ПЕТЕРБУРГСКИЙ МЕЖДУНАРОДНЫЙ ЭКОНОМИЧЕСКИЙ ФОРУМ

22—24 мая 2014

Панельная сессия

ИННОВАЦИИ В ЭНЕРГЕТИЧЕСКОЙ СФЕРЕ И НОВЫЕ ПЕРСПЕКТИВЫ ОТРАСЛИ

23 мая 2014 — 11:45—13:00, Павильон 5, Конференц-зал 5.2

Санкт-Петербург, Россия

2014

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TV announcer:

The US-led boom in shale energy has done more than reshape the global energy landscape. Its low gas prices have reignited industry in North America and put Asia and Europe at risk of manufacturing migration and declines in industrial competitiveness.

With up to 75% of industrial production costs from energy-derived raw materials, energy prices can alter industrial futures. Other countries with shale gas and tight oil deposits could participate in this energy renaissance. Russia, China, Australia, Argentina, South Africa, Algeria, the UK, and Poland are all hotspots.

But doing so will demand capital, infrastructure, water, enabling regulations, and advanced technological development. The technology presents a secondary opportunity for the US, Russia, and China, which are the only countries designing and building turbine-driven fracturing equipment. Russia may receive a further boost by adopting these new approaches to further secondary and tertiary yields in existing conventional wells.

Developing fracking technologies to access domestic gas is an energy security priority for China, but concerns remain over the amount of water used, and potential pollution issues.

France, Germany, and Spain are at loggerheads with the UK, Poland, and others over unconventional energy's potential harm, and what regulations should be introduced, but without a clear path for innovations towards more cost-effective energy, both China and Europe's energy-intensive industries find themselves – with high costs and soft demand – between a rock and a hard place. Ironic, since the exploitation of rocks in hard places is a potential advantage for economies that push ahead with innovative energy extraction.

B. Olsher:

Good morning, everybody, and thank you for joining the panel. My name is Brett Olsher. I am from Goldman Sachs, and I am responsible for our Global Natural Resources business at the firm, within our Investment Banking

division. And I am very delighted to be here this morning and have the distinction of speaking with such esteemed panellists about the future of innovation in the energy industry, and here specifically in Russia. There has obviously been a transformation of the energy sector, and of the energy mix, over the past decade, and innovation continues to play a critical role in the development of hydrocarbon resources around the world.

Here, of course, in Russia, gas liquefaction is starting to become an increasingly important element of the production of hydrocarbons in this country, and, of course, gas liquefaction has turned gas into a global commodity. It has essentially removed the limitations on natural gas trade, and that is a feature that we believe will develop even more for the foreseeable future.

As was mentioned in the short video, the technology of horizontal drilling with multi-stage fracking has turned conventional developments in North America into a new major global oil and gas opportunity, and it has turned North America into a more significant player. I am sure we will talk more about that.

There have been continuing improvements in rig technology and rig productivity, and this is actually driving down the costs per unit, which in a world where oil and gas prices have gone up quite dramatically in the decade, in the millennium, and have since come back down, cost and cost performance have become an increasingly important part of the energy companies' decision-making tree. And also, it is driving an increase in the reserves of commercially recoverable hydrocarbons.

There have also been a number of gas-to-liquid projects that have been launched, and this is allowing the conversion of gas into oil, and of course, as you all know, there have been certain problems and delays associated with that development. But it is very clear to everyone that the technological developments in oil and gas, which have always been there, are continuing to evolve. If things are moving more quickly, and different sources of energy are becoming more prevalent, then the technological lead is more important than ever.

We are going to talk today about some of the innovations in the energy space. We are going to talk about how important the innovative approach to energy is to different countries and different companies, and we are going to try to come away from this with a good understanding of what is going to define the outlook for the energy industry in this respect. We will also try to talk to these topics a little bit in the context of some of the evolutionary developments in the global oil and gas sector. I hope that you will find this interesting, and we look forward to your questions, after we get through the discussion with our esteemed panel.

Let me take this opportunity to introduce the panellists to you. To my left will be – we hope that he will be here shortly – Jean-Pascal Tricoire, who is the Chairman and Chief Executive Officer of Schneider Electric. Further to my left is Peter Parry. He is a Partner and the Leader of the Oil and Gas Practice for Bain & Company. To Peter's left is Jorge Montepeque. He is the Global Editorial Director of Commodities and Commercial Markets for Platts. If you look in the front row, we have got four gentlemen here. To your right, and to my far left, is Jean-Marc Soucy. Jean-Marc is heading up the Schlumberger Project, he is the Management Chair for the Moscow School of Management at Skolkovo, and of course you know Schlumberger has a very long and distinguished history here in the Russian market, and is a very important player. Then we have Igor Akhmerov. Igor is the Chief Executive Officer of Avelar Energy and the Group Director of Hevel LLC. To Igor's right we have Nikolay Grachev, who is the Vice-President, Executive Director of the Energy Efficient Technologies Cluster, again, at the Skolkovo Foundation. And finally, and importantly, we have Alexei Texler, who is the Deputy Minister of Energy of the Russian Federation. Minister, thank you for being with us this morning.

Let us start with a discussion on the role of innovation in the energy sector: what has changed, and what is the level of penetration of these innovative solutions in the Russian energy sector? Mr. Parry, I would like to address my first question to you. First of all, thank you for joining us today. In your consulting practice at Bain, which is a world-renowned consulting practice,

you see many different cases in many different countries with many different companies. What is your sense of where innovation sits on the hierarchy of the decision tree and the resource allocation for the global oil and gas majors?

P. Parry:

Thank you, Brett, and good morning, everybody, it is a great pleasure to be here. The question of where innovation sits in the hierarchy is somewhat moveable. The hierarchy of priorities for the global oil and gas majors has been changing, as you presented in your introduction. The introduction of the unconventional business at scale into the industry has set us into a new mode of operation. But since that has appeared on the horizon, some concerns, last year, about financial performance of the super-major oil companies in particular, is causing a re-examination of the priority set.

What do the major international oil and gas companies today see as their priorities? I would give you maybe five things that are interesting and important for them, and the role of innovation I will come to in the context of those five elements. I think the first, of course, is around safety and environment: the industry has a track record of making this their priority, and I think that the concern continues as we get into more difficult operating environments. As we see more challenges from operating with a large footprint – for example, the unconventional business has a very big footprint that you can see, and around where people live. So safety and environment continues to be the number one priority, and where we see a tremendous amount of effort going to continue the work on that issue.

I would say the second priority, which is the one that is moving rapidly to the top of the agenda, is around operational performance. This is an industry, as we have seen from some of the numbers on the screen, that consumes a massive amount of capital. It spends around USD 23 to USD 25 per barrel or equivalent to produce that oil and gas, and today is producing 91 million barrels a day of oil, and about 42 million barrels a day equivalent of gas, so you multiply your USD 23 to USD 25 every day, and it is a massive amount of

operating capital being put to work. That is a huge priority, and the priority comes through in the things we are seeing in our work: an effort to reduce that cost, and 5% to 10% is the watermark at the moment – if the industry can see an improvement of 5% to 10% in operating costs in the next 12 to 14 months, it will be happy. It is a challenge.

The third thing that I would say is rising to the top of the agenda is what we describe as affordability. This is the affordability of new capital projects. We saw some numbers here of the expenditure of the industry last year, but the super-major group 10 years ago spent about USD 75 billion on new capital projects: last year, it spent USD 228 billion, a threefold increase in a decade. So the affordability of new projects is very central to the strategy of the major international IOCs and, indeed, their stakeholder groups, as they eventually will pay for them in tax cost recovery.

The frontiers – I would put the unconventional world still in the frontier category – we are still learning a lot about how to operate, how to work in unconventional settings. We have big new developments continuing in the deepwater, getting deeper, getting hotter, getting higher-pressure environments. Those are challenges. Of course, there has been a lot of coverage in the press about the Arctic and the eventual development of the Arctic here in Russia, and also in other parts of the Arctic regions.

There are no shortage of strategic priorities in terms of the challenges there, but innovation will play a very important role. We see amongst the majors some really break-out work going on: Shell with their floating LNG concepts; Exxon working harder and harder on heavy oil recovery, for example, in Canada; BP doing a lot of work on low-salinity production technologies for enhanced oil recovery, etcetera. This is an industry that demands innovation from a technical point of view. I think the difference in 2014 is that innovation needs to translate into how people run the business as well. The operating practices need to evolve.

It is a busy agenda, and to close, I would just make reference to something which the industry is talking a lot about but yet has to do much with, and that

is the concept of big data. There is a massive amount of new information available to oil and gas producers, to refinery operators, to downstream retailers, about the nature of their assets. It is getting that information to work; it is getting that information to improve productivity, to lower costs, and ultimately give the consumer a better experience. So the innovation challenge for us is the obvious technical one, and the intellectual one.

B. Olsher:

Thank you very much, Peter, that is a very comprehensive answer, and I am sure that we could spend an entire panel just talking about one of those areas, so thank you for pointing them out. I am sure we will be coming back to them as the discussion continues.

Jorge, thank you also for joining us today. At Platts, you play a very important role in providing up-to-date information and insight into the industry; you service a lot of clients who consume your data and use it for decision-making. From the Platts perspective, what trends are you seeing in terms of your customer requirements and how that has changed with respect to innovation?

J. Montepeque:

Thank you for the question, I am very grateful to be here, and it is a pleasure to be in Russia. I come here very often. There are various trends going on right now, and I am going to dovetail a little with Peter's presentation. The biggest trend right now is shale gas and shale oil production. I think there are many lessons there. One of them is that innovation occurs typically by small companies that are trying to break through. Innovation is typically not done by very large companies, because they tend to be a little bit slow, and a little bit concerned about venturing into new, break-out areas.

We have seen a lot of data requirement from us by more players in the US. We believe that price is what brings about innovation and progress, and that price needs to be a function of a free market. If the price is in any shape or form deviated by government policy or some kind of intervention that yields a

non-market result, then misallocation of resources will happen. We have been seeing the trend and rapid pace of change based on price, because prices have been high, particularly in the US. One other key element of price is that the nominal price may not be as important as the profit that a company gets to keep, because if the price is USD 100 but the company only gets to keep 5% of that price, then the incentive to innovate, develop, and progress is not as big as if they get to keep a larger percentage of that money.

I would like to bring two countries into contrast, perhaps also with a third. One would be the UK versus the US. The UK has higher taxation on production than the US does. And the innovation in shale production – both countries have a lot of shale energy – has been greater in the US. They also have the logistics. So, price is global, but a company gets to keep more of the money in the US, and therefore the pace of innovation there is a lot greater. Another part of that is protectionism, and perhaps a third country that one could bring in is Brazil. Brazil also has a lot of energy, perhaps somewhat conventional, offshore, but the government there tried to protect the domestic producer, and also required the greater use of Brazilian-made components. This, of course, resulted in Brazilian manufacture being protected from the onslaught of foreign competition, and the quality and the speed at which these products were manufactured was terribly slow.

The trend we see is that there is a need for on-time, market-reflective pricing that then drives decision-making, and that the state perhaps has a duty to be less intrusive, and allow market forces to take over and generate production and innovation. Thank you.

B. Olsher:

Thank you, Jorge. Again, some really key points, a little more around the commercial angle, with respect to the role that pricing plays in developing innovation, and also influence from governments which in many cases can be extremely positive, and in other cases can create some challenges. Clearly

these are elements that play, and add on to the list that Peter started for us; and I think this list is very likely to grow. Thank you very much for that.

Moving on, let us go to Jean-Marc. Jean-Marc, as you sit in academia, we need very much all the great ideas and the great thoughts that come out of the Moscow School of Management, and particularly with your role in Project Management. Here in Russia today, let us say that 95% of the gas, more or less, is piped. There is a big change potentially afoot in that regard. Project management has been very focused on a particular set of processes and equipment design, and that is changing as we speak. With respect to here at home, how do you see innovation changing; how do you see the role of project management changing; what is your sense over the next 10 years about where the focus is going to be?

J. Soucy:

Tough questions, Brett, thank you. Good afternoon everyone. I will make my comments relative to the project management challenges in the energy industry. Unfortunately, the track record of delivering mega-projects has not been a good one. I think the fat margin and healthy oil price over the last decade has resulted in a high degree of project failures. Actually, over 50% of the mega-projects today fail. They fail from a standpoint of being at least 25% late, 25% over cost, or underperforming on production targets by at least 25%. It is not a pretty picture. I think there are a number of project management challenges that the industry is facing that I would like to share with you.

I think the first one is probably the hottest topic today: resources workers. There is a war for talent, and there is a strong desire to get the right people with the skill set, with the right capabilities, to deliver these projects. Most of the companies are facing shortages on having the right skill set to deliver on some of these projects, and these new challenges in unconventional oil, as well as Arctic, or as well as deepwater, require that you have the right resources to be able to deliver on these projects.

The second piece is around technology. Project managers like proven technology. They like fit for purpose. Why? Because it allows them to deliver projects with greater predictability. And so, when new technology comes along, it is quite important that that technology be tested and proven before it is actually incorporated into projects to be delivered. It is true from what we have seen with the shale oil revolution, that that new technology has really unlocked a lot of potential; these projects are now quite commercial, the multi-fracturing that has occurred, the nanobit technology that is progressing and hopefully will really allow people to monitor the wells better and so forth, is quite promising. The land rigs are quite innovative today, in terms of being able to monitor production in a much better way.

I think I would look at the innovation, especially in shale oil, as one of continuous improvement. Actually, the technology has been there for some time: now is an opportunity to continuously improve on that technology, expand it more, and make sure you continue to improve it to be able to develop those processes, those reserves, a lot better.

The third one, I think, is a major challenge for Russia, and that is having the right project management processes and methodology. There has been a history of trying to deliver projects a lot quicker without doing the proper analysis and the proper planning, what we call ‘permanent planning’. With these complex, mega and very expensive projects that my colleague Peter mentioned, you cannot afford a mistake. So this disciplined management process needs to be introduced into the Russian companies, to be able to do the right analysis, to make the right decisions, so you can progress these projects in the proper way. I think the other one that the industry has done a poor job at, is stakeholder management, especially in unconventional energy. We have not done a good job of convincing a lot of our primary stakeholders that this is good business. They are actually quite terrified about the environmental concerns from it; the water concerns from it, the potential noise, the potential damage to the landscape, and so forth. I think the industry needs to step up their game from a stakeholder management standpoint and have

the right plans in place that should mitigate, that should manage these stakeholders in the proper way. I think those are the challenges facing the project management industry today in Russia.

B. Olsher:

Thank you, Jean-Marc very much. I took some notes on what you said. One of the things that resonates is the worker talent. I can tell you that in our industry, there is no less competition for talent, thankfully, and there is a lot of development going on in the space which I think as you rightly point out is forcing people to sort of break the mould of how things were done in the past. We need some fresh thinking, and that is something where the talent is not necessarily readily available, and is continuously under development, and owners of these resources also have to be very open to receiving this talent and allowing this talent to progress inside these organizations. Thank you very much for that.

Let us move over to Mr. Akhmerov. He is the Chief Executive Officer of Avelar Energy Group, and interestingly, of our panellists, spends a great deal of time in renewables and also in the conventional energy sector. We want to spend a little time talking about alternative energy with Mr. Akhmerov. With the marginal cost of hydrocarbon production coming down, particularly in gas, for example, around the world, the affordability is increasing, to the point that Peter had made, in the gas world, it is getting more and more interesting. Gas is by definition a source of clean energy, but there is cleaner energy out there, and I think that now that gas has become very prevalent in the global debate, a discussion about how clean gas actually is and how one deals with the by-products of gas production is also getting more attention.

Given the profitability associated with gas, do you see this as an issue for developing even cleaner fuel sources? And is it something that might actually reduce the volumes of cleaner energy going forward, given how easy it is becoming to get gas out of the ground and increasingly out of the ocean? Thank you very much for being with us today, we appreciate your comments.

I. Akhmerov:

Let me first quickly understand which language to speak, given the translation. Who would prefer that I speak English? No one. Good – I will speak Russian!

Спасибо, мне этот вопрос всегда очень нравился. Я считаю, что это не проблема, а возможность. Нельзя думать о мире исключительно с точки зрения цены на газ. Во-первых, все мы видели, что за последние 20 лет цены на нефть и газ сильно менялись и в ту, и в другую сторону. Во-вторых, газ — замечательный вид топлива, и многим, что нас здесь окружает, мы обязаны цене на это топливо. Однако это толкает мир к старой модели: огромная инфраструктура, огромные станции, сначала дистрибуция газа в одно место, потом перераспределение электроэнергии от центра к потребителям. Если посмотреть, о чем говорит сегодня мир, то на первый план выходят слова «децентрализация» и «локальные сети». Не случайно Walmart объявил об отказе от централизованной системы энергоснабжения и о создании автономных систем снабжения. Если говорить о Big Data, давайте вспомним, какое огромное количество данных сегодня хранится на уровне потребителей и никак не используется, а ведь их можно применить для того, чтобы сделать систему двусторонней. Однако газовая модель построения бизнеса не обязательно этому помогает; более того, она этому несколько противоречит.

Далее, хотим мы этого или нет, газ — проблема очень политизированная. Если посмотреть на крупные европейские и мировые экономики, то окажется, что стран, в которых потребление газа и внутреннее его производство сбалансированы, крайне мало. Точнее говоря, такая страна одна — США. В Японии выработка электроэнергии из газа составляет 42%, а местное производство газа — 4%. В Италии производство электроэнергии из газа — 46%, а местная выработка — 10%. Это означает, что газ должен откуда-то прийти. Эта проблема существует не только в Европе: в Азии она стоит гораздо острее. Почему,

например, Пакистан не может решить свою энергетическую проблему? А еще острее эта проблема стоит в Африке, где страны не могут договориться о едином коридоре транзита газа. Поэтому ситуация, при которой газ производится в одном месте, а потребляется в другом, глубоко политизирована.

Третий элемент политики — это вопрос о вертикальном бурении. Когда бурится горизонтальная скважина, она проходит под чьими-то землями. Я член совета директоров компании по добыче сланцевого газа, и у нас возникла огромная проблема с белыми фермерами в Южной Африке, которые протестуют против горизонтального бурения под их землями, потому что это нарушит водный баланс. То, что происходит в недрах, нарушает права тех, кто находится на поверхности.

Четвертый пункт: люди не обязательно принимают решение об использовании того или иного вида энергии на основании цены. Ведь в обычной жизни мы как потребители, придя в ресторан, не принимаем решение съесть свиной стейк только потому, что сегодня стоимость свинины снизилась. Мы едим то, что нам хочется. Когда в Германии, где финансовая нагрузка на конечного потребителя, связанная с использованием возобновляемой энергии, особенно высока, тем не менее переизбирают госпожу Меркель с самым высоким рейтингом со времен Аденауэра, это говорит о том, что потребители готовы платить, это их выбор.

И последнее: технология получения возобновляемой энергии проделала колоссальный путь за очень короткий период времени. Я лучше знаком с солнечной энергетикой, чем с ветряной, и знаю, что Германия на сегодняшний день производит от 15% до 20% электроэнергии от солнечных батарей, что вдвое превышает выработку из газа. Италия производит от солнечных батарей 10—12% электроэнергии. Все это достигнуто за последние пять лет. Но что самое интересное, все это делается на старых технологиях, которым 20 и более лет.

На сегодняшний день в большинстве развитых стран достигнут сетевой паритет, если учесть стоимость передачи электроэнергии. А если мы подумаем над тем, что мы на сегодняшний день реально используем только часть солнечного спектра, что будет, когда мы задействуем более широкий диапазон? По этому вопросу ведется масштабная работа. Тогда вопрос господину Миллеру и прочим крупным руководителям газового сектора будет звучать иначе: слышали ли Вы, что стоимость солнечной электроэнергии опять снизилась, и что Вы по этому поводу думаете? Ведь эта инновация уже не за горами. Большое спасибо.

B. Olsher:

Thank you, Mr. Akhmerov. I think everybody in the room would agree with you that the more renewable energy we can produce in the world, the better the world will be that we live in, so thank you very much for that. I completely agree with you and others will as well, that developments in solar have been monumental in the last five years, and it has become a much more competitive product. We see more and more solar panels and solar energy being produced, and used, in many countries. We agree with you on all that, and finally on decisions made on pricing, we fully agree with the social implications of making decisions based upon one variable, which is a commercial variable. Your comments are very much appreciated, and thank you.

Let us turn to Mr. Grachev, who I want to remind everybody is the Executive Director of the Energy Efficient Technologies Cluster at the Skolkovo Foundation. I think it would be really helpful to this audience, Mr. Grachev, if you would be kind enough to talk to us about where you see the most significant turnaround in energy efficiency, efficiency of operations, and improvements in productivity in the Russian energy sector. Thank you very much for being here. We appreciate your comments.

Н. Грачев:

Добрый день, уважаемые коллеги. Вначале я немного расскажу о том, что делает наш кластер, чтобы пояснить, чем мы занимаемся. Мы отслеживаем, какие технологии есть на рынке и как их можно развивать, по всей цепочке повышения эффективности использования энергоресурсов: от нефтедобычи, генерации и передачи электроэнергии и тепла вплоть до их потребления в ЖКХ и в промышленности. На данный момент у нас в этом направлении работает уже порядка 300 стартапов.

Отвечая на Ваш вопрос, я бы сделал акцент именно на инновационных технологиях: понятно, что в России есть ряд направлений повышения энергоэффективности, где нужно дорабатывать рамочные условия, создавать финансовые стимулы, однако это, пожалуй, лежит за рамками моего ответа.

Если говорить о прорывных технологиях, где мы видим большой потенциал влияния на энергоэффективность в России, я бы выделил три примера. Первый, естественно, относится к добыче углеводородов. Здесь мы говорим о технологиях разведки и добычи, в первую очередь на уже разрабатываемых традиционных месторождениях, и о повышении отдачи на месторождениях с трудноизвлекаемыми запасами нефти. Если говорить о практическом влиянии этих технологий, здесь мы видим огромный потенциал, и в краткосрочно-среднесрочной перспективе ожидается сильное положительное воздействие на объемы добычи в России и на экономику, на бизнес.

Что очень радует, мы говорим не только о зарубежных технологиях, но и о российских стартапах, которые успешно работают в этом направлении. У нас есть ряд примеров, когда коллеги на основе российских разработок создают различные компании. Например, одна компания решает проблему, о которой шла речь: это экологические аспекты добычи методом фрекинга. Была разработана альтернативная технология, которая доказала, что можно достичь существенного повышения уровня добычи более экологически чистым способом. Это еще одно ключевое

направление, где мы активно работаем и видим большие задачи и мощную движущую силу для повышения эффективности использования энергоресурсов.

Я бы отметил и еще два направления в области электроэнергетики. Здесь мы возвращаемся к теме возобновляемых источников и к теме распределенной генерации и структуры энергосистемы. Понятно, что, если учесть географию российской электросистемы с ее огромными расстояниями, тема передачи электроэнергии и происходящих при этом потерь становится одной из ключевых в вопросе о повышении энергоэффективности. Здесь мы видим несколько очень интересных направлений. Одно из них рассчитано на более долгий срок, однако оно является важным условием для решения тех задач, о которых говорил господин Ахмеров: это тема сетевых накопителей. С точки зрения инновационности, возможно, это не тема завтрашнего дня. Тем не менее нам она кажется очень перспективной, так как сетевые накопители могут решить многие проблемы, связанные с распределенной генерацией, с альтернативной энергетикой, могут сделать сети более стабильными и надежными, а также, что для России тоже очень важно, снизить потребность в новых мощностях, в генерации и в электросетевом хозяйстве. В российской научной среде, в том числе на основе наработок советских НИОКР, есть ряд хороших и интересных проектов, которые мы тоже сопровождаем в рамках «Сколково», помогая им развиваться.

Следующая тема, связанная с этим направлением, — тема smart grid, о ней уже шла речь: как сделать энергосистему более интеллектуальной, как учитывать, кто и как потребляет энергию, как управлять ее потреблением, контролировать его и стимулировать правильное потребление. Эта тема сейчас у всех на устах, и здесь мы ожидаем большого воздействия на энергоэффективность, на изменение структуры электроснабжения. Понятно, что рычагов довольно много, но если говорить о приоритетных технологических инновациях, то именно эти три

направления, где можно добиться быстрого эффекта, способны существенно изменить структуру энергосистемы в России.

B. Olsher:

Thank you very much, Mr. Grachev. You have touched on several areas of important technological development. Of course, the increased yield from tight oil is something that is getting a lot of attention in this country right now, for the right reasons: it is a natural place to go with respect to the whole horizontal drilling element which is being featured more and more here in Russia. Thinking about the environmental aspects related to that, obviously it is a topic that is not only a topic for Russia, but a topic for many countries: how to better balance the environmental effects of horizontal drilling? I liked very much your introduction of the energy distribution system, how that system is changing, given the change in the energy mix. Also, from a consumer perspective, how to provide smart metering such that the consumption of that electricity is done in a way that is more sensitive to the development of resources, and also more sensitive to the utilization, and the sustainability. These are all great points, and I thank you very much.

Let us turn over to the Minister, Mr. Texler. Again, thank you very much for joining us today. It is great to have you with us. All of these great ideas, lots of things to do, the support of a framework of government and regulation to enable this all to happen. Can you talk to us about what measures are being undertaken, and what can be undertaken, to support research and development and the penetration of innovation here in Russia? Thank you very much.

А. Текслер:

Большое спасибо, Бретт! Я хотел бы поблагодарить всех сегодняшних спикеров за интересную дискуссию, а наших иностранных коллег — за то, что они приехали в Россию, на этот Форум.

Что касается Вашего вопроса, конечно, мы сегодня говорим о стимулировании инновационного развития, это важное направление деятельности министерства. В первую очередь это связано с тем, что в рамках своих стратегических направлений мы ставим задачу сохранить место и роль России — а сегодня это ключевая роль — на международных энергетических рынках. Однако не менее важно то, что мы хотим в полном объеме удовлетворять растущий спрос на энергетику внутри страны. Меры стимулирования бывают разные: и административные, и технические, и даже корпоративные. Вы знаете, что наш энергетический сектор представлен компаниями с государственным участием. У государства есть возможность принимать в том числе и корпоративные решения в этой сфере. Но в первую очередь хотелось бы поговорить о мерах экономического стимулирования инновационного развития. Здесь в каждой отрасли есть своя специфика.

В первую очередь давайте поговорим о нефтяной отрасли. Сегодня мы добываем порядка 524 миллионов тонн и ставим перед собой задачу сохранить или даже немного увеличить объем этого производства, а в наших сегодняшних условиях это возможно только за счет нетрадиционной нефти или нефти, которая добывается в новых регионах, в том числе в арктической зоне российского шельфа. Конечно, всё, о чем я сейчас сказал, непосредственно связано с инновационными техническими решениями.

Как же государство реагирует на возможность стимулировать инновации в нефтедобыче? В прошлом году мы провели существенную реформу действующего в России налогового законодательства. Она позволила нам увеличить экономически выгодные запасы добычи примерно на восемь миллиардов тонн. Это существенный объем: если порог рентабельных затрат в части трудноизвлекаемой нефти был в районе 25 долларов за баррель, то сегодня этот порог для трудноизвлекаемой нефти увеличился по некоторым месторождениям в два раза. Каким образом это достигнуто? Мы полностью обнулили ставки налога на

добычу полезных ископаемых (это наши роялти) и существенно снизили для таких проектов вывозные таможенные пошлины. Мы анализируем программы инновационного развития компаний и уже видим, что принятые решения позволили компаниям активно заниматься трудноизвлекаемой нефтью. Мы говорим о сверхвязкой нефти, о сланцевой нефти (в первую очередь это баженовская свита) и уверены, что, хотя доля традиционной нефти будет постепенно сокращаться, благодаря замещению ее нетрадиционной нефтью в структуре нашей добычи это не скажется на объемах добычи в целом. Это очень важно. Однако мы не стоим на месте: мы понимаем, что этого недостаточно. Я надеюсь, в этом году уже будут запущены проекты по тотальной налоговой реформе, которые сегодня активно обсуждаются. Речь идет о переходе на обложение финансовых результатов в нефтяной отрасли. Лучшие мировые практики говорят, что это оптимальная форма изъятия, которая даст возможность нивелировать особенности различных месторождений.

Что касается газа, там есть своя специфика. У нас очень много традиционного газа, поэтому сейчас мы ориентируемся в первую очередь на него, однако согласно решениям, принятым в прошлом году, с 1 июля этого года мы переходим на формульную ставку налога на добычу полезных ископаемых, которая позволит учитывать в том числе специфику месторождений, что тоже крайне важно.

Проведенная в прошлом году либерализация экспорта сжиженного природного газа (СПГ) позволила включить в проекты по производству СПГ независимых производителей, и если сегодня Россия производит около 11 миллионов тонн СПГ, то к 2025 году объем производства должен, как мы планируем, увеличиться до 60 миллионов тонн. Это существенно.

Я не буду сейчас останавливаться на конкретных технологиях в нефтяной и газовой сфере, вы их прекрасно знаете и понимаете. Хочу

сказать, что это не только интеллектуальные горизонтальные скважины: это и моделирование, и сейсмика, и геофизика.

Таковы основные направления, которые мы видим в рамках своего прогноза технологического развития и закладываем в рамках программ инновационного развития наших компаний.

Нефть и газ — это, безусловно, не всё. Очень важная составляющая энергетики — это «зеленая» энергетика, возобновляемые источники. Сегодня доля возобновляемых источников в общем объеме генерации находится на уровне статистической погрешности, однако мы приняли ряд нормативных актов, которые стимулируют оптовый и розничный рынок электроэнергии на основе возобновляемых источников. К 2020 году мы хотим увеличить объем генерации из возобновляемых источников энергии — это солнце, ветер, малая гидроэнергетика — на шесть гигаватт, и в объеме общей генерации это будет уже 2,5%. Для нашей страны это существенный шаг. Здесь мы, естественно, не имеем в виду большую генерацию, традиционные источники энергии: они у нас и так составляют существенную долю.

Какие решения мы предлагаем? Сегодня уже проводятся конкурсы, будет вовлечено более 516 миллиардов рублей инвестиций с гарантированной доходностью, при реализации которых будут достигнуты цели, о которых я сказал. Конечно, мы понимаем, что возобновляемая энергетика — это целый набор инновационных решений. А главное, мы делаем это осознанно, хотя многие потребители против и хотя мы прекрасно понимаем, что сегодня возобновляемые источники у нас не совсем конкурируют с традиционными по стоимости киловатт-часа. Мы это делаем, потому что таким образом создаем целую инновационную отрасль в России. Каким образом? При проведении этих конкурсов мы ставим обязательное условие: локализация производства оборудования непосредственно в нашей стране. Тогда у нас появятся соответствующие компетенции, а к тому моменту, когда возобновляемые источники станут

по-настоящему конкурировать по стоимости с традиционными, у России должна быть компетенция в этом вопросе. Спасибо.

B. Olsher:

Thank you very much, Alexei, that was terrific, and you have given us a lot of things to think about. But clearly from where you sit, there are many initiatives that are ongoing right now to support the development of innovation. You talked about the tax revision that enables 80 billion tonnes of incremental economically feasible reserves, you discussed this mineral taxation coming down to zero, and a reduction of import duties on equipment, so clearly as it develops in the unconventional space in oil, there is a great deal that you and your colleagues are doing to support that innovation. I think everybody in the room is very cognizant of the fact that Russia will become a very meaningful player in the global LNG business over time; it is a natural place for Russia to be, and clearly the liberalization of the exports will go a long way to help that to happen. It is very comforting to hear your comments about the drive and investment to develop the renewable business here in Russia. Six gigawatts is a great start, as is the money being allocated to identify and develop renewable resources more broadly. Thank you very much for your comments, we appreciate them.

Let us move the discussion a little bit away from the specifics of innovation, and let us transition to how that defines strategy. I would like to turn to Peter. Given what we have just discussed, Peter, can you comment a bit on how these different elements of innovation, thinking, and investment are impacting on the longer-term strategy of the major integrated oil companies? Thank you.

P. Parry:

Sure. The words there are important: it is the major players and this notion of integration that is interesting to think about. In terms of longer-term strategy, if we go out plus 2020, or 2025, the question I think many are asking themselves is, how global can we be? I think if we had asked the question five

years ago, many of the major international companies and many of the NOCs would have said, “We want to be global players.” I think the reality from a strategy point of view today is that there will be increased specialization; that may mean in certain parts of the industry, or certain geographies around the world.

The second element, as I mentioned, is around integration. Integration means, do I find, develop, produce, process, market, and potentially use hydrocarbon products or energy products within the company, within the commercial enterprise, or within the national enterprise? I think we see a separation coming here. The opportunity for the national oil companies – and here in Russia we see that – the big energy companies getting more involved through the value chain. We have mentioned some of the expansions into LNG in international markets: that is expanding how we make the energy portfolio work for us as an investor.

I think for the international companies, they are struggling with integration, to be honest. We have seen investments moving out of the downstream, particularly in downstream oil. We have seen some struggles in downstream gas, whereas maybe we will end up with a two-track industry, where some are fully committed to downstream gas and others pulling away from it. Integration is a big strategic puzzle: where is the profitability going to be, where does the investment need to go? What we have seen in much of our work in the last couple of years is a growing level of interest in the midstream part of the business: how do we move the product around, how do we move our raw material around? By shipping, pipelines, rail transportation, etcetera. The midstream has become a point for discussion. I think the other part of the strategic agenda which is very different and requires a different treatment is the non-technical risk agenda. We have mentioned keeping stakeholders involved in this industry, keeping them aware of what is happening. Jean-Marc, you mentioned the delay in projects. Non-technical risks account for a lot of that delay, and the strategic question is, how do we remove that delay and become much more predictable?

The consequence of not being very predictable in this industry means it is hard to finance this industry, crazy as that sounds. This is an industry which is struggling to attract investors, in terms of financing. The stock market is not rushing towards oil and gas companies these days as it has in the past sometimes, and a lot of that is to do with the predictability of the outcome. How reliable is the industry going to be in terms of delivering its promises? I think those are some of the strategic issues you are going to see, Brett.

B. Olsher:

Thanks a lot, Peter. You know, I agree with you. I guess what we have seen from where we sit, obviously in a more sort of market-oriented space, is that the capital expenditure budgets of the IOCs went up dramatically in the new millennium, and unfortunately, those budgets ended up being short of what the reality was, in terms of the capital expenditure, which essentially catalysed the capital markets into being less willing to price up these companies, and as a result the competition for capital became more acute. Clearly, this specialization that you referred to in the beginning is in many ways a by-product of that period now, where companies have to go and try to extract hydrocarbons much further away from their home, or go into geological areas that require more complex work, require more capital, and require more time.

You create an interesting divergence between where the IOCs appear to be going, versus where the NOCs appear to be going. The NOCs are being more prevalent through the value chain, and probably doubling down on the fully integrated nature of their business – versus the IOCs.

Then you also point out a trend that is not foreign to us, which is the midstream business. You know, energy infrastructure is a huge business today as an isolated business, and heretofore, it was a business that tended to be the purview of the energy companies themselves, the upstream companies. We are seeing a huge business being created. Certainly it started in the United States, and it was benefitted by the mass delimited partnership arrangement, but the size of that sector and the expertise associated with the

midstream sector is growing, and it is being exported around the world. So there are some really interesting trends. Thank you very much.
Jorge, let us turn to you. From your perch, how would you tackle this same question?

J. Montepeque:
Well, I think it is always very important to recognize what the reality is, and then how players adapt to it. Some do, and of course, some do not. One of the main realities of what has happened is that prices for most commodities seem to have peaked in 2008, that was five years ago. Therefore, no wonder companies are having trouble attracting capital, if the recent best days were five years ago. The other is that the prices, while they peaked in 2008, have not collapsed. They just came down somewhat from the peak, let us say 30%, or 20%. And those prices that we see right now – and prices are a very strong and important signal, around USD 110 – opened the world. Therefore, for many companies, let us say the relative importance of the Middle East as an energy producer, or even Russia, has declined somewhat, because so many other basins are being opened up. Major oil companies therefore are looking at it globally: where can I get the best return for the now scarcer dollar that I have to invest? Where is the best return?
The other part of the reality goes back to the issue that I raised before, the nimbleness to attack, and the profit from those newer areas that have opened up, seems to have been perhaps better harvested by relative newcomers. I would like to mention a company that I find very interesting to observe: Continental Resources in the US. One would have thought that established majors, with the knowledge they have, access to technology, and experience, would have been able to better harvest those new resources, but that was not the case, because they were not nimble enough and did not recognize the opportunity.
I would like to close by sharing what one major told me. They said, “You know, we knew this technology, we used it to extract remaining bits of oil in old fields,

but we never thought of using it in new fields." And that is the kind of nimbleness and innovation that comes in sometimes by being smaller, or hungrier, I would say. Thank you, Brett.

B. Olsher:

Thanks, Jorge. The challenges for the multinational oil companies are huge, as you point out, trying to find basins where you can operate successfully and deploy techniques that are effective, nimble – as you put it – and from a cost perspective, workable. It is a big challenge. Thank you, we appreciate it.

Jean-Marc, back over to you. Given your role and the comments you made before about project management, what advice would you give today to strengthen development of innovation in the industry here in Russia? What advice would you give to the integrated oil companies here in Russia?

J.M. Soucy:

Thank you for the question, Brett. You always have to be careful what kind of advice you give, but I can share what I have seen. I think the positions that companies take from an innovation or technology standpoint relate directly to the strategy of the company – i.e. do you want to be a leader, do you want to be a first mover, do you want to be a follower, or do you want to participate in technology and development? What I have seen are various vehicles and approaches that some of the companies use. One is kind of a shared R&D centre. So you will see a number of companies get together, mingle, and try to develop new products that they can take and apply to their projects and so forth.

The other one is we have seen some large international oil companies create startups, and then actually spin them off afterwards. Then you have got some partnerships. You will see a lot of companies working together, and when they do develop some new products they can either get the patents out of it or get co-patents out of it.

It really depends on the company strategy vis-à-vis innovation and technology. You need the organizational structure to support it. So, what is your appetite for spending a lot of money on technology and innovation? Then as I mentioned, you need the organizational structure and the culture, actually to support it. If you are going to spend a lot of funds in this respect, you are going to get some successes, and you are going to get some failures. You need the right structure in support of that.

B. Olsher:

Thank you, Jean-Marc, and I appreciate that it is never easy to give advice, but we thank you for providing advice. That is very, very helpful. I am mindful of the fact that we are getting into time here. We have got just a couple of minutes to go. So, I am going to put the final question to the Minister, just given that there are other panel sessions that are going to have to take place. Mr. Texler, as a final question, you are defining in the Ministry of Energy, long-term targets, plans for strategic developments in the energy industry. Can you please share with us, what are the key priorities and how you see the longer-term outlook for the Russian energy sector? Thank you.

А. Текслер:

Спасибо. Мы сейчас активно обсуждаем новую энергетическую стратегию, рассчитанную на период до 2035 года, привлекаем независимых экспертов. Мы проанализировали возможный спрос и предложение энергоресурсов как внутри страны, так и в мире на период до 2035 года, определили стратегические ориентиры.

С точки зрения объемных показателей добычи газа, если мы сегодня производим 668 миллиардов кубометров газа в целом в стране, то к 2035 году планируем довести этот уровень как минимум до 900 миллиардов кубометров: это если учитывать спрос и предложение на мировых рынках и внутреннее потребление, в том числе рост

генерации энергии на газе, потому что это экологически чистый вид топлива.

Что касается нефти, то мы планируем сохранить уровень нынешних 524 миллионов тонн добычи до 2035 года: он незначительно вырастет, примерно до уровня 535 миллионов тонн, однако мы существенно нарастим получение нефтепродуктов за счет более глубокой переработки. Современные технологии позволят нам повысить коэффициент извлечения нефти и заниматься тяжелыми нетрадиционными видами нефти для сохранения этого уровня.

Что касается электроэнергетики, там, пожалуй, самый интересный сюжет. Мы планируем повысить энергоэффективность и при снижении энергоемкости ВВП на 40% в 1,6 раза увеличить объемы генерации и потребления электрической энергии. Структура генерации будет меняться самыми быстрыми темпами, если не считать возобновляемые источники энергии, потому что возобновляемые источники будут расти быстрее всех, но их доля может вырасти в 15 или даже в 20 раз.

Однако основной рост будет связан с ростом атомной электроэнергетики. Вы знаете, что Россия — одна из ведущих стран в мире в этой области, и «Росатом» активно работает над новыми технологиями замкнутого цикла, над реакторами на быстрых нейтронах. Мы планируем, что объем атомной генерации вырастет в два раза, его доля в структуре потребления увеличится с 16% примерно до 23%.

Это основные инновационные направления, однако все остальные источники генерации тоже будут расти, пусть и не такими высокими темпами. Конечно, все это предполагает совершенно новые инновационные решения. Сегодня мы говорили о smart grid и возобновляемых источниках энергии. Здесь очень важно посмотреть, как будет меняться ситуация с сетевыми накопителями. Это напрямую влияет на возобновляемые источники энергии: в некоторых районах не всегда есть ветер и солнце, и надо накопить энергию для того, чтобы ее передать. Сегодня с этим есть проблемы, но мы активно над этим

работаем. Это, конечно, и водородная энергетика, и ряд других источников, и всё, что касается транспорта, точнее использования энергетики в транспорте, например газомоторное топливо. Мы все это закладываем при анализе производства и потребления энергии. Собственно, таковы основные направления.

B. Olsher:

That is great. Thank you very much. It is comforting hear of the future being around enhanced extraction, restructuring the generation facilities to support more efficient utilization and greater utilization of electricity. I am very mindful of the point you made about nuclear, and although there have been a lot of recent issues with respect to nuclear power generation, I think there is no debate about the long-term role that it is going to play in the energy mix, here in Russia and elsewhere.

I would like to say that we are out of time. I apologize also to some of our panellists who did not get asked a second question – I will try to do a better job next time around. But I hope you will all agree we have had a tremendous discussion here, a lot of really interesting topics, challenges, debates, opportunities. I want to thank all of our panellists very much for taking the time to be with us today, and thank you in the audience for joining us, and I hope that the Forum continues to be productive and enjoyable. Thank you very much.