**ST. PETERSBURG INTERNATIONAL ECONOMIC FORUM**

**JUNE 20–22, 2013**

**Russia's New Horizons**

# CHOOSING THE RIGHT PATH FOR ENERGY EFFICIENCY IN RUSSIA

**Panel**

**JUNE 21, 2013**

**09:45–11:00, Pavilion 5, Conference Hall 5.2**

**St. Petersburg, Russia**

**2013**

**Moderator:**

**Maksim Philimonov**, First Deputy Editor-in-Chief, Russian News and Information Agency RIA Novosti

**Panellists:**

**Alexander Chuvaev**, Executive Vice President, Fortum Corporation, Russia Division

**Michael Fallon**, Minister of Energy and Climate Change of the United Kingdom

**Maria van der Hoeven**, Executive Director, International Energy Agency

**Dmitry Konov**, Chairman of the Management Board, General Director, SIBUR LLC

**Alexander Novak**, Minister of Energy of the Russian Federation

**Anatoly Tikhonov**, Member of the Management Board, First Deputy Chairman, State Corporation Bank for Development and Foreign Economic Affairs Vnesheconombank

**Jean-Pascal Tricoire**, President, Chief Executive Officer, Schneider Electric SA

**M. Philimonov:**

Good morning. We will now begin this panel, which is entitled ‘Choosing the Right Path for Energy Efficiency in Russia.’ My name is Maksim Philimonov, and I am the First Deputy Editor-in-Chief at the Russian News and Information Agency RIA Novosti. I will be moderating today’s discussion.

I think few people would dispute that energy efficiency is one of the most important and, at the same time, one of the most underrated topics in both Russian public debate and in the Russian media. Moreover, its potential for the Russian economy across many economic measures is simply enormous. Like many other countries, Russia has recently adopted an energy efficiency programme, according to which energy intensity should be reduced by 40% by 2020. However, there is a feeling that many measures in this area may lose traction or not be implemented as vigorously as the government and other stakeholders would like. Several objective factors are interfering in this process. One of them is the relatively low cost of energy resources in Russia. After all, soaring oil prices in the early 1970s in the West acted as the trigger for the rapid development of energy-efficient technologies. Here in Russia, there is no such factor in play. We have other conditioning factors: inadequate technical regulation and a lack of clear incentives for the public and businesses to improve their own energy efficiency. Finally, the issue that we all have to face: macroeconomic problems. By this I mean the risk of a slowdown in the global and Russian economies, which forces businesses to be more cautious in their investment plans, including with respect to energy efficiency.

We have put together a very balanced panel to discuss all these issues. Allow me to present the panellists.

Alexander Novak is the Minister of Energy of the Russian Federation. We are expecting the Minister to provide some key messages that will allow us to understand what will happen with energy efficiency in Russia in the near future.

Maria van der Hoeven is the Executive Director of the International Energy Agency, which is responsible for developing energy efficiency action plans across the world for countries at the G7 and G20 levels.

Michael Fallon is the Minister of Energy and Climate Change of the United Kingdom. As you know, the UK has been one of the pioneers in the implementation of many energy-efficient solutions. I think that it will be interesting and useful to hear about the experience of the United Kingdom.

Dmitry Konov is Chairman of the Management Board and General Director of SIBUR. As you know, the petrochemical industry is one of the most energy-intensive sectors of the economy, so the views of this business in particular will be very interesting.

Jean-Pascal Tricoire is the President and Chief Executive Officer of Schneider Electric.

Anatoly Tikhonov is Member of the Management Board and First Deputy Chairman of Vnesheconombank, the State Corporation Bank for Development and Foreign Economic Affairs. He is the only representative of a financial institution on our panel and the opinions of our financial experts are very important.

We are also expecting Alexander Chuvaev. He is the Executive Vice President of Fortum Corporation, Russia Division. So we also have energy specialists on our panel.

I will give the floor to Alexander Novak, Minister of Energy.

I would like to inform our panellists about the format. Our panel session will last a little over an hour, meaning that 5–7 minutes have been allocated for each participant. Afterwards, if we have time, we can take questions from the audience.

Mr. Novak, please.

**A. Novak:**

Thank you very much, Maxim. Good morning, colleagues. I would like to thank you all for coming to this panel discussion. Thank you for inviting me.

I think the topic that we will be discussing here is very important for Russia. Yesterday, the President of the Russian Federation once again stated that the main goal for the development of our economy is modernization. We are well aware that modernization and energy efficiency go hand in hand. Energy efficiency is, in fact, a

consequence of modernization. Thus, there is no doubt that this topic is very relevant. I think that the purpose of today's panel is to discuss what is happening in Russia, the problems we face, and what methods and tools can be used to improve energy efficiency.

As you know, the Government has announced a policy to reduce energy intensity by 2020. A 40% reduction in the energy intensity of GDP, compared with 2007 levels, has been proposed. Business is already actively discussing these issues. As the moderator has already stated, in 2010, a state programme was launched, a year after the adoption of a special law – Law No. 261 – in 2009. The basic framework for improving energy efficiency has been laid out. Russia is now familiar with concepts that have long been used around the world, such as energy audits and energy services. The number of metering devices has increased, including in the public sector. Over the past two years, the number of these devices has increased by a factor of 1.5. The public sector has achieved 90% implementation of this programme.

We have accomplished a lot in terms of the legal framework. We have passed about 70 laws and regulations and have taken steps to provide tax incentives for energy efficiency and accelerated amortization of energy-efficient equipment. This is to say, in fact, that much work has been accomplished and the framework is now in place.

Money has been allocated from the state budget. Five to six billion roubles are set aside each year in the form of subsidies for the federal constituent entities of the Russian Federation. These subsidies provide a motivating factor. These funds, in turn, provide a multiplier effect by helping to attract funding from within the public and private sectors of Russia’s regions for the implementation of energy-efficient projects. In the regions, these funds largely go towards supporting new projects: to improve the efficiency of street lighting, replace boilers with more efficient equipment, and upgrade housing and utility infrastructure. We have done the analysis and we know where to spend money within the regional programmes.

However, despite all this, what are we seeing? The rate at which the energy intensity of GDP is falling is still not what we would like to see, if we are to achieve a

40% decrease for this indicator. If we continue at today's rates (in 2011 the energy intensity of Russian GDP fell by 1.5% and, in 2010, by 2.5%), then we will only achieve a 25% decline. In other words, this difference between 40% and 25% is where we need to do some more work. I believe that the most important task that we now face is to find new tools to explore international best practices in more detail for those mechanisms and instruments that operate in other countries and which provide additional benefit. By doing this, we can help speed up our reduction of energy intensity by increasing efficiency in virtually all sectors.

The Russian economy is, of course, somewhat different from other economies in its energy intensity structure. We see that industries such as power generation, housing and utilities, and transport account for the lion's share of the consumption of energy resources. These few components that I have listed in fact account for up to 70% of energy demand. Plus we have the production of hydrocarbons and petrochemicals and the energy-intensive metals industry, which includes aluminium, iron, and steel. That is 70%.

This is an interesting figure that you probably already know, but I would like to mention it anyway. Currently, we have the world's highest level of thermal power generation. We generate two billion Gcal, which is more than anyone else. We have the world's highest number of boilers and the highest usage of such facilities, and thus the equipment experiences high levels of wear and tear. It is clear that there are huge opportunities for increasing energy efficiency and replacing obsolete equipment.

If you take the electricity industry, then today we spend around 330 grams of conventional fuel to produce one kilowatt-hour, while the best figure in the world is 220 grams of conventional fuel. In other words, our figure is 1.5 times as much as the best rate. The same applies to the consumption of electricity and energy in industries such as steel and the cement industry, where we are still using outdated methods such as the wet process. They consume 30% more electricity than if modern techniques, such as the dry process, were used. In Japan, for example, 100% of companies operating in the cement industry use the modern dry process to

produce cement. In Russia, the reverse is true: somewhere around 15% use this modern method, while 85% use the old methods. In other words, the potential is huge.

It seems to me that the core of today's discussion lies in certain key decisions: how do we stimulate the accelerated reduction of energy consumption and increase energy efficiency? In principle, there are two well-known methods. One method is to provide economic incentives. The second method is to implement strict regulation of technical, technological, and environmental standards as used around the world.

Each approach has its plusses and minuses. In particular, if we talk about economic incentives, then it is clear that, say, the transition from steam-powered plants to combined-cycle plants is possible and cost-effective in the event that the price of natural gas increases to such a point that investment costs for conversion can be recouped. It is no secret that at current energy prices, there is still not enough marginal income to support the conversion of equipment in this industry, although 37 out of the 223 gigawatts of power generation capacity in Russia are produced by old steam power plants. Here, we have an enormous opportunity to reduce energy intensity and increase efficiency, since it is clear that the efficiency of steam power plant generation today is in the area of 35%. If modern combined-cycle plants were introduced as a result of economic incentives, then this ratio could reach 55–60%, that is, the highest efficiency levels. This, in turn, would significantly reduce energy consumption.

In general, if we talk about impact, then I think that economic incentives are very important. Our main priority is to establish mechanisms that would attract investment to our energy-intensive industries. In particular, if we take electricity and thermal power, then I believe we can do it. Today, the Ministry of Energy is developing a new market model and a proposal for continuing the reforms that are already taking place in the power sector. These reforms create opportunities to attract investment in electrical power for updating, upgrading, and building new generating capacity.

Under our programme, we are planning to modernize an additional 50 gigawatts of capacity by 2020. This is a very high figure. We need to create the appropriate economic incentives and tools in order to achieve this. These are, first and foremost, long-term bilateral contracts between consumers and producers, which would ensure the necessary flow of investments into the renewal and modernization of fixed assets.

We see huge potential in thermal power generation. Over the past few years, cogeneration capacity, where the equipment is able to produce electricity and heat at the same time, has fallen significantly. As a result, the operating efficiency of the combined heat and power plants in question has fallen significantly. The Ministry of Energy has this year set itself a goal to propose a new market model for heat generation that would help to create an economic incentive to upgrade power stations.

What else did I want to touch on? Many countries have accumulated a lot of experience in the technical regulation of this industry. My colleagues here today will be able to talk about this point in more detail. I think that this is a very strong, powerful tool that could significantly improve energy efficiency. We should not be afraid of setting specific requirements, although we will certainly encounter serious resistance.

I can give you a good example of how we have overcome such resistance and provisionally achieved a positive effect. Take, for example, the issue of utilizing associated gas at oil fields. We have adopted a resolution that, by January 1, 2015, no less than 95% of all associated gas must be captured and utilized. Many companies initially resisted. Nonetheless, we are now making progress. We are actually on track to meet this target by January 1, 2015. This associated gas, which was previously flared, will be used for domestic consumption, electricity generation, or will be reinjected into the reservoir to maintain the subsurface pressure. Although such large investments are, in many ways, not profitable for businesses, nevertheless, these requirements which have been established by the Government will serve to reduce energy intensity significantly and increase energy efficiency.

I will provide a second example in which we have also stood by our position. It concerns classes of energy efficiency and environmental friendliness for fuel. As you know, since January 1, 2013, we have legislated against Euro-2 fuel, which is now prohibited. Starting on January 1, 2015, we will ban Euro-3 and, on January 1, 2016, we will no longer accept Euro 4. One of the ways we have encouraged the adoption of progressively stricter standards is by offering tax incentives. And today we see that Euro 5 petrol is being produced in higher volumes than we had anticipated. That is, companies have invested and benefitted from this.

Another area that I think it would be appropriate to consider today is the introduction of so-called energy efficiency certificates, which are used around the world. I believe that my colleagues will also touch on this point today.

I would also like to draw attention to the household sector. This also has great opportunities for increased efficiency. Here we need to work on the proper labelling of household appliances, to harmonize standards with international practice, and on public education. The public needs to know what they stand to gain from the purchase of more energy-efficient appliances, including refrigerators, air conditioners, and so on. It seems to me that we as a nation could apply the same incentives as those used in other countries: when you buy more energy-efficient electrical appliances, you receive a discount on the purchase price. These incentives are being offered by businesses, including those in the housing and domestic services industry, which work directly with consumers.

There is an enormous amount of information about what is being done to improve energy efficiency throughout the world today. I could speak in detail on this point. We are currently preparing changes to the state programme, which was adopted in 2010 and is in force today. Our task is to take into account the specific nature of Russia in order to take advantage of the very best practices to achieve our goals. The potential is large and the objectives are ambitious. As a Ministry, we are ready to go to the Russian Government or the State Duma with proposals on economic incentives to improve energy efficiency and establish the technical and environmental requirements needed.

Thank you.

**M. Philimonov:**

Thank you very much. Mr. Novak, if possible, I have one clarifying question. Did we understand you correctly when you said that the Ministry of Energy, in developing its energy-efficiency policy, is less inclined to use forceful measures in order to compel businesses and the public to become more energy efficient? Rather, is it proposing creating the right economic incentives so that this transition occurs naturally and with the least pain for everyone involved?

**A. Novak:**

Maksim, I did not say that we would adhere to one particular tool over another to achieve energy efficiency. I think that it should be a mix of the two. On the one hand, there are economic incentives, and, on the other, there are stringent requirements. I am not against establishing the kind of strict requirements and standards that exist all over the world, including energy efficiency standards for construction, motor vehicles, household appliances, and so on. I do not think that we have to be afraid of imposing such requirements. You have to use both the carrot and the stick and this includes establishing strict standards and requirements.

**M. Philimonov:**

Thank you very much. I would now like to give the floor to Ms. van der Hoeven, Head of the International Energy Agency. Ms. Van der Hoeven, considering both global issues and the experience of other countries, how should best practices that have proven to be very effective in other countries be applied in Russia?

**M. van der Hoeven:**

Thank you very much for your kind introduction, and yes, I would like to make a few remarks about how we perceive Russia from a comparative international angle. Let me be honest – and this has already been said by Minister Alexander Novak –

Russia's energy intensity is high. It is very high. Russia uses two times more energy per unit of GDP than OECD countries, and according to our World Energy Outlook 2011, if Russia had used energy as efficiently as comparable OECD countries in each sector of the economy in 2008, it would have saved more than 200 million tonnes of oil equivalent, equal to 30% of its oil consumption that year, or 180 BCM of gas. That is a lot of oil, it is a lot of gas, it is a lot of money. So there is a lot to gain in that respect. A very active and dynamic set of energy-efficiency related legislation and regulation has been introduced. And that is needed. The second thing, of course, is implementation and monitoring. A performance-based approach is also needed, because people want to see what is in it for them, and that is very clear: if something is in it for them, whether it is industry or whether it is people, then they will follow. If they do not recognize that, it is more difficult.

Why energy efficiency? Well, somebody asked me when I was in Russia a couple of years ago (and I have been here quite often), "Why should we be energy efficient? We have got enough." It is true, there is enough oil, there is enough gas, but you can also use it in a more efficient way and get more money out of it. There are two other reasons why energy efficiency is important. It fosters economic growth; we can see that in other parts of the world. It stimulates the development of the small and medium-sized enterprise sector. It raises industrial competitiveness, which is quite important with Russia being a member of the WTO, and it is also a key part of the agenda for Russia's G20 presidency.

So, what do we think, from our point of view, are the priorities for Russia? One is to recognize the changing drivers for energy-intensive industries. That is a very important one, because a significant proportion of Russian industrial exports are energy-intensive products, and they come from facilities which have been there for a long time. They are quite old: low capital costs, low energy prices, and they are compensated for their low efficiency. But, of course, that period is drawing to a close, and we are now seeing new high-efficiency plants in North America due to shale gas. They also benefit from energy prices which are comparable with Russian domestic prices. So that means something has got to change there. At this moment,

we can see that any country – not just Russia, but any country – must look at the energy efficiency of its industrial sector, from a competitive perspective as well as an energy sustainability perspective.

That brings me to buildings. It is possible to achieve very high levels of energy efficiency. Russia can expect a continued construction boom, since a large proportion of the Soviet-era housing stock cannot support a twenty-first century middle-class lifestyle. So it is essential that new buildings are built with good energy efficiency, and that means more stringent minimum energy performance standards – very useful for buildings and for appliances – need to be developed, and, in some way or another, either enforced or brought to life through other measures.

Electricity. A couple of weeks ago, we completed a book on the restructuring of the Russian electricity sector that was developed in close cooperation with key Russian stakeholders. One of the findings was that if you really accelerate investment in modern power generation capacities, then that really can offer a step change in the efficiency of power generation. Of course, that creates, again, benefits for Russian industry, and efficient price signals as well. These are essential to mobilize end-use efficiency. What are people, what are enterprises, what is industry thinking and doing about energy?

That brings me to industry. What we can see is that a significant proportion of energy intensity improvements in transition economies – not only Russia but everywhere else – were delivered by foreign direct investment, and that means by creating new capital stock. We think that an open investment environment is beneficial, and will be beneficial to Russia in general, but it will also bring energy efficiency advantages. So that means there is a need for concerted measures to stimulate investment in energy efficiency legislation and taxation mechanisms.

There is one group of companies I would like to mention specifically, and these are the energy service companies. We need to develop a market for energy service companies, and the potential is large. But compared with other countries, these energy service companies do not have enough of a presence in Russia.

I know that there is a problem with tariffs, and a need to raise tariffs progressively. There are always vulnerable consumers, that is true, but it is better to have a targeted approach to vulnerable consumers than to have a general approach that benefits everybody, including the middle class and those with a higher income, because they do not need these low prices. They can pay. But some people cannot. So we have to do something about these people. That means that sometimes non-cost-reflective tariffs are an obstacle to investments in energy efficiency. That is what happens. And they are a challenge in regard to the district heating systems, especially district heating systems. One of the things that you mentioned, Minister Novak, was meters for energy use. And of course there is the question of who is going to benefit from these higher tariffs. Where is the money going to? So that means that you need transparency: what are you going to do with the money? Otherwise, people will protest at having to pay more. But if they know what is in it for them, again, that is important, and so it is important to have transparency there.

I mentioned the finance sector. Energy efficiency is often a financing problem, especially in the household sector, and energy service companies also rely heavily on outside financing, so what we can see is that government policies aimed at tackling financial market imperfections are really an essential component of energy efficiency. Then, of course, there are capacity building efforts and training at all levels: universities, federal and regional government agencies. We think that Russia needs to develop a very strong policy and very strong expertise in these areas.

So, can you do it from one day to the next? Can you do it one year? In two years? No, you cannot. Energy efficiency needs a sustained effort over a very long timeframe. It needs long-term policies. If you want to do these kinds of things, you need to include new opportunities to save energy as a result of technological change, new products coming on the market, and that takes time.

What we can see from a global perspective is that policies aimed at improving energy efficiency in industry can deliver large energy savings in a short period of time, so it is possible. I would like to mention some experiences from other countries. One is Japan, where they have the Top Runner Programme for

household electrical appliances, which is very effective. We see the Top 10,000 Programme in China; they are aggressively working towards a radical reduction in industrial energy consumption, and building on the success of that programme, they are now embarking on an industrial energy efficiency programme that covers two thirds of China's total energy consumption and aims to save 250 MtC by 2015, so that is a lot. The United States has extensive energy efficiency programmes overseen by energy utilities, funded by ratepayers, and they have an expanding portfolio of energy performance standards for appliances. They have the Energy Efficiency Resource Standard and Savings Obligation, so everything is on track there. Germany created a booming market for these energy service companies, and I think the development of the German market has been attributed to a very good mix of government support, for one thing (and this includes technical and financial support); nongovernmental programmes; and also favourable conditions, such as energy taxes, which were increased considerably during energy sector liberalization, along with an increase in energy prices.

Let us be honest. There is a limit to the value of foreign experience. You can learn from it, that is true, but all policies need to be adapted to national circumstances. Otherwise, they do not work. To design effective energy efficiency policies, it is necessary to take the national policy framework, the national energy system, the national industrial context into consideration. The experiences of other countries can help, and I would strongly advise you to learn from them, because they can indicate what factors contribute to effective policies and help to carry out the reforms that are needed to really achieve a step change in efficiency to remain competitive. With that, I will conclude.

**M. Philimonov:**

Thank you very much.

I would like to make some additional remarks on your speech, Ms. Van der Hoeven. You listed a number of measures to be taken in order to improve energy efficiency. In order to clarify what you said further, could you tell us what would be the two or

three most important things, in your opinion, that Russia could do to achieve the best possible effect within the shortest possible timeframe?

**M. van der Hoeven:**

I would like to emphasize the need for changes in the electricity sector, because that is something that is beneficial for everybody. I would like to emphasize the changes in industry required to improve competitiveness, and being part of WTO, you need to be competitive, so that is really very important. And thirdly, where is the most energy being used, besides energy-intensive industry? In households, by appliances – and changing appliances is easier than changing the whole system, because appliances have a lifetime of about 5 to 10 years maximum, and then there will be new ones. You can start there quite easily. Lighting – bulbs, and things like that. The other things are more difficult. But these would be my three recommendations.

**M. Philimonov:**

Thank you very much. Mr. Fallon, I would like to give the floor to you and ask you to share with us your experience of addressing energy efficiency issues in your country. Could you describe to us some mistakes that Russia should seek to avoid in order that it might not experience the same difficulties that the UK faced in going down this path?

**M. Fallon:**

Well, thank you, Maksim, and good morning. And thank you for the invitation to speak. I think for Russia this is the right debate at exactly the right time, and I am not going to lecture Russia on how to do it, but I could offer some reflections from what we have been doing in the United Kingdom. Our energy efficiency strategy is really constructed on two beliefs. One is that to prosper as a modern economy, you have to be the most energy efficient and the greenest if you are to be truly competitive globally. Secondly, our own situation in the United Kingdom, where in

the last decade we ceased to be a net exporter of gas and oil and we now have to import over 40% (and rising) of our energy. At the same time, we also have to meet European Union and international obligations on carbon reduction and renewable energy, so we have that very specific challenge to meet. But what we have learned, first of all, is that energy efficiency policies in themselves can add to growth. They have added as much as 0.1% to our rate of growth, as well as several hundred thousand jobs, and within that, the low-carbon sector has grown faster than the rest of the economy as a whole. It has been growing at over 5% a year and is now worth some GBP 17 billion. So adopting energy efficiency policies and developing a low-carbon renewable sector in themselves can strengthen our economy and can make it more competitive and more dynamic.

Now the question that you have set for us, I think, is how can governments best drive that search for efficiency and the growth that is attached to it? I would offer four particular lessons from the United Kingdom. First, policies have to be well targeted, clear, and proportionate, and as Minister Novak said, absolutely rightly, targets and obligations should be mixed with incentives. For example, in Britain, we have obliged energy suppliers by law to provide energy-saving improvements, but we have matched that by providing government investment through a new green investment bank to help industry adapt. We have compensated the most energy-intensive industries for the speed with which they have had to meet our European and international obligations. The same has happened on the consumer side. As consumers have had to pay some of the cost for new renewable energy, at the same time we have introduced a Green Deal whereby they can help finance energy efficiency improvements in their homes from lower future bills.

Second, in reforming energy markets, it is important to design in demand-reduction strategies right from the start to ensure that demand reduction is properly incentivized, and to use some of the financial techniques that are now well developed and give energy demand reduction companies the right incentives to play their part in the energy market.

Third, ensure that there is competition. We have six large energy companies in Britain. We think that is too few. We are encouraging the independents to play their part and to bring the innovation that an energy sector needs, and we are doing that by encouraging consumers to choose, by encouraging consumers to switch to cheaper tariffs and providing more information about the tariffs that are available, and ordering the energy companies to simplify the number of tariffs that they have for both industry and domestic households. In the last period for which we have figures, around 1.5 million people changed their energy supplier, and that, I think, is an essential part of installing more competition into the energy market.

Fourthly and finally – and I think the last speaker touched on this – you have to get, as far as possible, public support behind this. Energy costs are rising. They are not simply rising mathematically; they are rising as a political concern. They are a large part of the household and the industrial budget now, a large share of the cost. It is very important that, where targets are public, there is some consensus behind them, and that where new policies are being introduced, the public can understand very clearly what proportion of their bill is attributable to the policy change and what proportion is attributable to international factors or changing energy prices and so on. It is very, very important, as far as you can, to ensure that the public understands the need for the changes that are being made and that you build a consensus behind them. Our target for 2020 is to save a further 11% of our energy use, household by household. I think in Russia you have set a much more ambitious target than that; I think Minister Novak said 40% by 2020. As the last speaker said, if Russia was as efficient in energy use as the average OECD country, Russia would be saving the same amount of energy as Britain is consuming. So there is a huge prize here for Russia, and if there are other ways in which we in the United Kingdom can help towards that prize, building on the memorandum of understanding that we have already between our two countries, we would be pleased to do so and to cooperate more deeply on it. Thank you.

**M. Philimonov:**

Thank you very much, Minister. We have heard from governments and regulators and now it is time to listen to what private business has to say.

Dmitry, your industry is one of the most energy-intensive and many of your colleagues, who also consume a lot of energy, have complained that they have no money to invest in expensive projects to improve the energy efficiency of their enterprises. These projects also do not always have a quick impact. However, SIBUR makes these kinds of investments. What kinds of benefits do you see in this for yourself and what would you, from the point of view of your business and your own personal standpoint, recommend that regulators and the Government do to make their policies as effective as possible?

**D. Konov:**

I have a short answer and a much longer one.

The short answer is that I truly believe that those who are not improving their energy efficiency by upgrading will eventually have to leave the market. They will not be able to exist as businesses or as companies. This could happen in the short term or the longer term. But, sooner or later, everyone will be affected. This is inevitable and money not spent today is money that could eventually lead to the closure of a business in the distant or not so distant future.

The goal that we are discussing today is reducing the energy intensity of GDP by 40% over 12 years (as far as I remember, this figure appeared for the first time in 2008). In the history of the twentieth or twenty-first centuries, there are only a few examples where a similar reduction in energy intensity, similar energy savings were achieved in such a period of time. To my knowledge (I think that my colleagues may have different views on this), there are just two examples in the entire twentieth century, or in the entire post-war era. The goal itself was initially quite ambitious. This does not mean that we should not aspire to it. But it was not entirely realistic when it was established.

How do we typically view the reasons for this? We are comparing things which were built many years ago with what exists in the latest generation of technology. In

absolute terms, it is very likely that this difference constitutes the 40%. There is a difference between one generation of technology and another, between some buildings or devices and others. But we must remember what has already been said about household appliances or vehicles: cars are replaced on average once every 10 years, power stations are replaced once every 30–50 years, and, for example, buildings are replaced on average less than once every 50 years. So if it is a question of replacing everything with new versions within 10 years, then this goal of 40% can more or less be achieved. This is probably not very realistic; you need to find some additional mechanisms in order to achieve it.

Someone has already stated today that the petrochemicals industry is actually not the most energy-intensive. Within SIBUR, we have a subdivision that is responsible for raw materials. Among other things, we process associated gas and, within 10 years, processing throughput has grown from eight billion cubic metres to over 20 billion. You could say that this is SIBUR's biggest contribution to energy conservation, but this would be too simple and not completely objective. Our greatest contribution to energy conservation, as a company and as an industry, is how our products are used. It is for this reason that the products manufactured by petrochemical companies save twice as much energy as is consumed in producing them.

For example, look at the materials that the petrochemicals industry produces, and think, for example, about the last 15 or 20 years of car manufacturing. While 15–20 years ago, every car contained five to seven kilogrammes of plastics, today the plastics used in passenger cars weigh about 200 kilogrammes. The automotive industry reduces weight and the tyre industry reduces friction in order to conserve energy. Considerable progress has been made over the last 15–20 years and cars have become much more economical in many ways, owing to the fact that more petrochemical products are used in their construction.

If you look at the insulation of buildings and structures, it is evident that the use of petrochemical materials allows you to save on the amount of ordinary glass, wood, concrete, and other materials that are used. On the whole, petrochemicals

significantly change the configuration and increase the energy efficiency of buildings. Again, the greatest contribution of energy-intensive industries like the petrochemicals sector is energy conservation. They help other industries or manufacturers save energy.

The second area I would like to mention is production technologies. There are quite a few examples in Russia where several generations of technology are used in very similar production processes. If you look at the plants that exist in Russia, then there can be three or four generations operating alongside each other at completely different levels of efficiency. Of the many well-known, everyday examples, I will mention the simple process of electrolysis, the production of chlorine using electricity. Mercury cell electrolysis is still being used in Russia, although it is banned practically everywhere else in the world. There are three generations of production methods in use today. The difference between the current membrane cell electrolysis and mercury cell electrolysis in terms of energy efficiency is about 60%.

Another topic that I would like to touch on is related to behaviour and the transfer of expertise. In 2012, SIBUR set itself the goal of lowering its energy consumption by 5%. It was able to reduce consumption by 5.7% in 2012 alone. In many ways, this was accomplished not through investment projects or any particular innovation, but just by changing people's behaviour. It was achieved through the introduction of more stringent rules, hanging up reminders everywhere (I am exaggerating a bit) to instruct people to turn off lights when they leave, through visualizing processes, and through tweaking many other behaviours. Changing people's behaviour is quite boring. It often does not attract the focus of attention. But it can contribute very appreciable savings. The main thing is to pursue such a policy and stick to it.

The last thing that I would like to say is that we constantly have to maintain a balance as both an industry and a regulator. This is the balance between incentives (the good) and coercion (the bad). I am certain that we need to pursue both strategies. Without coercion, incentives do not work. I think that this approach is universal and applies to energy efficiency as well as to many other things.

If we talk about coercion, then the Government has the necessary tools and regulators. They offer standards, certifications, and model projects. They may decide to grant or refuse building permits on the basis of the efficiency of the technologies used. Accordingly, goods and products may or may not be certified on the basis of how their energy efficiency compares with the standards established by the state.

I had one last thing to say. I apologize in advance for the language that I am going to use. I must say that this is a quote from the website of the Prime Minister of the Russian Federation, a post that Vladimir Putin occupied a few years ago. Mr. Putin once met with one of the governors (SIBUR, by the way, works in the very same region that this governor is from, but I am still not going to name names) and they discussed the use of incentives and coercion. They discussed nursery schools at the meeting, for example (I honestly do not remember all the details). The governor replied to the Prime Minister's question by saying, "Our figure for nursery schools is 99%." Mr. Putin said, "Governor, when we met three months ago, you said that this indicator was very low. How are you now able to say that you have reached 99%?" The governor replied, "You know, Mr. Putin, when we met last, you gave us a miraculous kick up the backside and that helped us a lot." <Laughter in the audience.> I think that this sort of "miraculous kick up the backside", to quote the governor, can help a lot.

**M. Philimonov:**

Thank you, Dmitry. It seems that you have offered us a universal formula for increasing energy efficiency in the Russian economy.

**D. Konov:**

By the way, what I said goes beyond energy efficiency.

**M. Philimonov:**

Jean-Pascal, you work in the field of implementing projects to improve energy efficiency in many countries, including Russia. How active are Russian customers in employing your technologies, which are likely to be quite expensive? What, in your opinion, could be done in order to encourage them to use such technologies more actively?

**J.-P. Tricoire:**

It is a great pleasure to be with you today. Really, I am taking part in this debate not to offer testimony from other countries, but because Russia is our second-largest business in Europe. It is our second-largest head count. We have more than 10,000 associates in the country, and the problem you are raising today is really our problem. We have heard a lot of comparisons with other countries, but I have a lot of sympathy for Russia, because Russia is different. Russia is big, the largest country in the world, and while we are blessed today in St. Petersburg – it is always good to come to St. Petersburg in June – the city has extreme weather conditions most of the year. It is very hot or very cold, and when you are talking about energy, this has very significant consequences.

There are a few things that were said just now that I would like to come back to. First, I believe that there is an urgency for energy efficiency which is becoming integrated within the country, and we are seeing that with our customers. First, in energy-intensive industry, it is a simple question of competitiveness. When you are working with resources, chemistry, energy, you are operating on the international market, you are competing with people who have access to energy which may be a bit more costly, but a big part of your cost is energy. So you have to work on it. Yesterday, I was on a panel composed mostly of oil producers and gas producers; they were all speaking about price, price, price. We are just forgetting one thing: that if you reduce consumption by 30% or 40%, price is much less important. So we have the whole industry speaking about price, right? But not enough of the industry is speaking about quantity consumed. But if you are an industrialist, there is no

question. If you want to be in business tomorrow, you have got to be far more competitive in terms of your consumption.

My second point is, clearly, as Maria was saying, about residential households, which basically have the capacity to generate money that can be put into other sectors of society, like health, education, or money for infrastructure, so I believe it is integrated. Let us not forget, yesterday we had a panel on the impact of $CO_2$ emissions on the planet. Russia is already the fourth largest emitter on the planet, but with our company, Schneider, I see more and more customers come in to us and say, “I will buy your products if your carbon emissions are very low.” So it is a question of the reputation of your company, the ability to sell your products, and actually it is all good. What is good for your carbon footprint is really good for your business, it is good for your costs, and everything. What strikes me is that, when you look at the technology, there is one huge revolution which has been taking place, not over the past 10 years, but over the past five years. And it is really what is called the ‘Internet of Things’. If you come back to the Internet, over the past 20 years it has been about connecting people to people, and we have connected 2.5 billion people on the planet. In the next eight years, we are going to connect probably 2.5 billion more people. But the big difference is that we are going to be connecting 40 billion machines. So it is going to be everything around us: appliances; your car; my parking lot – I am going to know where I can park immediately. But it is going to be, above all, all the energy systems. I am not sure that every appliance should be intelligent, because the cost will be so high that it is going to take a long time. But what I know is that we as a company will next year put on the market systems which will switch off all of your appliances if you are not at your home, automatically, and these systems will cost less than USD 1,000, fully installed. The payback time is two and a half years. So you do not need to change your fridge, change your oven, change your TV, or anything like that. But, let us face it, most of what we use is used less than 50% of the time. If you have an automatic intelligence system that switches things off when you are not there, you will already save a lot. My last point on technology, probably, is that energy efficiency is not just

about saving energy. It is about efficiency from energy plant to plug. This Internet of Things that puts everything back on the Internet enables us for the first time to optimize from consumption to generation. I will give you an example. Most of the electrical networks in the world are used more than half of the time at less than 50% of their capacity, because guess what? At night we all sleep. In the morning, we all consume at the same time. So we need to make sure that we not only save energy, but also displace some of the consumption. Sometimes the price of electricity is actually negative in Europe. I mean, if you were able, thanks to technology, to consume more at those times, then you would get paid for your consumption. So think about that, because this is the future. Not in 10 years, not in 20 years. It is the future today.

So, the technology is here, and again, I am coming back to one or two things that were said before, with two consequences. First, we have been talking about energy efficiency with long-term policy, long-term returns. With these technologies, payback is three years. So it is short term. We were talking about buildings. Of course we want buildings which have a very nice envelope, but it will take a long time to make that happen. But if you switch off your bad building when you are not at home, then, again, the payback is very short. To install it, you do not need to shut your building off, destroy your building; you can do the work in a day. So it is very simple to implement. Technology makes it cheap and fast.

Now, what do we need? I am going to be very fast. We need a mix of rules and incentives, but I believe that sometimes you have to go for rules. If the payback of an efficient building is three years, then make sure that all the new buildings are less than 100 kilowatt hours per square metre per year, because that is good for everybody. So, simple rules.

The second thing is to measure. In industry, it is very simple: what gets measured gets done. You were talking about the KPI on certain methodology afterwards, but it works. But you need to measure. In energy it is very simple. You have to get meters on the Internet, make those meters available to everybody. In our company, people can get a picture of what they consume, and people are intelligent. They want to do

good, so if you make them intelligent with data, they behave well. So it is all positive.

I believe that we need a lot of pilots, because we are talking about brand new technologies. We need municipalities and cities to work with building owners, to work with companies, and to cooperate through public–private partnerships, private projects. I believe also that in most countries, the state owns the most square metres in any city, and the state has to be exemplary. Every city, every public building, should have an energy-efficiency plan and should show the way, because if the state does well, then all the citizens will do well.

There is one point that we did not touch on at all, which for me is the most important. We talk about renewable energy. We talk about the Internet of Things. We talk about energy efficiency. This is a whole new speciality, a whole new business. There is no training today. So we need to put our universities and schools to work to create education for those new jobs. You spoke very well about the massive job creation opportunity that we have with this new sector. How will it be paid for? By savings. So it is all beneficial. We need companies, and the state, and education to work together to develop these new sectors.

Those were the five things that I wanted to say. Thank you.

**M. Philimonov:**

Thank you very much, Jean-Pascal. Anatoly, as has been said, the goals Russia faces in this sphere are very ambitious. The potential number of projects is quite large. However, banks are very conservative in this area and they are very reluctant to allocate the funds. What, in your view, must be done? What tools would be most effective in helping financial institutions play a more active role in this field?

**A. Tikhonov:**

Thank you. Colleagues, good afternoon.

This topic is indeed very relevant. And its relevance goes beyond the Russian economy. As we have heard from the other panellists, it is a hot topic around the world.

Vnesheconombank is a Russian development institution, so the development of the energy industry is one of the priorities of our credit policy. Under the classical scenario, energy efficiency is achieved in two ways. One is the natural renewal of the economy. The second is the implementation of target projects in the area of energy efficiency.

Everything is simpler under the first approach (natural renewal of the economy). In our lending policy, whenever we are considering approving a new industrial project, we must first conduct an audit of its energy efficiency. In other words, we understand that any project that is implemented with the assistance of Vnesheconombank must use the latest energy-efficient equipment. We have Mr. Konov here with us today. When we carried out an expert review of SIBUR's Tobolsk-Polymer Plant, we concluded that SIBUR was one of the most modern enterprises in the industry today. I could also provide an example from RUSAL. Before we granted credit to the Boguchansky Aluminium Smelter, we also conducted a similar expert review. I can honestly say that this will be one of the most modern aluminium smelters in the world.

Secondly, we need to create a foundation for new, energy-efficient projects, or the situation will get worse. First of all, I do not think that we or the other state banks have enough expertise, as these energy service contracts really represent a new niche for the Russian market, albeit a very big one. I know that Sberbank has created a separate subdivision devoted to this type of project. We are moving in this direction. We have a special department that is actively engaged in this area. We have our own engineering company. Nevertheless, in my view it is necessary, first and foremost, for the Government to declare energy efficiency a priority sector so that investments can be channelled into it.

Energy efficiency is, undoubtedly, an issue which affects the entire Russian economy. Mr. Novak has already stated that we have an industrial sector, a

transport sector, and a sector for residential and utility services. We, for our part, are helping regions create a project base. Two years ago, by decision of our Supervisory Board, we created a fund to promote the development of regional and municipal projects. I should say that we have already developed quite a few projects relating to regional energy efficiency. But perhaps this too is not enough, as there are state-level methods for providing economic incentives that may be more effective.

Take, for example, the issue of subsidies. Today, there are subsidies allocated from the federal budget that the Ministry of Energy distributes to the regions. Unfortunately, historically speaking, the majority of subsidies distributed from the federal budget have been redistributive in nature. I think this is a very good tool to motivate the regions to accelerate their efforts to become more energy efficient. We have gradually been able to move towards a project-based approach. At the same time, I think that this work is being completed at a good pace. By 2014, it will be possible to organize contests between pilot projects and determine who will be able to attract more investment. In other words, we will use the multiplier approach that we talked about earlier. You know, we used to have an ‘investment fund’ instrument: we gauged the amount of private funding a region could attract per rouble of state funding. I think that this would change the approach of the regions and, first and foremost, would create a level of competition in the application process for federal funding.

The second instrument that the federal government currently has is state guarantees. If I am not mistaken, government guarantees account for RUB 10 billion in the budget for energy efficiency projects. But I do not yet know of an example of one which has been implemented. Vnesheconombank is the government agent that works with government guarantees. I can tell you from practical experience that government guarantees have completely proven themselves as part of the package of measures to deal with the financial crisis. When government guarantees were issued in 2008, they indeed supported the real sector of our economy. Yes, there are government guarantees for projects in the Northern Caucasus that also work,

but this was a completely separate decision to provide a stimulus. There is still no such active movement in other areas relating to the support of investment activity.

At the same time, international experience shows that there is sufficient demand for stimulus measures in the form of so-called ‘white’ or ‘green’ certificates (they have various names). At the beginning, Mr. Novak said that such an approach is possible. We need to move from a framework of government guarantees to a system of certificates. It is clear that, in the Russian Federation, we have not yet fully developed such a legal mechanism, although there are precedents associated with the ratification of the Kyoto Protocol. You can look at either the positive or negative aspects of the experience associated with the passage of the Kyoto Protocol. However, it seems to me that this is quite an interesting tool, which will be in demand, because businesses will understand that there really are economic incentives. As you know, the certification process is built on the fact that certificates generate income only when a certain effect is achieved. Nonetheless, we can develop additional engineering expertise in our country. I believe that this is currently insufficient in our country.

**M. Philimonov:**

Anatoly, you do not have that much time remaining.

**A. Tikhonov:**

Yes, I will finish my speech.

I want to say that the market really is quite large. This market is attractive to financial institutions. We would simply like to see the Government stipulate the energy efficiency priorities that it intends to support. For our part, we are ready to finance these projects.

In conclusion, I will speak about one more tool. We have a wonderful organization, the Russian Energy Agency, which coordinates state programmes. Over the last twelve months, a lot of work has been completed on integrating this company into project-based activity. But there is, in my view, one factor that interferes with its full-

scale operation: its legal form of incorporation as a federal state institution. Mr. Novak should perhaps look at the international experience or even at Russian examples? Our Agency for Housing Mortgage Lending supports mortgage lending. I think that a federal state institution is not quite the right form of legal incorporation.

Thank you, colleagues. In any case, on the question of whether we should choose the carrot or stick, I think that both mechanisms should work in our economy.

Thank you.

**M. Philimonov:**

Thank you very much.

Alexander, there has been a lot of talk about the need for proactive measures in your field, which is energy generation. Your company has experience of working both in Russia and abroad. You are able to compare what needs to be done in order to bring our standards into compliance with international best practice.

**A. Chuvaev:**

Thank you.

It is always good to be the last to speak, because you know what all the speakers who went before said. I would like to comment on the “friendly kick up the backside” that Dmitry Konov mentioned and the housing and utility services sphere. Many such friendly kicks up the backside have been applied to the housing and utility services sector by the highest authorities. Yet, things remain the same. How many times have we tried to stimulate this sector in terms of energy efficiency, by increasing housing and utility tariffs by 6% or gas tariffs by 15%? But things remain the same. In the words of the comedian Mikhail Zhvanetsky, maybe something in the conservatory needs touching up?

Yesterday, we had an interesting round table on industry and innovative development. Representatives of RUSAL and Sollers, as well as Vadim Makhov, gave presentations. Everyone said that the price of gas and the price of electricity are killing the competitiveness of Russian industry. Everyone said that we need to

reduce our dependence. I asked them: if we need to get away from oil, then should we do this when the prices for energy resources are high or low? And they all said that the prices for these resources should be high in order to wean Russia off its dependence, otherwise no one will have any incentive to make such a move. If jet fuel cost as much as it did in the Soviet Union, then we would still be flying the IL-18. In that sense, the electricity industry, which consumes 65% of all natural gas, is still 'flying the IL-18', if not the IL-2. And there is no incentive to modernize beyond capacity delivery contracts. Moreover, what was the only incentive, namely the rise of natural gas prices to profit parity, may now disappear. If natural gas prices were to continue to rise in accordance with the proposals of certain ministries (5%, 5%, 0%, and a further 0%), then we might as well forget about modernizing electricity production.

Let us compare our gas situation with what is going on with gas in the rest of the world. If we look at the US with its shale gas revolution, the Henry Hub price is 45% lower than the price in the Urals. We have nearly comparable costs, excluding transport. If you compare the price in Europe with the price of gas in Russia, then the price of gas in Russia is three times lower than in Europe. The price of gas in Europe has reached the point where, taking renewable energy sources into account, about 100 gigawatts of gas-fired generation in Europe is on the way out if they do not do something. This affects our consumption of gas because Europe consumes our gas. I could again allude to Zhvanetsky's conservatory.

I have another observation about gas: it is the price for electricity. The network tariff price component for consumer electricity has reached 45%. This provides an excellent opportunity for consumers to move away from networks and build their own generation facilities. For example, we have Dmitry Konov here with us, and he would probably be happy to build his own power plant at Tobolsk, for example, so that he could keep that 45% for himself or share it with the generation company.

The second issue that I would like to address here is very short and it concerns the installation of boiler infrastructure. Is it good or bad to build boiler plants and reduce the number of combined heat and power (CHP) plants or cogeneration facilities? Let

us begin with the fact that the tariff at (new) boiler facilities is about 30–40% higher than at CHP plants. For boilers that have already been in operation for 20–25 years, the tariff would be twice as high. So we have no market forces acting to modernize these facilities. Finland and other Scandinavian countries, for example Denmark, have simply banned the construction of generators with condensing turbines. Right now, combined generation accounts for 80% of all heat production there. I will repeat what the previous speakers said: there is huge potential for increasing energy efficiency.

That is all I wanted to say.

**M. Philimonov:**

Thank you very much, Alexander.

Mr. Novak, you began this discussion. So perhaps you would like to make some concluding remarks about what you have heard, since you are responsible for policy making.

**A. Novak:**

Thank you very much.

I really liked what Alexander just had to say. The last time he and I discussed this issue was on Sunday, I believe. In fact, I often meet with our colleagues in the electricity generation industry who study those that generate, transmit and consume energy. Of course, everyone has different views. But in this case I support what my colleague, Mr. Chuvaev, has to say about what we really need to do in order to increase energy efficiency and ensure that prices for energy resources accord with the market. If there are market prices, then there will be an incentive to modernize. Of course, there is another side to this, and we must not forget that either, so that these prices do not have too great an impact on consumers. We also need to think about consumers because it is obvious that high gas prices affect all other industrial sectors, as well as the cost of electricity itself that the end consumer must cover. Sometimes decisions are made not only to build private generation facilities, but

also private transmission networks: electricity is expensive and, thus, it is even more expensive to buy it. I think that this is correct from the point of view of improving efficiency.

I believe that my colleagues who have spoken today agreed that there is no single recipe for success: either we have to employ economic incentives or establish some sort of regulations. There really needs to be a balance of measures that would mean, amongst other things, tightening our technical policy.

Different terms have been used. I believe that it has been said that additional technical requirements and standards must be developed. In my view, energy efficiency provides a really great incentive for economic development. This is not a distinct form of economic activity. It seems to me that all industries must somehow deal with the issue of energy efficiency. Of course, there are more energy-intensive industries, where, perhaps, the application of coercion and methods of state regulation would provide the greatest short-term impact. I also think that this is correct. If we, in Russia, are using thousands of billions of tonnes of fuel oil equivalent, and, as my colleague the Minister from the United Kingdom, who has already left, said, we could save as much as the United Kingdom consumes, then that is really a huge incentive for us to pursue energy efficiency. I think we need to draw conclusions, re-examine international experience, and prepare higher quality proposals regarding economic incentives and the establishment of additional requirements.

I want to thank all my colleagues for their proposals. I listened to the proposal from Vnesheconombank. We will definitely work through the issues related to the definition of priorities, more effective use of subsidies, and increasing the effectiveness of the Russian Energy Agency, which deals with these issues.

Thank you.

**M. Philimonov:**

Thank you very much, colleagues. Unfortunately, there is no time to take questions from the audience, but we have had a very good and interesting discussion. Thank you to all of our panellists.