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Russia's New Horizons

**ACCESSIBLE GRIDS: AN ATTRACTIVE INVESTMENT CASE OR SOCIAL
INFRASTRUCTURE?**

Russian Grids Roundtable

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11:45–13:00, Pavilion 3, Amphitheatre

St. Petersburg, Russia

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Moderator:

Maria Stroeve, Anchor, RBC TV

Panellists:

Oleg Budargin, General Director, Russian Grids

David Fass, Chief Executive Officer for Europe, Middle East and Africa, Macquarie

Alexey Matveev, Deputy Chairman of the Management Board, Gazprombank
(Open Joint-stock Company)

Henri Proglio, Chairman of the Board of Directors, Chief Executive Officer,
Électricité de France

Hans Joerg Rudloff, Chairman of the Management Board of Investment Banking
Division, Barclays

M. Stroeva:

Good afternoon, ladies and gentlemen. Thank you for coming here today.

Allow me to introduce the participants of today's panel discussion, which is called 'Accessible Grids: An Attractive Investment Case or Social Infrastructure?' Electrical grids have become one of the most important factors in a country's economic development. They regularly create news for journalists and are the subject of discussion in all types of media. The current state of the global economy means that the condition of its electrical grids is one of the most important problems for any country.

Yesterday, I interviewed the Minister of Energy of Russia. We talked about what is in store for Russia's grids in 2013, and in the near future. Oleg Budargin undoubtedly knows more about this. But before giving him the floor, allow me to introduce the participants in today's discussion. Starting with Oleg Budargin, General Director of Russian Grids; Alexey Matveev, Deputy Chairman of the Management Board, Gazprombank; Mr. David Fass, Chief Executive Officer for Europe, Middle East, and Africa, Macquarie Group; Mr. Henri Proglio, Chairman of the Board of Directors and Chief Executive Officer, Électricité de France; Mr. Hans Joerg Rudloff, Chairman of the Management Board of the Investment Banking Division at Barclays; Mr. Vladimir Fortov, Academician and Doctor of Physics and Mathematical Sciences, President of the Russian Academy of Sciences. Today Mr. Fortov was awarded the Global Energy Prize, an international award. Let us congratulate him. Finally, we have Vyacheslav Kondratyev, Chairman of the Board, NP Market Council; and Karlheinz Springer, Chief Executive Officer, Siemens Power Transmission Division.

Let us begin the discussion. Oleg Budargin, you have the floor. Who would know better than you what the future holds for Russia's grids? I think that after that we will discuss international grids.

O. Budargin:

Thank you very much. First, I would like to greet our partners and friends who are attending this round table as well as those sitting in the audience who are also participating in the discussion.

Indeed, our friends and partners are here today. Much has been done to make Russian Grids possible. This month we completed the creation of all of the management structures. At the end of the month there will be a Russian Grids shareholder meeting, at which all of the members of the management bodies will be elected.

What goal have we set for the company during its first stage of development? Starting on day one, the most important thing for us is to win consumers' trust. We understand what we have to do to achieve that goal, but it will not be easy due to the deterioration of the grid network. It has not been modernized, and it is not reliable enough to meet the needs of consumers today. We must all win consumer trust by ensuring reliability, maintaining quality, and setting reasonable prices for electricity transmission. That is why the programmes that were previously put in place need to be adjusted now that other solutions to the problem have emerged. We have been working with energy developers and the Federal Grid Company, and we understand that energy transmission in the long term will use advanced technology.

We are going to invest further in the development of applied sciences and implement projects jointly with our international colleagues. We have joint projects with companies whose representatives are here today. First, we must prove to the consumer that Russian Grids is the only company that can provide high-quality products and that the price for our product is economically justified.

M. Stroeveva:

Thank you very much.

That is a significant challenge. It is impossible to win consumers' trust if you interrupt the grid's operation while modernizing and introducing something new. The

grid should always be on! At the same time, companies need funds to grow. These funds should not be taken from consumers' pockets.

A company should also be attractive to investors. You need to attract investors and show them that there are clear, binding rules for everyone, including suitable investors. It is an extremely difficult task, and I would like to hear a suggestion about how to solve it. Perhaps Alexey Matveev would like to say a little bit more about this?

A. Matveev:

I will answer the question about where to get the funds and whether they, in fact, exist. In our opinion, funds do exist. Today, there is no shortage of resources in the banking system (at least we have not noticed any).

What about Russian Grids? If you take the corporate group as a whole, then it is perfectly clear that it is one of the most reliable borrowers today. If we are talking about financing through loans, then there is definite potential for this to happen. The bank looks at the ratio of debt to the borrower's EBITDA. Russian Grids' ratio is less than three. As far as I understand it, the company's leadership does not want to allow it to go higher than three, so that it does not jeopardize its credit rating. Similar companies abroad have a ratio of 4.5. So, the organization does not have excessive debt.

But if we are talking about how it is going to attract additional financing from private business, the issue is not whether its debt-to-EBITDA ratio is 3 or 4.5. The issue is about increasing the company's efficiency because unfortunately, tariff regulation in the sector today does not push companies to improve their efficiency. Almost everything a company saves as a result of increased efficiency is in practice seized the following year. We will come back to the topic of EBITDA, which creates limits on lending.

M. Stroeveva:

Since we are already talking about private funding, which is badly needed, I would like to remind everyone that a programme to develop Russia's energy sector has been adopted by the Government and envisages allocating most of the funds through private investment. Attracting these funds is a serious challenge.

Go ahead, Mr. Rudloff.

H. Rudloff:

Good question and you put it in your script the right way. I think the question is, really, how big is the involvement of the government? How are the companies in the different countries structured? With the international market, there are lots of experiences with different concepts, different structures of infrastructure companies; it is long term. The nature of these investments is always long term by definition. Huge amounts which do not always fit normal criteria are needed, and therefore, the main question will remain, what role is the government playing? Is the government just a regulator that sets the framework of how things should be done? Is the government a majority owner? Is the government fixing and setting fixed returns? Is the government a referee between the prices which the consumers are being charged and eventual returns to shareholders, if they are private shareholders, or will there be more debt financing? These questions have been answered in the past in different ways and in different forms. We have with us the Chairman of EDF. EDF went through one of the biggest investment programmes in the 1970s and early 1980s, and they had a structure and a form, basically is the French government guarantee, which allowed massive financing, and over time, in the future, certain privatizations etc., were made possible. But the question of what to do and when to privatize, and when to bring in private capital of natural monopolies is a major question, which countries very often answer differently. There will always be money available for state guarantees, state ownership, or state participation in these companies, but investors will look very carefully at how the company is structured, what their regulatory environment is, and unlike in an industrial corporation, they will not look for natural financial growth, they will look much more at credit questions, as

well as maybe pre-determined and very visible earning streams or interest payments and returns. That will be the major question. But money, long-term money, in the bond markets for infrastructure projects is unlimited, virtually, and remember, I mentioned EDF, but I can mention Hydro-Québec, which did the St. James Bay project, which in those days was the biggest project where they borrowed unendingly, because it was structured in the proper way. And the same is true for today, and the same money is available for any emerging country or any country like Russia, without any problems whatsoever. On the equity returns, I think the infrastructure funds have a much better answer than I do.

Maria Stroevea:

Thank you very much.

The question of when to make those crucial decisions for the industry is really interesting. Every country responds to them differently, depending on how much the state of the sector influences the development of industry and the economy as a whole. I have always thought that in these circumstances, I put our guests in slightly awkward positions: it is as if they need to teach Russia something, but really, that is not the case at all. In this case, it is very important to compare the experiences of different countries, which have led them to come to certain conclusions. It is unlikely that you can just copy successful projects from other countries and implement them in Russia. Perhaps, there are several reasons why it would not work, and it is not necessary anyway.

I would like to give the floor to Mr. Proglia.

H. Proglia:

The major question you raised is, first of all, how to finance huge investment for long-term infrastructure projects? And secondly, how to make it possible that these major investments do not drive into tariffs so that the affordability for each and every customer remains possible? Most of the huge investments that have been realized during the last century, the 20th century, regarding networks and the generation

capacity, whether it is hydro, like in Canada, or nuclear, or whatever, were at a time when the states were either the major shareholders, or did it them by themselves. Now we are in another economy, most of the investments have to be funded through international financing, infrastructure funds, investors, and so on and so forth. So the question remains, that to make it possible you need first of all skilled operators that have the expertise in designing, building and operating these major infrastructures. The number of these operators is not unlimited; there are a few very skilled major operators in the world in developed countries, able to develop such programmes. We can focus on, for instance, nuclear and hydro in terms of power generation developments, or on the other hand in the networks, for instance, like setting the example of the smart grids that everybody in the world wants to develop today. Smart grids mean major investments in renewing and upgrading the grids. If I just focus for one minute on the French example, we are developing a project in the smart metres today. The investment linked to this development is in the range of EUR 6 to 7 billion just for France, which remains big money. We develop an expertise and try to make it free for the customer, which means that this investment has to be conceived in such a way that its standard level investment matches the requirement for return on investment. First of all, by avoiding energy waste, and secondly by limiting the costs of measuring consumption. Without the grids it has caused a lot of displacement of people, and so on and so forth. So overall, our goal is to make it possible to develop this huge investment without any payment from the customer, and make it possible to have a return on the investments so that we can borrow and fund these investments from the available funds. If I may, the returns should be in the range of 8–10%, which makes it possible to fund it without any pressure on tariffs. So this is how we intend to develop the project. Now, if we extend the question to renewable, for instance, then we could talk a lot about this, because most of the renewable countries today did it through subsidies, through public funding, which, in a way, destroys the market, as such, and makes it very difficult, for the time being, for all the operators to find some kind of return on investment on the developments, for instance, generating new capacity. If you just

focus on the price of energy in the market today, you find that the price is so low that it does not give you the opportunity to build any infrastructure in generation. So this is a point that should be discussed at the European level.

M. Stroevea:

Thank you very much.

I would like the audience to know that if you have an important question you would like to ask the participants in our discussion, feel free to raise your hand. Thank you very much. Mr. Fass, this next question is for you. When creating or modernizing any grid, a choice has to be made between making it as technologically advanced as possible or creating something simpler and more modest, but in a shorter period of time. This is a choice that every company and country faces. In your opinion, what is the best approach to solving this problem?

D. Fass:

Good afternoon, and thank you for the question. I do not know whether there is one solution for all, as you ask in your question, but trying to loop together a few of the themes that we heard here today, I would concur in one of the things that all you here in Russia should be confident of is that the private capital in the international community, from an infrastructure desire perspective – the big pension funds of the world, the big insurance companies of the world, the large long-term investors of the world – have much experience in investing in these types of projects and investing to make these types of grids more effective, more efficient and help to satisfy the needs that Russian Grids has put forward, as far as what they are trying to achieve. So I think, as far as you evaluating how you would like this to develop in your country, you should start first with the confidence that there is capital available in the world to help you grow. I think one of the real challenges, which I have picked up on over the last couple of days here and through studying the industry, that the international investment community has about putting more money here is around the stability and clarity, through time, of the different regulatory regimes that exist

with respect to offtake agreements, construction contracts, ultimately the tariff regime, and I think that the thing that really should be at the centre of the debate is how you can convince the outside world that that stability and clarity of the regulatory regime is going to be here for a long, long time. And, as everybody has talked about (references were made to the 1970s), this is a long-term business. The investors around the world are looking for long-term investment opportunities, and by long-term I am talking about decades; I am not talking about whether the market was or down by a few hundred points yesterday. So, what is going on? This intermediate instability that people are recognizing is a speed bump in a very, very long road. So I think you should have that confidence that the capital will flow. I think what you have to demonstrate, or debate whether you want to demonstrate, is that clarity of regime, that clarity of purpose, and that very, very clear desire to have a partnership with the international investment community to help you achieve the ambitious goals that you have.

M. Stroeve:

Incidentally, we are already discussing this. It is one of the steps that Russia is currently taking.

Just before the debate, I met with the United States Under Secretary for International Trade. He said that he had heard through the grapevine that next year's Forum will have more American participants. "We are learning more and more about this market, and we are interested in it", he said. That is how we must convince investors. One person comes and likes what he sees, and others follow.

A few years ago, major private investors who came to the Russian energy sector were not happy about the constantly changing rules. Based on government decisions, the situation has changed drastically. Vladimir Fortov, this question is for you. How can we get investors interested now, and how do we work with them? In your opinion, what challenges does Russian Grids face, taking into account the difficult situation they have with investors because of the tariff system?

V. Fortov:

You are right. It is a difficult problem.

I would like to focus attention on another aspect of the business. Russian Grids faces the problem of attracting investors and their returns, but that is not the only problem. It needs to drastically modernize. It is no secret that, for obvious reasons, the equipment is quite outdated. Of course, investors should pay attention to this aspect since the industry, in its current state, needs new solutions and requires large-scale modernization. Maintaining the minimum acceptable level of quality for the grids is not the only goal. We need to replace retired capacity while at the same time continuing to develop. The topology and structure of our grids means that in many places you need to increase capacity for energy transmission from one area to another. The leadership of the Federal Grid Company is aware of this. They understand what the outlook is and what investments need to be made.

There is another problem. We should be constantly looking for new concrete solutions to develop new technology and not just buy new equipment. Although, in some cases, that may be the correct course of action. Today, science offers fairly interesting solutions that have not been used before. I will not go into the details, but I think that investors can look at the industry from that perspective as well. It has been noted that long-term investments are reliable, and that is why investors will come into this industry. But electricity is high-tech, and any high-tech investment carries risk.

If an investor discovers a new technology and determines that it is promising, he may take a risk and earn an unstable, long-term income. The gains associated with the discovery are similar to what occurred with IT technology fifty years ago. The revolution is imminent. I think that is one more unique feature of our electricity market.

Thank you.

M. Stroeveva:

Thank you very much.

The analogy to the IT industry is very interesting. The solutions developed in that industry are, without a doubt, required in the creation of smart grids. The Russian IT market has grown and is continuing to grow, and the rate of growth makes it very attractive to investors. Many of our corporations were and are extremely cautious in implementing IT solutions because it requires a one-off investment of funds. Business leaders do not always understand that those funds can be recouped very quickly.

With regard to Russian Grids, another problem arises. Certain technological innovations make it more difficult for the grid to operate, and as we have already said, power should not be interrupted. When Oleg Budargin and I were taking part in similar discussions a year ago, we talked about how we need to be careful when we introduce new technology, and not move too quickly: we should not compromise the integrity of the grid.

Did I understand what your point was, Mr. Budargin?

O. Budargin:

Henri Proglio has already talked about smart grids and active adaptive grids. With help from the Academy of Sciences, we have started to employ new technology in our grid complex, but there can only be an effect if the technology is introduced over a vast territory. You cannot build smart grids only in the Far East: the effect will be insignificant. In today's world, we are convinced that creating smart grids in a single country will not have the required effect. That is why we have to actively cooperate with our foreign partners, not just with manufacturers of electrical equipment, but with companies that operate power grids in Eurasia. We are discussing the opportunities for creating next generation grids across the whole continent. That topic is the subject of lively discussions at forums, including this one. Our Chinese partners and Électricité de France are actively working with us. We even entrusted the latter with operating part of our grid network because with different financial circumstances, our French colleagues can suggest new ways of managing the grids. We have to move forward.

I am not talking just about Russia. Globally, the power industry is going through a period of modernization on a huge scale. Perhaps we are more in need of modernization because the grids reached a critical level of deterioration in the 1990s. We need to simultaneously ensure availability, reliability, and the accelerated development of power grids in Russia. In addition, we need to have economically justified tariffs. As I have already said, our main goal is to win consumers' trust. There was a serious discussion when Russian Grids was being created about what needs to be built, what does not need to be built, how to build it, and what is the basis for building it. The fact that Russian Grids was created on the basis of the Federal Grid Company puts great responsibility on us. Perhaps consumers saw that we were making progress in reaching the five goals that I mentioned. Now we are talking about society's trust and consumers' trust, without which it would be very hard to do anything.

It is very important to maintain the level of investment in this industry. Significant technological infrastructure has been developed in anticipation of this investment. I see representatives from many companies in the audience, both Russian and foreign, who have started manufacturing in Russia over the past four years. About 80 Russian companies have done this. We need long-term, stable programmes, for both large and small projects. Only then can we find the right solutions for all the remaining goals. We need to plan the amount of investment, new construction, and level of modernization in the industry.

The first phase, which will last two to two-and-a-half years, will be the most difficult. We would like to achieve all five goals within this short period. That is not easy. But the main thing for Russian Grids is to win the trust of the consumer and our partners.

M. Stroevea:

Thank you very much.

Michael Kubena, the CEO of PwC Central and Eastern Europe is here with us. I have a question for him. Just two days ago, the Russian Minister of Energy talked

about how, by the end of 2013, there will be a new system for evaluating the performance of Russian power grid companies. That is another step towards establishing clear rules for the market and increasing the attractiveness of grids for investors.

In your opinion, what other steps should Russian Grids take in this direction?

M. Kubena:

I think, in terms of some of the comments that have already been made, it is very clear that we are looking at a massive investment requirement over the coming years, and we also hear that the funding opportunities are actually there, but they are going to be selective. There is going to be a challenge in terms of actually attracting funds and presenting the best opportunity. So I think, from my perspective, the one thing I can think to add is that a key element of actually being successful at attracting funding will be around the topic of governance and the ability to actually communicate – whether it is to your stakeholders at a public level, the consumers, or your investors – the confidence that the funding will be used as effectively as possible. So I point first to quality of information. The quality of information that is available from both an operational perspective as well as looking at economic models. There is going to be a lot of complex decision-making in terms of where to place the investment money in the future, so having the right models and making those transparent is going to be critical. Financial data, obviously coming from my background, is something that we think about. The quality of financial data and the underlying systems will be critical to actually achieving the transparency that is going to be necessary to absorb and utilize the funds, and communicate back to the investors, the government, and ultimately to your stakeholders that they can be confident that the funds are being used efficiently. And then maybe the last point I would make is that, ultimately, the challenge is going to be to, as was described earlier, to execute projects where the projects are essentially self-funded: either funded through energy efficiency, or funded through cost reductions elsewhere. And again, that will require an incredible degree of

effectiveness in operation. So lots of effort will be required in terms of looking at the underlying operational procedures.

M. Stroeve:

Excuse me, but before you sit down, I would like to ask you another question. We are talking about self-sufficiency and efficiency. What period are we looking at to achieve those goals if conditions are good and we take the right steps?

M. Kubena:

To be honest, if I could answer that question, I would probably be in a different job. It is impossible. I think the challenge is to take first steps, and actually this conversation points to a lot of constructive steps that could be taken, both in terms of identifying and communicating the requirements to move forward, and then hopefully coming out with a real operational plan. Attracting USD 70 billion is a big task, so how quickly we can become self-sufficient to support that is going to be a challenge.

M. Stroeve:

Thank you very much.

I would like to hear from Karlheinz Springer, Chief Executive Officer of the Siemens Power Transmission Division. A lot depends on the equipment manufacturers. What do they expect from grid modernization? What steps are important for them? What rules should apply to the market? The choice between accessible grids and the latest modernized, high-tech grids has an impact on equipment manufacturers.

K. Springer:

So the challenges of how to increase accessibility of the grid were clear from the panel. So I believe we, as suppliers, have to take the responsibility, and I will come to that. First, on the challenge of the energy grid: how to modernize it? We have provided the newest technologies, transferred even that new technology to Russia

and manufactured it there, and the government has to help us on import tax, on building up our infrastructure here, and therefore, it is important that we take that challenge as suppliers, and as Mr. Budargin said, we have an ageing grid so we have to go for modernization. So we agreed on two regions as pilots, where we showed our contribution, including St. Petersburg. It is not only to analyse the existing grid, but also to give some indications and directions on how can we improve the availability in those regions, and how we can provide financing for the projects. Then we come to the second challenge: financing. The financing investors are always asking about security and how to make long-term financing happen, which are important questions. And for that, we, as suppliers, also have to contribute with reliable data and with reliable lead times. We have to stick to what we promised, if we execute a project, so that you get the security for your financing, at least on the execution time. And the third one is the government. The government also has a challenge because they have to secure affordable energy, which means tariffs for the consumers. On the other hand, they need investments for that, but to secure the tariffs, it means they also need suppliers who are manufacturing locally and able or willing to do local investment in Russia. We took that challenge years ago and contributed with local investments of one billion here in Russia, with a lot of factories. In the end we will be paid back for that. Therefore, that is a request we took, and there is a duty for us to go further. Now here to your question: how long does it take to make an accessible grid happen? I also do not have the answer, but I can say I believe it is not a 100-metre race; it is more of a marathon. We have all the stakeholders here on stage, including us, Siemens, as the supplier, and we have to find the common target, and find the solutions together in order to achieve that target, in hopefully not a marathon but a 20-kilometre race. Thank you.

M. Stroeve:

Thank you very much.

I would like to know how Schneider Electric deals with this. Jean-Pascal Tricoire, the company's CEO is here in the audience. Schneider Electric is one of the major

suppliers of equipment for the energy sector, and we are definitely interested in the opinion of its leader on this issue.

J.-P. Tricoire:

There is probably not much to add to everything that has been said. The panel has explained very well how the work of utilities has become increasingly complex over time, including multiplication of sources of generation, especially with renewable energy, but also public expectation is growing. Plus, now, there is also the notion to bring energy efficiency to many of the users. I believe there are two points that I would like to mention. First, we are in Russia, and I have a lot of sympathy for what is happening in Russia because Russia has its own characteristics. It is a huge country with climatic conditions which are kind of extreme, and an infrastructure inherited from the past, in a fantastic transition of society. The infrastructure is sometimes aged and needs very specific attention. There is, however, one good bit of news here, which is that sometimes there is an advantage to a late-mover to benefit from the new technologies. Here, the major technology revolution that we see today is a smart grid on the capacity, so we are to connect all the systems from the power plant to the plug, and for the first time probably in our history we can, on a wide scale, connect the consumer to the characteristics of the generation. What we need is really everything that was said. We need a clear, stable environment for utilities but also for manufacturers. I really believe we need even more cooperation between all of us, because utilities know very well all the problems of managing that complex network, and suppliers know the technologies that they can bring to support that. I really believe that experimentation is an important thing. It is good each time we can do a pilot project, where we can test those new technologies. Then if it is successful, review it for more pragmatic ways of doing things and scaling up, because the original plans are not always the correct ones for the future. So we need a lot of cooperation, a lot of experimentation, and we have a lot of possibilities thanks to new technology.

M. Stroeva:

If you have any questions for the speakers, please raise your hand.

A. Chuvaev:

Alexander Chuvaev. I represent the Finnish energy trust Fortum, one of three foreign investors that have entered the Russian energy sector.

My questions are addressed to Oleg Budargin, and also Vyacheslav Kravchenko, the Chairman of NP Market Council. It is known that currently, the grid component of the tariff makes up 45–46% for industrial end-users. It is also well known that in countries we are competing with, that figure is different (somewhere around 25%). Without a doubt, those statistics are somewhat misleading. You cannot directly compare them since the price in the wholesale market is two or three times less here than it is in Europe or the USA. Nevertheless, transmission tariffs in absolute terms are already higher for us than they are in Finland, France, and Germany. Next year, when the price is increased, it will be higher than in the UK, Italy, and almost twice as high as in the US. With such an expensive grid component, manufacturers and electricity consumers who are served by the grid may be tempted to generate their own electricity. For example, we are building power stations, and as we are doing so, it is more profitable for us to build auxiliary power stations for our manufacturing than to buy electricity from the grid.

My question for Oleg Budargin is this: how are you going to support the market that has developed? And the question to Vyacheslav Kravchenko is this: how are you going to support unity in our energy system?

M. Stroeva:

Before you answer those questions, I want to point out that the measures set out by the Russian Minister of Energy are aimed at changing the grid component. They include consolidating the grid companies, public consultation, technological and price auditing of investment programmes, and strengthening price regulations for standard technological solutions.

A. Chuvaev:

I am sorry. I asked whether...

M. Stroeva:

Go ahead, Oleg Budargin.

O. Budargin:

That is a good question.

My answer is as follows. This year will mark ten years since we started reforms in the power industry. Unfortunately, those reforms were primarily about electricity generation. The main task during those ten years was to support electricity generation, particularly in the private sector. The problems that the grids face have not arisen recently; they appeared when the current regulations were introduced.

That is why it is necessary to have a serious discussion about the results of the reform in the electricity industry, including regulatory asset base (RAB) principles. Today, the grids that operate under RAB principles are at a disadvantage compared with electricity generation companies. Under no circumstances would I want to put the blame on others, and I would be very careful stating those figures that you yourself said were misleading.

A. Chuvaev:

Investors always find a place to invest their money. Even power companies are better off having their own electricity generation, not to mention industrial consumers. I am not talking about power industry reform. I am talking about investor appeal.

O. Budargin:

At the very beginning I said that right now, it is important to win consumers' trust with whatever we do. You have asked the right question. We understand that we

need to explain to customers why our work costs what it does. You cannot forget that the population's living standards depend in large part on energy consumption: that social component is also very important.

As for regulation, this is not a question for companies, but for the government bodies that regulate the price. In 2010, the regulator developed a five-year action plan for us and made the relevant decisions regarding tariffs. Unfortunately, three years into implementing the plan, the pricing decisions have changed four times. Of course, that influences the quality of our work.

But at the same time, we need a smart consumer. This year, 23% of those who submitted an application to the Federal Grid Company to connect to the electrical grid did not fulfil the requirements from their end. That means that the power grid company wasted its money in vain. The applicants did not fulfil the requirements in 47% of the applications that the distribution grid companies received. That is why it is necessary to find out who is responsible.

Thank you.

M. Stroeve:

Do you have a microphone, Mr. Kravchenko? Go ahead.

V. Kravchenko:

Mr. Chuvaev is partly right. Unfortunately, many consumers decide to set up their own electricity generation facility. That should worry both generating and grid companies. That is why Oleg Budargin is absolutely correct in saying that grids need to fight for the consumer. A decrease in the amount of useful output hits the grids first. It is clear that if revenues fall, maintaining the existing infrastructure will be very difficult.

I can only wish good luck in this fight. I hope it can be won. If we fail, then we will have a slightly different system that is more decentralized with slightly different dispatch control, and a different configuration of power generating companies. I would like to talk about what measures need to be taken to preserve the existing

technology system. I am not talking about economics, just technology. Perhaps the issue of banning construction of distributed electricity generation will be raised, and so on.

But that is a dead end. The only sensible, correct position to take is to increase the operational efficiency of grid companies as much as possible: not just Russian Grids but the rest as well. The measures that were proposed are for the most part correct, but I think that implementing them greatly depends on what actions the authorities take.

So, let us remember the name of this session. What do we need most, social infrastructure or commercially attractive infrastructure? I think that the state should work out what it really wants before adopting regulatory measures. You cannot demand reliability, availability, and quality if resources are limited. If the goal is to make sure all this happens, then the following objection will be made: find us a source of money because it will not just appear out of thin air. The situation is just like the situation with discounted connection rates. The cost, where there is maximum electric power of up to 15 kilowatts, is a comical RUB 550. Attempts to compensate for all of the company's lost income are made through transmission tariffs. So it turns out that the connection discount is paid for by all those present here. I think that these imbalances should be eliminated. That is a rather complicated task. I do not know if I have answered your question.

M. Stroeve

Actually, we are busy in search of these solutions.

O. Budargin:

I would like to say something else. One of the main reasons for consolidating the grid complex and creating Russian Grids was the loss of consumers by the IDGC holding over the last five years, which cost USD 5 billion yearly. There are numerous local grid companies. They say there are about 6,000 of them, but no one

has counted an exact number because they grow like weeds, and there would be overhead costs, management costs, etc, involved in doing that.

Russian Grids also needs to work on lowering operating costs. Today, there are more than four management teams standing over each executive. That all has an effect on how much our work costs. In the near future, we must reduce the number of those agencies, which would cut operating costs by about 15%. We must establish rules of conduct in the grid. That also influences the cost of our product in all grids, both public and private. We should increase planning efficiency, and efficiency in the development and implementation of investment projects. We invite our colleagues and international experts to take part in this work.

Today, we have agreed with the Russian Direct Investment Fund that before getting actively involved in investment projects and modernization programmes, we need to quickly work out who, when, and why we are making these decisions. Who is producing the investment projects? Who is ordering them? Who is implementing them? How much will it cost?

And, of course, the grids will fight for work. That is a global practice. In Russia today, generating companies are engaged in sales. Grids also have the right to get or retain this work on a competitive basis. The state has instructed us to start working in 12 areas, and we are succeeding in doing that. We have a 100% collection rate and have even managed to settle debts which arose before we were created.

Today we are talking about the next generation power grid. It is not just the equipment that we need to update, we need a new generation of energy developers. We need to change our very attitude towards the grids. Tariffs that are under cost pressure from investment programmes should be reviewed.

We should change the mechanism for making decisions. Today, local grids are regulated at the local level, and there are different approaches everywhere. There are seven approaches across the country for the same voltage class. State grid financing in a region based on a standard unit may be four times less than private grid financing. This needs to be fixed. We do not want all of the country's grids to be

managed by one company. We want all the grids to work under the same rules. Then there will be fairness, and we will have a true market.

Thank you.

M. Stroeva:

Thank you very much.

I would like to remind everyone to raise their hand if they have a question.

V. Kondratyev:

May I?

M. Stroeva:

Yes, go ahead.

V. Kondratyev

Vyacheslav Kondratyev. I have an unusual question for Vladimir Fortov. The young people at the Moscow Institute of Physics and Technology want to ask you if the grid is an interesting subject for intellectual investment? Any financial investment is accompanied by intellectual investment. Today, is Russian Grids like space, quantum mechanics, physics etc.? What is your opinion?

V. Fortov:

Thank you for the question. I will gladly answer it.

In my opinion, the current phase, where smart grids are being developed, creates an interesting opportunity for young people. Why? It is always more interesting to do something new rather than something routine, especially when you are getting teams together from different fields of science and are achieving concrete goals. Energy is good because it is a long-term venture. A person going into the energy sector does not have to worry about being out of work. If I were half my age, then I would definitely work on energy projects. You will find economics, management

theory, pattern recognition theory, physical diagnostic methods, information transfer methods, and decision-making using mass-parallel computing in this field. All of these are interesting tasks for physics.

Physics always offers something new. Just two days ago, the St. Petersburg Institute of Problems of Electrophysics tested rotary equipment, and it worked well. These new, unexpected combinations are very interesting.

Yesterday, at the round table that I was at with Oleg Budargin, I said the following: in Germany, people strive to enter the energy sector more so than they seek to go into the economic field, or the law. They feel that there is something new there that is interesting. As Chekhov said, for young people you need to write just as well as you do for adults, only better. And young people know this well. All in all, I am an electricity enthusiast.

M. Stroeve:

Thank you very much.

D. Chagin:

May I?

M. Stroeve:

Yes, go ahead.

D. Chagin:

Good afternoon. I am Dmitry Chagin. I represent the non-profit partnership XXI Century Medical and Pharmaceutical Projects, as well as a medical and pharmaceutical industry and radiation technology cluster.

Absolutely everything that has been said here is correct. I would like to add that when the government resolution on the development of the pharmaceutical industry for the period to 2020 was announced, and I was given the honour of leading the cluster located in the northwest, it became clear that everything depends on the

team and the decision-making. We began to implement many comprehensive projects. Many of them were energy-intensive. For example, there was the creation of a proton therapy centre in St. Petersburg. We went to Lenenergo because it is well known. The decision we made allowed us to reduce the costs for investors. There was a clear statement of how much money was required for the initial stages, for construction, and for the facility to start operations.

Everything depends on the team and on understanding. There is money in every federal programme. Even the Pharma2020 programme offers opportunities to allocate funds for infrastructure solutions. People just have to listen to each other. Mr. Rudloff and I were at the session that Olga Golodets took part in, and we talked about how crises happen inasmuch as there are crises in people's minds. You have to get a good team together, and I am sincerely grateful to Lenenergo's team, with whom we are working constructively in the 'Medicine and Pharmaceuticals of the Future' programme.

M. Stroeva:

Thank you very much.

Everyone is already looking at the clock, but I would still like to know whether it is possible, in current conditions, to reduce the cost of long-term money, which energy developers desperately need. In this regard, Russian Grids is in a more vulnerable situation than electricity generating companies.

Alexey Matveev, go ahead.

A. Matveev:

If you want to talk about the cost of money, we would be here for four hours. Besides, that is another issue.

I will say that there have been a lot of meetings on interest rates and lending recently. Interest rates are determined by the market based on the amount of liquidity, the monetary policy of the Central Bank, and so forth. Russian Grids is without a doubt one of the most reliable borrowers in the country. The bank's

margins are not very large: no more than 1–1.5% APR over a sufficiently long period. That is why everything will depend on inflation and interest rates in the country as well as whether the Government and the Central Bank are prepared to adopt special measures to make it easier to get a return on the funds that are being spent on infrastructure. We are not only talking about electrical grids here, but about railways, roads, bridges, tunnels, ports, airports, and so on.

The issue is very serious. The time it will take for a return on most of those projects will be 10–15 years or more. The market does not have that kind of money right now. But at some point, banks will figure out that they cannot (to use professional slang) transform the short-term into the long-term and finance 10–15 year projects on the basis of annual deposits. That is today's reality. The Central Bank does not offer refinancing to banks for periods of longer than a year.

I would like to speak about tariff regulation as well. I am not an energy developer, and when I was preparing for this discussion, our colleagues gave me some materials. One thing struck me. If I am not mistaken, in 1996 the tariff regulation system in the UK changed: there was a transition to the RAB system. Over ten years, from 1996 to 2005, electricity transmission tariffs declined by half. At the same time, investment increased. That is why there really is a silver lining. Perhaps insufficient investment and poor regulation created a number of opportunities for attracting enormous sums of money (if the right approach is taken and there is coordination between company management and the regulator). And there is no evidence to suggest that this will have an impact on the consumer.

One more thing: I think that we are talking about too many different topics in our discussion, such as lack of investment to enable development, changing Moscow's borders, which, I imagine, caused Oleg a lot of...

M. Stroevea:

Problems and inconveniences.

A. Matveev

Let us say this: it created a lot of unexpected tasks for him. This is a situation in which financing options such as public–private partnerships can be considered, where money is lent without interest. Perhaps there will be direct financing in part by the state. There are a lot of questions, and the regulator has a lot of creative solutions to choose from. Oleg Budargin gave a good example of such a problem: revenue losses are passed onto the grid because the inefficiency of marketing and sales. There is a law about transition periods, but I think that that period has long since ended. Marketing divisions have been passed between hands a few times, and everything is back at square one. It is the same with electricity generation. These problems need to be looked at from a fresh perspective.

M. Stroeva:

Russian Grids has that new perspective because it is less than a month old. Correct? That is why we need to grow and mature. There are many issues, and I hope they will all be resolved as quickly as possible.

Thank you all for attending our panel discussion. Thank you for your attention and questions.