Policy Options to Enable Fertilizer Industry Growth

Seminar Presentation

December 5, 2012

Speakers:

Margaret Spears, *USAID Bureau for Food Security*
Amy D'Angelo, *USAID Enabling Agricultural Trade (EAT) Project*
Maria Wanzala, *African Fertilizer & Agribusiness Partnership*
Peter Heffernan, *IFDC*
Raymond Hoyum, *Advantage International*
David Atwood, *USAID Bureau for Food Security*

Sponsor
United States Agency for International Development

Male: Good morning, everyone. Welcome to today's Ag Sector Council for December. My name is Zachary Baquet. I'm the knowledge management specialist for the Bureau for Food Security, and would like to welcome both our online audience and our in-person audience today to our presentation on policy options for enabling a fertilizer industry growth.

Just a few brief points. If you could please turn off or silence your cell phones or other devices that might go bing in the middle of the presentations, we'd great appreciate it. Also, for Q&A, please hold questions until after the presentations are given. We do this so that the people online have the opportunity to hear what questions are being asked, so we need to make sure that you have a mic in hand to be able to do that.

With that, I'm going jump to a couple of points for today's event. Just to let you know, this is sponsored by the USAID's Bureau for Food Security through the Feed the Future initiative in partnership with the Knowledge-Driven Microenterprise Development Mechanism that is helping us put this on today.

I'd like to point out for those of you who've been going to Agrilinks on a regular basis, this is our technical website for Feed the Future through USAID. We've really upgraded it. I hope you go and check out the new features and know that this is where all the resources for the event and post even will be placed up here on Agrilinks.

So we've also streamlined it, tried to make it much more functional in terms of searches. But, please, let us know, give us your feedback and your comments. We'd greatly appreciate it.

With that, I'd like to also let you know that December 6, so tomorrow afternoon, we're going have our fourth Twitter chat. This is going be in conjunction with the Development Credit Authority within USAID, and we're going be doing it in conjunction with a number of different other partners, Root Capital, Acumen, and I forget one other. But, please, check out the event page on Agrilinks, and it's going be talking about making the case for investing in African agriculture.

With that, I'm going hand it over to Margaret Spears, the director of Markets Partnerships and Innovation for the USAID Bureau for Food Security, to give us a brief introduction.

Female: Hello. Good morning. It's a honor to be here with you for this discussion on building an enabling environment for the fertilizer sector. This is another important part of the US government's leadership to reduce global hunger, poverty, and undernutrition through the Feed the Future initiative.

Recently, we issued the first Feed the Future progress report in which we were able to highlight advances to date in our efforts. For instance Fiscal Year 2011, we directly helped more than 6.6 million households to improve agricultural productivity, and we have reached nearly 2 million food producers with improved practices to support higher crop yields and increased incomes. And Feed the Future-supported efforts reached nearly 9 million children with nutrition interventions, but there is so much more to do.

The UN Food and Agriculture Organization recently released a report estimating that there are no 870 million hungry people in the world, 98 percent of them living in developing countries. While these numbers have adjusted down from recent estimates, it's still 870 million too many. With the growing population and ever fewer resources, now is the time to continue act is now with the focus on small-holder farmers, particularly women, we support countries in developing their agriculture sectors as a catalyst to generate opportunities for broad-based economic growth and trade, which can support incomes and help reduce hunger.

Agricultural growth is the key to reducing poverty in the developing world. 75 percent of the world's poor living in rural areas in developing countries where most people's livelihoods rely on agriculture. Recent studies from the World Bank established that growth in agriculture is on average at least twice as effective in reducing positively as growth in other sectors, and improving agricultural productivity is crucial to achieving these results, and appropriate fertilizer use is a key part of the solution.

For example, Africa is a good case study in where getting the policies on fertilizer right could make a big difference in addressing food security. Consider that the continent has ancient soils, oftentimes with low fertility, a high percent of the population living in poverty, low agricultural productivity on much the land cultivation, and the potential for increased and expanded agricultural production.

Between 1961 and 2005, cereal production in developing countries tripled with fertilizers accounting for 30 percent of this increase. However, the usage rate of fertilizer remains low in many developing countries. So this session explores policy options and recommendations for changing the incentives to facilitate access to and use of appropriate fertilizers to help achieve the productivity gains that are so necessary for tackling the challenges that I outlined earlier, so we look forward to an interesting presentation and a lively discussion on this important topic.

I'll now turn the floor over to Amy, who introduce our panel. Thank you very much, and look forward to the discussion.

Female: Thank you, Margaret. Good morning, everybody. My name is Amy D'Angelo, and I am the technical lead for legal regulatory reform for the USAID Enabling Agricultural Trade Project. We are very excited to have you all here today as we discuss the important role of the legal and institutional framework for promoting private fertilizer sector growth.

The USAID Enabling Agricultural Trade Project supports the US government's efforts to create the conditions for agricultural-led growth by providing expert analysis and technical assistance to USAID missions worldwide to improve the business-enabling environment for agriculture. Now the brief we're here to discuss today, Building an Enabling Environment for Fertilizer Sector Growth, is part of our policy briefing series, in which we explore various aspect of the agribusiness enabling environment, in partnership with research institutions, both here in the US and abroad. And the goal of each of these briefs is to provide discreet, actionable recommendations for donors and policymakers, and also to do so in a way that is accessible to both experts and non-experts alike.

The key finding of today's brief is that in order for governments to sustainably increase effective fertilizer usage, they must focus on how to implement policies/investments that support, rather than control a dynamic private sector led fertilizer industry.

Now if you haven't had a chance to read the brief, there are hard copies of the brief outside. And for those of you online, you can find this brief, as well as all of the EAT Project's Policy briefs on our website at eatproject.org.

Now for today's brief, or for this brief, the EAT Project partnered with the Africa Fertilizer Agribusiness Partnership. AFAP is an independent, nonprofit partnership between African development organizations with the goal of increasing the competitiveness and sustainability of fertilizer markets throughout Africa. We are excited to report there's been a lot of interest in this brief, in particular. In fact, since we released it just a few months ago, we've distributed over 500 hard copies through the African Green Revolution Forum, and others of AFAP's partners. We're particularly excited about this because it means that the brief has found its way into the hands of not only donors and development professionals, but also into the hands of mid-level policymakers who are responsible for implementing the recommendations in the report.

With that, I want to go ahead and introduce our panel so I can turn it over to them for our discussion. We have today four distinguished experts who between them have a wide range of experience in the fertilizer industry from fertilizer policy, to research and development, to fertilizer marketing, and with field experience from around the globe.

So first we'll be hearing a presentation from Dr. Maria Wanzala, who will go over the main points in the brief. Maria is senior policy economist for the project implementation and coordination director for NEPAD, the New Partnership for Africa's Development, and NEPAD is, in fact, one of the chief parents in AFAP, and Maria herself was one of the main technical contributors to the brief, so we're very pleased to have here to present on the brief today. After Maria's presentation, we're going to have brief reactions from each of our other panelists, and then we will open up the floor to questions from all of you and our online audience.

Next to Maria is, we have David Atwood, food security policy advisor for the USAID BFS policy team. After David, we'll be hearing from Dr. Peter Heffernan, director of research and development for the IDFC. And after Peter, we'll be hearing from Dr. Ray Hoyum, who is an independent fertilizer specialist with 30 years experience in the fertilizer industry, both in the private second and more recently as a consultant. In fact, Ray recently finished an assessment of the fertilizer sector in Nepal for the USAID mission there, so we're hoping that he'll share some of his findings as well.

And as a last thanks, I want to give a big thanks to Zachary Baquet and the whole Agrilinks team for their support in putting on the event today. And with that, I will turn it over to Maria. Thank you.

Female: Good morning. Oh, I'll try not to shout. *[Laughs]* Stand over here. Okay, thank you for having me. It's a pleasure to be here. As you've already heard, the title of the presentation is Enabling an Enabling Environment of Fertilizer Sector Growth. So while why are we talking about building an enabling environment for fertilizer sector growth? Why is that important? Well, fertilizer, when used appropriately, has been proven to dramatically increase yields and improve productivity. For example, as we've already heard, cereal production in developing countries tripled between 1961 and 2005 to 1.25 million metric tons, and fertilizers accounted for approximately 30 percent of this total increase in production.

Nonetheless, despite public policies and investments by governments and their development partners the usage rate of fertilizer remains low in many developing countries, particularly Sub-Saharan Africa where their use rate is approximately eight to ten kilograms per hector, which is only ten percent of the world average.

Now these low-use rates are due to supply-side and demand-side constraints. On the supply side, the key constraints or policy uncertainty, particularly subsidies which I'll talk about more later. We also have weak

or non-existent regulatory frameworks which result in the sale of substandard fertilizers. We have port inefficiencies and an inadequate infrastructure which drives up the cost of fertilizer to the farmers, and then you also have high cost of credit to the fertilizer companies due to high interest rates and stiff collateral requirements.

On the demand side, some of the key constraints are small fragmented markets. For example, many of the markets in Sub-Saharan Africa are less 100,000 tons of product, compared to Bangladesh which is a single country which produces over 1 million with product tons. Other demand-side constraints include low purchasing power which results in low demand. Farmers also lack access to fertilizer due to weak AGRO _____ networks. Inconsistent quality is another demand-side constraint due to underweight bags, adulterated products. Farmers also lack knowledge about the correct use of fertilizers, and then they also have weak linkages to output markets for their produce.

Now while the paper does, indeed, recognize that for successful fertilizer policy one needs to take a two-pronged approach address both the supplier side and demand-side constraints, but then the paper does focus primarily on looking at the constraints to fertilizer supply. And in doing so, it notes that government and donor efforts to ensure fertilizer supply favor direct interventions and fertilizer procurement and distribution. And these interventions tend to be expensive, they tend to fail to reach their targeted beneficiaries, and they also displace the private sector. Therefore, the central contention of the paper is that in order to sustainably increase fertilizer use, government policies and investments must support, not control a dynamic private-sector-led fertilizer industry.

So then the paper then offers three guiding principles which governments can put into practice to achieve this. The first principle is to create a conducive legal and regulatory framework, and they can do this in the following ways. Number one, establish a standalone fertilizer rule that is facilitative rather than restrictive. "Standalone" means fertilizer exchange can be for fertilizer alone. What often happens is that you find that it's mixed with legislative AGRO chemicals and veterinary products which require restrictive legislation than is needed for fertilizer.

The framework should also provide clear processes for registration of products and legislation of AGRO dealers and also monitoring quality and also provide truth in labeling guidelines to inform consumers about correct fertilizer use, what the product's attributes are, et cetera. And the law should be facilitative rather than restrictive, meaning it should facilitate the entry of new products into a country by using a standard sort of registration process rather restriction acceptable products to those that are already on an approved list.

The framework should also enforce the laws to clearly define regulatory bodies which have the capacity for enforcement by positive action, meaning that they have teeth, basically. And this capacity should include laboratories that are equipped with supplies and with stuff that can meet international standards of fertilizer testing, and they should also maintain a system for tracing adulterated products back to their source.

The framework should also provide for elimination of tariff barriers and fertilizer taxes, or at least minimize fertilizer taxes, and it should also support competition in the private sector, and restricted the competition in the fertilizer industry tends to emanate from two sources, non-tariff barriers such as price controls and import quotas which tend to make it difficult for new companies to enter the industry, therefore, limiting competition, and then also the structure of the industry itself. It's a high-financing-cost industry. Companies need a lot of money in order to enter the fertilizer industry, and this creates a conducive situation for _____, particularly when operating in small markets.

The second principle is that government should remove from market participation _____ supports. Typically, you'll find small fertilizer markets and underdeveloped private sectors in many developing countries. This particularly the case of Sub-Saharan Africa, when in the 1990s, many of the fertilizer markets were liberalized, so the government withdrew from fertilizer procurement and distribution. And it was anticipated that the private sector would move in to fill in the vacuum that had been left by the government.

This did happen in some countries such as Kenya, but in many cases, it did not happen, and so the government's response has been to enter the market through public procurement and distribution programs, namely subsidies which have numerous problems, the key ones being that they tend to deliver fertilizer late to the farmers after the plant season, and they also tend to displace the private sector.

There are smart subsidy programs which have had a better record of success because they tend to deliver the subsidized _____ through the private sector, and they tend to use targeting mechanisms such as input vouchers to reach their intended beneficiaries. They also have the drawbacks. They're expensive. They like exit strategies. And they often have multiple and sometimes conflicting objectives such as achieve national food security, but also reach the poorest of the poor, which are not necessarily compatible objectives.

So the idea really is that government should move out of direct participation in the fertilizer market and move towards public policies and

investments that support private-sector development. And they can do so in the following ways. Number one, phase out government control of fertilizer procurement and distribution. And I said the government should focus on creating a stable and predictable environment that will create first in the private sector to invest in the fertilizer market.

Second, the government should implement credit guarantees to address the high cost of finance, and they can do this by collaboration with local commercial banks to create credit guarantee funds whereby, for example, an importer will put up maybe 20 percent of the funds that are needed for a letter of credit. The bank will provide the remaining eight percent, and the government will guarantee the loan from the bank in case of default from the importer, which also serves to reduce the cost of credits.

The government should also support AGRO dealers associations by building their capacities for self-regulation. AGO dealer associations are important for private-sector development because they provide technical knowledge to their members about new fertilizer products, what are their attributes, how to use them correctly, and they also provide market intelligence, what are the supply and demand conditions in the market? What are the prices and the trade, et cetera? But they could also be used to mind the quality. The quality of the products that their members are selling, by carrying out random tests and imposing fines on their members who are found selling adulterated products. And governments can support that process by providing training to AGRO dealer associations to improve their capability to monitor quality.

Government also needs to invest in marketing infrastructure. As I mentioned earlier, porting efficiencies and inadequate infrastructure really drive up the costs of fertilizer, and the government can address this by investing in improving port facilities, upgrading port facilities and also by investing in transportation networks, both fail and road networks, and make sure that the penetrate the rural interior because that is where the majority of transport costs are actually accrued.

And the government can also spur farmer adoption and demand for fertilizer through public research and development and improved seeds, for example, and best practices, and also by providing targeted extension services.

The third principle is to build a regional framework for fertilizer trade. Now the idea here is that establishing a regional fertilizer market allows the free movement of fertilizers between countries in a region would allow economies of scale in fertilizer importation and supply which will then drive down the cost of fertilizer. But for that to happen, there needs to be a regional regulatory framework for fertilizer in place that will harmonize

the national policies and regulations and, therefore, promote trade.

There are some ongoing efforts for regional integration in Africa. For example, the East African community which is comprised of five countries, has a zero-percent external to common tariff on fertilizers and ECOWAS, which is the Economic Community Of West African states, comprised of about 15 countries. It has recently established a regional fertilizer regulatory framework. But governments can harness these efforts through other means. For example, take steps to reduce cross-border transport costs which emanate from cross-border fertilizer taxes, delays at the order due to corruption or other rent-seeking behavior, all of which drive up transaction and transportation costs. Countries can address these by entering into free trade agreements, bilateral and multilateral free trade agreements and also by streamlining their border processes to reduce the further.

Another step that can be taken is to support the establishment of regional inspection and certification schemes to facilitate the approval process across the region. Trade is hampered in two ways here. First, fertilizers are subject to pre-shipment inspections, both at the border and at the ports, and this leads to delays of shipments due to multiple inspections. And then trade is further hampered by incompatible packaging and product specifications by countries in the same region – for a fertilizer compound used by countries in the same region. So, for example, there's an NPK fertilizer which is very commonly used by Zambia, which is in the SADC region, for Southern African Development Community. But that fertilizer product cannot be used in Malawi because it does not meet Malawi specifications, even though it is basically the same NPK fertilizer.

So the idea is to establish a regional fertilizer certification scheme that will facilitate the approval process by recognizing products that have a really been approved in at least one or two countries in the region and are approving them for use across the whole region.

So then the key takeaway is from the paper as follows. Number one, a dynamic fertilizer so it can provide timely quality fertilizer to farmers and encourage fertilizer use. However, number two, the fertilizer industry does face a number of constraints to operations and growth across countries which we've discussed is supply and demand constraints.

Number three, governments and donors can best utilize their limited funds to facilitate a dynamic fertilizer sector by supporting, number one, a strong and stable legal and regulatory framework, and, second, by focusing on providing public goods, such as investment and infrastructure training and extension, research and development, credit guarantee funds, and minimize actual intervention in procurement and distribution of fertilizers.

And, number four, regional economic and trade integration efforts can facilitate fertilizer trade by lowering trade costs and supporting regional inspection and certification.

Thank you for your time and you can get more information, continue the conversation by going to the website for the Enabling Agriculture Trade Project, visiting the Africa Fertilizer Agribusiness Partnership website, and also going to the EAT project website, if you want a soft copy of the paper. Thank you.

[Laughter]

Female: Thank you, Maria. At this point, we want to take just a few minutes to get brief reactions from each of our panelists. We'll start with David and work our way on down to Ray. Thank you.

Male: I don't do anything. First of all, I'd like to congratulate EAT and AFAP for really an outstanding brief and even briefer great presentation to that brief, Maria. And I think the beauty of this brief is it takes something extremely complicated, kind of the fertilizer value chain or the fertilizer system, and boils it down into a few key approaches and steps that policymakers can actually address and take on in what is a quite complicated system.

I'm going think a continue from Margaret Spears' comments in her intro here and talk a little bit about FTF. In the US government Feed the Future initiative we are putting increasing emphasis on input supply, fertilizer supply, and seeing fertilizer and inputs as their own system, as their own value chain and focusing on the regulatory and policy aspects of that in particular. Almost every country, maybe with the exception a couple of countries in Latin America, but almost every one of the 19 FTF focus countries has an emphasis on seed and fertilizer supply and policy in recognition of the absolute essential nature of these inputs and the constraints on those inputs in achieving our objective in the Feed the Future initiative.

And as part of that effort, about a year ago, began working with IFDC to do a series of country studies in Africa to look at what it would take for African countries to achieve their agricultural growth and food security objectives. As most of you in the audience know that in Africa there's continent-wide kind of commitment to increase agricultural growth rates up to at least six percent a year. That's quite an ambitious commitment these countries have made.

So IDFC started out in Kenya, Tanzania, and Ghana, looking at what it would take to get to the country investment program objectives that would

then get to that six-percent agricultural growth rate. And what they found, at least in those three countries is roughly, very approximately, it would take a doubling of fertilizer availability and use at farm level to get to the six-percent growth rates which is a further reason to come back to one of Maria's first slides, a further reason why countries had been so active in trying to do something now and quickly, to push fertilizer supplies and make them more available more quickly.

The sort of value chain or input system approach that I think we and EAT and AFAP and IFD are taking kind of lead you away, though, from that single intervention, and a lot of these single interventions that governments have done because is urgent to increase supplies have been either inadequate or in some cases as the brief points out, have kind of undermined incentives for private sector to really come in, in a big way and expand supply. And so taking a systematic look, a value chain look, kind of forces you to get away from a single-intervention approach and really look across the system in the way this EAT briefer does. And I'll just come in back, and that leads you to the basic message of this briefer, which is government should support, but not control and not be a key market participant themselves in a private sector dynamic supply system for fertilizer.

So I'd just like to underscore a few key points to Maria made and that are made in the memo. There are costs inefficiencies across the fertilizer value chain in most of the countries that we work in, in USAID and the US government and FTF. High margins, high costs, high inefficiencies. Both AFAP and the IFDC have done quite a bit of very good analysis that details, country by country, where those major cost issues are in the system. And Maria talked about quite a number of them.

Whether their short-term achievements or problems, one of the issues with fertilizer subsidies is they don't address these cost problems at all. They take them as given, and they put a Band-Aid on them that you have to put on again year after year after year. Even if they don't distort the system, which I think as Maria in the policy brief made, they often can distort the system by making government too much of a participant.

So the beauty of this briefer is it leads us all to think about the fertilizer value chain in a systematic way and get away from kind of single interventions like subsidies and single intervention that don't solve any problems involved.

The second point I'd like to emphasize is the point Maria made about competition. In this very good kind of takeaway point, we want governments to move away from participating in the market, away a from controlling the market to supporting the market. That doesn't mean

supporting individual firms, and one of the problems with some subsidy systems, and also a lot of government licensing and interventioning in the fertilizer market that whatever the motivations which are often positive motivations to make things work, by kind of picking out individual firms for participation, it limits competition. And competition is the way to get more actors in the system, and you get more actors in the system and you drive down prices and you drive down margins, and that's one of the things that has to happen to make fertilizer cheaper and more available to farmers.

Driving down margins and getting more actors in the system sounds good to use technocrats in the room, but it's actually not a benign thing. It threatens peoples' interests. So over a period of five years, there are many firms who could benefit by a much bigger market, even with lower margins. But in the short term, government actions to increased competition and lower margins because of more competition, are going face significant pushback. So very solid analysis, very skilled presentation to policymakers, political skill by committed policymakers dealing with these issues and political courage are really key when you start talking about increasing competition in the fertilizer sector and driving down prices.

Also, some of the innovative financial approaches that Maria in the EAT briefer mentioned, IFDC innovations. A long time ago in Bangladesh new financial instruments, and especially right now, some of the new financial instruments that the African fertilizer and AGRO business partnership that partners on this briefer are innovating in Africa are key to getting more actors into the system by helping to address the finance constraints.

Finally, just a final point on subsidies, saying they're expensive is the case. I think it's important to say that countries like Zambia and Malawi have been spending between 1/4 and 90 percent of their agricultural budget on agriculture subsidies. A lot of the actions required for a dynamic private-sector-led fertilizer sector outlined in the EAT briefer here are policy and regulatory actions, so they have some costs, but they don't cost a lot of money. But some of them do cost a lot of money.

Reducing transport costs, rural roads, port congestion. Those things cost money, and if you're spending 25 to 90 percent of one ministry's budget on fertilizer subsidies, that's money that's not available for the kind of investments in ag research and extension, and in rural roads, and in port congestions that these countries need to make.

The final point, I just emphasize one more thing in the brief. Stability is crucial to the private sector, so for a country that takes on this vision of how to create and sustain a dynamic private sector really requires kind of

articulating that vision, having a roadmap to get there, and letting the private sector know what's going happen, and sticking to that because I think a lot of the problems private firms face, in addition to finance and all the other problems is a rapidly changing and contradictory policy environment from one year to the next.

So thank you very much, EAT and AFAP, for this great briefer.

Male: Thank you, and good morning, all. I would like to echo David's remarks, and I think it's of critical importance, and a major contribution that this brief brings forward in terms of this idea of viewing not just a fertilizer market, but an entire value chain and the importance of looking at it in that holistic kind of a sense.

And to describe that value chain, it's really more than just what we traditionally think of a procurement and a discussion group, and the farm level utilization and appropriate application of fertilizer, and let's not forget the end market for the additional produce that is hopefully forthcoming for more efficient fertilizer used. But over the top of all that is the policy environment that helps all of those linkages work, pulls the whole chain together and allows it t operate in a smooth manner.

And then also to support that functioning, a lot of the support services that come out of the policy come out of private sector endeavors in terms of understanding the needs of the value chain and its smooth operation. That would be credit facilitation. That might be basic research and extension services to provide additional knowledge to the AGRO dealers as well as to farmers in terms of how to utilize and distribute fertilizers, and on the other end, how, perhaps, to store and process the output that's involved there.

So this very complicated, complex, and intricate Web of activities is taking place all the time, and it really begins with this idea of an overarching policy. And Maria mentioned the need for a framework, a legal and regulatory framework in which to operate, and certainly within a particular country, even better if you can expand that into a regional area because as the prior speaker just said, it's important to be able to, perhaps not initially, but eventually capture the scale economies that are involved in moving relatively large volumes of commodity products into various regions and marketplaces.

So the idea of a harmonization is very important. Maria mentioned some of the work that's taking place currently in ECOWAS. They have put that framework together and have harmonized the rules and regulations across the 15-country regions. And now they're doing the additional important work.

They've recognized the job's not done, that they have to take the next step in addling how do we build the plan and strategy to roll out the implementation of these rules and regulations so that the inspection services know what to do, have the resources to do what they need to do, and that market participants know what's expected of them, and then ultimately that farmers have the confidence and the knowledge that they will be receiving products that are appropriate for them and will provide the necessary plant nutrition that's required for them to enjoy the increased efficiency and productivity that comes with that.

So that holistic approach I think we can't lose sight of and recognize that when most of up here say taking about an enhanced environment for a fertilizer market, we're thinking in that much larger kind of a scope. So having said that, though, I think I can also maybe step down a little bit into the weeds and talk about some of the very practical issues and difficulties. We heard a little bit in terms of some of the majors issues in terms of infrastructure and we see that time and again in various countries throughout Sub-Saharan Africa that are challenged by a lack of infrastructure or antiquated infrastructure that really impedes the smooth operation of the marketplace.

And, perhaps, more importantly, creates risk, risk that the businesses that are trying to operate there have to deal with, and they can deal with it by turning their backs, walking away, not participating, charging premiums. All of those things disrupt and reduce the level of service and raise the cost of providing those services within the system.

We talked about some of the inconsistency of policies and occasions where a government well-intended policy to deliver fertilizer in a crisis or difficult situation takes that initiative, but goes around the private sector and undermines their competitiveness in the marketplace. That creates risk in the mindset of the private-sector participants, and it has repercussions that we don't always recognize or consider.

If you were in the habit of buying 50,000 tons of fertilizer, a full-size vessel and one year suddenly your market was displaced by heavily subsidized government intervention and you're left with a warehouse of 50,000 tons of material – of course, I'm exaggerating, but the experience stays with you for a while. And it can have very severe financial implications for that firm.

One of the reactions is, "Well, next time, I'm not going to buy that. I'm going buy a $10,000.00 vessel or a 15,000 ton vessel, and adjust things down." That adds cost, adds logistics complexity to the whole operation, and that's just one way. It's further complicated, though. It's not always

a reaction to risk. Sometimes the port facilities are incapable of handing much larger vessels, so we're left in a situation of having to handle many more smaller kinds of vessels. Additional boats in a port adds to congestion and difficulty of moving material out, and then positioning it for distribution out into the countryside.

It's also a very expensive commodity. Even if we're talking about volumes of 15,000 tons, there's a lot of money involved, and letters of credit and financing issues are always important, and a constraint, and perhaps a barrier to entry in terms of facilitating greater competition within a marketplace, so all things that need to be kept in mind.

And then moving out into the marketplace, all of the issues of roads and perhaps the lack of investment there, the great need for it in order to facilitate the timely movement and the flexibility and the reactivity of the marketplace. It's one thing to be able to just move fertilizer out into a marketplace and perhaps guess that we've got it in the right place. It's quite another thing to have the much more sophisticated approach of one I have it positioned as best I can, how do I react in season to the price and market signals that are provided to me? Do I have the ability to move fertilizer from a surplus region to a deficit region?

If I don't, I run a n you of risk. I won't make that sale. I won't be able to move fertilizer from where it's in surplus to where it's needed. Number two, if that occurs, I wind up with a warehouse full of material that I have to carry the cost of into the next season, again, adding to the cost, adding to the complexity and the financing issues that are associated there. So it's an incredibly complex kind of an operation, and you can step back and view it from above, and it looks very simple and straightforward, but what happens on a day-to-day and intra-day basis in terms of the distribution of those commodities, and any other, is an incredibly sophisticated complex, and fast-moving kind of a marketplace which makes it very difficult to facilitate really a government-based program.

So you need this idea of transition from initial participation in the government to how do we support and transition the marketplace to the private sector, which is better equipped to reach deeper and to react more quickly to changing market signals. So I think a summary is very much along the same lines that Maria and David have indicated, this idea of an overarching policy that's in place, and enforceable with clear rules and regulations and an understanding of them by all the parties.

One thing I forgot to mention, too, is the idea that if we step back, we should develop those policies and those implementation rules in an inclusive manner that involves all the actors in the marketplace. That brings the buy-in and the much greater likelihood of success in terms of

their implementation. Certainly, the issues of credit facilities, whether it's in procurement, what are it's for farmers bridging the period from planting to harvest in terms of their financial liquidity needs as well as on the marketing side on the output side we can't forget in terms of the value chain.

Certainly, the research and the extension work that can be done by governments that could be transferred to the private sector and AGRO dealer networks that are there to very effectively spread information and knowledge to the rural areas in terms of fertilizer usage. And, certainly, the idea, again, eventually to think in terms of a regional approach, regional markets for the procurement and distribution of fertilizer in larger more efficient volumes requires a great deal of infrastructure and adjustments in terms of trade barriers, and also, again, the idea of regional markets for outputs.

That also has to be on the radar screen in terms of really fostering an environment where the private sector can work and where we can enjoy and garner the benefits and the efficiencies that we're all looking for in term of fertilizer production utilization and, ultimately, agricultural food production. Thank you.

Male: Thank you very much for the opportunity to be here and be part of this distinguished panel and evaluating this program. I was very impressed when I was asked a few weeks ago to take a look at this brief and to give my reaction to it, and I said, "This is what I'm talking about in a lot of ways." However, I feel like my comments today will be maybe expanding on a segment of the value chain that Peter was just talking about. Everything they've said, I tend to agree with. This is not to diminish the importance and the past emphasis on the supply side of fertilizer. I understand the challenges and the importance of dealing with those kinds of issues in developing areas of the world. Those problems and challenges are real.

However, I feel like often the demand, aside of the equation, which is mentioned and discussed, often looks at opportunities or challenges maybe associated with the supply side in the sense that farmers, their line of credits, their timeliness of fertilizer, just the availability of certain kinds of fertilizer, all those kinds of issues are certainly demand-side issues. But it just starts there and that's what I would like to talk a little bit about today.

My background is in this is probably my most recent experience in Nepal on behalf of USAID on an extensive project there, and my 30 years in the private sector as part of the one of the world's largest fertilizer companies, it was IMC Global and now more recently Mosaic, and then my consulting in the last four or five years. When I was asked to do that project in

Nepal, I was asked to do a fertilizer assessment, and I asked them, I said, "Is that really what you want, or do you really want me to do what I think you may need in combination with that?"

And so my report is a little different than some of the others that you may have seen in the sense that the title of it is Fertilizer Assessment and Crop Nutrient Management. And I think that is a very important missing link in what we talk about on the benefit side of the fertilizer. It often says that the devil is in the details, and I think that is where we sometimes miss our opportunities in the demand side, is not understanding some of the details that farmers are interested in, fertilizer sectors interested in, and what really drives fertilizer into the market.

I believe strongly when I was in marketing kind of a push-and-pull type marketing where I felt like if you had a product that you wanted to introduce into the market, you had to push it down into the market, but you also had to spend a lot of time developing the market to be sensitive to product and position it so it can be pulled into the market. And so I think that, in the sense, is that we're talking about in supply and fertilizer. You have to have the demand. You have to understand the importance of quality of product. You have to have the stability of programs that help facilitate the availability of fertilizer, but you have to understand if you're going to grow the fertilizer market – and we all know that the herbal land is limited. A lot of the increased yield that we need is going to come from existing land that is already under production. So what is that? How do we do that? What is the important factors involved in developing countries to make that happen?

If you don't understand balance soil fertility, if you don't understand the need for where a fertilizer fits into that scheme of things, you can't really understand how that that can drive the demand side of it. I'll give you a couple of examples.

In developing countries, often there's a progression of use, and one is that they often use nitrogen fertilizer first, urea, ammonium sulfate, ammonium nitrate. Then we realize that there is a need for more than that, so we bring in some of the phosphate fertilizers, particularly DAP. And then it's not long before we need pot ash. In a lot of people's minds that's a balanced fertility. Well, to me, that's just the beginning. You have to understand, one, what crop you're dealing with, what kind of yield level you're planning to obtain.

You have to understand the soils that you're dealing with involving the nature of that soil, the chemistry of that soil. The Philadelphia of that soil, and the demands of that crop is, is that it's related to secondary and micronutrients. I, for example, saw personally in some of my experiences

in China, for example, in the early days of development there, they'd use nitrogen for a lot of years. We 'd introduce phosphate. Did a great job of education extension and field demonstrations where we used pot ash, finally.

Now they're up to millions of tons imported or inside production of that product. But there came a point where they realized, and I saw it in the field, where you went to pot ash, for example, and all of a sudden, you saw a dip in production of crop production. And the problem was that there was an antagonistic effect between potassium and magnesium, and unless you applied magnesium, you didn't get the bump in production that you needed, and a way with sulfur.

And then you look at things – if you have something like maize, somewhere in that system as you grow that yield, you need to have zinc or boron or something else. And so you have to look at the fertility side of it. It's very difficult in developing countries to get some of that across, but on the other hand, my experience is that you don't have necessarily physically educate everybody about everything. One of the most important and I think valuable extension programs is field demonstrations.

And that needs to be a partnership between public and private sector. If a private sector sees a benefit in something, they're going to get engaged in it. And so it doesn't have to be totally a government educational process. But when you go into a community and you can show physically what improved seed varieties do, what irrigation can do, what maybe crop diversity can do where now they can grow maybe two or three or four crops a year, rather than just one, you can see what balanced fertility can do, what the benefits of zinc can do.

Farmers can recognize that corn this size and corn this size is some kind of benefit to them, and they don't have to understand all the chemistry. But they can recognize that, and that helps. That recognition drives the demand, that type of thing. I find farmers worldwide – it doesn't matter if they're in a very developed countries or developing countries or peasant farmers, their lives kind of intersect in my world that I see in the sense that they want to make a profit. They want to – and they recognize that that comes from increased yields, primarily. The increased yields and increased crop quality that has to tie back into the market that we're dealing about. But they understand that. They understand that that has a direct relationship to the other things that go on in the their life, value of their family, food security, a lot of things.

And a lot of of this kind of, you might not say is direction involved with policy, but in my book it's all part of it. It's the part that backs into the policy, the relationships,. I believe that one of the things that's really

needed often is a partnership between governments and private sector. Often, they're also at odds with each other, and they don't trust each other. But partnerships develop trust. They develop stability. Private sector should have a place at the table as to when policies are decided because then they know that they're playing on more of a level field. And if they have – the competition will come. They'll compete with each other if they know that they're on a level playing field.

Let me give you one – a couple more examples I introduced in Nepal a concept or a platform that I thought was a way of maybe pulling all this type together. You may have heard of it. It's been introduced in this country and around the world. It's introduced. It's enforced by the Fertilizer Institute, and the International Fertilizer Association out of Paris. It's called the 4R concept to nutrient stewardship.

Now basically what it is, it's a very simple concept, but it's something they have to get their mind around it. One is you're talking about the right fertilizer at the right rate, at the right time, and in the right place. And you think of that, that ties into a lot of what I was just saying. Fertilizer, quality fertilizers is an important part of that. That's the fertilizer. But it's the not the end game. The end game is taking that fertilizer and putting it in the right place at the right time in the right amounts that balances itself in crop nutrition program.

One of the things that I came across in Nepal, and this is from an agronomic standpoint, but something that had never been addressed in Nepal and I tend to believe it's a problem in Africa, a lot of countries. A lot of soils around the world have certain different numbers, but one numbers is like this there's 4 billion hectors of acid soils in the world. I tend to believe you can start with a neutral soil and very quickly over time, by adding just nothing but nitrogen fertilizers or DAP, you can drive that PH down.

PH, a lot of people don't understand it, and I'm not going go into the details of it, Amy, but just very briefly because I think it's an important point. PH is an indicator of the soil environment. That's what it is. And that tells me a lot of what's going on because of a lot of interactions and solubilities and things of that sort, and if you drop the soil PH, especially if you go below five, all of sudden, you can drastically reduce your crop yield. I have seen where fertilizer actually will kill crops, and it has nothing to do more with than the acidity that it generates. And if we don't understand that, if we don't understand it – I was cued to this when I went to Nepal and I started reviewing a lot of the literature and looking back, and I saw ten years ago, 20 percent of the farmers said they used to use fertilizer and they no longer use it. So I dug a little deeper.

And, by the way, what we did in Nepal was we had a pretty extensive project. We interviewed over 800 farmers across the country in detail, a detailed survey, plus several hundred stakeholders. And so a lot of this thinking and what I was doing was not just my thoughts. It's an accumulation of field input and a lot of group discussions. In every district we operated in, we had farmer discussion groups and picked their brains about what they were doing and so forth. But the thing that came about was I got to the bottom of it, I think and I didn't have the opportunity to go out and do a lot of soil testing and that type of thing. But as an agronomist, I understood that one of the real problems, farmers said they didn't fertilizer just because they were not seeing a yield response or they actually saw a decrease in yield. And I said, "Why would you see a decrease in yield, other than the fact that the soil chemistry is out of balance.

And so I then went to say, "Okay, the solution that is liming," and I found out that 75 percent of the farmers never heard of lime. They've been putting on acid fertilizers for 50 years, and so my point is – and they're into a subsidy situation, and one of the recommendations I made as a sort of a short-term something to think about was to why don't you take some of your fertilizer subsidy money and actually start spending some of that money developing a liming infrastructure and education program, getting people to understand why lime is important and why PH is important, start putting soil testing laboratories in place, and then have a long-term exit plan where you actually turn over that kind of programs to private sector as the program builds. But without that, we're never going to get to a point of understanding and getting the efficiency.

We often talk about fertilizer as being a cost, and I understand the wording "cost." There is a cost, but in my educational process over the years in talking with dealers and farmers all over the world, I always try to get to a point of saying fertilizer is not a cost. It should be thought of as investment. It should be thought of something that because when I buy fertilizer, I expect to get a return on that. And that has a lot to do with I'm expected to be profitable. I can spend more for that fertilizer which backs into why private enterprise might be interested in participating if I get a better return for it.

So it's not just the cost of the fertilizer. It's what I get – I can spend more for fertilizer. I can use more fertilizer if I get more high-quality products and get that into the system. So I guess my thought is the fact that I think we need to look at the total value chain when we develop our policies. Some of these areas I think we could expand on and become more focused on and realize that as we talk to government programs, I'm a strong believer that government and private sector need to be partners, not adversaries.

We often see that as not intentionally, but they don't necessarily trust each other. But if you're going to have a stable strong fertilizer-enforceable program, you need the private sector is part of that mix, and they need to feel like they have ownership of it, at least part. And then you can develop policy, short-term/long-term that will be for the stability of that. And that will help drive the demand for fertilizer. In my mind, there's no greater way to drive the fertilizer demand up than to use it properly.

As you diversify, a lot of times, around these countries we're starting to see today like around Katmandu and Nepal, you're seeing there's a tremendous increase of fertilizer. Why? It's because those farmers are recognizing they have the market access, which is important, but they also recognize that rather than just traditionally growing wheat and rice, like their grandfather did, now they can diversify into vegetables and fruit crops, and they can grow three or four a year, and they can – with irrigation. And they can get tremendous returns on their small acreage and they can go to market with that, direct marketing, whatever. So they're getting more innovative, but that also drives the fertilizer demand.

And we've seen a tremendous increase in fertilizer demand in Nepal over the years s the result of these things. And the acreage hasn't increase. In fact, in some cases, the acreage has decreased, but the demand has grown because farmers are starting to recognize some of these things, even in a small way.

So with that, Amy, I appreciate being a part of this program. Thank you.