

ПЕТЕРБУРГСКИЙ МЕЖДУНАРОДНЫЙ ЭКОНОМИЧЕСКИЙ ФОРУМ

22—24 мая 2014

Панельная сессия

**ИННОВАЦИОННОЕ УПРАВЛЕНИЕ РЕСУРСАМИ ДЛЯ УКРЕПЛЕНИЯ
ПРОДОВОЛЬСТВЕННОЙ БЕЗОПАСНОСТИ И УСТОЙЧИВОГО РАЗВИТИЯ
СЕЛЬСКОГО ХОЗЯЙСТВА**

23 мая 2014 — 11:45—13:00, PepsiCo Café

Санкт-Петербург, Россия

2014

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C. Robertson:

Ladies and gentlemen, thank you very much for coming to this panel on innovations in resource management. We are going to be talking food and agriculture, and, hopefully, telling you something new.

I am going to start with a few slides just to set the big picture, and to introduce myself first. I am Charles Robertson, Chief Economist at Renaissance Capital, a Moscow-headquartered emerging markets bank.

I am an economist, and what you should have learned over the past few years is that you cannot trust economists. Economists get things wrong all the time. Most famously, in agriculture, the economist who got things wrong was Malthus. He predicted 200 years ago that the world would run out of food. And yet, here I am showing you a chart that goes from 1960 to 2010.

Looking at the pink and red lines, the red line is wheat production, and the pink line is wheat consumption. Whether we look at the lines for wheat, or for maize, or for rice, what this shows is that since 1960, global demand for food has matched global supply. We have not run out of food.

Where did the extra supply come from? This map shows yields, the amounts of wheat or cereals produced per hectare. You can see that Europe and the United States of America have been producing a lot of the food that the world wants. Another country jumps out here: Egypt.

Why was Egypt one of the first civilizations on Earth? Because it had the Nile River. The Nile River produced the water that gave us food surpluses, and we can still go to visit the Pyramids of Giza that were built on the back of agricultural surpluses found in Egypt 3,000 or 4,000 years ago.

Thus yields matter quite substantially. If we look at yields in Europe, the United States, and in Asia, they have been heading up. Even India has been making decent progress on boosting yields. Africa, however, has, as yet, had very little progress thus far. Indeed yields in Africa and in Latin America remain well below

those of industrial countries. We still need greater yields from much of the agricultural land in production today.

There are a few other long-term issues we must consider. One is climate change. A study prepared by the World Resources Institute demonstrated that the impact of climate change is going to be very negative for much of Latin America, for Brazil, perhaps, and even for Egypt. There will be some countries, such as the Russian Federation, that might even benefit from climate change. It might see more production over time.

A further issue is water. I met Mr. Gorbachev a few years ago, who now cares more about water than almost anything else. He set up an institute to look at the issue of water. This slide shows water withdrawal, which is a big problem in Central Asia, in parts of Africa and, potentially, in Latin America. Other countries, by comparison, are still lucky enough to have a good supply of water. The Russian Federation has a long-term advantage in that regard.

That is an overview of the big picture: the fact that economists are often wrong, the need to increase yields, climate change, and water – often described as the most under-priced resource in the world today. Those are a few of the things I will start with.

Rather than introduce the panel and then go back to each person, I would like to do it individually. I would like to start with Andrey Guryev, from PhosAgro, a large fertilizer company. He promised me that he is going to talk about innovation, which is the title for our panel. Mr. Guryev, please go ahead.

А. Гурьев:

Тема нашей дискуссии — инновации в сельском хозяйстве. Здесь нужно сказать, что краеугольным камнем любых инноваций является наука. Все инновации, которые произошли за последние сто лет в земледелии, в сельском хозяйстве, являются частью процесса научной работы. Я бы хотел выделить четыре-пять основных изобретений, которые были сделаны

за это время. Стоит начать с технологии Габера-Боша. Эти двое ученых разработали синтез аммиака, дали сельскому хозяйству азот, который сегодня является самым популярным и самым используемым удобрением во всем мире. Прежде чем я расскажу об этой технологии, хотел бы упомянуть об исследованиях, которые проводились задолго до изобретения азотных удобрений. Это математические исследования мальтузианской ловушки. Феномен мальтузианской ловушки заключается в том, что рост населения, идущий в геометрической прогрессии, превосходит рост производства сельскохозяйственной продукции, в результате чего возникают кризисы, войны, и популяция резко падает. В 19-м веке были проведены большие исследования, которые показали, что население Земли не может быть больше, чем один миллиард человек. Сегодня у нас семь миллиардов человек. Прокормить семь миллиардов позволяют несколько простых вещей. Это, во-первых, метод Габера и Боша, которые сто один год назад изобрели синтез аммиака и производство азотных удобрений. Сам Габер был злым гением: помимо изобретения удобрения, которое сегодня позволяет нам всем жить, есть, развиваться и заниматься сельским хозяйством, он также изобрел газ иприт. На вечеринке по случаю изобретения и первого использования этого газа его жена выстрелила себе в сердце. Тем не менее Габер оставил нам в наследство и эту технологию — ее не было возможности реализовать раньше, потому что не было необходимых металлов и инженерных изобретений.

Вторым ключевым моментом является селекция семян — их подборка под правильные погодные условия и так далее. В этой области также была проведена большая работа, и многие российские ученые внесли огромный вклад в эти исследования.

Третий момент — СЗР, средства защиты растений. Здесь тоже необходимо сказать, что даже сейчас 20-25% всего урожая в мире каждый год погибает из-за москитов, болезней, жуков. Американскими, российскими,

европейскими компаниями была проведена колоссальная работа по разработке химикатов, которые сегодня позволяют сдерживать этот рост.

Четвертый момент — изобретение ГМО. Его активное развитие началось в 1990-е годы. Площади, засаживаемые сельхозпродукцией, которая выращена при использовании технологий ГМО, выросли с двух миллионов гектаров в 1996 году до 175 миллионов гектаров в 2013 году. 175 миллионов гектаров – это 11% земли, которая сегодня задействована в мировом сельском хозяйстве. Если говорить о США, то на данный момент 80% всей кукурузы и зерна выращивается посредством ГМО.

Нельзя обойти вниманием и технологические прорывы, которые были сделаны. От тяпки в начале прошлого века мы дошли до комбайнов и других машин, которые помогают фермерам эффективно обрабатывать землю.

Это пять крупнейших достижений в сельском хозяйстве за последние 100 лет, которые нам сегодня помогают и, что особенно важно, в будущем помогут прокормить быстро растущее население.

Я представляю здесь компанию, которая занимается удобрениями. Идет большая научная работа над улучшением удобрений, улучшением их технологии, улучшением усвояемости удобрений в почве. Мы также продвигаем эти виды удобрений в больших компаниях, фермах в разных странах. Наша задача – научить фермеров правильно использовать удобрения, землю, на которой они работают, использовать семена, чтобы получать хорошие урожаи.

Если говорить о России, то сейчас она в среднем потребляет 38 килограммов всех видов удобрений на гектар. В Европе, где земледелие сегодня наиболее интенсивное, это 180-200 килограммов на гектар. Соответственно, мы видим разную урожайность с каждого гектара. Если в России это в среднем 30-35 центнеров на гектар, то в Европе 90-120. Разница ощутима, ее позволяет достичь правильное, интенсивное

земледелие. Все инновации, о которых я говорил, вкуче позволяют достигать таких результатов.

C. Robertson:

When I have looked at agricultural supply, Kazakhstan, Ukraine, and the Russian Federation are the three breadbaskets of the region. Is the use of fertilizer similar in in these countries, approximately 35–40 kg, or do they use less?

A. Guryev:

In Kazakhstan, they use less, but in Ukraine, I believe it is more or less the same as in the Russian Federation.

C. Robertson:

Thank you. Presumably it is much less in India.

A. Guryev:

Yes, it is much less in India. In India they also have a huge disparity in the use of nitrogen, potash, and phosphates. When we talk about fertilizers, it is necessary to understand what maize needs. It needs nitrogen, phosphate, and potash – NPK – these are the three major components of any fertilizers. They must be applied in proper proportions. Only this will give you the full effect.

That is why our company started to produce not only phosphate fertilizers but also complex fertilizers. We are able to supply many different grades to the market to suit farmer needs. The farmer assesses the soil to see how much nitrogen, phosphate, and potash is needed. We then produce that exact fertilizer and deliver it to them anywhere in the world.

C. Robertson:

If I may ask just one further question. Innovation is clearly an important theme for the Russian Government at the moment. President Putin and others have been pushing for education and a restrengthening of education. Is the education establishment supplying you with enough scientists to produce the next miracle in agriculture? Do you have good links with the university system?

A. Guryev:

Yes, very much so. I will comment on PhosAgro specific situation. We have an institute that is a part of PhosAgro, a science and chemistry institute that does a lot of research and development for our company. This helps to generate products and so on.

The Russian Federation is well-known for agricultural science. In Moscow, we have a huge institute, the Timiryazev Academy, which is well-known throughout the Russian Federation, and around world.

C. Robertson:

Can you tell us the next secret product about to be unveiled?

A. Guryev:

There is no secret product. The main focus now is the intensification of fertilizer application, and the specific knowledge of the soil the farmer has. The farmer needs to do a little bit more analysis in that respect.

C. Robertson:

Thank you. If I could move over to Mr. Koch. Please introduce yourself and share with us some of your thoughts on these core thematic issues.

O. Koch:

Thank you, Mr. Robertson. My name is Olaf Koch. I work for METRO, which is known as a trading company and, most often, as a retail company. We are indeed a trading company, but we are, in fact, a business development company above all else. That has a lot to do with how you use food for your business.

I will raise three points. One is the way our customers use the products we bring them; the second is food quality, which is key to ensuring that we meet expected consumer standards; and the third is about ensuring that we use resources effectively.

Let me start with the way our customers use our products. We typically serve independent traders, retailers – this is a very substantial portion of our customer base – and, a rapidly increasing segment: hotels, restaurants, and caterers. What is our role? Naturally, our role is to supply the products they need. We spend a lot of time analysing demand and how we can generate value with new products, innovation, and things that will make our customers more competitive. Our driving idea is that if we make our customers more successful, that is how we become more successful. It is a kind of golden rule in our company. In the 28 countries where we are present, whenever we have done it, we have been tremendously successful. The success of our customers is fundamental.

Part of that success is, of course, also how they use food. If you run a food business, restaurant, hotel, or caterer, there is one key thing driving profit and loss, and that is shrinkage. Using the resources that you have for your menu, for your customers, is key to making sure you are profitable. But how do you predict weekly demand and daily demand, and make sure your supply-chain planning is effective? We know the answers to these questions because we are running hotel, restaurant, and catering businesses across Western Europe and in Asia, and we share that knowledge. This is why we provide not only products, but also knowledge.

We just had a METRO Expo a couple of weeks ago in Moscow. We invited 14,000 customers from the many regions we serve in the Russian Federation,

and showed them new products, and got them excited about new products. We also have classrooms to provide training. We have chefs there, and we do many things to make people more competitive and ensure they become more profitable. Food utilization is actually a key part of that.

The next point is quality, as I mentioned. We are absolutely keen to have the best quality you can think of. We have very strict and very rigid quality rules. That is why we have 50 quality engineers here in our Russian headquarters, in Moscow, and in each store we run. We have 73 stores in more than 40 regions in the Russian Federation with two or three people engaging in quality.

Our aim is to get as much product as possible locally. What we do is to go to the producer and, if we find we cannot use their product, we engage them. That could mean, taking one recent example, that we go to a meat factory and spend three months with the people there and tell them, "This is what you need to change, this is what you need to introduce, and we can show you the proof that this will make you more competitive. Once we are there, we will start supplying products, and the beauty of all this is that not only do we supply to one store, but we will supply to more stores. Eventually, you might even want to supply to other people. We do not have a problem with that, because it makes you stronger, which makes us stronger." This is another example of our golden rule of helping others to succeed.

The last point is with regard to the use of resources, which is, as you know and has been mentioned before, a key issue in the upstream supply chain. We know that in many parts of the world, the production of resources exceeds the arrival of product to the store. Why is that? It is because of deficiency in the supply chain. People may be told they will be able to sell a certain volume, then the agent or intermediary comes and says, "Surprise, surprise, I cannot take that volume". Then they are in an unfortunate situation, if they stay with that volume, they lose money, and actually lose product. That is the worst abuse of resources you can think of.

That is why we also engage with commodities and go to the product source. We do this whenever we can actually to ensure 100% planning quality for our customers. If we commit to a volume, we will take it. The producer is not at risk, and we can make sure that the use of goods is to the highest standard.

I could also expand on other issues such as water consumption. This is a key topic when we talk to our suppliers, but I will stop here, otherwise I will take too much time.

C. Robertson:

I would like to go back to something you said. In the United Kingdom, supermarkets are now saying very proudly, “We are buying more produce locally”, so I am quite interested by the fact you mentioning that. I had a meeting with the Deputy Minister of Agriculture a few years ago in Moscow, and he said that the Russian Federation is moving towards food self-sufficiency. As a result, there should be more supply: more supply of chickens, more supply of grain, more supply, eventually, of beef. What percentage of the food products you sell is locally sourced, and what percentage would you target on a five-year horizon?

O. Koch:

We source most of our products from here in the Russian Federation. That is our aim. At present, more than 90% of our supply across the country in the food sector is from sources or factories in the Russian Federation.

Our aim is to be as local as possible for two reasons. One is to be very close to people, to their habits, to their customs, and to belong to the region, of course. When we open a new store, local sourcing might only be 4% or 5%. We can rapidly go to 8%, 9%, 10%, and our aim is to be above 20%. If we can get local supply, particularly in terms of fruits and vegetables, it is always of great benefit to the people and to the local area. The second reason is, of course, that supply chain costs are much less to get the product into your store.

C. Robertson:

Seeing what works well in another country, I presume you develop best practices, and import that innovation to other countries, in terms of logistics for example.

O. Koch:

Yes, that is a major benefit of a company operating in 28 countries. The cash and carry business itself has USD 32 billion turnover, and we really benefit considerably from the many areas where we operate, and we ensure that we transfer best practices and wisdom to the various entities we run.

C. Robertson:

Thank you very much. Mr. Guimarães, perhaps you could introduce yourself as well, because you will do it better than me, and give us a few minutes of thoughts.

E. Guimarães:

I am Enderson Guimarães from PepsiCo, where I am responsible for Europe and for sub-Saharan Africa.

Food security is fundamental for us at PepsiCo. Something to keep in mind is that is that of the 20 key inputs in our production, 13 come from agricultural sources. As a result, food security is a fundamental priority for us, all over the world, wherever we act. Naturally, this is also the case in the Russian Federation, given it is our biggest market outside of the United States of America.

We have dealt with food security for a long time, for decades, as a company. We have had a lot of success, but there is still a lot to be done. We cannot do this alone however. That is why we are in constant talks with government bodies, with universities, with our partners, and with farmers, to be able to develop an approach that would, in the case of the Russian Federation, allow it to take its due place in the world as a food producer, providing food not only for its own

people, but also being able to export commodities and export value-added food around the world.

The bottom line is that we believe food security is not possible without sustainable agricultural practices. We are very proud to be a major part of that. How do we play this part? We have long-term partnerships with our farmers to be able to develop this food security. Let me give you some examples here in the Russian Federation. We have had a partnership with potato farmers here for over 20 years, since we started selling potato chips in the Russian Federation. Through that programme, we provided farmers with open-ended programmes, and access to top experts, both in the Russian Federation and internationally, via seminars and on-site visits. We provide them access to best practices in water conservation, energy conservation, soil usage, and so on. We give them access to proprietary seeds, because PepsiCo has innovation centres around the world where we develop specific seeds that will provide better yields and higher-quality potatoes.

We also provide these farmers with cash advances against their future sales to use, allowing them to buy equipment and fertilizers to be able to increase their yield. This also allows them to build climate-controlled storage, because, as you know, the production season in the Russian Federation is not that long.

The end result is that, since 1996, our potato partners here in the Russian Federation have been able to double their per-hectare yields. They went from 13 tonnes per hectare to 25 tonnes per hectare just last year. Today, in regard to the question you put to Mr. Koch, we source 85% of our potatoes from the Russian Federation, with the aim of reaching 100% in the next three years. We started pretty much with zero, or a negligible amount, 20 years ago, so it has been great progress.

Success does not end there. We want to replicate this success in the dairy business. Today, we are the leading processor of raw milk in the Russian Federation. At present, we procure 1.7 million tonnes of raw milk per year in the

Russian Federation. We are starting partnerships, or increasing the speed of our partnerships in agriculture with these partners. We currently have approximately 500 farmers that are partners across 30 Russian regions, and we are doing similar things with them. We provide them with technology and access to domestic and international experts with the aim of improving the quality of their herd. We provide them with low-cost loans so they can buy the proper feed and equipment in order to increase productivity in the way we did with potatoes.

This is something we do on a daily basis around the world, and in the Russian Federation in particular. Last year alone we invested over USD 70 million in activities related to our agriculture programme, including donations to universities and to university agriculture programmes, allowing them to buy the right equipment and to fund tuition for their brightest students, and bring students into this field. We do so because if we do not have the right people doing the work, we will never be able to make progress. We will continue to do so around the world because we feel it is a win-win combination. If there is cooperation among governments providing the right policies, universities providing the technology where necessary, industry, and our partners, the farmers, we will continue to increase yields, and continue to help the Russian Federation come in line with productivity levels in the rest of Europe, and help around the world.

C. Robertson:

Your intervention led me to think about Joseph Stalin and collectivization, when such a large number of good, market-oriented farmers died. These farmers had done very well under Vladimir Lenin's New Economic Policy, and provided a lot of food. The collectivization process simply stopped that market economy. I was worried that once the knowledge and ability to be a market economy farmer is lost, all the skills that get handed down from generation to generation are lost as well. It sounds like Russian agriculture is doing much better, however, with, for

example, the potato yields you mentioned. Farmers have learned those skills, and they are actually helping to lead some of the growth story here.

E. Guimarães:

We have very smart people in the Russian Federation. They are not fools. They can learn. What we do is to try to bring this knowledge together and disseminate the knowledge in the best ways possible. That is why we have these partnerships with numerous farmers – and this is something we do all around the world, not only in the Russian Federation. We provide them with this expertise, we expose them to technology, and we provide them with funds to be able to do succeed. It is in our interest. If they become more productive and increase their yields, then we will have the resources to be able to process this food. This is a key role we believe we play as an organization. It is in our own interests, of course, but it is something that is good for the economy, good for the farmers, and good for food production.

C. Robertson:

Thank you very much. Mr. Sheps, please introduce yourself and talk about my favourite beer in the Russian Federation.

I. Sheps:

Thank you very much for inviting me. If I may, I am actually here in three roles. Starting with my main local role, I am the President of Baltika Breweries. We are part of Carlsberg Group, so I am also Carlsberg Senior Vice President for Eastern Europe. It also happens that I am the Chairman of the Russian Beer Union as well.

I will try to be short and to follow some of my colleagues in talking about innovation, and maybe try to tell you something you do not know. I am sure you

do know that Baltika and Carlsberg are the best beers, but perhaps you do not know that Baltika is the biggest brand in Europe.

Another thing you may not know is that 70% of all the exports of beer in the Russian Federation are made by Baltika Breweries. Baltika is exported to 75 countries in the world.

Some more facts: 30% of all the barley bought in the Russian Federation is bought by Baltika Breweries. To give you an idea of size, last year, we bought 204,000 tonnes of malting barley in the Russian Federation. Just to be clear, there are two types of barley: food barley that is eaten and malting barley that is used in brewing. As you can see, we need quite a lot of the latter.

To give you some history, Carlsberg was founded in 1847 by Jacob Christian Jacobsen. He was a big lover of science, and consequently we have a research centre that is more than 100 years old. Let me mention two specific aspects of this research centre. First, Carlsberg was the first to successfully develop a way to purify a single cell of yeast, thereby eliminating the “beer disease” that used to be a problem in the brewing world. The process, developed by Dr. Emil Hansen, was actually validated by Louis Pasteur, and Carlsberg gave it to the world for free. The reason you can brew a consistent quality of lager beers around the world today is because of the Carlsberg Research Centre. Second, I am sure you have all heard of the pH scale to measure acidity; it too was invented in the Carlsberg Research Centre.

As regards the Russian Federation, about eight years ago we started to develop the concept of an “agri-project”. We decided that the only way we could have the right supply of barley was, through our research centre in Copenhagen, to develop the right varieties for the climate and soil in the Russian Federation. We have developed special varieties of barley suited to Russian conditions. I should mention, by the way, that these are not genetically modified varieties, but totally natural ones. They are more robust and well-suited to the climate, so you actually need less fertilizing. Furthermore, these varieties are able to give a higher

stability to the beer, although I will not go into all the details. We brought over many varieties that are now already registered and seeded in the Russian Federation. At present, we are working with 100 agricultural companies or groups producing the barley we need, and we help them to produce the right barley in order to maintain our needs.

As a result, in 2013, we were successfully able to buy all our barley domestically. It is a great achievement that we did not have to import any barley at all. As it happened, in 2012, there had been serious issues with barley in Europe due to diseases and so on. As a result, in the Russian Federation, we had to import barley and malt – you will not believe this – all the way from Argentina, because that was the only place we could find the right barley, on the opposite side of the world. Consequently, we were very proud of our achievement in 2013.

Many people do not understand that beer is, in essence, an agricultural product. I was born in Romania, where we have a saying that beer is “liquid bread”. Basically, beer is bread; it just has a lot of water in it. Beer is 88% water, and the remainder is made of barley, yeast, and hops.

Beer, by the way, was developed as a nutritious drink. People, particularly those in the Russian Federation, talking about the negative health effects of beer just do not know what they are talking about, I am sorry to say. Large international studies have shown that beer consumed responsibly is as healthy as red wine. The only problem is that beer does not have the same kind of public relations. As I have said many times, Madrid might be a nicer city than Paris, but it has no public relations, so everyone talks about Paris. It is the same with beer.

Being so connected to agriculture, beer is, in many parts of the world, is under the purview of the Ministry of Agriculture. I assume that most people here know that this was the case in the Soviet Union. A huge mistake was then made in the Russian Federation however. Beer was put together with spirits and, as a result, we have made less beer, meaning we enjoy less beer, drink more vodka, which is less healthy, and buy less agricultural products from our grain producers. This

is a pity, and I hope the Government of the Russian Federation will realize that the way it is done elsewhere in the world is not so wrong. We should continue to develop this very important industry, and, of course, continue to consume responsibly. This is always true. Overconsumption is not healthy. We will continue to support agriculture in the Russian Federation as we do, as providing this support is very important to us. Thank you.

C. Robertson:

Thank you. I have learned a lot. You might be pleased to know that I used to work at a Dutch bank, ING, which had offices in Belgium as well as in the Netherlands. In Belgium, at lunch, you go to the cafeteria, where they serve beer. The idea is that you should be drinking beer at lunchtime. I think that idea is very popular with your company. In the Netherlands, they give you sour milk instead. I can tell you I much preferred going to Brussels than to Amsterdam; it is a much nicer place. Thank you very much, Mr. Sheps, for that.

Mr. Verghese, please explain a little bit about yourself.

S.G. Verghese:

Thank you, Mr. Robertson. My name is Sunny Verghese; I am the cofounder and Chief Executive Officer of Olam International. We are a large global agribusiness company present across the agricultural supply chain, upstream in plantations and farming, midstream in agricultural processing, and downstream in food distribution. We are also engaged in supply chain management across the agricultural space.

I am really not here to talk about my company, however, and, unfortunately, despite my admiration for my fellow panellists, I do not share their optimism with regard to our ability to manage food security issues. I think we have a disaster on our hands, and my objective today is not to reassure you, but to provoke you and

to make you concerned about the major developmental challenge we will be facing this century.

I believe we have six key developmental challenges we must face this century. The first is food security, the second is water security, the third is the impact of climate change, the fourth is energy security, the fifth is sustainable growth – we can grow the way we produce food, but whether we can do it sustainably is different question – and the last challenge is whether we achieve inclusive growth. Over the hundred years of the twentieth century, we increased global gross domestic product twenty-fold, and yet we have had income inequality widen tremendously in terms of the Gini coefficient. Even in the most successful economies, it has grown dramatically over this period. What is the point of all of this growth if you cannot do it sustainably and equitably?

Let me share some data with you. First, Trucost is a company that looks at how much natural capital we, as companies, appropriate from the environment. In 2011, they studied the 3,000 largest corporations in the world and looked at their greenhouse gas emissions, their water footprint, and so on. They estimated that in 2011 these 3,000 companies generated USD 6 trillion of bottom line, profit after tax, while their greenhouse gas emissions, their water footprint, and their biowaste footprint were to the tune of USD 2.4 trillion that year. That is to say that 40% of all the profits they made went away in depleting natural capital, where Mother Nature, because her back office was not set up, has not been able to issue those invoices.

My company operates in 65 countries, and it took us five years to map our carbon footprint, our water footprint, and our biowaste footprint. Last year, we consumed 4.6 million cubic metres of water in our 110 manufacturing facilities. We consumed 350 million cubic metres of water in our plantations. The suppliers who deliver us various agricultural commodities had a footprint of 26.3 billion cubic metres of water. If I look at my profits last year of USD 400 million, and if I

really calculated the cost of the water I consumed and the carbon dioxide emissions I created, the cost of natural capital I created was USD 200 million.

I wonder to myself, with all this overwhelming effort in 65 countries, dealing with 3.9 million farmers, what really is the impact we are having as an organization? By way of example, Puma SE is one company that had the guts to come out and publish figures on the natural capital it consumes each year. Puma's 2011 report said, "Our top line revenue is USD 2.7 billion dollars, our bottom line is USD 200 million, and the cost of the natural capital we have accreted is USD 94 million".

I can share the enthusiasm of PepsiCo, METRO, Baltika, and PhosAgro about the various innovations they are doing and the impact they are having, and I think that it is all incredible and extremely valuable. But look at our productivity growth rate and how it is trending. For the 30-year period between 1960 and 1990, the agricultural productivity growth rate was 2.3%. Areas under cultivation grew only at 0.15%, as Mr. Robertson showed us. If you look at the period between 1990 and 2000 however, the agricultural growth rate of productivity halved to 1.1% per annum. In the last five years, the agricultural productivity growth rate has been 0.4%. Land under cultivation is growing at less than 0.15%.

Consequently, we are going to have a major imbalance between supply and demand ten years down the road. I do not believe that China and India, for example, can produce the food they need. China is now importing wheat and maize. It was a major exporter of rice and is now importing rice. This really is because of various supply side constraints.

We are losing arable land at a rate of about 0.8% each year. In China in particular, this is an even bigger problem because of urbanization and urban sprawl.

There is a huge water problem, and we have talked about this issue. At present, we use about 4.5 trillion cubic metres of water, 71% of which goes into agriculture. By 2025 we will need 7 trillion cubic metres of water. Where are we

going to get that water from? I do not know how much water you think you drink in a day. We typically say that we drink one or two litres of water a day. We use about 55 litres of water for household uses such as bathing. But, in fact, for breakfast today, I would have consumed roughly 1,300 to 1,600 litres of water. To produce two eggs is 160 litres of water per egg. Bacon is 180 litres of water per strip. A potato is 24 litres. A tomato takes 13 litres of water to produce. One kilogram of beef is 16,000 kg of water. One kilogram of pork is about 10,000 kg of water.

It is China and transition economies that are consuming more proteins and fats. The cost of producing these proteins and fats is simply going to ramp up significantly. If you can fight a war over oil, be prepared to fight bigger wars over water and food.

There is a lot more we can discuss, but I will leave it here, and I hope you are sufficiently provoked to feel anxious and disquieted. Thank you.

C. Robertson:

Those are many interesting issues, thank you. I want to make sure that everybody gets a chance to speak. Arkady Zlochevsky, please take the floor.

A. Злочевский:

Я бы хотел отметить пару моментов из того, что рассказывал господин Вергезе. В последние 50 лет мир не знал нехватки продовольствия в глобальном масштабе. Несмотря на все разговоры о том, что нам не хватит продовольствия, его до сих пор всегда хватало. Вопрос только в том, сохранится ли такая ситуация и как надолго. То же самое касается земли, воды и других ресурсов, о которых мы все время говорим, что нам их не хватит.

За эти же 50 последних лет мир неоднократно сталкивался с ситуацией нехватки денег у потребителей на эти ресурсы, которых в количественном

плане всегда было достаточно. Нехватка денег и есть главная проблема. Она, в свою очередь, ставит перед нами вопрос о том, как формируется себестоимость производимой сельхозпродукции. Сколько она стоит, по какой цене мы можем предложить ее потребителю? Вот главная проблема и текущего, и будущего момента.

На нашей территории концентрируется огромное количество мировых запасов воды. Однако является ли это преимуществом для сельскохозяйственного производства? Отнюдь нет, потому что все эти запасы находятся в Байкале. Если мы добываем воду в Байкале и вывозим на поля, она стоит астрономических денег, и мы не сможем иметь конкурентоспособную себестоимость продукции. Главной проблемой российского сельского хозяйства как раз является недостаточный влагозапас в почве, несмотря на наличие огромных водных ресурсов. Все вызовы настоящего и будущего сельского хозяйства концентрируются в себестоимости. Давайте задумаемся о том, как сформировать низкую себестоимость будущего продовольствия, чтобы удовлетворить потребности растущего населения, потому что, повторюсь, главная проблема — это сумма денег в кармане потребителя, а не количество продовольствия в мире.

Необходимо иметь в виду, что главным драйвером снижения себестоимости производимой сельхозпродукции являются технологии. Как мы работаем с технологической базой и как мы относимся к мировым технологиям, которые позволяют снизить себестоимость? На сегодняшний день главная технология, которая позволяет снизить себестоимость сельскохозяйственной продукции, — это ГМО. Мы в России от нее отказываемся, пытаемся запрещать ее распространение на нашей территории. Исаак Шепс сегодня подчеркнул, что его компания отказывается от генномодифицированного ячменя. Однако существует

элементарная экономическая логика, которую необходимо отделять от отношения потребителя к продукции.

Технологическое развитие в сельском хозяйстве — это чрезвычайно сложный процесс, связанный не только с наличием денег, квалификацией, но и с ментальным восприятием потребительской сферы. Эта сфера очень подвержена популистским настроениям и влиянию общественного мнения. Это касается, в частности, не только ГМО, но и органической продукции, которая производится во всем мире и сегодня имеет нарастающую популярность. Однако главная проблема органической продукции — опять-таки себестоимость. Она чрезвычайно высока. Это исключительно премиальный сегмент потребления. Все мы как потребители являемся приверженцами органической продукции, чистоты, вкуса и так далее. Но мы должны понимать, что будущее целиком и полностью определяется экономической сферой. Это необходимо учитывать при обсуждении будущих рисков и акцентировать в нашей дискуссии главные болевые точки. Спасибо.

C. Robertson:

Thank you very much. We have one extra speaker who has arrived. Mr. Rakhmanin. We have discussed a lot of different issues. One of the things that has surprised me is how closely linked science is to agriculture; this has shown up from PhosAgro to PepsiCo, and from Carlsberg to Baltika. Please feel free, however, to put forward any issue for the panel.

V. Rakhmanin:

Thank you very much. I would like to apologize for my late arrival. I flew in this morning and was somewhat delayed. Please accept my sincere apologies. I have caught up with a number of speakers already, so I feel quite comfortable in this regard.

В. Рахманин:

Офис Продовольственной и сельскохозяйственной организации ООН находится в Будапеште, а вообще у FAO (Food and Agriculture Organization of the United Nations) пять региональных офисов, которые работают на Ближнем Востоке, в Африке, Латинской Америке и Азиатско-Тихоокеанском регионе. Мы отвечаем за Евросоюз, все постсоветские государства и Турцию.

Предыдущий выступающий затронул очень интересную тему. Как нам работать с продовольственной безопасностью? Собственно, продовольственной безопасностью FAO занимается в первую очередь. Сама концепция этого понятия претерпевала изменения, и сейчас она включает в себя много социальных, культурных и экономических компонентов: какую бы то ни было безопасность сегодня нельзя рассматривать изолированно. Требуется комплексный подход, и на этом делает акцент наша организация. Очень приятно, что эта тема обсуждается здесь, в Санкт-Петербурге, потому что Россия — это ведущая сельскохозяйственная держава, а также лесная и рыбная. Это еще одна часть мандата FAO — мы занимаемся не только сельским хозяйством, но также лесом и рыбой. Одна из особенностей взаимодействия нашей организации с Россией, российским бизнесом, правительством, гражданским обществом и всеми постсоветскими странами состоит в том, что это взаимодействие началось поздно. К моменту вступления России в FAO организация уже работала с другими странами. Следовательно, нам необходимо наверстывать упущенное. Есть такие простые вещи, как, например, совпадение терминологии на английском, французском, испанском и русском языках. У России имеются огромные запасы знаний по сельскому хозяйству, которые необходимо перевести и внедрить в систему Продовольственной и сельскохозяйственной организации ООН.

Теперь по теме. Безусловно, с точки зрения развития экономики, продовольственной безопасности ситуация в мире улучшается. Тем не менее, как посчитали специалисты нашей организации, в 2011—2013 годах 842 миллиона человек хронически недоедали. Термин «хроническое недоедание» можно употребить вместо термина «голод», в любом случае — это комплексный недостаток в питании, невозможность поддерживать необходимый калорийный уровень питания. Проблема усугубляется климатическими изменениями, интенсивным использованием земель и природных ресурсов. Здесь говорилось о воде; необходимо говорить также и о почвах. Все эти факторы мы обязаны учитывать, и когда мы говорим о продовольственной безопасности, главное — это комплексный всеобъемлющий подход.

Наращивание объемов сельскохозяйственного производства — важное направление по обеспечению продовольственной безопасности. Но, наращивая, мы должны действовать и числом, и умением. FAO старается разработать такие программы, которые бы позволяли максимально использовать потенциал и работать с высшим КПД по производству сельскохозяйственной продукции. Безусловно, эти интенсивные методы не должны подрывать базу природных ресурсов и должны обеспечивать устойчивое развитие.

FAO — это не закрытый клуб специалистов, которые варятся в соку собственных технологий и опыта. Организация межправительственная, поэтому она ведет активный межправительственный диалог. Одновременно она ведет диалог с гражданским обществом, с частным бизнесом; очень приятно, что здесь присутствуют представители частного бизнеса, чья точка зрения должна оказывать влияние на формирование повестки Продовольственной и сельскохозяйственной организации. Вне такого общего подхода разрабатывать эти направления будет сложно. Поэтому я приглашаю всех к диалогу.

Теперь очень кратко о мерах, которые предлагает FAO. Например, с учетом климатических изменений была выработана концепция климатически устойчивого сельского хозяйства. Это концептуальный подход, который также предлагает комплексный учет всех факторов, способных влиять на сельское хозяйство в условиях изменения климата. Предлагается и практическое руководство к действию, которое размещено у нас на сайте.

Второе — это налаживание международного сотрудничества и обмен опытом в области контроля и борьбы с болезнями растений и животных.

Третье — устойчивое использование природных ресурсов, задействованных в сельскохозяйственном производстве, рыболовстве и лесном хозяйстве. Были разработаны добровольные принципы ответственного использования земель, ответственного ведения рыбного и лесного хозяйства. Сейчас идет дискуссия по поводу ответственных принципов инвестиций в сельское хозяйство. Это также одна из принципиальных тем для нас.

2014 год объявлен Международным годом семейного фермерства. FAO как организация не является противником каких бы то ни было видов производства.

C. Robertson:

We gave each person two or three minutes; you have had two or three minutes as well. We have only about five or ten minutes remaining, and I would like to be able to bring everybody back in, if that is okay. Is there just a final point you would like to make?

B. Рахманин:

Семейное фермерство — это важный институт, который не только позволяет сельскому хозяйству быть гибким, но одновременно играет

важную роль в поддержании социальной стабильности и общественных, культурных ценностей. Большое спасибо.

C. Robertson:

Thank you very much. I was just interested to come back to the point made by Mr. Vergheze. What has struck me, however, from Mr. Sheps, from Mr. Guimarães, and from Mr. Zlochevsky was that science is helping provide solutions and innovation. I might be too optimistic, but my sincere hope with regard to food security issues is that it will be science and innovation that will address some of the concerns you raised, akin to how shale gas, which has very much helped the United States of America, is a result of science and innovation processes.

S. G. Vergheze:

I want to share that optimism, but if you look at the total amount of money that is being spent on agricultural research, it is less than USD 4.5 billion annually. Estimates state that we need at least USD 50 billion to find the next productivity breakthroughs. We have already picked all of the low-hanging fruit.

We spend USD 1.6 trillion globally on defence budgets, but we are not able to find USD 40 billion or USD 50 billion to invest in improving productivity on a sustainable basis. I am not talking about increasing production at any cost; but increasing production in such a way that you can have a sustainable future. I am not optimistic about that.

E. Guimarães:

Mr. Vergheze, may I? I think the facts are not new, it is the awareness that is new. This is indeed a major issue that must be addressed, but every single one of us has to contribute a little bit to be able to solve the issue overall.

I do not have the data that you do. I do not know if the research budget you just mentioned is solely with regard to water and energy conservation, because the issue is not only agriculture, but food processing as well. I will give an example. In the Russian Federation alone we have had up to a 20% reduction in water use in our factories, and up to an 18% reduction in energy use. This is just to say that these actions are part of our sustainability efforts. At PepsiCo, we say that we have performance with purpose, which is what can we do as an organization to reduce the use of inputs in our production. We do that for several reasons. One, we feel it is a moral obligation. Two, it is self-interest, because if you put in less, there is less cost, so it makes you move forward.

I agree with you, we have a long way to go, but I am a bit more optimistic, in the sense that I see a lot of small and larger progress in different areas to be able to reduce the use of inputs in production. I do agree with you, but I am a bit more optimistic.

I. Sheps:

Mr. Verghese, I think what you have said is really provoking and interesting, and you are indeed right. Many people assume that to make one litre of beer, you use one litre of water. That is not, in fact, the case. We use more in our production systems. If you read Carlsberg's annual reports, however, you see that we are very focused on corporate social responsibility. We are actually the world's leading brewer for reducing water use, energy use, and CO₂ emissions across our entire supply chain. To give you specific figures, in the Russian Federation we are actually one of the best breweries in this regard, and have succeeded in using less than three litres of water for one litre of beer.

Of course, we can do more, but I agree with what Mr. Guimarães said that awareness is very much key to these issues. There is a role for technology to play as well, but what is crucial is awareness that there is scarcity and that it must be dealt with.

I would like to mention small technology. You do not need big inventions for what we do in agriculture. You may have heard that Baltika, in the Russian Federation, has committed RUB 1 billion to the United Nations Industrial Development Organization (UNIDO), to invest in environmental projects. There are many projects, but in one leading agricultural project, Baltika is paying to put special Internet-enabled sensors in fields to measure climate. By having this data, farmers will be able to better manage their water use, their fertilizer use, and so on.

These are small things we can do. If I may end on a different note, however, what you said is very true. We must give due concern to what will happen when Chinese people begin to increase their consumption of protein.

S.G. Verghese:

I will just make one very quick point. We have all been affected by the global financial crisis in 2008. The estimate is that the global financial crisis cost the global economy USD 3.4 trillion. Three thousand companies in the world every year are depleting USD 2.4 trillion of natural capital. The estimate is that, globally, we are depleting natural capital between USD 3 trillion and USD 4 trillion annually. Why are we not concerned by this fact? Why is the world not preoccupied by the fact that we are heading for an environmental disaster, but rather being complacent about it?

C. Robertson:

Primarily because people like me had never heard of the term “natural capital” until you mentioned it on this panel. If I had not heard about it, I think it is not a term that is sufficiently well known. It is a really interesting concept, and I shall look into it, so thank you for educating me.

Mr. Zlochevsky, just to focus a little on the Russian Federation, if we may. The improvement in Russian agriculture has surprised me. It has been impressive,

and I am pleased to see it. Is there anything that you think the government can do more to support Russian agriculture? It sounds like businesses are doing a good job supporting Russian agriculture, whether it is Carlsberg or PepsiCo, or even METRO. I am interested, is there something the Russian Government should be doing that you would like to see?

C. Robertson:

Thank you very much indeed. I must stop now as it is time to break, but I will make a few closing remarks.

First, I think there has been an impressive recovery in Russian agriculture. It is surprising that PepsiCo, METRO, and Carlsberg source so much of their own production from here, and that does help with food security. Education has been very helpful. Science has played a huge role. Lastly, we are going to need to do much more, and perhaps get many more resources, if Mr. Verghese and all of us are going to feel more comfortable about the future.

We have also learned that beer is the healthiest thing you can drink, so stop exercising, drink more beer and all will be well. Thank you very much for your time. I very much appreciate your attendance. Thank you to the panel.

A. Злочевский:

Прогресс здесь достигнут на базе нашего основного ресурса, а это не земля и не вода — я имею в виду в количественном плане. Это запас питательных веществ в почве. Нигде в мире нет территории с таким же запасом питательных веществ, при этом сегодня мы их просто выкачиваем. Ученые говорят о том, что это опережающее истощение почвенного потенциала, и мы неизбежно придем к краху. Я ни в какой крах не верю. Мы все восстановим, хотя для этого требуется время. Но в правительстве и в государстве в целом пока нет понимания, что в поддержке сельского хозяйства как института и как отрасли необходимо в первую очередь делать

акцент на восстановлении именно этого нашего главного конкурентного преимущества. Я надеюсь, что в скором будущем ситуация изменится, и мы направим поддержку в первую очередь в эту сферу, а не на слабые предприятия: именно такого рода поддержка оказывается сейчас, в то время как концентрировать ее необходимо на восстановлении конкурентных преимуществ и технологическом развитии.

Ч. Робертсон:

I'd like to give one final word to Mr Guriev. I was just wondering if there is one single thing the Government could do that would be supportive, in your view.

А. Гурьев:

Я продолжу мысль господина Злочевского по поводу того, что может сделать государство, чтобы поддержать область сельского хозяйства. Я не случайно привел в качестве примера количество удобрений, которое сегодня вносится на гектар земли. Это 38 килограммов. В советское время было 100 килограммов на гектар. Удобрения — это те питательные вещества, которые дают хороший урожай, мы это прекрасно понимаем. Я не просто так говорил о том выдающемся открытии, которое Габер и Бош совершили 101 год назад. Без него мы сегодня все бы умерли с голода: без изобретения удобрений, без понимания, как их правильно использовать, не было бы семи миллиардов человек, которые живут сегодня на планете Земля. Это однозначно ключевое положение сегодня. Отсюда проистекает все, и правильное интенсивное земледелие, которое сегодня мы наблюдаем в европейских странах и в США, — лишнее тому подтверждение. Мы можем просто сравнить урожайность у них и у нас. Хочу продолжить тезис господина Вергезе по поводу Индии и Китая. Индия обладает гораздо большим количеством земли, которую можно вовлечь и которая уже вовлечена в сельское хозяйство. Сравните урожайность в Китае и в Индии.

Китай вносит 120—130 килограммов удобрений на гектар. Индия же практически ничего не вносит, хотя сегодня является чистым импортером удобрений и обладает большим потенциалом земли. Это сравнение показывает нам, что небольшое смещение в сторону правильного, научного землевладения может дать огромный всплеск урожайности в странах Азиатского региона и особенно в России. Если правильно вносить удобрения, урожайность можно увеличить в три раза. Как государство может нам в этом смысле помочь? Мы сегодня переходим на погектарное субсидирование фермеров. В Европе, в Германии и во Франции, субсидия составляет 300 евро на гектар. В России — от 5 до 10 евро на гектар. Как экономист я готов говорить об эффекте низкой базы и о том, что нас, видимо, ждет колоссальный рост с этой точки зрения. Но здесь мы должны все собраться, внести каждый свою лепту — и государство, и мы как производители удобрений, и фермеры — и создать правильную научную базу, финансовую инфраструктуру, дешевые «длинные» деньги, гарантировать фермеру покупку урожая, захеджировать его риски. Это огромный спектр проблем, которые мы должны решить в ближайшее время. Сегодня сельское хозяйство Российской Федерации — одна из отраслей, которым уделяется меньше всего внимания. Спасибо.