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CONTRIBUTING FACTORS AND INTERNATIONAL RESPONSES TO THE GLOBAL FOOD CRISIS

HEARING

BEFORE THE

COMMITTEE ON FINANCIAL SERVICES
U.S. HOUSE OF REPRESENTATIVES

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CONTRIBUTING FACTORS AND INTERNATIONAL RESPONSES TO THE GLOBAL FOOD CRISIS

Wednesday, May 14, 2008

U.S. HOUSE OF REPRESENTATIVES,
COMMITTEE ON FINANCIAL SERVICES,
Washington, D.C.

The committee met, pursuant to notice, at 10:02 a.m., in room 2128, Rayburn House Office Building, Hon. Barney Frank [chairman of the committee] presiding.

Members present: Representatives Frank, Waters, Velazquez, Watt, Sherman, Moore of Kansas, Baca, Miller of North Carolina, Scott, Green, Cleaver, Moore of Wisconsin, Klein; and Manzullo.

The CHAIRMAN. The hearing will come to order. The members of the minority have graciously made it clear that we're free to go forward. I will tell the witnesses, to many of whom this will come as no surprise, including, of course, our very distinguished and much missed former colleague. In fact, I have two former colleagues on this panel. I served in the House here with our friend from North Carolina, Ms. Clayton.

But I have an earlier colleagueship. After I was elected to the Massachusetts house in 1972 along with Congressman Ed Markey and Congressman Bill Delahunt, 2 years later, we were joined by one of our witnesses, Mr. Natsios, who then represented the town of Holliston, I believe, where the marathon begins, and later took over the town of Sherman, which is now in my district. So we have had one of the greatest bonds you can have—common constituents. There are probably some annoying people we can both remember, and some very nice ones.

But I want to assure people that obviously this is—because it is a Wednesday—it is a busy day. There are a lot of other things going on, but this is a hearing we take very seriously. This committee has jurisdiction over American relations with all of the international financial organizations, and we plan to follow-up on this, including there will soon be a letter coming from members of this committee to the Treasury Department urging more money for IFAD, which Ms. Clayton had brought to our attention. And when this committee sent a delegation to Africa during the spring break—several members of the committee, Ms. Waters, Mr. Meeks, Mr. Watt, Mr. Clay, and Ms. Moore—we included meetings with the IFAD people in Cape Verde and the whole question of how you deal with agriculture, and how you deal with the food crisis, was very much on our mind.

So I am very appreciative. My praise goes to the staff of this committee. They did a very good job of assembling an excellent panel, and I just want to assure everybody that this is a subject we take very seriously, and your words will have an impact as we go forward trying to shape policy.

I am also glad to note that we're not by any means the only committee dealing with this. I guess the Senate is having a hearing on it today. I have talked to my colleagues on various other committees, including the Agriculture Committee and the Appropriations Committee. I do believe there is a recognition of the extreme gravity of the food crisis. And what we hope to remind people is that, yes, it's important to respond in the short run, but it's equally important to take a set of policies that won't confront us with this in the future.

So this is the current crisis in which we have people literally starving and the economic harm that is being wreaked. The current crisis is an important reminder to us not just to respond to the crisis, but to try to use the attention that we get now that we're in a crisis to refocus polices in a broader sense, and I know that is what we expect to hear from you.

Are there any other members who wish to make statements? The gentleman from North Carolina.

Mr. WATT. Thank you, Mr. Chairman. I won't take much time, but I want to thank the chairman for scheduling this hearing and to reemphasize the importance of the subject matter.

I also wanted to just pay special tribute to my State colleague who came to Congress at the same time that I did, Eva Clayton. She was in many ways my mentor and she rounded out and smoothed out some of the rough edges until she finally gave up and left, and left me an unfinished product.

But I want to welcome her in particular and acknowledge all the wonderful work that she has been doing since she left the Congress around these issues. We met with her on another CODEL with the Speaker on the way to Darfur, and when she was in Rome with the World Food Program, that was an important transition into that area to understand what humanitarian assistance was being provided, and it was just—I was just really proud to see the work that she in particular has been doing around these issues since she has left Congress.

With that, I will yield back, because we are marking up 10 bills in the Judiciary Committee, and as important as this subject is, markups take precedence over hearings.

The CHAIRMAN. Well, as a chairman, I certainly concur in that even more than I used to. I thank the gentleman. The gentleman from Texas had asked to say a word.

Mr. GREEN. Thank you, Mr. Chairman. I, too, thank you very much for this most important hearing, and I will be very brief with my comments. Yesterday, I attended a briefing on Haiti—I will be taking a trip to Haiti shortly—and a term was used that sort of shocked my conscience, to be quite candid with you. The term was "hunger season." A hunger season. In Haiti, and I'm told in other countries as well, we have what are called "hunger seasons" where people plan their lives around a time when there will be hunger,

more I suppose to a greater extent than they have ordinarily, because in these countries, food is a problem.

So I'm grateful that this hearing is taking place, because seasons of hunger are seasons that we should be able to eliminate. I thank you, Mr. Chairman.

The CHAIRMAN. Are there further—the gentleman from Georgia.

Mr. SCOTT. Thank you, Mr. Chairman. I just want to make a few brief remarks. As you know, I am a member of the Agriculture Committee and we now have a farm bill. And one of the most important parts of that farm bill is that we have strengthened our international food aid program.

We have put in $60 million to purchase food overseas to feed people in need on top of the existing Food for Peace international program, and also you're familiar with McGovern-Dole. We have reauthorized that international food and education and child nutrition program to infant child school nutrition programs in underdeveloped countries and provides an infusion of $84 million in additional funding. So we are moving very forthrightly on this issue.

It is very interesting. This is a very timely hearing as we look across the globe and we see food riots. We see what is happening in places like China and India and we need to evaluate what contributions they are making in a large extent to the food crisis. There are other people who are blaming developed countries for the brunt of the concerns. The question is, who is to blame? And do we need to put the blame on any one entity?

But it appears to me that it is counterproductive to simply place blame on a few countries for a situation that looks to get much worse before it becomes any better. And when some experts are calling this crisis more of a threat than terrorism, we must definitely have and understand that this is a very dire situation before us.

Food security is very important. This is a very, very timely effort. This is a plentiful earth; there is enough to go around for everybody. We just have to manage it better. We have to make sure that the United States is truly fulfilling its role as the leader. We understand that this farm bill speaks to that, and we hope we get enough votes to be veto-proof so the President won't veto it.

Thank you, Mr. Chairman.

The CHAIRMAN. Are there any further requests for an opening statement? If not, I will note that we have been joined by another North Carolinian, our colleague from North Carolina, Mr. Miller. And with that, we will hear from our witnesses.

The first witness is Dr. Robert Watson, who is the director of the international assessment of agricultural knowledge, science and technology for development, and he is also a professor of environmental sciences at the University of East Anglia in the United Kingdom. He was previously chief scientist at NASA, Associate Director for Environment at the White House, and was the chief scientist at the World Bank.

He was also the first chair of the Intergovernmental Panel on Climate Change, and now he is the director of the recently released UN Study on Global Agriculture, which is the international assessment to which I just referred.

So, Dr. Watson, we are very grateful. Please go ahead.

STATEMENT OF ROBERT T. WATSON, DIRECTOR, INTERNATIONAL ASSESSMENT OF AGRICULTURAL KNOWLEDGE, SCIENCE AND TECHNOLOGY FOR DEVELOPMENT (IAASTD), AND PROFESSOR OF ENVIRONMENTAL SCIENCES, UNIVERSITY OF EAST ANGLIA, UNITED KINGDOM

Mr. WATSON. Mr. Chairman, members of the committee, it's a pleasure to have the opportunity to testify today. There is no doubt that the recent food price increases are a major cause for concern around the world. In developing countries where most of the household income is spent on food, increased food prices are undermining attempts to reduce hunger and pushing some of the world's poorest people into abject poverty.

The underlying causes of most of the recent increases are complex. They include factors such as increased demand from rapidly growing economies, especially China; poor harvests due to an increasingly variable climate, such as the Australian drought; the use of food crops for bio-fuels, such as the use of maize for bio-ethanol in the United States; higher energy and fertilizer prices; low food stocks; speculation on commodity markets; and then, in response to these high food prices, export restrictions on agricultural products from a number of a significant exporters to protect their domestic consumers.

A key question is whether these price increases are a momentary blip, the result of an unfortunate series of events, or are they something for the future? There is already evidence that the current high prices are stimulating increased production, but it may take a number of years to rebuild stocks to levels that markets are comfortable with. But if the high prices are more than a blip, what else do we need to know if we are to provide sustainable, nutritious and affordable food for the world in an environmentally and socially sustainable manner?

Meeting the goal of affordable, nutritious food for all in an environmentally and socially sustainable manner is achievable, but it cannot be achieved through current agricultural business as usual. We must recognize that business as usual is not an option. We need nothing short of a new agricultural revolution. We need more rational use of scarce land and water resources. We need an equitable trade regime, as well as widespread recognition and action on climate change.

We also need to recognize in this changing world that we need new tools, which means increased investments in agricultural knowledge, science, and technology, and we also need to care about rural livelihoods. It is undeniable that over the past century agricultural science and new technologies have boosted production, with enormous gains in yield and reductions in food price, but these benefits have been unevenly distributed.

Over 850 million people go to bed hungry every night. Primarily, this is a problem of distribution and local production. In coming decades, we need to double food production. We need to meet food safety standards. We need to enhance rural livelihoods and stimulate economic growth, all of this at a time when there will be less labor in many developing countries as a result of HIV/AIDS and other endemic diseases such as malaria in Africa, when there will be more competition from other sectors for scarce water, when

there will be less arable land due to soil degradation and competition for bio-fuels. There will be increasing levels of regional air pollution in many developing countries, loss of bio-diversity, and when climate is changing due to human activities.

Agriculture can no longer be thought of as production alone, but we need to recognize the inescapable connectedness of agriculture's different economic, social, and environmental roles and functions.

Thankfully, many of the technologies and practices we need to manage the challenge of sustainable agriculture already exist. But climate change and new and emerging animal diseases are throwing up new problems that we haven't considered before, and which will need advances in agricultural science and technology.

Climate change has the potential to irreversibly damage the natural resource base on which agriculture depends and in general adversely affects agricultural productivity. And while bio-fuels can offer potential benefits over the rising cost of fossil fuels, energy security issues, reducing greenhouse gas emissions, and improving rural economies, we concluded in the international assessment that the production of first generation bio-fuels, which are predominately produced from agricultural crops, can raise food prices and reduce our ability to alleviate hunger. There is also considerable debate over the environmental impact of bio-fuels.

Opening national agricultural markets to international competition can offer economic benefits but can also lead to long-term negative effects on poverty alleviation, food security, and the environment without basic national institutions and infrastructure being in place. Therefore, policy reform, trade policy reform that provides a more equitable global trading system, can help small-scale farmers become more profitable and enhance the ability of developing countries to achieve food security while ensuring environmental sustainability.

So what are the short-term challenges? International financial institutions and development agencies can assist developing countries with the impact of these high prices by recognizing that we need to increase productivity and profitability of the small-scale farm sector. We need to support emergency interventions to boost domestic agricultural production of food crops that are locally important for food security.

These interventions need to focus on supporting the small-scale farm sector, for example, post-harvest facilities, market feeder roads, improving access and tenure to land and other productive resources, and to provide access to credit.

We need to promote an increase in national public investment and regional cooperation in agricultural knowledge, science, and technology. We need to establish safety nets and public food distribution systems to provide the poorest and the most vulnerable members of the population with the resources they need to meet their basic needs and to protect them against food price shocks.

So what do we also need in the medium- to longer-term? The IFIs and other developmental institutions should target agricultural knowledge, science, and technology toward strategies that combine productivity with protecting natural resources, such as soils, water, forests, and bio-diversity. We need to help crop and livestock production systems adjust to human-induced climate

change. We need to help countries find the appropriate balance between the production of export crops, which can help a country's balance of payments, but does not ensure food security domestically, and we need to support production of subsistence crops that are needed to meet the needs of the domestic populations.

We need to support programs internalizing environmental externalities and provide payment and reward farmers for environmental services. And we need to help countries to develop the basic national institutions and infrastructure to take advantage of international trade and macro policy level changes that will enable AKST linkages with developing goals.

We need to help countries to build and reform the AKST skill base, and we need to build and rebuild national and regional foodstocks.

Lastly, Mr. Chairman, meeting the goal of affordable, nutritious food for all, to make the small-scale farmer profitable in an environmentally sustainable manner is achievable.

The future is not preordained, but it is in our collective hands. While we can build upon our successes, we must also recognize an extrapolation of business as usual will not suffice. Instead, we need to be bold enough to rethink agriculture.

Most importantly, if we are to help to improve the welfare of poor and disadvantaged people, we need to acknowledge that the time to act is now.

Thank you.

[The prepared statement of Dr. Watson can be found on page 63 of the appendix.]

The CHAIRMAN. Next, our former colleague, as I have noted, Eva Clayton, who while in the House was obviously very active in agriculture affairs, including helping draw attention to the need to remedy the past discrimination against African-American farmers, where she really was the leader in that effort that remains uncompleted. In 2006, after leaving the House, she completed a 3-year assignment with the Food and Agriculture Organization of the UN. She was assistant director general and special adviser to the director general, and we have since worked with her in her concern for the IFAD.

Ms. Clayton?

STATEMENT OF THE HONORABLE EVA M. CLAYTON, FORMER SPECIAL ADVISER TO THE DIRECTOR-GENERAL, FOOD AND AGRICULTURE ORGANIZATION AT THE UNITED NATIONS

Ms. CLAYTON. Thank you, Mr. Chairman, and members of the Financial Services Committee, for having this hearing. I certainly appreciate the opportunity to appear before you, and I will summarize my remarks.

We in the United States are not immune to these circumstances either. We are understanding that we are beginning to feel the drops of what has been called a tsunami in terms of a global food crisis. We are beginning to understand at the marketplace that we are paying more for food. But globally, the disaster is very dire.

The global food crisis is having a much more dramatic effect around the world, especially in developing countries. It was recently reported that food riots have erupted in more than 20 coun-

tries. Tragically, death has often resulted from these disturbances. In the country of Haiti, which was mentioned earlier, food shortage has become the order of the day.

Likewise, the global food crisis continues on the worldwide journey of misery and despair without regard to region or race. The global disaster is in addition to the existing global tragedy. Let me repeat that. This global crisis is in addition to the existing global tragedy of 800 million people going to bed hungry every night. Both the FAO and the WFP have reported 14 to 16 million people die—children die every day. So you can understand that the global devastation is indeed in addition to a current one that is going on.

What are the contributing factors to the current global food crisis? On many of them, I agree with Dr. Watson. The Rome-based agencies, both the FAO and WFP as well as IFAD, have agreed in a recent document that adverse weather conditions such as the Australian drought, which has caused a complete eradication of their rice crop, and many of the other producing cereal companies have experienced likewise.

The rise in transportation cost, making it far more expensive to produce and distribute food.

The diversion of crops for bio-fuel, resulting in fewer crops for food and feed.

The rising demand because of the increase in population but also in the increase in the emerging economies both in China and India require more grain and food.

The lack of access of important input such as seed, credit, fertilizer, technology and markets among smallholder farmers in low-income deficit countries, particularly sub-Saharan Africa, resulting in these low grain production.

And finally, but not exclusively, the commodity speculation and over-reactive trade policies put in place by some countries in an attempt to respond to domestic food shortages.

How we address these issues going forward will speak volumes about us as a nation and also our role in this global community. We need a three-pronged approach, that is, emergency, immediate, and long term. For the emergency response, the case has already been made by WFP and other UN agencies indeed that this situation is urgent and unrelenting. The recent Burmese cyclone, which killed tens of thousands of people, has decimated almost 65 percent of their rice crop. And by the way, their rice crop was a significant amount of the rice crop for the entire Asian market. So in addition to their situation, they have taken this away as well.

The immediate and long-term approach should include those activities that support the building of national food economies through fair and open trade. And we need to examine our policy here in the United States to the extent that we are not contributing to the unfairness of this trade.

The 2008 Rural Development Report on Agriculture and Development concluded that the ability to serve as the engine of economic growth and poverty reduction, especially in sub-Saharan Africa, requires a sharp productivity increase in the smallholder farming combined with more effective support to the millions coping as subsistence farmers. This can only be effectuated if significant re-

sources are made in agriculture and development to assist these farmers to be more productive.

The smallhold farmer must play a key role in the global response to the current food security crisis. IFAD has had an important role to play in helping to channel the increased investment to these family farmers to enable them to contribute to increasing the global food supply. Consultations are underway this year that will determine the level of the 8th replenishment of IFAD's resources, covering the period of 2010 to 2012.

IFAD is projecting a growth rate of greater than 10 percent for this period, which would require an overall replenishment budget globally of $1.2 billion. To maintain the U.S. commitment at their current level in the seventh replenishment in the eighth replenishment, if they maintain their level, that would mean an increase from the current $54 million to $90 million.

An additional opportunity to respond long term is also to make sure that we have the opportunity to transfer not only technology but new ways of assisting each other. And one of those ways certainly would be to consider the collaboration of the United States universities, the land grant universities, who have a special interest in helping small farmers, to work with national agriculture universities in increasing their ability to understand nutritional agriculture development, and to identify and design and implement the best practices to increase food security, good nutrition, and agriculture development. Such an initiative could be supported for a 5-year period for $10 million.

I need to make, Mr. Chairman, also a request of you. In my printed testimony, I think three zeroes were left off, so I want to make sure in the record that it has the correct—it should have been 10 million.

The CHAIRMAN. Without objection, the—

Ms. CLAYTON. I appreciate that. This would afford an opportunity of sharing low technology between countries and encouraging cooperation and collaboration between a number of the international market level organizations, which would enhance the opportunity of farmers being more productive with very limited resources.

The situation is dire. Our response must be decisive and forward thinking. The failure to strengthen our global food system would ultimately lead to political and economic upheaval all over the world. If we fail to act now, future generations will be condemned to a life of misery and headaches. Today must be the day that marks the beginning of reclamation of the world food supply, and our future, I think, Mr. Chairman, and members of the committee, hangs in that future.

Thank you.

[The prepared statement of Ms. Clayton can be found on page 34 of the appendix.]

The CHAIRMAN. Thank you. Now I am going to recognize another member of the committee. The Judiciary Committee, as our colleague from North Carolina noted, is marking up some bills. And we have one other member on our side who is a member of both Judiciary and this committee, and she has come in, so I am going to recognize Ms. Waters.

Ms. WATERS. Thank you very much, Mr. Chairman. I appreciate your allowing me to have a few words before I go back to Judiciary. I really came here to see Eva Clayton. I heard that she was going to be here today testifying, and of course there is no better advocate on the issue of hunger than Eva Clayton. I am very pleased and proud that I had the opportunity, as you did and some of the others on the committee, such as Mel Watt, had an opportunity to serve with her.

We were all a little bit disappointed when she decided to leave us, but we were very, very pleased and honored when we recognized what she was doing and where she was going. The assignment that she had with the UN Food Agriculture Organization was an extremely important assignment, and we all had the opportunity to visit her and to see where she worked and what she was doing. We could not have a better person with us on this issue than Congresswoman Eva Clayton.

And, of course, I believe that if many in the world had been paying attention to the work that they were doing and the advice that they were given about hunger and food, perhaps we would not find ourselves in a situation today where there are food riots that are going on in some places in the country, right here in our own hemisphere, right next door to us where Haiti is in desperate straits.

So I'm hopeful now that the world is beginning to pay attention that they will be able to apply some of the advice that you have been involved with for so long. I know that one thing that I am hopeful that those of you who have been involved with the issue of hunger are able to do is to help talk about distribution in ways that make good sense. Because many of the efforts to assist those who need help will not be done—those efforts will not be done very well, because they don't understand the complications of distribution. So I thank you for being here today, and it's always good to have you back, Eva. Thank you.

The CHAIRMAN. Our next witness is Dr. Raj Patel, who is a political economist and visiting scholar at the Center for African Studies at the University of California at Berkeley. And he is also a Fellow at the Institution for Food and Development Policy, which is located in Oakland. Dr. Patel.

STATEMENT OF RAJ PATEL, POLITICAL ECONOMIST AND VISITING SCHOLAR, CENTER FOR AFRICAN STUDIES, UNIVERSITY OF CALIFORNIA AT BERKELEY

Mr. PATEL. Thank you very much.

The CHAIRMAN. I should note that he has a new book out called, "Stuffed and Starved: Markets, Power and the Hidden Battle for the World Food System," which is a study of how the corporate model and international trade markets affect both farmers and consumers.

Please, go ahead.

Mr. PATEL. Thank you. I'd like to thank the chairman and the committee for their concern and their willingness to address this urgent issue. I will summarize my written testimony.

The World Food Program has called the current crisis a silent tsunami. Yet country after country has experienced not silence, but riot. We have seen them in Indonesia and Mexico and Haiti and

Morocco. These protests, like food riots throughout history, are both demands for food but also demands for democratic accountability. The citizens on the streets are all too aware that the current crisis is one of high food prices and a longer term failure of governments to respond to the food needs of their people. Both of these are concerns for today's committee hearing.

Now today's food prices and the reason behind the food price rises have been well-summarized by Dr. Watson and Ms. Clayton, and I endorse their analysis and their policy suggestions. But there are some deeper and longer-term reasons why governments have been so very vulnerable to the current price spikes. As the United Nations special reporter on the Right to Food has recently stated, this crisis is the result of 20 years of mistakes, mistakes for which the World Bank and the International Monetary Fund are particularly culpable in, and over which this committee has jurisdiction.

In the 1970's, the Bank invested in a range of agricultural institutions, supporting things like grain marketing boards, extension, food storage and distribution services, particularly in Africa, in an effort to support local agricultural development. In the 1980's, however, the Bank shifted strategies and the mistakes began in earnest. Last year the Bank's own independent evaluation group summed up its agricultural policy in Africa since 1980 as a story of systematic neglect and underinvestment.

The Bank had a further impact on agriculture through its agricultural trade conditionalities, which demanded cuts in government support for agriculture and which continues today with the privatization of crop boards in Tanzania and Mali, and which has the effect of shoving developing countries straight onto the playing field of international competition. But that playing field is far from level. Under World Trade Organization rules, supported by the World Bank and the International Monetary Fund, the European Union and the United States are allowed to support their agriculture to the tune of billions of dollars a year, a policy that will be reinforced by the passage of the 2008 Farm Bill. But developing countries under Bank rules continue to be denied similar protections and supports.

One of the most striking impacts of this distorted playing field has been the phenomenon of import surges, which happens when imports displace domestic production. In Ghana in 1998, local rice production accounted for over 80 percent of domestic consumption. By 2003, after liberalization, that figure was less than 20 percent. In 1992, 95 percent of Ghanaian poultry was local, and by 2003, that was only 11 percent. Yet the Bank remains unaccountable in the imposition of its mistakes.

Through lending conditionality the Bank and Fund are able to exercise direct and anti-democratic control over government policy. Agricultural trade conditionality in Haiti, for example, forced Haitian farmers to compete with U.S. rice farmers, who receive nearly a billion dollars a year in subsidy. Haiti produced the majority of its rice domestically in the 1980's, and today, most of the bags of rice in Haiti are imprinted with the U.S. flag and the words "gift of the people of the United States."

The situation facing the world is grave, but there are solutions. In the short term, there is a role for regionally purchased food aid,

and for income transfers to increase the purchasing power of the poorest people. Further, a freeze on continuing investment in the bio-fuels industry has also been internationally recommended. In the longer term, though, governments need, in the words of the IAASTD that Dr. Watson has chaired, to "preserve national policy flexibility."

Investment in agriculture offers a fast track to lifting the poorest out of poverty. Developing country governments should have the liberty to do precisely that, and to develop and maintain domestic agricultural polices that ensure against price fluctuations and promote agricultural development.

For this liberty to be made real, these countries need to be unchained from the shackles of World Bank conditionality. One way to do this first is to drop Bank loan conditionalities except for those around transparency and democratic decisionmaking.

Second, World Bank loans need to be smaller. If they were smaller, it would make more credible the threat to withhold them if transparency and democracy conditions were violated. To this end, debt forgiveness, a priority for this committee, is also a necessity.

In conclusion, with smaller loans and a targeted set of conditions, the Bank would be able to draw on lessons that it learned in the 1970's. Just as the Bank is responsible for the destruction of domestic agricultural supports that have made much of the world vulnerable to international price spikes, it was in the 1970's responsible for building such buffers and assisting democracies rather than dictating to them. So while the World Bank's recent past is ignominious and callous, the Bank can still call on distant glories to light the path for its future.

I thank you for inviting me here today to offer testimony.

[The prepared statement of Dr. Patel can be found on page 42 of the appendix.]

The CHAIRMAN. Our next witness is Arvind Subramanian, who is the senior fellow of the Peterson Institution for International Economics and the Center for Global Development. He is also a senior research professor at Johns Hopkins University, and was an assistant director of the research department at the International Monetary Fund as well as having worked at the GATT, the predecessor of the WTO during the Uruguay round. Mr. Subramanian.

STATEMENT OF ARVIND SUBRAMANIAN, SENIOR FELLOW, PETERSON INSTITUTE FOR INTERNATIONAL ECONOMICS; SENIOR FELLOW, CENTER FOR GLOBAL DEVELOPMENT; AND SENIOR RESEARCH PROFESSOR, JOHNS HOPKINS UNIVERSITY

Mr. SUBRAMANIAN. Thank you, Chairman Frank, and distinguished committee members for inviting me today. There is a saying that there are only seven meals between civilization and anarchy. The riots and social unrest around the world bear witness to this saying. The world, and especially the United States, needs to respond.

I want to outline the essentials of a comprehensive international policy response to this crisis, highlighting how U.S. leadership can make a difference. I will present five concrete suggestions by way

of response, two for the short run, two for the medium run, and one for the long run.

Short run: The immediate humanitarian imperative is to get food quickly and cheaply to the hardest hit parts of the world. Recent Administration and congressional actions on food aid are excellent initiatives, but they could be complemented in two ways.

First: The rice market. My colleague, Peter Timmer, has made the following suggestion. Japan today has 1.5 million stocks of rice. These stocks are not sold domestically. Instead, they are allowed to decay and then used as livestock feed. Last year about 400,000 tons of rice was disposed of in this manner. WTO obligations prevent Japan from re-exporting this rice, but the United States can relive Japan of these obligations which would allow Japan to export this rice commercially or as food aid, and that would make a big difference to the current crisis in the rice market.

Second: On food aid, the United States can easily increase its assistance by up to 50 percent without providing any additional money. How can this be achieved? Simply to eliminate the requirement that food be sourced from the United States. On my rough calculations, that would mean feeding an extra one million children annually without any extra financial contributions.

As the table in my written testimony shows, the United States is almost unique in the practice and magnitude of tying food aid. Moreover, this is an excellent time to eliminate the tying requirement because we are in a supplier's market, so that farming interests need not be sacrificed if we eliminate the tying requirement.

Medium run: To boost agricultural supply in the medium run, we need to fix the incentives facing agriculture globally. My two suggestions here are the following: First, to eliminate, gradually if necessary, the current set of policies surrounding ethanol in the United States; and second, to negotiate to eliminate all global barriers, import and export, to trade.

Bio-fuels: We can be confident that eliminating or reducing the distortions generated by the ethanol program will help dampen food prices. By how much is unclear, but help it will. This is one of the few policies we can control. We cannot control climate change very much in the short run. We cannot control rising prosperity and India and China. But this we can control.

More important, the problem with the bio-fuels policy is not objectives, which are laudable, but means. Current policies favor one specific alternative to fossil fuels; namely, ethanol, which is not even the best environmental option. Why not level the playing field so that all new avenues, all potentially new ideas have a good shot at being explored and discovered?

In short, Mr. Chairman, policies here should aim not to pick winners, which we are not very good at doing, but to find winners. On agricultural trade, we need a new global compact. Unfortunately, the ongoing Doha round of trade negotiations won't on its own address these problems. We need to enlarge the trade agenda so that bio-fuels policy, including in the European Union, and all trade barriers, import as well as export, are put on the trade agenda. As you know, currently the Doha round is dealing with import barriers but not really with export barriers, which have been a big part of the problem in the rice market in the last few months.

The United States has a key role to play in bringing all countries, industrial and developing countries together, so that comprehensive policies that are good for trade, good for food, and good for the environment can be negotiated.

Long run: If there is one positive fallout from this current crisis, it is to bring agriculture, which has long suffered from inattention, back into focus. For example, World Bank lending to agriculture went down from 30 percent of its portfolio in 1980 to 12 percent in 2007. That is a huge decline.

The United States and the international community need to go on a war footing to engineer a new Green Revolution, particularly in and for Africa. Investment in agricultural R&D offers probably the biggest bang for the outsider's buck. For example, the World Development Report on Agriculture by the World Bank says returns on investment in R&D and agriculture have been about 43 percent per year. And you will recall that the original Green Revolution was made possible by assistance from the Food and Rockefeller Foundations.

We need international public assistance here to complement private initiatives. Private sector initiatives alone will not be enough to generate research for African agriculture because of the limited purchasing power in Africa.

In conclusion, Mr. Chairman, the United States can make an invaluable contribution to the current food crisis. In the short run, the United States should allow Japan to re-export its rice and eliminate the tying of food aid. In the medium run, it should get all countries together in the WTO to eliminate all the distortions in agriculture and agricultural trade, including our own bio-fuels program. And in the long run, we should revitalize the financial and organizational effort to boost agricultural research and productivity in developing countries, especially in Africa.

Thank you.

[The prepared statement of Mr. Subramanian can be found on page 54 of the appendix.]

The CHAIRMAN. Our next witness is Andrew Natsios, whom I referred to in part before. He was the administrator of the U.S. Agency for International Development. He is a professor in the practice of diplomacy at the Walsh School at Georgetown, and he is, as many of us know, in one of the most morally compelling and difficult jobs now as the President's Special Envoy for the Sudan. Mr. Natsios.

STATEMENT OF ANDREW S. NATSIOS, FORMER ADMINISTRATOR, U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT, AND PROFESSOR IN THE PRACTICE OF DIPLOMACY, WALSH SCHOOL OF FOREIGN SERVICE, GEORGETOWN UNIVERSITY

Mr. NATSIOS. I resigned from that, Congressman, at the end of December.

The CHAIRMAN. Okay. Thank you.

Mr. NATSIOS. Rich Williamson, Ambassador Williamson, the new envoy, is a good friend of mine.

The CHAIRMAN. Thank you.

Mr. NATSIOS. I talk with him every week, and—anyway. I would like to thank the committee for the opportunity to testify today on

an important issue, the rapidly rising price of food. While this crisis presents grave risks to human life and the potential for terrible suffering, it can also be the catalyst for a new worldwide campaign to spread the Green Revolution of the 1960's to areas of the world which are yet untouched by it, particularly in sub-Sahara Africa.

We should set as an international objective the end of the specter of famine and of severe food insecurity in our time. We can do this through a two-pronged approach: A much greater investment in agricultural development and reforms to our food aid programs. This is a very complex subject, so I want to limit myself basically to five points.

The first is just some comments on where the locus of the problem is; the principal areas of greatest food insecurity in the last decade, and particularly right now, is South and Central Asia, North Korea, and sub-Sahara Africa. In fact, an incipient famine is developing in North Korea as we speak right now. The risk of the current price rise evolving into a famine in some areas is very high, particularly in North Korea.

The North Korean famine—and I wrote a book about this about 8 years ago—of the mid-1990's, which killed at least 2½ million people, was principally an urban famine, which is very unusual, and the incipient famine now developing is also likely to be urban as well.

It is also the case that generally speaking, urban famines are politically much more destabilizing than those in rural areas where people die in silence. In urban areas, they demonstrate and they riot, which often leads to political explosions. During the Sahelian famine of the early 1970's, 11 of 13 governments in the affected African countries fell to coups d'etats driven by inadequate governmental response to the famine.

While we should respond to the current food crisis for purely humanitarian and ethical reasons in my view, we ignore the strategic and political consequences of this crisis at our peril. People in most poor countries can adjust or cope with slowly rising food prices. What they cannot do easily is to deal with rapidly rising prices, which is what we are witnessing now.

My good friend, Amartya Sen—who won the Nobel Prize for Economics, I think a decade ago—in his research on the whole question of famine economics—in fact, I use his text as the principal text for my course on Great Famines and Humanitarian Assistance at Georgetown—usually rapidly rising prices in a very poor, traditionally food-insecure country with large, destitute populations frequently leads to starvation and death. I can go through all the famines I have worked in the last 19 years; almost all of them follow this pattern.

Second point: Investing in agricultural development. There are two things, Mr. Chairman, that I failed at while I was at USAID—it is not in my testimony—one was increasing the number of people working at AID and the other was increasing the budget for agriculture. We are grossly understaffed in the agency. That's being remedied now. We put money every year in the budget for agriculture and it was diverted to other purposes. I will describe that in a minute.

The cause of food insecurity and acute malnutrition in sub-Sahara Africa, apart from civil war, is threefold: Regressive trade and agriculture policies which discourage food production and trade between countries; declining donor investment in agricultural development; and poor and nonexistent rural infrastructure, particularly roads. By the way, if we increase agricultural resources for development in Africa, and we do not do something about rural roads, this is not going to work. You can't move seed around and fertilizer and other inputs and surpluses around if there are no roads. In large parts of rural Africa, there aren't any roads, and that's a big problem.

The real answer to food insecurity, particularly in Africa, is economic growth, particularly through agricultural development. More donor funding for agricultural development and rural roads in Africa should be the first and principal response. The President's Millennium Challenge Corporation is the only U.S. Government foreign aid program which is now spending substantial money to build roads and invest in agriculture in Africa. This is because the MCC is not earmarked. However, well-governed countries are the only ones that benefit from the MCC, so there is no funding for fragile and failed states.

The focus of a new U.S. agricultural initiative should be to connect farmers to markets, to use science to improve agricultural productivity, to lower northern and southern trade barriers to food, and to support and encourage both large-scale commercial farming and small-scale subsistence farming. There's been a way between policy advocates in this city on that issue for too long. We need to end the war. This country would never have been food secure if we stopped commercial farming and if we didn't help small farmers as well. We need to do both and stop this fight in the city that goes on between different NGOs and advocacy groups. It is not helpful.

I want to commend in particular the excellent work of the Gates Foundation in agricultural development as well as Bob Zoellick's recent announcement of the World Bank's new agricultural initiative to address food insecurity.

Let me mention how serious this problem is on the lack of investment for the U.S. Government on agriculture. In Ethiopia, one of my favorite countries in the world, and also one of the most food-insecure countries, the USAID budget in Fiscal Year 2007 totaled $462 million. That is a lot of money: 50 percent of it is for HIV/AIDS; 38 percent of it is for food aid; 7 percent is for maternal health and child health; 1.5 percent is for education; 1.5 percent is for economic growth; and 1.5 percent is for agricultural development.

The Ethiopians keep saying, why are you sending us all this money for things that are not the first priority? The HIV/AIDS infection rate in Ethiopia is not the highest in Africa. It is relatively low, in the single digits. There is so much AIDS money right now that is being pushed all over Africa, while there is no money for agriculture.

I have to say, I was in the AID mission in Ethiopia, and I had an officer get up and ask when Washington was going to send more money here for governance and for agricultural development? And I said are you the economist, the agricultural economist on the

staff? She said, "no." I said, "Are you the governance officer?" "No, no, no. I'm the health officer." I said, "Why is the health officer asking for things that she has nothing to do with?" She said, "Because the country is going to starve to death if you don't send us more money in these other areas."

And that is the problem. In the areas where we need money, there is no earmark. And so whenever earmarks increase in the AID budget, the hydraulics of the system are—and there's no increase in the actual level of spending—all the money is sucked out of the non-earmarked accounts. This is a little secret of the budget process. All of the budgets in AID that have no protection from earmarks get reduced whenever we increase very popular programs. I support education. I support HIV/AIDS spending. I support malaria initiative. All of these initiatives are good. But when you have an earmark, and agriculture is not earmarked, all those programs get cut, which is what has been happening for 20 years—20 years, through both Democratic and Republican administrations. And unless this structural problem in the AID budget is fixed, this is going to continue.

Food aid: We also need food aid reform which will phase out the monetization of food aid as an NGO mechanism to fund their programs. And I come from the NGO community. This is not a good practice, because monetization frequently has a depressive effect on agricultural markets, particularly in Africa. We should move toward a mixed system of locally and U.S.-purchased food aid. I suggested to the President that at least 25 percent of the food aid budget for AID should be locally purchased in the developing countries. I would actually like it to be higher, but we can't even get 1 percent. We ought to do at least 25 percent of Title II.

Some people say this is too dangerous, too risky. We should have a pilot program. We do not need, Mr. Chairman, a pilot program. The World Food Program has been doing this for 10 years, local purchase of food aid. We don't need any pilots. Sixty million dollars is in the current farm bill over 5 years. That is $12 million a year out of a $1.2 billion budget. Why are we only spending $12 million out of $1.2 billion for the Title II program, which is our major food account, for local purchase at a time of international crisis in food?

Under the current system, about 60 percent of the cost of food aid is ocean freight, land transportation, and distribution costs. Only 40 percent actually goes to purchase food. We can save a lot on these handling charges by moving to local procurement.

The Food for Peace budget is only one-third of 1 percent of our total food exports. And the farm community in this country is not the problem. They are not the ones who are insisting that we leave the system in its place, because they know this is not going to affect prices, it's not going to affect exports or anything else. It's so small. The President's initiative will not have any appreciable effect on commercial farming in the United States.

Without President Bush's reform, USAID will not be able to respond to the price increases that we are facing right now. We conservatively estimate in AID, and we did this estimate when I was there before the rise in food prices—this is a conservative estimate—that we could save 50,000 children's lives a year just by making the reform of 25 percent of Title II being locally purchased.

It is not only a matter of money saved. It takes 4 months to ship food, and we have a crisis. We can't wait 4 months.

But let me mention finally, and I'll leave the rest to the testimony for the record, and that is this: There is a provision in the farm bill putting down a mandatory hard earmark for non-emergency food aid, which means all the emergency accounts are going to have to be cut. That is a disaster right now.

Two, that money is going to be used for more monetization. The last thing on earth we need to do right now is more monetization to damage agricultural markets in Africa. This is a terrible provision in the farm bill and it was in there before, and it's in there now. It should be taken out.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Natsios can be found on page 38 of the appendix.]

The CHAIRMAN. Well, let me just clarify to Mr. Natsios. I am strongly inclined to agree with the substantive point; but earmark, we need to be precise about language.

I infer you don't mean earmark in the sense that it is for this bridge and this county, but earmark in terms of the program category?

Mr. NATSIOS. Yes.

The CHAIRMAN. Okay. That doesn't make it right, but I just want to be clear that these are not earmarked for this particular sector. It is a separate debate from that.

Mr. NATSIOS. Yes.

The CHAIRMAN. But it does restrict program flexibility?

Mr. NATSIOS. Yes.

The CHAIRMAN. Thank you.

Let me ask you just a couple of questions here, Mr. Subramanian. Give me this Japanese re-export issue again. Summarize that briefly.

Mr. SUBRAMANIAN. Thank you, Mr. Chairman, yes.

Under the WTO, under the Uruguay round, Japan was required to import rice because it had a protected rice market.

The CHAIRMAN. Okay, so it imports rice and destroys it or makes it into feed, and they are not allowed to re-export it?

Mr. SUBRAMANIAN. Exactly.

The CHAIRMAN. And we have a role in this because we are a big exporter?

Mr. SUBRAMANIAN. That rice that they import, 900,000 tons, is from the United States.

The CHAIRMAN. Okay, so the issue is, if the United States were in effect to acquiesce in that, would that take care of it? There wouldn't be other countries that would have these standards?

Mr. SUBRAMANIAN. There are two other countries, but that is, I think, more of a technical issue. If the United States would do it, I think these other countries would be more likely to.

The CHAIRMAN. All right. Now, would you know whether the United States could do that? Would that take statutory authority, or could the U.S.T.R., on behalf of the Federal Government, be able to do it?

Mr. SUBRAMANIAN. I'm not entirely sure.

The CHAIRMAN. We are going to check on that, but I am inclined to be supportive of that, and I have talked to our staff members. We will. I just want to make sure. So they have imported, and they should be allowed to export what they have imported, Mr. Natsios?

Mr. NATSIOS. First, you do not need statutory authority; U.S.T.R. already has the authority to do this. Second, in all famines, there is hoarding. It can be small farmers who do it or it can be big merchants. It can be the government that hoards.

Hoarding is going on now in rice more than anything else. The way to break hoarding is not through more government regulation—that is the worst thing to do—but to move rice onto the market and once the price starts to drop, the people hoarding the food will dump their rice.

The CHAIRMAN. All right, but this is a de-regulatory measure. Let me ask two more questions. One, in the bill that passed the House uncontested, in fact, it was a bipartisan agreement, to go back again to the point that was made about conditionality on the part of the World Bank and to some extent the IMF, or to a considerable extent earlier, we said that debt relief should come from us and from the multi-lateral organizations with no conditionality except the procedural conditionality, openness, democracy, add to corruption. And I am pleased to be able to report that was included in a discussion by both parties here. It was in our manager's amendment. It went to the Floor. It was unchallenged.

In fact, it was inadvertently wiped out by somebody else, and there was an agreement, and we had to put it back in. So, we are on track to do that. But let me say that this has been a subject we have felt strongly about; and it does seem to me that there has been some inconsistency on the part of the U.S. Government, on a bipartisan basis, because I do think agricultural policy has often been one in which both parties have vied with each other to be wrong more enthusiastically for political reasons.

And although I sometimes think, when I look at some of my more conservative colleagues, that in all of the great free-market texts, Friedrich Hayek and Ludwig von Mises and Milton Friedman, there was a footnote that I cannot find that says, "except agriculture." Because many of the most ardent proponents of those doctrines seem to think agriculture is exempted. It may be that the footnote is in high German and that is why it is so hard to translate, but there does seem to me to be an inconsistency between the policies we have followed domestically, which include a great deal of government intervention in agriculture, and the policies we have supported in the international financial institutions mandating very rigid privatization in opposition to government efforts.

For example, with regard to fertilizer, I am wondering, Dr. Patel, is that an accurate perception?

Mr. PATEL. Thank you, Mr. Chairman.

Yes, it is. There is a vast gulf between the kinds of policies that are supported domestically and those that are foisted on developing countries.

The CHAIRMAN. Pull the microphone closer, Dr. Patel, please?

Mr. PATEL. Is that working?

The CHAIRMAN. Just pull it closer.

Mr. PATEL. So there is a vast gulf between the policies supported within the United States and those foisted on developing countries. One of the recent success stories has been Malawi, which was forced under old circumstances to auction off its grain store in 2002 by the IMF when it was on the brink of famine, and since then has learned the lesson that IMF and bank conditionality is not necessarily the best way to go. And so recently they have started a program of subsidizing fertilizers for farmers in Malawi and that has had tremendously good results in terms of increasing productivity.

Now, I mean, sadly the use of inorganic fertilizer, particularly is fossil-fuel intensive, is not necessarily a sustainable way forward. And I would defer to Dr. Watson on the appropriate technologies that would be required there. But, certainly, the lesson to learn from Malawi is that it is important to break with a condition.

The CHAIRMAN. I appreciate that. There was an article from the New York Times that I am going to ask unanimous consent to put in the record, which in fact says, "Improving food production by defying the experts," and it was about Malawi.

I also would ask unanimous consent to put into the record the Wall Street Journal article from last week co-authored by Mr. Natsios and Dr. Norman Borlaug, the Nobel winner, entitled: "Africa does not have to starve." Without objection, both of those will be a part of the record. The New York Times article has just been efficiently edited from December 2, 2007, by Celia Lugger.

Let me ask one last question; I know we have a little more time.

Have we seen an improvement, or has there been a decrease in the conditionality we have been told by the World Bank and the IMF that they regret for instance the hyper prescription that accompanied the Asian economic crisis, not just the food crisis in the 1990's?

Any comments on what the current state is? Has there been more recognition or more relaxation by the IFI? Anyone?

You know, the recent examples, I am told, there are still excessive conditionality forcing a kind of privatization to an ideological model without looking at the reality. Dr. Patel?

Mr. PATEL. Yes, the conditionality still persists and the micromanagement of domestic economies, particularly in agriculture, still persists. There were four grain marketing boards that are about to be privatized in Tanzania. In Mali, the irrigation of the system is about to be modernized there, and these are just sort of small examples of many.

The CHAIRMAN. I appreciate it. On our congressional delegation we did encounter—Ms. Moore is doing this—some concerns about forced privatization of water. So we will follow-up with that.

Let me ask one last question, and I show a reference in one of the reports, and I know this is somewhat controversial. I have been very supportive of a lot of my liberal friends in many of these, but I think I may differ with them here. On the TMOs, on the genetically modified foods, are restrictions on those contributing to our inability to feed people adequately?

Let's start with Mr. Natsios.

Mr. NATSIOS. During the severe drought that affected, I think, seven or eight African countries, some of the lobbies told heads of

state that it would poison their population if they allowed USAID food aid in, and 60 percent of all food aid comes from AID and the Agriculture Department. There is GMO in it; I mean, we have been eating it for 15 years.

You eat corn flakes. You eat GMO grain. Eighty percent of our soybean crop is GMO now, and so our food aid has it in it and it was prohibited in a number of countries. Some of those countries, Zambia, for example, President Mwanawasa, I went to see him to try to get him to reverse this and he would not reverse it.

Some of this is the trade war with Europe. It's not just the environmental groups, because the Europeans actually privately told Southern African countries if you allow USAID food aid in, we will not trade with you, because the DNA will mingle with other crops. I mean, these arguments are ridiculous and completely unscientific; and, there wasn't enough scientific knowledge in the ministries to contradict these rumors that were being fueled.

One minister in Mozambique said that one western advocacy group told him that we put a pig gene into our corn GMO corn seed. And I said, well, there are no animal genes in any of our grain crops. It is possible to do it, but we haven't done it, because 25 percent of the population of Mozambique is Muslim, so a lot of this is rumor, and it is not helpful.

The CHAIRMAN. Any other comments? Yes, Dr. Watson?

Mr. WATSON. We do not need GM crops at the moment to help the African farmer. If they had appropriate use of inputs and the best possible seeds, they could triple or quadruple their production overnight. We could help them to reduce post-harvest loss. So, the food problem in Africa today is not because they do not have access to GM crops.

Now, it is conceivable in the future that when we look at the risks and benefits of GM crops, they may have a role to address drought tolerance, temperature tolerance, pest tolerance, and salinity tolerance when we look at climate change. But that is not the problem today.

The CHAIRMAN. What about the point that Mr. Natsios made about food aid being rejected because of GMO fears?

Mr. WATSON. Yes, it was, and that obviously had to be the decision of those individual governments. As has already been said, we eat GM crops here today. I think that was a problem when the GM crops were rejected as food aid, but the bigger question is—

The CHAIRMAN. One question at a time. I know we have bigger questions. We have medium-size questions. We have small questions. I would like to get my answers one at a time. That is the way my mind works. So you would agree that contributed, or the American food aid was rejected because of the GMO fears?

Mr. WATSON. Correct.

The CHAIRMAN. Yes, Mr. Subramanian?

Mr. SUBRAMANIAN. On GMOs, Mr. Chairman, while I agree that this might not be the current problem, there is a huge potential for GMOs in Africa, which Paul Kalia, the author of the Bottom Berlin, has said it is going to be.

The CHAIRMAN. Well, I appreciate it, as we are being told, don't just look at the immediate term, look at the long term. And we always did have it probably on a short-term effect.

Mr. SUBRAMANIAN. And if you just look at the adoption of GMOs by Latin America, Asia, and Africa, Africa lags far behind. So there is huge scope here and clarifying the trade rules, I think, will have an important long-run impact.

The CHAIRMAN. Mr. Green?

Mr. GREEN. Thank you, Mr. Chairman.

I think it merits saying thank you again for hosting the hearing. This is exceedingly important.

Let's talk for just a moment about Haiti and go back to this terminology that I introduced earlier, "the hunger season." If we are aware, and I assume that we are painfully aware that there is a hunger season, why do we not have the sense of a squirrel? Why is it that we have not appropriately dealt with a hunger season in a country like Haiti?

Mr. NATSIOS. We do deal with it, Congressman.

The hunger season is simply the 3 or 4 months at the end of the agricultural cycle, before the next harvest comes in. There is a hunger season in Chad, in Mali, in Mauritania, and in Sudan. It's all over the world in countries where they don't produce enough food, because their plots are too small, or there is a drought or there is an insect infestation.

For a variety of reasons, or they don't have enough land, and they don't produce enough food told to feed them the whole year, so they have coping mechanisms. In food aid programs in Haiti, for example, the USAID food is used to supplement in what is called traditionally the hunger season. Ultimately, the answer is not more food aid during the hunger season, it is to increase the productivity of small farmers and large farmers so that they can grow enough food so they won't have a hunger season.

We don't have a hunger season in the United States. No western country does.

Mr. GREEN. Would anyone else care to respond?

Yes, Representative Clayton.

Mr. CLAYTON. I agree that there is indeed a hunger season. There are many developing countries where they don't have the post-production ability to store and reap the harvest of their production season. But, also, there is an opportunity, I think, during this crisis that we can begin to encourage countries to put safety nets in places. Safety nets within their communities and here in the United States, we have become familiar with the whole idea of food banks store and we need to find ways where their version of some way of reclaiming their overabundance production when there is a production and storing that.

We would also need to find ways, and I agree that the purchase of our aid program needs to be where we give part of that money so we can buy from the local area that would allow for them to have a response when there is a famine or a hunger season in that area, if they don't have a sufficient supply, they can get from their neighbors.

But I think this gives us an opportunity to start structurally saying, what can we do anticipating those seasons? What could outside areas do? What can multilateral groups do? How can we increase the productivity of farmers and find ways of storing their food so they will have the opportunity to respond to those areas?

Mr. GREEN. Yes, Dr. Watson?

Mr. WATSON. There is another question. We must find a way to stimulate the profitability and productivity of the small-scale farmer in Haiti. Basically, one of the problems was back in 1994 one of the IMF loan packages to Haiti was conditioned upon agricultural market liberalization.

What resulted was that cheap rice from the United States flooded the country and significantly undercut and damaged national rice production. So one of the challenges we have as a medium or long-term goal is how could we have the right trade system? How do we stimulate local productivity that is profitable to the small-scale farmer?

Mr. GREEN. Thank you.

One final question: In Burma, we have a military junta that is not responsive, in my opinion, to the world's hand of friendship in terms of trying to provide aid at a time when it is desperately needed.

How much of this world, 854 million persons being food insecure, is associated with governments; countries wherein they just don't handle the circumstances, as I would see it, appropriately.

Who would care to respond, please?

Thank you.

Mr. NATSIOS. In my experience as USAID administrator, a very substantial portion of our problem is not just a function of inadequate investment. But, there is a huge problem with predatory, corrupt, and tyrannical regimes that do not represent their own people. They never have elections and they don't care what happens to their own population.

Amartya Sen has said—and the evidence is overwhelming—that there has never been a famine in a true democracy anywhere, even in very poor countries. And the reason for that is people go to the polls and vote politicians out of office if there is a famine and if Parliament or the Congress doesn't deal with it.

There is a direct relationship between democracy and famine prevention. Sen has shown that in his research over the years, and I completely agree with him. Most of the worst famines are in the worst dictatorships that are the most abusive. There are countries like Rwanda that is not a democracy, but President Kagami has done a lot to boost agriculture productivity and there is an 8 or 9 percent growth rate. They have very good economic policies; and, it's a good place to invest.

So I am not saying all autocratic forms of government are bad. They are not in terms of caring about their own people. You know, there is a big difference between Burma and countries that are also autocracies that have good policies, care about their people, provide social services, and treat their people decently. But the best way to guarantee food security over the longer term, particularly on the issue of famine, is moving toward representative and accountable government of some kind.

Mr. GREEN. And I would endorse that, but it is also the case that hunger is invariably a political phenomenon. And of the number of 854 million people going hungry, 35.5 million of those are U.S. citizens. Now that is a measure. I mean, obviously, the degree of food insecurity here is not comparable to Rwanda for example, or Haiti,

but it does signify that hunger is to some extent a political choice, a choice by government to support or not to support its poor citizens in accessing food.

Or, while we cannot control the climate, and we cannot guarantee harvest from one year to the next, all of human history has been about managing the transition from 7 lean years to 7 fat years. I mean, we have as progressive civilizations figured out ways to manage that. And, unfortunately, over the past 20 to 30 years, the kinds of trade and economic architecture we have put in place has gotten rid of the government's capacities to be able to make those kinds of regulations; to be able to have grain stores; to be able to set aside grain for lean years; and those politics, unfortunately, have often not been chosen by those governments but have been enforced by organizations like the World Bank.

Mr. GREEN. My time has expired.

Thank you, Mr. Chairman. I yield back.

The CHAIRMAN. I appreciate it. I will only just take one minute to get this straight. It was in 1994 that the IMF told Haiti to liberalize its economy?

Mr. WATSON. Yes.

The CHAIRMAN. That is very odd. I mean, for anybody to have been looking at Haiti in 1994, and decided that the time had come to act as if it were a functional place, is a sign, I think, of ideology run rampant.

Mr. Cleaver?

Mr. CLEAVER. Thank you, Mr. Chairman.

I am concerned and perplexed over the whole issue of bio-fuels. And I am interested in any or all of your responses. There are those who are calling on us to put a freeze on bio-fuels for 5 years. But of course, Congress has already said that we were going to increase the bio-fuels from 9 billion to about 36 billion by 2022, I think, maybe 2020.

And if we place a moratorium on bio-fuels, then obviously we won't be able to continue to manufacture ethanol which has some other challenges. One is that ethanol was not flowing through the pipes like gas. Or the only way you get it to a service station or get it anyplace is to carry it by large truck, which is using a lot of fuel to deliver.

But without going too far, I want to first of all get your response to whether you believe that it is absolutely critical that we put a moratorium on the bio-fuels for 5 years or whatever period of time.

Ms. Clayton?

Ms. CLAYTON. I'm not necessarily asking that there ought to be a moratorium, but I do think we need a reassessment of the utilization of ethanol, and understanding both is the pro's and con's in that. I think, as we are beginning to look at this crisis, we are now seeing the interplay between the value of food and the value of utility, of fuel.

And to the extent that utility prices go up, the market is going to drive that we grow more food for fuel. But in addition to that—the demand where farmers making decisions—it is to what extent, as you indicated, this is a more convenient, or more efficient or more environmental alternative.

And the other issues of bio-fuel that are growing and going to, I think all of those need to be, I think as indicated, as Doc Watson said, the objective for which we made that commitment is a laudable one. We need to find alternatives for the fuel, but we need not go in a situation that gives us greater food insecurity as we seek to find ourselves rid of a dependence on foreign oil.

So I think at least we need to pause, and the government needs to have an assessment as to the impact of bio-fuel, in particular ethanol, both on the food security as on an environmental issue that is efficiency.

Mr. CLEAVER. Dr. Watson, as you are responding, though, I want you to keep in mind, all of you, that currently we are subsidizing ethanol to a tune of about $9 billion a year.

Mr. WATSON. Yes, I would like to endorse exactly what Ms. Clayton just said. I would suggest you ask for the National Academy of Sciences to do a 3-month, in-depth study about the direct and indirect of bio-ethanol on the social and environmental issues.

It is not at all clear that there is a significant reduction in greenhouse gas emissions. There are potentially indirect effects internationally on bio-diversity, water, and soil degradation. There is clearly an impact on food price. And there may even be in some other countries, social dislocation of displacing small-scale farmers for large-scale plantations.

And as you just said, it is normally not economic. The only time that it has been economic is bio-ethanol from sugar in Brazil after 20 years of intense research into 500 cultivars of sugarcane. And effectively, when oil went above $50 a barrel and they could produce sugar at less than $200 per ton.

So I would strongly urge an in-depth analysis to see whether the current U.S. policy should or should not be modified.

Mr. SUBRAMANIAN. Thank you, Congressman. I also completely endorse what my two colleagues have said. But I just add two perspectives on this—first is that if you think about it, the market is providing huge incentives now for bio-fuel production. Why, because oil prices are at $125 a barrel. So the market itself is creating the incentives. Why add to that by giving more taxpayer money. That is point number one.

Point number is, you have to look at this from the point of saying what is better environmental policy? Sure, we have chosen for some not very good reason to favor ethanol. Whereas, there might be much better alternatives out there which can accomplish the objective.

And I will draw your attention to the fact that in the energy bill, the support for solar power and wind power was actually eliminated. So not only have we not favored you know, possibly better environmental alternatives, but actually favoring demonstrably less good alternatives to fossil fuels.

Mr. CLEAVER. But we all know that rather than using grain-based fuel from the grain, that cellulosic ethanol is the dream of the future. But that may be 10 or 15 years away. I mean, I hear people talk about it like next week we are going to have it, but the science is just not there yet.

So either we're—I have an E–85 car, and so I am depressed. And the reason for the depression primarily is just the five of you up

here, and, and, and all that I have been reading over the last couple of months. And so I'm frustrated—the food now travels in the United States—well, around the world, but in the United States for sure—we have a transportation-based economy.

Food travels about 1,500 miles before it gets to our table. So whether we use ethanol or not, whether we reduce or put some kind of moratorium or not—the truth of the matter is if gasoline prices continue to rise, food prices are also going to continue to rise, because we have done nothing to deal with the gasoline, even if we deal with ethanol. So what then?

The CHAIRMAN. We will finish up with these, because we may get to a vote soon. Please, anyone who wants to respond? Mr. Natsios?

Mr. NATSIOS. It is not just that the bio-fuels are pushing prices up for corn. People cope by always shifting to the cheapest grain when they are hungry. And the North Koreans survived—everybody in North Korea wants to eat rice, but if they have a choice between starvation and corn, they eat the corn.

Corn used to be the cheapest crop. USAID would ship corn as the preferred grain because we could ship the greatest volume because the price was so low. But what is happening now is because it has gone up so much, it is putting pressure on the prices for all the other grains, because people are shifting out of corn consumption, maize consumption, to other things.

And it's not just corn that is being affected; the substitutionary effect in the markets is to drive other crops—

The CHAIRMAN. We will take one more response to that. And I am going to get the other two so we can do that before we—yes, Dr. Patel?

Mr. PATEL. The point is well-taken—that the price of oil is increasing the price of food transport. But that's not the only place the oil price matters in agricultural production. Oil, and natural gas in particular, is vitally important for the production of fertilizers. And that's why the USDA is for—well its index—in 2000 was 118, but they expect that to reach 204 by 2006.

So they are seeing that the price of fertilizer, the price of the way we grow food is so heavily linked to oil—that is also going to be a long-term contributory factor. And I take great courage from Dr. Watson's committee and the results that they have come up with, the IAASTD, about the need to shift towards more local and agroecological fertilizer free kinds of inorganic fertilizer free kinds of agriculture. I think that absolutely is the way that we are going by force, one way or another, going to be feeding ourselves.

Mr. CLEAVER. Thank you, Mr. Chairman.

The CHAIRMAN. The gentleman from California; the gentleman from Wisconsin will be able to finish.

Mr. SHERMAN. Mr. Watson, we are told that we are 10 to 15 years away from cellulosic ethanol. Do you generally agree with that, and are we spending enough money on the science to move that forward as quickly as we can?

Mr. WATSON. I am told by people that it is 5 to 15 years. I would argue that we should aggressively increase both public and private sector funding for second and third generation bio-fuels. And I think it's crucial that we do reduce our dependency on foreign oil,

that we can improve oil infrastructure and reduce greenhouse emissions

Mr. SHERMAN. Sir, if I could move on to the next question?

Mr. WATSON. Yes.

Mr. SHERMAN. Is the way to go cellulosic ethanol, or is the way to go methanol?

Mr. WATSON. I think we shouldn't choose a winner; we should keep as many options open as possible.

Mr. SHERMAN. Okay. I think the panel has already briefed the ways in which higher fuel costs have contributed to this crisis. Biofuels, transportation, and fertilizer have all been affected by the price of petroleum.

Have the petroleum-exporting countries massively increased their contributions to food aid, or are they part of the solution or just part of the problem? Is anybody aware of any massive increases in food aid from petroleum-exporting countries or the absence thereof?

Mr. NATSIOS. Food aid is provided basically by the European Union, Canada, and the United States, 95 percent of it, and 60 percent comes from the United States.

Mr. SHERMAN. So the OPEC countries squeeze the U.S. economy so as to make it more difficult for us to provide food aid, dramatically drive up the cost of food, and simultaneously get a bunch of money, none of which they use for food aid.

I think this deserves a little bit more attention than it gets in the press.

Mr. NATSIOS. Congressman, there is a proposal by Bob Zoellick, the president of The World Bank, to ask for I think—I don't remember the percent—I think it's 1 percent of the sovereign wealth funds of these oil producing countries be invested in development. I think it's a very good idea, and Bob made it in a big speech for sort of a vision for the future, for the bank, and he proposed this idea. It's a good idea. We ought to push it.

Mr. SHERMAN. I think pushing that gives them just too easy an out. That's zero contribution, just an investment only from the sovereign wealth funds, so not of all oil revenues. And of course many of these companies, instead of having sovereign wealth funds, give their money to various non-sovereign hedge funds.

So you would be penalizing—if this is even a penalty, if this is even a contribution—you would be penalizing those who choose to manage their own money, as opposed to letting Wall Street manage their money. And I know there are many on Wall Street who will agree with that. I yield back.

The CHAIRMAN. The gentlewoman from Wisconsin.

Ms. MOORE OF WISCONSIN. Thank you Mr. Chairman. Just very briefly, all of you have given the very complex reasons for food insecurity. So in the scheme of things: adverse weather; transportation costs; diversion of bio-fuels; the emerging economies of China and India; the costs of fertilizers—what role would eliminating the subsidies in the EU and the US, averting the conditionality of The World Bank, WTO, and INF, IMF—to what extent would doing those things help immediately, given the complex nature of the problem?

And also Public Law 480 Title II, which some of you have talked about as being a really critical factor in food insecurity?

Ms. CLAYTON. Let me begin a little bit with the farm bill, since it is on the Floor.

Ms. MOORE OF WISCONSIN. Right.

Ms. CLAYTON. And it has many good parts of it, and many that I have have advocated in nutritionists, as I have talked with about it as well. But it does have persistently high subsidies in there, and those subsidies affect small farmers in developing countries.

And I have had—you know I voted for subsidies when I was here. I voted to reduce subsidies when I was here. I have been defeated by trying to, in the agriculture committee, when I try to have amendments on that. But I'm—so I'm guilty of knowing what it means to subsidize our farmers, because I represent an agricultural area.

But I also met, I would say, hundreds of farmers in developing countries, who said to me that the United States dumps their cotton cheaper than we can grow our cotton. And so what you do is you frustrate their market. So indeed, that does have a—

Ms. MOORE OF WISCONSIN. Representative Clayton, I was actually reading from your testimony. So in the interest of time, let me ask this—what do we say, you have been in my spot, to U.S. citizens who say, "Oh, if you don't give us these subsidies, you are going to create some food insecurity and some poverty among our farmers?" What is our argument against voting for these subsidies?

Mr. SUBRAMANIAN. I would say that the biggest one is that in the current crisis, prices of farm products are so high, farm incomes are really very high now. So this is as good a time as any for that argument not to be as compelling.

Ms. MOORE OF WISCONSIN. Thank you.

Ms. CLAYTON. And some farmers will tell you that if they had other kinds of assistance in meeting your mandates for environmental areas, they wouldn't need the subsidies; they would like to have the freedom to grow. And if the market is hard now as indicated, then it's evident.

I mean, so—and the subsidy is based on the market being so low that farmers can't make a living. Well, the markets are very high now.

The CHAIRMAN. If the gentlewoman would yield, let me just add that one of the most heavily subsidized crops that has a negative impact on Africa is cotton.

Ms. CLAYTON. Yes.

The CHAIRMAN. And as the song goes, "They don't eat very much cotton, whether the cotton balls get rotten or not." So I think the food security argument is that we do the same thing for cotton as we do for wheat. I think it cancels out the food security argument, because if that were the case, there wouldn't be all this cotton. I am—

Ms. MOORE OF WISCONSIN. That's right. Well, thank you all. I would like to ask more questions, but I need to go vote.

The CHAIRMAN. I thank the panel. We are going to be following up on some of these specifics. I did want to know one thing, and I have had problems with the farm bill over time. But the Speaker does take some credit for, in this bill, reducing the ethanol sub-

sidy—not by a huge amount. It goes from 51 cents to 45 cents, I think, per gallon.

She is very conscious of this, and this is a movement you know, it's a 10 percent reduction in the level of subsidy. It is not in and of itself huge, but it is recognition, I think, of the concerns that were voiced here. I thank the panel, and the hearing is adjourned.

[Whereupon, at 11:33 a.m., the hearing was adjourned.]

A P P E N D I X

May 14, 2008

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Financial Services Committee
Hearing "Contributing Factors and International Responses to the Global Food Crisis"
Opening Statement for Congressman André Carson
May 14, 2008

Thank you Mr. Chairman and Ranking Member Bachus for holding this extremely important hearing today on the global food crisis. It is shocking to think that 800 million people go hungry each day. We see images of suffering from every region on this planet and food riots have erupted in 20 countries already.

I look forward to gaining first hand insight to this food crisis as I join several of my colleagues on a trip to Haiti this Friday to investigate the devastating effects this crisis has had on the people there. As you know, anger over food shortages just recently forced the Prime Minister of Haiti to resign. Sadly, this nation is just a small portion of the world reeling from increases in food prices. As a member of the Congressional Hunger Caucus, led by Representative James McGovern and Representative Jo Ann Emerson, I am pleased that we are examining the multitude of factors that lead to this massive crisis in this committee today.

One factor that has been identified by many as a contributor to the global increase in the cost of food especially concerns me as a Representative of Indiana's 7th Congressional District. There has been a dramatic increase in the use of corn for producing ethanol. My home state is responsible for 7.5 percent of the U.S. corn crop and 6.3% of U.S. ethanol production. Further, 19% of the corn from my state is directed towards ethanol, a dramatic increase from 11% this previous crop year.

While it is imperative that we pursue alternatives so that we are a more energy independent and environmentally progressive nation, we must closely examine whether or not our increasing biofuel mandates are sustainable or wise given the current global needs.

Further, it is evident that certain agriculture policies pursued by the World Bank and the International Monetary Fund in the 1980's and 1990 have had tremendously negative consequences on small farmers throughout the world, especially in Sub-Saharan Africa.

Moving forward, we must ensure that the IMF and the World Bank do not impose conditionalities that prevent countries from strengthening their local food production and economies. We must ensure that countries are able stockpile grain, create domestic

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support systems for small farmers and invest research and technology to enhance agricultural productivity without depleting soil nutrients.

The only positive development from this crisis will be if global attention is focused on ways to improve international and domestic systems so that future price fluctuations are not so devastating to the most vulnerable populations. I want to thank the witnesses for taking part in this hearing today I look forward to hearing your testimony. Thank you.

Food Crisis Briefing
Financial Services Committee
Statement for Rep. Waters
May 14, 2008

I would like to thank Chairman Barney Frank and Ranking Member Spencer Bachus for organizing this hearing on "Contributing Factors and International Responses to the Global Food Crisis." I would also like to welcome my good friend, former Congresswoman Eva Clayton, who will be testifying before this committee. It is good to see you back in the halls of Congress.

United Nations Secretary-General Ban Ki-moon has warned that the global food crisis has reached emergency proportions and threatens to wipe out seven years of progress in the fight against poverty.

Causes of the Food Crisis

I understand that the global food crisis has several causes.

1. One of the most important causes is certainly the increase in fuel prices, which increases the cost of producing food and transporting crops from farms to markets.

2. Another contributing factor is the growth in the use of food crops to produce ethanol and other biofuels, instead of food.

3. A third contributing factor is increased demand from growing middle income countries, such as China and India. As incomes rise in these countries, people demand an increasing variety of foods, including meats, which can only be produced using even larger quantities of grains.

4. Yet another contributing factor is poor harvests in some parts of the world, which some analysts attribute to global climate change.

Unfortunately, I fear that all of these problems are likely to get worse in the foreseeable future.

Debt Cancellation

For over a decade, I have been working to free the world's poorest countries from the burden of international debts. Existing debt cancellation programs have freed up resources to reduce poverty in some of the world's poorest countries. Cameroon is using its savings of $29.8 million from debt cancellation in 2006 for national poverty reduction priorities, including infrastructure, social sector and governance reforms. Uganda is using its savings of $57.9 million on improving energy infrastructure to ease acute electricity shortages, as well as primary education, malaria control, healthcare, and water infrastructure. Zambia is using its savings of $23.8 million to increase spending on agricultural projects and to eliminate fees for healthcare in rural areas. Now, I am concerned that the global food crisis could wipe away many of the gains of debt relief.

Nevertheless, I do believe that the expansion of debt cancellation programs is one important way to address the global food crisis. Money that poor countries must spend on debt payments is money they cannot spend purchasing food or developing agricultural capacity.

Last month, this committee marked up, and the House of Representatives passed, the Jubilee Act (H.R. 2634) – my legislation to expand debt cancellation for the world's poorest countries. This legislation will make up to 25 additional poor countries eligible for complete debt cancellation. I deeply appreciate the support of the members of this committee for the Jubilee Act, and I look forward to its passage in the Senate.

Haiti

I am especially concerned about Haiti, one of the countries that has experienced food riots in recent months. Haiti is already the poorest country in the Western Hemisphere. According to the World Food Program, the average Haitian diet consists of only 1,640 calories. That's 460 calories less than the typical daily requirement of 2,100 calories. Reuters has reported that prices for some items in Haiti, such as rice, have doubled in the last six months.

For several years, I have been trying to convince the international community to cancel Haiti's debts. Haiti owes over one billion dollars to multilateral financial institutions, and Haiti is scheduled to pay more than $48 million in debt service this year. This is money that could be spent to develop Haiti's economy and rebuild crumbling infrastructure. It could also be spent on food for hungry people. Instead, it is being spent to service Haiti's debts.

On February 28, 2008, I sent a letter to Treasury Secretary Henry Paulson, urging him to use his influence to expedite the cancellation of Haiti's debts and to immediately suspend all further debt service payments from Haiti. The letter was signed by 54 members of the House of Representatives, including Chairman Barney Frank and Ranking Member Spencer Bachus.

Unfortunately, I received a disappointing response to my letter. Treasury informed me that Haiti is not expected to receive complete debt cancellation at the present time, but Haiti is receiving other forms of aid. While I appreciate that the international financial institutions and the United States are providing loans and grants, this is simply not enough so long as Haitians continue to starve. I once again call on Treasury Secretary Paulson to do everything in his power to provide immediate debt cancellation for Haiti. We cannot in good conscience accept payments from Haiti at this time of desperate need.

Conclusion

I am deeply concerned about the global food crisis, and I want Members of Congress to learn as much as we can about its causes. Only then can we begin to develop solutions that will be appropriate for the magnitude and complexity of this crisis.

I yield back the remainder of my time.

Testimony of
HONORABLE EVA M. CLAYTON
Member of Congress - Retired
President - Eva Clayton Associates International

Representative Frank, Representative Bachus, and other distinguished members of the Financial Services Committee, I appreciate the opportunity to appear before you to discuss "Contributing Factors and International Responses to the Global Food Crisis. While this crisis is often called the "silent tsunami", I would submit that the global food crisis is impacting the planet with the force of the Burmese Cyclone and we in the United States are invariably beginning to feel the drops of rain. This devastating condition is made even worse by the "perfect storm" of escalating fuel prices coupled with the increased use of grains for fuel rather than food. Understanding this issue from several dimensions and formulating appropriate responses will be a tremendous service to humanity around the world. I commend the committee for addressing this humanitarian issue.

As many of you know that upon retirement from Congress, I accepted a three year assignment with the UN Food Agriculture Organization where I had the opportunity to work with the International Alliance Against Hunger IAAH, a joint initiative by the Rome based UN food and agricultural agencies and other international organizations to advocate against hunger and malnutrition. These UN Agencies included: International Fund for Agricultural Development IFAD, World Food Program WFP, and Biodiversity all of whom remain active in addressing agriculture development, hunger, malnutrition and poverty. This opportunity afforded me the chance to see first hand the international community's commitment to battling global hunger. More importantly, it made me intimately aware of the dire circumstances of so many people.

We in the US are not immune to these circumstances. The rising cost of food is placing a strain on our families' budgets. I recently visited my hometown supermarket where I engaged in a conversation with a mother shopping for groceries for her family without any type of food assistance. She was visibly distressed that her family would have to go without meat because her limited budget could not stretch far enough to afford even the less desirable cuts of meat.

It was reported recently on National Public Radio that the American Second Harvest "Food Bank Network" around the country is seeing many more new faces, including people with jobs, seeking food assistance. These increases in demand for help come as the Food Banks in North Carolina and elsewhere are experiencing food shortages. We are fortunate in our country; however, to have the Food Stamp Program and other food assistance programs to address these needs. Central to the viability of these nutrition programs is the passage of the Farm Bill that is currently before Congress. We must, however, do more to address the increasing food needs of families in economic stress through the consideration of a second stimulus package. I will address my comments mostly to the global aspect of this global food crisis and possible responses.

The global food crisis is having a much more dramatic effect around the world, especially on developing countries. It was recently reported that food riots have erupted in more than 20 countries. Tragically, death has often resulted from these disturbances. In the country of Haiti

nationwide food shortages have become the order of the day. The resulting national food insecurity has led Haiti's Prime Minister to resign. Likewise the global food crisis continues on its worldwide journey of misery and despair, without regard to region, race or religion.

This global devastation is in addition to the existing global tragedy of the more than 800 million people who go to bed hungry every night and the more than 16,000 children who die every day from hunger related diseases. As the ravages of global hunger continue, we are sobered by the fact that 54% of all childhood deaths are directly attributable to hunger and malnutrition.

What are the Contributing Factors to the current 'Global Food Crisis'?

Global food prices have doubled over the last three years. The World Bank recently reported that this year US wheat export prices rose from $377 per ton in January to $$440 per ton in March. Equally troubling has been the increase in the cost of rice from the country of Thai, where rice export prices increased from $365 per ton to $562 per ton.

The Rome based UN agriculture and food agencies; IFAD, WFP, and FAO have listed the following factors as contributing to the escalation of food prices:

- Adverse weather conditions, such as the Australian drought, which decimated rice and cereal production in grain producing countries;
- Rising transportation costs making it more expensive to produce and distribute food;
- The diversion of crops for bio-fuel resulting in fewer crops for food and feed;
- The rising demand for meat and dairy in emerging economies e.g. China and India, requiring more grain to feed livestock;
- The lack of access to important inputs (seeds and fertilizer), technology, and markets among smallholder farmers in low income deficit Countries; particularly in Sub-Saharan Africa, resulting in low food/grain production;
- Commodity speculation and over-reactive trade policies put in place by some countries in an attempt to respond to domestic food shortages.

International Response to the Global Food Crisis

How we address these issues going forward will speak volumes about us as a nation and our role within the global community. We must also develop the political will as world governments, civil societies, and the private sector to reduce world hunger. Empowering people in developing countries by investing in agriculture technology is an example of this political will.

We need a three pronged approach that is emergent, immediate, and long term. For the emergency response, the case has been made by WFP and UN Organizations that the needs are urgent and unrelenting. This is evident by the deaths and unrest around the world. The recent Burmese Cyclone which killed tens of thousands also devastated Burma's rice production resulting in a loss to over 65% of the country's rice production.

The recommended $600 million initiative for food relief in the supplemental spending needs to be expanded to provide assistance to start-up safety-net programs. We must also help smallholder farmers by replanting their destroyed farms. Flexibility must be part of this approach if we are to maximize assistance to those needing help the most. There must be provisions that allow the purchase of foods closer to the areas of need. The international community should immediately consider reversing those trade policies that promote the 'hoarding' of commodities that are in short supply.

The immediate and long term approaches should include those activities that support the building of national food economies through fair and open trade. The United States is finalizing the 'Farm Bill' which still contains high commodity subsidy payments at a time when the market price of these commodities is very high. These subsidies stymie agricultural production in developing countries. Consideration must be given to reducing these payments and making resources available to support the needs of the American smallholder farmer as well as the smallholder farmers in Africa and other regions. By removing these barriers we make the ideal of self sustenance more attainable.

We must reassess our production of ethanol and other bio-fuels, given the meteoric rise of food production costs. These food production costs have had a profound impact on all farmers. The impact has been even greater on the small farmers of the world, which comprise about 85% of all farming operations worldwide. The 2008 World Development Report on Agriculture and Development concluded that the ability to serve as the engine of economic growth and poverty reduction, especially in sub-Saharan Africa, "requires a sharp productivity increase in smallholder farming combined with more effective support to the millions coping as subsistence farmers, many of them in remote areas." This can only be effectuated if significant resources are made in agriculture development to assist these farmers to be more productive.

The smallholder farms must play a key role in the global response to the current food security crisis. IFAD has an important role to play in helping to channel increased investment to these family farmers to enable them to contribute to increasing the global food supply. Consultations are underway this year that will determine the level of the 8th replenishment of IFAD's resources, covering the period of 2010 – 2012. IFAD is projecting a growth rate of greater than ten percent per year for this period, which would require an overall replenishment level of $1.2 billion or more. To maintain its 7th replenishment share of an 8th replenishment at this level the U.S. contribution would need to increase from $54 million to $90 million.

In response to the current threat of increased food insecurity, IFAD has indicated that it is prepared to reprogram $200 million of existing loan funds for those governments that request such action. The resources would be used to accelerate the provision of production inputs such as seeds and fertilizer to poor farmers to enable them to maintain or expand their production in the face of rising prices for such inputs.

An additional opportunity to respond to global food security, nutrition and reduction of poverty in developing countries is through the collaboration of US Land Grant Universities (especially those experienced with small farmers) in cooperation with the National Agricultural Colleges

and National Alliances in advocating for agriculture development and good nutrition through identifying, designing and implementing the best practices to increase food security and good nutrition. Such an initiative could be supported for 5 years for $10,000. This would afford the opportunity of sharing low technology between countries and encouraging cooperation and collaboration among institutions and international organizations.

The situation we face is dire. Our response must be decisive and forward thinking. The failure to strengthen our global food system will ultimately lead to political and economic upheaval of all the world economies. If we fail to act now, future generations will be condemned to a life of misery and heartache. Today must be the day that marks the beginning of the reclamation of world food supply. Our futures hang in the balance.

Thank you.

Testimony of Andrew S. Natsios
House Financial Services Committee Hearing
May 14, 2008
"Contributing Factors and International Responses to the Global Food Crisis"

I would like to thank the Committee for the opportunity to testify today on an important issue: the rapidly rising price of food. While this crisis presents grave risks to human life and the potential for terrible suffering, it can also be the catalyst for a new world wide campaign to spread the Green Revolution of the 1960's to areas of the world which are yet untouched by it particularly in sub-Sahara Africa. We should set as an international objective the end of the specter of famine and severe food insecurity in our time. We can do this through a two pronged approach: a much greater investment in agricultural development and reforms to our food aid programs. This is a very complex subject to address in a short time, so I will limit myself to five key points.

1. **The locus of the potential crisis points.** The principle areas of greatest food insecurity are in South and Central Asia, North Korea, and Sub-Sahara Africa. The risk of the current price rise evolving into a famine in some of these areas, particularly North Korea, is very high. The North Korean famine of the mid-1990's which killed at least 2 ½ million people was principally an urban famine, and the incipient famine now developing there is also likely to be urban as well. It is also the case that urban famines are politically much more destabilizing than those in rural areas where poor people die in silence. In urban areas they demonstrate, they riot which often leads to political explosions. During the Sahelian famine of the early 1970's 11 of 13 governments in affected African countries fell to coups driven by inadequate governmental responses to the famine. While we should respond to the current food crisis for purely humanitarian and ethical reasons, we ignore the strategic and political consequences of this crisis at our peril.

   Most people in most countries can adjust or cope with *slowly* rising food prices. What they can not do easily is to deal with *rapidly* rising prices, which what we are now witnessing. Usually rapidly rising prices in very poor, traditionally food insecure countries with large destitute populations frequently leads to starvation and death.

2. **Investing in agricultural development.** The cause of food insecurity and acute malnutrition in Sub-Sahara Africa (apart from civil war) is three fold: regressive trade and agriculture policies which discourage food production and trade between countries, declining donor investment in agricultural development, and poor or non-existent rural infrastructure particularly roads. The real answer to food insecurity particularly in Africa is economic growth particularly through agricultural development. More donor government funding for agricultural development and rural roads in Africa should be the first and principal response.

MCC is the only US government foreign aid program which is now spending substantial money to build roads and invest in agriculture: this is because the MCC is not earmarked. However only well governed countries benefit from the MCC. The focus of a new U.S. agriculture initiative should be to connect farmers to markets, to use science to improve agricultural productivity, to lower northern and southern trade barriers to food and to support and encourage both large scale commercial and small scale subsistence agriculture. I want to commend in particular the excellent work the Gates Foundation is doing in agricultural development as well as Bob Zoellick's recent announcement of the World Bank's new agriculture initiative to address food insecurity.

In Ethiopia, one of the most food insecure countries in the world, the USAID budget in FY 2007 totaled $462 million which is made up of 50% HIV/AIDS, 38% for food aid, and 7% for maternal and child health, 1.5% education, 1.5% economic growth, and 1.5% for agricultural development. More than 80% of the Ethiopian people are subsistence farmers, and yet only 1.5% of the budget is for agricultural development. This is because there is no earmark for agriculture and so when other earmarks for say education, HIV/AIDS, the environment, or micro-credit are increased, the non-earmarked accounts are all cut, further distorting priorities. USAID filed five annual budgets with more funding for agriculture and most of the money was cut out of the budget (only Iraq and Afghanistan saw large agricultural funding increases), so it is not because the agency has not asked.

3. **Food aid reform.** We also need food aid reform which will phase out monetization of food aid as an NGO mechanism to fund their programs, because it frequently has a depressive affect on agricultural markets particularly in Africa. We should move toward a mixed system of locally and US purchased food aid. Local purchases can be used to develop agricultural markets in developing countries: the President's reform proposal to allow 25% of Title II of the Food for Peace budget to be used for local procurement makes great sense and should be adopted as it is written. Under the current system about 60% of the cost of food aid is ocean freight, land transportation and distribution costs; only 40% actually goes to purchase food. We can save some those handling charges by moving to local purchase system. The Food for Peace budget is only .3% of our food exports, so the proposal will have no affect on prices.

   Without President Bush's reform USAID will not be able to respond adequately to these price increases and the potential crisis these will cause. We conservatively estimate that the President's proposal could save up to 50,000 lives in emergencies around the world. The Farm Bill reported out of committee yesterday includes a small pilot program of $60 million over five years--$12 million a year out of an annual food budget of $1.2 billion--controlled by USDA instead USAID. It is inadequate to respond to the current crisis; we don't need a pilot program, as the World Food Program of the UN has been doing local procurement successfully for many years. As disturbing as this failure is, the bill also contains another very troubling provision which places a hard earmark on

non-emergency food aid of between $375 and $450 million with a convoluted and impractical waiver provision. The net affect of this will be to reduce emergency food aid for crises around the world which will put refugees and internally displaced people, such as those in the camps in Darfur, at great humanitarian risk. It would also massively increase the level of monetization of food aid with very damaging consequences to African agriculture. It is troubling that the Farm Bill ties the hands of USAID's food aid managers and force a redirection of food aid in a very damaging direction just as we are going into one of the most serious food crisis in modern times. This provision should be removed immediately. I hope the President vetoes the Farm Bill as it is currently written.

Apart from these operational complications there is another reason to support this reform. And that is the opportunity for positive economic effects on local agriculture in the recipient country. In Africa, for example, two-thirds of the 200 million people who suffer hunger are small-scale farmers, primarily engaged in subsistence production because they find too few buyers for any larger harvest.

A crisis in Ethiopia in 2003 illustrates the dilemma. Widespread drought occurred in the low-lying areas of the country and the very dry northern highlands. Some 12-15 million people were at risk of hunger and starvation. But in the central and southern highlands of Ethiopia, farmers were producing a bumper crop of corn and other cereals. There was no market for the locally produced grains, and prices collapsed.

Had USAID had more flexibility, it could have purchased some of the crops, helping distribute some of the excess Ethiopian corn production, permitting as many as 500,000 smallholder farmers to sell their local corn. USAID assistance would have kept prices firm and demand high, but US law did not allow local purchases with the food aid budget. The only option was to import grain from the USA. (previous three paragraphs are taken from an Op-Ed by Dr. Norman Borlaug and me in the WSJ on May 2)

4. **New counter famine tools.** We should use this food crisis to develop a new tool box of counter famine tools, customized to local conditions, to aid us in preventing price rises from mutating into famine. These include efforts to intervene where hoarding, a typical response to rapidly rising food prices, is occurring by releasing existing food stocks on the commodity markets to stabilize and then reduce prices to a more sustainable level. This market intervention is needed right now. Some of the rapidly rising price of rice in Asia is a function of hoarding. If the Japanese and Chinese governments would release a million tons of rice onto Asian commodities markets it would break the dangerous hoarding cycle now under way. Both governments could do this with no risk to their own population. We should also consider cash distributions (particularly to woman headed households) instead of food aid, for destitute populations in inaccessible areas so they can purchase food themselves on local markets, which is almost always available even in an emergency. Finally we should consider market

interventions to stabilize prices including auctioning food off in local markets were prices have risen too high too quickly, so that more people who can afford some food purchases through these markets, and fewer will require food aid.

5. **We should end agricultural subsidies in western countries and move to an entirely free market in food, world wide including in developing countries.**

I would conclude by endorsing the idea of an international trade agreement for all countries, including the United States and developing countries, to phase out all agricultural export and production subsidies which damage agriculture in poor countries. Several World Bank simulations show that 70% of the benefit of free trade in increased economic productivity is attributable to the repeal of developing countries' trade restrictions on each other. So lower trade barriers is as important for wealthy northern countries as it is for southern countries.

Testimony before the House Financial Services Committee,
Wednesday 14 May 2008

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Introduction

1. We live amidst a profound and worsening contradiction. While we produce more food than ever before, hunger is rampant. In 2006, 854 million people were food insecure.[1] This figure is certain to increase in 2007 and 2008, with the recent global rise of food prices.
2. The World Bank reports that global food prices rose 83% over the last three years and the FAO cites a 45% increase in their world food price index during just the past nine months.[2] *The Economist*'s comparable index stands at its highest point since it was originally formulated in 1845. As of March 2008, wheat prices were 130% above their level a year earlier, rice prices were 66% higher, and maize prices were 38% higher.[3] Yet incomes for the poorest have stagnated and, in some cases, fallen.[4] The consequence of soaring prices and creeping income growth has been catastrophe, particularly for those who spend more than half of their daily income on food.
3. Food riots have been reported in Indonesia, Mexico, Haiti, the Philippines, Egypt, Somalia, Burkina Faso, Yemen, Cameroon, Mauritania, Senegal and Morocco. In all of these countries, as throughout history,[5] these protests are both demands for food, but also demands for democracy. The citizens on the streets are all too aware that the current crisis is both a failure of entitlement, and a failure of government accountability. The origins of both can be traced to a similar cause.
4. The food riots have both short- and long-term reasons. The recent short-term increase in the price of food has been the result of a confluence of factors, a 'perfect storm.' These short term price increases have created an entitlement gap in developing countries, where the ability to pay for food falls very far short of daily calorie needs.
5. Atop these increases, the longer term capacity of governments to weather and adapt to the price shocks has been compromised. The manner of this compromise has a great deal to do with the architecture of international development

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[1] Food and Agricultural Organization of the United Nations FAO, The State of Food Insecurity in the World 2006 (Rome: Food and Agricultural Organization of the United Nations, 2006).
[2] World Bank, Rising Food Prices: Policy Options and World Bank Response (Washington DC: World Bank, 2008).
[3] FAO, FAOSTAT database, retrieved April 2008.
[4] Department of Economic and Social Affairs United Nations, The Inequality Predicament: Report on the World Social Situation 2005 [a/60/117/Rev.1 St/Esa/299] (New York: United Nations, 2005).
[5] E. P. Thompson, "The Moral Economy of the English Crowd in the Eighteenth Century," Past and Present 50 (1971), Anthony James Coles, "The Moral Economy of the Crowd: Some Twentieth-Century Food Riots," The Journal of British Studies 18.1 (1978), Louise A. Tilly, "Food Entitlement, Famine, and Conflict," Journal of Interdisciplinary History 14.2 (1983), Dana Frank, "Housewives, Socialists, and the Politics of Food: The 1917 New York Cost-of-Living Protests," Feminist Studies 11.2 (1985).

assistance. The United Nations Special Rapporteur on the Right to Food, Olivier De Schutter, has recently said that despite the fact that the price rises are recent, "we are paying for 20 years of mistakes." Dr De Schutter's assessment is correct and, further, he is correct in his identification of the agents of those errors in naming the World Bank and International Monetary Fund as particularly culpable.[6]

6. The solutions to the current crisis require a structural transformation in the Bank's approach to development policy, in both substance and in procedure. Unfortunately, the Bank itself insists on policies that have been proven failures over the past three decades, and which are likely to stymie rather than enable a change for the better in securing food supplies in a way that promotes democracy, accountability and sustainability in a growing world.

Situation Analysis

7. The current price spike is the combination of five distinct factors.
    a. **The price of oil.** The high price of oil, at the time of writing higher than $120/barrel, has direct and indirect implications for food security. The net energy costs of food production under modern industrial agriculture require more than a calorie of fossil fuel to produce every calorie consumed. This energy is required not only to transport food considerable distances, but also in the manufacture of inorganic fertilizers and pesticides. The USDA's index for nitrogen fertilizers was 118 in 2000 but reached 204 by 2006.[7] The Department projects that over the next decade, cereals will cost 15% more per ton to produce.[8]
    b. **Agrofuels.** The use of arable land to grow crops for transformation into agrofuels (also known as biofuels) is increasingly recognised as a net negative in terms of climate change, water and energy use.[9] The European Union is in the process of retreating from its agrofuels policy. The World Bank has deemed the shift towards agrofuel crop production to be a significant contributor to the price rises.[10] Agrofuels policy has also been criticised for its discriminatory effects against women, who disproportionately shoulder the consequences of the current food crisis.[11]

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[6] Olivier De Schutter, Background Note: Analysis of the World Food Crisis by the U.N. Special Rapporteur on the Right to Food, New York and Geneva, May 2 , 2008
2008, Available: http://www2.ohchr.org/english/issues/food/docs/SRRTFnotefoodcrisis.pdf, May 2, 2008 2008.

[7] Steve Wiggins and Stephanie Levy, Rising Food Prices: A Global Crisis (London: Overseas Development Institute, 2008).

[8] United States Department of Agriculture USDA, Usda Agricultural Projections to 2017 (Washington DC: Office of the Chief Economist, World Agricultural Outlook Board, United States Department of Agriculture, 2008).

[9] Joseph Fargione, Jason Hill, David Tilman, Stephen Polasky and Peter Hawthorne, "Land Clearing and the Biofuel Carbon Debt," Science (2008).

[10] World Bank, Rising Food Prices: Policy Options and World Bank Response .

[11] Andrea Rossi and Yianna Lambrou, Gender and Equity Issues in Liquid Biofuels Production: Minimizing the Risks to Maximize the Opportunities (Rome: Food and Agricultural Organization of the United Nations, 2008), Karen Hansen-Kuhn, Women and Food Crises: How Us Food Aid Policies Can Better Support Their Struggles - a Discussion Paper (Washington D.C.: ActionAid USA, 2007).

c. **Unsustainable consumption.** Increasing incomes have led to some demand for meat and dairy products in some developing countries. The 'nutrition transition' has meant that increasing numbers of people in developing countries aspire to the unsustainable diets found in the United States and Western Europe.[12] These diets have bid up the price of grains for feed, rather than for direct human consumption, and have been both cause and consequence of further distributional inequalities.[13]
d. **Unfavorable climate.** Poor harvests have been caused by unexpected climatic events, most recently the tragedy in Burma. Unusual events have been reported elsewhere, however, and have been responsible for poor harvests, in particular in South East Asia and in Australia.
e. **Speculation.** Financial speculation is a legitimate and serious concern, and is rightly the subject of review in the House Committee on Agriculture on May 15th, 2008. Financial speculation has been an important contributing factor in almost every major famine since WWII. As the senior development economist Amartya Sen observed in his seminal study of famine in Bengal in 1943, there was enough food to feed the hungry. The reason that millions starved was because of hoarding and subsequent speculation on the future price of rice.[14]
f. In the Philippines today, the government is currently instructing its law and order officials to raid rice warehouses. The effect of a bubble in food prices will be familiar to this committee – it has its analogue in the housing bubble, which swelled for no other reason than a widespread belief that there was profit to be made in buying real estate in a market of high expectations.
g. On top of these factors are legitimate concerns about the existence of price collusion among producers. In the United Kingdom, Spain and South Africa, competition regulation authorities are investigating the price of eggs, milk, bread and chicken. It would not be unreasonable to expect more investigations of this nature to be opened in other countries. Indeed, the European Commission has recently found that the price of certain food commodities in the EU has increased three times more than might be explained by the changes in agricultural markets.[15] With incomes stagnating or increasing only slightly, and the price of food undergoing such dramatic rises, hunger is the tragic consequence.

8. The current context of high prices is, however, only part of the reason why protests around food are so prevalent. The longer-term factor is the absence of

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[12] Majid Ezzati, Ari B. Friedman, Sandeep C. Kulkarni and Christopher J. L. Murray, "The Reversal of Fortunes: Trends in County Mortality and Cross-County Mortality Disparities in the United States," PLoS Medicine 5.4 (2008).
[13] On the severity of distributional inequality, see United Nations, The Inequality Predicament: Report on the World Social Situation 2005 [a/60/117/Rev.1 St/Esa/299].
[14] Amartya Kumar Sen, Poverty and Famines : An Essay on Entitlement and Deprivation (New York: Oxford University Press, 1981).
[15] Mariann Fischer Boel, Member of the European Commission Responsible for Agriculture and Rural Development, Annual Policy Strategy for Agriculture Speech to the Agriculture Committee of the European Parliament (Brussels: European Union, 2008).

mechanisms to protect populations from these high international food prices, and the lack of domestic food-production capacity. Over the past thirty years, large numbers of developing countries have been subject to 'structural adjustment policies' and their subsequent variants, as demanded by international financial institutions, the World Bank group foremost among them. It is these policies which bare a considerable share of the responsibility both for developing countries' inability to meet the challenges of the current crisis, and for the promotion of unaccountable governance within these countries.

History

9. The World Bank's initial forays into agriculture in the 1950s were largely diplomatic. Indeed, as a new global financial institution the Bank faced structural disincentives to invest in agriculture. It needed to prove its creditworthiness to a sceptical bond market, and did so by investing in projects with guaranteed high rates of return. As a result, it heavily favoured industrial projects over agricultural ones.[16] In 1961 there were only 12 staff charged with agricultural programming at the Bank. Funding for agriculture received a boost under Bank President Robert McNamara, who pledged himself to support agriculture, 'which for so long has been the stepchild of development'.[17] Under his tenure, the Bank invested in and supported the creation of grain marketing boards, agricultural extension services and food storage and distribution services, particularly in Africa. These policies ran alongside the goals and aspirations of developing countries, and supported endogenously-formed and democratically-demanded socio-economic policies.
10. The debt crisis in the early 1980s was accompanied by a political transformation in the economic policy of the World Bank. The state, previously seen as the *sine qua non* of development was considered secondary to 'getting prices right'. This doctrine, influenced by a particular style of economics, demanded a reversal of policy. Instead of support for domestic industry under import substitution economic policy, developing countries were to be exposed to free markets. It was an approach that ignored the development trajectory of the First World, which developed its agriculture and industry behind very high tariff barriers. Yet this approach denied developing countries the same opportunity.[18] Instead, developing countries were to be plunged straight into the cauldron of international competition.
11. This approach had some very specific consequences for agriculture. The then-US US Secretary for Agriculture, John Block, said in 1986 at the beginning of the Uruguay Round of Negotiations of the General Agreement on Tariffs and Trade that: "[the] idea that developing countries should feed themselves is an anachronism from a bygone era. They could better ensure their food security by relying on US agricultural products, which are available, in most cases, at much

[16] Devesh Kapur, John Prior Lewis and Richard Charles Webb, The World Bank : Its First Half Century (Washington, D.C.: Brookings Institution, 1997) 379.
[17] Kapur, Lewis and Webb, The World Bank : Its First Half Century 380.
[18] Ha-Joon Chang, Bad Samaritans: Rich Nations, Poor Policies and the Threat to the Developing World (London: Random House Business Books, 2007).

lower cost."[19] That lower cost was due in no small part to the large subsidies given to the industrial production of crops within the US and European Union.

12. For this food regime[20] to work, existing marketing boards and support structures needed to be dismantled. In a range of countries, this meant that the state bodies that had been supported and built by the World Bank were dismantled by World Bank. The rationale behind the dismantling of these institutions was to clear the path for private sector involvement in these sectors, on the understanding that the private sector would be more efficient and less wasteful than the public sector. As one report has observed: "Farmers suffered negative consequences because key products and marketing costs rose rapidly, fertilizer prices and transport costs soared and labor costs declined. [For example p]roducer prices showed greater volatility in Cameroon, Cote d'Ivoire and Nigeria – countries that dismantled their marketing boards than in Ghana (which keeps its)."[21]
13. This is an assessment shared by the World Bank's own Independent Evaluation Group, which noted two key failures in the Bank's operations in agriculture. First, the Bank has neglected agriculture: "Underperformance of agriculture has been a major limitation of Africa's development. For most of the past two decades, both governments and donors, including the World Bank, have neglected the sector. The Bank's limited - and, until recently, declining- support to agriculture has not been strategically used to meet the diverse needs of a sector that requires coordinated interventions across a range of activities."[22] Second, the dismantling of agriculture was intended to create opportunities for the private sector but invariably, the invisible hand was nowhere to be seen. The Blair Commission for Africa concurs with the Bank's evaluation. In its report, the Commission states, "Domestic stabilization schemes and associated institutions have been dismantled under the banner of market efficiency, and this has created an institutional void with adverse consequences for the livelihood of millions of African farmers."[23]
14. This combination of neglect and active dismantling of support has combined with further pushes to liberalize economies. This liberalization has been a prerequisite for loans from the Bank. In accepting the conditions, however, countries were effectively forced into culling domestic policies and institutions that might have been bargaining tools in multilateral trade negotiations. The World Bank group, for example, required that the Nicaraguan legislature approve the controversial Central American Free Trade Agreement as part of its Poverty Reduction Support Credit.[24] Broadly, the adoption of these structural adjustment policies put

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[19] Walden Bello, "WTO: Serving the Wealthy, Not the Poor," The Ecologist. Sept. (2000).
[20] Philip McMichael, "Global Development and the Corporate Food Regime," Symposium on New Directions in the Sociology of Global Development, XI World Congress of Rural Sociology. (Trondheim. : 2004).
[21] Nancy Alexander, The Value of Aid: A Critical Analysis of the UN Milliennium Project's Approach to the MDGs (New Delhi: ActionAid Asia, 2005).
[22] World Bank, World Bank Assistance to Agriculture in Sub Saharan Africa: An Independent Evaluation Group Review (Washington DC: World Bank, 2007).
[23] Cited in Alexander, The Value of Aid: A Critical Analysis of the UN Milliennium Project's Approach to the MDGs.
[24] International Development Association, International Development Association Program Document for a Proposed Credit In the Amount of SDR 16.83 Million (US$25 Million Equivalent) to the Republic of Nicaragua for a Second Poverty Reduction Support Credit (2006)..

developing countries in yet a weaker structural position for negotiating outcomes favourable to agriculture and, in particular, the rural poor.[25]

15. The result of these interventions and conditions was to accelerate the decline of developing country agriculture. One of the most striking consequences of liberalization has been the phenomenon of 'import surges'.[26] These happen when tariffs on cheaper, and often subsidized, agricultural products are lowered, and a host country is then flooded with those goods. There is often a corresponding decline in domestic production. In Senegal, for example, tariff reduction led to an import surge in tomato paste, with a fifteen-fold increase in imports, and a halving of domestic production. Similar stories might be told of Chile, which saw a three-fold surge in imports of vegetable oil, and a halving of domestic production. In Ghana in 1998, local rice production accounted for over 80% of domestic consumption. By 2003, that figure was less than 20%. [27]
16. Nor is this the only commodity in which Ghana has suffered an erosion in domestic production. As one report notes: "Until the early 1990s, local industry supplied all the chicken and eggs consumed in Ghana, and in 1992, 95 percent of the domestic poultry requirement was met through local production ... this trend did not continue through the 1990s, as imports of poultry products such as legs, wings and thighs from Europe attracted consumers. The consumption pattern of Ghanaians gradually changed from whole chicken to chicken parts, particularly the thighs. Thus, from 2000 onwards the share of local poultry had dropped to 11 percent."[28]
17. This is an outcome predicted in advance by Ghanaian civil society and members of the Ghanaian Department of Agriculture, but it was taken to be an acceptable consequence of liberalization policies that farmers in tomatoes, rice and poultry should compete unprotected against billions of dollars of annual subsidy in the European Union and North America. The consequence is the public monopolies have been transformed into private ones, without any of the benefits of competition and, now, without even the benefit of recourse to elected officials. The deepest irony is that such changes are summoned under the language of the 'level playing field'.
18. This points to a further problem. The Bank itself is unaccountable for its policy decisions. By insisting that governments implement conditionality as part of its lending regime, it is able to exercise a great deal of control over the direction and substance of policy in developing countries. That list of conditions has included

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[25] Armin Paasch, Frank Garbers and Thomas Hirsch, Trade Policies and Hunger. The Impact of Trade Liberalisation on the Right to Food of Rice Farming Communities in Ghana, Honduras and Indonesia (Geneva: Ecumenical Advocacy Alliance (EAA) and FoodFirst Information and Action Network (FIAN), 2007).

[26] Food and Agricultural Organization of the United Nations FAO, Some Trade Policy Issues Relating to Trends in Agricultural Imports in the Context of Food Security. (Rome: Committee on Commodity Problems, FAO. , 2003).

[27] ActionAid International Ghana, Agro-Import Surge Study: The Case of Rice in Ghana (Johannesburg: ActionAid International, 2006).

[28] Sofia Monsalve, Mohammed Issah, Burghard Ilge, Armin Paasch, Kerstin Lanje and Patrick Mulvany, Right to Food of Tomato and Poultry Farmers: Report of an Investigative Mission to Ghana (Heidelberg: Foodfirst Information Action Network FIAN, 2007).

substantive changes in agriculture, and they continue to be enforced. In the recent rounds of the Bank's Poverty Reduction Support Credits (PRSCs), for instance, loans continue to be contingent on specific policy demands. Four crop boards are to be prepared for sale in Tanzania[29], Benin's cotton sector is to be privatized,[30] all agricultural support programs are to be liberalized in Moldova,[31] and Yemen is to be forced into a land reform policy that has failed everywhere else it has been attempted,[32] to take four agricultural examples among dozens of economic transformations in areas as diverse as water, housing, government procurement and labor law. Again, even by the generous standards within the international development community, these loans have been failing – none receives an A grade in a recent OECD assessment and the majority receive C or D grades.[33]

19. The effects of these policies on women deserves special mention. As ActionAid International notes, "Women suffer disproportionately from food crises. Some 70 percent of the hungry are women and girls. But women also contribute more than their share to the potential solutions. Numerous studies cite the importance of women's participation in agricultural production. According to the FAO, rural women in developing countries produce between 60 and 80 percent of their countries' food. They are overwhelmingly responsible for the production of vegetables and basic food grains, especially in sub-Saharan Africa. Women contribute their labor, their knowledge about traditional seed varieties and cultivation practices, and their determination to feed their families, especially their children, over most other considerations. Studies have also documented that increases in women's incomes are more strongly associated with improvements in their families' wellbeing, especially their children's nutritional status, than similar increases in men's incomes."[34] The current food crisis has had a particularly devastating effect on women, yet the Bank insists on policies that have been responsible for exacerbating the current crisis.

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[29] International Development Association, Program Document for a Proposed Credit in the Amount of Sdr 127.6 Million (Us$190 Million Equivalent) to United Republic of Tanzania for a Fifth Poverty Reduction Support Credit (PRSC-5) (Washington DC: World Bank Group, 2007).

[30] International Development Association, Program Document Regarding a Proposed Fourth Poverty Reduction Support Credit (PRSC-4) to the Republic of Benin (Ida/R2007-0138) (Washington DC: World Bank Group, 2007).

[31] International Development Association, Program Document for Proposed Poverty Reduction Support Credit in the Amount of SDR 6.8 Million (US$10 Million Equivalent) to the Republic of Moldova (Washington DC: World Bank Group, 2006).

[32] See, Bank Information Center, World Bank Pressed to Disclose Documents on Controversial Yemen Reform Program (Washington DC: Bank Information Center, 2008). On the failure of Bank land reform policy in South Africa see E. Lahiff, "Willing Buyer, Willing Seller': South Africa's Failed Experiment in Market Led Agrarian Reform," Third World Quarterly 28.8 (2007), and Saturnino M. Jr. Borras, "The Underlying Assumptions, Theory, and Practice of Neoliberal Land Policies," Promised Land: Competing Visions of Agrarian Reform, eds. Peter Rosset, Raj Patel and Michael Courville (Oakland, CA: Food First Books, 2007) more generally.

[33] Organisation for Economic Co-operation and Development OECD, Aid Effectiveness: 2006 Survey on Monitoring the Paris Declaration: Overview of the Results (Paris: OECD, 2007).

[34] Hansen-Kuhn, Women and Food Crises: How Us Food Aid Policies Can Better Support Their Struggles - a Discussion Paper.

Solutions

20. The situation facing the world is grave, but there is a range of short and long term solutions. In the short term, there is a role for food aid purchased regionally – the recognized best-practice option and one consonant with policy recommendations from the World Bank and other institutions. There are well-defined policies that should guide the disbursement of the emergency aid that is required, and these are policies contravened by existing PL-480 title II provisions.
21. Further, as the Bank has noted, the push to agrofuels policies led by this government are exacerbating the international food price squeeze. It was for this reason that both the previous UN Special Rapporteur on the Right to Food, Jean Ziegler and the current Special Rapporteur have called for a moratorium on the production of agrofuels, or at a minimum for a freeze of any further investment in this industry.
22. Sustained income transfers from rich to poor, and particularly to women, also have a role to play in ensuring that governments meet their obligations to ensure the right to food, both in the short and medium term, with the price of food likely to remain high for the foreseeable future.[35] Indeed, while governments may not shoulder the blame for poor harvests, they will certainly be in dereliction of their duties of care if they allow widespread hunger to continue.
23. Governments should be free to develop and maintain domestic grain stores to insure against the kinds of fluctuations that we have seen to date. Strategic grain reserves, and the means to accumulate and distribute them through government intervention in the market, are reasonable short and long term solutions to the current impasse. Because they are under the democratic control of governments such stores are the antithesis of private speculation in grain markets – public stores exist not to maximize profit, but to minimize hunger.
24. This policy flexibility should include the right and obligation to support the domestic agricultural investment that has for so long been neglected by the World Bank. Particularly since US levels of agricultural subsidy are, with the 2008 Farm Bill about to be signed into law, likely to remain high in the foreseeable future, developing countries need the policy flexibility to protect domestic agricultural production in ways consonant with their own democracies. Without this option, the playing field will continue to be tilted against developing country agriculture. As the World Bank itself has noted, this harms none more than the world's poorest people, who are sustained by agriculture.[36] Yet it is under the Bank's own policies that agricultural spending and protection for agriculture has been eroded.[37]

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[35] De Schutter, Background Note: Analysis of the World Food Crisis by the U.N. Special Rapporteur on the Right to Food.

[36] World Bank, World Development Report 2008: Agriculture for Development (Oxford: Oxford University Press for The World Bank, 2007).

[37] Raj Patel, The World Bank and Agriculture: A Critical Review of the World Bank's World Development Report 2008 (Johannesburg: ActionAid International, 2007).

25. A country that has followed an independent path is Malawi. Harmed by the IMF's pressure to force them to sell off their grain reserves in 2002,[38] the Malawian government decided to act in defiance of IMF and World Bank advice and support the acquisition of fertilizer for farmers. This policy has resulted in increased domestic food security in Malawi, increased output, and better development outcomes. The Malawian government is to be applauded for its rejection of Bank interference in its domestic agricultural policy, and for its determination to press ahead with a policy that was demanded by its people. This is a reasonable policy response to the failure of private enterprise to invest in agriculture.
26. Unfortunately, the price of inorganic fertilizer is high and rising, raising questions about the replicability of this experiment.[39] There is widespread agreement that an increase in soil fertility is required around the world. While industrial agriculture may have increased output in the short term, it has reduced soil fertility through the application of petrochemical-based inputs, it has tied the price of agricultural inputs to the price of oil, and has in many countries already reached the point of diminishing marginal returns. While the private sector has been keen to offer genetically modified technology as a potential solution, a World Bank-sponsored project, the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD), has recently concluded its review of ways in which the world might be fed. Its conclusions run counter to those of the private sector, but offer an important and vital series of recommendations to mitigate the current food crisis.
27. The IAASTD involved not only the World Bank, but the United Nations, the Global Environmental Fund, the World Health Organization and many other international stakeholders together with a wide range of governments, civil society and the private sector. Comprised of over 400 scientists, the panel evaluated the potential scenarios for feeding a world with a projected population of over 9 billion people. More than 50 governments approved its conclusions in April 2008, including, with certain reservations, that of the United States.
28. The report repeatedly suggests measures to reduce vulnerability in the food system through locally based knowledge, innovations, policies and investments. Instead of a one-technology-fits-all solution, the IAASTD report focuses on a matrix of locally appropriate solutions based on local knowledge and control of productive resources. The report also identifies research and policy priorities, such as reducing the dependency of agriculture on fossil fuels, which seem especially wise in light of the crisis.
29. A key recommendation of the IAASTD is to "preserve national policy flexibility"[40] in order to balance the needs of poor consumers and small scale farmers. The freedom of individual governments to enact regionally appropriate

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[38] Kwesi Owusu, Francis Ng'Ambi and Barry Coates, "Who Caused the Malawi Famine?," African Business (2003).

[39] USDA, USDA Agricultural Projections to 2017, Office of the Chief Economist, World Agricultural Outlook Board, United States Department of Agriculture, OCE-2008-1.

[40] Abate et al, Executive Summary of the Synthesis Report of the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD) (Johannesburg, South Africa: International Assessment of Agricultural Knowledge, Science and Technology for Development, 2008), 19.

policy is crucial to protecting sustainable farmers, the rural poor, and consumers from price shocks, scarcity, and speculation. The World Bank should enact policies that bolster national institutions that support price stabilization mechanisms, access of small farmers to land and economic resources, and local mechanisms for addressing market failure.

30. Strengthening local markets was also powerfully recommended to address both poverty and food security.[41] In response to the language of 'market access' offered by the international financial institutions, farmers groups have responded: "access to markets? Yes! Access to our *own* markets".[42] Many farmers are unable to have that access because of long term constraints stemming from lack of investment in rural infrastructure, credit, social programs, and an open trade policy that pits them against heavily subsidized countries (or countries with an artificially low exchange rate). Governments need the freedom to strengthen local markets for local agricultural goods. Policies that forcibly open local markets to international competition should be summarily abandoned by international finance institutions, for no other reason than it violates basic principles of economic and political sovereignty.
31. The IAASTD repeatedly stresses the need for "increasing access by small-scale farmers to land and economic resources...and increasing local value added and value captured by small-scale farmers."[43] The summary sections on Poverty and Livelihoods, Food Security, and Equity all mention the need to provide better access to land for small farmers. Re-distributive land policies, far from being prohibited by loan conditionalities, should be actively encouraged as a tool for increasing food security and alleviating poverty. Similarly, support is needed for measures that help small farmers capture more of the value of their products by using low-input technologies and local seed systems.
32. The IAASTD highlights the importance of maintaining " local expertise and germplasm so that the capacity for further research resides within the local community."[44] Successful projects on Participatory Plant Breeding and Farmer-Researcher groups were highlighted as models for successful technological development.[45] Farmer-managed local seed systems[46] are another recommendation for that could help ease the food crisis, combined with "cultivars adaptable to site-specific conditions".[47]

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[41] Abate et al, Executive Summary of the Synthesis Report of the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD) 7-8.
[42] See Annette-Aurélie Desmarais, "The Via Campesina: Consolidating an International Peasant and Farm Movement," Journal of Peasant Studies 29.2 (2002). for more on the Via Campesina farmers movement.
[43] Abate et al, Executive Summary of the Synthesis Report of the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD) 7.
[44] Abate et al, Executive Summary of the Synthesis Report of the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD) 15.
[45] Abate et al, Executive Summary of the Synthesis Report of the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD) 20.
[46] Abate et al, Executive Summary of the Synthesis Report of the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD) 7.
[47] Abate et al, Executive Summary of the Synthesis Report of the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD) 8.

33. The IAASTD reports that investors should "focus investment on local priorities identified through participatory and transparent processes, and favor multifunctional solutions to local problems."[48] Following this advice, the World Bank should cease investment in projects that focus on the adoption of patented seed. The report states that "the use of patents for transgenes introduces additional issues. In developing countries especially, instruments such as patents may drive up costs, restrict experimentation by the individual farmer or public researcher while also potentially undermining local practices that enhance food security and economic sustainability."[49] Projects like the Gates and Rockefeller foundations Alliance for a New Green Revolution in Africa, while perhaps well intentioned, are models of unaccountable and unsustainable technological investment. The AGRA program focuses heavily on distribution of chemical fertilizer and eventually, of patented genetic material. Instead, international finance institutions should invest in programs that further the adoption and research into locally appropriate and democratically controlled agro-ecological methods. The IAASTD identified several areas ripe for investment and public research, among them, low-input and organic systems, biological substitutes for agrochemicals, site specific easily adaptable cultivars, local seed systems, and reducing the dependency of agriculture on fossil fuels. These suggestions evolve from an already existing body of recognized best practice, most recently codified by the Food and Agricultural Organization.[50]
34. These policies are part of a comprehensive agrarian reform strategy necessary to support smallholder farmers.[51] It involves not a turning back of the clock to some bulcolic past, but serious investment, serious science, and the spread of democracy and liberty in rural economies. In particular, it involves agrarian reform to combat poverty and hunger, a comprehensive commitment to women's rights - not simply the right to property, but the rights to education, healthcare and equality- and substantial investment in sustainable and ecologically sound locally-owned science.
35. The Bank has a role to play in the current crisis, and in building a better future for food security, and for agriculture. It must both cease its current harmful practices, and contribute to a policy environment in which domestic agricultural investment is stimulated, sustainable, and democratically accountable. For the past three decades, agricultural policy in developing countries has been none of these.
36. One way to increase accountability is to drop loan conditionalities, except for those around transparency and democratic decision-making. A further policy, proposed by former Bank insiders, is to reduce the size of Bank loans: if loans are smaller, it makes more credible the threat to withhold them if transparency and

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[48] Abate et al, Executive Summary of the Synthesis Report of the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD) 15.
[49] Abate et al, Executive Summary of the Synthesis Report of the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD) 14.
[50] Food and Agricultural Organization of the United Nations FAO, Voluntary Guidelines to Support the Progressive Realization of the Right to Adequate Food in the Context of National Food Security Adopted by the 127th Session of the Fao Council, November 2004 (Rome: FAO, 2005).
[51] Michael Courville, Raj Patel and Peter Rosset, Promised Land: Competing Visions of Agrarian Reform (Oakland, Ca: Food First Books, 2006).

democracy conditions are violated. At the moment, the Bank, like all International Financial Institutions has an institutional bias to lend large tranches of money rather than withhold those sums on grounds of condition violation.[52] The consequence is that conditions are scrappily observed. Smaller loans with conditions restricted only to transparency and democracy, would put the Bank back on a course of supporting and nurturing developing country agriculture and democracy, rather than to trample on both. To this end, debt forgiveness is a necessary policy tool, and the House has seen fit to pass legislation supporting precisely this policy in HR 2634. Such legislation is part of broader changes required to support sustainable agricultural development in the twenty first century.

Conclusion

37. Josette Sheeran, executive director of the World Food Program has called the current crisis a 'silent tsunami'. Yet the protests around the world are far from silent. For decades, people in developing countries have struggled to make their voices heard around issues of hunger, agriculture and democracy.[53] Their efforts have been hampered by the structure and substance of international lending from organizations such as the World Bank. The Bank's fingerprints are to be found on the protests for food and democracy around the world.
38. But with smaller loans and a reduced set of conditions, the Bank would find itself in a position similar to the one it was in the 1970s. Just as the Bank is responsible for the destruction of grain marketing boards and domestic agricultural supports that have, in consequence, laid so much of the world vulnerable to the international commodity price rises, it was in the 1970s responsible for building these buffers, assisting developing country governments rather than dictating to them. Its own reports have argued comprehensively and cogently for a return to more policy autonomy for developing country governments. It is a direction in which the Bank can and should head once more. So while the World Bank's recent past is ignominious and callous, the Bank can call still on distant glories to light a path for its future.

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[52] Ravi Kanbur, "Aid, Conditionality and Debt in Africa," Foreign Aid and Development: Lessons Learnt and Directions for the Future ed. Finn Tarp (London: Routledge, 2000).

[53] John Walton and David Seddon, Free Markets & Food Riots : The Politics of Global Adjustment, Studies in Urban and Social Change (Oxford: Blackwell, 1994).

STATEMENT BEFORE THE U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON FINANCIAL SERVICES

Hearing on Contributing Factors and International Responses to the Global Food Crisis
Wednesday May 14, 10:00 A.M.

Arvind Subramanian
Senior Fellow, Peterson Institute for International Economics
Senior Fellow, Center for Global Development, and
Senior Research Professor, Johns Hopkins University

Thank you Chairman Frank, Congressman Bachus and distinguished members of the committee for inviting me to participate in today's hearing.

There is a saying that "there are only seven meals between civilization and anarchy." The riots and social unrest around the world bear witness to this saying.

The severity of the global food crisis is undeniable. As the chart shows, prices of major commodities have increased substantially over the last three years, and especially, in the last few months. According to the World Bank, about 100 million people might be thrown back into the ranks of the poor because of these price rises (see chart attached). There have been riots in a number of countries, and the Bank has identified 33 as especially vulnerable. The poor are especially vulnerable because they spend the largest portions of their income on food. For example, in Nigeria, about 70 percent of income is spent on food, 75 percent in Vietnam, and 50 percent in Indonesia compared with 12 percent in the United States (though that figure is also now on the rise).

Unfortunately, pressure on food supplies, and associated high food prices, are likely to be a medium- to long-term reality because some of the driving factors— rising prosperity in the developing world which creates more demand, high fuel prices, stagnant agricultural productivity, and climate-change induced pressure on agricultural supplies —are also of a durable nature. That recognition is important because as the world and the especially the U.S. forge their response, there will be need for actions in the short, medium and long runs.

In my testimony, I will spell out what I think are the essentials of a comprehensive U.S. and international policy response to the crisis for each of these time frames, highlighting how enlightened U.S. leadership can make a difference to the problem we now face.

Short run

The immediate humanitarian imperative is to get food quickly and cheaply to the hardest hit parts of the world, and recent events in Myanmar are yet another grim reminder of this imperative. Preventing the loss of economic security, especially in vulnerable countries such as Egypt, Somalia, and Indonesia, is in the long-term U.S. interest.

President Bush announced two weeks ago additional funding for food aid of about $770 million for fiscal year 2009. This is in addition to the previously released $200 million worth of stocks from the Bill Emerson Humanitarian Trust and the administration has asked Congress for additional funding for this year. These are excellent initiatives, affirming U.S. leadership and commitment to responding expeditiously to international crises. But this could be complemented by two additional steps.

First, my colleague Peter Timmer of the Center for Global Development (CGD) and Tom Slayton have another excellent proposal which would help the rice market and hence millions of poor and hungry in Asia, which still accounts for the bulk of the world's poor

and where rice is the staple of the diet (http://www.cgdev.org/content/publications/detail/16028/ for full proposal). The rice market has essentially seized up because three major exporters Thailand, India, and Vietnam have either imposed export restrictions or are struggling to export. More food aid simply cannot resolve this problem. But Washington can take immediate action by exerting leadership to get new rice supplies, specifically from Japan and China, to the world market.

How can this be done? Japan has large stocks of rice (about 1.5 million tons) based on its WTO obligation to import rice. These stocks are not sold domestically; instead they are allowed to decay and then used as livestock feed. Last year about 400,000 tons of rice was disposed in this manner. WTO obligations prevent Japan from re-exporting this rice. But the U.S. can relieve Japan of these obligations which would allow Japan to sell its stocks commercially or as aid; food that is fed to animals could easily be used to feed starving people. This could also be a grand gesture ahead of Japan's G8 summit in July.

In addition to the release of Japan's rice stocks, China could get some badly needed good publicity by also taking a leadership role in this crisis. Beijing is holding rice stocks equal to at least four months of domestic consumption. Just as China helped stabilize the world rice market from 1973 to 1975 during the worst rice crisis ever, China could do so again now without repercussions on its own inflation rate. Alternatively, China could launch its own food aid program to help the world's poor and could call it "Olympic Rice", and could even make their first donation to Myanmar.

Second, on food aid, the U.S. can easily increase its assistance—by up to 50 percent—without providing any additional money. All it needs to do is to eliminate the current requirement that food be sourced from the U.S. My colleague, Kim Elliott of CGD (http://www.cgdev.org/content/publications/detail/11567) has noted that every dollar of food aid could go much further if the tying requirement is eliminated (just from the saving in increased shipping and distribution costs). That would mean feeding an extra million children annually from President Bush's recent food aid authorization without extra financial contributions.[1]

Tying food aid not only reduces the effectiveness of U.S. efforts, it also undermines its soft power because U.S. generosity is obscured by the perception that food aid is unduly influenced by considerations other than humanitarian ones. In this connection, I would like to draw your attention to the table in my written testimony (drawing upon the work done by my CGD colleague David Roodman, who compiles the Commitment to Development Index (CDI) which ranks donor behavior) which shows that the U.S. is almost unique (apart from Canada) in the practice and magnitude of tying food aid.

[1] The World Food Program estimates that it takes 25 cents to fill one of the "Red Cups" that it uses to give hungry children a regular school meal of porridge, rice or beans. Three meals a day for a year then costs about $275. If the recent authorization of $770 million can go say another 40 percent without tying that would mean food for about 1.1 million additional people annually.

The two proposals relating to rice and untying food aid will encounter resistance from farm interests. But in the current context, farming interests will not be sacrificed for a simple reason: at this moment, we are in a supplier's market and farmers face little competition. A lot of the food will, in any case, have to be sourced from the U.S. in this environment of scarcity, as Josette Sheeran, Director of the World Food Program pointed out in a speech at the Peterson Institute. This is an excellent time to eliminate the tying requirement. Why not reap the commercial benefits without the tying requirement, which as I noted earlier reduces the dollar value of U.S. contributions and also entails reputational costs for the U.S.?

Medium run

To boost agricultural supply in the medium run, we need to fix the incentives facing agriculture globally. That in turn means efficient and food-friendly trade policies around the world. But not only are we far away from that objective, we are moving in the wrong direction.

In the U.S., the combination of the Renewable Fuels Standard (the ethanol mandates), the blenders' tax credit, and tariffs on imported Brazilian ethanol have diverted land, especially from wheat and soya bean production, and contributed to food price increases. Estimates vary on the magnitude of this contribution (one estimate by Professor Babcock of Iowa State University says that eliminating all three of these measures would reduce prices by 16 percent, while another by the International Food Policy Research Institute (IFPRI) suggests that a moratorium on biofuel production in developed countries through 2008 would ease corn prices by 20 percent and wheat prices by 10 percent), but as I will explain below, the question of exactly how much is less important than the fact that these three policies contribute to food price rises.

Meanwhile in the developing world, tightened restrictions on exports of foodstuffs are obstructing a long-term solution, even as import barriers come tumbling down (see the World Bank's study available at http://siteresources.worldbank.org/NEWS/Resources/risingfoodprices_chart_apr08.pdf which shows that about 18 developing countries have imposed some form of export restrictions in the current crisis). Each country is trying to keep domestic supplies high on the justifiable grounds of food security (and WTO rules do allow such restrictions). But export bans hold prices artificially low and keep the market from sending accurate demand signals to domestic farmers. This penalizes farmers, who can't get the full world price for their produce. That impairs efficiency, and undermines the incentives for investments that can increase long-term supply. Topping it all off, such measures subsidize high-income households, not just the poor.

Moreover, as more countries implement export controls, global supply contracts even further, pushing prices up. In ongoing research with Maros Ivanic, Will Martin and Aaditya Mattoo, we estimate that world prices go up substantially—up to 20 percent—due to export restrictions, with effects particularly harmful in the case of rice.

I would like to make a few general comments about trade and economic incentives. First, U.S. policies related to ethanol. There is a big debate about the contribution that they make toward raising food prices. The range of estimates will vary and we will never know the precise magnitudes. But that should not come in the way of action. We can be confident that eliminating or reducing the distortions generated by the ethanol program will help dampen food prices. Moreover, these policies are one of the few factors responsible for the crisis that we can control—more than we can control climactic factors that affect supply or the increased demand due to prosperity in the developing world. We need to act on the few things that U.S. policy-makers can control and eliminating or reducing the ethanol program is one policy lever we have.

Moreover, the ethanol issue should be seen not from the narrow perspective of its contribution to food but from two broader perspectives. With oil prices at US$126 a barrel, the market by itself is providing a lot of help and incentives for ethanol production. There seems little need for additional help and incentives at taxpayers' expense.

Furthermore, while ethanol interventions originally had good motivations (reducing dependence on fossil fuels and imported fuels), they have led to some unintended consequences that are now becoming evident. The question now from an environmental perspective is this: insofar as the U.S. government needs to provide incentives for the search for alternatives to fossil fuels, why favor one particular alternative, namely ethanol (which, according to experts is not even the most environmentally efficient one)? Why not level the playing field so that all new avenues, all potentially new ideas have a good shot at being explored and discovered? In other words, eliminating all the assistance to ethanol-based biofuels and providing broad-based incentives for alternative fuel research and production might be better food policy *and* better environmental policy. The aim of policy should not be to "pick" winners but to find winners.

Second, on the trading system, Nancy Birdsall, president of CGD, and I have argued that we need a new global compact on agricultural trade (http://www.petersoninstitute.org/publications/opeds/oped.cfm?ResearchID=921). Note how we have ended up having the worst of all possible worlds. Under normal agricultural conditions, we have huge distortions in terms of costly taxpayer support to reduce imports and encourage production and exports. Under abnormal conditions, such as we are seeing now, we see the opposite where countries liberalize their imports but prevent exports. We need a system where *both* imports and exports remain free to flow in good times *and* bad. This is especially important if trade is to remain a reliable avenue for food security. If in bad times, importing countries are subject to the export-restricting actions of producing countries, they will consider trade an unreliable way of maintaining food security and will reconsider how to manage their agriculture; there will be a greater temptation to move toward more self-reliance as insurance against the bad times; this is exactly what the European Union (EU) agriculture minister had in mind when he recently said that vulnerable African countries should think of emulating the EU's policies to attain greater self-reliance in agriculture. And if in good times, exporting countries cannot

have access to markets because of import barriers and other subsidies, they will be reluctant to give up the right to restrict exports during bad times.

Unfortunately, the ongoing Doha Round of trade negotiations won't on its own address these problems. And that's not just due to the poor prospects for completing these negotiations in the current environment. The round has been devoted to traditional forms of agricultural protection—trade barriers in the importing countries and subsidies to food production in producing countries—which are becoming now less important as food prices have soared and import barriers have declined. We need to enlarge the trade agenda so that biofuels more broadly (including the European Union's biodiesel policies), and all trade barriers, import and export, are put on the trade agenda. The United States has a key role to play in bringing all countries—industrial and developing—together, so that comprehensive and sensible policies that are good both for trade and for food can be negotiated. A key point here is that there is need for collective action: each exporting country is acting rationally but they must collectively desist and somebody, clearly the U.S., must lead the international effort to bring about collective agreement.

Long run

If there is one positive fallout from this current crisis it is to bring agriculture, which has long-suffered from inattention, back into focus. For example, in 1980, 30 percent of annual World Bank lending went to agricultural projects, but this declined to 12 percent in 2007. The overall proportion of all Official Development Assistance going to agriculture is currently only 4 percent (see http://siteresources.worldbank.org/NEWS/Resources/risingfoodprices_backgroundnote_apr08.pdf). In response to the recent crisis, the World Bank has recently announced that it will nearly double its lending to agriculture to about $800 million over the next few years.

If there is one valuable contribution that the U.S. and international community can make, in addition to providing greater finance for agricultural projects in developing countries, it is to go on a war footing to engineer a new green revolution, particularly in and for Africa. Africa has not had technological productivity improvements in agriculture to the extent that Asia and Latin America have had. The green revolution was the result of agricultural research done by Nobel Peace Prize laureate Norman Borlaug and others with the assistance of the Ford and Rockefeller Foundations. According to the *World Development Report 2008*, investment in agricultural research "has paid off handsomely," delivering an average rate of return of 43 percent in 700 projects evaluated in developing countries.

Today, we need similar initiatives both in the public and private sectors. Private sector initiatives alone will not be enough to generate research for African agriculture because of the limited purchasing power in Africa. If markets are small, returns are correspondingly small, reducing the incentives for private sector research. Nancy Birdsall and I have argued that (http://www.cgdev.org/content/publications/detail/14625) the international community, under the leadership of the U.S. and the World Bank, needs to fund more such research in

African agriculture. The international consortium of agricultural research under the aegis of the Consultative Group on International Agricultural Research (CGIAR) needs to be revitalized and provided with extra funding. For example, Monsanto, the private corporation that is a major player in agriculture, spends about $700 million on R&D compared with total spending by the international public agricultural research institutes of only about $100 million (of which less than $20 million is spent on agricultural research for Africa). One possibility would be for the World Bank to devote substantially more financial resources for CGIAR as well as to strengthen its capability more broadly to assist agricultural research in and for the poorest countries.

Of course, the recent crisis has also made clear that food prices are now inextricably linked to fuel prices. Higher fuel prices add to the cost of agricultural production. More importantly, they increase the attractiveness of diverting land and agricultural products toward producing fuel. With grain used for fuel rather than for human consumption, food is now fodder for fuel. Any long-run strategy to increase food supplies will need to include action to reducing dependence on fossil fuels.

Conclusion

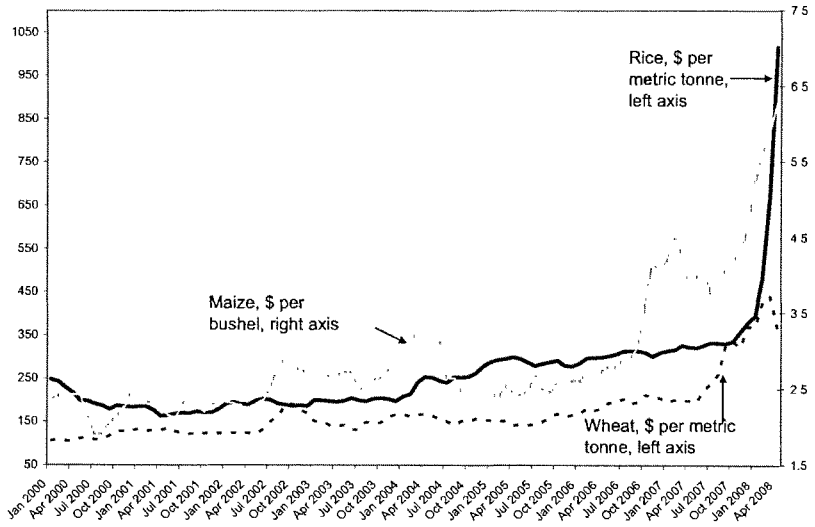
In conclusion, the U.S. can make an important contribution to the current food crisis. In the short run, the U.S. should make aid available faster, allow Japan to re-export its rice, and eliminate the tying of food aid. In the medium run, it should get all countries together in the WTO to eliminate all the distortions in agriculture and agricultural trade, including its own biofuels program, replacing it with policies that can find winners rather than pick winners. And, in the long run, it should revitalize the organizational and financial effort to boost agricultural research and productivity in developing countries, especially Africa.

Table 1: Tied Food Aid Commitments by Donor
(as % of total food aid)

Donor name	*2005*	*2006*
Australia	25%	0%
Austria	0%	0%
Belgium	0%	
Canada		100%
Denmark	0%	0%
EC	0%	0%
Finland		
France		0%
Germany	25%	25%
Greece	0%	0%
Ireland	0%	0%
Japan	0%	0%
Luxembourg	0%	0%
Netherlands	0%	0%
New Zealand	0%	0%
Norway	0%	0%
Portugal		
Spain	0%	0%
Sweden	0%	0%
Switzerland		
United Kingdom	0%	0%
United States	88%	69%

Source: OECD's DAC CRS Database
The completeness of reporting to DAC varies by country and there is no auditing or enforcement
Zero values could refer to no tying or no reporting of tying

Chart. Prices of Three Major Commodities, 2000-April 2008



Source: International Monetary Fund's, *World Economic Outlook.*

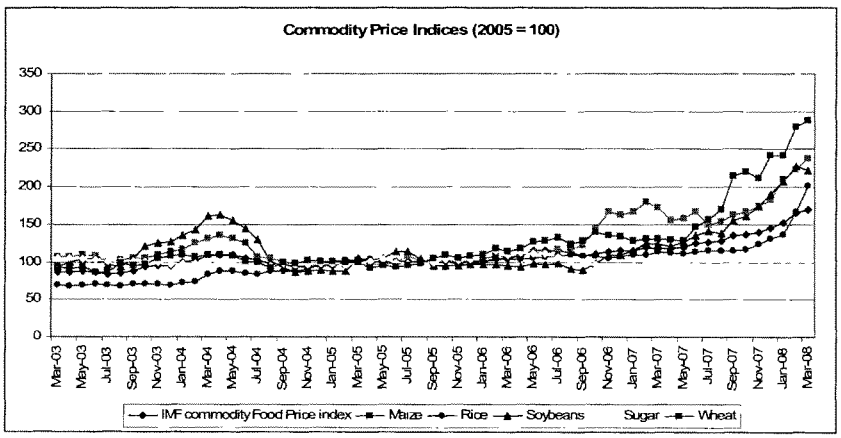
Testimony to the Financial Services Committee of the US House of Representatives

Robert T. Watson
Director of the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD): University of East Anglia, UK

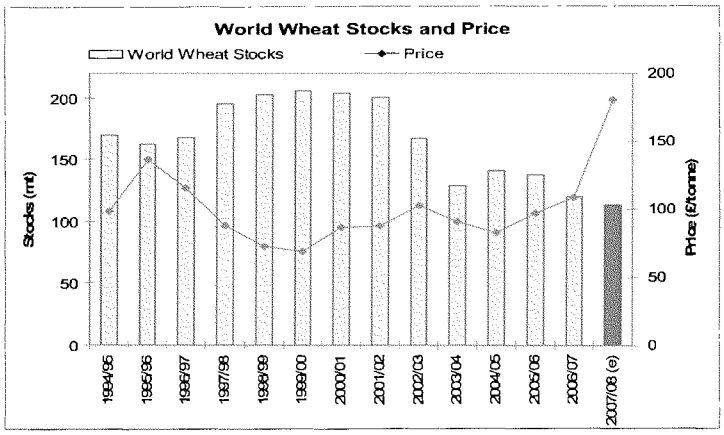
Do we have a food crisis: Are the recent prices increases a harbinger of the future?

The recent food price increases are a major cause for concern around the world – the price of wheat and rice has doubled in the last six months and international dairy prices increased sharply in 2007 recording particularly sharp gains in late spring. In March 2008, rice prices on the world market were at a 19-year high and wheat prices at a 28-year high, although in real terms they are at similar levels to prices in the mid-1990s. In developing countries, where most of the household income is spent on food, increased food prices are undermining attempts to reduce hunger and pushing some of the world's poorest people into abject poverty.

The following figure (from IMF) shows the change in commodity prices over the last 5 years.



The underlying causes of the most recent increases in food prices are complex and include factors such as increased demand from rapidly growing economies (especially China), poor harvests due to an increasingly variable climate (e.g., the Australian drought), the use of food crops for biofuels (e.g., maize for bioethanol), higher energy and fertilizer prices, low food stocks, speculation on the commodity futures market, and then, in response to the high food prices export, restrictions on agricultural products from a number of significant exporters to protect domestic consumers (e.g., Argentina, India and Ukraine).



A key question is whether these price increases are a momentary blip - the result of an unfortunate series of events, or are they a harbinger of the future? Some factors impacting food prices are shorter term than others. For example, the effects of adverse weather conditions tend to be relatively short-lived, but recurrent. Longer-term issues include the impact of global warming, which may give rise to more enduring climate change and more frequent occurrences of extreme weather events leading to potentially greater agricultural price variability in future.

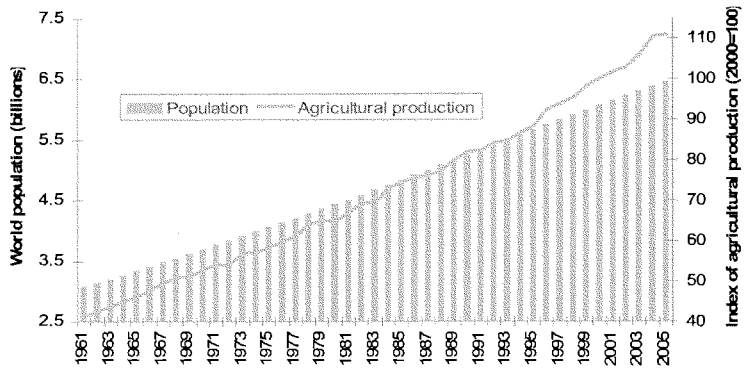
There is already evidence that the current high prices are stimulating increased production, but it may take a number of years to rebuild stocks to levels that markets are comfortable with. But if the high prices are more than a blip, what else do we need to know if we are to provide sustainable, nutritious and affordable food for the world in an environmentally and socially sustainable manner?

I was the director of the IAASTD, which involved more than 400 experts from around the world, which assessed the role (past, present and future) of agricultural knowledge, science and technology on reducing hunger and poverty, improving rural livelihoods and facilitating environmentally, socially and economically sustainable development. Annex I lists the key findings from the Global Summary for Decision Makers, while Annex II is the Executive Summary of the Synthesis Report.

Meeting the goal of affordable nutritious food for all in an environmentally and socially sustainable manner is achievable, but it cannot be achieved through current agricultural 'business as usual' – we must recognize that business as usual is not an option. Instead, if a large part of the world isn't to go hungry in the 21st Century, we need nothing short of a new 'agricultural revolution', with a more rational use of scarce land and water resources, an equitable trade regime, as well as widespread recognition and action on climate change. We also need to recognize that in this changing world we need new tools, which means increased investments in agricultural knowledge, science and technology. We also need to care about rural livelihoods – the employment opportunities and working conditions of rural laborers and their families, as well as small-scale farmers, traders, and small scale agro-enterprises. These are the people that are hurting most because of the food crisis. Existing and new S&T can only help us reach development goals if we understand that land security and tenure, appropriate technologies and good governance are critical to better food security and conserving precious resources such as land, soil and water.

It is undeniable that over the past century, agricultural science and new technologies have boosted production, with enormous gains in yields and reductions in the price of food. But these benefits have been unevenly distributed. While we in the West are surprised if there isn't a choice of bread in the supermarket on a Sunday evening, over 850 million people still go to bed hungry every night, especially in parts of sub-Saharan Africa and South East Asia. Primarily this is a problem of distribution and local production, but solutions are going to be increasingly difficult. In coming decades we need to double food production, meet food safety standards, enhance rural livelihoods and stimulate economic growth in an environmentally and socially sustainable manner. All of this at a time when there will be less labor in many developing countries as a result of HIV/AIDs and other endemic diseases (e.g., malaria in Africa), when competition from other sectors will make water even more scarce, when there be less arable land due to soil degradation and competition from biofuels, increasing levels of regional air pollution in many developing countries, loss of biodiversity, and when the climate will be changing, due to human activities giving us higher temperatures, changing rainfall and more frequent floods and droughts.

World population and agricultural production 1961-2005



Source: FAO

The new agricultural revolution that we'll need to meet this challenge will require a fundamental rethinking of the role of agricultural knowledge, science and technology. Agriculture can no longer be thought of as production alone, but the inescapable interconnectedness of agriculture's different economic, social and environmental roles and functions must be explicitly recognized.

Thankfully, many of the technologies and practices we need to meet the challenge of sustainable agriculture already exist. For instance, we know how to manage soil and water more effectively to increase water retention and decrease erosion; we already have access to microbiological techniques to suppress diseases in soils and conventional biotechnology (plant breeding) can help us produce improved crop varieties. But climate change and new and emerging animal diseases are throwing up problems that we haven't considered before and which will need advances in agricultural knowledge, science and technology to address.

Climate change has the potential to irreversibly damage the natural resource base on which agriculture depends, and in general adversely affects agricultural productivity. While moderate increases in temperature can have small beneficial effects on crop yields in mid- to high-latitudes, in low-latitudes even moderate temperature increases are likely to have negative effects on yields. Water scarcity and the timing of availability will increasingly constrain production, and it will

be critical to take a new look at water storage to cope with more extreme precipitation events, higher intra- and inter-seasonal variations (floods and droughts), and increased evapotranspiration. Climate change is already affecting, and is likely to increase, invasive species, pests and disease vectors all adversely affecting agricultural productivity. Advances in agricultural knowledge, science and technology will be required to develop improved crop traits, e.g., temperature, drought, pest and salt tolerance. In addition, it will be critical to reduce greenhouse gas emissions from the agricultural sector - methane from livestock and rice and nitrous oxide from the use of fertilizers.

And while biofuels can offer potential benefits over the rising costs of fossil fuels, energy security issues, reducing greenhouse gas emissions and rural economies, the IAASTD concluded that the production of first generation biofuels, which are predominantly produced from agricultural crops (e.g., bioethanol from maize), can raise food prices and reduce our ability to alleviate hunger. There is also considerable debate over the environmental impact of biofuels, including their greenhouse gas emissions and their impact on biodiversity, soils and water. Increased public and private investments are needed for next-generation biofuels, such as cellulosic ethanol and biomass to liquids technologies, so that cheaper and more abundant feedstocks can be converted into biofuels -- the biofuel demands on agricultural land and on pristine forest must be reduced.

Against a backdrop of a changing climate and the threat of even larger parts of the world going hungry it is clear that integrated advances in biotechnology, remote sensing and communication technology for instance, will be important in providing opportunities for more resource-efficient and site-specific agriculture.

Currently the most contentious issue in agricultural science is the use of recombinant DNA techniques to produce transgenic products because there is not widespread agreement on the environmental, human health and economic risks and benefits of such products. Dependent on how the technology develops, it is possible that GM crops could offer a range of benefits over the longer term that could make a contribution to dealing with food security problems and managing the effects of climate change. Research and development is needed to bring to market crops with new traits that would benefit, inter-alia, small-scale farmers in developing countries e.g. disease-resistance, drought-tolerance, improved nutritional characteristics, and more efficient use of nitrogen fertilizer. However, it is likely to be several years at least before these new traits might reach possible commercial application. At the same time, it needs to be recognized that small-scale farmers in many parts of Africa could increase their yields significantly with current non-GM crops and inputs, given access to markets, financing and improved rural infrastructure. This highlights the importance of securing a successful outcome to the Doha trade round. In addition, more attention needs to be focused on reducing post-harvest losses in poor countries, as currently between 30-40% of the food grown is lost before reaching markets.

Opening national agricultural markets to international competition can offer economic benefits, but can lead to long term negative effects on poverty alleviation, food security and the environment without basic national institutions and infrastructure being in place. Therefore, trade policy reform that provides a more equitable global trading system can help make small-scale farmers profitable and enhance the ability of developing countries to achieve food security while ensuring environmental sustainability. Developing countries would also benefit from the removal of barriers for products in which they have a competitive advantage by a reduction of escalating tariffs for processed commodities in both developed and developing countries.

Specifically, our ability to produce affordable nutritious food that is accessible to everybody in the future will mean addressing several of the drivers of the current increase in food prices. We will need to decrease the vulnerability of agricultural productivity to projected changes in climate, develop the next generation of biofuels, and transform the trade system to benefit the small-scale farmer.

Short term interventions to establish a sustainable and secure food system that meets the basic food needs of all people:

The challenge for international financial institutions is to reassess standard policy prescriptions, e.g., trade liberalization, dependence of developing countries in export cash crops, appropriate technologies, and withdrawal of the state from the agricultural sector.

In the short-term, international financial institutions and development agencies can assist developing countries with the impacts of high prices by:

- Recognizing that business as usual is not an option and that increasing the productivity and profitability of the small scale farm sector is critically important to food security in developing countries – there should be increased support for small scale farmers who should be at the centre of development policies that promote production of locally appropriate crops;
- Supporting emergency interventions to boost domestic agricultural production of food crops that are locally important for food security - these interventions need to focus on supporting the small scale farm sector, e.g., post harvest facilities, market feeder roads, improving access and tenure to land and productive resources, provide access to credit, etc.
- Promoting an increase in national public investment and regional co-operation in agricultural knowledge, science and technology, with a focus on drylands, fisheries, mountain and coastal ecosystems, orphan crops, crop-livestock systems, and climate change impacts; and
- Establishing national safety nets and public food distribution systems to provide the poorest and most vulnerable members of the populations with resources to meet their basic needs as well as to protect them against food price shocks. Increasingly, organizations such as the U.N. Food and Agriculture Organization are saying aid should be provided in the form of cash or food coupons rather than food shipments, which can affect producers and markets in recipient countries and distort international trade.

Medium to long term interventions to establish a sustainable and secure food system that meets the basic foods needs of all people:

In the medium to longer-term the World Bank and other international financial institutions can assist in establishing a sustainable and secure food system that meets the basic foods needs of all people by:

- Targeting AKST toward strategies that combine productivity with protecting natural resources such as soils, water, forests, and biodiversity by supporting biologically diverse agroecological farming and grazing methods, especially those practiced sustainably by small-scale food producers, which the IAASTD found makes agriculture more resilient, adaptive and capable of contributing to the elimination of hunger and rural poverty;
- Assisting crop and livestock production systems adjust to increasing rainfall variability, higher intensity rainfall events, and rising temperatures;
- Supporting programs to improve the fundamentals for small-scale farmers and rural livelihoods – security of access and tenure to land and resources; access to credit for the small-scale farm sector; access to seeds and other inputs; rural infrastructure such as market feeder roads, post-harvest facilities, and investment in local value addition; local, regional and international market information and access;
- Assisting countries to find the appropriate balance between the production of export crops, which help a country's balance of payments, but does not ensure food security or buffer a country from volatile international market prices, and support for production of the subsistence crops needed to meet the needs of the domestic populations;
- Supporting programs to internalize environmental externalities and provide payment or reward for environmental services;
- Promoting public-private-CSO involvement in AKST with accountability for social and environmental outcomes;

- Assisting countries develop basic national institutions and infrastructure to take advantage of international trade and macro-level policy changes to enable AKST linkages with development goals;
- Assisting countries to build and reform the AKST skill base (basic sciences, social, political and legal knowledge) and innovation capacities of rural communities and consumers; and
- Building national and regional food stocks, which can be of use in meeting emergency needs resulting from the frequent natural disasters in regions such as south-east Asia.

Meeting the goal of affordable nutritious food for all, in an environmentally sustainable manner is achievable. The future is not pre-ordained, but is in our collective hands. While we can build upon our successes, we must also recognize that an extrapolation of business-as-usual will not suffice. Instead, we need to be bold enough to rethink agriculture. Most importantly, if we are to help improve the welfare of poor and disadvantaged people, we need to acknowledge that the time to act is now.

Annex I to Testimony by Robert T. Watson to House Financial Services Committee

International Assessment of Agricultural Knowledge, Science and Technology for Development

Key Findings from Global Summary for Decision Makers

1. Agricultural Knowledge, Science and Technology (AKST) has contributed to substantial increases in agricultural production over time, contributing to food security. This has been achieved primarily through a strong focus on increasing yields with improved germplasm, increased inputs (water, agrochemicals) and mechanization. These increases in productivity have contributed to a net increase in global food availability per person: from 2360 kcal in the 1960s to 2803 kcal per person per day in the 1990s, at a time when world population significantly increased.

2. People have benefited unevenly from these yield increases across regions, in part because of different organizational capacities, sociocultural factors, and institutional and policy environments. While in South Asia the percentage of people living in poverty (<US$2 per day) has decreased from 45 to 30%, in sub-Saharan Africa (SSA), for example, this percentage (around 50%) has remained the same over the last 20 years. Value added per agricultural worker in 2003 (in 2000 US$) in OECD countries was 23,081 with a rate of growth of 4.4% for 1992-2003. For SSA, the figures are respectively 327 and 1.4%.

3. Emphasis on increasing yields and productivity has in some cases had negative consequences on environmental sustainability. These consequences were often not foreseen as they occurred over time and, some occurred outside of traditional farm boundaries. For instance, 1.9 billion ha (and 2.6 billion people) today are affected by significant levels of land degradation. Fifty years ago water withdrawal from rivers was one-third of what it is today: currently 70% of freshwater withdrawal globally (2700 km^3 – 2.45% of rainfall) is attributable to irrigated agriculture, which in some cases has caused salinization. Approximately 1.6 billion people live in water-scarce basins. Agriculture contributes about 60% of anthropogenic emissions of CH_4 and about 50% of N_20 emissions. Inappropriate fertilization has led to eutrophication and large dead zones in a number of coastal areas, e.g. Gulf of Mexico, and some lakes, and inappropriate use of pesticides has lead to groundwater pollution, and other effects, for example loss of biodiversity.

4. The environmental shortcomings of agricultural practice associated with poor socioeconomic conditions create a vicious cycle in which poor smallholder farmers have to deforest and use new often marginal lands, so increasing deforestation and overall degradation. Loss of soil fertility, soil erosion, breakdown in agroecological functions have resulted in poor crop yields, land abandonment, deforestation and ever-increasing movement into marginal land, including steep hillsides. Existing multifunctional systems that minimize these problems have not been sufficiently prioritized for research. There is little recognition of the ecosystem functions that mitigate the environmental impacts.

Multifunctionality

The term multifunctionality has sometimes been interpreted as having implications for trade and protectionism. This is **not** the definition used here. In IAASTD, multifunctionality is used solely to express the inescapable interconnectedness of agriculture's different roles and functions. The concept of multifunctionality recognizes agriculture as a multi-output activity producing not only commodities (food, feed, fibers, agrofuels, medicinal products and ornamentals), but also non-commodity outputs such as environmental services, landscape amenities and cultural heritages.

The working definition proposed by OECD, which is used by the IAASTD, associates multifunctionality with the particular characteristics of the agricultural production process and its outputs; (i) multiple commodity and non-commodity outputs are jointly produced by agriculture; and (ii) some of the non-commodity outputs may exhibit the characteristics of externalities or public goods, such that markets for these goods function poorly or are non-existent.

The use of the term has been controversial and contested in global trade negotiations, and it has centered on whether "trade-distorting" agricultural subsidies are needed for agriculture to perform its many functions. Proponents argue that current patterns of agricultural subsidies, international trade and related policy frameworks do not stimulate transitions toward equitable agricultural and food trade relation or sustainable food and farming systems and have given rise to perverse impacts on natural resources and agroecologies as well as on human health and nutrition. Opponents argue that attempts to remedy these outcomes by means of trade-related instruments will weaken the efficiency of agricultural trade and lead to further undesirable market distortion; their preferred approach is to address the externalized costs and negative impacts on poverty, the environment, human health and nutrition by other means.

5. Projections based on a continuation of current policies and practices indicate that global demographic changes and changing patterns of income distribution over the next 50 years will lead to different patterns of food consumption and increased demand for food. In the reference run, global cereal demand is projected to increase by 75% between 2000 and 2050 and global meat demand is expected to double. More than three-fourths of growth in demand in both cereals and meat is projected to be in developing countries. Projections indicate a probable tightening of world food markets with increasing resource scarcity adversely affecting poor consumers and poor producers. Overall, current terms of trade and policies,and growing water and land scarcity, coupled with projected changes in climate is projected to constrain growth in food production.

6. Agriculture operates within complex systems and is multifunctional in its nature. A multifunctional approach to implementing AKST will enhance its impact on hunger and poverty, improving human nutrition and livelihoods in an equitable, environmentally, socially and economically sustainable manner.

7. An increase and strengthening of AKST towards agroecological sciences will contribute to addressing environmental issues while maintaining and increasing productivity. Formal, traditional and community-based AKST need to respond to increasing pressures on natural resources, such as reduced availability and worsening quality of water, degraded soils and landscapes, loss of biodiversity and agroecosystem function, degradation and loss of forest cover and degraded marine and inshore fisheries. Agricultural strategies will also need to include limiting emission of greenhouse gases and adapting to human-induced climate change and increased variability.

8. Strengthening and redirecting the generation and delivery of AKST will contribute to addressing a range of persistent socioeconomic inequities, including reducing the risk of conflicts resulting from competing claims on land and water resources; assisting individuals and

communities in coping with endemic and epidemic human and animal diseases and their consequences; addressing problems and opportunities associated with local and international flows of migrant laborers; and increasing access to information, education and technology to poorer areas and peoples, especially to women. Such redirection and strengthening requires thorough, open and transparent engagement of all stakeholders.

9. Greater and more effective involvement of women and use of their knowledge, skills and experience will advance progress towards sustainability and development goals and a strengthening and redirection of AKST to address gender issues will help achieve this. Women farmers, processors and farm workers have benefited less from AKST than men overall and poor women least of all. Efforts to redress persistent biases in their access to production resources and assets, occupational education and training, information and extension services have met with limited success. Many of the societal, policy-related and operational impediments to more equitable progress, as well as the private and public costs of such an uneven pattern of development, are well understood as are the factors that discourage more determined action to empower women.

10. Many of the challenges facing agriculture currently and in the future will require more innovative and integrated applications of existing knowledge, science and technology (formal, traditional and community-based), as well as new approaches for agricultural and natural resource management. Agricultural soil and biodiversity, nutrient, pest and water management, and the capacity to respond to environmental stresses such as climate change can be enhanced by traditional and local knowledge systems and current technologies. Technological options such as new genotypes of crops, livestock, fish and trees and advances in plant, livestock and fish breeding, biotechnology, remote sensing, agroecology, agroforestry, integrated pest and nutrient management and information and communication technologies (ICTs) will create opportunities for more resource-efficient and site-specific agriculture.

Biotechnology
The IAASTD definition of biotechnology is based on that in the Convention on Biological Diversity and the Cartagena Protocol on Biosafety. It is a broad term embracing the manipulation of living organisms and spans the large range of activities from conventional techniques for fermentation and plant and animal breeding to recent innovations in tissue culture, irradiation, genomics and marker-assisted breeding (MAB) or marker assisted selection (MAS) to augment natural breeding. Some of the latest biotechnologies, called 'modern biotechnology', include the use of *in vitro* modified DNA or RNA and the fusion of cells from different taxonomic families, techniques that overcome natural physiological reproductive or recombination barriers.

11. Some challenges will be resolved primarily by development and appropriate application of new and emerging AKST. Such AKST can contribute to solutions provided appropriate institutions and capacities are in place. Examples include combating livestock diseases, e.g. vaccine development; mitigating greenhouse gas emissions from agriculture; reducing the vulnerability of agriculture to a changing climate; reducing the heavy reliance of agriculture and commodity chains on fossil fuels; and addressing complex socioeconomic issues regarding local, national and international public goods.

12. Targeting small-scale agricultural systems by forging public and private partnerships, increased public research and extension investment helps realize *existing* opportunities. Strengthening participatory research and extension partnerships, development-oriented local governance and institutions such as cooperatives, farmer organizations and business associations, scientific institutions and unions support small-scale producers and entrepreneurs to capture and add value to existing opportunities on-farm, postharvest and in non-farm rural enterprises. In some instances, opportunities lie in those small-scale farming systems that have high water, nutrient and energy use efficiencies and conserve natural resources and biodiversity without sacrificing yield, but high marketing costs do not allow them to harness these

opportunities. The underlying principles, processes and knowledge may be relevant and capable of extrapolation to larger scale farming systems, particularly in the face of climate change effects.

13. Significant pro-poor progress requires creating opportunities for innovation and entrepreneurship, which explicitly target resource poor farmers and rural laborers. This will require simultaneous investments in infrastructure and facilitating access to markets and trade opportunities, occupational education and extension services, capital, credit, insurance and in natural resources such as land and water. The increasing market influence of large scale buyers and market standards are especially challenging for small producers necessitating further innovation in public and private training, education and extension services and suitable legal, regulatory and policy frameworks.

14. Decisions around small-scale farm sustainability pose difficult policy choices. Special and differential treatment for developing countries is an acknowledged principle in Doha agricultural negotiations and it is accepted that developing countries can have this special treatment especially on the grounds of food security, farmer's livelihoods and rural development. Suitable action is considered necessary at the international and national level to enable small farmers to benefit from these provisions. New payment mechanisms for environmental services by public and private utilities such as catchment protection and mitigation of climate change effects are of increasing importance and open new opportunities for the small-scale farm sector.

15. Public policy, regulatory frameworks and international agreements are critical to implementing more sustainable agricultural practices. Urgent challenges remain that call for additional effective agreements and bio-security measures involving transboundary water, emerging human and animal diseases, agricultural pests, climate change, environmental pollution and the growing concerns about food safety and occupational health. Achieving development and sustainability goals calls for national and international regulations to address the multiple economic, environmental and social dimensions of these transboundary issues. These policies need to be informed by broad-based evidence from natural and social sciences with multistakeholder participation. Improved governance and strengthening engagement of stakeholders can redress some of the inadequacies where identified in AKST arrangements that often privilege short-term over long-term considerations and productivity over environmental and social sustainability and the multiple needs of the small-scale farm sector.

16. Innovative institutional arrangements are essential to the successful design and adoption of ecologically and socially sustainable agricultural systems. Sustainable agricultural production is more likely when legal frameworks and forms of association provide secure access to credit, markets, land and water for individuals and communities with modest resources. Creating market-based opportunities for processing and commercializing agricultural products that ensure a fair share of value addition for small-scale producers and rural laborers is critical to meeting development and sustainability goals.

17. Opening national agricultural markets to international competition can offer economic benefits, but can lead to long term negative effects on poverty alleviation, food security and the environment without basic national institutions and infrastructure being in place. Some developing countries with large export sectors have achieved aggregate gains in GDP, although their small-scale farm sectors have not necessarily benefited and in many cases have lost out. The small-scale farm sector in the poorest developing countries is a net loser under most trade liberalization scenarios that address this question. These distributional impacts call for differentiation in policy frameworks as embraced by the Doha work plan (special and differential treatment and non-reciprocal access). Developing countries could benefit from reduced barriers and elimination of escalating tariffs for processed commodities in developed and developing countries; and they could also benefit from reduced barriers among themselves; deeper generalized preferential access to developed country markets for commodities important for rural livelihoods; increased public investment in local value addition; improved access for small-scale farmers to credit; and strengthened regional markets.

18. Intensive export oriented agriculture has increased under open market operations but has been accompanied by both benefits and adverse consequences depending on circumstances such as exportation of soil nutrients and water, unsustainable soil or water management, or exploitative labor conditions in some cases. AKST innovations that address sustainability and development goals would be more effective with fundamental changes in price signals, for example, internalization of environmental externalities and payment or reward for environmental services.

19. The choice of relevant approaches to adoption and implementation of agricultural innovation is crucial for achieving development and sustainability goals. There is a wide range of such approaches in current use. In the past, most AKST policy and practice in many countries were undertaken using the 'transfer of technology' approach. A critical decision for AKST stakeholders is the selection of approaches suited to the advancement of sustainability and development goals in different circumstances.

20. More and better targeted AKST investments, explicitly taking into account the multifunctionality of agriculture, by both public and private sectors can help advance development and sustainability goals. Increased investments in AKST, particularly if complemented by supporting investments in rural development (for example, infrastructure, telecommunications and processing facilities) can have high economic rates of return and reduce poverty. AKST investments also generate environmental, social, health, and cultural impacts. More evidence is needed on the actual levels and distributional effects of the economic and non-economic benefits and costs of these investments for better targeting of future AKST investments.

21. While public private partnerships are to be encouraged the establishment and enforcement of codes of conduct by universities and research institutes can help avoid conflicts of interest and maintain focus on sustainability and development in AKST when private funding complements public sector funds. Government capacity to understand, and where necessary mediate public/private partnerships, can be assisted for instance by means of monitoring systems.

22. Achieving sustainability and development goals will involve creating space for diverse voices and perspectives and a multiplicity of scientifically well-founded options, through, for example, the inclusion of social scientists in policy and practice of AKST helps direct and focus public and private research, extension and education on such goals. Diverse and conflicting interpretations of past and current events, coupled with the under-valuation of different types of AKST limit progress in the field. Understanding the underlying sources of competing interpretations of AKST is crucial to addressing goals. Some interpretations have been privileged over others and have helped push formal AKST along certain pathways, to the neglect of other scientifically sound options. Some of the by-passed options originate in traditional knowledge or civil society experience and may be better able to contribute to poverty reduction, social inclusion, equity and generate multifunctional outcomes.

Annex II to Testimony by Robert T. Watson to House Financial Services Committee

International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD)

Executive Summary of the Synthesis Report

This Synthesis Report captures the complexity and diversity of agriculture and AKST across world regions. It is built upon the global and five sub-global reports that provide evidence for the integrated analysis of the main concerns necessary to achieve development and sustainability goals. It is organized in two parts that address the primary animating question: how can AKST be used to reduce hunger and poverty, improve rural livelihoods, and facilitate equitable environmentally, socially, and economically sustainable development? The eight cross-cutting themes include: bioenergy, biotechnology, climate change, human health, natural resource management, trade and markets, traditional and local knowledge and community-based innovation, and women in agriculture and is organized in two substantive parts. In the first part we identify the current conditions, challenges and options for action that shape AKST, while in the second part we focus on the eight cross-cutting themes.

The International Assessment of Agricultural Science and Technology for Development (IAASTD) responds to the widespread realization that despite significant scientific and technological achievements in our ability to increase agricultural productivity, we have been less attentive to some of the unintended social and environmental consequences of our achievements. We are now in a good position to reflect on these consequences and to outline various policy options to meet the challenges ahead, perhaps best characterized as the need for food and livelihood security under increasingly constrained environmental conditions from within and outside the realm of agriculture and globalized economic systems.

This widespread realization is linked directly to the goals of the IAASTD: how Agricultural Knowledge, Science and Technology (AKST) can be used to reduce hunger and poverty, to improve rural livelihoods and to facilitate equitable environmentally, socially and economically sustainable development. Under the rubric of IAASTD, we recognize the importance of AKST to the multifunctionality of agriculture and the intersection with other local to global concerns, including loss of biodiversity and ecosystem services, climate change and water availability.

The IAASTD is unique in the history of agricultural science assessments, in that it assesses both formal science and technology (S&T) and local and traditional knowledge, addresses not only production and productivity but the multifunctionality of agriculture, and recognizes that multiple perspectives exist on the role and nature of AKST. For many years, agricultural science focused on delivering component technologies to increase farm-level productivity where the market and institutional arrangements put in place by the state were the primary drivers of the adoption of new technologies. The general model has been to continuously innovate, reduce farm gate prices and externalize costs. This model drove the phenomenal achievements of AKST in industrial countries after World War II and the spread of the Green Revolution beginning in the 1960s. But, given the new challenges we confront today, there is increasing recognition within formal S&T organizations that the current AKST model requires revision. Business as usual is no longer an option. This leads to rethinking the role of AKST in achieving development and sustainability goals; one that seeks more intensive engagement across diverse worldviews and possibly contradictory approaches in ways that can inform and suggest strategies for actions enabling to the multiple functions of agriculture.

In order to address the diverse needs and interests that shape human life, we need a shared approach to sustainability with local and cross-national collaboration. We cannot escape our predicament by simply continuing to rely on the aggregation of individual choices, to achieve

sustainable and equitable collective outcomes. Incentives are needed to influence the choices individuals make. Issues such as poverty and climate change also require collective agreements on concerted action and governance across scales that go beyond an appeal to individual benefit. At the global, regional, national and local levels, decision makers must be acutely conscious of the fact that there are diverse challenges, multiple theoretical frameworks and development models and a wide range of options to meet development and sustainability goals. Our perception of the challenges and the choices we make at this juncture in history will determine how we protect our planet and secure our future.

Development and sustainability goals should be placed in the context of (i) current social and economic inequities and political uncertainties about war and conflicts; (ii) uncertainties about the ability to sustainably produce and access sufficient food; (iii) uncertainties about the future of world food prices; (iv) changes in the economics of fossil based energy use; (v) the emergence of new competitors for natural resources; (vi) increasing chronic diseases that are partially a consequence of poor nutrition and poor food quality as well as food safety; and (vii) changing environmental conditions and the growing awareness of human responsibility for the maintenance of global ecosystem services (provisioning, regulating, cultural and supporting).

Today there is a world of asymmetric development, unsustainable natural resource use, and continued rural and urban poverty. Generally the adverse consequences of global changes have the most significant effects on the poorest and most vulnerable, who historically have had limited entitlements and opportunities for growth.

The pace of formal technology generation and adoption has been highly uneven. Actors within North America and Europe (NAE) and emerging economies who have captured significant economies of scale through formal AKST will continue to dominate agricultural exports and extended value chains. There is an urgent need to diversify and strengthen AKST recognizing differences in agroecologies and social and cultural conditions. The need to retool AKST, to reduce poverty and provide improved livelihoods options for the rural poor, especially landless and peasant communities, urban informal and migrant workers, is a major challenge.

There is an overarching concern in all regions regarding poverty alleviation and the livelihoods options available to poor people who are faced with intra- and inter-regional inequalities. There is recognition that the mounting crisis in food security is of a different complexity and potentially different magnitude than the one of the 1960s. The ability and willingness of different actors, including those in the state, civil society and private sector, to address fundamental questions of relationships among production, social and environmental systems is affected by contentious political and economic stances.

The acknowledgement of current challenges and the acceptance of options available for action require a long-term commitment from decision makers that is responsive to the specific needs of a wide range of stakeholders. A recognition that knowledge systems and human ingenuity in science, technology, practice and policy is needed to meet the challenges, opportunities and uncertainties ahead. This recognition will require a shift to nonhierarchical development models.

The main challenge of AKST is to increase the productivity of agriculture in a sustainable manner. AKST must address the needs of small-scale farms in diverse ecosystems and to create realistic opportunities for their development where the potential for improved area productivity is low and where climate change may have its most adverse consequences. The main challenges for AKST posed by multifunctional agricultural systems include:

- How to improve social welfare and personal livelihoods in the rural sector and enhance multiplier effects of agriculture?
- How to empower marginalized stakeholders to sustain the diversity of agriculture and food systems, including their cultural dimensions?
- How to provide safe water, maintain biodiversity, sustain the natural resource base and minimize the adverse impacts of agricultural activities on people and the environment?

- How to maintain and enhance environmental and cultural services while increasing sustainable productivity and diversity of food, fiber and biofuel production?
- How to manage effectively the collaborative generation of knowledge among increasingly heterogeneous contributors and the flow of information among diverse public and private AKST organizational arrangements?
- How to link the outputs from marginalized, rain fed lands into local, national and global markets?

Multifunctionality

The term multifunctionality has sometimes been interpreted as having implications for trade and protectionism. This is **not** the definition used here. In IAASTD, multifunctionality is used solely to express the inescapable interconnectedness of agriculture's different roles and functions. The concept of multifunctionality recognizes agriculture as a multi-output activity producing not only commodities (food, feed, fibers, agrofuels, medicinal products and ornamentals), but also non-commodity outputs such as environmental services, landscape amenities and cultural heritages.

The working definition proposed by OECD, which is used by the IAASTD, associates multifunctionality with the particular characteristics of the agricultural production process and its outputs; (i) multiple commodity and non-commodity outputs are jointly produced by agriculture; and (ii) some of the non-commodity outputs may exhibit the characteristics of externalities or public goods, such that markets for these goods function poorly or are non-existent.

The use of the term has been controversial and contested in global trade negotiations, and it has centered on whether "trade-distorting" agricultural subsidies are needed for agriculture to perform its many functions. Proponents argue that current patterns of agricultural subsidies, international trade and related policy frameworks do not stimulate transitions toward equitable agricultural and food trade relation or sustainable food and farming systems and have given rise to perverse impacts on natural resources and agroecologies as well as on human health and nutrition. Opponents argue that attempts to remedy these outcomes by means of trade-related instruments will weaken the efficiency of agricultural trade and lead to further undesirable market distortion; their preferred approach is to address the externalized costs and negative impacts on poverty, the environment, human health and nutrition by other means.

Options for Action

Successfully meeting development and sustainability goals and responding to new priorities and changing circumstances would require a fundamental shift in AKST, including science, technology, policies, institutions, capacity development and investment. Such a shift would recognize and give increased importance to the multifunctionality of agriculture, accounting for the complexity of agricultural systems within diverse social and ecological contexts. It would require new institutional and organizational arrangements to promote an integrated approach to the development and deployment of AKST. It would also recognize farming communities, farm households, and farmers as producers and managers of ecosystems. This shift may call for changing the incentive systems for all actors along the value chain to internalize as many externalities as possible. In terms of development and sustainability goals, these policies and institutional changes should be directed primarily at those who have been served least by previous AKST approaches, i.e., resource-poor farmers, women and ethnic minorities. Such development would depend also on the extent to which small-scale farmers can find gainful off-farm employment and help fuel general economic growth. Large and middle-size farmers continue to be important and high pay-off targets of AKST, especially in the area of sustainable land use and food systems.

It will be important to assess the potential environmental, health and social impacts of any technology, and to implement the appropriate regulatory frameworks. AKST can contribute to radically improving food security and enhancing the social and economic performance of agricultural systems as a basis for sustainable rural and community livelihoods and wider economic development. It can help to rehabilitate degraded land, reduce environmental and

health risks associated with food production and consumption and sustainably increase production.

Success would require increased public and private investment in AKST, the development of supporting policies and institutions, revalorization of traditional and local knowledge, and an interdisciplinary, holistic and systems-based approach to knowledge production and sharing. Success also depends on the extent to which international developments and events drive the priority given to development and sustainability goals and the extent to which requisite funding and qualified staff are available.

Poverty and livelihoods
Important options for enhancing rural livelihoods include increasing access by small-scale farmers to land and economic resources and to remunerative local urban and export markets; and increasing local value added and value captured by small-scale farmers and rural laborers. A powerful tool for meeting development and sustainability goals resides in empowering farmers to innovatively manage soils, water, biological resources, pests, disease vectors, genetic diversity, and conserve natural resources in a culturally appropriate manner. Combining farmers' and external knowledge would require new partnerships among farmers, scientists and other stakeholders.

Policy options for improving livelihoods include access to microcredit and other financial services; legal frameworks that ensure access and tenure to resources and land; recourse to fair conflict resolution; and progressive evolution and proactive engagement in Intellectual Property Rights (IPR) regimes and related instruments. Developments are needed that build trust and that value farmer knowledge, agricultural and natural biodiversity; farmer-managed medicinal plants, local seed systems and common pool resource management regimes. Each of these options, when implemented locally, depends on regional and nationally based mechanisms to ensure accountability. The suite of options to increase domestic farm gate prices for small-scale farmers includes fiscal and competition policies; improved access to AKST; novel business approaches; and enhanced political power.

Food security
Food security strategies require a combination of AKST approaches, including the development of food stock management, effective market intelligence and early warning, monitoring, and distribution systems. Production measures create the conditions for food security, but they need to be looked at in conjunction with people's access to food (through own production, exchange and public entitlements) and their ability to absorb nutrients consumed (through adequate access to water and sanitation, adequate nutrition and nutritional information) in order to fully achieve food security.

> *Food security* [is] a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life. (FAO, The State of Food Insecurity 2001)
>
> *Food sovereignty* is defined as the right of peoples and sovereign states to democratically determine their own agricultural and food policies.

AKST can increase sustainable agricultural production by expanding use of local and formal AKST to develop and deploy suitable cultivars adaptable to site-specific conditions; improving access to resources; improving soil, water and nutrient management and conservation; pre- and postharvest pest management; and increasing small-scale farm diversification. Policy options for addressing food security include developing high-value and under-utilized crops in rain fed areas; increasing the full range of agricultural exports and imports, including organic and fair trade products; reducing transaction costs for small-scale producers; strengthening local markets; food safety nets; promoting agro-insurance; and improving food safety and quality. Price shocks and

extreme weather events call for a global system of monitoring and intervention for the timely prediction of major food shortages and price-induced hunger.

AKST investments can increase the sustainable productivity of major subsistence foods including orphan and underutilized crops, which are often grown or consumed by poor people. Investments could also be targeted for institutional change and policies that can improve access of poor people to food, land, water, seeds, germplasm and improved technologies.

Environmental sustainability
AKST systems are needed that enhance sustainability while maintaining productivity in ways that protect the natural resource base and ecological provisioning of agricultural systems. Options include improving nutrient, energy, water and land use efficiency; improving the understanding of soil-plant-water dynamics; increasing farm diversification; supporting agroecological systems, and enhancing biodiversity conservation and use at both field and landscape scales; promoting the sustainable management of livestock, forest and fisheries; improving understanding of the agroecological functioning of mosaics of crop production areas and natural habitats; countering the effects of agriculture on climate change and mitigating the negative impacts of climate change on agriculture.

Policy options include ending subsidies that encourage unsustainable practices and using market and other mechanisms to regulate and generate rewards for agro/environmental services, for better natural resource management and enhanced environmental quality. Examples include incentives to promote IPM and environmentally resilient germplasm management, payments to farmers and local communities for ecosystem services, facilitating and providing incentives for alternative markets such as green products, certification for sustainable forest and fisheries practices and organic agriculture and the strengthening of local markets. Long-term land and water use rights/tenure, risk reduction measures (safety nets, credit, insurance, etc.) and profitability of recommended technologies are prerequisites for adoption of sustainable practices. Common pool resource regimes and modes of governance that emphasize participatory and democratic approaches are needed.

Investment opportunities in AKST that could improve sustainability and reduce negative environmental effects include resource conservation technologies, improved techniques for organic and low-input systems; a wide range of breeding techniques for temperature and pest tolerance; research on relationship of agricultural ecosystem services and human well-being; economic and non-economic valuations of ecosystem services; increasing water use efficiency and reducing water pollution; biocontrols of current and emerging pests and pathogens; biological substitutes for agrochemicals; and reducing the dependency of the agricultural sector on fossil fuels.

Human health and nutrition
Inter-linkages between health, nutrition, agriculture, and AKST affect the ability of individuals, communities, and nations to reach sustainability goals. These inter-linkages exist within the context of multiple stressors that affect population health. A broad and integrated approach is needed to identify appropriate use of AKST to increase food security and safety, decrease the incidence and prevalence of a range of infectious (including emerging and re-emerging diseases such as malaria, avian influenza, HIV/AIDS and others) and chronic diseases, and decrease occupational exposures, injuries and deaths. Robust agricultural, public health, and veterinary detection, surveillance, monitoring, and response systems can help identify the true burden of ill health and cost-effective, health-promoting strategies and measures. Addition investments are needed to maintain and improve current systems and regulations.

- *Increasing food security* can be facilitated by promoting policies and programs to diversify diets and improve micronutrient intake; and developing and deploying existing and new technologies for the production, processing, preservation, and distribution of food.

- *Increasing food safety* can be facilitated by effective, coordinated, and proactive national and international food safety systems to ensure animal, plant, and human health, such as investments in adequate infrastructure, public health and veterinary capacity, legislative frameworks for identification and control of biological and chemical hazards; and farmer-scientist partnerships for the identification, monitoring and evaluation of risks.
- *The burden of infectious disease* can be decreased by strengthening coordination between and the capacity of agricultural, veterinary, and public health systems, integrating multi-sectoral policies and programs across the food chain to reduce the spread of infectious diseases, and developing and deploying new AKST to identify, monitor, control, and treat diseases.
- *The burden of chronic disease* can be decreased by policies that explicitly recognize the importance of improving human health and nutrition, including regulation of food product formulation through legislation, international agreements and regulations for food labeling and health claims, and creation of incentives for the production and consumption of health-promoting foods.
- *Occupational and public health* can be improved by development and enforcement of health and safety regulations (including child labor laws and pesticide regulations), enforcement of cross-border issues such as illegal use of toxic agrochemicals, and conducting health risk assessments that make explicit the tradeoffs between maximizing livelihood benefits, the environment, and improving health.

Equity

For AKST to contribute to greater equity, investments are required for the development of context-specific technologies, and expanded access of farmers and other rural people to occupational, non-formal and formal education. An environment in which formal science and technology and local and traditional knowledge are seen as part of an integral AKST system can increase equitable access to technologies to a broad range of producers and natural resource managers. Incentives in science, universities and research organizations are needed to foster different kinds of AKST partnerships. Key options include equitable access to and use of natural resources (particularly land and water), systems of incentives and rewards for multifunctionality, including ecosystem services, and responding to the vulnerability of farming and farm worker communities. Reform of the governance of AKST and related organizations is also important for the crucial role they can play in improving community-level scientific literacy, decentralization of technological opportunities, and the integration of farmer concerns in research priority setting and the design of farmer services. Improving equity requires synergy among various development actors, including farmers, rural laborers, banks, civil society organizations, commercial companies, and public agencies. Stakeholder involvement is also crucial in decisions about IPR, infrastructure, tariffs, and the internalization of social and environmental costs. New modes of governance to develop innovative local networks and decentralized government, focusing on small-scale producers and the urban poor (urban agriculture; direct links between urban consumers and rural producers) will help create and strengthen synergistic and complementary capacities.

Preferential investments in equitable development (e.g., literacy, education and training) that contribute to reducing ethnic, gender, and other inequities would advance development goals. Measurements of returns to investments require indices that give more information than GDP, and that are sensitive to environmental and equity gains. The use of inequality indices for screening AKST investments and monitoring outcomes strengthens accountability. The Gini-coefficient could, for example, become a public criterion for policy assessment, in addition to the more conventional measures of growth, inflation and environment.

Investments

Achieving development and sustainability goals would entail increased funds and more diverse funding mechanisms for agricultural research and development and associated knowledge systems, such as:

- Public investments in global, regional, national and local public goods; food security and safety, climate change and sustainability. More efficient use of increasingly scarce land, water and biological resources requires investment in research and development of legal and management capabilities.
- Public investments in agricultural knowledge systems to promote interactive knowledge networks (farmers, scientists, industry and actors in other knowledge areas); improved access to ICT; ecological, evolutionary, food, nutrition, social and complex systems' sciences; effective interdisciplinarity; capacity in core agricultural sciences; and improving life-long learning opportunities along the food system.
- Public-private partnerships for improved commercialization of applied knowledge and technologies and joint funding of AKST, where market risks are high and where options for widespread utilization of knowledge exist.
- Adequate incentives and rewards to encourage private and civil society investments in AKST contributing to development and sustainability goals.

In many developing countries, it may be necessary to complement these investments with increased and more targeted investments in rural infrastructure, education and health.

In the face of new global challenges, there is an urgent need to strengthen, restructure and possibly establish new intergovernmental, independent science and evidence-based networks to address such issues as climate forecasting for agricultural production; human health risks from emerging diseases; reorganization of livelihoods in response to changes in agricultural systems (population movements); food security; and global forestry resources.

Themes

The Synthesis Report looked at eight AKST-related themes of critical interest to meeting IAASTD goals: bioenergy, biotechnology, climate change, human health; natural resource management; trade and markets; traditional and local knowledge and community-based innovation; and women in agriculture.

Bioenergy

Rising costs of fossil fuels, energy security concerns, increased awareness of climate change and potentially positive effects for economic development have led to considerable public attention to bioenergy. Bioenergy includes traditional bioenergy, biomass to produce electricity, light and heat and first and next generation liquid biofuels. The economics and the positive and negative social and environmental externalities differ widely, depending on source of biomass, type of conversion technology and local circumstances.

Primarily due to a lack of affordable alternatives, millions of people in developing countries depend on traditional bioenergy (e.g. wood fuels) for their cooking and heating needs, especially in sub-Saharan Africa and South Asia. This reliance on traditional bioenergy can pose considerable environmental, health, economic and social challenges. New efforts are needed to improve traditional bioenergy and accelerate the transition to more sustainable forms of energy.

First generation biofuels consist predominantly of bioethanol and biodiesel produced from agricultural crops (e.g. maize, sugar cane). Production has been growing fast in recent years, primarily due to biofuel support policies since they are cost competitive only under particularly favorable circumstances. The diversion of agricultural crops to fuel can raise food prices and reduce our ability to alleviate hunger throughout the world. The negative social effects risk being exacerbated in cases where small-scale farmers are marginalized or displaced from their land. From an environmental perspective, there is considerable variation, uncertainty and debate over the net energy balance and level of GHG emissions. In the long term, effects on food prices may be reduced, but environmental effects caused by land and water requirements of large-scale

increases of first generation biofuels production are likely to persist and will need to be addressed.

Next generation biofuels such as cellulosic ethanol and biomass-to-liquids technologies allow conversion into biofuels of more abundant and cheaper feedstocks than first generation. This could potentially reduce agricultural land requirements per unit of energy produced and improve lifecycle GHG emissions, potentially mitigating the environmental pressures from first generation biofuels. However, next generation biofuels technologies are not yet commercially proven and environmental and social effects are still uncertain. For example, the use of feedstock and farm residues can compete with the need to maintain organic matter in sustainable agroecosystems.

Bioelectricity and bioheat are important forms of renewable energy that are usually more efficient and produce less GHG emissions than liquid biofuels and fossil fuels. Digesters, gasifiers and direct combustion devices can be successfully employed in certain settings, e.g., off-grid areas. There is potential for expanding these applications but AKST is needed to reduce costs and improve operational reliability. For all forms of bioenergy, decision makers should carefully weigh full social, environmental and economic costs against realistically achievable benefits and other sustainable energy options.

Biotechnology

The IAASTD definition of biotechnology is based on that in the Convention on Biological Diversity and the Cartagena Protocol on Biosafety. It is a broad term embracing the manipulation of living organisms and spans the large range of activities from conventional techniques for fermentation and plant and animal breeding to recent innovations in tissue culture, irradiation, genomics and marker-assisted breeding (MAB) or marker assisted selection (MAS) to augment natural breeding. Some of the latest biotechnologies ('modern biotechnology') include the use of *in vitro* modified DNA or RNA and the fusion of cells from different taxonomic families, techniques that overcome natural physiological reproductive or recombination barriers. Currently the most contentious issue is the use of recombinant DNA techniques to produce transgenes that are inserted into genomes. Even newer techniques of modern biotechnology manipulate heritable material without changing DNA.

Biotechnology has always been on the cutting edge of change. Change is rapid, the domains involved are numerous, and there is a significant lack of transparent communication among actors. Hence assessment of modern biotechnology is lagging behind development; information can be anecdotal and contradictory, and uncertainty on benefits and harms is unavoidable. There is a wide range of perspectives on the environmental, human health and economic risks and benefits of modern biotechnology, many of which are as yet unknown.

Conventional biotechnologies, such as breeding techniques, tissue culture, cultivation practices and fermentation are readily accepted and used. Between 1950 and 1980, prior to the development of GMOs, modern varieties of wheat increased yields up to 33% even in the absence of fertilizer. Modern biotechnologies used in containment have been widely adopted; e.g., the industrial enzyme market reached US$1.5 billion in 2000. The application of modern biotechnology outside containment, such as the use of GM crops is much more contentious. For example, data based on some years and some GM crops indicate highly variable 10-33% yield gains in some places and yield declines in others.

Higher level drivers of biotechnology R&D, such as IPR frameworks, determine what products become available. While this attracts investment in agriculture, it can also concentrate ownership of agricultural resources. An emphasis on modern biotechnology without ensuring adequate support for other agricultural research can alter education and training programs and reduce the number of professionals in other core agricultural sciences. This situation can be self-reinforcing since today's students define tomorrow's educational and training opportunities.

The use of patents for transgenes introduces additional issues. In developing countries especially, instruments such as patents may drive up costs, restrict experimentation by the individual farmer or public researcher while also potentially undermining local practices that enhance food security and economic sustainability. In this regard, there is particular concern about present IPR instruments eventually inhibiting seed-saving, exchange, sale and access to proprietary materials necessary for the independent research community to conduct analyses and long term experimentation on impacts. Farmers face new liabilities: GM farmers may become liable for adventitious presence if it causes loss of market certification and income to neighboring organic farmers, and conventional farmers may become liable to GM seed producers if transgenes are detected in their crops.

A problem-oriented approach to biotechnology R&D would focus investment on local priorities identified through participatory and transparent processes, and favor multifunctional solutions to local problems. These processes require new kinds of support for the public to critically engage in assessments of the technical, social, political, cultural, gender, legal, environmental and economic impacts of modern biotechnology. Biotechnologies should be used to maintain local expertise and germplasm so that the capacity for further research resides within the local community. Such R&D would put much needed emphasis onto participatory breeding projects and agroecology.

Climate change

Climate change, which is taking place at a time of increasing demand for food, feed, fiber and fuel, has the potential to irreversibly damage the natural resource base on which agriculture depends. The relationship between climate change and agriculture is a two-way street; agriculture contributes to climate change in several major ways and climate change in general adversely affects agriculture.

In mid- to high latitude regions moderate local increases in temperature can have small beneficial impacts on crop yields; in low-latitude regions, such moderate temperature increases are likely to have negative yield effects. Some negative impacts are already visible in many parts of the world; additional warming will have increasingly negative impacts in all regions. Water scarcity and the timing of water availability will increasingly constrain production. Climate change will require a new look at water storage to cope with the impacts of more and extreme precipitation, higher intra- and inter-seasonal variations, and increased rates of evapotranspiration in all types of ecosystems. Extreme climate events (floods and droughts) are increasing and expected to amplify in frequency and severity and there are likely to be significant consequences in all regions for food and forestry production and food insecurity. There is a serious potential for future conflicts over habitable land and natural resources such as freshwater. Climate change is affecting the distribution of plants, invasive species, pests and disease vectors and the geographic range and incidence of many human, animal and plant diseases is likely to increase.

A comprehensive approach with an equitable regulatory framework, differentiated responsibilities and intermediate targets are required to reduce GHG emissions. The earlier and stronger the cuts in emissions, the quicker concentrations will approach stabilization. Emission reduction measures clearly are essential because they can have an impact due to inertia in the climate system. However, since further changes in the climate are inevitable adaptation is also imperative. Actions directed at addressing climate change and promoting sustainable development share some important goals such as equitable access to resources and appropriate technologies.

Some "win-win" mitigation opportunities have already been identified. These include land use approaches such as lower rates of agricultural expansion into natural habitats; afforestation, reforestation, increased efforts to avoid deforestation, agroforestry, agroecological systems, and restoration of underutilized or degraded lands and rangelands and land use options such as carbon sequestration in agricultural soils, reduction and more efficient use of nitrogenous inputs;

effective manure management and use of feed that increases livestock digestive efficiency. Policy options related to regulations and investment opportunities include financial incentives to maintain and increase forest area through reduced deforestation and degradation and improved management and the development and utilization of renewable energy sources. The post-2012 regime has to be more inclusive of all agricultural activities such as reduced emission from deforestation and soil degradation to take full advantage of the opportunities offered by agriculture and forestry sectors.

Human health

Despite the evident and complex links between health, nutrition, agriculture, and AKST, improving human health is not generally an explicit goal of agricultural policy. Agriculture and AKST can affect a range of health issues including undernutrition, chronic diseases, infectious diseases, food safety, and environmental and occupational health. Ill heath in the farming community can in turn reduce agricultural productivity and the ability to develop and deploy appropriate AKST. Ill health can result from undernutrition, as well as over-nutrition. Despite increased global food production over recent decades, undernutrition is still a major global public health problem, causing over 15% of the global disease burden. Protein energy and micronutrient malnutrition remain challenges, with high variability between and within countries. Food security can be improved through policies and programs to increase dietary diversity and through development and deployment of existing and new technologies for production, processing, preservation, and distribution of food.

AKST policies and practices have increased production and new mechanisms for food processing. Reduced dietary quality and diversity and inexpensive foods with low nutrient density have been associated with increasing rates of worldwide obesity and chronic disease. Poor diet throughout the life course is a major risk factor for chronic diseases, which are the leading cause of global deaths. There is a need to focus on consumers and the importance of dietary quality as main drivers of production, and not merely on quantity or price. Strategies include fiscal policies (taxation, trade regimes) for health-promoting foods and regulation of food product formulation, labeling and commercial information.

Globalization of the food supply, accompanied by concentration of food distribution and processing companies, and growing consumer awareness increase the need for effective, coordinated, and proactive national food safety systems. Health concerns that could be addressed by AKST include the presence of pesticide residues, heavy metals, hormones, antibiotics and various additives in the food system as well as those related to large-scale livestock farming.

Strengthened food safety measures are important and necessary in both domestic and export markets and can impose significant costs. Some countries may need help in meeting food control costs such as monitoring and inspection, and costs associated with market rejection of contaminated commodities. Taking a broad and integrated agroecosystem and human health approach can facilitate identification of animal, plant, and human health risks, and appropriate AKST responses.

Worldwide, agriculture accounts for at least 170,000 occupational deaths each year: half of all fatal accidents. Machinery and equipment, such as tractors and harvesters, account for the highest rates of injury and death, particularly among rural laborers. Other important health hazards include agrochemical poisoning, transmissible animal diseases, toxic or allergenic agents, and noise, vibration and ergonomic hazards. Improving occupational health requires a greater emphasis on health protection through development and enforcement of health and safety regulations. Policies should explicitly address tradeoffs between livelihood benefits, and environmental, occupational and public health risks.

The incidence and geographic range of many emerging and re-emerging infectious diseases are influenced by the intensification of crop and livestock systems. Serious socioeconomic impacts can arise when diseases spread widely within human or animal populations, or when they spill over from animal reservoirs to human hosts. Most of the factors that contribute to disease emergence will continue, if not intensify. Integrating policies and programs across the food chain can help reduce the spread of infectious diseases; robust detection, surveillance, monitoring, and response programs are critical.

Natural resource management

Natural resources, especially those of soil, water, plant and animal diversity, vegetation cover, renewable energy sources, climate, and ecosystem services are fundamental for the structure and function of agricultural systems and for social and environmental sustainability, in support of life on earth. Historically the path of global agricultural development has been narrowly focused on increased productivity rather than on a more holistic integration of NRM with food and nutritional security. A holistic, or systems-oriented approach, is preferable because it can address the difficult issues associated with the complexity of food and other production systems in different ecologies, locations and cultures.

AKST to resolve NRM exploitation issues, such as the mitigation of soil fertility through synthetic inputs and natural processes, is often available and well understood. Nevertheless, the resolution of natural resource challenges will demand new and creative approaches by stakeholders with diverse backgrounds, skills and priorities. Capabilities for working together at multiple scales and across different social and physical environments are not well developed. For example, there have been few opportunities for two-way learning between farmers and researchers or policy makers. Consequently farmers and civil society members have seldom been involved in shaping natural resource management policy. Community-based partnerships with the private sector, now in their early stages of development, represent a new and promising way forward.

The following high priority NRM options for action are proposed:

- Use existing AKST to identify and address some of the underlying causes of declining productivity embedded in natural resource mismanagement, and develop new AKST based on multidisciplinary approaches for a better understanding of the complexity in NRM. Part of this process will involve the cost-effective monitoring of trends in the utilization of natural resource capital.
- Strengthen human resources in the support of natural capital through increased investment (research, training and education, partnerships, policy) in promoting the awareness of the societal costs of degradation and value of ecosystems services.
- Promote research "centers of AKST-NRM excellence" to facilitate less exploitative NRM and better strategies for resource resilience, protection and renewal through innovative two-way learning processes in research and development, monitoring and policy formulation.
- Create an enabling environment for building NRM capacity and increasing understanding of NRM among stakeholders and their organizations in order to shape NRM policy in partnership with public and private sectors.
- Develop networks of AKST practitioners (farmer organizations, NGOs, government, private sector) to facilitate long-term natural resource management to enhance benefits from natural resources for the collective good.
- Connect globalization and localization pathways that link locally generated NRM knowledge and innovations to public and private AKST.

When AKST is developed and used creatively with active participation among various stakeholders across multiple scales, the misuse of natural capital can be reversed and the judicious use and renewal of water bodies, soils, biodiversity, ecosystems services, fossil fuels and atmospheric quality ensured for future generations.

Trade and markets

Targeting market and trade policies to enhance the ability of agricultural and AKST systems to drive development, strengthen food security, maximize environmental sustainability, and help make the small-scale farm sector profitable to spearhead poverty reduction is an immediate challenge around the world.

Agricultural trade can offer opportunities for the poor, but current arrangements have major distributional impacts among, and within, countries that in many cases have not been favorable for small-scale farmers and rural livelihoods. These distributional impacts call for differentiation in policy frameworks and institutional arrangements if these countries are to benefit from agricultural trade. There is growing concern that opening national agricultural markets to international competition before basic institutions and infrastructure are in place can undermine the agricultural sector, with long term negative effects for poverty, food security and the environment.

Trade policy reform to provide a fairer global trading system can make a positive contribution to sustainability and development goals. Special and differential treatment accorded through trade negotiations can enhance the ability of developing countries to pursue food security and development goals while minimizing trade related dislocations. Preserving national policy flexibility allows developing countries to balance the needs of poor consumers (urban and rural landless) and rural small-scale farmers. Increasing the value captured by small-scale farmers in global, regional and local markets chains is fundamental to meeting development and sustainability goals. Supportive trade policies can also make new AKST available to the small-scale farm sector and agroenterprises.

Developing countries would benefit from the removal of barriers for products in which they have a comparative advantage; reduction of escalating tariffs for processed commodities in industrialized and developing countries; deeper preferential access to markets for least developed countries; increased public investment in rural infrastructure and the generation of public goods AKST; and improved access to credit, AKST resources and markets for poor producers. Compensating revenues lost as a result of tariff reductions is essential to advancing development agendas.

Agriculture generates large environmental externalities, many of which derive from failure of markets to value environmental and social harm and provide incentives for sustainability. AKST has great potential to reverse this trend. Market and trade policies to facilitate the contribution of AKST to reducing the environmental footprint of agriculture include removing resource use distorting subsidies; taxing externalities; better definitions of property rights; and developing rewards and markets for agroenvironmental services, including the extension of carbon financing, to provide incentives for sustainable agriculture.

The quality and transparency of governance in the agricultural sector, including increased participation of stakeholders in AKST decision making is fundamental. Strengthening developing country trade analysis and negotiation capacity, and providing better tools for assessing tradeoffs in proposed trade agreements are important to improving governance.

Traditional and local knowledge and community-based innovation

Once AKST is directed simultaneously toward production, profitability, ecosystem services and food systems that are site-specific and evolving, then formal, traditional and local knowledge need to be integrated. Traditional and local knowledge constitutes an extensive realm of accumulated practical knowledge and knowledge-generating capacity that is needed if sustainability and development goals are to be reached. The traditional knowledge, identities and practices of indigenous and local communities are recognized under the UN Convention on Biological Diversity as embodying ways of life relevant for conservation and sustainable use of biodiversity; and by others as generated by the purposeful interaction of material and non-material worlds embedded in place-based cultures and identities. Local knowledge refers to capacities and activities that exist among rural people in all parts of the world.

Traditional and local knowledge is dynamic; it may sometimes fail but also has had well-documented, extensive, positive impacts. Participatory collaboration in knowledge generation, technology development and innovation has been shown to add value to science-based technology development, for instance in Farmer-Researcher groups in the Andes, in Participatory Plant Breeding, the domestication of wild and semi-wild tree species and in soil and water management.

Options for action with proven contribution to achieving sustainability and development goals include collaboration in the conservation, development and use of local and traditional biological materials; incentives for and development of capacity among scientists and formal research organizations to work with local and indigenous people and their organizations; a higher profile in scientific education for indigenous and local knowledge as well as for professional and community-based archiving and assessment of such knowledge and practices. The role of modern Information and Communication Technologies (ICTs) in achieving effective collaboration is critical to evolving culturally appropriate integration and merits larger investments and support. Effective collaboration and integration would be supported by international intellectual property and other regimes that allow more scope for dealing effectively with situations involving traditional knowledge, genetic resources and community-based innovations. Examples of misappropriation of indigenous and local people's knowledge and community-based innovations indicate a need for sharing of information about existing national *sui generis* and regulatory frameworks.

Women in agriculture

Gender, that is socially constructed relations between men and women, is an organizing element of existing farming systems worldwide and a determining factor of ongoing agricultural restructuring. Current trends in agricultural market liberalization and in the reorganization of farm work, as well as the rise of environmental and sustainability concerns are redefining the links between gender and development. The proportion of women in agricultural production and postharvest activities ranges from 20 to 70%; their involvement is increasing in many developing countries, particularly with the development of export-oriented irrigated farming, which is associated with a growing demand for female labor, including migrant workers.

Whereas these dynamics have in some ways brought benefits, in general, the largest proportion of rural women worldwide continues to face deteriorating health and work conditions, limited access to education and control over natural resources, insecure employment and low income. This situation is due to a variety of factors, including the growing competition on agricultural markets which increases the demand for flexible and cheap labor, growing pressure on and conflicts over natural resources, the diminishing support by governments for small-scale farms and the reallocation of economic resources in favor of large agroenterprises. Other factors include increasing exposure to risks related to natural disasters and environmental changes, worsening access to water, increasing occupational and health risks.

Despite progress made in national and international policies since the first world conference on women in 1975, urgent action is still necessary to implement gender and social equity in AKST policies and practices if we are to better address gender issues as integral to development processes. Such action includes strengthening the capacity of public institutions and NGOs to improve the knowledge of women's changing forms of involvement in farm and other rural activities in AKST. It also requires giving priority to women's access to education, information, science and technology, and extension services to enable improving women's access, ownership and control of economic and natural resources. To ensure such access, ownership and control legal measures, appropriate credit schemes, support for women's income generating activities and the reinforcement of women's organizations and networks are needed. This, in turn, depends on strengthening women's ability to benefit from market-based opportunities by institutions and policies giving explicit priority to women farmer groups in value chains.

A number of other changes will strengthen women's contributions to agricultural production and sustainability. These include support for public services and investment in rural areas in order to improve women's living and working conditions; giving priority to technological development policies targeting rural and farm women's needs and recognizing their knowledge, skills and experience in the production of food and the conservation of biodiversity; and assessing the negative effects and risks of farming practices and technology, including pesticides on women's health, and taking measures to reduce use and exposure. Finally, if we are to better recognize women as integral to sustainable development, it is critical to ensure gender balance in AKST decision-making at all levels and provide mechanisms to hold AKST organizations accountable for progress in the above areas.

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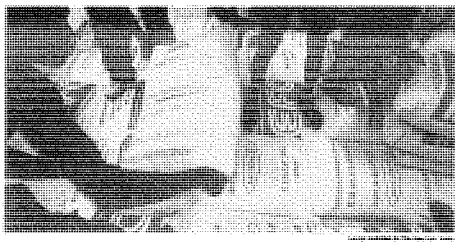

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By CELIA W. DUGGER
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Correction Appended

LILONGWE, Malawi — Malawi hovered for years at the brink of famine. After a disastrous corn harvest in 2005, almost five million of its 13 million people needed emergency food aid.

But this year, a nation that has perennially extended a begging bowl to the world is instead feeding its hungry neighbors. It is selling more corn to the World Food Program of the United Nations than any other country in southern Africa and is exporting hundreds of thousands of tons of corn to Zimbabwe.

In Malawi itself, the prevalence of acute child hunger has fallen sharply. In October, the United Nations Children's Fund sent three tons of powdered milk, stockpiled here to treat severely malnourished children, to Uganda instead. "We will not be able to use it!" Juan Ortiz-Iruri, Unicef's deputy representative in Malawi, said jubilantly.

Multimedia

Ending Famine in Malawi

Farmers explain Malawi's extraordinary turnaround — one with broad implications for hunger-fighting methods across Africa — with one word: fertilizer.

Over the past 20 years, the World Bank and some rich nations Malawi depends on for aid have periodically pressed this small, landlocked country to adhere to free market policies and cut back or eliminate fertilizer subsidies, even as the United States and Europe extensively subsidized their own farmers. But after the 2005 harvest, the worst in a decade, Bingu wa Mutharika, Malawi's newly elected president, decided to follow what the West practiced, not what it preached.

Stung by the humiliation of pleading for charity, he led the way to reinstating and deepening

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fertilizer subsidies despite a skeptical reception from the United States and Britain. Malawi's soil, like that across sub-Saharan Africa, is gravely depleted, and many, if not most, of its farmers are too poor to afford fertilizer at market prices.

"As long as I'm president, I don't want to be going to other capitals begging for food," Mr. Mutharika declared. Patrick Kabambe, the senior civil servant in the Agriculture Ministry, said the president told his advisers, "Our people are poor because they lack the resources to use the soil and the water we have."

The country's successful use of subsidies is contributing to a broader reappraisal of the crucial role of agriculture in alleviating poverty in Africa and the pivotal importance of public investments in the basics of a farm economy: fertilizer, improved seed, farmer education, credit and agricultural research.

Malawi, an overwhelmingly rural nation about the size of Pennsylvania, is an extreme example of what happens when those things are missing. As its population has grown and inherited landholdings have shrunk, impoverished farmers have planted every inch of ground. Desperate to feed their families, they could not afford to let their land lie fallow or to fertilize it. Over time, their depleted plots yielded less food and the farmers fell deeper into poverty.

Malawi's leaders have long favored fertilizer subsidies, but they reluctantly acceded to donor prescriptions, often shaped by foreign-aid fashions in Washington, that featured a faith in private markets and an antipathy to government intervention.

In the 1980s and again in the 1990s, the World Bank pushed Malawi to eliminate fertilizer subsidies entirely. Its theory both times was that Malawi's farmers should shift to growing cash crops for export and use the foreign exchange earnings to import food, according to Jane Harrigan, an economist at the University of London.

In a withering evaluation of the World Bank's record on African agriculture, the bank's own internal watchdog concluded in October not only that the removal of subsidies had led to exorbitant fertilizer prices in African countries, but that the bank itself had often failed to recognize that improving Africa's declining soil quality was essential to lifting food production.

"The donors took away the role of the government and the disasters mounted," said Jeffrey Sachs, a Columbia University economist who lobbied Britain and the World Bank on behalf of Malawi's fertilizer program and who has championed the idea that wealthy countries should invest in fertilizer and seed for Africa's farmers.

Here in Malawi, deep fertilizer subsidies and lesser ones for seed, abetted by good rains, helped farmers produce record-breaking corn harvests in 2006 and 2007, according to government crop estimates. Corn production leapt to 2.7 million metric tons in 2006 and 3.4 million in 2007 from 1.2 million in 2005, the government reported.

"The rest of the world is fed because of the use of good seed and inorganic fertilizer, full stop," said Stephen Carr, who has lived in Malawi since 1989, when he retired as the World Bank's principal agriculturalist in sub-Saharan Africa. "This technology has not been used in most of Africa. The only way you can help farmers gain access to it is to give it away free or subsidize it heavily."

Correction: December 7, 2007

A chart on Sunday about improvements in Malawi's agricultural production, using erroneous information from a study by researchers at Imperial College London and Michigan State University, misstated the size of recent corn harvests. (Because of an editing error, the article also included the wrong figures.) The increase in production was in millions of metric tons, not billions. (Estimates show that corn production rose to 2.7 million metric tons in 2006 and 3.4 million in 2007 from 1.2 million in 2005.)

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OPINION

Africa Does Not Have to Starve

By NORMAN BORLAUG and ANDREW NATSIOS
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Rapidly increasing world food prices have already led to political upheaval in poor countries. The crisis threatens to tear apart fragile states and become a humanitarian calamity unless countries get their agricultural systems moving.

Now, with conference committee negotiations over the final shape of the Farm Bill at a critical stage, Congress needs to change the foreign food-aid program and help avert this calamity. The Bush administration has urged, rightly, that the U.S. Agency for International Development (USAID) be allowed to buy food locally, particularly in Africa, instead of only American-grown food.

The U.S. government currently buys grain and other foodstuffs from American farmers for free distribution in poor countries where a disaster has occurred, or sells it in food-deficit nations to generate funds for food-security development programs. Under the law, the food must be shipped almost exclusively on American vessels.

Ocean shipping costs are 20%-30% of the food-aid budget; and it takes on average over four months to order, buy, ship, offload and transport food by ground. In a famine, people can die waiting for the food to arrive.

Other problems arise. One food shipment sunk in a storm off the coast of Asia in 1996. In 2006, two food shipments were hijacked by pirates off the coast of Somalia. Hurricane Katrina nearly shut down much of the foreign food-aid delivery system in the Mississippi Delta.

Purchasing food locally simplifies the process, cuts down the time delay in delivery, reduces the logistical risks, and saves transport costs. These savings can be used to buy more food. At the same time, higher prices will probably reduce the purchasing power of USAID's food-aid programs by at least $200 million this year. While President George W. Bush has released food aid from a reserve fund, it is not sufficient.

Direct food purchases in local countries could also help improve their agriculture. In Africa, for example, two-thirds of the 200 million people who suffer hunger are small-scale farmers, primarily engaged in subsistence production because they find too few buyers for any larger harvest.

In Ethiopia in 2003, for example, widespread drought occurred in the low-lying areas of the country and the very dry northern highlands. Some 12 million to 15 million people were at risk of hunger and starvation. But in the central and southern highlands of Ethiopia, farmers were producing a bumper crop of corn and other cereals. Yet with no market for the locally produced grains, prices collapsed.

If USAID could have purchased and helped distribute some of this excess, up to 500,000 small farmers would have benefited, as well as the millions at risk of starvation. But its only option was to import surplus food grain from the U.S.

Seventy-five percent of USAID food aid goes to Africa, the most food-deprived region of the world. More robust agricultural growth there will help in a period of rising food prices. More prosperous African nations will become better trading partners, expanding imports of U.S. agricultural commodities, machinery and technology. Any near-term losses will lead to longer-term gains for the American economy.

What we are advocating is already in place. The World Food Program, the food-aid agency of the United Nations, has been buying food in African agricultural markets successfully for years using European aid funding, while Canada announced this week they were moving to 100% untied food aid.

The Bush administration's reform would have little or no impact on U.S. grain markets. President Bush urged action on bis reform before the General Assembly of the U.N. and in his State of the Union address. Even if this authority were exercised fully, it would equal 0.3% of U.S. agricultural exports and a much smaller fraction of U.S. agricultural production.

Congress should amend the Farm Bill to allow up to 25% of the appropriation for USAID's food-aid program to be used to purchase food locally, when the program's administrator deems it appropriate to do so. A great many people's lives depend on this reform.

Dr. Borlaug won the Nobel Peace Prize in 1970. Mr. Natsios, former administrator of USAID, teaches at Georgetown University.

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Answers to Questions from Congressman Carson from Robert Watson

Question 1: How would you reconcile the United State's interests in becoming less dependent on oil for energy independence and more environmentally responsible with the increasing need for corn?

Energy independence and becoming more environmentally friendly with respect to reducing greenhouse gas emissions from the use of fossil fuels in transportation can best be accomplished by increasing fuel efficiency standards and ensuring the standards apply to all vehicles. This would allow corn to be used for food rather than being diverted into liquid fuels where there is considerable uncertainty whether they actually reduce greenhouse gas emissions because of indirect effects, i.e., biofuel production that indirectly leads to land-use changes that result in a net emission of greenhouse gases.

Question 2: In what other ways would you propose reforming our current system in a way that helps those in need while also helping U.S. farmers?

The basic problem is that "classical food aid" does nothing to stimulate local production in developing countries, indeed it inhibits it. Therefore, in times of food shortages, financial assistance that stimulates local food production can assist food security in developing countries in combination with equitable international trade policies that are pro-poor. I suggest we should not mix up " assisting those in need abroad" with helping the U.S. farmer. The basic challenge is for U.S. farmers to become competitive and profitable without subsidies.