real Inconvenient Truth, and she writes, “The whole world needs to adopt China’s one child policy.” Now, she wrote this on December 8, 2009.

She said, “Ironically, China, despite its dirty coal plants, is the world’s leader in terms of fashioning policy to combat environmental degradation thanks to its one child per couple policy.” She says to the world, “The fix is simple. None will work unless China’s one child policy is imposed.” She calls that smart policy.

You know, if you are willing to kill children and slaughter millions of children—billions in her estimation—you are going to reduce carbon breathers known as little children. Ironically, Diane Francis has two children, and I wish she would have as many children as she would like, but she is suggesting, and she does it in very, very somber tones, that to save the planet we need to eradicate children.

She says by 2075, under her proposal there would be 3.4 billion humans on the planet. You only get there through massive intrusion into the privacy of women and families. You only get there through coercion as China has proven since adoption in 1979 of its one child per couple policy.

And even at Copenhagen, China daily said population control is the key to the deal and talked about how many billions, millions of tons of CO2 emissions a year have been reduced by their Draconian policy of slaughtering children. So I am very concerned that this unwittingly perhaps may unleash more drive in Africa, putting more little babies and children, African babies, at risk.

In the Mail, the London Mail, there was a big article recently, and I would ask people to read it, where women talk about having abortions to help the environment and that this is the means to reducing the carbon footprint of their families by destroying their children. That is perverted, frankly. That is sick, and we should not wittingly or unwittingly put our arms around that kind of policy, in my opinion, and promote the elimination of children as a means of saving the planet.

And yet in the Financial Post it couldn’t be more clear. A very well educated woman with a very fine skill for writing says we need China’s one child per couple policy. That is why I am so worried about Africa. Given all of the power to persuade and to intimidate that the international community has on some governments relying on foreign aid, there may be a go along acceptance of that kind of Draconian measure.

So again I was encouraged by Dr. Pershing’s statement, but I think we have to be very careful that while we combat environmental degradation we don’t consider killing children as part of the solution. So if any of you would like to touch on that.

And finally again I want to bring up the unintended consequences that Dr. Molly Brown and others have suggested. When the cost of energy goes up, as she pointed out in her NASA study—it was joined by two others who wrote it, and I do believe this is an unintended consequence—the ability to get food in Africa and elsewhere will become an enhanced challenge.

She says use of biofuels will put direct upward pressure on food pricing, and cap in trade is likely to increase energy prices and it will be—this is her words—a spillover effect on food prices due to

the coupling of the food and energy markets raising food prices. The last thing Africans need are higher costs for food.

Mr. GREEN. I will emulate the Ambassador and point out what I am not, which is I am not a demographer or a specialist in population trends or population control issues. It is not an area in which I have done much work or writing, so I will in general leave that to them, although I would certainly agree that coercion should have no place. Coercion of any sort should have no place in climate policy, and the ultimate form of coercion is almost certainly that sort of one child policy that China has invoked.

So I will address the other points instead, and I will be brief. If you want to know where these predictions of future climate change come from and possible impacts on Africa and the like, you need to look to a book called The Special Report on Emission Scenarios by the U.N. Intergovernmental Panel on Climate Change.

That book, which is created separate from the other science reports, creates a series of what they term story lines and scenarios of what they think the future may be like under certain conditions such as increased use of fossil fuels, increased use of nuclear fuels, higher rates of population growth, lower rates of population growth, and they draw these out, often extrapolating them to the year 2100 from what they either see or they think is going to happen.

That generates a concentration of CO₂ in the atmosphere. A scientist plugs that into a model and asks how much will that warm the globe based on what their model tells them. The model will come back with a number, and other models are used to say well, how will that affect certain areas of the globe.

The IPCC acknowledges that trying to go below the continental level is not yet possible with any precision and so you can make predictions at the continental level that it would be slightly warmer or slightly cooler. Subcontinental level predictions have virtually no utility other than as a what if thought exercise.

So that is where that data comes from, and I would offer to submit my copy of it to the record, but it is about this thick and it cost me quite a lot of money, so I am afraid you will have to acquire your own.

On the last point of unintended consequences, I mean, this is absolutely correct. We did this with ethanol. The ethanol problem has not been solved and won't be solved by cellulosic ethanol or other types. What we are doing is we are putting a bounty on land for biofuels, and as long as you place a value on a square of land that is higher for fuel than for food, farmers will respond and they will grow fuel and they will not grow food.

This is a real problem with biofuels around the world, especially in Africa and in the equatorial regions because if we place a bounty on biodiesel, raising soybeans for biodiesel, hungry people will raise those soybeans at the expense of the rainforest around them. They will cut them down and plant and they already are.

So the biofuel issue is one of the greatest unintended consequences you can possibly imagine and yet we still have it as a major aspect of U.S. policy to boost biofuel use not only here, but around the world. It really is a bit of a travesty.

Mr. BOLTZ. Thank you, Mr. Smith, for the questions. I similarly do not have the expertise to speak on the issue of population control. As you have described it, certainly I would not be in favor of Draconian population control, killing children to address any issue personally nor the institution that I work for.

I don't have the expertise to speak of what would be appropriate family planning measures. However, as Congresswoman Woolsey referred to earlier, access to education, to health services, to nutritional services, providing the tools for sound family planning should be a priority for all nations on earth. Access to the basic facilities for care and sound upbringing of healthy families is fundamental.

To the other two questions, is it prudent to quote the IPCC? The IPCC is currently our best source of scientific information and acknowledges its own limitations and shortfalls. The IPCC provides several scenarios of possible climate change impacts. Is it prudent to cite them?

To the extent that they do provide a credible source and their shortcomings and limitations are explicitly acknowledged and considering that the role of government on behalf of its public is to provide for the measures needed to ensure the greatest probability of sustaining the welfare of current and future generations, I think it is prudent to follow the globally recognized science while, as Dr. Pershing acknowledged, noting what key gaps there are in science. Dr. Green has mentioned some others related to the albedo effect.

Noting the key limitations and those areas that must be strengthened to provide greater certainty and to provide a more rigorous scientific basis which you have also mentioned as a principal concern. So is it prudent? I would agree. I would say yes. Is it sufficient? Not yet. We need to continue to build that scientific certainty and the basis for making sound decisions.

To the last question on energy and food security, I think as a principle we would be wrong to try to address issues of climate change and climate security in isolation from issues of food security because they are intertwined and interdependent issues that must be resolved in tandem.

Increasing scarcity of fuels upon which we are presently dependent will lead to an increase in energy prices and trigger increases in the price of food. Increases in the demand for land for biofuels or for the production of other commodities such as soy, such as cattle, will also lead to increasing scarcity of land available for agriculture and increasing food prices. These issues are intertwined and must be dealt with in an integrated and compatible manner.

The measures that Mr. Moore referred to earlier I think are critical. Notably, increasing agricultural productivity, sustaining long-term climate security and adaptation capacity is also related to increasing the productivity of lands and the ability to sustain production on those lands.

Similarly, restoring degraded lands and identifying the possibility for cultivating biofuels, for instance, on degraded lands as opposed to using fertile lands that can produce for agriculture should be a policy. Understanding the carbon debt that can be incurred by biofuel productions and establishing stringent standards for investment in biofuels such that that carbon debt is acknowledged and

we are not incidentally creating higher debt by converting lands to biofuel use is fundamental, and that should be an element of U.S. investment policy.

Lastly, there has been some efforts and Conservation International has been among those leading the development of this process. There is a committee established which is a Responsible Biofuels Producers Association that is talking about how do we make the best use of degraded lands, different sorts of biofuel products in different areas and address the issue of carbon debt given that there is an emerging and will be a future demand for biofuels production, but that it poses the serious risks that you enunciated.

That group is a private sector group working with civil society in Indonesia, also looking at Brazil, and is making great gains, and the extent to which we can provide policies and investment that favors more responsible production is certainly in our long-term interest. Thank you.

Ambassador RAJAOBELINA. Mr. Chairman, I think I can be very brief because most of what I wanted to say has been said by Dr. Green and by Dr. Boltz.

Regarding the question of population and climate change, I certainly agree with Congressman Smith that it would be really appalling to link climate change to extreme conditions such as the one proposed by some quarters for the one child policy. Clearly population problems are not and cannot be dealt in such a way, but through various programs, from various approaches as mentioned by Congressman Woolsey.

Regarding energy, that is really the key because the more the prices of energy increase, fuel and so on, the more it has an impact on households to the extent that in Africa and in Madagascar in particular most of the energy consumed by households comes from charcoal, so the more increase in energy, increase in fueling, the price increase, the more they are going into natural resources to produce. That is one problem.

Then there is a problem mentioned by Dr. Green and Dr. Boltz, the question of energy versus particulate. Clearly it is a real problem. It is a real problem. The last few years that I have been going to—and so on, and that has been at an expense, putting it in very simple terms. That has to be carefully considered as explained by Dr. Boltz.

Mr. PAYNE. Well, let me thank the panel for your expertise. I also would like to before we adjourn acknowledge the Ambassador from Madagascar who is with us. Thank you for attending, Mr. Ambassador.

With that, I would like to ask for unanimous consent that a statement from JoDee Winterhof, vice president for policy and advocacy from CARE USA, be a part of the record, in addition to several questions submitted by Representative Blumenauer.

I will now ask for unanimous consent that members have 5 legislative days to revise and extend their remarks. Without objection, so ordered. Thank you. The meeting stands adjourned.

[Whereupon, at 12:44 p.m., the subcommittee was adjourned.]

A P P E N D I X



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 AFRICA AND GLOBAL HEALTH
Donald M. Payne (D-NJ), Chairman

April 13, 2010

TO: MEMBERS OF THE COMMITTEE ON FOREIGN AFFAIRS

You are respectfully requested to attend an OPEN hearing of the Subcommittee on Africa and Global Health, 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: Thursday, April 15, 2010
TIME: 10:00 a.m.
SUBJECT: Combating Climate Change in Africa

WITNESSES: **Panel I**

Mr. Franklin Moore
Deputy Assistant Administrator
Bureau for Africa
Office of the Assistant Administrator
United States Agency for International Development

Jonathan Pershing, Ph.D.
Deputy Special Envoy
Office of the Special Envoy for Climate Change
United States Department of State

Panel II

His Excellency Leon M. Rajaobelina
Chairman of the Board
Madagascar Foundation for Protected Areas and Biodiversity
(Former Malagasy Ambassador to the United States)

Fred Boltz, Ph.D.
Senior Vice-President
Global Strategies
Conservation International

Kenneth P. Green, D.Env.
Resident Scholar
American Enterprise Institute

By Direction of the Chairman

The Committee on Foreign Affairs seeks to make its facilities accessible to persons with disabilities. If you are in need of special accommodations, please call 202/223-5021 at least four business days in advance of the event, whenever practicable. Questions with regard to special accommodations in general (including availability of Committee materials in alternative formats and assistive listening devices) may be directed to the Committee.

COMMITTEE ON FOREIGN AFFAIRS

MINUTES OF SUBCOMMITTEE ON Africa and Global Health MEETING

Day Thursday Date 4/15/10 Room 2172 RHOB

Starting Time 10:02 a.m. Ending Time 12:44 p.m.

Recesses (_____ to _____)

Presiding Member(s) Chairman Donlad M. Payne

CHECK ALL OF THE FOLLOWING THAT APPLY:

- Open Session
- Executive (closed) Session
- Televised
- Electronically Recorded (taped)
- Stenographic Record

TITLE OF HEARING or BILLS FOR MARKUP: (Include bill number(s) and title(s) of legislation.)

"Combating Climate Change in Africa"

SUBCOMMITTEE MEMBERS PRESENT:

Congressman Flake, Congresswoman Woolsey, Congresswoman Watson, Congressman Smith (NJ), Congresswoman Lee

NON-SUBCOMMITTEE MEMBERS PRESENT: (Mark with an * if they are not Members of HFAC.)

HEARING WITNESSES: Same as meeting notice attached? Yes No

(If "no", please list below and include title, agency, department, or organization.)

STATEMENTS FOR THE RECORD: (List any statements submitted for the record.)

Questions by Congressman Blumenauer

ACTIONS TAKEN DURING THE MARKUP: (Attach copies of legislation and amendments.)

RECORDED VOTES TAKEN (FOR MARKUP): (Attach final vote tally sheet listing each member.)

Subject	Yeas	Nays	Present	Not Voting

TIME SCHEDULED TO RECONVENE _____

or
TIME ADJOURNED 12:44p


Subcommittee Staff Director

Opening Statement
Congresswoman Diane E. Watson
Subcommittee on Africa and Global Health
Committee on Foreign Affairs
Thursday, April 15, 2010
10:00 a.m.

"Africa and Climate Change: U.S. Assistance"

Thank you Mr. Chairman for holding today's important hearing on the effects of climate change on African nations. In our role as a global leader, there are critical international challenges and opportunities on the African continent that we must address.

Climate change will affect every nation on this planet, but Africa is projected to receive the brunt of some of the most severe effects of climate change, such as increased temperatures, decreased rainfall, and desertification. As a result, Africans will face greater food and water insecurity. The marginalized members

of populations, such indigenous peoples, elderly, handicapped, women, and children, will suffer the most. In addition to being an environmental and human health concern, global climate change also has the potential to hinder the economic growth of African nations.

Admittedly, developed nations have played an overwhelmingly large role in contributing to global warming through greenhouse gas production. The U.S. must play a role in mitigating the problems that we have helped create. However, the majority of African nations have developed programs focused not on mitigating, but adapting, to the dangers associated with climate change. The decentralized nature of the funding leaves African nations without a cohesive plan to

combat climate change disasters. Though adaption will be key for Africa, we must also keep in mind that we should help African nation adopt policies that will not hinder their future growth.

Thank you Mr. Chairman. I yield back the remainder of my time.

STATEMENT OF
JODEE WINTERHOF, VP, POLICY & ADVOCACY, CARE USA
FOR THE RECORD
of the U.S. HOUSE FOREIGN AFFAIRS COMMITTEE
Subcommittee on Africa and Global Health
Combating Climate Change in Africa

Mr. Chairman, Congressman Smith, Members of the Subcommittee. I speak today on behalf of CARE, an international development and relief organization that has worked for more than 60 years in some of the poorest communities in the world. Thank you for the opportunity to share with you the perspective of people living in extreme poverty. My goal is to shine a light on how poor, marginalized people in the developing world are likely to be affected by climate change and how U.S. policies on adaptation and reduced emissions from deforestation and forest degradation (REDD) can contribute to sustainable development, long-term resilience and food security, while protecting, promoting and respecting the rights and needs of women and other especially vulnerable groups in developing countries.

As members of this Subcommittee, you undoubtedly understand the challenges poor people face every day. As the impacts of climate change unfold, those challenges only grow greater, and nowhere is the threat of climate change more real than in Africa. If left unchecked, climate change could wipe out decades of development gains, and the world's poorest people, especially women, will be hardest hit.

In many of the poor and marginalized communities where CARE works, social and cultural norms place expectations and restrictions on women that render them especially vulnerable to the impacts of climate change. Prevailing gender rules have denied them the right to access new information and resources, the right to make decisions that impact their lives and the lives of their families, and the opportunity to feed their knowledge and experience into community, national and global decision-making about climate change.

Yet, as the main providers of the most essential livelihood sources, women possess valuable knowledge about effective and innovative solutions to the growing problems associated with a changing climate. They possess a wealth of skills and knowledge about low-risk farming, sustainable water management, and family health and nutrition. Women are agents of adaptation.

I want to acknowledge the important contribution the House of Representatives made to the effort to advance climate change policy with the passage of the American Clean Energy and Security Act of 2009. This legislation is an important first step in this endeavor and demonstrates your understanding of the importance of addressing the impacts of climate change on people in extreme poverty. It is essential that U.S. climate policy and legislation not only contribute to efforts to reduce greenhouse gas emissions but also support the efforts of the world's poorest communities to grapple with these new challenges.

Climate change remains a very real threat to the world's poorest communities and populations, especially to women living in ultra poverty. Extreme weather events are becoming more frequent and intense. The world is getting hotter. Rainfall patterns are changing. From a humanitarian perspective, it is critical that we reduce greenhouse gas emissions to safe levels. We also have to invest in building people's resilience to the impacts of climate change. CARE is pleased that the American Clean Energy and Security Act recognizes the importance of providing robust support for international adaptation, with a prioritization of most vulnerable populations and a call for local community engagement, and for REDD, particularly the capacity building activities necessary to ensure its sustainability and success.

Unmitigated climate change will pull the rug out from under progress the world is making on the Millennium Development Goals, and it is likely to contribute to mass migration and increased conflict over scarce natural resources, undermining global stability and security. While climate change will affect us all, the world's poorest people will be hardest hit. Today, more than one billion people, the majority of whom are women and girls, survive on less than \$1.25 a day.¹ Climate change poses substantial new challenges to populations already living on the edge of crisis, yet these communities have the fewest resources to adapt.

Tackling Climate Change – Toward a Global Solution

As the largest historical emitter of greenhouse gases, the U.S. must act now to reduce domestic greenhouse gas emissions. U.S. leadership will help bring other countries along and strengthen the world's collective resolve to ensure that our planet does not become a very different, and much more dangerous, place. Likewise, robust investments in adaptation are vital and already urgently needed. Investing now will cost far less than dealing with the consequences later. It will also safeguard national security, protect decades of development investment, and demonstrate renewed U.S. leadership.

A global solution to climate change begins but does not end with deep and immediate reductions in domestic greenhouse gas emissions. Effective climate change policy – domestically and internationally – must also

1. *Protect rights.* Support the reduction of emissions from deforestation and forest degradation in developing countries (REDD), including through funding for capacity building activities, in a manner that protects the rights and interests of indigenous peoples and other forest-dependent communities; and
2. *Ensure that adequate funding for adaptation reaches the poorest and most vulnerable.* Support adaptation in developing countries vulnerable to climate change with robust funding that reaches and responds to the priorities of the poorest populations most vulnerable to climate change.

Social Standards and Safeguards Essential for Successful REDD

The inclusion of Reduced Emissions from Deforestation and Degradation (REDD) in U.S. climate legislation is crucial if we are to avoid dangerous global warming. Deforestation accounts for at least 15 percent of human-induced greenhouse gas emissions.

¹ Chen, S. and Ravallion, M. 2008. *The Developing World Is Poorer Than We Thought, But No Less Successful in the Fight against Poverty*. World Bank Policy Research Working Paper 4703.

However, CARE believes that REDD must be accompanied by adequate social standards and safeguards from the outset. While investments in REDD have the potential to offer significant benefits for indigenous peoples and other forest-dependent communities in developing countries, they can also do substantial harm. Past experience with forest conservation worldwide tells us that, without appropriate standards and safeguards, forest-dependent communities face numerous social and economic risks to their livelihoods, their access to resources and land, and their ability to share in the benefits of REDD activities.

Take the case of Uganda. In 2002, the Ugandan government took forested land away from local populations in the Butamira Forest Reserve and gave it to large commercial sugar companies. Forests were mowed down and cleared for profit. Natural resources from the forest were no longer available to forest-dependent communities. Pig, cattle and goat rearing projects were forced to close due to lack of access to water and grazing land. Crafts and household goods, which women used to sell at local markets, ceased to be produced because women no longer had access to raw materials. As a result of the loss of income, parents had to pull their children out of school. Women were forced to use leftover sugar cane waste, instead of fuelwood, for cooking, which meant that they could only make food that could be cooked quickly. Sugar cane leftovers burn fast, making preparation of nutritious beans impossible.

In 2006, CARE worked with women from the former Butamira Forest Reserve to stop rampant deforestation and change national policies. Their protest led to a reversal in government attitude in February 2007. Unfortunately, within a month of winning that policy change, there was another reversal and the Cabinet re-endorsed the giveaway.² What has happened in the Butamira Forest Reserve underscores the kinds of risks that forest-dependent communities face without proper safeguards in place. What has happened in the Butamira Forest Reserve also underscores the importance of standards to ensure that such communities can exercise their rights and participate in the management of forests that directly affect their well-being.

It is critical for the U.S. to support the types of capacity building activities necessary to ensure that countries can improve governance practices and develop and implement the safeguards and standards necessary to ensure participation by indigenous peoples and other forest-dependent communities in forestry management; prevent human rights violations; and guarantee free, prior and informed consent, equitable benefit sharing, the right to access and use resources, and access to legal recourse and fair compensation for damages. These standards are essential not only to guard against risks but also to ensure environmental success, i.e. the sustainability and permanence of emission reductions.

Adaptation that Engages and Empowers

Even if all greenhouse gas emissions were halted today, however, a certain degree of climate change is inevitable. Past emissions have already set in motion longer-term changes to which people in extreme poverty must adapt. Adaptation commitments should be based on historic responsibility and capacity to pay. Adaptation funds must be new and additional to official development assistance. New and innovative mechanisms that can raise significant funds for adaptation and create incentives for mitigation should be pursued. At the same time, funding

² CARE, 2004. *Reclaiming Rights and Resources: Women, Poverty and Environment*.

must reach the people who need it most. This will require systematic identification of socio-economically vulnerable groups within high-risk countries. Vulnerability to climate change varies within countries, communities, and even households and is more than exposure to climate shocks and stresses. It includes the economic, social, and political systems and structures that govern people's lives.

Furthermore, for adaptation activities to meet the needs of the most vulnerable, these poor communities and populations must be guaranteed meaningful participation in relevant decision making, monitoring and evaluation. CARE believes community-based adaptation is the most effective approach because it targets the most vulnerable communities and populations and promotes community engagement and buy-in, thus incorporating sustainability in its program design. Community-based adaptation is people-centered. It fosters more resilient livelihoods, strengthens local capacity through training and the promotion of appropriate traditional knowledge, supports social change and advocacy to address the underlying causes of poverty and differential vulnerability. Community-based adaptation is about empowering vulnerable communities and facilitating their ownership of adaptation strategies.

In Northern Ghana, for instance, poor communities are well aware that the climate is changing, though they may not understand that this represents a trend that will continue in the future, nor do they have access to information such as seasonal forecasts that can facilitate planning to reduce risks. While some people are adapting through the use of alternative crops and income generating strategies, most people are employing coping strategies that are unsustainable, such as cutting firewood to sell.

CARE and our local partners have worked with communities to discuss their observations of climate change, and to communicate the expected impacts in future. Discussions were held separately with groups of men and women to allow analysis of gender differences in observations of climate change, as well as the impacts of hazards on livelihoods, and resulting differences in vulnerability. Women highlighted their particular vulnerability to the impacts of climate change. For example, they discussed their role in the household where they are likely to be more responsible than men for securing food and water for domestic consumption but have less power in decision-making on the use of family resources. Women's vulnerability also stems from their role in the community, where they have less voice in local governance. Key-climate-related changes observed by both men and women include shifting rainfall patterns, reduced soil fertility, longer periods of drought/without rain, lower water table, decreased ability to plan when to plant. In terms of climate-related hazards, communities were most concerned with the impacts of floods, erratic rainfall, and droughts.

CARE and our partners then worked with community members, local NGOs and local government units to use this information in planning. This included action planning at the community level, focused on actions such as tree planting, establishment of early warning systems for droughts and floods, and use of agricultural practices that conserve soil moisture and nutrients. With action plans in hand, communities are in a strong position to communicate their priorities to their District representatives, resulting in District plans that address climate vulnerability issues. Given the particular vulnerability of women in the target area, the project is placing significant emphasis on ensuring that the needs and priorities of both men and women

are represented in the community action plans and in the District plans. This is achieved by striving for equal representation of women on committees developing action plans and by supporting women with training and mentoring to take on leadership roles in community and local government organizations.

Strong, effective climate change policies can reduce the risk of the world becoming a different and much more dangerous place, particularly for especially vulnerable populations. These policies can also create new opportunities for women and other especially vulnerable populations to participate meaningfully and actively in adaptation activities, to acquire skills, information and income to adapt to climate change, and to alter the relationships and structures that surround women and shape the choices and aspirations available to them. Such policy could therefore help promote the ascent of women and their families from poverty.

Climate Change and Women's Empowerment

Through CARE's Climate Vulnerability and Capacity Assessment (CVCA), CARE is helping the governments and communities with which we work understand who is most vulnerable to climate change and why. The CVCA is already affirming what we have known about women's disempowerment, in particular. Again and again, across cultures and countries, CARE finds that women's disempowerment co-exists with, and indeed underlies, poverty. The CVCA is demonstrating that disempowerment is, in large part, also what makes women especially vulnerable to climate change.

Women farmers, for example, are often denied the legal or customary rights to own land. This restriction makes it difficult for women to access credit, without which they cannot buy the tools and technology – such as drought tolerant seed varieties – to deal with new rainfall patterns or other impacts of climate change on agriculture production. Moreover, as extreme weather events increase and climate conditions, such as rainfall patterns, change, women are forced to spend even more time in the fields and collecting water and fuel wood. When harvests are poor or incomes shrink, and if the nutritional needs of men and boys are viewed as more important, then women and girls become the last to eat when their families begin to run short of food.

Climate Change and Global Hunger and Food Security

The U.S. Congress and Administration have prioritized tackling global hunger and food insecurity, and CARE is pleased to see such efforts. However, even the most comprehensive U.S. global hunger and food security policy, in and of itself, would not be enough to help the world's poorest and most vulnerable populations, including women, realize their right to food in the face of climate change. If we are serious about ending global hunger and food insecurity, we must also tackle climate change.

Global models project that the overall impact of “business as usual” climate change on agricultural production will likely be small in the near future (up until the 2030s).³ At first blush, this projection may not raise alarm bells. It should. Yields will likely be higher in temperate regions, but lower in tropical regions, where large swathes of the population are already vulnerable and food insecure. Agricultural production in many African countries is likely to be

³ CARE USA, “The Impact of Climate Change on Agricultural Production,” 2008.

severely compromised by climate change and climate variability, with yields declining by as much as 50 percent by 2020.⁴

To say that the near-term impact of climate change on global agricultural production will be small assumes that low-income countries in areas such as sub-Saharan Africa can cope with localized food shortages through normal carry over stocks, food aid, and international trade. We know this is not the case. Our global humanitarian food security architecture, as it stands today, is inefficient and inadequate. It is certainly not equipped to deal with more frequent food emergencies due to climate change.

Agricultural production is just one aspect of food security. The presence of food in and of itself does not guarantee that a person can obtain and consume food. Food security also depends on food accessibility, which is a person's ability to secure the legal, political, economic and social resources s/he needs to obtain access to food. Food is inaccessible, for example, if a person cannot afford food when prices increase, if preference in a household is given to the nutritional needs of able-bodied men and boys to the detriment to women, girls, the elderly and disabled, or if emergency food assistance is inadequate or inappropriate. Climate change will impact food accessibility in already vulnerable and food insecure regions by increasing prices (as local production declines), triggering unequal household allocation practices, and putting even greater pressure on an already inadequate global humanitarian food security architecture.

In addition, climate change will affect the ability of people, especially vulnerable populations like women, to secure essential nutrients from the food they consume. This decrease in nutrition follows as their ability to purchase a diversity of food declines and as changes in pest and disease patterns affect human and livestock health. As more frequent and intense severe weather events and storms damage transport and distribution infrastructure, disrupt food supply chains and affect the quality and safety of food, vulnerable populations face even more difficulty in securing adequate nutrients. Climate-induced disruption of infrastructure and food supply chains will also affect the stability of global, regional and local food systems.

Effectively addressing climate change requires a global response based on a common vision, a shared sense of community, and leadership to make and implement difficult decisions. At a time when global leadership seems overwhelmed by economic challenges and national interests, the U.S. remains the critical actor that can help forge and implement an international plan to save the planet by the power of its example. That effort must start here in the U.S. with strong climate change policies that underscore our commitment to addressing climate change, be it for national interests or in answer to a moral challenge of what kind of country the United States is. Whatever the motives, it is time to act...time to act now.

Thank you.

⁴ Boko, M., I. Niang, A. Nyong, C. Vogel, A. Githeko, M. Medany, B. Osman-Elasha, R. Tabo and P. Yanda, 2007: Africa. *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge University Press, Cambridge UK, 433-467.

House Subcommittee on Africa and Global Health

“Combating Africa in Climate Change”

Thursday, April 15, 2010

10:00 a.m.

Congressman Blumenauer

Questions Submitted for the Record

1. Following the amendment of the U.S. Lacey Act that banned the import of illegally harvested timber in May 2008, a broad array of federal agencies are now actively engaged in tracking and prosecuting importers of wood of illegal origin. Illegal activity plays an outsized role in driving deforestation and forest degradation and the corresponding release of emissions, and much of this activity is driven by demand from countries like the US. How is the administration incorporating policy implementation and enforcement measures to eradicate illegally sourced timber from US markets into its domestic climate change agenda and into its position in the UNFCCC international negotiations? And what other policy and enforcement measures can the U.S. take to ensure that it is not driving deforestation generated by logging activities in Africa, where both illegal and unsustainable logging practices are a major source of carbon dioxide emissions?

2. The House passed H.R 32. in April 2009, which condemned the pillaging of Madagascar's national parks by illegal loggers. Since then, the Malagasy government has permitted the export of rare, valuable rosewood and ebony on several occasions, most recently at the beginning of this month, despite acknowledging its illegal origin. This wood is going to principally Chinese markets, as well as Europe and America. Are there any measures that the U.S. can take to discourage the international market for such products, especially given its leadership in banning the trade in illegal wood in its home market through the Lacey Act amendments?

[NOTE: Written responses were not received to these questions prior to printing.]

