



# INTEGRATING LANDSCAPE MANAGEMENT INTO CLIMATE-SMART AGRICULTURE

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AUDIO TRANSCRIPT

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## PRESENTERS

Julie MacCartee, USAID Bureau for Food Security

Christopher Delgado, World Resources Institute

Christine Negra, EcoAgriculture Partners

## PRESENTATION

*Julie MacCartee:*

Well good morning everyone and welcome to our final Ag Sector Council Seminar of 2014. I'd like to extend a very sincere thank you to everyone who has participated in one of these seminars over the course of the year. Your engagement, your questions, your suggestions for future events are really what keep us going and we're excited to engage further in 2015. The Ag Sector Council Seminar Series is a product of the USAID Bureau for Food Security and Feed the Future's Agrilinks platform and is supported by the Knowledge-Driven Agricultural Development project.

My name is Julie MacCartee and I'm a knowledge management specialist with the USAID Bureau for Food Security. And as per usual I'll be facilitating today, managing the Q&A and just kind of keeping things moving along. Before we dive into the content I always have a few basic housekeeping issues. First we always ask that you turn off your cell phones if you're joining us in person just so that we don't interrupt the speakers. However if you are a Twitter person we always encourage you to use those cell phones to follow along on Twitter.

Or if you're one of our over 60 people joining on the webinar please feel free to use the #AgEvents hashtag to follow along on Twitter. This session is being recorded and we will send a link to the recording to everyone who registered today so you can share it with your colleagues or review any of the content. And because it's recorded and because we have an online audience that's pretty sizeable we generally ask that you hold your questions until after both of the speakers have presented so that we can pass around one of these handheld mics and make sure that the webinar participants can hear your questions.

Very quickly I wanted to mention that we haven't officially announced our Agrilinks events for January but because it's the International Year of Soils we're expecting for our January seminar and our January Twitter Chat to be focused on soil. So if you are a soil-related person feel free to get in touch with one of us after the event. We'd love to pick your brain. All right, so now we'll be getting started with our December seminar on Integrating Landscape Management into Climate-Smart Agriculture.

And I just wanted to mention that USAID is keenly aware of the threat and realities of climate change and how it will influence agricultural development. Climate change and the environment were identified in the original Feed the Future guidance as cross-cutting themes that need to be integrated across our portfolio. And climate-smart ag in particular is an approach that will be necessary to project and increase agricultural yields, build resilience, and develop opportunities to mitigate climate change.

Most recently the U.S. government has recommitted to climate-smart ag with support to the Global Alliance for Climate-Smart Agriculture, launched at the UN General Assembly in September with over 70 stakeholders who have joined the Alliance thus far, and based out of FAO in Rome. And actually the very first membership meeting of that alliance is starting today and tomorrow. And it's being broadcast by webinar on FAO's website if you want to attend tomorrow's session.

In addition, President Obama signed the Climate-Resilient International Executive Order in September calling for adaptation and mitigation across all of the U.S.'s development programs. So the Bureau for Food Security has been working with others to integrate these important issues: climate change, land-use, and environmental considerations into Feed the Future. And that's why we're so excited to have our two speakers here today to just illuminate some of these topics.

And so with that I'd like to just quickly introduce our speakers who will be discussing some approaches to landscape management and land-use interventions to promote climate-smart ag. First up will be Chris Delgado, who coordinates the land-use topic of the New Climate Economy Project, a multi-institution research inquiry on the interactions between economic and climate policies. He's particularly interested in the restoration of degraded forest and ag landscapes. And prior to his work at WRI he was the economics and policy practice leader in the agriculture environmental services department at World Bank.

And then next up will be Christine Negra, who is a senior research fellow at EcoAgriculture Partners. And her early career as a soil chemist and agricultural extension agent informs her current work promoting integrated landscape management in policy and market decisions. Her recent projects have investigated the potential of climate-smart agriculture to improve outcomes for people and the environment in Africa, Asia, and Latin America. So with that I will pass the microphone and the infamous clicker over to Chris and we'll move forward.

*Chris Delgado:*

Thank you Julie. I come more from the ag side and so it's interesting in a primarily ag audience some people – I also come primarily from the livestock side within ag and that's an anomaly I might add at WRI where I now work. And it's not an anomaly in this audience. But then again talking about some of the things we're going to talk about today may be less familiar. Really just a few words of context to sort of set the scene for what is really I think one of the premier issues the world faces in any domain.

Here's where you may wonder if I'm in fact coming from the ag side. But the fact is that a lot of the world sees ag as a perpetrator when they do like

to eat, but they tend to forget. If you look at climate change, people are generally concerned about climate change. But agriculture and land-use change, some of which is related to agriculture, accounts for a quarter of all greenhouse gas emissions. The only other sector that's even close is energy. Energy is number one.

But agriculture alone is more important than transportation, like cars and trucks and that sort of thing in climate change. And within the – what you see as the green there – that is land-use and land-use change in forest, i.e. when trees get cut down emissions occur. But agriculture actually directly produces more emissions than all the cutting down of trees. And most of agricultural emissions – we'll see in a moment – actually come from livestock.

Now there's actually an error in this slide. And if anyone can detect it in the time I'm talking you get a prize I'm told. The error is the word "direct" in the first bullet. That's not true. It's 30 percent of agricultural and land-use change emissions. It's actually 56 percent of all direct ag emissions. And 80 percent of livestock and manure emissions come from ruminants, primarily cattle.

This is a huge issue because for those in this audience I don't really need to tell you what livestock, particularly if you work in Africa but also South Asia and the really poor parts of the world, that is one of the few pathways out of poverty for poor rural people. And it's growing tremendously in demand for milk and meat. And it's also probably one of the major adaptation pathways for the rural poor, which is most of the poor, in Africa in particular.

So this is actually a major concern. There is an upside to this which I'll get to. But I wanted to motivate that a bit. At the same time, now most of the people on the environmental side who work on anything related to land-use in the missions are concerned about deforestation which is real. And in fact the figures are all over but basically the standard figure for net deforestation – I'm going to come back to that term – is about five million hectares a year.

Net deforestation; it really means that the net amount of land that changes administration from a department of forestry to some other department, either a city or agriculture. In fact FAO, in the same 2010 study which is still the reigning study on this, would say that gross deforestation – that is the cutting of trees – is 13 million hectares on average a year. And these are already aging figures. And Matt Hansen and his group at the University of Maryland which does remote sensing very carefully would say that net tree cover loss is something more like 20 million hectares a year.

So there are a lot of trees going down. Now in the OECD, that is the U.S., Europe, sort of the traditional developed countries club, pulp demand and wood demand is actually going down. People now read things on tablets more than people are reading newspapers and that sort of thing. Pulp and timber demand is soaring in the emerging developing countries, the BRICs in particular. If you think about it, if the world – you know for producing electronics – has shifted to South/Southeast Asia, those things are all packaged.

If the workshop is over there that's where the packaging goes. Plus you've got the rise of newspapers and all the other uses of paper. There has been about 10 percent of forests in the last 50 years – a little more than 10 percent – have actually been cut down and put into agriculture leveling. And a lot of the expansion of agricultural production that has been possible even with yield increases from the Green Revolution has been through extensive – you know clearing new land and planting it.

And so that is going to be inevitable. In fact my colleague Tim Searchinger who lead the World Resources Report 2013 team at WRI calculated that you'd have to have about one-third more kilos per hectare added every year through yield increases for cereals globally than actually happened in the last 44 years under the Green Revolution in order to avoid the need to clear new land if you're going to meet caloric needs at 2050.

That's a complicated mouthful. And I'll give you a reference later. You can look it up if you want but basically if we have the same rate of technological progress we've had for the last few decades we're going to continue to clear land if we're going to meet food needs. That's the message. But the thing we always leave out is actually forest. And that is a very serious omission because – for several reasons.

The main reason that's serious – I'm going to actually give you one of the punchlines later on now. If you believe WWF, which is one of the few organizations that's actually tried to do this quantitatively, demand for pulp and wood logs in the world is going to go up by a factor of six by 2050. In volume terms FAO says demand for cereals is going to go up half. So – I'm sorry. I just made a misstatement. The demand for wood and pulp is going to go up by three, for cereals by half, ergo demand by volume for pulp and logs is going to go up six times faster than cereals by volume by 2050.

I mean we don't know exactly what the terms are but the point I want to make is that demand for wood is quite lively in the world. Demand for food is certainly lively. And the potential for just continuing to draw new resources – land and water – into production is getting quite tight. You

know we really have a major resource crunch that's coming. And you can't solve the ag problem without solving the forest problem at the same time. I mean you certainly can't solve climate change without addressing both.

You just can't. You're not going to get enough in the non-land-use sector. And as countries prepare their sort of commitments – their national commitments or index in the language for the Paris Summit in December – and as it becomes obvious what a large gap there's going to be between the sum of countries – sort of nationally determined commitments and what you'd need for a two degree pathway – people will turn to, "What can we do?" And one of the few things that can actually be done is in agriculture and land-use change.

So this is going to be a major area of policy focus. It already is but it's going to become even more of an area of policy focus in the next five years around the world. Agriculture is typically blamed for deforestation. This is a well-known study by Gabrielle Kissinger and her colleagues out on the West Coast. And I don't know how visible it is but the middle column is Latin America. This is by region. And it basically says that if you look at the drivers of deforestation, it's commercial and smallholder agriculture.

Commercial is the orange. Smallholder subsistence is the blue. This is a very widely held tenant in the environmental community. It's the Aggies that did it, you know? And in fact if you go to Brazil or Columbia or parts of Latin America, in fact cutting down trees is often a device to have access to land. But this is really, as we will see, a little misleading. But before I get to that, what is not debatable is that you've got these demands for food and for wood. We know there's going to be a lot more people.

I mean the best guess is 9.6 billion by 2050. At WRI my colleagues estimate that means 70 percent more calories if you accept the FAO volume projections and the fact that there's a change into livestock products that's very wide in the world. You know you need two times as much more meat and dairy by most projections, if you look at it. Three times as much log and pulp demand. And you're going to have all the problems that we've had in the past that are pretty severe, which we'll go into, perpetuated.

Except that the ability of the world to continue to sustain this is actually going down. On top of it, other studies now show that approximately one-quarter to one-third of all food produced is lost. Lost means, you know, it rains and it rots in storage which is quite common – the usual explanation in poor developing countries – or it's wasted, which is the usual

explanation of the developed countries. And where it's wasted, it tends to be at the retail and the consumer level.

And if you think about it, it's bound up with our concepts of food safety. You have dates. It's time use. You go to the supermarket once a week in a developed country because you don't have time. And of course then you buy too much 'cause you don't want to have to go twice a week. And then you throw stuff out and then everything else that goes along with it. That's a lot of food. And of course that's a lot of emissions too, both to produce the stuff and to get rid of it.

Unfortunately, more and more of the world is looking like this slide here. Those fellow Sahelians here will recognize this picture. It could be any of a number of Sahelian countries. And this particular one I believe is Burkina. But the – according to FAO, again with figures that are several years old now, 20 percent of all ag land is severely degraded in the sense that it no longer is producing the ecosystem services, including growing crops, that we really need.

And Christine is actually a soil chemist so I hope she'll tell us a little more about that. But this is a huge issue. Ominously, another eight percent is moderately degraded which means it's going to look like this or it already does very soon. And this amount is growing annually. And we don't know the exact cost. We were talking about this earlier. But the estimates are of the order of three to seven percent of total ag production in any one year is lost. And that probably is an underestimate in my opinion.

Now to get back to one of our premises: one of our premises is that agriculture is driving deforestation. That is correct that once trees are cut down, if you've got a choice to sort of go away and let them regrow for 20 years and maybe someone else will take over the land. Or now they're cut down. Why don't I colonize this and plant something or put some livestock on it? That is the driver of deforestation.

But increasingly in the world – again this is regional. Increasingly in the world, the motive for cutting down trees is to get wood. And in Africa particularly – the column that's here – it's charcoal. Until you come up with alternatives for people to cook their food, you're going to have deforestation. You're going to have people cutting trees down anyway. What they do with that land after they clear it is a different issue. But we have to be clear that it's the resource constraint that is driving this. It's not just some greed to have free land if you like.

So now having set the stage, what can we say about landscapes because landscapes really are the only solution – landscape improvement? And it's the only one that really gets to the whole series of problems all at once.

And unfortunately, being a failed academic, I love parentheses. But one parentheses I want to insert here is that we have to remember that at the end of the day in climate change, the ones who have the skin in the game are the rural poor in the tropics.

There is a lot of big modeling studies including computable general equilibrium type models and so forth that have looked at this very carefully. I've given some references. I can give more in the question period if you want. But basically those are the ones whose livelihoods are really hurt in the first instance by climate change and whose food security is at risk. So the poor in tropical countries – these are the same increasingly where the poor live in tropical countries or sort of the background picture.

It's the degraded landscapes. And unless you deal with those degraded landscapes you're going to have a lot of problems really addressing poverty in the developing world – the rural poor. You know, the less than \$1.25 a day Purchasing Power Parity 2005 type poor. Poor countries understand that. So if we waltz into an African country and say, "Hey we are here to talk about climate-smart agriculture." If they hear mitigation they say, "Thank you, no. The airport is over there."

You know? And it's understandable because why would you go where people are so abjectly miserable? Why would you use what they're doing with the background, with this sort of mindset that there's a tradeoff between mitigation and adaptation? When adaptation is what's needed and you seem to be interested in mitigation. The answer of course – which we'll come to – is that it's not a tradeoff. In fact they necessarily must go together. That is the answer.

But as my parentheses, adaptation is so critical for African agriculture. And it's almost completely underfunded. There's an estimate that you need something of \$35 billion to \$50 billion a year for adaptation of all sectors in Africa from UNDP. Yet total funding in 2012 was \$1.6 billion. And for agriculture – I think I left agriculture out of there but – it's about \$50 million a year on average. And we can discuss why that is.

Particularly in a donor meeting like USAID, it would probably be worth discussing why that is. But it's just a drop in the bucket by comparison and need. This is my prediction for one of the big issues we'll all face in the ag sector in the next five years as we look at climate change is African agricultural adaptation. The challenges faced by productive landscapes demand and supply opportunities are the same as before. I mean this continues to be a challenge.

But really the resource crunch from competing sectors – the urban sector now is really after water that is used by ag. And they're going to win because the returns per cubic meter of water are so much higher. Land-use is a tradeoff and it's complicated by the fact that there's lots of poverty, lots of small operations, lots of market failures – or as the economists would say – externalities of play in landscapes.

At the same time, we have no alternative but for intensification. I don't think I need to push that message here. And it's a harder problem. The low-hanging fruit is largely picked in the Green Revolution. Now traits of the game, you have to speed the process up which means that you really have to use technologies like marker-assisted selection, biotech, which you can use for conventional breeding.

I think Rob Zeigler gave a seminar in the series not very long ago where he made that point for rice – that genetics generally allow us to do a lot but we have to use the tools that will speed the process up even if we do a conventional breeding because it'll just take too long otherwise. And as we saw we've got a problem between climate and livestock. Livestock is necessary for poverty alleviation I would maintain and for resilience. It's also a big player in emissions.

There's a lot that can be done to improve that and actually make money doing it. Here's from an FAO study – I'm running out of time so I don't want to belabor it, but this is kilos of carbon dioxide equivalent, that is the greenhouse gases that are produced per kilo of beef in different regions of the world according to FAO. And you see the big difference between regions. And that has partly to do with the productivity of animals and of herds and of herd structure, but also the feeding.

And there's an awful lot that can be done just by intensifying pastures in Brazil, even the ones going up toward the Amazon. You can greatly reduce emissions. In Latin America, they're quite high per kilo of beef. They can be reduced and still make money. But you have to protect the forests next door or people will start cutting down more trees in order to produce beef. So again it's a landscape problem – lots of land. You know landscapes involve a degree of land-use planning that we have resisted intellectually. But there's really no way around it when you've got so many externalities and so many targets.

Governance and technology really can slow deforestation. And Brazil has actually done it quite a bit since 2004. And they've used remote sensing. That remote sensing – and Brazil installed a tremendous cost using U.S. satellite they get for free – is now available to absolutely anyone who wants it at <http://www.globalforestwatch.org> for free. You can get alerts.

Right now it's every month you can get an alert for any part of the world you specify using GPS coordinates.

But it's only down to 25 hectares and resolution will soon be down to 6.25 hectares resolution. And the private sector has responded. This is where you're getting big changes in a hurry now in supply chains. Wilmar, which trades 40 percent of the world's palm oil, made a commitment in 2013 not to source from illegally logged land. This is an amazing commitment because they have thousands of suppliers. They're extremely exposed on this because anybody can really check this up – anybody.

Any NGO can go in and check this out. But they can check their own suppliers. So they could actually enforce this. And so they're willing to make this commitment. And Unilever has also been pushing forward. And there's a big movement for sort of illegal – you know getting illegal logging out of the sourcing of the major multinational chains, and aided by market fiction, pushed by civil society, but very much in the interests of large formal supply chains.

And now they can protect themselves with technology and they're going for it. This is in Brazil. This is patches of 25 hectares. Now there's been a blip up recently in Brazil and we're trying to assess why that is. And of course this is only the legal Amazon. It doesn't cover the *cerrado*. The Amazon is public land. The *cerrado* is largely private land these days. And there are lots of other issues. But it just shows that you can do it.

Another solution that can be done is to really commit to restoring a target amount of agriculture land. The New Climate Economy recommended this. They're basically two ways to do it. One way to do it is through large, expensive projects of the kind that USAID and the World Bank and others do. That is the most effective way but it's expensive both in terms of money and in terms of talent of human capital. And the problem is there's only so much you can do a year in that.

The other way is through policy changes that really facilitate farmer-managed type regeneration activities. That takes 30 years but it can cover potentially a much larger amount of area. Here's an example of the project mode. This is from the Loess Plateau, a well-known project – quite a large project – and a long running one in China. The World Bank was involved for ten years of this. And during that period the rate of return was 20 percent. And in livestock it was 27 percent.

And I can tell you – I looked into this and – the World Bank didn't really think livestock was going to be very important. They thought it was part of the problem when they started because it was free-ranging goats that did a lot of damage on the hillsides. But what they did is confine the

goats. And they put in fruit trees and other things, some of which worked and some of which didn't work. But what really worked to save the day was they put in dairy cattle, confined.

And they put in cashmere sheep for wool, confined. And they now have the biomass to actually feed them on a cut and carry system. That was the highest yielding part of the project. And what was really key is it gave income to those that had to change their behavior to the farmer. Because these projects are extremely beneficial to everyone; they're beneficial to Beijing because they don't get blown dust; and they're beneficial to people downriver on the Yellow River because they don't get silting.

But it's beneficial to farmers because they actually have a good livestock enterprise now that they can make money with. I told you I was a livestock guy. Yeah I know I've got to finish and I'll finish. Sorry. I get into this. Solo pastoralism in Latin America is much the same thing. Again that's a project-type activity. It's very expensive – capital. It takes skills. Once you get it you've sequestered a huge amount of carbon which is beneficial to everyone. But the key is it works because there are returns to the guy who has to do it – the farmer. And the returns come through livestock.

Niger is an example of the policy change. This is the part of the world I worked in at one point. I would never have thought – I always thought of these landscapes as looking like the top picture. The bottom picture is absolutely astounding to me. And that came about through basically a change in rules as to who can harvest wood and when. Instead of it being harvested illegally at night by farmers it was harvested legally in the daytime, slowly by farmers. That was the basic change. It took 30 years to operate.

Land-use – when I say economic land-use I mean land-use – interventions that actually are profitable – can really provide 30 percent of the mitigation needed for a two degree pathway. Which a two degree pathway – we're probably going to have a lot of trouble meeting. But you can get a lot of it. The hardest one is probably protecting forests simply because there you have a higher degree of externalities. And you probably need an incentive to bring the people who have to comply into order. You need things like REDD+ to help.

But reforestation, reducing food waste, realigning subsidies toward climate-smart agriculture; all these – restoring ag land. These are no-brainers. Basically they have high rates of return. They increase resilience as well as productivity. We just have to do it. They need leadership to get it done because often it involves getting a lot of actors to

work together. I'm going to zip through some of this. This is from the New Climate Economy. This is what you'd really need.

This is the total emissions on the left column of the world in 2010 and gigatons of CO2 equivalent. That's where you'd need to get in 2030 if you want to get to something close to a 2° Celsius pathway. And you see the big actor – the one that can actually produce, can actually get us there – is the one that's circled: the land-use interventions. Between 4 to 10 is actually feasible. We estimate reductions in gigatons of CO2e. For sure, until the world peaks coal and deals with coal, the big issue in Paris is going to be land-use and agricultural emissions.

This is the big topic in climate change because it's where the big savings are possible in the next 15 years. There it's summed up. There are more details here. Sorry I went on a bit long. I apologize to Christine, but thank you.

*Christine Negra:*

Can you hear me? Great. So good morning everyone and thanks very much to the organizers for having me here. And I very much appreciated Chris's remarks. And I think there is some nice synergy between the kinds of things that we're going to talk about today. And I'm also looking forward to the last part where we have a group discussion. Uh-oh that was not the right button. Here we go. Great. So I'm going to talk about two pieces of work today and hit a few highlights.

And certainly I think we've made both of these reports available through the website. So certainly any details you want to follow up please do check that out. The first piece of work is something that I did recently looking at this issue of the national policy mix and how a national policy mix might represent climate-smart agriculture and be something that really supports that transition. And I'll use some examples to talk about four major categories of policy action that seem to be quite important.

That might not be the irreducible list but I think those are four ones to keep our eyes on. And then the last part of my presentation I'll talk about another piece of work that focused on Africa and looked at research needs for this integrated landscape management approach.

Okay so I think we've got a good sense from the previous presentation about some of the challenges facing countries in terms of agriculture and land use. And I think we're sort of very prime to understand those issues. And we've also heard that we've got this new global alliance on climate-smart agriculture that's getting going. And if you look at the materials coming out of that alliance of course one of the leading strategies is national policy. How do we use that as a major mechanism for making climate-smart agriculture a reality?

And this piece of work was really motivated to say, "Well what would that look like?" Do we know actually what a policy mix would look like in any given national setting that would really be supportive of climate-smart agriculture? We took a three-country case study approach. And I want to recognize of course my contributors here who are country-based who helped really make the work a reality.

And so the three countries – the first case study was Brazil. And we've heard a little bit about Brazil. And Chris spoke about the work that's been done to protect forests. But a really important complement that Brazil made a big investment in is on the ag – sustainable ag side. So lots of different types of activities, really focused on many different regions in Brazil to say, okay, if we want to have productive agriculture, agriculture that's dense per hectare, you know what do we need to do? And so they've made a big play on that and that's been a very important part of the Brazil story.

The second case study was New Zealand. And again we heard mentioned on one of Chris's slides about the issue of subsidies. And I think New Zealand has the lowest agricultural subsidies of all the OECD countries. And that's an important part of their story. And they've also made big investments as a very small country with a relatively small economy, very agriculture-dependent. They've made big public/private sector – a lot of 50/50 contribution investments in agricultural research that's very targeted to their particular agricultural sector.

But you know given the nature of the group today, I think I'll focus most of my examples on the third case study country, which is Ethiopia. So many of you probably are familiar with Ethiopia, have traveled there, or have done work there. There's a lot to say about it so it's undergoing a very significant period of economic growth. The GDP annual estimates are in the 10 percent range, 84 million Ethiopians – one-third of them – living in poverty.

Major components of the agriculture sector: teff, maize, wheat. About 84 percent of Ethiopians are getting their livelihood through agriculture. It's major. It's about half of GDP and represents about 90 percent of exports. So agriculture is a really big story in Ethiopia. There are a number of issues, and some of these again will be resonate to the remarks we've just heard. So widespread farming on marginal lands, use of inappropriate practices in technologies for sustainable long-term production.

And as a result very significant problems with land degradation – an estimated two billion tons of soil lost annually through erosion. An estimated \$100 – I think it's \$100 million U.S. dollars per year in soil

nutrient loss. I think we're in the order of 200,000 hectares of deforestation net per year, are some of the numbers that are coming around for Ethiopia. So some really significant land-use issues, and of course part of that, this issue of low agricultural productivity which has an implication for food security.

So Ethiopia, like many countries, already experiencing quite a lot of impact from changing temperatures, changing precipitation, increasing incidence of drought. And these two slides are – these two maps are quite interesting. So when you have different modelers making projections about changing precipitation you actually see quite different results. But when you run analyses, and I think this is an IFPRI study that ran it through the DSSAT crop modeling.

And you start to see that heat stress and other factors really have some potentially quite negative implications for wheat production, which is an important food and cash crop for Ethiopia. So this is a – and what it shows is that total loss in yield, as well as some net reduction and reproduction area is a very significant concern.

Okay so I said that there were four major areas of policy action that in the report we talk about as ones that we think are probably going to be important for most countries in their own unique context if they're going to be interested in advancing and bringing climate-smart agriculture as part of their ongoing development. What would that look like? And so the first one we point to is this idea of context-specific assessment that is designed to support decisions around actions and investments.

So one example from the Ethiopian context is this study that was done by EDRI and also the Global Green Growth Institute. And this was done I think in 2010/2011. And this is basically a sector mitigation potential assessment. And so if you see the -64 percent the study estimated across these six areas of the economy, that's about the amount of mitigation potential by 2030 that's available. And you'll quickly notice that there are two sectors that are the big wins here.

And so the 130 in blue is forestry. Reforestation, afforestation, efficient fuel wood stoves and other techniques would sort of capture that. It's about 45 percent of the total mitigation potential to 2030 and then another 25 percent in the sort of soil and livestock, improved management initiatives.

The second major category of policy action for climate-smart agriculture that we point to is this idea of the government taking a role to provide a coordination framework. So something that's going to help different sectors basically all get into traces and pull together even if they're not

always acting exactly hand in hand. It sort of sets some targets. It sets some objectives and says, "Here's where we want to go." And so based on, or heavily anchored in the study that I mentioned in the previous slide, the government in 2011 instituted the Climate-Resilient Green Economy Strategy which basically goes on record and says, "Look. We want to have low carbon development. We want to be focused on sustainable agricultural intensification. This is where we want to go."

And they did a bit of work to assess a much longer list of potential initiatives that might make sense in the Ethiopian context, screen them for feasibility, mitigation potential, cost effectiveness, and ended up with a short list of about 60 strategies. And so it puts them on the map and says government is going to get behind these across different agencies. And we would really like to see private sector, the donor community, and civil society all get behind these particular sets because they make sense to us in our context.

The third major policy category that we point to is this idea of strong institutions. And that can look a lot of different ways. That can be convening platforms to get to a place where you can actually have some shared sense of what are the common risks? What are the common strategies that make sense? And what are some of the policy directions we want to go? Or it can take the form of actual program implementation and whether that's a government program or a public/private initiative.

There's a lot of different ways that this idea of institutions becomes important. And I'll talk about a couple of examples. The first is this strategic investment framework for sustainable land management. And again this is very much about the idea of saying as a government, we see sustainable land management as really critical for dealing with our land degradation and low agricultural productivity issues, as well as our food insecurity, and poverty issues. So that's a direction we really want to see investment. We're going to be investing it in as a government and we really would like to see our international partners join us.

And so this pie chart basically represents at the time of 2008 when this strategy was getting put forward where – what's the general distribution of the international partners that are playing in the Ethiopian space? Where do we see that coming together? So again this idea of, we're creating this framework as an institutional mechanism so that we can kind of have everyone pulling in the same direction.

Interestingly, this is just out – a new report that came from the Overseas Development Institute on climate finance in Ethiopia and just a couple of interesting patterns to point to. And again noticing the data ranges max out at 2011 and 2012. In the first pie chart you see that of the

expenditures on climate change, a relevant development 80 percent is coming from the Ethiopian government and 20 percent from donor-funded. So that's interesting to note. It's really the Ethiopian government putting its money where its mouth is, I guess is one interpretation of what that chart would be.

And then the second chart shows that the distribution – 87 percent of those expenditures over a four year period were in adaptation. And I think this makes the point in the Ethiopian context that Chris made which is that adaptation is going to be – it's going to make sense as an investment. And the mitigation side is going to need a bigger case. So another example, and I think Ethiopia has been quite well-known for its community-based kind of watershed, programs like the Productive Safety Net Program which have had, again, multiple objectives.

So it's about – it's about addressing poverty and food insecurity. And it's been targeted to those areas where there was chronic food insecurity and food aid being distributed, and looking for ways to get out in front of that and focus on building productive assets. And so basically it's a cash transfer program primarily, but often an exchange for public works activities that are often focused on, you know, improving the quality of soils and building the ability of people in different areas to actually have a productive life and build their resilience.

So this was a piece of work by Béné et al in 2012 that looked at the PSNP to say okay you know, what's the effect? And if you see all the bars of the pairs, the lighter pink, to the right, represent households that received PSNP, were PSNP beneficiaries and generally shows a pattern in which – whether they were a household that experienced a shock like drought or flood or illness, nevertheless – in most cases, their food security index was actually higher than PSNP non-recipient households, and so we start to see some evidence base for these kinds of programs, where again it's multiple objectives. It's not just food security and poverty. It's also land rehabilitation and having some longer term effects for the households that are beneficiaries.

So the fourth category that I'll mention is this idea of information systems. And so of course climate-smart agriculture is a very knowledge intensive set of activities. You've got to know a lot in order to understand the sets of drivers and the types of interventions in any particular place that are going to make sense. And this is a really interesting, I think, example focusing on soils from the Ethiopian context in which they've made it. They've basically launched a soil information system, EthioSIS. And so there's a national soils database.

There's a national soil fertility map. And that's both through remote sensing and in the field. So building that and making a big investment on that as a national resource. And the idea is to determine in a spatially resolved way where – what kind of soil nutrient deficiencies do we have in different parts of the country? And what are some of the tailored fertilization regimes that are going to make sense that we can use in an advisory services way to break out into different producer communities?

And as a corollary to this, it's quite interesting. I think there are eight fertilizer production plants and four new fertilizer blending plants that are also being rolled out. And the idea being, okay, we're not just going to get you the information. So it would tell you kind of what we think the fertilization scheme is that makes sense here. We're going to make sure that the supply side – that those fertilizers are actually available and presumably at an accessible cost.

One other thing that I'll mention, and we talked about this – Chris talked about this earlier – about aging information. Just last week I was looking at some information about the cost, the effect of land degradation in Ethiopia and some of the estimates that float around. And more recent reports are about four percent of GDP associated with land degradation, lost. And I traced that back to the original source. And it actually originates from data in the 1990s, from about six studies in the 1990s. And so I brought this up with Tekalign Mamo, a colleague at the Ministry of Agriculture. And he said, "Yeah that's a problem." It's a real problem. And we're making these kinds of investments that have the potential to change the pathway and the trajectory of land degradation in our country, but we don't have the data to track it. And so they're actually – the Ministry is going to be convening an expert group in the coming year to look at that and say, "Look, what can we do on the information side?" So I think Ethiopia is a country where they're really recognizing the importance of this information system side of things.

So I'll switch gears here from talking about the policy side and talk about some conversations that happened last summer and led to a short policy brief, again, that you can access through the website that's more kind of on the research and research-to-action side of things. So I hope that some of you have already become aware or been involved with an initiative called the Landscapes for People, Food, and Nature. EcoAgriculture partners together with eight other co-organizers several years ago, banded together with a focus on integrated landscape management.

And a strong focus on both is kind of charting, what is the evidence base for what is integrated landscape management? What evidence do we have about what it is and whether it works? And how do we bring some of that evidence into action? And now, of course, that initiative has been joined

by several dozen other strategic partners. And I think WRI in fact is probably one of them. So several of the LPFN partners came together in Nairobi to organize a conference last July that brought together 170 people.

And it was very strongly focused on Africa. So it brought people from outside Africa but very much also focused on convening scientists, government players, people from agribusiness, and the NGO sector together to have a discussion that was really focused on this idea of how do we really accelerate progress toward integrated landscape management in the African context? And so one of the major outcomes that I'll mention is in Africa is an action plan for that.

And so I would certainly encourage you to go to the website that I think is on the previous slide and have a look at that action plan. But I'll talk just about one of the themes, which was on research. And I definitely want to recognize my co-authors on this piece who participated in the session. And actually I want to particularly flag Carmen Jacquez because her colleague is here in the room today.

Okay, so what I want to do is just walk through a couple of the top themes. And I think the idea here being that these themes I think are important. And certainly the people that came together at the conference to have this discussion identified these as important. But I think they also probably have some relevance for people working in other regions beyond Africa. And one of the hot topics really was this issue of multi-functionality. And again it's because we're running out of land.

We don't – we're running out of resources that we really have to make sure that every landscape and every hectare in the landscape – that the objective really is to move towards a place where we're achieving multiple benefits out of the same areas, this era in which we can have kind of single use areas and we're really moving away from that in the context of all the many risks and drivers that we're dealing with.

So in the science literature you can certainly find many studies that look at the – different agricultural management conditions in different parts of the world. The outcomes for yield, for income, human well-being, for ecosystem services increasingly, and so on. But it's not that common – it's a little sparse in the literature – if you're wanting to look at these things together. You know, maybe you'll find one that looks at two or three of these kinds of variables and other important variables. But it's – we don't have a standard way we look at these multiple benefits.

And so that's a major gap. And to the extent that there are some examples in the literature, they're not replicated. So I think this is a major gap that

we talked about, which is how do we start to build a much more systematic approach to looking at this multi-functionality across different – you know, different types of agricultural management regimes, different socioecological contexts, and also looking at multiple scales in a spatially explicit way because another piece of course is the interaction across different landscape elements.

We also talked a lot about agrobiodiversity as a source of resilience in landscapes, for people, for the landscapes themselves. And so for example Bioversity, one of the CGIAR centers, has done some really interesting pieces of work where they look at how farmers are using the actual heterogeneity of landscapes as a resource to deal with increasing variability in weather conditions and other kinds of increasing variability that they're dealing with.

So the central idea here is that if you have landscapes, and as producers or as communities of producers, you have access to different micro-agroecological systems. So it's different crops. It's different conditions that are going to be affected differently when you have changes in precipitation and temperature. The fact that you have access to different ways of producing different types of products, and as you concatenate that across individual producers to whole landscapes full of producers, that that in itself is a source of resilience.

So the evidence base here is only emerging and building. And so another key recommendation was to just dramatically increase the geographic coverage of these kinds of studies where you actually document, is this even true? We have some evidence that it is true but we really need to understand a lot more about that. The idea is very appealing. Let's make sure it's really true. When is it true? And how do we increase agrobiodiversity as a resource?

So of course this idea of evidence-based response to changes in climate and dealing with both the mitigation and adaptation sides was a hot topic. And we did talk about this piece of work done a year or so ago by Harvey, et al. And this chart gives an example if you're looking in livestock systems. Oh I should mention what this work did was basically look at – it took a global look, not just an Africa-centric look, to say what are the sets of practices that are more likely to provide both mitigation and adaptation benefits when you apply them?

So, and Chris pointed this idea as well. Like really, where can we find these kinds of synergies? And he also showed some slides around civil pastoral systems. And really the idea is to recognize that compared to some conventional systems when you're moving into a civil pastoral system you can have a carbon, sequestration, mitigation benefit, as well as

a whole set of adaptation and potentially increased economic or food security benefits under civil pastoral system.

But again it's more a way of thinking and how do you apply this kind of tradeoff synergy mentality to thinking about what makes sense in any particular system? And again that's an area for further research and applying this kind of approach. Inevitably we talked about the fact that investment in Africa in agriculture R&D and monitoring is relatively low, and especially relatively low given the need. So that was certainly a recommendation that emerged from the conference, was let's increase the total amount.

But I think almost as importantly, we talked quite a bit about the fact that there's really a big variation across countries both in terms of their own domestic investments and also where global donors are placing their investments – that it really is quite patchy as you look across different countries. And of course there are many reasons that that is true. And one additional issue that they pointed to is that the sets of issues and the sets of topics that are investigated and supported is pretty patchy as well.

And that maybe we need a systematic look at where we need to be putting the research dollars and having a bit more of a collaborative and strategic effort. So the last point I'll make and the last theme that we talked about is this idea of agroecological research networks. And it's worth mentioning because I think we think about our research network. And the first bullet point makes a ton of sense. We're going to look across different scientific disciplines. We're going to bring people together to really build the evidence base for dealing with some of these complex challenges.

But they're really quite interested in these other functions of these research networks which is actually articulating clearly in a common voice that there's a business case for co-investment, not only from international donors but also for business – from businesses in knowledge systems. So things like seasonal forecasting, long term landscape observatories and really making a case to some of the other types of partners which don't play – always play as big a role in research and try to get them more involved.

And then of course this point about having these research networks much more explicitly carrying research recommendations into decision-making environments in the government and in private sector. And then I'll just close, because I would say that Tom MacMillan and Tim Benton really had something quite interesting to say in this commentary earlier this year. And I'll just read the quote: "Enhancing farmers own R&D could reap big rewards from minimal extra cost. Farmers everywhere are practical experimentalists who understand the idiosyncrasies of their land."

And that I would say was the last theme that I'll share with you from the conversation, which is that yeah, there's a lot of different sources of knowledge. And it's incredibly important to make sure that the research structure, the research networks, and where the dollars are flowing actually makes sure that we bring in this farmer expertise as we start to figure out how climate-smart agriculture is going to play out in specific geographies in Africa and around the world. So thank you very much. I look forward to questions.

## QUESTIONS AND ANSWERS

*Julie MacCartee:* Thank you so much Christine and Chris. It might make sense for you both to come up to the front since you'll be primarily engaged in this discussion. So we have about 25 minutes or so for Q&A and welcome questions, comments, reactions to what you saw. Please feel free to direct a question to one or both of the speakers. And traditionally we like to start with a question from our online audience. Do you all have one ready to go or should we throw it to in-person first?

And also feel free to let us – oh okay. All right so we'll start with an in-person question and then come back to here. Oh and please state your name and organization if you will.

*Tom Herlehy:* Yeah hi. My name is Dr. Tom Herlehy. I'm with Land O'Lakes. Chris, I had a question for you. I really liked your presentation and talking about the demand for wood and timber and pulp and the fact that in Africa the largest contribution to deforestation is for charcoal and for fuel. I was recently in the Dominican Republic. And anybody who's ever gone there and flown over the Island of Hispaniola can't help but be struck by the green line between the deforestation in the west on Haiti and the fact that in the east we still have a lot of forests, especially cocoa.

And when I was last there about a month ago I was told the main reason for this is because the government made a decision about a decade ago to subsidize the cost of kerosene for home cooking, therefore through a government subsidy they've discouraged deforestation. I was wondering if you were aware of that, if you could talk about that as a potential policy or strategy for countries in Africa to follow. Thank you very much.

*Chris Delgado:* I think I can use this mic. Everyone can hear me? I'm not actually familiar with the Dominican Republic case but throughout Africa I mean charcoal is a huge – years ago it was an \$8 billion a year business. I'm not sure what it is now. But the fact is that people don't have a lot of alternatives, even in cities. And I personally have tried to urge my energy colleagues whenever I can in different parts of the NCE network to look at this because that will make a huge difference.

You know part of systems thinking is we have to start with asking, why do people do what they do? And then what can we –? How can we help in a way that they can do what they need to do without unintended consequences? And the charcoal one in Africa is huge and often neglected.

*Julie MacCartee:* We'll pass it to our online audience and then come back here.

*Webinar Monitor:* Great, so we have 80 participants joining us online currently – a very active community. And John Russell from Eco Food Systems Consulting in Oregon asks: what parameters were used to assess the human well-being component of The Landscapes for People report? The question is for you Christine.

*Christine Negra:* I'm not 100 percent sure I understand the question. Do you think he's referring to the second report I talked about?

*Webinar Monitor:* Yes I think so.

*Christine Negra:* Okay.

*Webinar Monitor:* We can ask for clarification.

*Christine Negra:* Yeah that would be helpful. I'm not 100 percent sure. I appreciate that.

*Julie MacCartee:* We'll bring it back to in-person. Let's see. I'll come all the way to the back.

*Tonya Rawe:* Hi. I'm Tonya Rawe with CARE USA. Thank you both for your presentations. I particularly want to thank you for bringing up the importance of really engaging farmers in research so that we make sure that the information and the practices that we're exploring are those that are going to meet their needs. And I want to ask a question really to follow up on that, on how you see governments being able to engage farmers in landscape level planning.

And what do you see as the barriers to doing that, given the primacy of food insecurity and the need to tackle poverty in places like Ethiopia? But then also the challenge really of doing so in the context of different kinds of land tenure policy?

*Christine Negra:* So I think there are a lot of different ideas just as you were asking your question that come to mind. I think certainly one of the ideas that people talk about is inside the context of development programs which do actually touch farmers, that if you build a research component into those programs – and I think there are probably a lot of different ways to do that and it probably depends very much on the structure of the program, and incidentally there can actually end up being some really useful kind of M&E side benefits of that.

But I think really rethinking the information dimension, and I think obviously we're very much in that transition. But I think this idea of really increasingly thinking about development programs that are very much about kind of a multi-directional learning process, where it's oriented

around addressing core drivers and addressing core – and really setting targets but being much more fluid about how you get there. Creating space and a set of maybe different pilot programs and leaving room in these development programs for pilot initiatives that really are that kind of active learning dimension.

I think another really important piece too – and I think again there are probably a lot of good examples around the world – is making sure that the sets of national and international research institutions that are present in any given place are engaged. And I think that's often difficult to do because of the siloing. There's a lot of, you know, programs rolling out. There are a lot of targets and deadlines. And there is often not a lot of room both in terms of time and budget to really tackle – take in and find a lot of portals to bring in the existing institutions.

And that can take the form of whether we're talking about CGIAR centers or whether we're talking about national research or we're talking about places like – and again on the forest side – the International Model Forest Network. So here's an international network that has a research to action orientation. You know finding networks, these international and regional networks, and bringing them into some of the design processes, maybe taking advantage of some of their kind of research-to-action capabilities, and building those into programs.

And I think at the end of the day it's really about having a more fluid capacity to deliver on program but really keeping the targets in mind. It would be one basic strategy that I would think of.

*Chris Delgado:*

I'd like to – I agree of course and I'd like to just add, as we mentioned, there are different ways to go about promoting productive landscape approaches. But the project mode is an important one. And it's limited by the fact that it's so labor intensive and capital intensive. It's hard to be extensive on it. Yet we can still do a lot. And one of the lessons I think that comes out of the project mode is that you really have to have themes in there that farmers can focus on, if they're going to agree to collaborate.

You know if you're dealing with – I can think of places in Costa Rica where one farm includes all the key elements of the landscape: the upslope, the downslope, the forest, the pasture, the riparian areas and so forth. There it's just a matter of sustainable farming. And even in a place like Niger where you saw their small farms, there aren't a lot of externalities across farms. I mean people are facing – there aren't a lot of slopes to begin with and you know the way the water is distributed and whatever everyone has pretty much the same problem.

So you're not really redistributing from one group to another. But the problem is so many of the places that we work in the world have lots of small farms and we have upslope and downslope and we have water sources and so forth. These create externalities. They create market failures if you like. What the guy up the slope does affects the person down the slope. And that's where you need land-use planning. You need governance.

And to get, that I think the project mode shows that it's not just a question of having a strong central government or any of those things. It's basically you have to have thought out themes that allow people to see their advantage. I mean it doesn't hurt to have some strong governance somewhere. But you've got to really have themes that they can relate to. Livestock is a powerful one because everyone does it in smallholder systems pretty much. But they need to do it differently. And that is one of the entry points.

There are other entry points. And soil management is critical. I think any farmer can understand the advantage of managing their soils. The question is are their actions alone going to be enough? And what exactly are they getting out of it?

*Julie MacCartee:* Question from online.

*Webinar Monitor:* Okay, so we have a clarification on the last question. John says, "Yes the priorities for research in the African Landscapes Report, in the slide called multi-functionality. You mentioned systematic assessment of yield income, human well-being, and ecosystem services outcomes. What parameters were used to assess human well-being?"

*Christine Negra:* Okay so that's a really useful clarification. What that slide is talking about is it's pointing in the direction of areas we need to go. So there's not – I wasn't talking about a particular study so much as pointing to the fact that in the research literature there are lots of different ways that all those types of – those major kind of categories of interests or benefits – are parameterized. And it can be tremendously different. And so I think perhaps at the heart of the question is that maybe there are some good ideas about the best ways to consistently monitor human well-being, maybe for certain regions, probably not globally.

So I wouldn't venture in this context to offer sort of any specific idea. But I think the main – the central theme from the conversation in Nairobi was that we have to figure out what are those ways and how can we do it more consistently across different areas so that we end up with a bigger picture and a more systematic assessment of human well-being across different

contexts. So sorry if that's not kind of giving you the answer that would be useful.

But I think the idea is that we don't have that answer yet. Maybe people who – I'm not a specialist in the kind of human dimension side so maybe there are others who can do a better job with that.

*Scott Bode:*

I'm Scott Bode and I work at ACIDI/VOCA. I heard you guys mention governance a couple of times. When I used to work at USAID I worked – I was part of the team that helped to develop the Nature, Wealth, and Power framework. And I thought what was useful about NWP was it brought out governance, you know, more than nature or wealth. And I think landscapes – a landscape approach, and you don't have to convert me, I've been converted for a longtime – implies governance, good governance.

And I point to an area of interest and concern that I have. And it's the West Africa cocoa sector. And I see that industry seems to be investing more – I don't have numbers on this – in intensifying sun, open cocoa rather than shaded cocoa. And since the forests of West Africa are very fragmented and the governance of those spaces are quite contested, my concern is the goal of increasing the productivity, which is a good goal of cocoa from 300 kg per hectare to 1000 kg per hectare, will not lead to less pressure on those fragmented landscapes.

It's going to lead to more pressure unless we have equal investments into the shaded cocoa systems that produce 70 percent of the cocoa from West Africa. So that isn't really a question but I did want to hear a little more elaboration on the importance of governance as it relates to landscape approaches. Thanks.

*Christine Negra:*

I can take a first crack and then hand it over to you.

*Chris Delgado:*

Sure.

*Christine Negra:*

You know, I think the thought I had as you were asking your question is really these four categories that I talked about in my mind are kind of part of that story of governance because governance has a lot of different aspects and different maybe sequences for any particular region or sets of challenges. And I think part of governance is some sort of shared information base. And I think without a shared information base that describes – in this case we're talking about a cocoa sector.

We're talking about fragmentation. We're talking about probably displacement. We're talking about whole sets of issues – that some issues are of great concern in the cocoa sector. And some issues are of great

concern to people living in different regions. And some issues are of great concern to government and to the NGO sector. And so when you have a lot of different players from civil society, private sector, public sector – kind of all with their own dog in the fight, it becomes quite easy to be very focused on kind of singular, linear response strategies.

But one of the values of some of these contexts and specific assessments where you really look at the sets of issues and try to say, "Look. Here are the major drivers. Here are kind of the major trajectories of where we're headed. That doesn't really look that great. Where can we start to realign and have a different set of scenarios that we're aiming towards?" And again this idea of these coordination frameworks. And I think government really does have often a very key role here to sort of set the frame, to set the stage to say this is where we're headed.

We may not get there exactly, you know kind of where we're charting. But you know we're trying to point in the right direction. And we're articulating the things we're going to do as government. But we're also really trying to articulate the absolutely essential roles that private business needs to play, that multiple levels of government need to play, the civic sector, the reliance on international partners.

And I think those start to look like something that's better governance when you have these sort of heavy information base that leads into some sort of reasonably well-founded strategies and starts to create the mechanism for different players, sometimes working closely together and real kind of public/private/civic partnerships. But sometimes operating independently but again theoretically moving in the same direction instead of at cross purposes, and ideally with a greater awareness of what the implications of certain strategies are.

*Chris Delgado:*

There was kind of a private sector aspect to the question. And I'm not from the private sector but I have worked a fair amount with private sector people. And my impression is that the primary concern, at least of the formal international private sector – and Tom can correct me if I'm wrong – is really to reduce risks. Because the profit margins tend to be quite high but the risks are quite high. So if you can do something about the risk you kind of hand them the bottom line a bit.

And two risks are particularly relevant here. There's the social instability risk which is always there, anywhere where you are. And you're dealing with rapidly changing situations with lots of very poor people. And the other big risk is the sort of ecosystem services risk. And I don't know the corporate sector very well. But there are many investments, whether it's in cut flowers in Kenya as some of your colleagues have shown Christine. I think you've been involved in it.

Or whether it's Nestlé bottling water in the Philippines, or many cases where really it's not – it's very much in the interest of these investors to do something to help people that are their neighbors, prevent them from polluting water, which often means not cutting trees or not pasturing cattle right next to the river or whatever it is. And so there are definitely the conditions there for working with a broad variety of actors.

Now again, I don't know the specific example in West Africa but the conversation is more likely to go well and be productive if it's looked at on a larger scale where you look at what all the different actors need and how you can arrange things and collaborate so everybody is better off. Because ultimately that's what the landscape business is about. We're not talking about a zero sum game. We're talking about net benefits.

*Christine Negra:*

Okay and just to build on that, because I think that's such an important point – this idea of different perceptions of risk – and getting that to a more shared understanding of risk. And certainly in the cocoa sector I think that's very much growing as there's an awareness that, hey, what's our long term supply going to look like? You know, and I'll point to a piece of work that was done by LPFN colleagues on reducing risk. And there is a case study focused on cocoa that really does look at that.

And where there's real recognition in the cocoa sector like we have to do something that's quite different from just even a supply chain sustainability approach to one that's a landscape approach that looks at the sets of larger risks that are affecting people in the communities and the regions where we want to have a sustainable sourcing strategy where we really have kind of critical operations. I think that conversation is really evolving in the private sector side. But I think that capacity across different sectors to plug and play with each other, to speak the same language, I think really gets to your governance question.

You know, yes, we can know that we need to have multi-stakeholder cooperation. But to get to a place where we have the capacity as individuals working in different companies and agencies and NGOs and so on to get to a place where we know how to do it; that's a bit of a cultural transition we're in the middle of right now I think.

*Julie MacCartee:*

Question from our online audience.

*Webinar Monitor:*

So we have two questions from – apologies if I mispronounce your name – Yihenew Zewdie, joining from the Netherlands, Technical Center for Agriculture and Rural Cooperation. So the first question is for Chris, which is: what was the underlying reason for the pitiful record of agriculture's inability to access adaptation funds? Do you see some

imbalance in the geographic distribution of beneficiaries of the adaptation fund?

And the question for Christine is: what incentives need to be put in place to ensure a landscape approach to land management?

*Chris Delgado:*

I think the honest – well actually I was going to say the honest answer is I don't know. But that's not quite true. So I'll give you an even more honest answer. I think the fundamental reason – disbursements – when I gave the \$53 million dollar a year average figure, that's disbursements from projects. Projects are primarily designed to ensure good governance over public funds. They also require all kinds of safeguards and all – well both financial and fiduciary type safeguards and other kinds – social and environmental and so forth.

And they're inherently a slow means of response to a problem. But over time I think those disbursements will go up. But it's a slow process and it really I think is a legitimate question to ask whether they can go up fast enough under business as usual. And my own feeling on that is probably not. So we need to think about the forms of assistance that are both – not just the supply of money but I guess my point is the format through which assistance is purveyed. We really – you now I don't want to say we have a crisis because it's going to be an enduring crisis.

It is a crisis. We have a serious issue that need attending to quickly. We need a response and I think we need a different format than the traditional format of assistance project to agricultural projects. I'm not sure I know the answers for that but I might add there are parallels. When we had a food crisis we found way to speed up the project response that worked quite well. One reason it worked well was because it was an emergency and you could get everyone to agree to sort of trust each other temporarily even though people don't trust each other in the project business.

But this is a conversation we really need to have in the context of the how. Not the what to do, but how to do it. And it's going to be an important inter-donor conversation in the first instance. How do you do multi-lateral responses? What kinds of trust do you emplace in whoever is managing that trust fund? What kinds of expectations do you have? Who is actually capable of running such a mechanism and so forth?

*Christine Negra:*

So the question about incentives for integrated landscape management. I mean part of the answer is the incentives are everywhere. And I think awareness is growing of that, that really to deal with some of the challenges that we've been talking about today – really I think Chris articulated this – there really is increasing recognition that that is the

approach. I think there are some – it's almost in a way about removing barriers to that approach.

And I'll just mention a couple of examples that come to mind. You know we saw that a change in kind of tenure and that sort of legal structure had such a big impact in the changes in the Sahelian region in terms of re-greening. And so sometimes it's tweaking some of these tenure laws. And so that's kind of a removal of a barrier to individuals and in a highly distributed way, changing what they do in operating in a different way. I would say there are some good examples.

And I think the CRGE in Ethiopia is an example of something also quite important – this kind of more whole of government across ministry, de-siloing across government is another really important general strategy that I think makes sense. And again that's going to require very senior leadership in national governments. But I think the idea here is you kind of think about integrated landscape management, you've got ministries of forestry and of ag and environment and water and so on.

If they're siloed, if their mandates are siloed, if they're operating in a siloed way and there are no mandates to them that really expect them to work more closely together, that's a barrier. There's maybe something similar that operates in some of the major agricultural businesses. And it's that orientation that doesn't really leave room in their internal processes to think on a longer time frame, to think across different units of the enterprise.

So I think this idea of de-siloing is a really important one if we're thinking about kind of creating better space for integrated landscape management to take place in all the idiosyncratic ways that we need it to across the world.

*Julie MacCartee:*

I think we have time for one or maybe two more questions. I'll get you. But in case you need to take off quickly I just wanted to mention the surveys that are on your chairs. Those are always very helpful for us for planning future events. So if you wouldn't mind just filling that out and either leaving it on your chair or dropping it at the front. We'll find all the filled out ones. And also before you take off please take more coffee, pastries, and fruit so that we don't have any of the food waste that you mentioned.

Let's see if we can squeeze in one more, two more.

*Anita Champion:*

Thanks so much. I really appreciated the conversation, discussions by both of you. My name is Anita Champion. I'm the president of Connexus Corporation. We organize the annual Cracking the Nut Conference and

this upcoming year is focused on developing rural and agricultural markets amid climate change – so a very relevant topic. And USAID is a big supporter. My question is – I agree with the de-siloing concept and that's part of what we try to do with the conferences to change the lens each year to look at a little bit of a different angle.

This year being the climate change angle. I'm curious, especially the case from Ethiopia with 80 percent of the funding coming from the government – what caused that? Or what was the driver behind that? I mean, I know that there has been drought and famine. Was that enough to –? You know, was it the crisis that pushed things politically? Or can you talk about that a little bit more? And if there are any kinds of lessons learned to get other countries to move or donors to move to support more climate change adaptation.

*Christine Negra:* Yeah I think I'm going to have to pass the buck and point you towards the report. And I can certainly provide you the link. Because I, you know, haven't given it a thorough read. I just happened to look it at the other day and saw those two charts. And I thought it was worth including. So I'm actually curious to dive in a little bit more myself to understand it. And actually it would be quite interesting to look across a suite of countries to ask exactly the questions that you're asking.

But I think one of the – I guess – ideas that I would have would be, you know, having made some of these investments in looking – you know, in looking strategically across the economy at mitigation potential, looking across a wide set of potential sustainable land management practice. Having kind of done that assessment work, does that actually create buy in and the potential across different units of government and across other important constituencies to liberate spending?

I have no idea if that's true but I think we should ask that question. And that report may offer some insights as well, as I'm sure other good work that's out there.

*Chris Delgado:* I think I actually know the answer to that.

*Christine Negra:* You should've jumped in sooner.

*Chris Delgado:* It's only because of age. But it was USAID that did it because about – about 40 years ago USAID had an intelligent program that sent American teachers into African universities. And they sent a guy called John Mellor to teach at Alemaya. And John Mellor is a great proponent of agricultural-led growth. And when the – not the current government – Prime Minister Meles came to power he was a great believer in agricultural-led growth for whatever reason.

And you can also find political economy explanations of where that particular government drew its support and so forth. But the fact is the government of Ethiopia is one of the governments around the world that is really committed to agricultural-led growth. They've bought into this and they've acted. I mean they have made their own budget allocations that reflect this. So that's the fundamental reason.

*Christine Negra:* And just to build on that, you know this idea of these kind of cultural histories and path dependency is really quite important. We're doing a piece of work in some East Asian agricultural commodity landscapes. And we are seeing that pattern as well in those studies which is that if you had – if a country has had certain kinds of experiences and used certain kinds of mechanisms they're comfortable with them, whether they've worked or not. You know but I think that idea that the comfort level and familiarity and how that sort of perpetuates through different units of government and other parts of that sort of social economy, you now make a difference in how you kind of try to come in with something that looks really unfamiliar and brand new.

That's actually, you know, part of adapting program goals to specific places and understanding what the political culture allows.

*Julie MacCartee:* All right we'll take one last very quick question from our online audience and then I hope that all of you will stick around for a bit of networking. And we can follow up with the presenters afterwards as well with any additional questions that come through.

*Webinar Monitor:* Jerry Brown from Agriculture Results, Inc. in D.C. asks – or states at first, "Agroecological research networks make sense and there really is a gap in the relationship between agriculture, environment, and livelihoods. In establishing such a network, how would the network participants take a more regional approach to research and findings, therefore leap-frogging over current research networks and lack of research results sharing?"

*Christine Negra:* Just one kind of quick example from the discussions in Nairobi this summer that we talked about is the idea of focusing on some very tangible potential areas of collaboration. So one of the ideas there is that, you know, say it's the idea of creating a new network where we're kind of jump-starting an existing network. Start by looking at the resources that individual countries – you know, what their individual research institutions have available. And that's everything from, you know, sort of traditions of research, equipment that they own, field staff research.

You know, look at what they have and then look across and see where there's synergy. So if there's particular expertise in one country, a real

strength that they have because of either infrastructure investments they've made in research or special capacities, how can they be of value to partners in another country and vice versa? So you actually start to articulate a little bit of this kind of, you know, who can scratch each other's back and be very pragmatic, would be one idea that I would offer into the mix so that you build a network, not kind of on concepts but on very practical exchanges of capacity in information so that you actually start to see and build this sort of like, "we're stronger together" kind of approach.

So I would say that's probably not the only component of a successful network. But I think that's a very tangible one that people could recognize as useful.

*Julie MacCartee:* Great. All right well I don't like to run over too long on our seminars. So I'd like to thank our speakers; one last round of applause for them. Thank you very much for coming.