THE BROOKINGS INSTITUTION

THE RUSSIAN GAS MATRIX: HOW MARKETS ARE DRIVING CHANGE

Washington, D.C.

Tuesday, May 27, 2014

PARTICIPANTS:

Moderator:

CHARLES EBINGER
Senior Fellow and Director, Energy Security Initiative
The Brookings Institution

Featured Speakers:

JAMES HENDERSON
Senior Research Fellow
The Oxford Institute for Energy Studies

JONATHAN STERN
Chairman, Natural Gas Research Program and Senior Research Fellow
The Oxford Institute for Energy Studies

Discussant:

EDWARD C. CHOW
Senior Fellow, Energy and National Security Program
Center for Strategic and International Studies

* * * * *

P R O C E E D I N G S

MR. EBINGER: Good morning, ladies and gentlemen. Thank you very much for coming out today. I think this will be one of the most exciting programs we've had in our energy program. I'm Charlie Ebinger, the director of the Energy Security Initiative. We've got probably some of the heaviest hitters in the whole Russian European energy field, and we're delighted to have everyone here today.

I won't introduce people individually, because you have their bios. I only would like to thank Ed Chow, for coming from CSIS to be a commentator, and our own Cliff Gaddy. And I would just like to say it's a particular honor for me today to sponsor this event, because there are very few people that professionally, you can say in the case of Jonathan Stern, that we have known each other literally for close to 40 years, and we first met each other when Jonathan was working on Soviet natural gas. So, it's a delight to have both him and Jim Henderson here today to launch what -- once you have time, peruse, I think you'll find is one of the most outstanding books on this whole issue, certainly that I have ever seen.

So, without further ado, let me introduce Jonathan and he'll kick us off, and then, we'll have a presentation from Jim, and then we'll move for open commentary, but leaving a lot of time for questions from the audience. Jonathan?

MR. STERN: Charlie, thank you very much, and thank you all for coming. We really appreciate the opportunity to launch our book here. I want to say in terms of protocol, that of course, as far as the Oxford University Press is concerned, the first launch is in London, which is next Tuesday. (Laughter) So in a sense, we're not really here, (Laughter), but this just happened to fit really well. So, this is actually the first time we've presented the book in public in this way.

We come from a very small institute, which is part of Oxford University.

We are some of the few people in the European university still doing research on the deeply unfashionable subjects of oil and gas. And you can see the title of the book. I'm just showing you the structure, because we're just going to give you pretty much of a snapshot of a few issues, not all of these issues, although we're happy to talk about anything in the Q&A.

We're not, in this presentation, going to talk about the Ukraine crisis, but we'd be happy to talk about it in the Q&A, as well. The thing that you should probably understand about the approach of the book is that this is the first book on Russian gas that we've published since the one that I wrote in 2005 on Gazprom, and the subtext of that book was, would the Russians be able to develop enough supply for all of the markets they could possibly service, they could possibly deliver to?

And the subtext of this book is that that situation has completely changed; that's no longer the question. The question is, can they deliver gas to rapidly changing markets where the market conditions, and particularly the pricing conditions -- I mean, they are facing much more competition than was ever the case in the past. And the idea is not to go through all the numbers in this table. It's just to give you an idea of the complexity of the situation they face.

Gazprom, but not just Gazprom, the Russian government faces a very, very complex mixture of supply sources and markets which have to be managed on an ongoing basis as those markets are changing very rapidly. So, I'm still listening to people who are talking about Gazprom's declining production and attributing that to some problems that Gazprom may be having. Jim will address that a little later on.

I'm still listening to people who keep saying things like, well, what are they doing in Europe? Is this due to political or commercial issues? These are the kinds of complexities that we are going to be addressing, we have addressed in the book, and we are going to be addressing a little bit in this presentation.

Let me just locate you in terms of the importance of gas in the macroeconomic picture. People, and particularly journalists, tend to talk about oil and gas in the Russian economy, not realizing that the two are completely not comparable. So, this just shows you -- I hope you can see -- maybe in the back it's a little difficult -- essentially, the three charts are the share of value added sector in GDP, where gas is at least significant, nearly 10 percent, the share and exports where gas is about 12 ½ percent compared with oil at 54 percent, and the share of budget revenues where oil is 42 percent and gas is 6.3 percent.

So, the key thing to remember is that gas is very, very important in the Russian energy balance, but it's not really important in the big financial picture of the Russian economy. And this is just another way of looking at it where those top two light blue and dark blue bars are the money that the Russian budget earns from gas tax as opposed to the big green bars which are about the money it earns from oil.

So, those people who keep saying that oh, you know, we must try and impact on the financial aspects of gas, because this will punish the Russian economy, they haven't got the picture remotely right. Let me rush on and just show you the big picture of Gazprom's long-term take or pay contracts in Europe. Now, the reason this is really important is that Americans, some of you I can see who I recognize, will remember an era before the 1980s when they were long-term take or pay contracts in this country, but that hasn't been the case for a long time.

Long-term take or pay contracts are still alive and well in Europe. These bars, the top gray line -- this line is the 85 percent take or pay line. This is what we think is more like the current situation. So, what you see here, there are the contractual commitments, for those of you who are not familiar with billion cubic meters a year, if you divide by 10, you get to a billion cubic feet a day.

So, basically what we're saying in this chart is that until the mid 2020s, European buyers are obligated to buy at least 10 billion cubic feet a day, and actually, probably closer to 15 billion cubic feet a day from Gazprom under international contracts with legally binding arbitration. So, all of this discussion about, oh, how can Europe reduce its dependence on Russian gas -- if Europe wants to break these contracts conservatively, very conservatively, it would need to spend between 400 and 600 billion Euros to buy out these contracts. So, that isn't going to happen.

So, essentially, this is the picture you need to have in your mind when you think about Russian gas exports to Europe. But there is some difficult -- and I'm not going to go into it -- dependence arithmetic which people try to do saying this country is dependent on Russian gas for this percent of its gas supply. That really isn't very helpful, even on an individual country basis, let alone a European basis.

The thing that you probably need to keep in mind is that traditionally, virtually all of Russia's gas supplies flowed through the Ukraine, hence the problems that we're having at the moment, but that is not diversifying. And it has been specifically diversified because of the lack of trust that the Russians have had in the whole of the post Soviet era, not just in the last year, not just since January, 2009, when the last big disruption happened, but for the whole of the post Soviet era, due to non payment and what the Russians construe as theft of gas. This is obviously disputed. But this has been the problem that the Russians have not been able to control the supplies that have been flowing through Ukraine.

As a result of that lack of control, they have progressively built transit diversification pipelines of which the first was Nord Stream, which you see here, and you see better here, where we have two pipelines now up and running. But despite the fact that we have probably around 5 ½ billion cubic feet a day of deliverability through those pipelines, they have not and are not running at that rate. And that is principally due to some complex regulation in the EU which means that there has been a constraint on the amount of pipeline capacity that Gazprom has been allowed to use.

That might have been resolved, but due to the most recent Ukrainian events and the political response in Brussels, it has not yet been resolved. That is a relatively simple problem compared with this problem, which is the new South Stream pipeline going from Anapa to making land fall in Bulgaria.

Now, again, we'll talk a little bit more about this in detail, if people are interested. But there are very, very severe regulatory problems with the new regulation in Europe connected with the fact that the new regulation in Europe has not yet been written (Laughter). So, it's very difficult to comply with regulation that you don't know whether it's been written, but the inter-governmental agreements and Gazprom's model for how this is going to work conflicts with even the main principles of the new European regulation.

And this is very important, because the really big problems in January, 2009, and if we have a crisis in the next few weeks and months, have all been and will be in Southeastern Europe. In other words, this line will deliver to countries like Bulgaria, Romania, Serbia and other former Yugoslav republics which experienced the really huge problems in January, 2009. And that's why this is a very important pipeline for one aspect of European gas security that, as I'm sure you'll appreciate, it's considered a threat in relation to other aspects of European gas and energy security.

So, that was a brief snapshot of the European part of this book and some relations to the events of the moment. What I'm going to do now is to pass on to Jim Henderson, who's going to talk about other aspects of the book.

MR. HENDERSON: Okay, thank you, Jonathan. So, one of the obviously interesting questions, the biggest questions that we try and ask in the book is, you know, what's going to happen to Gazprom, because obviously, Gazprom is by far, the largest producer and reserve holder in Russia in terms of gas; is the largest exporter into Europe and into the former Soviet Union, and the largest seller of gas in the domestic market.

And the reason for the matrix concept and for the title, How Markets are Driving Change, is because what we've observed since Jonathan wrote his book in 2005, and particularly, post the economic crisis in 2008 and '09, is that, to put it bluntly, Gazprom's gas had become the least desirable option in all of its markets. And so, the big question was how is Gazprom responding to this change in is outlook and the need to find customers for its gas.

And I think the best way to explain how this turn of events came about, and of course, the shift in outlook from 2005 really, to 2008, is a combination of factors, the first of which was the stagnation of demand in Europe for gas post the economic crisis, and also, to an extent, as the European government started the shift towards renewables. The second was, obviously, the unconventional gas revolution in the U.S. which led to LNG being available, diverted to the European market, and to an extent, cheap coal.

The third was the rise in the oil price, which meant that Gazprom's oil related gas prices in Europe suddenly became very expensive. All that was happening and was leading to, if you like, a reduction in the demand for Russian gas at a time when on the supply side, rather unfortunately for Gazprom, they had made a fundamental decision around 2006 that they were going to develop a huge new region, the Yamal region in particular, above Nenkov Skofield in Northern Siberia, because there had been a concern across the economic crisis that Russia might not have enough to gas to supply, what at the time, was a growing demand in all its markets, 2005 and 2006.

And this combination of events, the stagnation of demand, the availability of alternative supply, the high price of Russian gas and the massive development of a new source of gas supply, led to, if you like, a kind of perfect storm for Gazprom, which is somewhat reflected in this graph. And what we try and address in the book is how Gazprom eventually has started to address the issue of its gas being the last desirable option, and is now starting to develop strategies to solve that problem.

But this graph is a graph that was published in 2013, and I apologize, it's slightly out of focus, so I'll point you at the colors. The dark blue is Russia -- is Gazprom's, sorry, historic fields -- the big Soviet legacy fields that have been in decline for some time, and you can see going forward, in very, very sharp decline. And this was why the question was raised about the development of the Yamal fields. And the Yamal fields are the light blue; the sort of third-tier blue.

So essentially, in 2013, Gazprom's outlook, as you can see for its west facing fields, which are the blue fields, is essentially that its production is not going to rise at all, really, over the next 20 years, as it faces this new demand outlook. And this contrasts very, very sharply with the outlook it had only a year earlier in 2012, which is kind of reflected in the high case, as they now call it, blue line. You can see that essentially, it downgraded its production forecast by the best part of 100 billion cubic meters per year, so that what had been a growth trajectory has now turned into a very flat trajectory.

But nevertheless, as you can see, the light blue expands dramatically. So essentially, what's happened is that Gazprom has committed to developing gas in a more expensive region of Russia, in a very remote region of Russia, and is now becoming increasingly dependent on higher cost gas, and has also got a lot of it; an excess of it, because it has committed to this development of fields that can produce, perhaps as much as 250 or 300 billion cubic meters per annum.

And as I'll show you later, it is being forced to cut back its production expectations. So essentially, now, what we have in Russia is a gas bubble; is a theoretical over supply of gas. There is a lot of gas to be produced by Gazprom and by non Gazprom producers, the independents as they are called. And so essentially, now, we have a competitive market developing both in Russia, and also I've also described, in the export market for Russian gas.

The other thing to point out on this graph is that all the growth you can see, is going to come from the east, which is another new theme that is developed in the book, and last week, of course, Gazprom finally signed its export agreement with CNPC, which we can discuss in greater detail later.

So the themes here are, essentially, Gazprom in the west is now fighting a significant competition in all its western markets, Europe, the FSU and domestically; has pretty much a flat production outlook, and has a lot of gas to produce, but really, not enough markets to sell everything, and all its growth is going to come in the east. How are we doing?

This just talks to kind of the theme of Yamal, the shift from the core West Siberian areas, Yamburg, Modosha, Urengoy, Zapalianoya, the traditional fields up to the northwest, Bovanenkovo, the massive new pipeline system that's being put in from the Yamal Peninsula, and the potential development of (Inaudible) as supplements which are now being pushed much further out, and you can also see in the -- or at the top of the Yamal LNG project, the Novatek Project, which I'll talk about in a little while, as well. But essentially, this shift away from the core areas into the rather more expensive developments in a Russian context of the Yamal Peninsula. This is essentially --

Gazprom is tied in now to this new source of higher cost gas.

In contrast with the Gazprom story, the other you know, key theme in the Russian gas supply story has been the emergence of non Gazprom producers, independent producers as they're called in Russia, particularly Novatek and now the emerging force of Rosneft in the gas sector, Russia's national oil company, which is moving much more into gas. And this graph just demonstrates the theoretical growth of production from the independent sector, and as you can see, essentially, it could more than double by 2020.

In reality, I think what will happen, because of contracts that have already been signed with customers, particularly in Russia, is that domestic independent production will reach somewhere between 250 and 300 billion cubic meters by 2020. But nevertheless, we see this shift away from Gazprom and towards the non Gazprom producers, because they've been able to compete with Gazprom, who have been forced to sell at regulated prices which have been rising very fast, and essentially, they've been undercut domestically by the independent sector.

So, a fundamental shift which could see Gazprom's market share in Russia fall below 50 percent easily by 2020, and the further element of competition that has emerged within Russia is now in the export market, where Novatek and Rosneft in particular are now allowed for the first time ever to sell gas to customers outside Russia in the form of LNG, and are preparing to do just that. So, essentially, Gazprom's position kind of under threat from domestic peers as well as from international peers.

And this graph and this slide, basically, just makes the point that I made right from the beginning, that essentially, there is a lot of Russian gas looking for a market. What I've done here in the graph on your left is just to say what was Gazprom saying it could produce, or what is it saying it can produce in 2012, and that Alexei Miller has outlined that the company has potential production capacity of 600 billion cubic meters a year, despite the fact that it only sold 490 billion cubic meters last year. So, there’s a big uplift there, and I show historically an independent production in 2012, and 300 billion cubic meters of independent production in 2020.

And you can see, there’s just a huge potential surplus. And it’s theoretical, obviously, but a lot of gas available, potentially 900 billion cubic meters of gas available for demand of less than 800 billion cubic meters on most people’s forecast. And within that position in Russia, Gazprom as the high cost producer is essentially becoming the swing producer, if you like, of Russian gas, which of course, puts it in a difficult position, but also potentially, a position of some strength as well, as others describe at the end, because although in Russian terms it’s relatively a high cost gas, in global terms, actually, Gazprom’s gas is relatively competitive, both in western markets and in Asia.

In terms of just moving to Asia and competition, this just shows you Russia’s LNG plans and just highlights the fact that although Gazprom itself has -- you know, it controls the existing LNG production from Sakhalin-2, in fact, Rosneft now has a competing project in the same island, the Sahkalin-1 project, which it plans to bring on stream with Exxon by 2019, and most relevantly, and most immediately, Novatek has its Yamal LNG project, which is planning to sell gas both into Asia, but also, interestingly, into Europe.

And so, we're seeing the first elements of competition for Gazprom in its core European market, as well as in the new Asian market. And you know, I think that competitive threat, as much as anything else, may have catalyzed Gazprom into doing its deal with CNPC and getting it done this year, because significant pressure was building up on Gazprom, particularly from Rosneft, to get an Asian deal done, which was obviously vital, not just for Gazprom, but for the Russian kind of political and commercial economy, as well.

In terms of the Asian deal, we can talk more about the exact details, but obviously, the foundation of Russia's eastern gas strategy will now be the infrastructure that is going to be built from the Irkutsk and Yakutia regions on the left via the three and a half thousand kilometer pipeline that will run to -- how do we do this -- Blagavishentz on the China border here, and then on to the Vladivostok LNG plant here. And there is existing infrastructure down from Sakhalin -- the Sakhalin-Khabarovsk-Vladivostok pipeline here.

And these two pipelines will become the foundation for the development of an eastern strategy that can see Russia producing and selling in domestic and export markets up to a hundred billion cubic meters a year within a decade or so. And so, this is a fundamental shift in Russia's export strategy. It is hugely politically important, obviously in terms of foreign policy, but also, in terms of domestic development of eastern regions, and it now provides Gazprom with the ability to re-establish itself as the dominant force in the Russian gas sector.

A quick word while we're talking about Asia, about Central Asia. You know, we talk in the book about the shift, if you like, in Russian strategy in Central Asia from being the dominant buyer of gas from Turkmenistan, Uzbekistan and Kazakhstan, now to if you like, becoming perhaps -- taking a subordinate role to China, who now, obviously, takes the vast quantities -- increasing quantities of gas from the Galkynysh field in Turkmenistan, is also set potentially to import gas from Uzbekistan and Kazakhstan.

And so, we've seen essentially Russia and Gazprom accept a lot of geopolitical leverage in the region as the commercial realities of these countries' diversification strategies has meant that they're sending much more of their gas east than they are now sending it north. And we'd expect that to continue. We don't see exports from Central Asia into Russia rebounding at all to their historic levels really remaining in the range of 20 to 30 BCM per annum for the foreseeable future.

So, just to conclude, given our half hour is up, this graph at the end is intended to show that where, although some of the issues we address in the book clearly have been problems for Gazprom and Russia as markets have changed and have driven a change in strategy, particularly at Gazprom, actually, Russia is in an interesting competitive position relative to the world's two major importing regions, Europe and Asia.

Clearly, the vast amount of Russia's gas infrastructure points west towards the European market, and you know, we believe, despite the fact that Gazprom's, in a domestic context, gas is quite high cost, in the European context, it's actually very competitive. And just to put a number on that, you know, we calculate that the breakeven price of Yamal LNG at the German border is around $7.50 to $8.00 MMBTU, which is competitive with anything we can see that could arrive in Europe to compete with that.

Towards Asia, obviously, the new pipeline that will be built, the new reserves that we've developed will provide gas into China at around 10 to $11 per MMBTU at the Chinese border, which again, will allow Russian gas to be very competitive with Central Asian imports and future LNG imports and current LNG imports into China.

So, although Russia has had to face significant competitive threats over the last five to six years, as the markets in which it has sold its gas have evolved, in fact, the country finds itself in a competitive position, in a geographically ideal position to supply the major markets, and going forward, you know, if Gazprom can continue to adapt its marketing strategy, could find itself in a strong position relative to competitors over the next decade.

I'll stop there, and we can certainly be happy to take lots of questions.

MR. EBINGER: Well, I think Jonathan and Jim have given us a lot of points for discussion, and I thank you very much for a commendable piece of work that you've done. If I may just use the power of the chair, because our principle commentator is going to be Ed Chow and Cliff Gaddy -- if I may just raise one question that you kind of ended your presentation on, Jim.

And I guess the question that would emerge in my mind is, if the Chinese deal, indeed comes to fruition, and the addition of Russian gas moving into Far Eastern power markets, do you have any views on what that means for competitive LNG sources? And I'm thinking particularly, does this make it even more difficult, say, for Canadian LNG to come into the market, and Gulf Coast LNG from the United States? And are we kidding ourselves that with all of the hoopla about LNG coming out of the United States, that it may really be somewhat subdued from the more optimistic forecast?

QUESTIONER: Well, I think the context is that, assuming the deal goes ahead, as you say, and Gazprom kind of efficiently develops the infrastructure that's required, we're talking about 30, 40 BCM of gas into Northeast China into a market that is looking to be supplied with 400 billion cubic meters of gas, plus, by 2020, if they meet their current target.

So we're talking about of supply for Chinese markets, so I think there's plenty of room for alternative sources of supply, and I think that the Chinese very clearly have developed a kind of a compass of supply. We have western supply from Central Asia. We have southern supply from the pipeline from (Inaudible). We have supply on the eastern seaboard from LNG, and clearly, you know, degasification is being expanded dramatically on the eastern seaboard.

And then, you know, the Russian deal provided the very logical northern access to that supply, and obviously, there’s an indigenous potential increase in supply from both conventional and unconventional sources. So, I think there’s still plenty of room for other LNG. I think what it interestingly does to, though, is start again to set a benchmark price for potential imports into China, because clearly, the Chinese have started to set a domestic benchmark down in the southeast of the country related to LPG and fuel oil.

This deal looks like it’s linked to oil and oil products, as well, and would deliver gas into the eastern coast at around 12 to $13 MMBTU, which looks like the kind of price at which use LNG, depending on (Inaudible) how prices would be delivered. So, I think we're starting to get a benchmark price, which perhaps does make it more difficult or forces the higher cost LNG -- potential LNG produces to assess how competitive they will be in the Chinese market.

So, I think there’s still a gap for the volumes, but I think there is a -- we're converging on a sort of price expectation now, which is certainly lower than we’ve seen in the past couple of years, at least.

MR. EBINGER: Okay. Ed?

MR. CHOW: Thank you, Charlie, and thanks, Jim and Jonathan for putting this book together, which will be a real contribution to the field, I think. It’s always good to bring reality based analysis to Washington (Laughter), because we often hear Washington substitute perception for reality in policy making. I don't know about bureau, but it’s always good to have profits from overseas come to Washington, because sometimes, a profit is not respected in his own country (Laughter). And I promise to do the same in Brussels and London as the opportunity arises.

By the by, I mean, I think one comment on gas and the importance of gas to Russia that I might make is that it is definitely true that oil is all about money in Russia. But gas is often about politics, both domestic politics as well as foreign policy, and sometimes, personal politics, as well. And you can see that in Mr. Putin's very personal involvement in both Ukraine and the China deal that was just announced.

You know, Mr. Putin would rattle off Gazprom's statistics at the drop of a hat, anytime anyone gives him the opportunity. So, this is clearly something very close to the Russian leadership. But the question I want to raise, which may be a subtext of the book, which I promise to read more carefully as time allows, is whether in order to meet the various market challenges that both of you have outlined, whether fundamental, structural reform of the gas sector is necessary in Russia or not, the role their independence plays, for example -- it amuses me that Novatek and Rosneft are called independents.

It's like calling Exxon Mobil and Conical Phillips independents in the American context. They hope to independent from Gazprom, but otherwise, they're not independents in the classical or in gas patch sense of the word.

Are they going to be limited, these so-called independents to serving the domestic market, as they have clearly expanded their scope there? Are Yamal LNG and Sakhalin-1 LNG one-offs, or do they pretend to be something that's larger in the future that will be a real liberalization of the gas market in Russia? You know, one could easily explain Yamal LNG and Sakhalin-1 as Mr. Timchenko and Mr. Sechin's special relationships, rather than the systemic change that is over the horizon. So, it would be interesting for you to say more about that.

If one were to become more responsive to the changing global gas market, which you mentioned, it seems to me that some changes would be necessary.

Unbundling, which is kind of a four letter word for Gazprom, certainly would allow better access to pipeline capacity by more producers than just the privileged few. You know, you think about the associated gas that's flared all over Russia as a result of the structural rigidity of the current system. Given that supply is not the issue, is structural market reform necessary in order to achieve the kind of efficiencies that Russia may want to have?

On Ukraine, it seems to me that not only is Ukraine currently relied upon for at least half of Gazprom's exports to Europe, still, there's also a question of whether the availability of transit through Ukraine allows Gazprom to compete in the spot market in the way that these expensive new infrastructure projects, Nord Stream, Nord Stream expansion, South Stream, do not afford, because really, they are very expensive projects that need to be financed. They require the kind of long-term take or pay obligations on the part of the buyer in order for these projects to be financed.

Doesn't the option of Ukraine, even into the medium to longer-term, give Gazprom the kind of flexibility to price their gas to meet the spot market where it is, rather than be stuck with these long-term take or pay contracts? I would really be interested to hear you talk a little bit more about your assessment of the recent deal in China.

A lot of things are not known. Some of the Russian pronouncements have not been confirmed by the Chinese side, which I find interesting. No, there is almost certainly going to be some prepayment or loans required for the $55 billion that Gazprom estimates it will cost them in terms of capital spending on their side. We don't have a lot of commercial term details on the commercial terms.

It is interesting in the slide that Jim showed, which was really a Gazprom forecast of the 2020 production from Eastern Siberia, it was very modest in 2020. So, maybe this deal will cause them to revise their forecast. So, how real is this deal? And when and how might we be able to tell?

One other point that would be interesting for -- particularly for Europeans coming to Washington, for us to hear more about, is the EU's competition case against Gazprom -- anti-competitive practices, allegedly, which maybe a report should be filed not too long from now, maybe fall. The other part of the picture that you can help us fill out, maybe, is how interested is Russia in the gas exporting country's forum?

Is this just a talk shop that won't lead to anything, or is this something that in the longer run, may have more legs than we seem to expect right now? I happened to be in Turkmenistan last week when Deputy Prime Minister Drovkovich decided to make a refueling stop, I think, between Shanghai and Saint Petersburg, and invited the Turkmen to the next meeting of the gas exporting country forum, which is in November, I believe, in Doha. So, a little bit about that would be, I think interesting for the audience as well.

MR. EBINGER: Well, Ed, you raise a lot of questions, but before you gentlemen can address them, I'll ask Cliff to make a few remarks.

MR. GADDY: Right. That might make sense, since of my questions would probably be the same as Ed Chow's, and I won't repeat them. I want to first of all, to say how happy I am to have a chance to not only read the book, but get a free copy, which I think a lot of people here in the audience are amazingly appreciative of. You don't typically do that in Washington (Laughter), but I won't reveal that secret, because this is an amazing book.

It is really going to be, I think, the go to reference book for anybody who works on Russia, who works on energy issues. It doesn't have to be narrowly focused on Gazprom or on Russian gas, or gas at all. So, I speak as a consumer. I mean, there is no way I can envision knowing at least a fraction of what's in that book, but I have the book, and I can go through it, and I think it's going to be a wonderful asset for all of us.

I wanted also to just make the point -- Ed's made it to some extent, but despite the title of the book, talking about markets, and Jonathan's remarks about the complexities of supply and demand, competitive markets to which then, Russia has to react, the book is more than just about the complexities of markets. It's also about the complexities, or as the terms keep coming back in the book, trying to balance different interests, trying to resolve the tensions between different interests, and this is not just between supply and demand.

This is between, largely, the political imperative, the political demands that are placed on the Russian gas sector and on Gazprom in particular, to resolve that intention with the commercial demands. And in fact, of course, as the book points out, there's really three demands being placed on Gazprom, and it makes no sense whatsoever to look exclusively at Gazprom as a commercial entity, and expect it to -- oh, it's not living up to the profit expectations or the profit potential, without taking into consideration that this more than a profit maximizing commercial entity.

It is subject to that which generates revenues, generates revenues for the budget, as the authors point out, actually a small percentage of Russia's formal tax revenues. I'll get to that in a second. But it also, of course, has the geopolitical role. And this book is exemplary in talking openly about the geopolitical role of Russian gas, but doing it in a very sensible, realistic and balanced way, and pointing out, debunking the idea that gas is a weapon, and pointing that it's a lever.

It's a point of pressure. It's used -- in fact, if you use it, you probably will destroy your ability to use it in the future, so there's a lot of complexity there, as well. And then finally, the role of Gazprom in Russia's domestic situation, which is both economic and political and in Russia today, that those are pretty much the same thing. It is to -- basically, boils down to Gazprom's role in keeping an economy alive that's not always viable completely on its own.

It preserves jobs in ancillary sectors, construction sectors, input producers. A huge part of the former Russian defense industry, Soviet defense industry is kept alive and was especially kept alive during the 1990s by orders from Gazprom for equipment, for everything from cables to pipes to everything else you can imagine, pumps, aircraft engine manufacturers being prime producers of pumps for Gazprom, and so forth.

It is a hugely important role, and it is expected to play that role, perhaps more than anything else. It may only produce -- Gazprom may only account for five -- or the gas sector, for 5 percent of Russia's tax revenues, but that's formal tax revenues. And if one were able to compute the informal taxes, the informal burdens, social and economic and political that Gazprom has to play, we'd find that it does, as indicated, play a very, very important role. So there is that complexity.

And that, in a way, the complexities, the trade-offs and the tensions is the overall theme of the book. I really like it in that regard, and it's a two-fold message. Because on the one hand, the authors are identifying the huge nature of these complexities; the challenges, both in the market sense, the supply demand equation -- the competitive market, but also, in this other beyond, non commercial complexities that Gazprom faces, and bigger, maybe, than people ordinarily imagine. And they will only grow larger.

At the same time, there is a positive message, which is what Jim ended the conversation on, about real signs that Gazprom and Russia, more generally, or the manager of the big Russia incorporated, I guess we should say, Vladimir Putin, is able to see and start to adapt, maybe belatedly. Who knows? What he says publicly has little to do with what he’s really thinking. We know that by now, and I’ve heard him personally talk about poo-pooing shale gas and playing down this and playing down that.

And you tend in the beginning, to take that seriously, but later, you wonder, was that just a smokescreen? Was that just disinformatsia that we won't really know what he’s thinking? But I think that -- my sense is, and especially after perusing this book, is that there is real capability for change in Russia. It won't necessarily be the kind of change that some people are imagining with the perfect market oriented structural reform of Gazprom and so forth, but there will be change to adapt to this changing environment that Gazprom is in.

And just to end on a very -- again, on this very personal note of Putin’s role, which Ed outlined or indicated pretty clearly, he does regard himself as the head of the whole energy sector, and especially of gas. But he’s a man who hedges his bets, and we know that. He has fallback options. He avoids, under all circumstances, making a commitment that he can't somehow get out of.

And with that sort of a mentality, given those challenges that are the kinds that have been described in the book here, I think -- we don't know exactly what sort of changes he might undertake, and I think they could span almost anything with respect to the domestic organization of the industry, as well as foreign markets.

But we have to keep our eyes open, because I think the gas sector, Russia’s energy based economy, is much more resilient than many people seem to realize or seem to indicate when they simply extrapolate forward from certain assumptions about past behavior. And to me, that’s kind of the story of this book -- I think indicating what the challenges are, what the trade-offs and tensions are, and then, giving indications of how already certain changes and adaptations have begun to be made.

MR. EBINGER: Thank you both, gentlemen. I don't know who wants to

--

MR. STERN: Okay, well, why don't I try and pick up some of the more specific points? I'm going to leave Jim to talk about China and the independents, because that's very much his thing. Can I just start by picking up a point that Cliff just made about that role of Gazprom?

What we try and explain in the book is that Gazprom -- if you look at energy business models, is caught between the business model of a traditional utility company in a producing country where these companies are expecting to provide energy for citizens at below cost. That is what they do almost everywhere in traditional producing countries.

And one of the things that is interesting about the point that Ed made about reform is that actually, the Russians have done pretty well in relation to their peers for reforming the gas sector in relation to pricing, and also, in relation to liberalization. I don't want to make too big a deal of this, but if you take a look at some of the efforts in European, indeed, EU countries in relation to price reform and liberalization, you will see that the Russians have quite a long way to go.

But in comparison to where they were 10 years ago and where I, in my previous book, predicted they would be, they've done pretty well. Virtually, every cubic meter of gas which is sold today in Russia is sold at a profit; maybe not a big profit, but at a profit. Now, that's a big thing to say about producing countries, and in our book that we published in 2012 on gas pricing around the world, you know, what we saw outside the OECD is just subsidy, subsidy, subsidy, and unsustainable subsidy. And Putin, himself, did address that.

So you know, okay, there's not -- certainly, the third party access regime is not perfect, but it exists, and we -- Kathy Afimva talks about it in the book. It's relatively complex. Unbundling is certainly not going to happen anytime soon, but it is talked about. What a step forward that anyone would even talk about it.

Let me just cash in a few Ukrainian European things. As far as the Ukraine, the availability of Ukraine transit and what that means going forward, I see this as a typically Russian chess game. In other words, they have their pieces on the board in different pipelines, and if necessary, they can move their pieces around the board, depending on what the commercial situation looks like, depending on what the political situation looks like.

They, I believe, would be very happy for some kind of resolution of the Ukrainian situation, which would create a non-hostile relationship between the two countries. Whether they will succeed in that, given the Crimean act, I wouldn't want to venture an opinion. But normalization of relations with the new regime in Kiev is a priority.

Is it achievable, given the kind of guy Putin is? Big question. The DG Comp case against Gazprom. Yes, we are closing in on what will need to be the statement of objections. For those of you -- this is what you guys call anti-trust. The key problem here is that the competition authorities are objecting to the continuation of oil inc. pricing in particularly, the central east European and Baltic countries. Gazprom is basically resisting this for all kinds of historical reasons.

If they don't settle with the authorities -- in other words, if the authorities do see the statement of objections, if this was an EU company, there would be no discussion. There's no appeal. But of course, this isn't an EU company, so Gazprom will appeal to the European Court of Justice. Those guys don't hurry (Laughter), so we could well see this stretch on for the next few years.

But in de facto terms, this will be settled within these countries. In other words, I believe that by the time this is finally resolve, if it goes all the way to the European Court of Justice, in contractual terms it will be settled, I would be surprised if the European Court of Justice decided to try and levy a big fine for historical violations which the Russians, anyway, wouldn't pay.

How interested is Russia in the GCF? Very, very interested in advertising, but not interested in reality. So, Putin, when he was in Moscow, I think last year or maybe the year before, they made a big splash about it. Putin did a major sort of speech about it, which didn't represent anybody else's policy but his own.

But the key thing really, is only three countries are really high profile. And you know, the Guthries, the Russians and well, I guess the Iranians and the Algerians. But the problem is that the Iranians don't really export any gas, and none of the rest of them can agree on anything. So, the Turkmens may or may not show up. They haven't shown up since the first meeting.

MR. GADDY: True.

MR. STERN: And you know, this is something that journalists get very excited about, but not many other people.

MR. HENDERSON: Okay, so just to talk about the independents and that sort of the deregulation of the Russian market, and just to pick up the point that both of you made about balance. I think it's really interesting to think about why the independents, particularly Novatek and Rosneft, have seen some dramatic increase in their market share and production.

And I think it comes down to that the problem that Gazprom has in terms of balancing its political objectives; that it's been set by the Kremlin, and its commercial objectives to kind of survive and operate as a commercial entity, and at least try and make some profit to keep itself going and developed. And I think what we saw around post crisis was, as the markets changed and Gazprom failed to adapt, there was a risk, I think, that its commercial inadequacies were starting to lead to a situation where it could not fulfill its political objectives, or at least the Kremlin perceived that there was a possibility that Gazprom would be losing its kind of dominant role and its ability to be a tool of foreign policy.

And I think that pressure was being applied, but from various angles, and again, balance is all about this. It's not just about this issue. It's about vested interest, as well, because obviously, Gennady Timchenko who owns Novatek is closely affiliated to Mr. Putin, and you know, Igor Sechin has his links, as well.

But I think that there was a sense that Gazprom commercially was failing, and that potentially, it was in a downward cycle, and that elements of competition, and also, elements of encouraging Russia to start and develop its most competitive gas and get it into the marketplace was a driver. And I think you once saw that in the domestic market, because Gazprom's expensive new field needed a higher domestic price to underpin their economics.

We saw the regulated price which Gazprom charges its customers increasing by 15 percent per annum. And at some point, the independent producers found that actually, they had Russia's cheaper gas, and could undercut Gazprom, and from 2012 onwards, really, when Gazprom's five year contract started to expire, they were allowed and even encouraged to compete with Gazprom to start to set what is a quasi market price for gas in Russia now.

You know, there is still a regulated price which acts as an indicator, but essentially, now, the independents and even Gazprom in 2014, potentially, are going to be allowed to set prices above and below the regulated price. And this is because Gazprom's higher regulated price was undermining the economic growth of Russia, potentially in the post crisis period, and consumers were complaining about high energy prices.

And so, once saw this kind of regulatory process develop which would allow third party -- created a third party act, has allowed competition with Gazprom. But that doesn't mean we're heading towards a liberalized market. That means there was an incentive to try and encourage some competition, and I think what we're seeing now is very much a kind of oligopoly, and I think that there are now three big gas companies in Russia; Gazprom, Novatek and Rosneft, and we saw that development in the domestic market.

And now, we're starting to see it in the export market. And I think, you know, Gazprom's loss of market share until last year in Europe was one catalyst. I think Gazprom's inability to do a deal with China was another. And what we see is the LNG export monopoly broken in a very controlled manner. I mean, the legislation is very specific. If you're a state company with offshore gas, you can develop an LNG. If you're a company with LNG in your license, defined in your license, then you can develop a LNG project, and that's Novatek's Yamal LNG. So, those are two very specific projects, so it is very limited.

But nevertheless, it was a catalyst for action, if you like. It was a poke at Gazprom to say, look, get your act together. And you know, it's interesting that Novatek signed the deal and sold equity to CNPC. Before Gazprom signed its deal with CNPC, Rosneft had signed a joint venture with CNPC to develop East Siberian oil and gas reserves before Gazprom did its deal.

So, I think what we're seeing is a balance between the kind of commercial, the political and the vested interest, and it will be a very controlled process. And you know, looking forward, the next step could be third party access to the export pipelines in the east.

Rosneft has made a request that it be allowed to put its gas through the Power of Siberia pipeline, which could go to China or could be sold into the domestic market. And that is the next potential step towards a controlled liberalization of exports. Now, there’s no mention yet of the pipelines facing west being liberalized in this fashion. But you can see a step by step process by which the three companies tried to find a balance in the east, and then tried to find a balance in the west, potentially.

And so, I think the liberalization process is a slow one. I think that you know, it will be, you know, many years before we see Gazprom broken up. But we're taking steps along that very slow, slow journey. In terms of you know, the reality of the China deal, I mean, obviously, I see what you see. And I know it’s difficult to be concrete about it. All I'd say is that from a commercial perspective, we’ve believed for about the last three or four years that the price at which they appear to have done the deal, i.e., somewhere between 350 and $400 a thousand cubic meters, somewhere between 10 and $11 in MMBTU is about the right price for both parties to make some money.

We estimate that Gazprom can make a reasonable rate of return on its investment, assuming it invests relatively efficiently in the entire eastern program. And you know, we estimate that the gas can be competitive in China relative to alternative sources of supply. So again, it appears to be a balanced commercial contract with no doubt, lots of bells and whistles and nuances, but it would seem to make sense for us for both parties to take the deal forward. So, whether it will or it won't, maybe there will be some political shenanigans. But commercially, it looks sensible, so I wouldn’t be surprised at all if it did proceed on roughly the terms that we know.

MR. EBINGER: Thank you very much, and I think it’s time to open to the floor. We ask that you please identify yourself and please keep your question a question, and not a lengthy statement. And you can address it to a member of the panel, but if anybody else wants to weigh in, we'll proceed that way. Over here against the wall?

QUESTIONER: Thank you. Nico Sophis, independent consultant. I wanted to go back to this idea of a prospective bubble and throw out a few possible reconciliations for that bubble. And I wanted to get your reaction.

One is, you reform the price at which you sell gas to Europe, and you make your gas more competitive. The second option is you try to build a western route to China, which actually would bring gas from West Siberia out to East Siberia. You try to just lower the price within Russia and just shove more gas into the Russian economy, or you just leave it in the ground for a better day.

If you were to think about those four possible options, how would you think about the relative attraction of each one of them? Thank you.

MR. HENDERSON: Want to start? Okay.

MR. STERN: Well, I mean, the real politic is leaving it in the ground is what is happening now. I mean, even if you don't believe Alexei Miller saying that they could have produced 617 last year when they produced 487, even if you think he was exaggerating by a factor, they have a lot of shut in gas. Jim will talk a little bit about on the independents on this.

What I think is most interesting is, and again, we as an institute have actually conducted a public debate to Gazprom on pricing. And what is fascinating is that they are still saying the same things about pricing and the importance of oil in pricing, but they have, after a lot of hard talking with their customers -- they have adapted where they needed to adapt, which is in the competitive markets.

So, their prices are now competitive with hub prices, spot prices in Europe, although the way they've done it is, you know, incredibly kind of bizarre way of doing it. You know, you have to pay, and then you get paid back if you've paid too much. I mean, it's a crazy way of doing it, but they've done it.

Now, the question, really, going forward is, do they want to push more gas into Europe? And here, we come back to the -- you know, what we described in the 2012 book as the discriminating monopoly thesis. And you see all gas exporters doing this, Gadda does it, you know, they all do it, which is, how do I continue to compete in my main markets without crashing the price?

And this is a -- every so often, they make a mistake and they crash the price. Or, they starve the market and the price goes up dramatically. But what is very, very interesting, I think now, is that with this "threat" hanging over Europe, prices are falling. Prices in Europe are falling and have fallen around 25 percent since the beginning of the year. And what that says, what that is telling everyone, which they should have known already is, gas is in big trouble in Europe. Demand is falling, and it's falling faster than domestic production.

So, you want to sell your gas in Europe, you've got to compete. Gazprom finally figured this out in 2013. It lowered its prices. It massively increased its sales. It's not a complicated concept, but the practice is complicated.

MR. HENDERSON: Yeah, no, I'd just reiterate that. I mean, I think the interesting thing about Gazprom's gas is it is competitive. It's not priced at a premium anymore, and if you literally do the math, in 2013, at some point, it has actually been cheaper than hub price gas, which is why volume has rebounded from 139 BCM to 162 BCM last year.

And I think the Russians are quietly confident that Europe will not find alternatives, and they have openly stated that if U.S. LNG arrives in Europe, they will compete with it. And there is no doubt they could undercut U.S. LNG in Europe. So, if they want to, they can undercut the competition. There is absolutely no point in them crashing the price now. You're always better maximizing price over volume, and that's what they've done.

And in terms of your question about what do you do with the oversupply, well, there's a price in the domestic market below what -- you know, they were losing money in the domestic market in 2009, and they just broke even for the first time. The price in the domestic market now is give or take the breakeven price of the Yamal gas delivered to Moscow.

So, we've reached a level now which Gazprom can make money, certainly, on its average cost portfolio, and can break even on its most expensive fields. You know, they could pump more gas into the market, but you know, there's no need. The customers and producers seem to have found a level at which everyone is happy. The price isn't going up this year, and going forward, we'll see. But we look like we've breached equilibrium.

In terms of extending gas via a western point to China, absolutely, they'd love to do that. (Laughter) But the Chinese --

MR. EBINGER: The Chinese don't want it.

MR. HENDERSON: -- the Chinese aren't falling for that. I mean, you know, they can see exactly what Gazprom's strategy is, which is trying to sort of play off the European and Chinese market, and China has plenty of gas coming into its western borders from Central Asia and from fields where they have equity and significant political and commercial control.

I think you know, Gazprom's best hope is to sell more gas, or Russia's best hope is to sell more gas in the east using the new pipeline infrastructure and the existing pipeline infrastructure from Sakhalin. And the western route is something, you know, which Miller has claimed they're now talking about, which in realistic terms, is somewhere out late 2020s, 2030s, I think, before we see any gasoline from West Siberia and the western (Inaudible 01:07:29).

QUESTIONER: The western route is one area where you know, the lack of Chinese comment is conspicuous.

MR. HENDERSON: Yeah.

QUESTIONER: Even though the Russians keep talking about, that's the route to get it up to 68 BCM. I mean, drawing gas from a pool that is Western Siberia is precisely what the Chinese don't want. I mean, I think it's very significant that the -- besides the determination of the eastern route, which was a breakthrough last March, I guess -- March a year ago, it is the destination -- China and Kovykta as the source of that gas, which raises a suspicion in my mind, as a recovering oil and gas man, that maybe CNPC is going to try to crawl up stream eventually.

I mean, part of the attraction of designating the field from which the Chinese -- the supply to China would come from, is that if and when Gazprom develops those fields with their usual efficiency (Laughter), that there may be an opening down the road for the Chinese to at least bring up the question of equity in those two giant fields.

MR. EBINGER: Yeah, two questions over here. Tim and then Ariel.

QUESTIONER: Thank you. Thanks. My name is Tim (Inaudible) with Brookings, with ESI. I would like to ask a question. You've hinted at the answer in the previous response you gave, but I'd like to learn more about Europe's desire to diversify its supplies. I mean, this is not new. It's been revitalized, I guess, in light of the Ukraine events.

If I listened to you correctly in knowing what -- you know, with the background knowledge we have on competitiveness of fuel sources in Europe, it seems to me that you know, there's going to be an increasing share of coal, I guess, in Europe, and then there will be very competitive Russian gas.

First of all, do you think that's a correct assessment? If it is, what does it tell us about Europe's desire to diversify its gas supplies, and you know, how successful in its attempts to realize that, being in your view? Thanks.

QUESTIONER: Okay, well, I mentioned when I introduced our institute that we are some of the few people still working on the deeply unfashionable subject of oil and gas (Laughter). This is because 99 percent of people in European universities working on energy are working on renewables, climate and other sustainable issues.

And let me tell you that for -- this is a horrible generalization, but I think it's a reasonable one. For most of the old member states in Northwest Europe and for everyone under 35, this is the only subject that matters in energy. You know? You go and give lectures to people on this subject in Europe, and this is like conversation. What do we care about this for? You know, the planet's at risk. Why are we bothering with this kind of old style hydrocarbon stuff (Laughter)?

So, this is the problem with promotion of coal. You know, still, the environmental community have not understood that this is what's happening. The task's suggestion of an energy union is basically a manifesto partly for coal and to treat coal as an energy security product. Europe is nowhere with its climate policy and the EU trading scheme. This is something the new commission will have to do as it picks up in the fall.

I don't know how that's going to work out, but what I do know is that I am confidently expecting coal to be massively resisted outside of Germany, where nobody can speak against it. Now, the question of alternatives to Russian gas, you know, this is a terribly politically incorrect thing to say, but there actually are no alternatives to Russian gas in Europe.

You know, you can go through them -- you know, conventional gas production is falling. We don't need to speak about unconventional gas -- just to tell you, if you don't know, that probably in the whole of Europe, no more than a hundred wells have been drilled anywhere, and mostly where they've been drilled, they've either been unsuccessful or there's been massive resistance.

In my own country, you drill a well, a well -- this is before you (Inaudible) -- you just drill a well, and it is headline news on the evening news, and there is a massive punch out between environmental protestors and police. This is for one well. Okay?

Then, the big gas crisis in Europe that no one can even talk about, because it's so serious, is in North Africa. I know Egypt, we need to speak about. Libya, we have no idea whether any gas would be arriving in Italy from one day to the next. And the Algerians, you know, they haven't even issued any data since 2012, because we know what it will say. But nobody can talk this very European phenomena. You know, once things get too serious, nobody can talk about them (Laughter). You know, East Med is a big resource, but it's probably going to stay in the region. Anyway, the politics are very complicated. And so on and so on and so on.

So, this is something that you know, many studies have been done, many consultants have got rich doing these studies, but actually, there's nothing much new to say that we haven't known for quite a long time.

MR. EBINGER: Ariel?

(Simultaneous discussion)

MR. EBINGER: Did you want to comment?

QUESTIONER: I'm just going to add to the point. I mean, I think that there's a very simple analogy with the European situation. If Europe wants to diversify away from Russian gas and to have increased security supply, then it just has to look at the Japanese example and say, fine. You know, you can do that, but there's a price. And I think that's pretty much what the Russians are saying. You know, look, if you want to do that, go ahead. But you know, if you want gas at 10, come back and see us (Laughter).

And I think that that's why the Russians are sitting, keeping very quiet about the whole thing and just letting it play out. And I think the interesting dilemma for the European Union is played out in the whole decision about South Stream, where the Russians are offering to bypass the Ukraine, to rid Europe of one source of lack of security supply and of being blocked from doing that for short-term reasons. So, we'll see how that plays out.

But you know, of course that doesn't diversify Europe in any sense from Russian gas, of course. But it reduces one of the transit risks. So I think yeah, just to endorse Jonathan's points.

MR. EBINGER: Ariel?

MR. COHEN: Good morning. Excellent presentations. Ariel Cohen. Cost of production. If you look at Chayanda, you look at Eastern Siberia -- Chayanda or Kovykta, which is closer to the border, or if you look into Arctic, cost of productions are very high.

And this is land gas as opposed to offshore, but if you look at offshore Mozambique that is shallow, if you look at offshore Guinea that is signing new licenses as we speak, don't you think that this will go to Europe, as well as eventually Eastern Med? And the picture in the early 2020s is going to be quite different than what we see today, where of course, Russian gas for West Siberia, which is legacy basin has an advantage.

And the second question is about Ukraine. Do you think Ukraine has viable options in terms of interconnectors from Europe, gas coming as LNG or otherwise, or even LNG into the Black Sea with the floating LNG terminals such as Odessa? Thank you.

MR. EBINGER: John?

MR. STERN: Well, in terms of the upstream cost, the overall costs are high. I mean, every little capital expenditure is high, but on a per MMBTU basis, I think they are expensive. I think that Russia is pretty competitive. I mean, I think -- as I've said, I think Yamal gas delivered to Europe can be delivered at 7.50, $8 an MMBTU.

So, I think it can compete with any of the offshore sources. Yes, absolutely, Arctic gas would be very expensive, but I think Arctic gas is not in our lifetime. So, you know, Yamal has more --

QUESTIONER: (Laughter) You're a young man.

QUESTIONER: Huh?

QUESTIONER: You're a young man.

(Laughter)

QUESTIONER: I don't think I'm going to see Arctic gas coming out of Russia.

MR. STERN: Or the offshore Arctic gas. I think there's plenty of gas on the Yamal Peninsula to satisfy, you know, west facing demand. I think, you know, clearly, China and Kovykta will have their issues, and Georgia is more difficult. There's a helium issue. But it's all about transportation costs, really. It's just a huge distance to market from both.

But I think that, you know, Russian gas up stream can definitely be competitive. And I think the interesting thing in the east is that we're also going to see, if Gazprom fails to deliver -- we're going to see the same thing happen in the east as we've seen happen in the west, which is -- and it's already been mentioned by Rosneft and by the Energy Minister, Novak.

The independents have got gas they'll just put in the pipeline. I mean, Novak is talking about 25 billion cubic meters a year of non Gazprom gas going into the Power of Siberia pipeline. Rosneft's claiming it can produce 15 billion cubic meters a year of associated gas and gas from existing fields in East Siberia by the time the Power of Siberia comes on stream.

So I think, you know, again, if we're disappointed, as we could well be in Gazprom's efficient or inefficient development, there are other people, there are other people who can step up to the plate. And I think that you know, Rosneft's already been hinting at that. So I think it will be interesting to see what happens.

QUESTIONER: And I'll just say, what about Ukraine? I mean, there are complicated reverse flow options for Ukraine which really, you need a different presentation to outline. But I mean, what the Russians, I think will be very clear about, because they saw this happen in 2012, beginning of 2013, is this is all Russian gas coming around the corner and flowing back in. So, they'll be careful to try and price in a way in which that doesn't happen.

The kind of tragedy in Ukraine is yes, of course, you could do floating LNG or other LNG, but it would cost a lot of money. But the real tragedy is, you know, this is a great country which has been run by people who have basically abused their positions in the post Soviet period. If this country could be run by people who would even give the place a chance, it can produce gas. It has domestic gas resources, conventional, unconventional, on shore, off shore.

But the moment that things seem to be going well, somebody in government decides they'd, you know, like to take a position in a PSA that they've given to a private company. You know? If we could get just some semblance of workable government, you know, in that country, that would be fantastic, because this should be a rich country. It's just got everything it needs to be a success.

QUESTIONER: Thank you for a remarkable presentation.

MR. EBINGER: Use the mic, please.

QUESTIONER: Oh, sorry. Thank you for a remarkable presentation. It's quite breathtaking, and the book is thick (Laughter). It's quite astounding, what you're describing, which looks like the potential capacity of Russia's well situated geostrategic position and its implications of oil and may I say -- sorry -- gas and, may I say, oil and gas?

So, my question is this, and I'm confused, really. In the index, there were two mentions of climate change in Copenhagen, and not, at least in a two second flip through, a significant amount of discussion about environmental implications, greenhouse gas implications, local environmental impacts, et cetera, which as we know, is swamping the west in terms of off shore issues, in terms of all of the above.

And I'm just wondering where and how and if that fits in, both as a cost mention and also, as a geostrategic dimension, giving the seeming acceleration of opposition to carbon fuels. And I guess I would be particularly interested, although this may be off topic, the Rosneft Exxon center that is being constructed in Saint Petersburg to take on environment and corporate responsibility type issues. Thank you.

QUESTIONER: Okay. Well, all right, let me try and address the reason why we haven't done very much on that in the book, is that there is quite a big literature on that elsewhere. And this book really focuses on what our comparative advantage is, which is not in that area.

However, what is very interesting to me is -- I mean, as a regular visitor to Moscow and a regular person who discusses gas and energy with Russians, is how little climate -- the climate issue features on their agenda. They feel they can use it to their advantage, because of gas' advantage particularly over coal, but that's about it.

Now, local environmental issues are much higher on the agenda, and there is at least some evidence of greater sensitivity to environmental issues when they develop new projects. And if you take a look at the Yamal development and you look at the photo album on the Gazprom site, you'll see a lot of references to what they have done in order to try and counter the environmental problems that could have arisen.

One of the things, though, that is very notable in Europe, is that while the gas industry has really tried to play the climate card in its favor, it has almost totally failed. Despite the fact that it's a very logical argument, it has almost totally failed. You know, gas in most parts of Europe, maybe in every part of Europe, is not regarded as a significantly beneficial fuel, despite the fact that in reality, it is (Laughter). It's not regarded as that.

Environmentalists tend to focus on you know, methane emission issues which are unquantifiable and difficult to know. That's one of the reasons, but not the only one that they are so fundamentally opposed to anything to do with unconventional gas. So, that's kind of a start of a story that I would see. Do you want to say anything else?

QUESTIONER: No, I would just say, I think Gazprom, in common with the rest of the European gas industry, risks underestimating the impact of renewables in Europe, and you know, Gazprom, from what I've seen, has made one presentation outlining the traditional view of gas as a supplementary fuel to substitute for intermittency of renewables, obviously, and has made some effort to demonstrate, obviously, the benefits of gas over coal, but you know, has failed to make an impact.

I mean, I think anything -- Gazprom certainly feels anything it says is taken as a bad thing in Europe. So, you know, they're obviously just talking their own book, and it’s a Russian book as well (Laughter), so you know, forget it. But I feel they're better off not talking. I mean, in the east, of course, it’s very, very obvious that gas is replacing coal in the Chinese economy.

So there, the story just plays out as a very natural environmental story. And I don't think there’s any need for -- Gazprom feels no need to demonstrate that. It’s just quite clear what’s going on, that gas is substituting for coal, and they're part of that story.

MR. EBINGER: Kevin?

QUESTIONER: Thank you. Kevin Massute, Stats Oil. Thanks for a great presentation. As we're in Washington, I want to ask a political question related to the U.S.’ role in what’s happening in Ukraine.

I think the reasons that Jonathan outlined were unlikely to see that the Europeans quickly adopt any punitive measures against Gazprom, but there’s been a lot of talk here. There’s been some legislation -- draft legislation introduced in Congress that directly targets Gazprom. I'd be interested in your perspectives on what the effect would be of U.S. sanctions against Gazprom, or not specifically under Gazprom, but one issue being discussed here is technology export restrictions.

Would that have any impact on what they're doing in Yamal? And what do you see as being the material effects of any U.S. -- unilateral U.S. sanctions against Gazprom?

MR. STERN: Well, I’ll start. I'm going to leave the Yamal question to Jim, but let me start. What I have been very careful to try and say in Europe is, we have a political crisis with the Russians. Let’s not make that into an energy crisis. You know, it’s -- and whilst I'm completely supportive of the general view of the Crimean annexation, I think we need to be really clear in Europe that we have an enormous amount to lose from this relationship.

And if we're going to impose significant costs on ourselves, let's be clear why we're doing it. I'm not saying there wouldn't be reasons for doing it, and should there be, which of course, we all hope there isn't any Russian encouraged into Eastern Ukraine, this would come onto the agenda very quickly. But if the status quo currently is maintained, my guess there won't be any increase in sanctions, and they will not go into the energy sector.

One thing, though, that we should keep in mind before I pass over to Jim, is of course, this is not a new situation. U.S. sanctions on Soviet energy have strong historical antecedents. And I think maybe, before the U.S. does anything, it should look back on what happened during those episodes to see, you know, how successful they were in achieving their aims.

MR. HENDERSON: I think the technology sanctions, and there are three big areas, I think, in the gas area, it's LNG. And I think you've mentioned Yamal. I was with the finance director of the Novatek last week, and I think there are two things that are of concern to that project.

One is the fact that they're buying the technology from Air Products, which is a U.S. company. And so if there was a specific targeting of that project, then that could hurt. And the other thing that's already having an impact is if the financial sanctions and the threat of the sanctions, which are making banks nervous about lending, and the completion of the project finance via Yamal LNG has taken longer than expected for precisely that reason.

But of course, what we're seeing in both instances -- I'm sorry, just to complete the technology thing. The other two areas are oil related. There's obviously, the Arctic off shore -- or off shore generally, but particularly the Arctic with Exxon drilling as well in August this year in the South Kara Sea, and then there's the unconventional where again, we've got the pilot projects from a number of companies now -- Totov, Shell, Exxon, Stats Oil and now BP, and obviously, that transfer of technology could hit.

Now, but the response on a number of issues is, as we've seen in the gas sector, is to turn east, and particular on the finance influence. You know, where Novatek are looking to finance a lot of the stuff now for Yamal with you know, Chinese banks, Japanese banks, Korean banks. So, you know, that's the response.

On the technology front, it's not quite as easy, certainly in terms of the LNG technology, I think that would have an impact. In terms of drilling and the unconventional side, you know, you can get rigs who -- already 40 percent of Russia's rigs are coming from China. So you know, on that front, there is a sort of resource to turn to.

I think the off shore thing is the difficult one. I can't see how they could drill in the Arctic without the support of the ISEs and the technology they bring. And I think that could have a significant impact. And I think that well in August is a massive PR event as well as a massive oil industry event. So that would be an interesting one to follow. So, I think on those three issues is really where the technology can hurt.

MR. EBINGER: Well, I think unfortunately, we're going to have to cut it off there. I want to thank Jonathan and Jim very much, and Ed and Cliff for joining us. And please, join me in thanking our guests. (Applause)

* * * * *

CERTIFICATE OF NOTARY PUBLIC

I, Carleton J. Anderson, III do hereby certify that the forgoing electronic file when originally transmitted was reduced to text at my direction; that said transcript is a true record of the proceedings therein referenced; that I am neither counsel for, related to, nor employed by any of the parties to the action in which these proceedings were taken; and, furthermore, that I am neither a relative or employee of any attorney or counsel employed by the parties hereto, nor financially or otherwise interested in the outcome of this action.

Carleton J. Anderson, III

(Signature and Seal on File)

Notary Public in and for the Commonwealth of Virginia

Commission No. 351998

Expires: November 30, 2016