INSTITUTE FOR FINANCIAL
STUDIES

Global energy security and international financial mechanisms of risk management

Roundtable summary

December 18, 2008 Russia's Federation Council's Budget Committee held the Global energy security and international financial mechanisms of risk management roundtable initiated by senator Andrey Vavilov, the Committee member.

S. A. Shuvalov, deputy chairman of the Budget Committee, hosted the roundtable.

Speakers:

- Vavilov A. P., member of the Budget Committee,
- Marghelov M. V., chair of the Committee for International Affairs,
- Tsibulsky V. F., senior researcher at the Russian Research Center 'Kurchatov Institute',
- Academician Glaziev S. Yu., Director of the Institute of New Economics of the State University of Management,
- Academician Makarov V. L., Director of the Central Economics and Mathematics Institute of the Russian Academy of Sciences,
- Beskhmelnitsyn M. I. auditor of the Accounts Chamber of the Russian Federation,
- Simonov K.V., director of the National Energy Security Fund,
- Ickes B., professor at the Pennsylvania State University.

A. P. Vavilov opened the meeting with his report 'Energy Security: Global Growth and Risk Management' in which he presented the main results of the IFS staff research projects on this topic (you can view the earlier research results in A. Vavilov's and G. Trofimov's article 'Formula for Energy Security').

Mr. Vavilov said that energy prices were not likely to grow in years to come. The world market has entered a low-price stage, but the global and Russian economies should continue progressing and effectively adjust for new conditions.

In his report, Mr. Vavilov offered a formula for energy security in which cooperation between energy producers and consumers is the main component.

The report by M. V. Marghelov, chair of the Committee for International Affairs, 'Enhancement of International Relations and Cooperation Mechanisms for Oil and Gas Shipment to the EU States', focused on transit risks that have hit a record high. Mr. Marghelov agreed with Mr. Vavilov's opinion upon the cause of impeding development of relations, including those in the sphere of energy security, between Russia and the EU. It is financial protectionism, often presented as liberalization of the European market. Marghelov says in his report, that Europe eliminated state monopolies but gave an impulse for emergence of private monopolies; he added that Europe's efforts to make oil and gas supply more diverse ignores the seller's interests. Thus, lack of cooperation impedes Russia's and the EU member states progress.

Academician S. Glaziev's presentation, 'Possibilities and Limits of Russia's Economic Development amid Structural Changes in the Global Economy', tackled the research results. The research revealed that energy price surges and declines are related not only to economic growth fluctuations, but also to the transition of the global economy to a new technological level. According to Mr. Glaziev, the low-price period may signify that the global economy has already started transferring to a new technological level.

Academician V. Makarov is convinced that the world is about to enter an era of new thinking. Simple models of the past tend to be replaced with modern and more-complicated ones. The complicated models include new methods and new artificial economics with multiple parameters. Taking advantage of these models, researchers will be able to make much more accurate and reliable forecasts, i. e. know more about the future.

To keep the Russian economy up-to-date, two things should be done: incomes from oil and gas exports should be invested in high-tech industries and Russian mineral resource extraction risks should be diversified. B. Ickes, a professor at the Pennsylvania State University, also mentioned it in his speech. Both the Russian and world economies need efficient diversification of risks, especially amid the crisis.

Along with investments in high-tech industries, incomes from primary energy exports can be invested in research projects, such as watercuts reducing

technology, water discharge increasing etc. According to Mr. Beskhmelnitsyn, an auditor at the Accounts Chamber, this measure will help us put into operation hundreds of idling wells and so reduce the risks of oil production decline, raise oil extraction and efficiency of the industry on the whole.

In the course of the discussion, speakers presented different, sometimes totally opposite viewpoints.

Particularly, the senior researcher at the Kurchatov Institute, V. Tsibulsky, said in his report, 'Global Energy Security on a Multilateral Basis: Search for New Strategies and Ways of Development of the Oil and Gas Sector', that energy should be cheap, otherwise the civilization development would be threatened.

At the same time, V. Tsibulsky and other experts believe that energy prices are driven up by the growth of population and, consequently, higher demand for energy. Taking into account Mr. Marghelov's viewpoint that as long as there is oil, no anti-oil scenarios are likely to take place, we can assume that demand for primary energy will increase. Then oil prices should grow too, but this does not happen. That is why Mr. Vavilov pointed to pricing risks in the world energy market.

The most important theses stated in the roundtable participants' reports:

1. Under the conditions of globalization and increasingly vague borders between regional markets, cooperation has paramount importance for the global economy progress. As long as cooperation between Asian countries develops fast, the region's competitiveness has largely increased in the past years. Europe, on the contrary, is engaged in protectionism and creation of artificial barriers. This, above all, hampers the EU economic development.

2. Incomes from oil and gas exports should be invested into different industries in different countries. This will enable Russia to diversify its industry and country risks and receive foreign technology; also, the country will be able to timely upgrade its oil and gas industry and the real sector to raise their competitiveness. This is especially important now when there are enough accumulated resources for the economy to transfer to a new technological level.

The main result of the roundtable is that it became a meeting point for state agencies, researchers and business leaders to exchange information, expertise and opinions. All roundtable participants agreed that the energy security theme is urgent and needs to be tackled.

Andrey P. Vavilov

Member of the Budget Committee of the Russia's Federation Council's
IFS Academic director
Doctor of Economics

Energy Security, Global Growth and Risk Management

The topic of our roundtable is: are there alternatives in the Russian government's economic and financial politics? This question should be considered in a mid-term, or, better, long-term perspective.

1. Oil and gas are our key resources. What are the possible risks?

In the past 6-7 years, we had an illusion that the world's necessary and required traditional energy reserves are limited. Countries that have oil and natural gas fields find themselves in a privileged position. As oil and gas traders, they can put forward their demands and enjoy economic and short-term political benefits.

This thesis arouses many doubts related to the following factors:

- Accuracy of reserve evaluation;
- Size of investments in the Arctic and Eastern Siberia;
- Changes in oil price;
- Capital efficiency and global economic growth.

I would say, we can be sure that the information about the world oil and gas reserves is incomplete. This is confirmed by various forecasts of global oil production peaks (the Hubbert peak theory). Some years ago, the oil production was expected to peak in 2005, the present-day forecasts state that it will peak in 2015 or 2025 (Figure 1).

The problem of incomplete information on oil and gas reserves was vividly seen in the fight between transnational companies for the Caspian region. Some companies have reviewed their investment plans and gave up their initial projects. (Table 1). It signifies unreliability of the initial reserve assessments – they were overstated.

The global uncertainty, with large reserves located in the countries with unstable political regimes (like Iran, Nigeria, Venezuela, Libya), worsens the problem (Figure 2). In some more stable economies, such as Arab countries and Turkmenistan, the information on the proven reserves is not transparent.

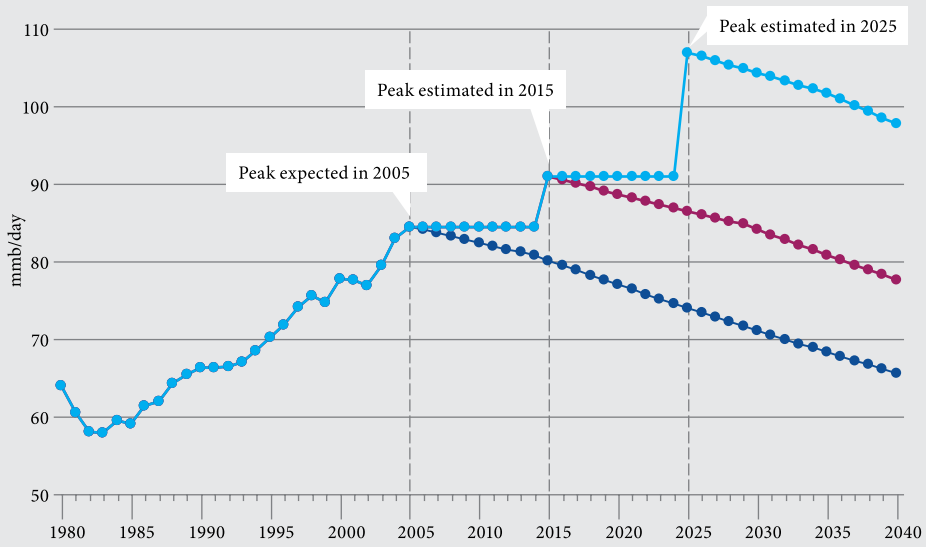

Figure 1. Forecasted peaking of global oil production

Table 1. Ineffective oil and gas projects in the Caspian sea area

Companies and alliances	Projects	Results
Agip	Kurdashi, Araz-Daniz	Loss of expected 100 million tons of oil
Total, OEIC, Wintershall	Talysh-Daniz, Lankaran-Daniz	Loss of expected 50 million tons of oil
ExxonMobil	No data	Loss of expected 40 million tons of oil
Chevron, Total, SOCAR	Oguz	'dry well'
Agip, Lukoil	Karabakh	No data
BP	Dan Ulduzu, Ashrafi	No data

The governments purposefully conceal and distort the information and use it for their own benefits ignoring their potential partners' interests.

The second uncertainty factor is high investment risks. Exploration of oil and gas fields (the Arctic shelf, Western Siberia) requires hundreds of billions of dollars. Development of new fields in the north of already explored provinces (like the Yamal peninsula) requires dozens of billions of dollars.

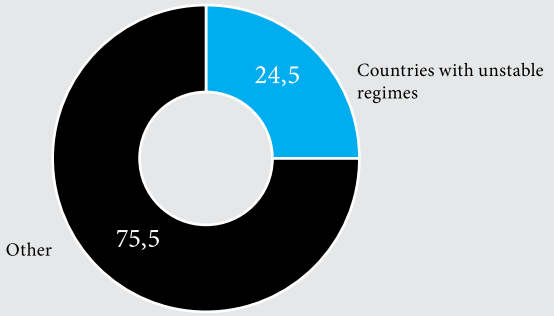

Figure 2. Oil reserves in unstable economies

The third uncertainty factor is changes in oil prices. Will the future oil prices cover large investments (will they bring at least medium profits, not to mention extra high gains)? Two hundred, three hundred or five hundred billion dollars is huge money for our country. This amount would be enough for revamping the Russian industrial sector or for large imports. To explore new fields, new cities and settlements should be built and workforce transportation arranged. If the oil price falls, customers will be glad, but Russia will suffer immense losses. As a result, the country will have to sell oil just to cover the operational costs.

What is happening to the oil price? It peaked during the Iran-Iraq war (1981-1982) (Figure 3), the first US' campaign in Iraq (1990-1991) and other events of the like. We can see that there have not been long periods (5-15 years) when prices remained high, which would be a basis for capital investment decision-making. Within a long period (from 1949 till now) oil prices have grown, but the annual growth averages just around 1.6% (Figure 4). According to this trend, the oil price should be around 50 dollars per barrel or even lower now. So, why should it rally to the previous levels of 100-150 dollars per barrel or climb higher than 200-300 dollars per barrel? There are no grounds to hope for that, therefore we recommend estimates be made based on the assumption that in the coming 5 to 10 years the oil price will stand at 50 dollars per barrel.

Let us consider the fourth factor in a separate section because its mechanism is much more complicated.

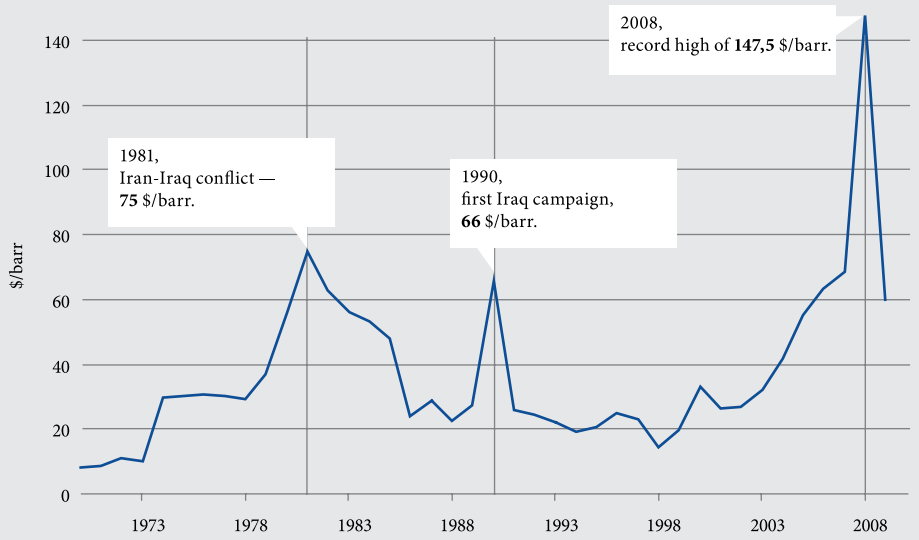

Figure 3. Rebased price fluctuations (2008 data)

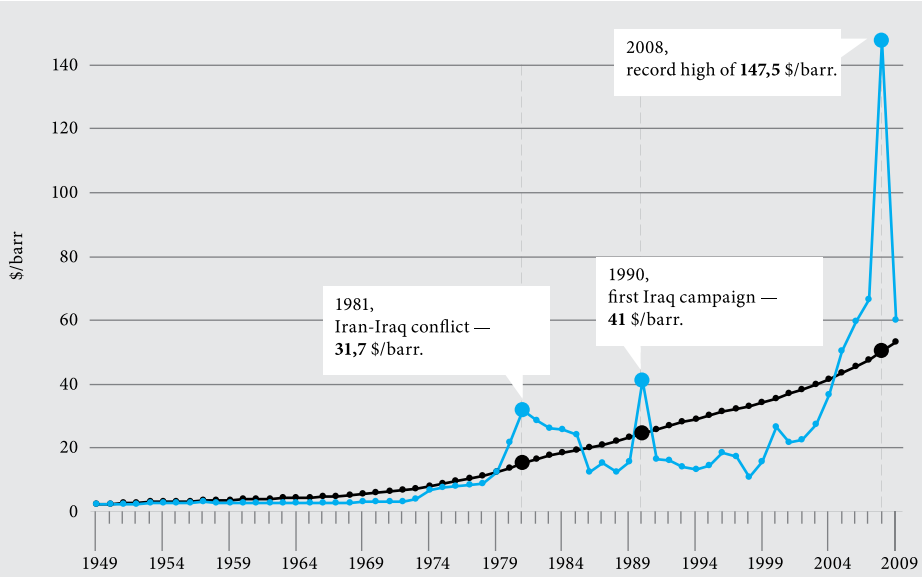

Figure 4. Oil par value fluctuations

2. Capital to cut energy consumption and global economic growth

The developed countries report that their energy consumption is relatively low compared to the GDP (Figure 5). This is the result of the 1970s technological breakthroughs that targeted cutting energy consumption by means of capital.

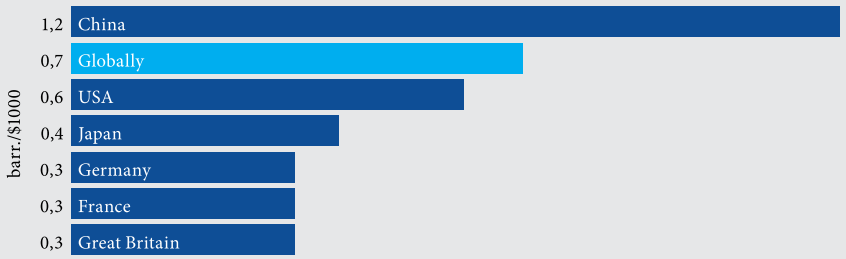

Figure 5. Energy consumption in the GDP

However, the possibilities to further cut energy consumption have been already used up, therefore, the developed economies largely depend on energy resources. This dependence is characterized by strong technological ties between energy and production capital (which can be seen in an unchangeable ratio of these production factors). The pure capital is not productive, while the so-called capital 'secured with energy resources' is productive (for example, an automobile with an empty tank is just a set of parts). Possibilities to replace energy with capital are limited, i.e. it is hard to raise energy efficiency with the help of capital.

Under conditions like this, small investments in new fields and insufficient oil supply cause the return on investments to fall (compare: you will have a zero return on investment in a vehicle if its tank is empty (or negative, if you have to pay for a parking place)). It results in households' reluctance to save and leads to a growth of debts – this trend has been observed in the developed economies for many years (Figure 6).

High consumer activity in the developed countries has become the vehicle of the world economy. However, growth based on consumer demand is very vulnerable (in a large part, the current world crisis illustrates this statement).

The existing global growth model rests on reliance on the oil trade and can be described by the following chain: low oil supply – low return on investments – high consumption – low capital growth. This process is partly compensated by high saving norms in some Asian economies, but they are likely to fall in future, too.

Thus, the developed countries' dependence on oil supply pushes the capital growth rate below the optimal level. This will eventually lead to long-term problems in all countries.

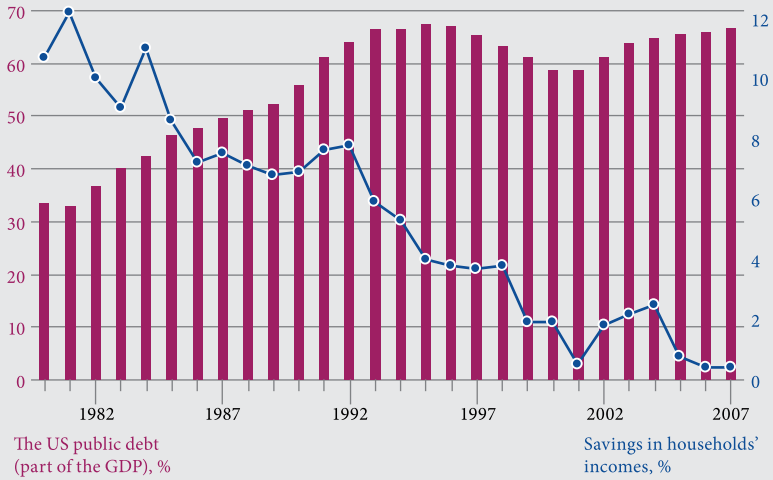

Figure 6. Savings and debt fluctuations in the US

3. Cooperative or non-cooperative behavior? Zero amount game

To eliminate this problem at least partially, investment risks should be redistributed between the parties. This is difficult because national governments, as a rule, pursue only their own interests. This type of behavior is especially critical in crises.

For the purpose of the national energy security, consuming countries attempt to reduce energy imports and reliance on external economics and politics. For instance, such economies focus on alternative energy technologies and expansion of shelf development in reserved areas. However, the developed countries have very few options to reach energy security on their own. As I have already said, energy saving plans that rest on basic technologies have been largely fulfilled in the late 1980s. In general, all alternative energy programs are carried out at the expense of taxpayers and pursue certain influential groups' interests and political goals. Economic efficiency of such programs is somewhat doubtful.

Oil and gas producing countries strive to diversify their shipments and opt for stricter state control over energy reserves and energy flows. This one-sided approach is known as resource nationalism. Russia has used it recently to strengthen its geopolitical role. However, this strategy increases external risks and impedes international cooperation.

Excessive corporate debts that hurt the Russian economy illustrate the damage caused by such policy. Risky investments in new fields and transport infrastructure considerably increased the country's macroeconomic and financial risks. If the oil price drops below 40 dollars/barrel, the state will have to manage the largest oil and gas exporters' debts. As a result, corporate investment risks will be paid by taxpayers, too.

The problem of global energy security can be called a zero amount game between energy producing and energy consuming states. In this game, one-sided strategies are initially no-win solutions for each party. Moreover, these strategies are unable to solve the problem of global energy security, they only complicate it.

Cooperative strategies can be seen as a means to redistribute international investment risks via market mechanisms and interstate cooperation. It means that energy-consuming countries are expected to bear part of the risks related to oil and gas field investigation and development, while producing countries are expected to allocate part of their finance for global production. This strategy enables international risk exchange and management.

4. Financial mechanisms of risk exchange

Risk exchange is beneficial for all the parties involved and can be carried out using the market laws and financial mechanisms of holding stakes in foreign companies and managing them. For instance, Russia could sell its vividly excessive risks in exchange for alternative ones. It can exchange its stakes in Gazprom or Rosneft for stakes in the world's leading high technology companies like EADS-Airbus, Boeing, IBM, Siemens and others (these are just examples). Russia should not miss this opportunity, because when the crisis is over, these assets would no longer be a very profitable purchase.

In fact, this is about exchanging one sort of assets for another. Remarkably, Russian oil and gas shares are more volatile than oil prices due to the underdeveloped stock market (Figure 7). The offered approach to risk exchange is aimed, in particular, at lowering volatility of the domestic stock exchange indexes.

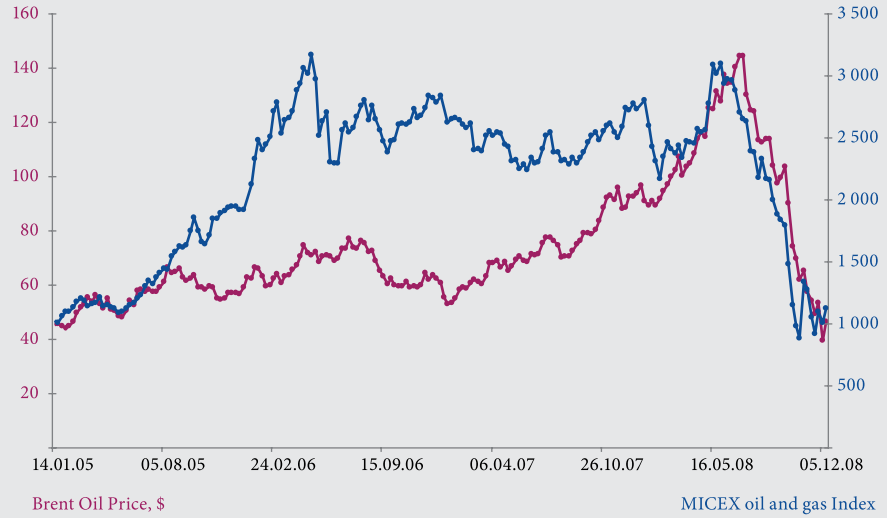

Figure 7. MICEX oil price and oil and gas indexes

Clearly, the state should anyway keep controlling Russia's oil and gas reserves, we do not say that the existing rules and laws including state ownership of mineral resources should be cancelled. In particular, rights for field exploration and development given to foreign companies should at the same time oblige them to invest in transport and social infrastructures. Provided national assets are properly managed, the energy security issue can be settled in the global scope without hurting Russia's own interests.

5. Threat of financial protectionism

Global energy security based on financial mechanisms is impeded by restrictive measures known as financial protectionism. Such measures were widely used in many economies before the crisis. In particular, they blocked strategic and portfolio investments in large companies, allegedly significant for national security. Governments of importing countries said they restricted foreign investments in an effort to protect secret information on cutting-edge technology from leakage.

Governments of energy exporting countries, including Russia, tried to keep control over oil and gas extraction and shipment. We do not negate the necessity of external energy projects, especially projects to create gas pipelines across Europe. But external expansion for the purpose of Russia's dominance in energy supplies cannot last forever. The crisis should force the financial authorities to more thoughtfully evaluate Russia's risks related to long-term investments in global energy projects.

Fund recipients would like to admit foreign investors and cancel restrictions on strategic investments amid the crisis. This was stated at the G20 summit and can be considered the major positive outcome of the meeting. In Russia, the financial protectionism seems to be intensified. With indexes falling, the government started to support the domestic stock market with the Reserve Fund money. They purchase stakes in the largest oil and gas companies, primarily. In our view, this is a pointless attempt to cure symptoms, not the disease.

Conclusion

At present, the most important energy security question is not the lack of world reserves or their depletion. Problems are rather of structural nature and are complicated by improper policies led by national governments. This might cause the global economy to be hit with a large energy crisis – despite that there are sufficient energy resources.

To solve the outlined tasks, consolidated international efforts are needed. Importantly, decisions in the field of global energy security should be aimed at crisis prevention rather than relieving its consequences. Joint international efforts should be preceded by open problem discussions involving political and business leaders and researchers. We offer to discuss these issues at the roundtable.

Mikhail V. Marghelov

Chair of the Committee for International Affairs of the Russia's Federation Council's

Enhancement of international relations and mechanisms of cooperation in oil and gas deliveries to the EU states

Making energy supply sources more diverse has been considered a key energy security requirement since the time of Winston Churchill. At present, these requirements need to be made more diverse, too. This is what we actually do when we discuss energy cooperation. It is a means that, along with diversification, prevents disruptions of gas shipments. There are people who have expertise in the technical, economic and commercial problems of this cooperation. Perhaps, part of these should have been solved by now, but we must not be deceived by obviousness of economic efficiency: relationship between oil and gas producers and consumers imply political commitments along with economic ties. Oil and gas are political products, no doubt.

Researchers offer various classifications of countries. For our purposes, I would divide all states into gas producers and gas consumers, because relations between these groups largely define the nature of foreign politics and the 'climate' of international relations. The world political map could be modified so that to show not only the borders between energy producing and consuming areas. Countries that have transit pipelines are also greatly politicized. The producers are backed by Organization for Petroleum Exporting Countries that now focuses on coordination of natural gas suppliers; the consumers are supported by the International Energy Agency. Eastern European countries that have transit pipelines further the idea of launching a NATO-style energy organization. Political instability in Afghanistan deprives the world of profitable oil and gas pipelines. The piracy threat in the Indian Ocean prompts tankers to bypass the Suez Canal. And there are more examples to cite.

The modern energy problem holds an important political contradiction between authoritarian economies of oil-producing countries and liberal systems of the majority of oil consuming states, not to mention energy reserves competition between new industrial and post-industrial states. This, I would say, nervous competition will be long-lasting, because the transition to new sources of energy (such as alternative motor fuel) will remain just a plan until the last drop of oil is extracted from the last wellsite. As soon as public discussions of the use of biofuels started, experts stated we faced a food crisis.

Petroleum can be substituted with something, at least in theory, while farmlands can be not. Increasing the use of biofuels will definitely affect the farmlands. To replace just 5% of global petroleum consumption with biofuels, 20% of farmlands should be used for growing waste plants. To replace the US' yearly gasoline output with ethanol, two world annual wheat harvests would be required. Along with croplands, Brazilian and Argentinean forests are also damaged by the production of biofuels. Ecological consequences are really terrible, which, in its turn, affects the crop yield.

Experts believe that all anti-oil strategies have weak points, especially those investigating alternative motor fuels. Furthermore, there are no accurate estimates of oil and gas reserves. All estimates and conclusions are made based on the present-day machinery and technology. If the 1970-80s alarmist forecasts came true, the world would long use solar oil made from coal. I agree with those who believe that oil reserves are 'a concept that cannot be measured'.

Interdependence between energy producers and consumers is obvious. Yet, this is irrelevant today because the balance of OPEC and IEA interests, set after the last century's oil crises, has been broken again. Experts say that influence of non-member exporters increases. The developed energy-consuming states now have got rivals – primarily, new economic centers in Asia. Energy security issues have become utterly urgent – the time when the two cartels, OPEC and IEA, were allies, has gone. We live in the time of a new institutional form of relations between energy-producing and energy-consuming countries. Cooperation seems the best form for that.

Russia has been working on consolidating Asian electric and power engineering for ten years already. Researchers from the interested countries had six meetings to discuss this topic, the last one took place in September 2008. Today, 'electric' companies of the Asia-Pacific region agree that international associations should be set up, but they split in opinions regarding technical and economic details. Participants of such meeting point to problems (between countries and companies) as well as risks for potential members. Russia advocates a holistic approach in Asia. For instance, it wants to be involved in pumping gas through the consuming countries' territories. Consumers can participate in developing gas fields in Russia.

The idea of cooperation gradually spreads across Asia. As for the EU, many believe that Brussels builds an 'energy curtain' around Europe.

As is known, Russia holds energy talks with the US and EU, harsh dialogues that are often suspended – not because of benefits or losses, but for political reasons. The term 'strategic partnership' is no longer used to describe the relationships between Moscow and Washington or Moscow and Brussels. Russia's proposals for energy cooperation with the EU will most probably be opposed with requirements worked out in the Energy Charter Treaty style. Russia does not want to ratify the Energy Charter Transit Protocol. One of the reasons is that the protocol is advantageous for one party, and this does not foster cooperation. This position contradicts the organizational aspect of the matter given the relations between various countries' companies are based on long-term interests. Russia and the EU have been tied with each other in energy issue, whether it is gas or oil shipments. The Brussels energy ideology encompasses all types of energy resources.

Russia is accused of 'energy imperialism' whenever there is an occasion for that. These accusations might produce an impression that Brussels faces a Moscow-initiated 'energy siege'. The fact of the matter is that its expansion in the energy field is much stronger than that of Moscow. Coming up with suggestions to the EU, Russia should keep in mind its major energy policies.

It is hard to predict in what way the financial crisis will re-shape this policy. Until recently, Brussels stoke on liberalization of its energy market and, willingly or not, imposed the principles of this reform to its partners. The plan stipulated elimination of 'natural monopolies', separation of oil and gas extraction, delivery and distribution – to cut it short, making this sector of the economy to follow the market laws. This is no bad unless foreign natural gas suppliers are scared off by vaguely defined scope of their activities. Besides, with the European energy industry infrastructure, no liberal energy market can be provided. As long as energy, a limited commodity, trades on this market, there is no free access and choice of suppliers. Meanwhile, the market 'likes' surpluses. The European Union does not have facilities to cope with typical overloads. Members do not have gas interconnections and their cross-border junctions are usually overloaded.

Let us believe the experts who say that the EU does not have a natural gas market network. The government's quitting the market before the crisis began surprised investors. Fighting with state monopolies triggered off appearance

of private monopolies. Then large-scale mergers and acquisitions started, and several energy giants have appeared with more to emerge in future. This also must be kept in mind when holding energy talks.

Brussels continues to consider liberalization a key element in struggling for energy security. In its statements, such problems as technical progress and energy economy are no longer in the spotlight. However, we should not take Brussels' calls for liberalization of banking seriously. The EU members stonewalled this reform, they continue to control the tariffs and are reluctant to start privatization. Commentators point out that the national administration for oil and gas reserves still exists. Fulfillment of guidelines of the Commission of the European Communities (CEC) in Great Britain caused the natural gas price to double. Germany, France, Italy and Spain where large energy concerns operate do not support it. Experts report that these countries advocate consolidation of energy assets in giant transnational holdings.

Yet another activity of the EU in its fight for energy security is making gas and oil supply more diverse. Experts state that Brussels intends to considerably reduce reliance on Russian, Norwegian and Algerian gas. According to the EU's energy strategy, gas supplies from these countries' should be pushed down from the current 90% to 65-70% by 2030. There are plans to pump gas from Middle East and Central Asia and ship it by sea from Qatar, Libya, Trinidad and Tobago, Iraq and other countries. As it is all about reducing gas dependency, it is clear why Brussels eagerly backs up any pipeline project bypassing Russia. These include Baku-Tbilisi-Ceyhan, Odessa-Brody-Gdansk, Nabucco, and Trans-Caspian pipelines. Whether they might hurt the economy or not, the projects are valued based on their ability to minimize the reliance on foreign gas suppliers. This also should be taken into account when suggesting energy cooperation to the EU. Perhaps, diversification will be given a higher priority than energy security cooperation.

Another target of Brussels' energy policy is expanding its footprint into other regions. This is called the creation of an 'energy community'. The ideology of this community - in the way it is seen by the EU – is directly related to cooperation. Cooperation implies mutual benefits and multilateral relations, but the cooperation proposed by Brussels does not have these implications. I would say that the community members' energy sectors are occupied by the EU, and the

CEC staff openly speak about it. For Europe that usually uses politically correct rhetoric ('un-housed' for homeless and 'sanitary engineer' for street cleaners) this is quite unexpected and tough. The idea is that 'an energy community is a replica of a single market with its major characteristics'. They mean competition, renewable energy, gas and electricity markets rules, etc. Those who want to enter this community are required to liberalize their energy sectors according to the Brussels-proposed model.

According to experts, this is just a method to strengthen the EU influence without expanding its territory. The energy consumers' block will consist not only of South-Eastern Europe, it will also include Norway, Algeria, the Caspian states and countries south of the Mediterranean. Brussels wants to 'show the way' to all of those. Experts doubt that these ideas are realizable amid a tough competition for energy resources. Therefore, they think, the largest energy consumers can offer their suppliers something more substantial than just market liberalization.

Like in a fairy tale, Brussels has three energy-related wishes: market liberaliza tion, supply diversification and launch of energy communities. However, fairy tales often end up with much more wishes, especially such epic 'oeuvres' like energy security.

The EU's attitude to foreign investors is seen in five bills. No matter whether they are adopted, what is really important is how they are drawn up. On the one hand, Brussels liberalizes the market, on the other – toughens conditions for buying and holding energy assets. Probably, European legislators have been impressed by Russia's law on strategic industries. Russian experts, in response to the EU intentions, started considering cooperation with Asia. Naturally, Brussels saw foreign investors immediately sell their gas and oil licenses on the Russian market – not always at market prices. Gas scandals with Ukraine followed by disruptions of energy supplies also influenced decision-making in Brussels. While Russia and Ukraine are in another energy standoff, Europe believes that Moscow fires up gas scandals seeking to drive up oil and gas prices.

Every single move made by Russia in the energy field makes Brussels more suspicious of some ill intents. I think, our cooperation proposals arouse suspicions, too.

However, it is not only the above-mentioned law, price conflicts with Ukraine and foreign investors' leaving the Russian energy market that bother Brussels. Foreign companies have been buying electricity and gas selling networks across Europe with companies who owe entire fuel chains being especially active. Energy prices and tariffs within the EU might fall under foreign countries' control. According to Brussels, they will have stronger political influence on the EU through Chinese, Russian and Arab corporations.

This opinion is hard to change. And, I believe it impedes the cooperation. Of course, with all openness of the economies, the countries should continue to maintain their defense industries at a due level. Part of the assets, therefore, are classified as 'sensitive'. I would add that Europeans are vain in accusing Russia of Russification of the economy. Let me remind you that the US adopted a Foreign Investments and National Security Act. The main idea of the document is reflected in its title. This document was worked out in the wake of Dubai Ports World's attempt to buy the US seaports. Whether deliberately or not, the company dropped its ambitious plans. Nevertheless, a 'curtain for investments', even if only thought, not made, impedes cooperation.

Russia and the EU have discrepancies in the understanding of energy security. Clearly, in this regard we depend on Europe just as Europe depends on us. Almost 60% of our gas exports and a little less than 90% of oil exports go to the EU. We are not happy about Europe's intentions to diversify imports while trying to diversify our exports shipped across the eastern borders. Some experts think that our 'rushing' to the East is our response to the 'curtain for investments'.

Let me remind you that Moscow has more claims to Brussels. The European Investment Bank no longer lends to our energy industry. Experts add to the 'offence list' their attempt to revamp long-term contracts with Gazprom. They also remember the Energy Charter Transit Protocol – strengthening provisions about pipelines running from Central Asia through Russia. But it does not contain a single word about the EU pipelines through which Russia pumps gas.

Moscow and Brussels resumed talks to renew the Partner and Cooperation Agreement. Importantly, the EU is not against cooperation on the whole. But in autumn 2007, the Energy Commissioner stated: "Cooperation is the only way to security of energy supplies, sustainable economic development and climate control". The EU urges launching 'a real integrated market for electricity and gas based on the general standards of openness, environmental protection

and security'. It is good that the European Commission is working out a special document, Platform for International Cooperation on Energy Efficiency. This paper should stipulate access to new technology that Russia needs. Some experts say that annually we lose more gas than France consumes.

I am sure that there are people in the EU who understand that a gas supplier who invests in downstream, is interested in failure-free supplies. Such suppliers will follow the laws operational in the EU. Therefore, the fact that Brussels does not officially 'understand' these things points to the presence of some political undertones.

There is also a contradiction in the approach to the format of the new Partner and Cooperation Agreement. 26 May, 2008 the Council of the European Union gave the mandate to the CEC to manage the resumed energy talks. Brussels believes that Moscow should be given a detailed technical and economic task while Moscow advocates a concise political agreement on partnership between new independent centers – Russia and the European Union. Russia thinks that all details should be laid down in industry sections. If the agreement divided into sections, non-fulfillment of one part will not block all others.

The EU mandate for energy talks promotes many values, such as democracy, human rights, judicial system etc. Moscow is expected to report to Brussels on these items – which in fact relate to the domestic politics. The mandate holds the requirement to ratify the Energy Charter Treaty and liberalize the gas sector, in other words, to provide free access to gas pipelines to western investors and level internal and international gas prices. We all know Russia's attitudes towards this point.

There is yet another nuance. Until the Lisbon Agreement enters into force, the CEC is not entitled to expand foreign investments. It can limit them, not expand. In other words, it is unable to provide Russia's presence on the EU market. But this is what energy cooperation is aimed at. Experts warn that the CEC's promises will not be legally valid because foreign investments are the EU competence.

Experts also believe that the European Commission maintains a very straightforward position in energy talks. Pursuant to the mandate, talks can be

stopped at any moment, and there was a precedent. The Council of the European Union set up the Article 133 Committee that acts based on article 133 of the EU Treaty. The Commission is obliged to submit reports on talks with Russia to this Committee on a regular basis. It means that no compromises are possible, and advancement towards a new treaty depends solely on whether Russia agrees for any concessions.

Thus, the resumed talks will most likely be long and difficult. Russia should boost the dialogue, otherwise the structure of the European energy market will be shaped without our participation. We should manage to arrive at an agreement and exchange our excessive oil and gas risks for stakes in Europe's high technology sector.

Anyway, today we face a bent to solidarity that international community members seem to have lost recently. It will be a disaster if the fight for margin calls breaks this trend. If solidarity were in place, it would greatly reduce the impact of the crisis on the economies. Experts say that we are confronted with not only a financial crisis, but food and energy crises as well. Let us hope that the Moscow-Brussels tensed talks will not focus on the political aspects of energy cooperation that prevent the progress. All else being different, Russia and the EU have identical ideas of good and evil

Sergey Yu. Glaziev

Director of the New Economics Institute
Academician of the Russian Academy of Sciences

Possibilities and Limits of Russia's Economic Development amid Structural Changes in the Global Economy

I would like to talk about long-term trends using the figures of approximately one-hundred years' interval. We recently held the Academy of Sciences session where we discussed a long-term forecast for our research, technology and economy development.

I would like to show you several diagrams to expand the scope of our discussion a little bit. Now you can see a diagram showing energy price movements within two hundred years. I purposefully did not extend the diagram to 2008 for you to see how things looked in the past. In the bottom there is a sine curve that depicts deviations from the world's absolute energy use trend; energy consumption grows 1.5-2% a year on average.

In the upper part you can see the energy price changes. The last upswing is for oil price surge in the mid and late 1970s. It is preceded by the 1920s disturbance – that one is for oil and coal prices. Before that, coal prices surged 50 years ago. The first upswing is for wood and it is related to the first industrial revolution. This diagram shows that energy price movements follow certain periodicity: they rise every 30, 40 or 50 years. These surges are related to in-depth processes of the economy reshaping and are connected with the research and technology progress.

Long sinusoidal cycles in the modern world economy are known as Kondratiev waves that consist of alternating periods of economic decline and growth. Growth periods average 20 to 30 years, they are technologically conditioned (let us call it a technological pattern). Energy price surges herald transitions from one technological pattern to another.

Why do energy prices rise? They rise because at the final stage of each technological period energy enjoys excessive demand and the economy 'swells'. This enables energy monopolists to drive the prices up, which, in its turn, prompts market players to use totally new technologies. This period is shown here in the form of a flat curve, an S-curve. It lasts about 5 to 10 years (the time needed for structural renewal of the economy) and then is followed by another long period of growth.

The analysis of statistical data shows that oil price fluctuations take place exactly when financial markets face fluctuations. Considering a one-hundred-year-long period, we can see that transitions from one technological pattern to another are accompanied by a sort of bumps and 'swelling' of the financial market. It has an explanation: when a certain technological pattern becomes out-of-date, capital flows out of old-fashioned technological 'ties'. As it does not reach new technologies at once – because time, experience are needed for and high risks are associated with that – it is accumulated in the financial market for 5 or 10 years, which causes indexes to soar. Dow Jones indexes illustrate this well. So, today the world economy sees long-term regularities. Sadly, our monetary authorities were unaware of these, despite that I repeatedly told about it to Kudrin and Ignatiev. But they for some reason believed that the boom would be everlasting. They created a 'financial technology' to match their assumption: they accumulated the oil trade proceeds in a separate budget and invented oil transfers. There is no point in that, because we face falling oil prices that move in a cyclical manner if viewed in the long run. Periods of oil price and financial market booming are short, and they are followed by depressions. According to our estimates, the recession will last three or five years. In the course of this depression, the economy is structurally reshaped and new technological pattern emerges to shore up the economy.

What does a new technological pattern consist of? There is much talk about nanotechnologies, gene engineering, telecommunications, IT and so on. I will not focus on the structure of this technological pattern, I just want you to know that almost all leading industries of a new technological pattern grow 30-35% annually despite the crisis. Nanotechnology use increases by 35% per year. Use of gene engineering doubles annually. Information and communication technologies continue to boom. However, this pattern is still weak – it accounts for just 2% of the developed countries' GDP.

Please note that such industries as, for instance, healthcare are main vehicles of economic growth. The US health industry accounts for 16% of the GDP, this is the largest sector of the economy. What does it mean from the energy use viewpoint? It means a sharp decrease of the energy-output ratio. Clearly, health industry does not require so much energy and metal as, say, the automotive industry. Clearly, nano- and bio technologies are very energy efficient.

Let me cite just one example. What do LEDs give us? You see that each interval in the diagram denotes five years. Practically all sources of light have not

seen any modernization from the point of view of efficiency, while the LED industry is booming. Our 'Svetlana' factory makes LEDs. I think that in five years LEDs will replace all other sources of light and energy use will decrease ten times. This is just one example. We are starting to live in a totally different technological world in which energy use per GDP unit will be less than it is now. This does not mean that energy will no longer be consumed. Energy consumption will grow, but at a far slower rate.

With this in mind, leading our monetary policy by operating oil and gas transfers and creating a separate oil budget is, to my mind, an absolutely weird idea.

What our strategy should be like? When risks are really high, the structure of the balance of payment changes for the worse. The financial market will remain turbulent.

The fact that many countries' monetary authorities inject money in banking is, in fact, nothing else but the monetization of derivatives that triggers off a huge fluctuation in financial markets. Today, the amount of dollars in the world stands at around 50 trillion while derivatives account for one quadrillion. If monetary authorities continue to bail out banks, it will be pure monetization. This is a huge mass of liabilities that will just flood the world. With snowballing emissions of dollars, euros and other currencies, the world will face tough turbulence. Meanwhile, financial markets will just grow.

The Washington declaration transparency provisions were fully discredited by the US' monetary authorities' decision to cancel market evaluation of securities in banks' balance sheets, which makes risk assessment absolutely subjective.

The conclusion is that it is absolutely insane to solve this complicated task by just pumping money into banks. Banks feel good: they are happy to grab collateral-free government funds, one trillion rubles, without bearing any risks. The government forces them to allot this money to the real sector, but being reluctant to do so, banks transfer the money to the FX market, which is smart from their viewpoint.

We saw turbulence like this in the early 1990s. The government credit committee would issue cheap loans, which hit the ruble exchange rate because banks, who grabbed the money, channeled it to the FX market and earned by means of FX speculations.

We have to be foreseeable, understand what processes are taking place in the global economy and stake on the new technological pattern. It means that authorities should push the economy to a new technological pattern rather than save banks.

As long as banks do not want to bear risks, risk management should be carried out through development institutions that would force banks to engage in the real sector. Say, risks can be refinanced via companies' promissory notes, the company list can be drawn up based on long-term priorities. Then banks will search for companies listed as perspective and apply to the Central Bank for loans against these companies' promissory notes.

In other words, the anti-crisis plan should be combined with the concept of Russia's long-term development until 2020. The concept contains all necessary information about the new technological pattern. For some reason, the RUB3 trillion anti-crisis measures do not match long-term strategic plans that still lack money. If managed properly, three trillion rubles could strongly aid our economy in shifting to a new technological pattern.

And the last thing I would like to outline. I think we should not feel upset because of falling oil prices. Our economy is northernmost, so we use much energy, and cheap energy is a blessing for us, for the whole economy.

Furthermore, the economic growth model based on maximization of energy prices does not suit us. We could not digest this money and store it in the Stabilization Fund or other reserves all the time. Inter-industry clearings shows that the less oil we export, the higher our economic growth rates are. This is what the inter-industry balances states, both current and estimated. Oil is our feedstock.

Let me remind you the statement of an outstanding chemist and economist Mendeleev who said that burning oil away is like putting banknotes into the oven. I think that we should not try to keep our position in the world market thinking how to enhance exports amid declining profits, but focus on oil refining and using oil as a chemical feedstock rather than seek to earn more as an energy superpower.

If we combine the two tasks – structural reshaping of the economy and an anti-crisis plan - and use the re-monetization potential, we will surely manage to 'ride' this new wave of the economic growth. But times goes by, and I would

like to warn you that the longer we wait, the higher will be the price. All countries worldwide tend to invest in new technology. At present, a nanotechnology plant can be built for, say, $300 million, but in some three years it will cost $1.5 billion. These things will get increasingly more expensive. Therefore, it is time to act.

Victor F. Tsibulsky

Senior researcher at the Russian research center 'Kurchatov Institute'
Dr. of sciences

Global Energy Security on a Multilateral Basis: Search for New Strategies

When we speak about energy security we mean energy sufficiency. This is the way this issue should be treated. The next thing is, obviously, interests of particular countries when we tackle issues related to our domestic affairs.

Energy sufficiency is in way a technical and scientific issue. I will focus on it so that we try to understand it and see how things will be going in future.

Look at the diagram showing the net energy consumption and net GDP (Figure 1, there are data for 70 countries), now you can imagine energy efficiency of these countries' economies. Russia lags behind the developed countries in terms of energy efficiency. However, Russia is not the largest energy consuming economy. Energy efficiency of the Russian economy is higher than that of the global economy (it is marked with a light blue dot).

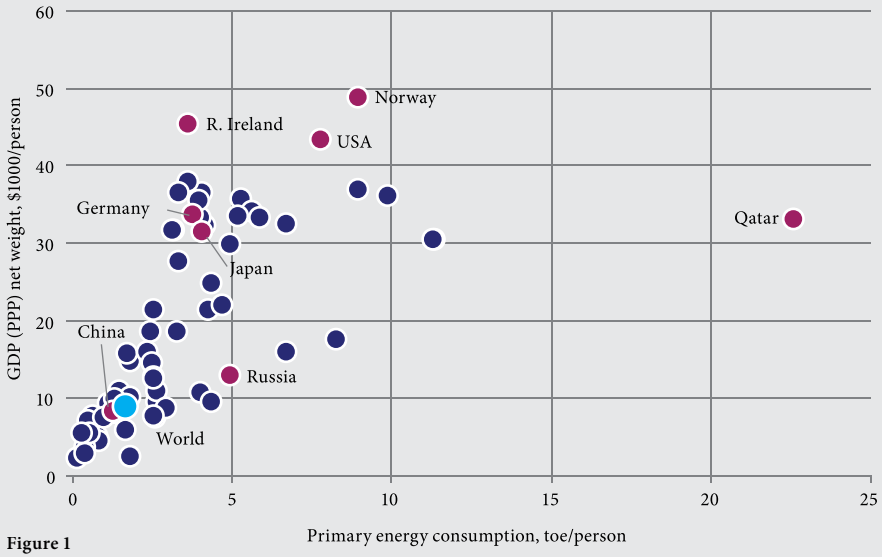

Figure 1

Energy efficiency of Ireland, Europe is twice as large as of the US. It is paradoxical. Why is the US economy two times less energy efficient than European countries? Is there anything wrong with technology in the US?

The major energy-consuming industries are electrical power engineering, transport, steel and cement production, chemistry, ammonia, cellulose and aluminum production. These industries require approximately equal amounts of energy. As soon as their energy consumption is almost the same, this balance of energy should include the balance of international energy exchange in the form of commodities. Commodities with small added value are sold at low prices, commodities with high added value – at high prices.

When we calculate this, we will see that Russia is a source of energy producing almost 200 million tons of oil equivalent. One-half of this amount goes to foreign countries as direct energy supplies and another 210 million tons of oil equivalent – as products of the so-called initial stage of processing. In total, Russia sells 65% of all energy that it produces. Aluminum is also electric energy, tightly packed.

If we convert this into normal values for all countries, they will line up in a nice curve. This curve looks really upsetting. Why? If you want to live well, you should consume much: you buy a lot of commodities, products, whatever. Transition to higher, special energy technologies stipulates that you will take these products away from people as commodities in some other form. This is a price exchange factor.

The next question is how much people consume. If we take just mathematical statistics and study it thoroughly, apply the relevant knowledge and make a diagram showing how population correlates with net energy consumption, we will discover a very interesting thing. There are two distribution peaks. Here lives one group who consume little energy per person. Here lives the other group who consume more. In 2005, the two peaks got very close to each other.

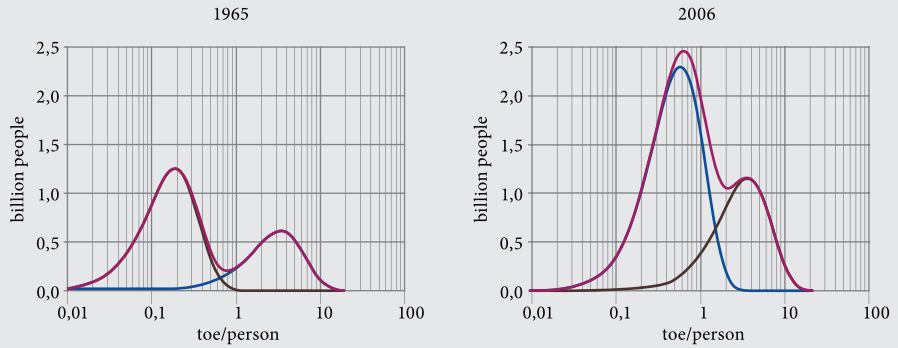

Figure 2.

Around 4.5 billion people live here and more than one billion people live here. The correlation between the groups remain constant. In 1965, the developed used 25 times ore energy than the developing countries, now they consume only 5 times more.

What's next? There is no certainty about the future. We can draw regular trends. If energy consumption is kept at the level of European countries, we must increase primary energy production three times. You understand that it is impossible until 2015.

What does total energy consumption consist of? It consists of two components. The first one is population growth that totals about 1.5% per year. The other factor is much more important: the developed and developing countries' net energy consumption becomes identical. This problem is a dominating one. A couple of years ago, China extracted three million tons of oil and it was enough, now it consumes around eight million barrels a day and it is a pure exporter. The annual oil production growth rate is 5 %.

Here you can see what is going on in the world. By now, our planet has consumed almost 152 billion tons of oil. The proven reserves total around 164 billion tons of oil. But this estimate has been done based on an assumption that the reserves hold 430 billion tons of oil. You can see that we reach the maximum factor, this is peak oil. We have access to wells, mineral resources renew, and oil is so hugely important that efforts to put into operation new wells and explore new difficult fields require extensive funds. People cannot manage it.

Let us assume that we have not 400, but 800 billion tons of oil. Let us suppose that we discovered new fields somewhere. We see that this peak's maximum shifts slightly. What does shift greatly? The decline rate.

What about gas? The situation is a bit more favorable, because our hopes are placed on the Middle East, first of all.

Many economists, primarily, our American counterparts, predict a dull future for us. Economists say, as usual, that there is no explicit peak. They care about money, that's right.

Resting on these two things, we can reach an energy balance. The future demand is depicted with the flattest curve. The supply is comprised of oil, coal, gas, biomass, hydro-hydrate and renewable sources of energy. There is unsatisfied demand. How are we going to meet it? We will face deficit of energy, it will account for around 30% of our needs by the 2050s.

Annual global energy saving averages 0.8% per ton of oil equivalent. We turn out greater GDP, we increase the added value. But this does not cover even the minimum part related to the population growth.

The oil problem is evident. 95% of transport uses oil. This is an irreplaceable energy source. Even if we invent a perpetual motion machine tomorrow, we will see no radical changes in 20 or 30 years. This mechanism has a very strong inertia.

How much are we ready to pay for energy? We are not interested to know absolute values – 60 dollars in 1930, 1970, 1980. What are we ready to pay in relative units, compared to the GDP? Look here. This is a relative share of energy resources in the gross domestic product.

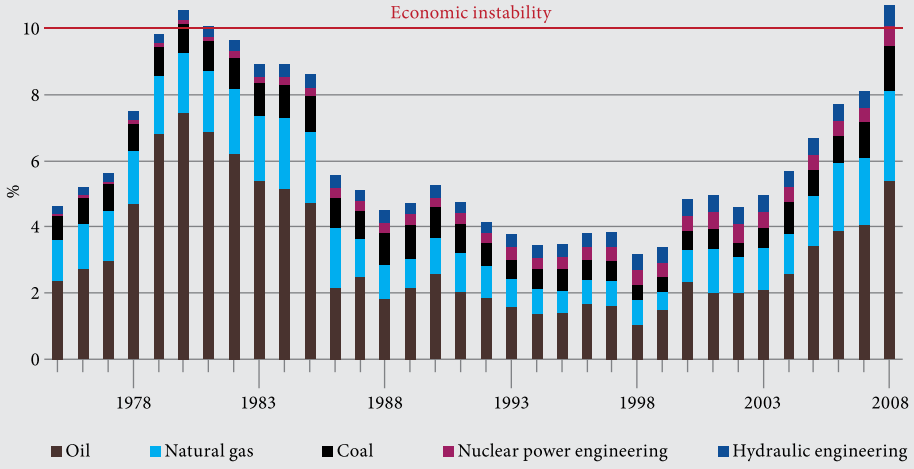

Figure 3. Relative share of energy resources in the GDP

This is the 1980 level, the first crisis. Here is what we have. Approximately 10% of our efforts were aimed at providing energy for ourselves. We lived in favorable conditions for quite some time, and this figure fell to 2-3%, 6%. This year we reached this peak again. I want the economists to pay attention to the following fact: it's no proof that a crisis will happen at this stage. Another crisis will illustrate this statement.

What is the reason? Energy must not be very expensive. Energy must be cheap, otherwise no one needs it. If 20% of the population is involved in energy production, this will be, I am afraid, a primitive system.

We cannot say that oil, becoming more expensive, paves the way for new, expensive sources of energy. To the contrary, oil becomes unaffordable source of energy. And we will have to re-structure our community. This is a really difficult situation.

What should we do? We consume a little bit less than 2.8 tons of oil equivalent per person. This is an unfair world: some people live well, some live poorly. We'd better reach at least the European level of consumption.

Imagine what amount of energy the humankind will need by the 2050s. We should increase primary energy production four times. Where is this source of energy? Can we use windmills or solar batteries to reach that level of energy output? You know that I work at the Kurchatov Institute, so I will speak of nuclear power engineering.

We can replace oil and gas only by nuclear energy. Its capacity is so great, I mean the feedstock, that we can use the already extracted uranium within 600 years provided we create proper technologies, fast reactors and will use uranium 238 in them.

But there are three key problems for the development of nuclear power engineering. First, this is a very inertial industry. We should create a special infrastructure and the culture of handling it, which is difficult. The second question is non-proliferation. Nuclear power is a global problem. Of course, disseminating substances will be available to a wide range of people. And this might cause serious problems.

The third issue is, of course, psychological – fears. There is much talk about nuclear wastes. Russia's nuclear industry produces around 20 cubic meters of harmful products a year, they need to be disposed.

Clearly, it can be done, it is realizable technologically. But we need a corresponding culture and efforts. Will people cope with that? I do not know. What's next? You see, unfortunately, I cannot make any optimistic predictions so far. We should work over it. We should search for alternatives. I do not touch upon political questions because what we do is exclusively scientific grounding of energy related problems.

Ickes Barry

Professor at the Pennsylvania State University

Thank you very much for this opportunity. I feel honored to speak before this audience.

Obviously, if we met here six months ago, when the prices were high, we would have had a totally different discussion, we would say that it was planned in the period of high oil prices.

Producers do not think of cooperation in the periods of high oil prices, consumers - in the periods of low oil prices. Thus, cooperation and collaboration cannot be reached through prices.

Mr. Vavilov told about price uncertainty in his statement. Of course, there is volatility. Price volatility explains investment cycles. When prices surge, new projects are launched, when prices drop, investments also decline, and increasingly fewer people get involved in oil and gas sector jobs. For example, in the 1980s, when prices were very low, no one entered oil and gas universities. Later, when prices boomed, we lacked possibilities for production enhancement. So we need to foresee price surges and declines to maintain the production.

At the same time, high prices encourage discoveries of new fields and oil supply growth. In the late 1980s, there were rumors that the Soviet Union's oil reserves were almost depleted. However, everything that happened in Russia since then contradicts to those forecasts. Why? The thing is that high demand for oil and high oil prices lead to additional investments and additional investigations.

The research projects we conduct jointly with the Institute for Financial Studies focus on energy security. Here we speak of three groups, namely consumers and two types of producers – those producing low-cost oil (OPEC, Saudi Arabia) and high-cost oil (Russia, Norway). Why is that important? Here is a large risk for investors who will invest huge funds, but no one can insure them against falling prices. All these processes with cooperation really take place here. When oil prices are high, the West wants Russia to invest in these new fields in Siberia to increase supplies. When prices drop, like they do now, from 140 to 45 dollars per barrel, Russia has to bear all expenses. Of course, Russia can diversify something at the national level. Besides, if Russia wants to use the diversification option and not to bear all the risks, the following is obvious:

if we put aside all these political difficulties, we should allow western companies to bear risks related to the price decline. And Russia can use tax instruments to generate profits from oil production rather than extract and produce oil and bear risks related to prices surges and declines on its own.

Another question is whether Russia should allow diversification in the production field to minimize price uncertainty. Despite that the European Union hampers Russia's investments in the petroleum industry, will Russia benefit from diversifying its production with all protectionist measures undertaken by the EU?

Here is yet another question. Is there any opportunity to reduce protectionism regarding investments and let Russia 'enter' Europe, if Russia allows more investments into the national petroleum industry? Maybe it is better to let Russia make these investments despite that Europe advocates protectionism and hampers the investment flow? Of course, the answer is 'yes'. Russia should develop future oil fields and it needs large investments.

Diversification can be done through investing in the future, in new technology. But the required investments cannot be found within Russia. Let other sources of investments bear part of the Russian oil and gas sector risks. The drop in oil prices will dull investments in Siberian fields. However, if the diversification strategy is carried out, western investors will bear these risks. Free money might be injected into new technology to find a substitute for oil and gas.

Let us assume that six months ago Russia would have decided to allow more investments, use tax inflows and maybe invest those funds and assets in the international markets. Six months ago this prediction would have sounded strange. But today we know about the stock market downturn. Of course, that would be a bad suggestion, but investing all funds in the domestic market would have been less risky for Russia, because the Russian market slows down even more drastically.

This is just one way to diversify the portfolio. And I think that wider diversification of oil production could benefit Russia in the way that it will use its resources more efficiently. Incomes, sources of income can be diversified by investing petroleum production profits in other sectors, so that overall incomes would not be tied to petrol so much.

Mikhail I. Beskhmelnitsyn

Auditor of the Accounts Chamber of the Russian Federation

The first question associated with this problem is what we should do with oil production and oil sales outside the Russian Federation. There is only one answer to this question. Oil production and sales to foreign countries should not decline, at least in the near future. And we should keep renewability of extracted resources in the focus of attention.

Let me cite an example. The Russian Federation Accounts Chamber audited oil companies Rosneft, Lukoil and Slavneft and revealed that the main reasons of well conservation and idleness are low oil flow rates and high watercut. Exploration of such wells is unprofitable for petroleum companies. Gazpromneft and Surgutneftegaz report that idle wells account for less than 10% of the operating wells. It means that we need to invest in exploration, follow-up exploration and development of our oil-producing provinces as well as in research projects that would be helpful for putting non-performing wells into operation.

Another urgent question is distribution of the value of the additional product gained from oil extraction and sales. I mean the launch of a state-run body. First, we should figure out how much money generated from this extra product we want to leave to companies.

In our view, this amount should be comprised of the following components: funds equal to Russia's industry average profitability plus companies' expenses for exploration of new fields and investments into research projects to raise extraction efficiency.

Here is yet another question. Where to allocate money that the state receives from oil and gas trade — should it be invested in this industry or in other industries? We believe that the right answer is to develop other industries.

The oil processing issue is also important. We all know that no oil refineries have been built in Russia in the past twenty years. Moreover, petrochemical production has faced a steady decline even at the time when oil prices were high and oil refining products saw large sales both domestically and globally.

The last but not the least, I would like to tackle the following point: today the world lives in a totally new technical and technological reality. We should not forget about alternative sources of energy, and part of incomes derived from oil production and sales — domestic and international — should be channeled for development of alternative sources of energy. Thus more oil and gas can be used for petrochemical production rather than burnt away.

Valery L. Makarov

Director of the Central Economics and Mathematics Institute
Academician of the Russian Academy of Sciences

I will briefly speak about the methods. Actually, we are about to enter a new era of thinking. The era of simple models is ending. Simple models are good for convincing and comprehending. However, simple models are useless for forecasting, as a rule. Great forecasters never used simple models.

Now new methods are being worked out, i. e. artificial worlds, communities and economies are created. These artificial worlds and economies have more pre-set parameters than the present-day models.

A simple model is a model in which some parameters are changeable while others are considered constant. For example, living standards are often modeled, but lifestyles remain constant practically in all models. Nobody knows what the world will be like in some twenty or thirty years, but artificial communities, worlds and economies are gradually emerging.

I think that the Andrey Vavilov's Institute (Institute for Financial Studies) and other research centers have started researching into these areas. This work will be furthered. In this regard, and, also, as soon as our way of thinking will change, forecast techniques will be revamped, too. Consequently, forecasts results will be different. We will see what we did not see before or what we used to see in a different way. Let us prepare for that.

Institute for Financial Studies, Russia
Phone: +7 (495) 710-78-10, 710-78-12
Fax: +7 (495) 710-78-11
E-mail: info@ifs.ru
URL: www.ifs.ru