

**THE ST. PETERSBURG INTERNATIONAL ECONOMIC FORUM 2009**

**ECONOMIC DAY**

**ENERGY EFFICIENCY AND ALTERNATIVE ENERGY SOURCES**

**June 5, 2009**

**(10:30-12:30, Hall 4.2, Pavilion 4)**

**St. Petersburg, Russia**

**2009**

**Description:**

The global energy sector is a network of interdependencies to which no country or company can remain an outsider. This round table addresses the current status of the power industry and, in particular, solutions offered by energy companies in the area of energy efficiency and application of the latest generation biofuels. The key issue of the discussion will be governmental measures needed to bring predictability and stability to the massive investment ahead in upgrading existing capacities, constructing greenfield projects and deploying new technologies on a wide scale.

**Moderator:**

**Mikael Lilius**, Senior Advisor, Fortum Corporation; Chairman of the Board, Huhtamäki Oy

**Panellists:**

- **Sergey Shmatko**, Energy Minister of the Russian Federation
- **Mauri Pekkarinen**, Minister of Economic Affairs of Finland
- **Maria van der Hoeven**, Minister of Economics of Netherlands
- **Miguel Sebastian**, Minister of Industry, Tourism and Trade of Spain
- **Binyamin Ben Eliezer**, Minister of Industry, Trade and Labor of Israel
- **Nobuo Tanaka**, Executive Director International Energy Agency

**Discussion participants:**

- **Jean-Francois Cirelli**, Vice Chairman & President, GDF SUEZ
- **Mikhail Slobodin**, President, IES-Holding, Chairman of Supervisory Board of Non-Profit Partnership "Council of Power Producers and Power Industry Strategic Investors"
- **Bernhard Reutersberg**, Chairman of the Board of Management, E.ON Ruhrgas AG
- **Jussi Pesonen**, President & CEO, UPM-Kymmene
- **Vasily Zubakin**, Acting CEO of the Board, OAO "RusGidro"
- **Ole Johansson**, President & CEO, Wärtsilä

## **Transcript:**

### **M. Lilius:**

Distinguished panellists, ladies and gentlemen, good afternoon. It is my great pleasure to welcome you to this panel on energy efficiency and alternative energy sources. My name is Mikael Lilius, I was until recently the CEO of a power company called Fortum, one of the largest investors in the Russian electricity sector. Today we are living through times that are perhaps the most challenging that modern society has faced. In the global setting we have today, developments, whether economic or energy related, are increasing interdependent. No country or company can remain a complete outsider. And we know the demand for energy will increase, despite the fact we are momentarily seeing a decline. When economic growth picks up and population growth continues, we will see a growth in energy, going forward. Well, of course, knowing that the energy system is largely based on fossil fuels, because existing infrastructure and abundant fossil fuels are there, we will continue to see a development towards more emissions, making the challenge of climate change even bigger. So we need huge investments: to change the energy system, be geared towards less-emitting production forms, and meet increasing demand for climate-change mitigation. We need more renewable energy, more nuclear energy, and also hopefully commercialisation of CCS - carbon capture and storage. We will need alternative fuels for transportation, intensified efforts in research and development, and a mechanism for technology transfer to allow for the fast deployment of new technologies and solutions.

But it is not enough only to deal with the supply side. We also need to deal with the demand side. According to the International Energy Agency, which is represented on this panel, by 2030 more than 50 percent of the reduction of energy-related CO<sub>2</sub> emissions will actually come from energy efficiency measures.

I also think we need a global agreement on climate change and set targets and prices on CO<sub>2</sub>. The Copenhagen Summit this autumn is an important step in this process. I said that huge investments are needed, and, again referring to the IEA, approximately 6 trillion dollars are needed in power plants by 2030, and 5.7 trillion in energy efficiency over the period ending in 2030. So, huge numbers.

We all know that the EU has set challenging 20-20-20 targets for itself: 20 percent reduction in CO<sub>2</sub> emissions; 20 percent increase in energy efficiency; and 20 percent of renewables in final energy consumption. In Russia we have seen significant steps in liberalising and reforming the power sector, and this initiative, to date, has shown very impressive progress. We also see that the new administration in the US is taking steps in this direction, tackling climate change and deploying clean technologies.

So things are happening. The question is, are they happening fast enough? And what is the best way

to speed up the process? What can we do, both on the corporate side and the governmental side? These are issues we will be dealing with during this panel, and I'm extremely proud to be chairing a panel with such distinguished panellists. I would like to briefly introduce them to you before we start.

On my right we have the Deputy Energy Minister of the Russian Federation, Mr. Vyacheslav Sinyugin. Unfortunately, his boss couldn't speak - he lost his voice - but we are very pleased to have the Deputy Minister here. Then we have the Finnish Minister for Economic Affairs, Mauri Pekkarinen. Then we have the Minister of Economic Affairs of the Netherlands, Maria Van Der Hoeven. We have the Spanish Minister of Industry, Tourism and Trade, Miguel Sebastian. We have the Israeli Minister of Industry, Trade and Labour, Binyamin Ben Eliezer. And, of course, we have Mr. Nobuo Tanaka, Executive Director of the International Energy Agency.

On the industrial side, starting from the left, we have Mr. Yermolai Solzhenitsyn, Managing Partner for McKinsey. Then we have Mr. Michael Slobodin, President of Integrated Energy Systems here in Russia. We have Mr. Vasily Zubakin, Acting CEO of the Board, RusHydro, and a professor at St. Petersburg State University. We have Mr. Jussi Pesonen, President & CEO of UPM-Kymmene, one of the largest forestry companies in the world, and we have Mr. Ole Johansson, President & CEO, Wärtsilä in Finland. And we have to my left, Mr. Bernhard Reutersberg, Chairman of the Board of Management of E.ON Ruhrgas.

I'm looking forward to sharing this panel with you and I hope we have a good and lively discussion. I will start off asking each panellist a question and after that, if anybody feels that they want to comment, please feel free to do so, and then let's see how this discussion continues. In order to save time, let's make sure the responses last no more than 4-5 minutes. I'll kick things off by turning to the Russian Deputy Energy Minister.

Mr. Sinyugin, energy efficiency has recently been assigned high priority on the government agenda. Which challenges do you see for energy efficiency in Russia during the economic crisis? Could you also elaborate on the plans your government has developed to improve energy efficiency? And could you also tell us something about the most recent legislative efforts and government decisions?

**V. Sinyugin:**

Well, thank you very much for your question. Good afternoon, ladies and gentlemen. Energy efficiency and renewables are bottom-line issues on Russia's governmental agenda. This was recently illustrated by our president issuing a provision on June 4, 2008, one of the first dedicated to this particular issue. Russia currently has vast potential for improved energy efficiency technologies to be taken on board. This is related to the prices for energy resources and for electrical power established in Russia. One of the important stimuli for achieving real energy efficiency is boosting

competition in the market. The main steps towards market liberalisation have been identified and we are currently engaged in this process. As for creating vehicles and a legislative framework for energy efficiency: it is especially important right now during the economic crisis to find a solution to this challenge. Towards this, we have put together a package of regulations and bylaws relating to energy efficiency and energy conservation measures, which introduces a number of mechanisms that are binding for state companies as well. And a number of efforts have been undertaken in order to attract the best available technologies and capital for application in this area. A Russian-German agency on energy conservation and energy efficiency has been set up on the model of the German DENA agency. At the moment a state energy efficiency and energy saving programme is being elaborated. Yet another question concerns renewable sources of energy, aside from big CPUs. This year, the Russian government put together a number of indicators fixing the growth of the quantity of renewable energy sources up to 4.5% for the country's total energy balance by 2020. When you include the energy from big CPUs, this is a fairly impressive number, and a highly ambitious task. Thank you.

**V. Sinyugin:**

Well, thank you very much for your question. Good afternoon, ladies and gentleman. Energy efficiency and renewables are bottom-line issues on Russia's governmental agenda. This was recently illustrated by our president issuing a provision on June 4 2008, one of the first dedicated to this particular issue. Russia currently has vast potential for improved energy efficiency technologies to be taken on board. This is related to the prices for energy resources and for electrical power established in Russia. One of the important stimuli for achieving real energy efficiency is boosting competition in the market. The main steps towards market liberalisation have been identified and we are currently engaged in this process. As for creating vehicles and a legislative framework for energy efficiency: it is especially important right now during the economic crisis to find a solution to this challenge. Towards this, we have put together a package of regulations and bylaws relating to energy efficiency and energy conservation measures, which introduces a number of mechanisms that are binding for state companies as well. And a number of efforts have been undertaken in order to attract the best available technologies and capital for application in this area. A Russian-German agency on energy conservation and energy efficiency has been set up on the model of the German DENA agency. Yet another question concerns renewable sources of energy, aside from big CPUs. This year, the Russian government put together a number of indicators fixing the growth of the quantity of renewable energy sources up to 4.5% for the country's total energy balance by 2020. When you include the energy from big CPUs, this is a fairly impressive number, and a highly ambitious task. Thank you.

**M. Lilius:**

Thank you. We then continue to the Finnish Energy Minister and Minister of Economic Affairs, Mr. Mauri Pekkarinen, with the following question. Finland as an EU member state has made commitments to increase its share of renewable energy and cut down on CO2 emissions. Finland is already well known for its advanced level of energy efficiency. Could you please share with us your view on how energy efficiency can be promoted, and what are the best practices when it comes to the Finnish experience? Also, maybe you could give us a kind of an EU perspective on the issue of what to do in terms of energy efficiency and renewable energy.

**M. Pekkarinen:**

Mr. Chairman, colleagues, ladies and gentleman, first of all I would like to thank you for this invitation to this very important event here in Saint Petersburg. And now, your question. I would like to underline very strongly that climate change is one of the biggest challenge for us in the coming decades. And we need many tools for tackling these challenges, not only in Finland but also in the EU, Russia and the whole world. Energy efficiency is one of the most important keys, once again, in the EU and Russia and the whole world. When it comes to Finland, I would like to underline that in Finland we need a lot of energy. You all know that CO2 emissions, 80% of that comes from energy production. And in Finland we need a lot of energy and there are some special reasons for this. One is the structure of our industry. We need a lot of energy in our industry. And then we have long distances and cold climate, you all know, we need a lot of energy. And that is the reason I would like to say that we have had to learn to improve our energy efficiency and we have learned to improve the use of energy. In Finland, our total energy consumption is about 310 terawatt hours per year. Five million inhabitants and our total energy end consumption is about 310 terawatt hours.

Our new climate and energy strategy says that our energy consumption might be in 2020 about 350 terawatt hours. And now our target is to decrease energy consumption to 310 or 300 terawatt hours. You can see that the task we have is quite broad, I would say a big challenge. But our aim is to fulfil this kind of new strategy, the targets we have set. And now, which kind of activities we have already today. All available means should be directed at achieving greater energy efficiency. This includes the broader and small rapid introduction of current techniques to develop new more efficient technologies, financial steering shots as investment aid, and taxation new legislation and litigation, advice and training. International cooperation is also a prerequisite to utilising good practices. Due to its energy intensive industrial sector and the cold climate I already mentioned, we really have to improve our energy efficiency all the time. For example, Finland has one of the

world's highest shares of the highly efficient coal generation of electricity and heat; another good example can be found in our efficient boiler technology developed for biomass combustion. Meanwhile, with our industry for heating buildings, in particular end-user efficiency has been enhanced and energy efficient technology adapted. Furthermore, the phased tightening of building regulations has proven effective in steering of new construction. In the current decade, a key means of effecting energy use has been the conclusion of energy efficiency agreements between organisations and companies representing trade and industry and other sectors, and also municipalities. These agreements have been far-reaching and have yielded good results. Actually, from 1998 we have managed to decrease our energy consumption by about 9 to 10 terawatt hours per year. We do think in Finland that these kind of results had been far quite encouraging and that is the reason we want to continue this way and try to reach new very good results. Through state-supported energy audits, companies and organisations have already obtained extensive guidance on practical energy saving measures. Despite these significant achievements, much remains to be done in terms of savings and efficiency.

For the energy efficiency committee, which will soon complete its work, we will present concrete new measures for achieving this objective. While the last part of these objectives will be achieved through EU norms relating to machinery and equipment, most will be based on our own domestic measures. Mr. Chairman, these are some examples of what we already have done, and now, as I already mentioned, our new target is to decrease our energy consumption about 40 terawatt hours per year to 2020. We will continue this kind of activity, but we need a lot of new activities and this committee will give some new guidelines for us to work towards. We need both Europe and EU-level activities, but it's also very important that we have our own national activities. Both of these kinds of activities are needed, because we want to reach our target of decreasing energy consumption by 40 terawatt hours. Thank you very much.

**M. Lilius:**

Thank you, Minister Pekkarinen. Finland is a large importer of energy; the Netherlands might have a slightly different view on energy efficiency, because it is producing exports of hydrocarbon. Could you, Minister Van Der Hoeven, comment on the importance of predictability and proper investment climate when it comes to investing in any energy, either oil and gas sector or now, energy efficiency and alternative sources of energy? And it would be very interesting if you also hear how the Dutch government plans to ensure cutting CO2 emissions.

**M. Van Der Hoeven:**

Thank you very much. I'll try to answer your questions in a short time but we have more than an

hour and a half to go. So, if I don't manage to answer all your questions, there will be some time for it later. Thank you.

**M. Lilius:**

Very good.

**M. Van Der Hoeven:**

Ladies and gentleman, the idea of having a session on energy at the economic forum in Saint Petersburg shows that without energy there is no economic development. This is very clear, and it means that we have to do all we can when we are talking about energy efficiency. Because everything that we do to safeguard security of supply and to protect our living environment has to do with raising energy efficiency, that's the first place to start. And it's not easy, it's difficult. Because when we really want to make more efficient use of energy resources, it requires a complete break with existing patterns of thinking and behaviour, and that's difficult. I think it's very important that we engage business and industry as well as consumers in everything that we do in the government. In all our ambitions, we need to involve business and industry and consumers. And we have to be predictable in our subsidy schemes for instance, and we have to have a stable investment climate. And that means that it isn't a good thing to change policy every year, every four years, although of course every four years there are elections in the Netherlands, like in all our countries, which means there might be a different government. But we have to make sure that there is a stable investment climate through the years. And as for the Netherlands, in 2012 we want the yearly tempo for energy efficiency to be increased from 1% per year to 2% per year. This means doubling our efforts and setting high targets, that's one thing. But the next question is how? How are you going to realise it? And sometimes you need to take small steps, because you have to see to it that you have this joint initiative, this joint partnership, which has to be there all the time. And when we are talking about energy efficiency, I would like to think about this as a field of opportunity. And of course, economically speaking, times for investment are rather uncertain, but the question of course is, what can governments do to bring predictability and stability to this massive investment ahead? As far as I'm concerned, the answer lies in developing strong and lasting, sustainable public-private partnerships in the field of investment and in the field of innovation. So, what we did in the Netherlands: we had some long-term agreements with representative organisations and with large energy-consuming companies, and their commitment is really of vital importance. We had some environmental legislation being put into place. For instance, laying down the obligation for industry to implement all energy efficiency investment with a payback time of 5 years or less. And the result? Well, our industrial sector has achieved an average annual energy efficiency reduction of

2.1% for the last 15 years. Now it's a standard part of facility management and it plays quite an important role in investment decisions in a lot of firms. But the largest energy reduction potential is within the existing building stock. Cooperation is really a must in that area, and we have a set up a program called "More with Less," a joint initiative from the government, energy retailers, social housing companies, building and installer companies; it's also supported by house owners and consumer representing organisations. I would like to emphasise that the joint purpose is to make 500 000 buildings 30% more energy efficient in the period 2008-2011, and 2.4 million buildings by the year 2020. So, this is really a serious target, and it forces us to take a critical look at how we work, how we live, how we organise our lives and our businesses. I would like to end with one other remark. We are working on profound changes, and we can't do it by ourselves as a government or even as a country. I think international cooperation is very important for such changes. We really need to bring together knowledge and expertise and technological research wherever we can, whenever we can, and exchange the best practices, so that we all can profit. In the end our climate will profit from it, and the young people coming after us will profit from this as well. Thank you.

**M. Lilius:**

Thank you very much. Before giving the floor to Miguel Sebastian, just one thing I would hang on to: you said that the largest potential is in the existing building stock. Now, coming back to the European energy ministers here: we know that the 2020 targets, the emission reduction, the renewable target is binding, which is challenging. Whereas the energy efficiency target is not, that is, it's all known technology. Could I just briefly ask you three European ministers, shouldn't actually the energy efficiency target be binding, because it is the easiest to achieve?

**M. Van Der Hoeven:**

It's not the easiest to achieve, but if you -

**M. Lilius:**

The technology is known.

**M. Van Der Hoeven:**

That's right, the technology is known. But if you really want to achieve CO2 reduction, start with energy efficiency. Because it leads to CO2 reduction, because you need less energy so you need to produce less energy, etc. And you know, the interesting thing is, producing energy is something consumers, well, as they tell me, "that's far away." But energy efficiency, they feel it. It's as simple

as that, you just have to start at the other end.

**M. Lilius:**

Minister Becker, do you want to comment?

**M. Pekkarinen:**

I have understood that our view in the EU has been that there are two different alternatives to go forward. And many times, these alternatives work together. We can decrease our consumption, and then we can decrease our consumption by improving efficiency. And these are quite clear synonyms, but not exactly. There is a difference and I think that this is the reason we have not made binding targets to 2020. There are maybe some other background but I believe that this is one of them.

**M. Lilius:**

Thank you. Miguel Sebastian, do you want to commit on these before getting your own question.

**M. Sebastian:**

Of course, because when we talk about efficiency, saving, we are not talking about reduction in energy consumption per se. We are talking about a reduction in the ratio of energy consumption to GDP. So, there would be an easy way to reduce consumption, which is just to drop the growth of GDP, but we don't want that to happen. We want to keep on growing, but with more efficient use of energy. But anyways, I think I was appointed to talk about renewable energy, Mikael, and I want to talk about that in the 4 minutes I have. Before I talk about the Spanish case, I would like to make a sort of philosophical, general point, which is that renewable energy is not a zero-sum gain. It's a win-win option for everybody. It's clearly a win-win option for oil-dependent countries, because we increase our energy independence and we increase our national income, because we don't have this external transfer to oil-producing countries. That is obvious. But it is also a win-win option for oil-producing countries, not only because of climate change, which is bad for everybody, but also from an economic point of view, because we are talking about an exhaustible resource, oil or gas. And if you have an alternative, from an optimal structure point of view, it will be always good to develop an alternative energy source, even if you are an oil-producing country. So, I think it's a win-win option for everybody.

Now, Spain. Well, the whole world has 120 gigawatts of wind power, 120 for the whole planet. Spain has 16 of this 120, which is quite remarkable since we make up less than 2% of the world. So, we have made a huge effort in wind power. We are also country #4 in solar photovoltaic installed

capacity. Why? It's not only because we have a lot of sand, which we have; a lot of wind, which we also have; also because of the heritage of Don Quixote de la Mancha and the windmills, that we have! It is because we are an extremely oil-dependent country, and also a country with extremely bad performance regarding CO2 emissions. That's why we have made this huge bid for renewable energy. And we are country #3 in wind power and country #4 in solar energy. Of course, we don't want to do it only for ourselves and our companies, like Iberdrola (which is company #1 in the world in wind power operation), and Gamesa and Acciona (one of the top five companies in turbine production). We are investing not only in Spain, but everywhere in the world, and we think that renewable energy is the source for future growth.

What do we do from the government point of view? We try to provide a good regulatory framework. We think this is very important. We have made some mistakes in the past from which we have learned, and we are willing to share our experience with this regulatory framework. We have opted for a feed-in tariff model that provides good certainty, long-run vision, and of course, support for R&D in our companies to take advantage of the learning curve. We have also focused a lot in integrating wind power in the grid. Every single wind power turbine in Spain is integrated in the whole system in a centralised way through our transmission operator, Red Electrica Española, that optimises the supply of wind power electricity. Last quarter, 1/3 of electricity was renewable energy. We are very happy with that, but we don't want to stop there. We want 42% of our electricity in the year 2020 to be renewable and we still have a long way to go. And I want to encourage everybody, all companies and all countries, to follow this way together. And of course, it's not only good for their long-run but it's also good for the short-run to fight the economic crises. We are talking about 150,000 jobs in Spain due to renewable energy, and now Spain is exporting more renewable energy than wine, and you know that Spanish wine is also very good. Thank you, Mikael.

**M. Lilius:**

Thank you very much.

**M. Lilius:**

Talking about R&D and support for R&D gives us a good bridge to our friend from Israel, Minister Ben Eliezer. Israel is well-known for its high R&D spending and advanced venture funding activities. Could you please tell us something about your views on energy efficiency and alternative energy sources, in terms of R&D spending and venture funding? Is energy efficiency really attractive from the point of view of investors seeking returns?

## **B. Ben Eliezer:**

Distinguished colleagues, distinguished audience, regarding the first part of the question, the renewable energy market, being an infrastructure and capital intensive market, is not the classic type of investment for venture capital or for smaller companies, such as those that are very common in Israel. Traditional venture capital investment in areas such as IT, communications, medical devices, etc. is based on returns from investment over a period of five to seven years, at a certain risk level and with certain expected return of funds. The renewal energy area is different, as it requires much larger investments since it involves infrastructure, and although the potential return is very large, so is the risk level. In order to bridge the gap between the expectation of the VC market and the needs of the renewable energy sector, the segment of energy efficiency can become an interesting solution. The reason for that is that this segment acts in a similar manner to the traditional VC investment model. Instead of investing in developing new technologies from the beginning, energy efficiency means taking the existing technology and improving it enough to make it economically beneficial. The size of required investment is not very large and similar to the investment in traditional VC sectors, and as a result the level of risk and return on investment are also similar to those of regular VC investment. This model enables VCs to enter the clean takes sector without changing completely the business model that they are used to working with. The question is whether this area really has economic potential from the point of view of the VCs. I believe that since this is a huge segment, any improvement and increased efficiency - even if this improvement is relatively small - can result in very significant returns, thus making it profitable and interesting for VCs and other investors in R&D. A survey that was done with VCs shows that most of them see clean take as a growth area. In Israel, we see significant growth in VC investment in these areas. According to Dow Jones, VC investment in clean take in 2010 will reach to USD 200 million. With a proven record in innovation and technological leadership, many examples have already emerged across several subsectors. Two samples are metro lighting, energy efficient lighting for high intensity lighting, street lamps, warehouses, Tigo energy efficiency for existing energy, and new solar PV installation. In addition, Israel is world-renowned for its water efficiency, water management solutions, in which Israel specialises. These are actually energy management tools since the act of collecting, cleaning and managing water are all extremely energy intensive. Last but not least, I would like you know that in the last month, the Israeli cabinet has taken two very important resolutions. One, to declare PV upon the area from Beersheba up to the southern part of Israel (which is very sunny, like in Spain). All that is with national priority for renewables, which means less taxes, means almost zero - the cost of the land - and it means a lot of encouragement by the government. The second decision is that every year up to 2020, we have to build a solar power station for at least 250 megawatts. Beside all that, I think that you can see now how PV is entering

in the country almost every day and everywhere. I certainly believe that this is the future. Thank you.

**M. Lilius:**

Thank you. Now, we heard speakers representing the view of the developed economies. Now, Mr. Tanaka, Executive Director of the International Energy Agency (IEA), could you please elaborate on the situation for the emerging economies, because to them it is not only a way of energy efficiency, it isn't only about reducing costs, but also a way to increase demand for innovation. How do you see the role of energy efficiency in the emerging economies, and, since we are here in Russia and it's a very important question overall, what is the best incentive to promote more efficient energy use, a stick or a carrot or a combination of both? Finally, we all know that you are providing 25 recommendations. Could you pick the 3 most important recommendations specifically for Russia?

**Mr. Tanaka:**

Thank you very much, Mr. Chairman. Well, we have to use everything to make this efficiency possible, from carrots to sticks, everything. And for the European community, we are recommending these efficiency targets as binding. That is the best way. It is very unfortunate, as it is not that far, but it is certainly going to be very important as a sort of "low hanging fruits" for getting a better economy and also mitigating CO<sub>2</sub> emissions. For the developing countries, it is obvious in our calculations that efficiency can be achieved much more effectively in the developing economies. We calculated that, by investing one dollar in demand-side efficiency equipments or business, you can save about 1.5 dollars of investing into the supply side. I mean electric generation or transmission in the developed countries or OECD countries. This ratio is doubled in developing economies. If you invest one dollar into the more demand-side efficiency appliances, housing, then you can save three dollars in building electric generation and transmission facilities. So it is obvious that you can gain much more in developing or emerging economies than in OECD. In fact, in climate change mitigation, we are calculating how much CO<sub>2</sub> emission reduction should happen in OECD and non-OECD countries. In our projection, from business as usual to the real reduction of CO<sub>2</sub>, two-thirds of emission reduction should happen in non-OECD countries, because economy growth happens there. OECD growth is 2%, non-OECD growth is 4.8%, so greener growth is really necessary with using energy efficiency. That is the solution for developing economies. For Russia, we recommended 25 very detailed recommendations of energy efficiency for all G8 countries: incandescent lighting bulbs facing out, that's an easy one, building and installation standards, transportation, auto fuels standards, appliances. There are lots of things you can do, we know what

to do, but the important thing is to implement it. That is really tough, as the Minister of Netherlands said: we know what to do, but to make it happen, the government should coordinate everything. Many of the governments have agencies in-charge of different area of efficiency. How can you do that in a strategic way? You need good leadership of the government. My last recommendation for Russia, something to do fast, is to stop subsidy and price control. That is the best way to increase energy efficiency. Also, I am surprised by one thing here at this conference. In many of the international conferences I have participated in, climate change takes up probably half of the discussion. The other half is devoted to the financial crisis. Here, this is the only session where we are talking about climate change. Climate change is a challenge. We have to really change our system of economy. Oil prices are getting higher and higher because of the supply and demand situation but not only because of that. We have to put carbon prices on it. In our projection, in 2030, the carbon prices should be 180 dollars per ton of CO<sub>2</sub>. This means that we are no longer in the cheap energy age. We are now in a very different age with a huge economic crisis, oil prices are now 60 dollars! This is historically a high price. So, we are now coming into the very high energy price age. Still, when you look far ahead into 2050, oil prices for consumers are very high, but not necessarily for producers, because of demand peak will persist on reduction of consumption. So, this is probably what would happen if all global communities are serious about energy climate change. Climate change provides a huge business opportunity. We will now talk about the case in Israel, in Spain, the Netherlands, Finland - there are big opportunities there. If the government set the right framework for doing so. If you don't do that, you will lose a business chance, you need to be building the new business models to compete in this mega-competition. I am afraid Russia is a huge exporter of coal, oil and gas. You have a fossil fuel economy, but this will not be continued forever. This is an opportunity to move into a new industry and economy, and that is your opportunity.

**M. Lilius:**

Before we turn over to the industrial representatives on the panel, I'd like to ask the following question of Mr. Miguel, and maybe Mr. Johansson. We have been talking about the economic recession we are all trying to find the growth driver. Do we believe that clean technology could be an economic growth driver in the future?

**Mr. Miguel:**

Yes, as I said before, the Spanish case, for example, it's clear we have made this bid for renewable energy. We also want to make a strong bid for energy saving, energy efficiency, and this is a source of growth, of employment. Not only because any energy we save implies an increase in national

income - because all of our energy is fossil - energy is important. But also, it improves industrial development. And as I have said, we are exporting already more renewable energy than exporting wine, which is seldom the case. That is, even when these things are costly in the short run, in the long run, they become profitable for the economy and for employment.

**Speaker:**

Thank you. Mr. Johansson, do you see that clean technology could potentially be a growth industry in years to come?

**Mr. Johansson:**

Thank you very much, Mr. Chairman. Absolutely, as long as we remember that clean technology is not only via technology, biofuels, etc. Clean technology is also energy-efficiency, and as long as we accept that, it would mean that we will continue to use fossil fuels. We are bound to do so, but energy efficiency is the key and there technology plays a role, and as long as they keep that in mind, I'm in full agreement on that.

**M. Lilius:**

Thank you. The organizing committee has now asked us to use this year's new invention. They have asked us to involve the audience and get advice from them. And, this time, we all should vote. I hope from me you have received this small thing that looks like a mobile phone, but it isn't. If you press the green button, then it's on. And the question we've been asked to respond to by organizing committee is: In which sector would you start improving energy efficiency in Russia? Number one is households. Number two is the energy sector. Number three is the utilities infrastructures such as heat pipes and so forth. Number four is the public sector, like schools, hospitals. Number five is industries and number six is transportation. So again, press the green button, pick your choice, anything from number one to number six, and let's see what the eventual vote actually will be. So, let's press the button now. It should take a minute or two before we have the answers.

So, here we have the answers with a clear majority for number five, which is industries, and then number three, which is utilities infrastructure. Minister Sinyugin, do we have a wise audience here? Do they come up with the right solutions for where to start improving energy efficiency in Russia?

**From audience:**

The solution will be elaborated. In my opinion, items number three and number two are critically important, however it is essential that the audience marked number five.

**From audience:**

Definitely, the largest share of energy is consumed by industry, that is why the audience chose number five. Altogether there are several issues. McKinsey & Company has been looking into this issue all over the world. I absolutely agree with the comment made by Mr. Tanaka: on average one dollar spent on demand-reduction side saves two dollars of investing into the supply side. There is another way to say this: if we as a planet make investments in energy efficiency, we will be able to reduce the world energy demand growth rate by more than 50%. Quite often this growth – those involved in oil and gas industry are aware of that – is an expensive thing: it is getting more and more difficult to find sources of hydrocarbons. Such investments are fairly expensive however the major potential lies in developing markets where investments are 30-40% cheaper than investment in developed markets. This is not good for Russia – for a score of reasons it costs more to construct in Russia than in Europe and America. That is why special care should be taken while identifying investments to make.

According to our estimates as well as the World Bank estimates the efficiency growth potential in sectors of Russian economy varies from 30 to 45%.

You asked what the state should do. We examined what the states of the world are doing. The first issue is the goal setting mechanism. So far no clear national goal in terms of energy efficiency has been publicly announced by Russia. What is being discussed is requirements to standards. However after all an established goal is instrumental not only in terms of ensuring awareness and transparency in this area but also in handling another problem. Standards, especially in this country, are always a pretext to, first, put innovations on ice and, secondly, evade those by means of all kinds of transactional decisions. There are lots of standards in Russia and we all are aware that many of them are not observed. It looks like Russian society should better define the end product, measure it and leave more flexibility in terms of how to reach this goal. However standards are definitely needed in the segments like electric bulbs, electrical equipment and light industry.

Besides, the whole world is faced with the motivation issue: what is the way to force a TPP or an energy company to sell less energy? What is the way to force a construction company to construct a less power-efficient building? Certainly, this should be thoroughly thought over.

Now the issue of subsidies. Let us take an example: many industrial companies have started constructing their own power/heat generation capacities. This involves cross-subsidiation. Can cross-subsidiation be reduced and can the respective population segment be subsidised directly? There will be no need for the companies to implement their own alternative solutions. This is a more efficient way for the industry – resources will not be spent in vain.

Finally, my last consideration. Huge investments are needed for Russian infrastructure: construction, roads, buildings, pipelines and power plants. Efficiency for us is in many regards a

way to avoid unnecessary investments both in power generation and in hydrocarbon production. And since, unfortunately, our investments have not been yet efficient – this is the major economic substantiation to be developed.

**V. Sinyuigin:**

I would like to add that last year the goal was set to reduce energy intensity of Russian GNP by 40% by 2020. This is our goal, it has been articulated and we are moving ahead in a planned matter. Thank you.

**From audience:**

That is exactly what I meant. The goal is set, another thing is that we do not have sufficient institutional environment and we are anticipating the introduction of the law on energy efficiency that is supposed to increase the institutional side.

One more thing to add. My understanding is that over the last half a year the electricity consumption decline rate has actually exceeded the GDP decline rate.

**M. Lilius:**

Now, I would like to give the word to Mr. Reutersberg. Could you elaborate on the following question and I would also like you to answer from your perspective. The energy business is long-term, and decision-making spans over decades. On the one hand, investment to ensure the supply of gas to Europe, for example, requires billions, and returns can only be expected decades later. On the other hand, we should be making investments to address the challenges faced by climate change. What can be done to reduce uncertainties in the energy sector and could energy efficiency be one of the solutions?

**Mr. Reutersberg:**

Yes, thank you, Mr. Chairman. Before I try to answer your question, let me first elaborate a little bit on the results of the voting. First of all, I would like to mention that our addressing energy issues here at the economic forum is not surprising, because we are in the country with probably the largest supply of energy in the world. However, energy efficiency is something that, when examined, produces unexpected results. For our company, which is probably the largest consumer of Russian gas, it is a really important issue because we are aware that in Russia energy efficiency has a lot of potential. When we look for new resources for gas export, Russia should seriously focus more intensively on efficiency, because it is probably the most efficient exploration of additional resources for export. We know that the inland gas prices are relatively low, so to sell them at a

higher price in export is a very attractive business, which in the end will lead to a win-win situation for exporters and importers in the European area. Coming back to your question: is energy efficiency or climate protection a contradiction to long-term perspectives for the energy industry? I personally have my doubts. Of course, the energy industry has certain characteristics. Supplying our economies with secure, competitive and climate-friendly energy involves a high capital commitment, long pay-off periods, complete commitment, and large technical and economical investments. These general characteristics of our industry will not change in the future. We make forecasts in terms of decades rather than years or quarters. The energy industry therefore needs a leading energy policy that is of a long-term nature and is geared evenly towards the goals of competitive, secure, and environmentally friendly energy supply. However, this is not always taken into account in practical policy making. For example, the speed and intensity of market intervention and the short-term nature of political targets mean that the energy industry does not have the framework it actually needs taking into account the long-term requirements for energy supply. This can result in serious difficulties that may lead to faulty assessments and thus incorrect investment decisions. We also discover that quite often policy makers give precedence to one goal, such as competition with rivals, and make this the focal point of their activities. One such example is the EU's third internal market package. The <inaudible> in respect of the various models for unbundling gas trading, and transmission may impair the ability of European import companies to act on the international procurement market. This runs counter to the goal of ensuring security of supply. Let me therefore appeal to political decision-makers. Greater account than before must be taken of the requirements of a long-term, non-contradictory and cautious energy policy. Given the growing importance of the international, indeed, global dimension of energy and climate issues, the greatest possible coordination of energy and climate protection policy is needed at the international level. In this respect, we eagerly await the outcome of the forthcoming world climate conference in Copenhagen. So, let me summarise what energy needs. We need clear predictability from policymakers. We need a clear target setting from governments. We need the right legal framework and in some cases, we need subsidies to start certain technologies. What we do not need is a clear decision on the policy side about what kind of technologies we need to achieve our targets. Thank you.

**M. Lilius:**

Thank you very much. Mr. Cirelli, could you comment from your perspective on the same issue, because you are in the same industry, different country.

**Mr. Cirelli:**

Thank you. Good afternoon, I will not be in disagreement who is my good friend from E.ON. Clearly, energy efficiency is not the solution for the investment that we need in the energy sector, but it is clearly part of the solution. Having said that, I do fully agree with what has just been said regarding the predictability and the role of the governments in this predictability, which means a fiscal, regulatory framework, which is clearly investment-friendly. And clearly the role of the government is key in this matter. We have just come from a meeting with the president of Russia, and my good friend from Shell said that we have to open new areas for exploration, to be more open to companies for investment, because we are also constrained in this field - not everywhere, but in some cases. But what is striking to me is that today what is expected from the companies is also very huge. When we see the number of investments at stake: to rebuild the energy sector, to modernise the energy sector, to deal with the new demand for energy in the world. The amount of money which is at stake is billions and hundreds of billions of dollars and even billions and billions of dollars. What it is key for this is to consider: where will we find the companies in the world willing to invest for all this money? Where do we find an executive board willing to approve projects given the size and the amount of money needed. So, it is very important that in the coming months and years we strengthen our companies in the energy sector to be able to invest in what is needed today, bosses need to respond to the demand in the world in terms of the amount of money needed for investment, and to have less CO<sub>2</sub>, and to increase the efficiency of energy. What is at stake is huge and we need strong companies to do it. The world is happy to have these companies but we should be very careful not to farm our companies all over the world, because we need them for the challenges lying ahead.

**M. Lilius:**

Thank you. Now, one of the things we talked about in relation to changing the industry, the energy sector, is how to finance, how to transfer technology. And Wärtsilä represents the forefront of energy technology and operates globally in different markets. What in your view is the best way to promote technology transfer, energy efficiency, to emerging markets, and what is required to successfully corporate the companies in emerging markets to transfer technology? Mr. Johansson.

**Mr. Johansson:**

Thank, Mr. Chairman. With all due respect, in my world, the definition of emerging markets when we are talking about energy efficiency is not necessarily a proper one. Let me explain. President Medvedev in a recent speech in Helsinki said that the energy efficiency of Russian industry is stone age. And we all know that parts of the US energy infrastructure could be characterised with similar

words. As an example, I could mention the gas pipeline network, which is extremely energy consuming. Whereas there are Sub-Saharan and Latin American countries that have developed technologies that are highly energy efficient, and that is really my point. I think when it comes to technology transfer, it is our job as technology providers, it's the governments and the regulator's role as regulators to look for those holes in the system where energy efficiency can be improved. In my opinion, the advisors and consultants of this world have a big responsibility here when advising in what we normally call the emerging world. The big responsibility comes from the fact that it is not their job to determine what technology should be used, but rather to make sure that we have a level playing field and that efficiency is properly measured. There are ample technologies in the world that can be brought to the place and that can then contribute to the solutions. Thank you very much.

**M. Lilius:**

Thank you. Now, Mr. Pesonen, talking about alternative fuels. UPM was the largest user biomass in energy production. It also has very ambitious plants for biofuel. What should governments do in order to promote use of biofuels in terms of regulation, taxation or other incentives to get it off the ground?

**Mr. Pesonen:**

Thank you, Mr. Chairman. I guess that in the audience there are plenty of you wondering why a paper company is participating in the energy round table discussion here in St. Petersburg, but I will explain. I think that most of you might know that you might know that UPM is one of the leading paper companies in the world, but I guess that only very few of you know that we are also a leading bio-energy company. UPM only produces 30% of the total Finnish bioenergy. So, bioenergy, CO<sub>2</sub>-free energy is a natural part of the forest industry value chain. Energy is, as Mr. Chairman was saying, a huge growth business area for UPM, especially CO<sub>2</sub>-free, emission-free and bio-based energy is what we do. Today, UPM currently operates more than 20 biomass heat and power plants in Europe, and many of those are the world's largest bio-based units. During the last 10 years, we have invested more than a billion Euros in renewable energy. So, renewable energy and electricity are a core competence area for the forest industry. On top of that, CO<sub>2</sub>-free and bio energy: we are developing the so-called 2nd-generation liquid biofuels business. Currently, we have three projects going on: first, bio-diesel based on forest residuals; second, industrial cellulosic waste bioethanol; and then finally a bio-oil project based on forest residuals. But then coming back to your question, Mr. Chairman: what should government do to promote the use of biofuels? First of all, I feel that the governments should provide a stable and predictable operating environment. These investments

are large and they exist for the next 20 years at least. Four points that governments could do, in my opinion: support demand by mandating use of biofuels and providing task exempts. Secondly, governments could support the technology development and piloting through direct R&D funding, and then thirdly, investment support to develop and ensure the availability of the cost competitive inputs (biomass and electricity). So, these four items governments could provide to the industry. Thank you.

**M. Lilius:**

Thank you. Now, we move to our Russian friends and the question I would like to post to Mr. Zubakin is the following: RusHydro is a company with a key focus on operating hydro plants, but also your company plays an important role in developing alternative energy sources in Russia. Does this activity create demand for innovations and what kind of support does it give for complimentary industries?

**M. Slobodin:**

Fundamental and applied research as well as technological developments is underway all over the world with the purpose of meeting two major challenges – improving efficiency of renewable energy sources and increasing efficiency through the reduction of incremental cost. It should be noted that our company is also travelling in the same direction. Ca. 1% of our investment programme is spent annually on research and development. Apart from our own research institutes we also involve design bureaus and plants, as a rule belonging to military-industrial complex. This is a Russian peculiarity: all equipment for tidal power industry is being custom-built and designed at Severniy Mashinostroitelny Zavod which main products are atomic submarines. Almost all equipment for experimental prototypes of geothermal machinery and for geothermal power stations is manufactured at Kaluzhsky Turbinny Zavod – this is also a defense plant.

In certain areas Russian researchers and specialists are leaders – for example, in tidal power industry. In some areas we are on the average European/average world level – like in geothermics. However in wind industry we fall behind – I would say, fall behind forever. Russia today does not have technologies enabling the above mentioned Spain, Denmark, China, Japan, and the USA to annually commission thousands megawatts of windmills. Unfortunately, in this area despite the presence of most reputable research schools in aerodynamics and in aircraft industry, we will have to go along the road of equipment importation which we are currently doing. Later on localisation is possible and, in partnership with defense industry enterprises, creation of a whole new windmill industry. Today hydraulic power industry is the most promising area for the development of renewable sources in Russia. It is suffice to say that only 4% of Russian Far East hydropotential is

being utilised. As a comparison: in Norway the amounts to 99%, in Italy to 96%. Within years in investment institutions, in financial community and among specialists involved in handling climate change and fighting greenhouse gases an opinion prevailed that construction of large power stations with water storages is not good for the planet because of accumulation of methane in water reservoirs. I need to say that both our and Canadian research disproved this opinion: there is a positive effect of the construction of large stations. Yesterday in Rome a summit of Energy Eight, the eight world largest electric companies took place. It is very important that the final document of the summit rehabilitates large CPUs.

This gives an additional signal to Russia: we need to increase efficiency of existing structures and developments in electric power industry and expand construction of such facilities. This will be a contribution to the resolution of the issue Russia and that whole world community is faced with – increasing the share of energy generated using renewable energy sources. Thank you.

**From audience:**

Mr. Slobodin, you are also representing a traditional Russian energy supplier. It is really of interest for you to implement energy efficiency for your consumers because such actions reduce demand for electricity, energy and heating power? Could you tell us about any such successful energy saving spheres where you really, sort of, founded it commercially attractive? And the other point is, which measures do you expect from government in order to support energy officials?

**M. Slobodin:**

Thank you. This is really a big question – why would energy companies supplying power help consumers save power and, as a result, reduce demand for their product? For IES-Holding, one of the largest suppliers of electrical and thermal energy in the Russian centralised heat market 2009 is the year of energy efficiency. This is not just a fashionable thing to do, this is our response to what is happening today in the world, in Russian economy and what is happening with our consumers. This is the position we have established for ourselves.

Why 2009 is the year when our company is so concerned with energy efficiency? First of all the financial crisis has put all participant of economic process, including our consumers in very serious and tough environment. In the previous years we were constantly growing, prices were not that important for our consumers – availability of resources was the most critical issue: in 2007, 2006 and in the first half of 2008 the most important issues were connections, new capacities, etc. Today price sensibility of our consumers is significantly higher. This means that they experience a huge stress operating in the conditions of decreasing demand, deterioration of their economy and reduction of prices for their products. At the same time Russia experiences quite a significant

growth of prices for energy resources. For example, by December 2009 gas prices as compared with December 2008 will have increased by 25%. Price for electric power is following gas prices and this definitely is putting our consumers in complicated and difficult conditions – their revenues are falling, the prices for energy resources are growing, they are getting closer to the world prices. Our company is especially strongly dependent on the consumers of thermal energy: our electricity production depends on their consumption. That is why our task is to help consumers survive in such extremely difficult conditions.

In the 90's heat and power plants went through significant reduction of consumption and transferred to alternative thermal energy sources which resulted in their loss of competitiveness. We would not like this to happen again. That is why we are taking significant measures, in cooperation with our consumers, to use the energy we are generating in the most efficient manner. First of all this applies to large consumers having alternative energy sources. We suggest that they should get back to our heat and power plants. By doing this we increase generation of both thermal and electrical power and provide discounts on the previous price for thermal energy. At the moment we are implementing projects with four large financial and industrial groups. Customers are We are getting back, generation of thermal power is growing, all in all we are saving ca. 10-15% of gas while generating energy resources.

Now let's talk about small and medium-size consumers, i.e. public sector entities. Today we want to examine their experience and state-of-the-art practices in implementation of energy-saving programmes and programmes for saving of energy resources. Budgets are under serious stress today. Fiscal revenues, especially local and regional revenues have dropped by 30-40%. They can not pay in full for energy resources, that is why the issue of indebtedness is critical one as well. We are jointly looking for a way out.

Our company announced an energy cooperation contest – we were identifying the best consumers of electric and thermal power. Not in terms of how much they pay but in terms of how they save energy. Our goal was to attract attention to this issue and to show whose experience is the best. At the same time we arranged a contest for “energy vampires” to identify the least efficient consumers. This was done to show what should not do. An interesting observation: at absolutely the same apartment blocks belonging to the same construction series with the same floor space used by the same type of public entities the range of thermal energy consumption varies from two- to six-fold. This means the situation can be improved six-fold. People see how this difference emerge and where the improvement potential lies.

We organised one more contest for the population – thirty days of energy efficiency. Energy saving starts with everyday decisions, you should start with yourself. The culture of energy consumption is of utmost importance. Unfortunately, in this regard Russia is far behind Europe and other countries

of the world. Thus we arranged a contest and introduced ten simple ways to save electric power – switch off the light for example. We received huge response from people who really save electric and thermal energy – and we are not talking about manipulating with power metres. We got letters from penal institutions, from pensioners, students, etc., from a very wide range of people. People really implemented those steps within a month – simple steps that do not require any significant investments. The result is as follows: using ten simple ways you can save from 15 to 25% of electric energy.

I will give you an example for mere entertainment. We received a letter for our reader. He read the information about our contest and got interested. He got rid of the fridge made in 1972 and a 20-year old iron. He bought energy saving bulbs, a new fridge and a new iron. He tested all appliances, they all worked, and so he decided to celebrate this event and was drinking for a month. Then he checked how much energy he consumed over a months . Zero kilowatts... We contacted this person. It turned out that he just invented this story for the sake of amusing us

I told all this to make you smile. In fact the energy saving issues are critically important in Russia today. We talk a lot about this but unfortunately do very little. Definitely there are people who are interested in this issue. Heads and chief power engineers of the majority of companies who became winners of our contest are people for who this is an issue of utmost importance.

We often refer to the fact that we do not have certain law and so on. If my memory serves me right, the old 1996 law on energy efficiency did not work properly. The version of the law that is being currently discussed, in my opinion, contains fairly realistic tools and opportunities to launch the process in question. Everyone should start with themselves. Switch off the light, turn off the tap while brushing teeth. The tools elaborated by our company in cooperation with consumers, and those that will emerge upon the implementation of the above law really help saving resources, use our product more efficiently and get better payoff. This means that Russian economy will get stronger. This means that we will be able to overcome the crisis sooner and that we will be rich and happy. Thank you.

**M. Lilius:**

Everybody on the panel has responded to one question. Are there any comments to a previous speaker, or some add-ons to your comment, please go ahead. Mr. Sebastian?

**M. Sebastian:**

First, I have a very small comment on energy saving. In my building, in the Ministry of Industry, Tourism and Trade of Spain, we made a plan for energy saving. And in one year, we saved 17% of our electrical bill. You may think it's not enough, but it's enough to pay for the salary of the

minister and all the high officials in my ministry. So for the taxpayers it's also good news. The comment I wanted to make is regarding international cooperation on energy issues. I would like to give two examples. One is the agency IRENA, International Renewable Energy, which has been created, 85 countries has joined, and we would like Russia to join us. The second is the Mediterranean Solar Plan. This is a plan to promote the joint effort of all the countries around the Mediterranean Sea to promote solar energy. For so many years, energy has been a matter of conflict, a matter of war. Now hopefully, with renewable solar energy, energy could be a matter of peace. Thank you very much.

**M. Lilius:**

Thank you. Mr. Eliezer?

**B. Ben Eliezer**

I would like to make some remarks about the efficiency of the emerging market, how to promote energy efficiency. First, I would suggest thinking as we have done of the government as a customer. I think this is typical of the US example, of American recovery and reinvestment up to 2009: with federal, state and local programs to increase energy efficiency through retrofit, and money to help rebuild the power grid as a smart grid. And the second issue that I wanted to mention here, we require an increase in the use of alternative energy sources: I would say we don't have any other alternative right now except government subsidies to kick-start the stock market. And first of all <inaudible> in Israel, 50 megawatt at 40 cent kilowatt of PV, for example, and public tenders in Israel 250 megawatt of solar each year. And the last thing, we could promote technology transfer, which is very important. I think that we must focus on the gap between academic, university, research, and commercial technologies and academic university research. This can move the issue quite ahead. In Israel the system of incubators, local R&D grants, office of chief scientist <inaudible>, and bilateral R&D grants help move technology from academic institutes to commercial applicability. Thank you.

**M. Lilius:**

Thank you very much. Mr. Buerkner, you wanted to add something?

**H. Buerkner:**

Yes, Mr. Chairman. I think that one of the key questions when it comes to energy efficiency is how it encourages all actors to improve their energy efficiency. How it encourages, for instance, technology to produce more and more efficient technology. I think that one of the key issues here is

open and well-functioning energy markets. The reality today still, as far as the EU, Europe is concerned, is that we still have a lot of regulation that is not needed. We will have a lot of different kinds of obstacles that prevent all actors to do their best and we really need to improve, to open markets. To take away all obstacles and guarantee to all actors, to say: "if you are ready to improve your energy efficiency you can get certain kind of price" - a price they can see in money.

**M. Lilius:**

Thank you. Mrs. van der Hoeven?

**M. van der Hoeven:**

I would like to make three remarks. The first one is about these open markets and about a liberalised market. It's very, very important and I don't agree at all with anyone who's telling me that unbundling is a bad thing to do. I think it's very important to have an independent network operation company because this the only way to guarantee free access for any distribution company. It's the only way for consumers to have a real choice, to choose their own distributor of energy. That's my first remark. The second one is about research and development. In the Netherlands, within our cluster approach, one of our key fields is energy and we have brought it together in what we call energy value, in Groeningen. I think it's very important that, although the Netherlands is not number one, two, or three with the solar energy, that we some knowledge that is very interesting, not only for us, but for others as well. And that means that knowledge must not be kept in a university, but it has to be used. It's very essential that we see to it that all the knowledge we can produce on sustainable energy for instance, on energy efficiency, or on CCS is available also for others. And then my last remark: whenever this crisis is over - and it will be over, of course it will be over, not now, maybe not next year, but there will a time that this crisis is over - but two crises will stay. They are climate change and rising energy demands. So that means that whatever we are going to do, we have to find a different attitude towards climate change and towards energy. Otherwise we can't fulfil this demand, on one hand, and on the other hand we are not making the right choices. I'm talking about the predictable investment climate organised by the government, of course that's important. I agree, I fully agree but we have to bear in mind that everything, everything a government does in terms of money comes from you, the taxpayers. Nothing is for free and I think that's something that we have to bear in mind.

**M. Lilius:**

Thank you. We've been getting near the end and we've been talking about what will remain after the financial crisis and that is the climate crisis. There's a question I would like to pose to all of you,

just a 30-second answer. In December, we will have the Copenhagen Summit. There are different views on it, different views from different countries on what should be achieved. But could all of you, in 30 seconds at the most, just summarise what would your message be to the Copenhagen Summit. This time we'll start from our left to the, let's call it the industrial side.

**From audience:**

It would make sense to place this issue on the agenda for active discussion. The Forum is intended for exchange of experience and it is important to ensure understanding that many measures for the reduction of CO<sub>2</sub> are also cost effective. The second consideration: it looks like Russia should handle with care the CO<sub>2</sub>-capacity index of GNP: for certain structural reasons it is higher in Russia. Maybe it would be better to agree and fix not the percentage but a base CO<sub>2</sub> level and, respectively, any later improvements will be considered in favour of each country. This is the vision of Russia.

**From audience:**

Actually, when talking about Russia it should be noted that currently there is an extremely serious system of limitations with regard to financial and investment resources available in the sector. I mean not only pure electric power industry I am also talking about solar, wind, hydro, nuclear and gas power industry. Different investment decisions concerning what to construct and where to invest give different economic effects. And we should keep in mind that for Russia investments in solar and wind industries are too expensive today. There is a much more efficient and interesting option – properly invest in energy saving money that we would have passed on consumers. This would give a better effect in terms of CO<sub>2</sub>, environments protection, etc. Such prioritisation within a short three-five year period when access to funds is limited and they are very expensive is critically important – it can help avoid wrong strategic and investment decisions that can later cost consumers a lot. This is what should be discussed. Not the global situation but situation in each specific country.

**V. Zubakin:**

I believe that while preparing its position to the Copenhagen summit Russia should answer the question whether we are sufficiently developed, both technologically and financially, to assume responsibility for long-term expensive decisions. Indeed, as far as I understand, developing and developed countries bear absolutely different responsibility. Russia should look at itself honestly and decide whether it is prepared to the decisions that currently are being pushed by the most

energy-efficient and technologically advanced countries, both European and American.

**From audience:**

The commitment for long-term consistent policy making is very important achievement if in this 20-20-20 that can be achieved. For the globally operating companies, it is absolutely important that we have a level of playing field opportunities where we operate, and then finally to see some new openings to promote technology development.

**M. Lilius:**

Thank you. Mr. Johansson.

**O. Johansson:**

Mr. Chairman, developing our weakness. Personally, I was saying yes, we need a level of playing field. As a European representing European industry, I would remind our European decision makers not to participate in an agreement which would only move the problem rather than remove the problem. And with that, I mean, pay attention to the carbon leakage issue which potentially is the big issue here.

**M. Lilius:**

Thank you. Mr. Cirelli?

**J. Cirelli:**

So rapidly, two things: First of all, make Copenhagen a success first. And second, we Europeans are not prepared to be alone making the efforts, so we have to have everybody on board.

**M. Lilius:**

Thank you. Now, <inaudible> your message to the Copenhagen summit.

**From audience:**

It is very important to achieve a unified approach to post-Kyoto mechanism. It is a key question whether the states are able to find this new common paradigm that will be useful, understandable and efficient for major countries of the world.

**From audience:**

Thank you.

**Pekarrinen:**

Yes, Mr. Chairman, it is true that the world needs a new and clearly more ambitious agreement after the Kyoto agreement and now it is time to take steps forward together. All the countries which have the opportunity to do something important in this sense - first of all this means that countries like USA, Japan, China, India and so on - now they have to take much more and clearly bigger responsibility for doing their own best in this sense. We also have to prevent leakage, as Ole Johansson mentioned already earlier, and because we want to do that, it is very important that the whole world is here and for us to work together. It is clear that the industrialised countries, we have clear bigger responsibilities and the rest of the world has much smaller ones, but all together, we have to go forward.

**M. Lilius:**

Thank you. Mrs. Van Der Hoeven.

**M. Van Der Hoeven:**

In my opinion, CCS and CDM must be part of Copenhagen. Although I know that the interests of the developing countries are not the same, so you need a diversified approach; but everybody has to be on board, and in my opinion, that means that when you are talking about an emission trading system, we have to secure that there is a global level playing field for our companies, especially if we are not ensuring that there will be carbon leakage. That only puts the problem somewhere else.

**M. Lilius:**

Thank you. Mr. Sebastian.

**M. Sebastian:**

Yes, as my colleague said, we need long term targets, maybe 2050 targets, as well as medium term targets. Europe may lead the way, but we cannot make it alone. Climate change is a global challenge and we have to be together on board.

**M. Lilius:**

Thank you. Mr. Ben Eliezer.

**B. Ben Eliezer**

I would start with coordination, exchange of information and maybe technology. This is a logical

move if we want to put everyone on board. I think the agenda at the summit should lead with renewables and energy efficiency, and I agree with my friends here who note the necessity of working towards long range targets. Thank you.

**M. Lilius:**

Thank you. And finally, Mr. Tanaka.

**Mr. Tanaka:**

Thank you very much. As the Minister from the Netherlands said, if there is one single technology, probably the most important one is carbon capturing and storage because coal must be utilised in many countries in emerging economies and in many developed countries. So this must be treated clearly in the framework, otherwise CO2 emission reduction is simply science fiction. Another thing is that to make a very predictable and consistent carbon price, a system must be built. Otherwise the private sector cannot invest a huge amount of money, because that is the most important framework to encourage energy efficiency, renewable energy, CCS and nuclear. I think Russia can contribute in a lot of areas of renewable energy, hydro or solar, or whatever, bio, nuclear, and there you have a very important contributor to the completion of this post-Kyoto agreement. Thank you very much.

**M. Lilius:**

Thank you. So now we have spent two hours on climate, on energy efficiency, renewables, into setting the early part of the session that this was only a small part of the overall economic forum. I don't think we solved all the problems but we identified a lot of them. I am sure that in coming summits we will have this topic on the agenda even to a larger extent. Thanks so much for your contribution. I really appreciated having you here.