

THE ALLIANCE FOR A GREEN REVOLUTION IN AFRICA

Panel Moderator: *Roger Thurow*

October 17, 2019 - 4:05-4:55 p.m.

Introduction

Ambassador Kenneth M. Quinn

President - World Food Prize Foundation

Roger Thurow was a *Wall Street Journal* reporter who could always get Norman Borlaug for an interview. I found Norm down with Roger and his running mate at the Marriott Hotel in Washington. I said, "Oh, my gosh, he's with the press." Turned out to be wonderful.

Dr. Emma Naluyima is a farmer from Uganda who has the most incredible farm, so that President Obasanjo who was just here and chairs the African Food Prize, chose her with the jury to share the African Food Prize, because she has like one acre of land and does the most amazing things. I was there in 2014. I brought her here to speak. And as I was sitting there and she was about to be introduced, I said, "Oh, what have I done?" You know, here she's a farmer from Uganda. She's going to be scared on the stage. And she got up here and she wowed the crowd. And I said, "Oh, my gosh, she's a rock star!" And indeed she is a rock star. She's back.

Agnes Kalibata is such an incredible person, Minister of Agriculture in Rwanda. I first met her at the first African Green Revolution forum in Accra, and she was working with AGRA and then became the new president of it and over the last ten years has provided this amazing leadership in spreading this passion that Kofi Annan had started over there and bringing Africa together. This year she received the United States National Science Foundation Public Service Medal – its highest recognition.

And Joachim Von Braun, former Director General of the International Food Policy Research Institute, distinguished professor at the University of Bonn, and the President of the Pontifical Council of Science. So he's giving advice to the pope. And I don't think you're even a Catholic – right? Yes. So talking about speaking truth to power. But is one of the most brilliant intellects on the planet about agricultural economics. This is an amazing aggregation of people, and thank you for being here. Roger, over to you.

Panel Members

H.E. Agnes Kalibata

President, AGRA

Dr. Emma Naluyima

Farmer and Private Veterinarian

Professor Joachim Von Braun

Director of The Center for Development Research,
Co-Chair of the Malabo Montpellier Panel, University of Bonn

Panel Moderator

Mr. Roger Thurow

Senior Fellow, Global Food and Agriculture, The Chicago Council

Thank you very much, Ken. Congratulations for your marvelous stewardship of the World Food Prize all these years. Thank you for that, and congratulations.

Yeah, you're in for a treat. Thanks for staying. It is an amazing and an impressive panel. I just want to say, my goodness. I mean that first class of the Hunger Fighters is really impressive and so a really good lead-in to be talking about how Africa is poised going forward to take us all forward and to show the way.

And congratulations to Akin for the book. He will now spend his time selling books as opposed to writing it. I'll give him some tips.

So I want to refer back to the previous panel with Gebisa and Rodger Voorhies. And they went back ten years to when Bill Gates was here with Gebisa and the commitments that the Gates Foundation made there. I want to go back briefly just a little bit further, because coming up, Ken, obviously, next year is the 50th anniversary of Dr. Borlaug winning the Nobel Peace Prize. And at the time the Peace Prize Committee basically lauded and hailed Dr. Borlaug for cutting the Gordian knot that was hanging over the world at the time. And that Gordian knot was the drag race, as they said, between the population explosion and food production. And he wins the Nobel Peace Prize for putting, through this work at the Green Revolution, for putting the pace of food production ahead of the population growth.

So now we are here 50 years later, and we've got this new Gordian knot that's hanging over us and here the dramatic races between how do we nourish the planet going forward with the increasing population, the increasing prosperity of that population – hooray – putting more pressure on the global food chain. So nourishing the planet and then saving the planet at the same time.

We've had other panels discuss that from other angles, and now is our chance to basically address it from the point of view of Africa and what's going – and can Africa being the vanguard and basically show us the way of cutting this new Gordian knot?

So we'll start with Agnes as the head of the Alliance for a Green Revolution and to tell us kind of how poised the Alliance is and Africa's farmers, fishers, ranchers to basically tackle these great challenges facing us.

Agnes Kalibata

Thank you. Just let me take a moment to recognize Akin and what he's been doing here, launching the global Hunger Fighters. I knew one of them. When I first met you, you were fighting hunger out there in Africa, so it's really good to see that there are people... Sometimes I feel like a lone voice, so it's good to see that there are more people being brought on board.

So fast forward now to the work that AGRA's doing. This is on the smallholder farmer in Africa that works with AGRA and works with some of the private sector that we work with. This farmer is now producing five tons per hectare, which is really huge for a farmer. Remember a while ago we

were talking about less than a ton per hectare. He's able to do that because there are improved seeds out there. He actually has choices of seed. He's able to have traces of soil improvement. He's able to have extensions through what we call VBS. So we live... As AGRA, we live so that farmers like this can actually stop being subsistence but farm as businesses that actually have markets and can supply those markets.

So fast forward. I mean, we've already talked about Norman Borlaug, the expectations. Let me just say that when Kofi Annan spoke about a Green Revolution in Africa, he used the word "uniquely African green revolution". And that time Mr. Annan was referring to the geographies that we live in, the complexity of those geographies, the complexity of the culture, the complexity of the people and their debts and everything. What you didn't know is that the word "uniquely" would come in extremely handy today even more than ever before, because we are dealing with the climate change today. So we have to think about how to feed farmers in a very difficult environment, so this has become even more important.

Fast forward, I would just bring out some of these numbers. One of the numbers that I'm most proud of in terms of what the work that AGRA has done is the fact that we have reached nearly 20 million farmers. Is that good? From the numbers getting to achieve what we said we would do, yes. But there are still 230 million farmers that need to be reached that are still hungry. But let me just say also that we have been building capacity, and one of those people that we are trained through the Rockefeller Foundation, we have been able to build capacities of scientists to \$600.83 so I'm extremely proud of that number. And we've been working with seed businesses in Africa to really create systems that can reach smallholder farmers like the one I just showed you, so that they can have and be able to produce more food.

So fast forward. One of the major results I want to share with you is just how many varieties. Working with the CGIAR, which is the best of producing these varieties, but being able to then take them at country level and working with NARS to really transition into varieties that can be functional in the different agro-economies in Africa. And today we are talking about 672 different varieties. Some of them are blockbusters. If you talk about the umbra rice in Ghana, it's a blockbuster, every farmer wants to own that variety. But I put this on here so that you understand that AGRA has actually not been working with just maize, sometimes people say. We've been working across 18 commodities, and maize is only 6% of what we've been doing.

Fast forward. A few years ago we decided to review our strategy. Reviewing our strategy was based around two things. One, because we believe we have enough technologies right now across the continent to be able to help us drive a Green Revolution. But, too, we also believe that the challenges and the problems are very far from technologies, they are around governments and leadership and how governments function, and being able to deliver for smallholder farmers, which is a majority of the farmers we have. The ability of systems to deliver services whether it's functional city systems, whether it's functional fertilizer systems, whether it's functional markets and many others. But also the ability to build partnerships that would allow private citizens to thrive and be able to learn businesses that they can make money off in Africa, be able to really drive sustainable business in the agricultural sector in Africa.

So that's what we do now. This is just an example how we analyze a system and how we find out what is broken. For example, I was not prepared. I didn't even know. Even after having been a minister in Rwanda, I didn't know that early generation seed is a deal-breaker in the seed sector. For those of you that are in the seed systems you would understand what I mean. I didn't know. But later as I prepared for the total lack of a policy environment, in some cases, especially around

control, that from country to country we come around and need to be fixed before these systems can work. So we really have now an approach to systems that looks at what is broken but also looks at how we can do the businesses and to at farmer level.

I will not dwell on this. We have talked about CAADP before. You all know about CAADP. But what is important is that if, when governments take leadership, when governments invest, you definitely see a motion forward, the agricultural sector responds. Here we have started taking advantage of what the continent put forward and what we call the continental scorecard and we are working with a few countries. And with those countries we really want to push forward and show that this continental scorecard, can help us keep track of how we hold each other accountable, for the results we want to see in the agricultural sector. So this usually happens through the AGRF. We have a forum on the continent, which was, most of you have attended. It was last September. But this forum allows us to bring leadership together to talk about financing we need to see, to talk about the development we need to see, the progress but also provide an opportunity for all of us to share around what we need to do differently.

We have an alliance of partners. We welcome now with the people that fund us. We created a partnership we call PIETA, and this is really to recognize that sometimes Africa's problem is fragmentation of resources and with our partners we try to make sure that we are more coordinated and engaged than fragmented. And you see the partnerships there, but there are also so many other partners that we have through the AGRF. So I realize that I'm running out of time. I just wouldn't to give you a highlight of what you are doing. And really our work is based around strengthening the ability of governments to deliver, strengthen the ability of the private sector through strengthening systems, and then strengthening partnerships that can deliver at scale. Thank you.

Roger Thurow

That's really impressive progress in taking forward Kofi Annan's charge of a uniquely African Green Revolution. I remember when he said that and was like, that's a great, significant word to put in there.

Now, Emma, Dr. Emma. She's also a veterinarian and a mom and a wonderful farmer, getting the most out of her one acre. Yes, tell us a little bit about kind of what you're doing on your farm, and, yeah, how you come to win the African Food Prize.

Dr. Emma Naluyima

Thank you very much. First I would like to thank Ambassador Quinn for bringing me back to this place. In 2014—I think that's five years ago—like you say, he phoned me, a smallholder farmer, and I would like to thank AGRA for making sure that smallholder farmers get the seed and get all this information.

Now one challenge before I tell you about my story, one challenge that is for the smallholder farmer is something to do with information. Farmers out there really want to do something, but their challenge is that they don't even know. They don't have the technical know-how, or even when they get it, they still don't have... Or even when they get the funding or when they get all systems not done, if they don't have the information, the right information on how to do A-B-C-D, they will still fail.

Now, I've kind of become successful because I went to school and I've been able to do something very little using science. So how is my farm? So my farm is just one acre, and why one acre? Because when someone leaves school, like the students, when someone leaves school after high school or after university and they work, the next thing, if they'll get money, the next thing they will do is buy a piece of land. Now, a piece of land, the smallest piece of land in Uganda where you stand up and say, "Oh, yeah, I have some land. It's just one acre." At least you've tried, and now you're crawling or going to stand up.

So in this one acre, I said to myself – What do I do with this one acre? So I cut this piece of land into quarters. The first quarter, I have pigs – those are my cash cow. The second quarter I have cattle, and the third quarter I have fish, and the other quarter, that's where I would do vegetables and poultry. Now, I use plants to do this very simply. I get the pig dung or the dung from the home. I play with it using science to produce maggots, the larva of the housefly. And then this larva stage is what we use to feed the chickens and the fish.

So when we do this, we cut our costs by 60% and production. And the good thing about it is that you've cut production and the animals, the fish and the poultry are feeding organic calories, so thus right now every time we want to use organic, organic, so it's very healthy. And actually the chickens, when you cut them, they're fatless, and we've been able to produce the chickens, the amount of kilos faster. So in the conventional feeding, you get about 1.5 kilos in six weeks to eight weeks. When we use our earthworms and maggots, the bugs get the same kilos in just four weeks. So we get faster growth where it is in terms of time, and then we already saw in terms of production, cost of production.

And then I introduce earthworms into the dung. When I introduce the earthworm into the dung, these earthworms, as they're composting the dung, they excrete, and it is the excreta that we use as a pesticide and also a fertilizer. So I still cut down on my cost in terms of production when I'm using crops. And then the dung, the compost is what I use to grow the vegetables and the planting. And then, remember the earthworms we're feeding the fish, or the fish we're feeding from the earthworms. So the water that comes from the fish irrigates the vegetables, and the water that comes from the fish also irrigates the corn that we use to make silage for the cattle. So it's an integrated farm, one contributes to the other.

So that's how the farm is. And then we've been able, because using science, we've been able to be sustainable, we've been able to be profitable, and we've been able to train other people as well.

Roger Thurow

That's amazing work. Thank you. So your one acre... So I'm thinking if we can replicate your efforts and your one acre by hundreds of millions or billions of efforts, the Gordian Knot basically is in danger. I mean we shall slay this Gordian Knot particularly with kind of the integrated management of everything and both nourishing and saving and protecting the planet and the environment.

Dr. Emma Naluyima

Yeah, I think we can if we did it, and this is what happens, like when everyone, when I read... No. Actually, how I went into farming now, you would wonder how I went into farming. This is - I forgot this. So I give back to premature twins and I was at home to look after them. And I didn't know how to start asking for money every time, so I needed to farm. And that's why actually why I

started farming. And when I did all this, I'm like, but wait a minute. Each time I went to the market, everything was quite expensive. And I looked at this before farming. When I go to this market and the person sending me this stuff says the season has changed. And I'm like, but the person growing this is a human being like I am, and also the person sending them is a human being. And I had some little land of course in the U.S. having an acre is nothing. But in Uganda it's something.

So I said, you can have this piece of land. Why don't I use it? And after finding that we have been successful. We open the farm to other people to come and learn and study and work and see whatever we are doing. And we've actually gone ahead, because as people kept coming to see us and to ask, "Can you come to our farm? Can you come and do this? Can you come and teach us?"

We could not duplicate ourselves or we could not clone ourselves. So we decided to open a school. It's a primary school. No more school with the biased agriculture. I remember when I was here in 2014, I showed pictures of it when we were building it. The school is now up and running, and we are now in our fourth year. And right now we have 265 pupils. And what we do here is, you know, children, everyone thinks, even here in the U.S., I'm very sure many people think they don't know where food comes from. And we need to teach the children that food comes from the garden, and they need to know how to grow it. So that is one of the reasons why we put the school here. Like, okay, fine, if we can't clone ourselves and we can't keep running to people's homes and farms, if we make this school and then the children of farmers come, they come and study in our school, and then...

Now we teach the three things. We think every African should learn: the value of money, a culture of serving, and time management. And we do this with farming, because farming is the richest timekeeper. Take, for example, if a cow went into heat this morning and someone didn't come to inseminate it this morning, you are going to lose production for – 21 days. So we train these children to keep time, and then we train them that there's value for whatever they're growing or they're keeping. And then later when it's grown, we sell them. The pupils sell their food to either, the produce to either the school or to the community or to their parents. And the money goes to their account. So in a nutshell they're learning how to grow food. They're learning how to live, to eat it well and to understand food basically. And at the end of the day, they're saving.

Roger Thurow

Yeah, I've been looking for examples to kind of illustrate going forward for my next book. I think I'll just make it on you. Right, so the next time I'm in Uganda, I'll come by and observe all of what's going.

Joachim, you've been on the frontlines of this and a stalwart, a hunger fighter for many years and in Africa so often. What is your kind of view of where Africa is poised now and what it needs to do to show the way forward.

Joachim Von Braun

Well, it occurs to me that I have some insight and knowledge about these two great ladies, which I probably shouldn't share, but I'll do it anyway. I happen to be on the board of AGRA, Agnes' organization, and let me tell you this is a fabulous organization, which moves smallholder farming forward in Africa and thanks to a committee led by Agnes. AGRA is an African-based and increasingly African-owned organization which drives the Green Revolution.

I also happen to have insight and knowledge about Emma, because I happen to sit on the Selection Committee for the Africa Food Prize, and Emma, I can tell you we were all fully behind you and felt this is a marvelous choice. But there was competition, and that's good news. That's good news that there are up-and-coming African leaders.

And I address myself to the youth quarter over there on the right. We only need to go once to the so called next Einstein Forum in Africa, a thousand young scientists in the room, and you understand. And many of them are not just interested in physics, chemistry, math and so on – they're interested in agriculture. And then you understand that the Green Revolution in Africa will be driven by brainpower, not by muscle power with a hoe in the field. By brainpower it will be driven. And that is where the generation of youth, of yours, Emma, will succeed.

However, we have this survey of 10,000 young people in rural Africa, done by cell phones. Asking the question – Where will you live in the next five years from now? And only 7% of them said – In this village. About 40% said in the local town or the big town, and 50% said – It depends. We need to focus on the “It depends” group, because they also know what it depends on – access to communication, getting mechanization and not working the field with old-fashioned tools, and getting into the value chains. They have ideas. So we need to make sure that these dreams can come true, that “It depends” youth under 25 years of age from these 10,000 who were sort of a representative sample don't pack and move but have a future, a good future. They don't want to move if they have an alternative.

We have over the last couple of years in a group which I'm co-chairing, a group of twelve Africans and four European's courts in Malabo, Montpellier, produced four reports – one on irrigation, one on mechanization, one on digitalization, and one on nutrition. And we have taken the following approach. We have looked not theoretically but practically – which African countries are ahead? Which 10 or 12 countries are ahead in these fields? And we always have found countries which are ahead, which have done things right and well and have shown the way.

So the message from this report says Africa can learn from itself, not just from the textbooks and not only from China and India or Europe – from itself, because the people have made the change already.

What we have also found in recent research – and let me professorial for a moment, if I wasn't already. We need this big investment in infrastructure, alongside the Green Revolution technologies. In the last 18 years we have seen how Africa has light up. I'm talking about night light, satellite, monitoring, at pixel level. If you relate this increased electrification of rural areas in Africa to labor productivity in agriculture, you see a phenomenal effect of electrification driving agriculture labor productivity. So we need to get this big investment.

And then we close by talking about money. And the G7 nations, the U.S., the Europeans, Japan, Canada, have four and a half years ago made a commitment to get 500 million people out of hunger. And that was their declaration. Their heads of state have signed up to that. That number is haunting them now. Have they put up the money? Sort of but not really. The G7 spent about 7 billion in aid for African food and agriculture per annum. But besides Germany, the other six have remained sort of stable. We in Germany have added 1 billion per annum, which is good, so we should not quarrel. We should thank taxpayers. The U.S. is ahead with 2 billion, Japan, Germany, each about 1½ per annum. Private sector, 3.5 billion a year in food and agriculture investment. This is good but not good enough. Without a much a bigger public and private investment, we will not achieve the goals.

Thank you.

Roger Thurow

Thank you, professor. Very good. So I wanted to get back to that “It depends” category is really fascinating, and that’s kind of where the balance hangs. So, Emma, in your school with those 200+ students that you have, do you think they will be committed to remain on the farm or in the rural communities, or are you sensing... What are their ambitions?

Emma Naluyima

Most of them actually committed, and the amazing bit is this – some of them... Let me give you a story about when the school began. So the school began. Two weeks into the school, this 9-year-old goes to his father and tells the father – they stay in the city kind of, and then he goes up to the father, “What are we doing here?” And the father is like, “What do you mean?” The boy asked the father, “When are you getting another piece of land? This is too small for us” – because they’re staying in a 50 by 100 feet home. “This is too small for us. I need to do something.” So this child overturned everything, got broken wheelbarrows, tires of cars, old tires, and he’s doing something within the compound as he’s waiting for his father to go and look for a bigger piece of land so that they can actually grow stuff.

Another one told the father, “You look at your plantation. This plantation does not thrive.” And the father asked, say, “No, no, no. This is good.” And the son is like, “No. This is now how we do it at school. You better come to school, and then I teach you how.” So this kid, and the parents come and tell us these stories. It’s quite amazing. And then they tell the parents what to do, and the parents have heeded to that, so the beauty about it is that the children teach their parents, and then they also teach their community, because as the neighbors see, they’re like, “What are you doing...” so-and-so. I’ll give an example maybe. Let me use my daughter’s name. “Victoria told me to do this.” So if Victoria told him and then the students or the community members who can’t afford to come to our school, they learn because they will learn from the other neighbors. So and then the pupils themselves really love to farm.

There’s another parent actually said, “You know what? Before my child came to your school, it was a tug of war to ask her even to cut the greens, you know, the vegetables. But now she’s the first one to get the basket, and she goes.” They have a small garden. She gets the basket, and then she plants something. And the other 9-year-old in grade 4, went and asked the mother, “I need a piece of land here. Can you take up your lawn and then grow?” And the mother’s like, “No, but I have my flowers,” and she said, “No. I want to grow my vegetables,” because the kind of homework we give them is we give them seedling or seeds to want to do something of their own. And this is what the mother said – She no longer goes to the market or to buy groceries, because she’s looking, she’s picking whatever, the greens and the vegetables from the little garden the son has had to make.

Roger Thurow

Yeah, so these examples, they can see that and you as a role model and what you’re teaching in the school. It hasn’t posed a kind of seeing the really desperate lives of so many of the parents and the smallholder farmers and struggling through the hunger season. It’s like, yeah, why would they want to stay at home. So I think, you know, continue that or remain on the farm, go off and do something else with grander ambitions or opportunities. So that vision of success of a future or perspective that you can stay on the farm and have this kind of exciting life is great.

So Agnes, kind of at AGRA what efforts are there, or how key going forward is the youth of Africa? You know, we know, and the Chicago Council did a report on this a number, a couple of years ago on just this kind of bubble and swelling ranks of youth that are unemployed in Africa. How significant would be rural employment and them shifting from “It depends” to people that are saying, “Yes. No. I'm going to be staying here.”?

Agnes Kalibata

I really want to build on the “It depends” that is being made here. We work by driving and trying to encourage people to adopt improved technologies, improved seeds, fertilizers and new ways of doing business. When we talk like that and when we do demonstrations that attract people to do things, it's amazing that exactly the number you're talking about—50% of them is exactly the number of young people we are attracting that are coming to us. When you look at the seven million people that we are working with, who the businesses work with, actually 50% are young people between 18 and 35.

Now, initially I said—but everybody's saying farmers are old—farmers are supposed to be old. When I was telling my team that—“You know what? Maybe they look old. They are not old.” Then I came to another point and said, “No. They are actually... It's possible that they are actually attracted to us because we are talking about technologies.” And for me that point was strengthened by the fact that actually attracted fewer women, 3%—only 3% of the people we attract are women. In a country like Rwanda where we work, I know that over 50% of the farmers are women.

So for me it was a technology thing—who is attracted to technologies and why, and what are the implications for that. But to take it much, even higher, recently the AGRF released the report on the private sector and the role of SMES in the agricultural sector. And the report actually states that there's a hidden middle. The estimates out there that it is handling 80% of the food that is being produced in Africa. Only 20% is being consumed at all. 80% is actually being traded. And this is happening through young people that have created all sorts of businesses in Africa landscape, and that's why we call it a hidden middle. We actually need to start focusing on how do we make these new businesses work for young people so that the value that is coming out of smallholder farmers and feeding 64%, of which is feeding rural markets, I mean, urban markets on the continent can actually be part of employing the youth, because you know that for every ten youth that are graduating, only three are getting jobs.

So we have an opportunity through to use of technologies to attract youth to agriculture. Because if you have a tractor, if you have a mobile, something that is monitoring your farm, if you have something, if you're increasing yield, young people want to be attracted, but also if we have anything that will allow them to make money, they're attracted. You see this in Rwanda where you see young people carrying threshers in the back of the motorcycle to go thresh for farmers, so a farmer doesn't have to go around. You just have to have a mobile number where you call, and someone will come and thresh your maize.

So there are opportunities that are being created and I really believe that the “It depends” question gives us an opportunity to start thinking about the type of agriculture sector construction to assure that we are creating jobs for young people.

Roger Thurow

And do you find the young people, and Joachim also kind of as you kind of study trends on the continent, is there..., and being energized also by the challenge of, yes, growing food, of increasing the nutritional aspects of their lives and the lives of their families, but also kind of energized by this challenge of kind of working and solving these planetary boundaries and things that are coming into. So dealing with the soil challenges, the water challenges, the climate change challenge, the extreme weather challenges – as opposed to, oh, this is a hindrance, another reason to leave the farm. But these are great challenges that our generation, the young generation, these guys over here, this is their world coming up that they're going to be running. Is that kind of a challenge that they're energized and excited about taking on?

Emma Naluyima

I would call that a tide that people are [inaudible] their gifts to young or old. In the last 20 years, Africa's crop productivity has been from 12 million hectares to three million hectares. It's also true that we've had significant productivity increases, but that hasn't been the most important. We've seen how much challenge the adoption of varieties, and we can talk about that; but you see, we need to start working on the variability of markets and showing that markets are working so that the intensification can work, so that people can see value in investing in agriculture.

So there are problems when we are working with, for example, the government of Kenya where we are trying to reduce the amount of land that is being put in agriculture by demonstrating that intensification can actually give you what you need. Farmers who are producing five tons per hectare are cutting back, and the women actually replanting some of the land they had cut from forests, and they're willing to plant forests. But that's working with them to demonstrate that they can do more with less, and that would only work because they're investing, and they will only invest because they have markets. And think it is one big challenge we're still working with Africa that is still holding back adoption that is still holding back ability of farmers to thrive as businesses. It's markets and the function of markets and made decisions that need to help the whole market perspective work.

Joachim Von Braun

Also, you hint at something extremely interesting. What are the perceptions and goals of young entrepreneurs and innovators all over the world, not just in Africa? Knowing what's happen with the planet, that knowledge is increasingly widespread, and that leads to reframe how we design economies, heading towards a more circular economy, a more bio-based economy, a bio-economy in which agriculture, forestry, land use, and bio-based innovations are core elements. And that's attractive to young people.

It's interesting to note that in the last six years more than 40 countries have written themselves bio-economy strategies. The U.S. just last week had a bio-economy summit in the White House context, rewriting its bio-economy strategy. But it's not only rich countries. Asian, East Asian countries, Latin American Countries, and nowadays East African countries are writing themselves new strategies to come to a sustainable, more circular economy, which will be attractive for a lot of innovative jobs in agriculture and the food system related jobs are co-elements of this.

So I'm arguing we need to reframe the food and agriculture story in the broader bio-economy context. And this whole thing, however, will only work out if there is education, vocational training

for the rural youths and not just primary education and university – we need that vocational education and training in order to bring the applied actors into the game.

Roger Thurow

Emma, we were talking – it's that aspect of education, but there's also so many of those profound societal aspects of education as well – right? – particularly the empowerment of girls and women.

Emma Naluyima

Oh, yeah. If we educate, especially the girl child in Africa, because the girl child in Africa is not really... We are trying now, but earlier on the culture in Africa was abandon education as not really so important. So if African leaders, well, everyone in Africa, tried to educate the girl child, then this girl child is actually going to do better in this way. She's going to be able to look after herself, to look after the children, and then she's actually empowered. She's also going to be able to make money and try to make sure that her family feeds well, she does everything very well – and then in the process she's actually going to be more empowered, and then it serves towards home violence.

Roger Thurow

Domestic abuse.

Emma Naluyima

Yeah, domestic abuse. I just like this year's theme – *Peace through Agriculture*. Many a times, even when it comes to stealing or robbery, many a times we were born... You know, when God was creating humans, He give us all these opportunities. We are equal. We just need to be exposed and maybe educated like I'm saying. But no single person was born with a bad habit – it's because they're not exposed or for example someone who is going to steal something, or someone who is going to rob you of something because they think you have more, so I just want to pick something more from you so that I can have.

So if you can empower people, we can empower them through like what purposes, say, through vocational training, primary education and everything, we are going to be better people. And especially the girl child, she is going to be a better person, and then she won't be really vulnerable in any way because she can fight for herself. And in the process she's going to feed the whole world. Because she's a mother, she's going to make sure that the children feed very well, so we are going to cut malnutrition, everything, all the challenges, problems, especially the malnutritional problems will be cut down if this girl child is trained.

Roger Thurow

Yeah, I mean that's a really good point – the *Peace through Agriculture*. I think most of the thinking was, yeah, international peace, you know, national stabilities, food security. But it's also peace in the communities, peace in the households – that's also an important aspect of this. We're down to the final three or four minutes. I just wanted to ask Agnes and then the others maybe to react to this, that AGRA has become really the go-to African institution for governments, governments in Africa and actually governments around the world. How important is that? Or kind of the role of governments and the African governments. And we've had a couple of leaders here this afternoon. Yeah, so your thoughts on kind of the role of the governments.

Agnes Kalibata

You know, one of the things you notice about Norman Borlaug's work, every time he got a breakthrough in a country, he went to the leadership, whether it was in Mexico or in India and was working with Swaminathan. The only time... You know, even in Ethiopia more recently, the breakthroughs come through leadership and the ability to engage the leadership around the value of taking it and scaling it to the people to the extent possible.

One of the challenges we have in Africa is... First of all, we have a very, I would say, limited civil service in the sense that you don't feel like it's providing the type of functions we would like to be provided to a society that is so smallholder driven. We have 80% of occupations are smallholder farmers. So that type of provision needs a function of public service.

Now our public service has lots of challenges but just to mention a few. I mean every so often there's a whole lot of short-termism. Democracy is great, but it also comes with short-termism – right? So everybody's looking at next year's business around elections and all that. The time to be able to invest time in developing systems becomes shorter and shorter and shorter.

So one of the things we've been talking about as AGRA is – How do we help government to understand that their democratic systems and building institutions that can survive time is extremely important. And our partners have these concerns. Partners meaning development partners. We have these concerns. But when they push against us and say – Oh, you need to do this, you need to do this, but I'm a sovereign state you can't tell me what to do.

So what we decided to do as AGRA, we said, listen, you need to understand the challenges of other countries around capacity to deliver on the agricultural sector, the sector that needs skills. But also around to understand the ability to drive businesses and government in general around capacities that we need. So we said, listen, we have skin in the game as an institution, you can't tell me you can't do this. You need to actually do it. You need to drive this policy because things are not working. You need to listen to the present system because things are not working.

So we've really structured ourselves as an institution that says – Listen, we can provide the support you need, but we also push back if we feel like that we are not getting what we need from us, from you, because we too want to see that development, that you should be giving us. Then the partners that work with us, the development partners, we are able to be able to discuss – this is more important for us as a country. This planning should have the world governments..., our governments that have the ability to actually develop and drive the development for their people if they know what they need to be doing. So we need to be empowering them better.

So we are saying as an institution – Listen, we are a capacity for you. Use us. We will give you the expertise acquired while at school. We will support you, but you also need to prepare to do the right thing.

Roger Thurow

I know Dr. Borlaug, he was really frustrated often with red tape – he didn't have time for it – and administration. And he would always say, yeah, the important thing in every country where he's going into – and you're absolutely right – who's the one who can get things done in the government, or in the instance, you guys, in Africa these days. And so that's kind of a vital role also

that you're playing. We are now into the red numbers, so we'll wrap it up. If it's okay with Agnes and Joachim, I was going to leave the final word for Emma, but if you're...

Joachim Von Braun

One thing, governments can invest. That's not the essential part. Governments can screw up or can do good rules of the game. And AGRA is there to help them not to screw up but make good rules of the game.

Roger Thurow

Or get out of the way, right? That's right. But if you're back in five years from now — right? — can get into your pattern. What are we going to hear from you then in terms of what's going on in your one acre then? Still one acre or...

Emma Naluyima

It will still be one acre, but five years in the future I will have made another foundation like the Borlaug-Adesina Foundation or something.

Roger Thurow

We'll look forward to that. Thank you.