ACADEMICIAN NODARI SIMONIA:

COUNTRIES THAT DON'T CARE SHALL PRODUCE SHALE GAS

SHALE GAS REVOLUTION MYTHS AND REALITIES

Exploration and production prospects at shale gas fields remain in the public eye in the Baltic Sea region. Thus, the Economic Pulse-2013 poll held by KPMG Baltics auditing company among business leaders in Lithuania revealed that nearly a third of respondents (31%) listed nuclear power engineering as priority for national energy sector, 22% – biomass fuel, 19% – wind energy, and 13% – shale gas. In 2012 only a few Lithuanian respondents listed shale gas as priority. In April the new government of Lithuania had to decide whether to cancel a tender for shale gas exploration or name Chevron the winner as it was the only bidder and allow its operations in Lithuania. The government postponed the decision and said it would consider it after parliament approves law bills enhancing control over gas prospecting. Russian Academician Nodari Simonia analyses the phenomenon of shale gas revolution.

Shale gas revolution has joined pop culture of late. Even when you switch on an iron you hear something new about shale gas revolution. The words "shale rock" are well known to Russian experts. MGIMO has been recently visited by Estonian lawmakers who asked not to confuse available shale rock in Estonia with shale gas revolution. You have been dealing with the issue for long. What is it all about?

Shale gas has been developed in the world for decades but in small volumes as it is, firstly, expensive and, secondly, technologically difficult.

The government of the United States traditionally subsidizes the production of shale and other non-traditional gas. I do not want to burden the reader with numerous figures but will anyway cite one table which explains a lot about the shale gas revolution which was artificially and intentionally inflated. The table was produced on the basis of calculations by well-known Wood Mackenzie consultancy and published in March 2010 by Petroleum Economist.

US 48 lower states gas production

	2000	2009	2020
Total gas production	51,8 bln cubic feet/day	55,0 bln cubic feet/day	62,5 bln cubic feet/day
Conventional gas	67 %	41 %	27 %
Tight gas	23 %	36 %	37 %
Coalbed methane	8 %	9 %	7 %
Shale gas	2 %	14 %	29 %

The table shows the share of non-traditional types of gas grew before 2009 not due to real physical volumes but as a result of depleted production of traditional gas. In reality the difference in total volumes of US gas between 2000 and 2009 comprised 3.2 bln cubic feet a day. Although the share of shale gas considerably increased it was still 2.5 times lower than tight gas (most deposits were developed by old vertical drilling technology) and nearly three times less than conventional gas. Such a modest result hardly merits "shale gas revolution" title. Even if Wood Machenzie forecast for 2020 comes true the total growth of domestic gas production in the United States can hardly be viewed as radical. The surplus will comprise only 7.5 bln cubic feet a day.

To comprehend the developments it is necessary to remember that 92% of natural resources in the United States are mined by small and medium independent companies

which account for 82% of gas production. The second major aspect is that everything under your own land is yours.

The technological condition for the shale gas revolution was the unification of two well-known technologies – horizontal drilling and fracking (high-pressure hydraulic formation fracturing). Shale is different from stone and sand as after fracking that discharges gas the cracks fold back and "heal". To prevent it they add chemicals to the injected water. That is the reason while local population and authorities oppose the technology in most states. However there are territories where residents are indifferent to the environmental consequences and mostly want jobs.

In Texas, in a place called Barnett someone decided to combine horizontal drilling with fracking. It seems the Barnett field continues to provide a lion share of US shale gas. The situation was favorable as from 2005 prices of energy carriers grew and became record-high in 2008 when a barrel of oil cost 147 dollars. (I always warned at the time the price was unbalanced and a result of gambling at NYMEX – New York Commodity Exchange). However it was like hypnosis for many people. Even Vladimir Putin said when oil price began to rise after the crisis that so far we have failed to reach 147 dollars per barrel. But it was an absolutely artificial and abnormally high price. A fever similar to gold and oil rush in the XIX century began. Companies and individual businessmen bought out land plots and drilled for shale gas. A number of major fields were discovered – Eagle Ford, Haynesville, Utica, Woodford, Marcellus, and others. The last one includes the States of Pennsylvania, New York, and New Jersey, which are densely populated and well-developed regions. When TV showed a land plot whose owner allowed to produce gas on it people were horrified by seeing dark brown water around. Another TV broadcast hit the whole world: a burning match ignited water in a tap.

Academician Nodari Simonia

There is still one more important aspect for the comprehension of the general situation. In all the years when the shale issue was in the focus of public attention there were only two-three serious publications about it, as far as I remember.

In mid-March 2010 the Oil and Gas Journal published an article of Houston-based expert and President of Merlin Associates consultancy Chuck Yost whose biography offers a successful synthesis of theory and practice. He agreed there are prospects for shale gas in the United States but expressed skepticism regarding excessively optimistic present-day forecasts. Yost said shale gas industry was in "infant age" at present and there are many uncertainties to be clarified and problems to be resolved. One of the problems is rapid depletion of wells. The article offered an index schedule of average productivity of a typical well which showed the yield rises only in the first year of operation after which it radically falls and continues to slowly decrease during the second, third, and fourth years of operation down to a low level of some 12-13 points from maximum 100. As for competition between shale gas and imported LNG, Yost analyzed three options of gas demand and price movements and convincingly showed that in any option LNG will continue to come to the United States (the amount is the question) and will exert considerable competitive pressure on shale gas and thus decrease its production. We should not expect that LNG will stop coming to the US market because of fear of competition with shale and other non-traditional gas, he concluded.

A similar opinion of LNG prospects in the United States was voiced by another expert – Nikos Tsafos who published an article in the British Petroleum Economist in May 2010. He monitored the staged movement of LNG in 2007-2009 and concluded that the United States was "the last resort" for LNG as exporters can always come to the market if they fail to profitably sell the gas in other countries. He noted that even before the shale gas boom LNG did not strike root in the USA after regular supplies began from Trinidad and Tobago in 1999 but stressed that in 2008-2009 two-three re-gasification terminals did not stop operations and in 2009 LNG staged a comeback to the United States.

The shale fever only slightly resembles the oil fever which lit up the star of Rockefeller when oil was discovered in Pennsylvania and hundreds and thousands of people rushed there. They drilled the earth literally stamping on each other feet. To save money they bought a very small plot of land which could accommodate a primitive drilling rig and its wooden supports often stood on neighboring plots. They nearly ruined the oil industry. It was Rockefeller who saved it by creating the first vertically-integrated company in the world. He deserves a monument for that. The main difference of the current fever is that shale gas wells rapidly deplete. A normal gas well operates for 16-20 years while you have to keep constantly drilling for new shale gas.

Maybe the technology is imperfect?

The Americans learned how to partially offset the problem. Today horizontal drilling is accompanied by drilling in several directions through only one surface well. In Russia they also drill the same way at Vankor field in the north of Krasnoyarsk territory. Shell invented the flexible bore when it helped Brunei cope with the problem of depleting fields in which oil remained only in the so-called pockets.

Rapid depletion of fields is not the only problem of the business. It triggers others and makes shale gas production a loss-making business which is subsidized. Thousands of people took bank loans to buy or lease land and acquire equipment. The heat continued up to 2009. In 2008 oil prices were still very high. (In contrast to Europe the United States does not tightly link oil and gas prices, but the exchange feels the dynamic). Then prices began to fall for one, two, three years. The "thermal price" of the gas was 3.5 dollars per MMBtu. Falling prices were accompanied by depletion of numerous shale gas fields and new drilling costs. Many people who believed in shale gas revolution went broke but 10-12 medium independent companies emerged and succeeded to survive. The most distinguished of them is Chesapeake Energy which pioneered in purchasing land for shale gas drilling and now has huge debts and fourteen billion dollars in the red.

In the summer of 2012 MGIMO published a collection of articles under your supervision called Russia and the Asia Pacific Gas Cooperation Prospects. I had an impression after reading it that shale gas revolution in the United States was a result of a sophisticated state policy aimed at creating maximum favorable conditions for private enterprise in shale gas production. The policy aimed at decreasing US reliance on imports. In general the flow of publications about shale gas revolution does not highlight the role of governments.

There is also another misunderstanding. The news makes public opinion believe that shale gas revolution helped the United States stop buying liquefied natural gas and the biggest importer quit the world market. The withdrawal naturally affected prices and the market structure, as well as strategic prospects of its main players. But the main thing is that the United States increased its independence from foreign supplies and came close to the cherished dream when Arab countries will no longer be necessary and it would be able to deal with them in the way it treated other states and territories.

Let's recall the situation of late 2008. Barack Obama was preparing to occupy the Oval Room. The public paid all attention to election results and upcoming appointments. The NYMEX and the US oil and gas industry were waiting to clarify the course of the new administration as the previous one was closely related to the mining sector. Obama and supporting elites signaled a course for change and the oil business suffered major losses as a result. However there was an exception for shale gas as benefits were preserved. Why? Economic globalization played a low-down trick with US industry which suffered from global outsourcing. It became profitable to move production to China, India, and Southeast Asia. Profits from production were partially reinvested and partially kept offshore. On this background

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production of traditional gas sharply decreased in the United States, fields depleted and no new licenses were issued according to the principles adopted yet by the Roosevelt administration in the end of World War Two which triggered the emergence of "seven sisters" that shared the world among them and established the price of a barrel of oil.

Obama decided that widely advertised shale gas can compensate for the decreased production of traditional gas and prevent major price hikes for energy carriers which could deal the final blow to thousands of American enterprises. If we count all gas, including traditional, sand, and shale, there has been no quantity revolution at all. I believe the revolution boiled down to an efficient impulse to keep the US industry more or less viable and prevent further deindustrialization.

People who overslept the changes now speak about shale gas revolution which is rarely recalled today in the United States. But we continue to issue gloomy forecasts by inertia.

What did the real or imaginary revolution mean for energy security and independence of the United States?

Today shale oil is more popular in the United States as it was found at certain shale gas fields. It is praised to high heaven now. They promise to outshine Saudi Arabia soon. The wave emerged in 2010. One very stubborn independent investor in North Dakota continued to unsuccessfully drill one plot after another. He first drilled for shale gas. He then got disappointed in his gas dream but found the oil one. And he was lucky. The second stage of the fever began in the United States. Chesapeake Energy was again in the lead. But it is noteworthy that it no longer buys but sells land. The Upstream weekly said on March 1 that Chesapeake announced the sale of 427 thousand acres at the popular Bakken field located in Montana, Wyoming, and North Dakota states.

It is true that shale gas is produced and sold for cheap in the USA. It is good for industry, economy in general, and the government. But those who invested in it will not get expected profit.

Daniel Yergin, current president of Cambridge Energy Research Association (IHS CERA) predicted in Foreign Affairs in 2003 that in several years America will be the biggest import market for LNG. The article was co-authored by Michael Stoppard. Sergei Karaganov immediately reprinted it in his Russia in Global Politics magazine. But it was a bluff. America did not become the major LNG buyer. As for Yergin, he switched to the propaganda of shale gas. He visited Moscow once and I asked him: In 2009 you addressed the International Gas Congress in Buenos Aires and promised to satisfy not only America with cheap shale gas but also teach the whole world how to produce it. Aren't you afraid the forecast will face the same plight as the one about LNG?

Under the influence of such experts President Obama said before the Copenhagen conference on climate change (December 2009) the United States will teach China to produce shale gas and signed with Hu Jintao an agreement which promised US assistance to China in mastering the necessary technologies.

Naturally, it was aimed against Gazprom, in particular. For example, Obama's aide Joseph Aldy said the following about the role of shale gas in US policy. He told the Center for Strategic and International Studies (CSIS) that shale gas provides a possibility to ruin cartels and help many countries produce gas.

Why did I recall the story with the old forecast by Yergin? America is a country where business listens very attentively to such forecasts. As soon as prospects of large-scale LNG imports were announced investors immediately rushed to build terminals and re-gasifying facilities. They built twelve of them and there were twenty projects in the line. At present four are operating at reduced capacity while others have been mothballed or construction suspended.

Under the influence of forecasts about shale gas exports from the USA investors again lined up to build export terminals. However they did not have time to erect something significant. Europe, to which Russia belongs, is not critical in assessing the fluctuations in US business. Kommersant newspaper reports about the projects as if they had already been implemented and serious people begin to believe in it. One of them is Board Chairman Rainer Seele of Wintershall, which is a major partner of Gazprom. He supported the construction of both Nord Stream pipelines and now supports South Stream construction. Through Gazprom Wintershall enjoyed a possibility to develop Achim fields while Gazprom got a share in midstream sector of Wintershall. That is what he said in an interview with Kommersant on April 30: the US demand for imported gas is practically equal to zero.

Look at figures! Don't be afraid of looking deeper. Every June British Petroleum publishes an excellent statistical report on all energy sectors – oil, gas, coal, and nuclear. It clearly shows the situation on the US gas market. But they forget a small detail: there is Canada close to the United States which continues to export to the US 88 billion cubic meters of gas. It is more than Seele's native Germany imports!

It is truly strange for a German. But some Americans do not view Canada as another country...

That is what Americans think. But when Bush administration requested Ottawa to supply huge water volumes for fracking the Canadians responded: Any volume but of bottled water.

I will repeat that British Petroleum provides the best statistics. It is one of the best things it is doing. They show that US LNG imports which decreased to the minimum of 0.57 billion cubic meters began to grow in 2010 and reached 10 bln in 2011.

Does it mean the major buyer which is the United States did not quit the world gas market?

No, it didn't. I will again cite Nikos Tsafos who categorically predicted in the same article that no matter how upstream developments progress the United States will remain an LNG buyer. I am looking forward to July when the next annual BP bulletin comes out with 2012 import volumes. The upward trend in evident anyway.

If there was no shale gas revolution but only an attempt in the United States, if the country returns to the global market as a buyer, what does it mean for the European Union as consumer?

In November 2010 the annual US-Russian Energy Dialogue was held in Washington. I delivered a report there and praised the achievements of the United States in at least partially replenishing the outgoing gas production capacities and thus saving the real sector from recession. But I also cited data confirming there was no alleged gas flow from the USA to the European Union. It is only natural as the Obama administration is in no hurry to encourage LNG exports from the United States as they will inevitably raise domestic prices on the US market. It is not accidental that up to now (May 2013) federal authorities have approved only one out of twenty submitted bids for Sabine Pass terminal in Louisiana (Cheniere Company). In case the regulator approves the project the first shale gas batch will be exported in late 2015 – early 2016 (less than 5 mln tons a year). Moreover, there is "coal renaissance" in some European countries today which squeezes out more expensive gas. There are also other

LNG consumers in the world – Japan, South Korea, and Taiwan. In future there are China and India. There are also suppliers, first and foremost, Qatar which since 2002 has developed into the biggest LNG supplier in the world. Two years ago its exports amounted to 90 billion cubic meters. However they include also pipeline gas supplied by Qatar to Arab neighbors with existing discounts. It comprises over 19 billion cubic meters.

They scared us by claiming Europe will be flooded with excessive gas. Statistics do not confirm it so far. On the contrary, consumption is falling in some EU countries because of the crisis. Naturally, Norway revived as it always gets a green light in the European Union in contrast to Gazprom. It is noteworthy that nobody demands Norway to decrease gas prices.

There is evidently a prudent man in Gazprom who likely said: let's justify our inaction at Shtokman and other offshore fields by reported surplus of gas in the world and that shale gas suppressed everything. These will be objective reasons for our inaction.

Naturally, Gazprom overslept the market, but not American, as Russian newspapers claim, but Asian and the Pacific Rim. The lion share of Qatari LNG goes to Japan, South Korea, and other Asian countries although Russia is closer to them. LNG transportation costs comprise 40 percent minimum. It takes two-three days to sail from Sakhalin to Japan or may be even 36 hours depending on the island while transportation from Qatar takes two weeks. The Japanese are interested in LNG exports from Russia and their companies operate in Sakhalin-1 and Sakhalin-2 projects. They insisted at talks with the Russian government to make Gazprom build the third line at Sakhalin-2. It is cheap and close. We have to remember that neither we nor Shell built everything on Sakhalin. Shell was in command as an operator. The Japanese built everything.

Now after the Fukushima tragedy their interest increased. One more gas pipeline will go to Vladivostok where it is planned to complete the construction of an LNG plant in 2019 for exports to Japan. An agreement between Gazprom and with several Japanese companies has already been reached.

Let's go back to Europe. What do you have after shale gas development? Moon landscape. France rejected any shale gas development projects. Nuclear power plants account for 40 percent in its energy mix. Germany decided to get rid of NPP but it also banned fracking. The whole of Old Europe is a garden where people care about each meter of land. Why should they subject it to shale gas tests?

They say there should be a lot of shale gas in Poland…

Yes, there is much ado about shale gas in Poland. ConocoPhillips and other forty companies arrived to prospect for it. They promised energy independence to the Polish government and said Polish gas would oust Russian gas from the EU market. In 2011 the US department of energy estimated Poland can have 5.3 trillion cubic meters of shale gas which are enough for 300 years of consumption. Today there is no shale gas in commercial energy mix of Poland but they delayed for a year the signing of a new transit agreement with Gazprom. In the meantime Exxon Mobil withdrew from Poland in 2012. ConocoPhillips is thinking so far. In May 2013 three companies refused to develop shale gas in Poland – Marathon Oil, Talisman Energy, and Polish state-run Lotos! They said there are no commercial gas reserves. However the Polish leadership keeps insisting it will not affect its decisiveness to find and develop shale gas.

Well, Poland is a big country. It is no Denmark or Austria. But I pity Poland.

Do you mean it is worth producing shale gas in a country which you do not pity?

Yes, in general. The Americans do not pity Texas as it is big and scarcely-populated and people would not protest a lot.

Does it mean there are no shale gas prospects for Baltic countries? They do not let migrants in, will they allow such environmental devastation?

No. Besides, they struggled a lot to make Gazprom lay its pipelines through their territories. They recruited Poland as an ally and demanded a new pipeline to go along the Ukrainian one.

It is exactly the pipeline which Gazprom is offering to Poland at present, but Tusk is rejecting it for unclear reason. They claim it would be a politicized pipeline and they would not support a project that bypasses Ukraine. Do they really mean that oil and gas can be unrelated to politics? Does the fantastic Nabucco project have anything besides politics?

It is a very instructive story. Russia and neighbors should learn lessons from it. Which lessons?

Today we are talking with the European Union as if we are on different sides of barricades. It is abnormal. It is better to discuss existing problems at a round table and take common interests into account. Energy security problem is double-edged and risks shall be shared by both parties – suppliers and consumers. It is the main thing. They should not politicize the issue or resolve it unilaterally.

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From 1990 he is corresponding member of the Soviet Academy of Sciences and from 1997a Russian Academician. In 2000-2006 he directed the Institute of Global Economy and International Relations at the Academy. In 2001-2006 he was special representative of the Russian president for relations with leaders of African countries in the G8 framework. He participated in G8 summits in Kananaskis (2002), Evian (2003), Sea Island (2004), Gleneagles (2005). He is currently professor of the desk of international problems in fuel and energy complex of the International Institute of Energy Policy and Diplomacy at MGIMO University at the Russian foreign ministry.

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In 2012 MGIMO published a volume of selected works by Academician Nodari Simonia.

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