

2014 BORLAUG DIALOGUE

October 17, 2014 - 10:00 a.m.

Panel: *Dr. Per Pinstrup-Andersen, Moderator*

Introduction:

Ambassador Kenneth M. Quinn

President - World Food Prize Foundation

So I have to go back now to my other job of the moderator and find my papers for the next session. As always, Dr. Per Pinstrup-Andersen is way ahead of me and has got his gang up here. Is everyone present and accounted for? All right. All the chairs are filled. So, Dr. Per Pinstrup-Andersen – The Smallholder’s Lifeline: Innovations in Agro-Financing and Insurance – and so the floor is yours.

PANEL:

THE SMALLHOLDER’S LIFELINE: INNOVATIONS IN AGRO-FINANCING AND INSURANCE

Panel Moderator:

Dr. Per Pinstrup-Andersen

2001 World Food Prize Laureate and Cornell University, H.E. Babcock Professor of Food & Nutrition

Panel Members:

Ndidi Nwuneli	Co-founder, AACE Food Processing & Distribution
Dr. Jimmy Smith	Director General, International Livestock Research Institute
Dr. Kurt Weinberger	President, International Association of Agricultural Production Insurers
Mohammed Amin Adam	Executive Director, Africa Centre for Energy Policy (ACEP)
Dr. Marco Ferroni	Executive Director, Syngenta Foundation for Sustainable Agriculture

Per Pinstrup-Andersen

The last session provided a great segue to what we’re going to talk about now. Risk and uncertainty, unless appropriately dealt with, will contribute to food insecurity, which in turn will contribute to conflict. This last session brought this session into a whole different perspective.

We need to help farmers, particularly smallholder farmers, manage their risk and uncertainty. And farming is risky business. In case people didn't know, prior to 2007 when the current ongoing international food price rollercoaster began, we now know for sure. Beginning in the middle of 2007 and up until now we have been on such a rollercoaster. Prices are going up dramatically. After a while they come back down. We have had several spikes in 2007. Right now we are on a downward ride on this rollercoaster. Rest assured, that is going to change. We're going to have other spikes in the future. Are they going to be next year or five years from now? We don't know. That's the kind of uncertainty that farmers, and for that matter, consumers are faced with.

Yesterday the Secretary of Agriculture from Mexico suggested that maybe we could abolish the law of demand and supply, and he immediately retracted that and said, no – even though it's a law, we really can't abolish it. However, some countries have tried to do this, but none have succeeded.

These risks and uncertainties are much more severe, the consequences are much more severe for poor people, for smallholder agriculture, than for the non-poor. Children may die when the drought hits or when the flood hits.

Lack of capital makes it very difficult for smallholders to protect themselves against risk and uncertainty, and we also need capital to achieve the vision that Dr. Emma presented yesterday, or the vision that Pamela Anderson presented to us yesterday. So agro-financing and insurance are the smallholder's lifeline.

Now, our job this morning is to highlight recent innovations in agro-financing, insurance and other risk management tools with emphasis on smallholders. We should be looking at what have we done in the past, and what are the current trends towards more appropriate action in the future. And most importantly, before the hour is over, we should have a set of actions that need to be taken in order to fill the gaps that currently exist, whether these are research gaps or whether they are gaps in action.

So the success, my friends on the panel, the success of this panel is whether by 11 o'clock we have a list of things that need to be done. We need to look into the future, but we need to understand where we are now before we do that.

Now, my job is to moderate and to ask questions. It's a wonderful job to have. Your job is to answer those questions, and we are very fortunate to have a very knowledgeable panel who can provide the answers. So let me proceed without taking any more of the panel's time, by a very quick introduction of each of the members. After that, each of the members will speak for roughly three minutes, and then we will continue with questions and answers and have a conversation. We don't have any PowerPoints. We're not going to give formal presentations. We'll have a conversation, and as we get closer to the 11 o'clock, I'm going to ask all of you to kind of sum up and say, so here are the action points that really we have to take into account as we relieve Ambassador Quinn's slight pessimism – I think we can deal with that insofar as the food system is concerned. There are bigger issues that may be above our pay grade. And then to kind of look into the future and say – what is it that needs to be done between now and 2050 in order to achieve the goals that we all have been talking about this week?

Let me start at the far end. Marco Ferroni is the Executive of the Syngenta Foundation. Let's see. Kurt Weinberger is the president of the Worldwide Association of Agricultural Insurers. Ndidi Nwuneli – Did I do that right? Close enough. – is a cofounder and partner with Sahel Capital, and she has done a number of other things in the area of entrepreneurship; she will tell us about that this. Mohammed Amin Adam is the Executive Director of the Africa Centre for Energy Policy. And last but not least, Jimmy Smith is the Director General of ILRI, the International Livestock Research Institute. If you want to know more about these panel members, you have a brochure which gives a short bio for each of them.

So, please, why don't we start at this end, Jimmy, and if you would speak for roughly three minutes, telling us everything we need to know about the lifeline for smallholder farmers.

Jimmy Smith

Thank you, Per. Indeed, like you, I was struck about how much the previous panel connects with ours, connecting the geopolitical issues of our time with very local, specific challenges, none more important in my sort of world than the connection with the very poor people who live in the drier parts of the world, particularly those I'll talk about today in Africa – those two to three hundred million people who live in the drylands of Africa and who depend mostly on livestock are the ones most subjected to the poverty traps. And these poverty traps are usually associated with droughts.

For a long time now, we have not been able to protect their assets adequately. And the organization I work for certainly tried to do that by developing vaccines, for example, and getting those vaccines into use in these areas. But insurance, which has been a common means of protecting us as elsewhere, has been difficult to apply in these regions because they're remote; the transaction cost of getting the insurance there has been high. And so we have developed a product, working with our colleagues at Cornell and elsewhere – index-based insurance. It doesn't insure the individual animals, but it insures animals against an index. And this technological, biophysical product, linked to the innovations that we have in banking and the insurance companies where you can identify people by temperance and so on, has allowed us to take an insurance product to these people in these very dry areas.

And evidence so far has shown that people who bought that product have benefited very significantly from it. They are less likely to fall into the poverty trap as a result of a drought. They are less likely to go without food, they and their families to go without food when there is a crisis. And they're more likely to take innovative actions to invest in their livestock so that they can improve the production and productivity.

So this is a product which we think can be broadly applied to the drylands of the world, not only in Africa but elsewhere, and I hope I can tell you more about it as you ask me those questions.

Per Pinstrup-Andersen

Okay, thank you very much. Mohammed.

Mohammed Amin Adam

Yeah, thank you very much. I'm happy to be on this panel. I think in 2011 the President of Ghana, former President Kufuor, and I want to thank you for honoring the efforts of my country. But as you know, I'm not here to take the award because it was taken yesterday, but I'd like to share with you how citizens in our government back home in Ghana are working to address the risk of low productivity, especially of smallholder farmers' poor access to markets and also for financing.

You will notice that most of the fast-growing economies in Africa are resource-based economies. I work mostly around oil and gas, and we see a significant relationship between oil resources, revenues that are generated from the exploitation of oil and gas resources for providing financing for agriculture, particularly for smallholder farmers. Most countries in Africa, including most of the poor countries in Africa, are making discoveries of oil. And so we see the discovery of new wealth in oil and gas and other minerals as a lifeline for smallholder farmers.

So in Ghana we embarked on what we call Oil for Agriculture Campaign, which seeks to secure the commitment of our government and the governments of resource-rich countries to commit substantial portions of their oil revenues to financing agriculture. This has been somehow successful in Ghana. We used SMS to mobilize 20,000 citizens in Ghana who called on our government to commit more of the oil revenues Ghana is generating from this newfound oil to agriculture.

We have seen increase in the allocation of oil revenues to agriculture, and this has largely gone to investment in irrigation schemes, has gone to investment in fertilizer subsidy. And to date about 300,000 Ghanaians have received fertilizer at reduced prices. The World Bank study showed that without the fertilizer subsidy program funded partly from the oil revenues, 41% of farmers would have bought fertilizer at reduced quantity. And so oil revenues are helping to provide cheap fertilizer to smallholder farmers. The irrigation schemes I talked about are also being supported through that. And in 2014, apart from increasing the share of oil revenues to agriculture from 5% in 2013 to 15% in 2014, we are seeing investment in mechanization and smallholder farmer support programs.

And therefore if this is successful in Ghana, because oil kills agriculture economies... I'm sure you have heard about the dreaded Dutch disease, and our apologies to the Dutch – a situation where the country that received large inflow of foreign capital from exploitation or export of natural resources get to a point where it's local currency appreciates in real terms, and thereby making these exports mostly dominated by agricultural produce, internationally noncompetitive. This hurts the local agricultural economy. And therefore we need to be able to invest oil revenues back into agriculture, especially because smallholder farmers suffers most food import increases... I'm sure you all know that Africa spends about \$35 billion U.S. dollars importing food into their continent, because our local agricultural economies are collapsing because of their overreliance on oil and gas resources or other mineral resources.

And therefore, if we are to commit a portion, a larger portion of the oil revenues to revitalize agriculture because of the effects of oil production on agriculture, and especially targeting the smallholder farmers as we have seen in Ghana, we will be building a sustainable economy,

because these oil and gas resources are exhaustible. But we need to have an agricultural economy that can sustainably support the continuous development of our country.

Per Pinstrup-Andersen

Would you argue that you have a message to some of your neighboring countries who have also been exporting oil for a long time?

Mohammed Amin Adam

Yes, in fact, Nigeria is one clear example where the agricultural economy almost collapsed. We also have examples in Angola where the coffee industry collapsed. And therefore if Ghana is to avoid the curse of oil, which has afflicted many of our neighboring countries producing oil, the shortest way is to invest our oil revenues building economies that can support a [inaudible] exhaustible oil resource ever, and we, and we think that agriculture affects that opportunity for our governments to invest.

Per Pinstrup-Andersen

Thank you very much. Ndidi.

Ndidi Nwuneli

It's a pleasure to be here, and I'm honored to serve on such a distinguished panel. As you mentioned when you introduced me, I wear two hats, so I'll talk about this issue from those two perspectives.

I'm the cofounder of an agroprocessor in Nigeria called AACE Foods. We source produce from farmers and process them for the local market, and the range of products includes spices, spreads, complementary food such as maize, soy maize and sorghum maize plants.

Now for the last four years in doing this, we recognize that the smallholder farmers we source from struggled immensely with access to financing. And so, as we have grown our volumes with them, we've actually added on financing as a key component of what we offer, in partnership with micro-finance organizations, and it has been a real challenge, primarily because many of these farmers work in very loose clusters. They don't have strong associations and very strong governance methodologies in their organizations. And so we have had to invest in building that up, and so far it's been working. So there are promising signs.

Now elevate that to the other hat I wear, which is cofounder and partner at Sahel Capital. And Sahel Capital provides advisory and recently was selected to manage a fund called FAFIN, which was initiated by Dr. Akinwumi Adesina, the honorable minister of agriculture, who many of you are familiar with. FAFIN is basically an innovative fund, which the German government, KFW, the Nigerian government, and the Sovereign World Fund initiated to address this huge gap in financing in Nigeria. It's a hundred million dollar equity fund, and it's focused on investing in SMEs across the agricultural value chain. Historically, these partners would not have come together to address this issue, and that's why it's quite innovative.

And what FAFIN is doing is threefold. First, investing in microfinance organizations that can then lend to smallholder farmers, investing in agroprocessors, and working with them to build their farmer outgrow networks, and then finally investing in logistics and cold storage across the value chain. Through the Technical Assistance Facility, which is a unique aspect of FAFIN, we're also working very closely with the smallholder farmers and agroprocesses to build their capacities to increase farmer yields.

Now, we're cognizant of the fact that SMEs and smallholder farmers oftentimes are seen as two separate things. But if you think about agriculture as a business and look at the entire value chain, there are opportunities across the value chain.

One of our investee companies provides a very strong example of this. He's a livestock farmer who has two wives in Northern Nigeria, and two of his wives are involved in the business, which is quite unique, as executive directors. But what he's doing is, in addition to having his own cattle and they produce yogurt and milk, they also source from fulani farmers who work in clusters. And profoundly, in addition to sourcing from these fulani farmers, he makes a special exception to buy double amounts of milk from those farmers that have committed to educating their daughters. And so far 200 farmer families, nomadic families, are now educating their daughters because of his business. So I think SMEs play a critical role in bridging that gap, and sourcing from smallholder farmers directly and working with them can transform the space and reduce some of the risk that we've discussed.

Per Pinstrup-Andersen

Thank you very much. So, as I understand what you just mentioned, this is contract farming — you are supporting agribusiness, the post-farm part of the supply chain and with contracts to the farms. Is that how it works?

Ndidi Nwuneli

I'm sorry. I have to have AACE foods basically work sources from smallholder farmers. Sahel through FAFIN invests in SMEs across the value chain, and by investing in them, we also support them, so extend, grow their businesses and work directly with smallholder farmers to extend the work that they do. So I was using the example of L&Z, which is one investee company that sources milk, has its own dairy farm, but also sources milk from clusters of farmers across the country. So it's just an example of one impact that investment has in reaching a multitude of farmers and having a ripple effect.

Per Pinstrup-Andersen

So the two hats go together.

Ndidi Nwuneli

Yes.

Per Pinstrup-Andersen

Thank you very much. Kurt.

Kurt Weinberger

Yes, dear Mr. Pinstруп-Andersen, ladies and gentlemen. It's a big honor and a pleasure for me to talk to you this morning as the president of the Worldwide Association of Crop and Revenue Insurance. To talk to you how can an insurance program help to stabilize especially the income of smallholder farmers to provide food security in their regions, because only a global and a whole stable agriculture sector can feed the world 2050.

But some words about our international organization. We have all over the world 101 members, and we represent currently an amount of premium \$29 billion. And our mission is to connect agricultural insurers worldwide in order to make, enable a comprehensive exchange of information.

But now let me name the most important reason why I am here today. I'm here today because also it has seldom been as important as now to talk and to think about more income security for the farmers, also for the smallholder farmers, by using and by developing new finance tools like insurance programs. Because global warming, cost of global warming, big changes are being announced all over the world – droughts never seen before, floods never seen before, other different natural catastrophes never seen before, and more and more volatile prices never seen before.

And traditional crop insurances with premium subsidies are in the meantime a very well-established system in a lot of countries all over the world, especially in the United States and Canada. These huge countries have the best-developed income security program with insurance programs. In the meantime, 30% of the worldwide arable land is with subsidized premium programs insured. And we know crop insured farmers bring a stable agriculture sector, and this helps to have sustainable food security for nine billion people.

But how can we improve the penetration, especially for smallholder farmers? This is the question. More and more so-called index-based insurances are in the meantime successfully implemented for smallholder farmers in China, India or also in some parts in Africa. Index-based insurances are cheaper, easier to handle and provide an early payout. The index insurance is a way to reach plenty of small farmers in a short time in emerging markets. But what we need in the future is we need more and widespread weather stations for these products to get the better relation to the real loss, and we need also a better-subsidized comprehensive insurance program for smallholder farmers.

We all know all the smallholder farmers, or especially smallholder farmers in the regions are the backbone, the backbone, of food security and agriculture. And we all know as well agriculture was, agriculture is, and agriculture will be the most important sector in the world. Because only the farmers can feed the world population with nine billion people. Therefore, we have to offer in the future a stronger security net for all the farmers, also especially for the smallholder farmers with a new private-public partnership-based insurance program. It is the future for all of us.

And I say on the one hand, as the president of the International Association of Agriculture Insurances, as the CEO of a crop insurance company in Europe, I say this as the father of three

children, and I say this as an operator of my own farm in my homeland in Austria. Thanks for your attention.

Per Pinstrup-Andersen

Thank you very much, Kurt. Marco, you are very far away physically but not mentally.

Marco Ferroni

I can join you over there if you would like, but I think that I would like to refer to the most important that Kurt just said – agriculture is the most important sector. Right? And I'm sure everyone in this world will agree, because we are the World Food Prize Symposium here, right?

Now, agriculture, to be really and to remain the most important sector needs to intensify and needs to modernize. Right? And that requires investment on the part of the farmer, and we know by now that weather insurance solutions are necessary for farmers to be able to invest – right? Because as you intensify and diversify, also in the face of resource overuse and in the face of climate change, risk increases. And when risk is large in relation to the farmer's income prospects, then the only way to deal with that risk is through insurance solutions, which transfer that risk ultimately to the international insurance and reinsurance markets – right? That's the first point to make.

The second point to make is that of the various types of insurance that are theoretically accessible to us, only parametric and index-based, which is a form of parametric, can work in small-scale farming. I do not have the time to explain why this is so, but just please accept this. There's plenty of literature that Per's former institute, IFPRI has produced, and others, on this particular question. So we're talking about parametric kinds of insurance.

Parametric kinds of insurance eliminate the need for loss adjustment in the field. That makes the administration of it much cheaper, which would lead to a cheaper premium that needs to be charged to the farmer. And I need to minimize the cost to the farmer so that I can maximize the growth path, the scaling-out path of insurance solutions. Parametric solutions also eliminate the moral hazard issue and the adverse selection issue, which pervades and besets, of course, insurance problems.

So the challenges, however, then become – How can I design something that actually works and actually scales? And I'm pleased to be able to report that, as we launched the Kilimo Salama project in the Syngenta Foundation back in 2009, we were... I mean, obviously it's been a lengthy process of product development and a very inspired team and so on, that has performed extremely well. But we now have solutions that are in the market and that seem to be proving themselves and that seem to be scaling up.

The issues have to do with financial literacy of the farmer. We need to explain insurance solutions, unless you do packages of the kind that we have in our portfolio of solutions that are basically partnerships with microfinance organizations or banks where the farmer doesn't even necessarily know that they are insured – right? – but the farmer, does get, if they lose their crop and there's a drought, they do get their outlays and inputs paid back to them in good time – right? And at the same time, the microfinance organization or the bank that will be partnering

with the program sees its exposure reduced, needs to have fewer reserves and as a result can expand and scale up more rapidly.

There are other big problems. Basis risk is essentially the Achilles heel of index insurance solutions. And so that has to do weather data and the quality of the models, and there are ways to deal with it, but it is a difficult topic. Aggregation and distribution is a big issue, and that requires commercial partnerships and so on.

And I want to close by just describing one product in a suite of products that the Kilimo Salama project, which has now been converted into a commercial country headquartered in Nairobi... I forget the beginning of my sentence, but I just wanted to describe one interesting product, which is a replanting guarantee that we have introduced into the markets, which mobile phone based, which is basically an insurance to the farmer against the rains coming late. So you plant, you hope that the rains are coming, the rains don't come, and you're seed doesn't germinate, so you lose the investment in your seed, hybrid maize or whatever it may be. Maize is not the only crop that's insurable under this approach. And you may lose other monies that you spent on other inputs, such as fertilizer, which you need to apply at the same time as you plant.

So the program works with seed companies that have agreed in this partnership to put basically a card into the bag of seed that the farmer buys. And as the farmer opens the bag of seed, on the card they will find a phone number and an SMS code that they need to send by their cell phone. And that immediately triggers the issuance of a policy that says that this farmer is now insured for the cost of that particular bag of seed for 21 days, which is the duration of that cover. We can, for a little bit of additional money, cover weather risk for the full year, but that's not yet in the market, but it will come next year.

Then what happens is that, so the insurance is now triggered and weather data are being observed, which in this case are satellite based. And if it didn't rain or did not rain enough, then a payout kicks in on Day 21, which is payable through mobile money if it is in Kenya, or even in Rwanda they have mobile money also, less distributed as in Kenya, but it's there and it's growing. That payout comes within at most 48 hours, allowing the farmer to go back and repurchase the input seed, in this case, and replant and hopefully get a harvest. So that's one of our products that I wanted to just mention, because it illustrates in very concrete terms how it can function. It requires a partnership with, in this case, the input companies, and it's all based on most very advanced mobile platforms.

Andersen Thank you very much. Now, let's suppose we translate moral hazard to temptation to cheat. How would the parametric approaches avoid cheating? And could you explain what you mean by "parametric," because this is a jargon-free environment.

Ferroni Correct. Parametric is a sort of a yes-no sort of situation, either it rained enough as determined by independent weather data over which the farmer has no control, right?, or didn't. If it didn't and we have a record of that policy having been issued, then that farmer gets a payout, even if it did rain on his particular farm, because that can happen, because that has to do with the density of the weather station network and or the quality of the satellite data that will be worked with in this instance.

- Andersen So the farmers' opinion as to what's happening is irrelevant here.
- Ferroni The farmers' opinion is irrelevant, and that is a very important element of the approach, which makes the cost of producing and delivering the product very low. And that, of course, as mentioned, has an impact on the premium that needs to be charged.
- Andersen So you're hoping that it will rain on your farm but not on anybody else's farm in the neighborhood – then you get paid.
- Ferroni That can theoretically happen. It's not likely, but it could happen.
- Andersen Jimmy, do you agree with that definition of index insurance? Is that roughly what you were referring to?
- Smith Yes, and it's the same in our case, that the farmer's opinion doesn't matter. What we do is take satellite imagery, commonly available, has been available for many years, available in relatively dense resolutions, and we're able to look at the index, look at the amount of vegetation on the ground. We correlate that vegetation availability with the ability to carry livestock. As there is a drought and vegetation declines, we correlate that with mortality rates; so that if the vegetation falls below a certain level, we know animals will start to die, and we can correlate how much may die, depending on the decline in vegetation. And therefore there is a trigger at which, or an index that we use to trigger payments.
- Andersen So in fact we do have well-functioning insurance programs for the livestock sector as well as for the cropping sector. And my understanding was that it moved much faster on the cropping sector. That's not the case then.
- Smith Well, yes, the index insurance is more commonly used in the crop sector than the livestock sector. We are piloting the product we have in Kenya in Ethiopia at the present time, and we are doing so with insurance companies and commercial banks because you need those innovations to reach the farmers, who are sometimes mostly illiterate; they don't read and write and so on. And the insurance companies have means of identifying their clients by thumbprints and things like that. So combining the features of our product with that of the commercial insurance and banking industry, we're taking this product out to consumers and have tried it over several seasons so far.
- Andersen Okay. Thank you very much. Kurt, you mentioned that we see climate change we've never seen before. We see price volatility we've never seen before. There are all kinds of uncertainties happening out there, as opposed to risks to which you can attach probabilities. How can you insure against uncertainty when you've never seen it before?

Weinberger

That's the key question, but firstly, I would congratulate Syngenta to this best practice example of index insurance program. I think this will be the way also for other countries in the next years to implement such programs.

One disadvantage of this program, of index programs is the confidence with indemnities, with the payout, is not absolutely very high; because you don't have a hundred percent correlation with the damage. And this is a question, and this is a reason why in markets where we have index-based insurance programs implemented, we have a discussion from the farmer's side. But now it's their own possibility to improve income security for smallholder farmers.

But to your question. The base of insurance calculation is that normally you have all dates during the last 10, 15, 20 years. You have the statistics concerning all damages in the historical period, and then you can assume the common and the future damages. In the meantime, you have to add rate for climate change. And this is the consequence, that the premium become more and more higher. And this is the challenge for insurance companies, this is the challenge for all reinsurance companies, that we need, we are confronted in the future with higher damages.

The answer cannot be that we have to improve and to have to demand a higher premium. The solution worldwide is that we want to have a higher penetration all over the world. And with a higher penetration, you have a better distribution of the risks, and therefore we are able to stabilize in a long period, in a long way, the premium. And this is the answer and the strategy of the insurance industry.

Andersen

The Secretary of Agriculture from Mexico yesterday said that his country had been affected by huge droughts, subsequently huge floods. On the average they were doing fine, but it wasn't really a good average they could use for anything. He didn't say that – I added that. How do you insure, if you can't spread your risk? How do you insure against floods that affect 20% of a country that drought that ends up in 50%? Do you then look to the government to say – Government, it's your turn now, because I'm going broke if I have to cover all of this. How do you handle that?

Weinberger

May I give you some examples. The best example concerning these huge damages is handled here in the United States, because here in the United States you have a very good partnership between the private insurance industry and the government. On the one hand, you have subsidies in order to reduce the premium with the consequence that you have in the states, and in Canada, the penetration is approximately more than 90% of the arable land is insured.

And the other benefit, advantage in the United States, the right way, that in such cases that you have secure Internet provider by the government, you have governmental reinsurance treaty. And so you can handle such risks, like

drought, flood and so on. And this must be the answer also for other countries all over the world, a close partnership.

Andersen So, Marco, do agree that this insurance business is really not for the private sector alone. You need subsidies. You need government to step in so you have what so beautifully is called public-private partnerships where the public pays to cost and the private sector... Let me stop here.

Ferroni Well, if you put it this way, I cannot possibly agree. I would be philosophically against such a statement – right? Because this has got to be workable as much as possible through private channels and so on commercially.

Now, Kurt is right. I mean, there can be extreme events, catastrophes that require, that may..., in the context of small-scale agriculture, not in the context of commercial aviation and a plane doesn't land as it should, etc., etc. It's a matter of... that's covered and coverable through insurance and reinsurance. Earthquakes are covered and coverable through insurance and reinsurance – right?

So, but in this case when you're talking about a country, the whole country or a large segment of a country has droughts almost every year, that's not any more insurable than if you're talking about a developing country and small-scale farming, then I think there is a scope or a need for a partnership with government, I think. But that's not the way I want to think about it in the first place.

I want to create, and we have, I'm proud to say, created solutions that operate through commercial channels and essentially subsidy-free. We have one product in one country that is receiving a subsidy, and we have a partnership with IFC, for example, the global index insurance facility where there's a special smallish grant to finance subsidies as a sort of training investment to get the thing going. And that is because in that particular country there is an 18% back charge on premium payments. And since it's a country that's essentially based on, has an agricultural economy and has as its public development objectives the statement that says that ag needs to be intensified and so on, it just doesn't seem like that I'd think to put 18% of that on premiums. So there we have on a transitional basis these subsidies, the premium subsidy kicks in. But I regard this as having to be on a transitional basis.

The real answer lies in barring catastrophes – right? – lies in ever-better models, ever-better data, so that we can understand risk and price risk appropriately. So for now I would focus on that rather than painting doomsday scenarios, which in the end, if they're really extreme, yes, then they do in an African condition require governments and donors.

- Andersen So by doing reinsurance you get to spread the risks. And, for example, the Mexico case, by reinsurance you can spread the risk to a number of other countries which don't have droughts at the same time – it's that kind of thing, you're saying. So you really don't need the government. You don't need the government to...
- Ferroni I'm not saying you don't need the government. First of all, you need to operate in a regulated environment, and the regulator is a governmental agency, and regulation is absolutely very important and necessary. And with all the regulation, it ought to be the right kind of regulation that's conducive to the production of that social outcome that we're after.
- You also need to have partnerships with typically the national meteorological office and so on, and you want to be working on this, together with the ministry of agriculture, because it's their farmers. And so the government has a role in various dimensions.
- Andersen I was thinking of my tax money – do you want my tax money or just regulation?
- Ferroni No. I should be able to... I, okay, we, these programs ought to be able to function without your tax money and as much as possible without donor money because now... I'm not going to go into what I think about donor money and aid, because that's a separate topic. But it should function without that if possible.
- Andersen And Ndidi, I would like to come back to the credit to smallholder farmers and low-income traders in the agribusiness sector and so on. You are an entrepreneur, so you are very familiar with the problem entrepreneurs have to go through to get credit because you may not have the necessary guarantees for the creditor. How do we get beyond this problem, whether it's for smallholders or for small-scale traders so in fact they can get capital in a situation where they are quite poor?
- Nwuneli So there are a couple prerequisites, and we've tried to experiment with some of them. The first is the concept of offtaker agreements. You had asked me about contract farming. But if you look across the value chain, finding large buyers and then linking the smallholders with the large buyers, gives the financial institutions in the formal sector some confidence that the farmers will be able to pay back. And that's the case of AACE foods. Nestlé in Nigeria has tried it, Grand Cereals, with a whole range of value chains that have huge demands, such as soy and maize and cassava. In those ones you're guaranteed offtakers and offtakers service guarantors. And insurance is actually bundled into the pricing of the financing, because farmers ordinarily, at least in the Nigerian context, will not go out and buy insurance as a standalone product. That's one.

The second one is the concept I talked about, which is you're putting farmers into clusters. So where you don't have offtakers who are ready, you put the farmers into clusters, formally register the cooperative, which allows them to access financing from formal channels. Now, the Central Bank of Nigeria has been quite creative to NISL in offering guarantees, the banks, which hedges the risk, taking on 70 to 75% of the credit risk, which gives formal financial institutions the confidence that they can give financing to the farmer.

And the third is the FAFIN model, which is private equity. Now, many people don't think about private equity and smallholder farmers in the same breath. But by initiating a fund like FAFIN, you're giving patient capital to SMEs, small and medium-size enterprises, and then encouraging them to source from farmers. That patient capital allows them to take risks that they ordinarily would not take. And in that funding, there is also the insurance component, which you bundle in, into the price. So these three models appear to be working.

Now, I want to mention women and financing, because with agriculture women in Africa contribute and constitute 75% of the labor force but only receive 10% of the financing. And so I think there is an extra effort that we have to make to ensure that more women can take advantage of these products, whether it's insurance or financing products that I've talked about.

The bank of industry in Nigeria tried to open a special window of financing for women and female cooperatives, offering 5% interest rates, which was quite attractive. But it's a huge challenge, and we need to do more.

The same applies to young people, getting young people interested in agriculture and helping them start their own businesses. And actually Syngenta worked with agribusiness competition for young Africans under the age of 30, and I was a judge earlier this year in Kenya. And it generated a lot of excitement, because young people..., making agriculture look cool and then giving them an opportunity to participate in a business competition and giving funding, those little initiatives need to be scaled up to get more young people interested in agriculture and providing financing and training. Training goes hand in hand – capacity building for individuals and entrepreneurs who want to enter the space, so that when they get the funding, it's utilized effectively.

Andersen When you lend to clusters, is it your experience, which I've seen in some literature, that if you have a cluster or a collective responsibility by women, the repayment is likely to be more, the probability of not repaying is likely to be very low, compared to a group of men. And don't worry that you're a minority up here. We're going to be kind.

Nwuneli Well, definitely, statistics and research have shown that women are better at repaying than men. And they always say that men will spend extra money on another wife or on alcohol, but I think we're starting to see that the trend

is also changing, even for men, especially when it's linked to offtaker agreements. When they know that that money is going to... I mean, that money needs to go to working capital, inputs for that year and that they will generate returns, we're starting to see a change in mindset. So I'm optimistic for both genders.

Andersen All right, very good. Thank you. Mohammed, the money that's created from oil exports, you made a very clear case for avoiding the Dutch disease, ignoring agriculture in the process of making lots of money from oil exports. Does this money ever reach the smallholder, or is it used for investment in, say, infrastructure and other public goods? How does that work?

Amin Adam Yeah, I think that part of the money goes to finance infrastructure investment, and I talked about irrigation schemes. But we also have some that are targeted at smallholder farmers. For instance, the fertilizer subsidy program that I talked about, the mechanization program has led to the establishment of about 110 mechanization centers across the country, which are providing technology services to the farmers.

But I haven't talked about this. There are also risks associated with government financing for smallholder farmers through resource revenues, and one of the risks is the risk of price volatility. You know, when crude oil prices fall then you have a big instability between budget and disbursement. And that was the experience in Ghana in 2013, as a result of the fact that crude oil prices fell, relative to our reference price. Government budgeted to provide 20 million cities, but, and ended up providing 30 million cities to the agricultural sector. So this is one risk that we need to manage, and this is why government must put in place stabilization mechanisms to be able to address the risk of revenue inflow to the agricultural sector.

But secondly, most of these countries that are resource based are losing substantial amount of money through transfer mispricing but also because of the international tax system, a lot of money is going out of our countries, I mean, the capital outflow, and thereby our countries are losing substantial amount of money. Ghana lost about \$32 million U.S. dollars, and in fact loses \$32 million every year from the mining sector through transfer mispricing. And so we also need to boost our capacity to be able to plug the loopholes within the tax system in order to ensure that we retain substantial amount of the money we're generating from our natural resources to finance investment in agriculture. In fact, if Africa is to invest 15% of the money we lose through through transfer mispricing that we should be able to reduce poverty levels by 45%.

Andersen Thank you very much. It sounds like you are giving Norway competition in terms of responsive management of oil revenues. That's wonderful. I want to go down the line. We have one minute and five seconds and counting, but I want to ask each of you for one thing, one action point that you would like to promote in order to achieve the goal of sustainable food security and

nutrition as soon as possible, certainly before 2050. What's the one thing you would want to do to strengthen the lifeline in terms of capital and risk management? Do you want to go first, Jimmy, or are you still thinking about it?

Smith I'm ready to go. Well, in the broader sense in the context of this conference, can we feed nine billion? The one thing I'd like to see us do is to unleash the livestock sector. There's a huge policy bias against the sector, very little attention to it, even though it contributes 40% of agriculture GDP. I think we need to look at this more carefully. And if we look there, we will find that there is huge opportunity to help feed this nine billion, and not only feed them but nourish them as well.

Andersen Does that include fish?

Smith Yes.

Andersen Okay, thank you. Mohammed.

Amin Adam Yes, I think that I don't need to belabor the point that investing in agriculture holds promise for reducing the high levels of poverty in Africa and also for promoting productivity. And so I'd like to see more investment. Government in Africa must live up to their commitment that is the Maputo Declaration that they should spend at least 10% of their national revenues in agriculture. Most countries are not doing it. The average is 5%. I want to call on African leaders to be committed to this declaration, to show that they provide more funding for agriculture investment.

Andersen One of the countries that apparently does that in Ethiopia. There may be others. There are probably others. Ndidi?

Nwuneli Yes. I think that a lot of focus has been placed on increasing yields for farmers and outputs for farmers. But I think that investing in SMEs across the agricultural value chain, that process this food, will reduce the waste that occurs. And my country is 40 to 60% of the food that is cultivated goes to waste. So investing through private equity, through creative financial models, in SMEs, to enable them to grow so that we can process more of this food and reduce the waste would definitely have a huge impact to address this challenge that we have.

Andersen Thank you very much. Kurt.

Weinberger We know that only crop insured farmers bring a stable agricultural sector, and this helps to have sustainable food security for nine billion people. We all know also that at the moment we have a penetration of 40% all over the world, only 40% of the world's arable land is insured. And it must be the goal to have a higher penetration in order to have more comprehensive stabilized agriculture sector. This must be the goal with more private-public

partnership in order to make possible to have an affordable premium for bigger land and for more farmers all over the world.

Andersen Thank you. Marco, you get the last word.

Ferroni Well, that's great, so I agree with everybody, with what people have said. So basically we need to invest in agriculture. Now, and in the context of this panel and my particular topic, right, that requires insurance. I agree. I agree with Ndidi. I agree with the previous two speakers. The investment has to be not just at the farm level where it's sorely needed, it's got to go all the way throughout the value chain. By the way, Ndidi, we have agreements like portfolio insurance solutions with offtakers. Maybe we can talk about it after. So as to insurance, I think that we have a path ahead that is very clearly defined, and we want to travel it now.

Andersen Please join me in thanking a wonderful panel.