ТЭК

JANUARY 2022

OIL AND GAS VERTICAL

NATIONAL INDUSTRY ENERGY MAGAZINE

НЕФТЕГАЗОВАЯ
ВЕРТИКАЛЬ
НАЦИОНАЛЬНЫЙ ОТРАСЛЕВОЙ ЖУРНАЛ

January 2022

Content:

Stakeholders

2 **Pavel Zavalny:**
«Russian energy markets will become the basis for the formation of the common energy market of the EAEU»

7 **Ilya Torosov:**
«We follow global trends, but we have gone further...»

10 **Vyacheslav Mishchenko:**
«We must be initiators, and not take the position of outsiders»

World markets

14 A lucky force majeure for coal industry
Anastasia Shishkalova

Energy policy

17 Trojan horse in concept space
Ulyana Olkhovskaya

Sustainable Development

21 The City of the Sun in the style of cyberpunk
Ivan Mishin


http://www.siapress.ru/images/news/main/59337.jpg

«RUSSIAN ENERGY MARKETS WILL BECOME THE BASIS FOR THE FORMATION OF THE COMMON ENERGY MARKET OF THE EAEU»

About the upcoming regulatory changes in the legislation of the oil and gas sector, Russia's position on climate regulation, and the development of market pricing of hydrocarbons and energy resources the "Oil and Gas Vertical" had a conversation with the Chairman of Committee on Energy of the the State Duma of the Russian Federation Pavel Zavalny.

Oil and Gas Vertical: *You have retained your position as a chairman of the committee on energy. At the very least, this means that both the industry community and the government are quite satisfied with the work of the committee under your leadership. What would you credit yourself and the committee for the last convocation in the part of the oil and gas industry?*

P. Zavalny: Let's turn to the statistics - the bills considered for the convocation - there were 190 of them, 120 of which were co-execution, 44 adopted laws, 65 round tables and parliamentary hearings, which are also important for goal-setting and formulating of a strategic vision for the development of the fuel and energy complex, including oil and gas complex.

In the oil industry I would first of all highlight the adoption of the law, which launched the experiment on Income added tax, where we were a co-executing committee. It is already possible to analyze the first practice of application - the mechanism is working, we can see the intention of the companies to work in this mode, and today we are talking about further expansion of the experiment. That is, we have finally moved towards changing the taxation regime for the oil and gas industry to the stimulating mode.

The second important thing is the improvement of the damper mechanism on the domestic market of petroleum products in the circumstances of a big tax maneuver, which should end in 2024. The task is to maintain market pricing for petroleum products, and at the same time to ensure the growth of prices for them at a level below inflation. This is very important, because the social and economic situation greatly depends on the prices of petroleum products, and here we all - the government, the relevant ministries, the Duma committees on budget and taxes and on energy - had to adopt many regulation acts to fine-tune the system. In principle, we have received a good result, the price of gasoline and diesel is growing below inflation, even in the difficult economic situation of a covid crisis. Now, perhaps, a new phase of readjustment is required, taking into account the new realities, tand his will become the subject of the committee's work in the new convocation.

This is with regard to oil. In terms of natural gas industry, there were two most significant laws during the convocation: expanding access to LNG exports and, of course, a new gasification model.

The "LNG Law" made it possible to launch a number of LNG projects. It's not only for the monetization of reserves, which is difficult and even impossible to monetize in another way, but also for the loading of the northern sea rout, plenty of orders for related industries, as the new projects will mainly use Russian equipment. The development of the LNG industry gives a large cumulative economic effect, and our ambitious plans in this area are the opportunity to maintain and strengthen our position on the global gas market in the future, in the context of an energy transition.

Oil and Gas Vertical: *Do you believe in these plans?*

P. Zavalny: Yes, I believe in these plans. LNG allows us to monetize our gas reserves, to reach those consumers who cannot be reached by the pipeline. And taking into consideration our gas reserves, the circumstances of the energy transition, in which gas will still be a popular resource, and the prospects for hydrogen energy, where natural gas will also play an important role in the first, rather long-term stage, our gas will be in demand for the long time period, and it is important to be able to supply it different ways.

Oil and Gas Vertical: *You have repeatedly drawn attention to the emerging competition between Russian LNG and Russian pipeline gas...*

P. Zavalny: It does exist on the European market, and in many respects this is a consequence of the EU's policy of diversification of supplies and development of spot market. Of course, this year this approach played a cruel joke on European consumers when Qatari and American LNG sailed away from Europe to the Asian market. And this shortage opened up additional export opportunities for us, but at the same time did not lead to a decrease in prices. This shows that both Russian pipeline gas and Russian LNG strengthen Russia's reputation as a reliable and flexible supplier, our position as the largest player in the global gas market. And this is important. Of course, the revenues from LNG export to the budget of the state and the regions cannot be compared with revenues from the export of pipeline gas, but, as I have already said, the development of LNG projects is a driver for the development of related industries, that means accelerating the development of the country's economy. And as the costs are returned to investors (and prices today contribute to this), the issue of income to the budgets will also be resolved.

Oil and Gas Vertical: *The second law, which you mentioned, concerns the so-called social gasification, which will certainly require attention from the committee and the Duma in this convocation as well. It is clear what it will give the country in social terms. And what will it give the industry, except for very difficult tasks?*

P. Zavalny: In general, in the case of the gas industry, the principle works: "not the state for the industry, but the industry for the state," therefore the social effect of gasification is a priority. At the same time, there are advantages for the industry as well. The simplest one is to establish order with gas distribution organizations, on which the reliability and safety of power supply depends. A bill on the possibility of privatizing municipal gas distribution networks has already been submitted to the State Duma; the Energy Committee will be a co-executor on it. If we talk about the larger and longer-term advantages, the new gasification will increase the demand for gas in the domestic market, moreover, it will be stable and long-term. According to our estimates, domestic gas consumption will increase by 30 billion cubic meters each year. In addition, the need to look for sources of financing for gasification is pushing the industry to improve the gas pricing model.

At the same time, of course, the current operating and pricing model of the gas industry, when supplies to the domestic market are subsidized due to gas exports, will remain in the short term. In fact, the same model works for oil and petroleum products, we protect the domestic market and support the development and competitiveness of our industry with the help of low domestic energy prices. True, this negatively affects its energy intensity, energy efficiency, and this is already a direct threat to our competitiveness.

Oil and Gas Vertical: *What should we do with the Russian gas market? You are the main advocate of the transition to market-based gas pricing. But so far there is a feeling that if the transition to it does begin, it will obviously not be in the coming years. But the common gas market of the EAEU will be, and soon. Is there a contradiction here, and is Russia ready for this common gas market?*

P. Zavalny: The cross-subsidization is already being formed in our country as apart of the implementation of the new gasification model, and this, on the one hand, is a kind of compensation for non-market pricing, and, on the other hand, is another signal that the gas pricing model does not correspond to the tasks facing the industry. And this is serious. Ii order to understand this is enough to see how the cross-subsidization hinders the development of the electric power industry.

In general, in many countries the reform of the gas market and the reform of the electric power industry proceeded in parallel. We have been reforming the electric power industry for more

than 10 years, and there is still no true market pricing, primarily in the retail electricity markets. But it is much easier to create it there than in the gas industry, because there is electricity generation in almost every region, but 90% of gas is produced in one region and goes through one channel. Therefore, it is very difficult to create real competition between gas producers. I I have to admit that we will not have a true market price for gas on the domestic market for a very long time. At the same time, some elements, at least inter-fuel competition and exchange trade, need to be developed. The work of SPIMEX contributes to the establishment of indicative gas prices in the regions and in the country as a whole, but in order for this tool to work correctly, we must release the maximum wholesale gas price little by little, to build a field for competition.

And this is especially important on the of the launch of the common energy market of the EAEU, which you mentioned. Moreover, the Russian energy markets of energy resources, and even more gas market, will become the basis for its formation.

In principle, Russia is preparing for this event, both in terms of gas and in terms of electricity. And in terms of trading in oil and oil products, for example, the big tax maneuver is element of this preparation.

It is more difficult with gas than with other energy resources. But in the near future we still need to create at least a full-fledged roadmap for the transition from the current model of the gas market in the country to a more "market" one, with greater use of exchange instruments, inter-fuel competition, a clearly built model of gas transport, entry-exit, taking into account export netback, so that this model could earn in the common market, taking into account the requirements of the EAEU.

In a new convocation of the Duma we plan to hold at least a round table on this topic in the near future. Expert and analytical work is being carried out, including at the site of the Russian Gas Society. We will formulate our recommendations, we will propose them to the government. I believe that this work cannot be postponed any longer.

Oil and Gas Vertical: *Hydrogen is a really popular theme. Now it is customary to talk about this direction with great optimism, as something that will "save" Russian gas exports. But won 't it work like this, that steam reforming of methane, even with CO_2 capture, will not be included in the list of "clean" in Europe for political or some other reasons?*

P. Zavalny: I don't think it will work this way. There will be a rather long transition period to the pure green hydrogen, and gray, and then blue hydrogen will take their place in European energy mix, for instance, during this period simply due to security of energy supply. Otherwise, the price of the issue will be excessive, and the depth, duration and, most importantly, the unpredictability of energy crises will be much greater than those that so frightened everyone this year. It seems that everyone saw how dangerous the imbalance in the energy balance and the underinvestment in traditional energy are. It is possible, of course, to argue that green energy has failed, because it is not yet green enough, and we need to invest even more in it, but this is shortsighted even from a political point of view – your citizens will not say "thank you".

Therefore, I think there will be some period of transition, where methane, then methane-hydrogen mix, and then pure hydrogen will play an important role - this will be the most relevant way of energy transition. More ambitious emission reduction targets should be achieved through energy efficiency or compensation measures related to absorption capacity of forests, swamps and so on. In the end, let's not forget that the European Green Deal is not only about renewable energy sources and refusal to invest in traditional energy resources, but, in many respects, it is about increasing the energy efficiency of the entire European economy.

Oil and Gas Vertical: *When will work on the hydrogen legislation begin? So far, after all, we don't have it at all. There is a feeling that we are late...*

P. Zavalny: I don't have that feeling. Certain normative regulation, primarily technical, exists, because hydrogen is used in one way or another today. Of course, these are slightly different areas and scales of application than those, which discussed in connection with the energy transition. An expansion and change in the regulatory framework will be required simultaneously with the expansion of application. It will be necessary to finalize the legislative norms for the transport of hydrogen, especially by pipeline, on the safety of production, transportation and use, on economic incentives for this new industry on tax and customs issues, if we are talking about exports, and so on. Today a high-level working group on hydrogen has been formed, I plan to join it, preliminary agreements have already been made. The committee seems to be a good public platform for discussing hydrogen-related issues; we have already formed an expert group on hydrogen topics.

At the same time, in my opinion, when creating a Russian regulatory framework for hydrogen energy, it is important to harmonize it with international legislation in parallel, especially since it is in the formative stage. This is a field for cooperation. In this context, preliminary agreements at the government level between Russia and Germany are important, for example, aimed at joint actions not only on the technological aspects of the development of hydrogen energy, but also on its regulatory support. I look forward to joining this work both as chairman of the committee and, I hope, as coordinator of the friendship group with the German Bundestag, when such a group is formed both in the Duma of the new convocation and in the Bundestag. In the last convocation, our work was recognized as effective.

Oil and Gas Vertical: *The Committee got involved in work on the topic of carbon taxation. At the same time, if many of your colleagues talk only about external challenges and seem to hope that the topic will subside, then you have repeatedly said that a carbon tax should be introduced in Russia as well. Why? Judging by your statements, you see this not only as a tool for achieving climate goals, but also as some kind of whip for wasteful consumers. Is it so?*

P. Zavalny: The energy intensity of our Gross domestic product is really insufficient, not only because we are a northern country, but because the low price of energy resources. It does not stimulate either the large energy sector, or industry, or the utilities sector to save the energy. We have a huge potential for energy saving, and this makes it possible to reduce CO_2 emissions significantly. In conditions when proper economic incentives are lacking, the state needs to create some kind of whip, the system of penalties. The carbon tax can also become such a whip - the introduction of payments for emissions will force consumers to look for technologies that will reduce it, and at the same time will increase the energy efficiency of industries, commerce, and so on. Of course, carbon regulation can be more stringent, such as carbon tax, or more lenient, like implementing the green and white certifications.

So far, our legislation in Russia follows a softer path. This year, the State Duma adopted a draft law "On limiting carbon emissions," and the Committee on Energy was a co-executor.

There are two major blocks in this law. The first is the introduction of mandatory carbon reporting for the largest issuers and the submission of this reporting to a government-authorized body. The largest emitters of greenhouse gas emissions are considered to be enterprises that emit more than 150 thousand tons of CO_2 equivalent. Other organizations are free to submit carbon reporting on a voluntary basis. Thus, an information basis will be created for the management of carbon emission in the economy and its industries.

The second block is the formation of a legal framework for the circulation of carbon units as a tool to reduce the carbon footprint and to attract investment. Any organization will be able to implement a climate project on a voluntary basis. The emergence of a new class of investment projects aimed at fulfilling the climate goals of the Paris Agreement will make it possible to create a new market in Russia associated with the circulation of carbon units, and this stimulates investment in climate projects and a market mechanism will form the price of greenhouse gas emissions in Russia. At the same time, the bill does not provide any restrictive measures for business, there are no quotas and payments for greenhouse gas emissions.

For a long time I have been a supporter of this approach, mitigating the "climatic burden" on Russian business, at least at this stage. But today it is becoming more and more obvious that we have to act more strictly and make decisions faster. The "Fit for 55" package, approved by the EU, envisages the introduction of cross-border carbon regulation, the so-called CBAM, already in 2026. And this is a serious risk for Russian producers of cement, fertilizers, metallurgical products, and electricity supplied to the EU. According to the CBAM project, importers will be able to reduce payments on it to the EU budget by the amount of the carbon tax paid in the country from which the goods were exported, but only the payment of the carbon tax or the carbon price in the exporting country will be taken into account, and no green certificates will be taken into account. will be. So, understanding the importance of the European market for us, we will have to introduce carbon taxes so that our companies pay them to the Russian budget, and not to the European one, which is, in fact, what the EU is striving for.

I have no illusions about what goals the European Union is pursuing by introducing CBAM. But this does not mean that we can resist these intentions by ignoring them. Moreover, following the EU, other countries are planning to introduce similar mechanisms, for example, Japan, the United States. Therefore, if today we carry out the same selection of projects for the construction of capacities in the electric power industry under the COMMOD program for 2026-27, securing energy-ineffective modernization, we risk laying a mine under all products that will be produced using this electricity, and, accordingly, under the global competitiveness of our economy.

We are part of the global economy, and it will not work out that all developed countries will go one way in matters of carbon regulation, and we will be able to go the other way without damaging ourselves.

Oil and Gas Vertical: *Will the methane cut agreement, which was signed during COP 26 in Glasgow, be more potentially dangerous for Russia than cross-border carbon regulation? Despite the fact that Russia has not signed this agreement.*

P. Zavalny: It is too early to talk about it, this agreement at the moment is rather a declaration of intentions; it does not contain any instruments for calculating volumes and setting quotas for methane emissions. But this does not mean that they will not appear at some stage, especially since the countries that signed the agreement are going to reduce methane emissions by 30% by 2030. And from this point of view, the agreement is a potential source of risk, and we need to work with it. In fact, our oil and gas industry is already working to reduce methane leaks along the entire production and transportation chain, this is part of the policy of our companies, so Russian plans in this regard do not contradict the intentions declared in the agreement.

In my opinion, if more than 100 countries of the world sign such an agreement, Russia should not ignore it. Moreover, considering that gas and, more broadly, energy exports are one of the most important items in our budget replenishment, we will have to synchronize and harmonize our regulatory framework, our requirements for emissions, for climatic and environmental goals with international ones. Otherwise our data on these parameters will not be recognized, and this will restrain our economic opportunities and slow down our development.

Of course, at the same time, we need to defend our interests at all international platforms, in the G20, within the framework of the Paris Agreement, which, in fact, is what our President is doing. This is and will be done by parliamentarians, within the framework of inter-parliamentary interaction. Recognizing nuclear and hydropower as carbon free resources, taking into account the absorptive capacity of our ecosystem - these are all critical points. Climate issues should not be allowed to be used for political purposes as a weapon in global competition. In this context, I want to note that an agreement on forests and land use was signed there in Glasgow, and Russia also signed it. It is in line with our climate strategy, as stated in Glasgow by the President of the Russian Federation.

Oil and Gas Vertical: *Let's return to the oil topic. The Energy Committee is more likely to deal with oil legislation, rather as a co-executor, with your colleagues from on the budget committee taking priority. Do we have the feeling that the approach of financial and tax officials to the oil sector outweighs the industry one?*

P. Zavalny: There are three committees, responsible for oil industry, first of all, the committee on budget and taxes, the committee on natural resources and ecology and our committee. The fact that the committee on budget is playing the first fiddle is normal, given the importance of the oil industry for replenishment the country's budget. At the site of these three committees, there is a constant dialogue, a search for a balance between the interests of the state, society, and the industry. There are no good or bad here, there is one common task - to ensure both the development of the country and the sustainable development of the industry. Moreover, we, the Energy Committee, often act as representatives of the oil industry, defending their interests.

Now, for example, there is a very complicated dialogue on the issues of adjusting the taxation system for the oil industry, taking into account the deteriorating structure of reserves. The task is to make such amendments to the legislation that will allow companies to include in the development the reserves, which are unprofitable today, to continue the profitable development of depleted fields. For this, a working group of the Expert Council under the State Duma committee on budget and taxes has been created. It included representatives of the State Duma committee on budget and taxes, the committee on energy, representatives of relevant ministries, regional authorities and oil and gas companies. Work is underway to adjust the income-added tax regime; its effect can be extended to fields in Western Siberia if they meet a number of criteria.

These criteria have already been determined, in particular, the company must produce no less oil than is planned in the field development project, in the horizon of 5 years and then the total budgetary effect must be positive, the threshold for field depletion must be at least 50% for the third group of the tax (it includes mature fields in Western Siberia), and not more than 1% for the fourth group (it includes new fields in Western Siberia). For the fields of the third group, the total production volume should not exceed 15 million tons per year, for the fields of the fourth group, restrictions on the size of the total reserves are set - up to 300 million tons.

Oil companies have already submitted to the Ministry the packages of documents on 72 license areas that could become candidates for transfer to the income-added tax. The bill is in progress, our task is to have time to do everything quickly so that the expansion of the experiment takes place in 2022 for the 3rd group and 2023 for the 4th.

Oil and Gas Vertical: *What will happen to the income-added tax? Do you believe that this incentive approach can still replace the current systems of taxation, and if so, in what time frame?*

P. Zavalny: I think the industry will continue to transition to income-added tax, practice has shown that its introduction was the right decision. As I said at the very beginning of the interview, he proved himself well, interested oil workers, did not disappoint the state, and really opened up new opportunities to involve in the development of those reserves that are simply unprofitable to develop outside the framework of this tax. Otherwise, there would have been no talk of expanding it. I believe we have a chance to move to income-added tax regime in the prospect of 5-7 years. Of course, if there are no emergency events, such as those faced by the global oil industry in the spring of 2020.

Oil and Gas Vertical: *How does the oil industry get into the energy transition? You often say that the age of oil will end faster than the age of natural gas, and perhaps sooner than we think...*

P. Zavalny: Natural gas really has very good prospects for at least the next 40 years. As for oil, I believe that oil will also be in demand for more than a dozen years, only in a different way, not in the way we are used to. 150 years ago the great Mendeleev said that burning oil is the same as stoking the stove with banknotes. And now, on our very eyes, this statement is becoming a given, an axiom. The further, the less oil will be used as fuel, will be replaced by other types of fuel in the energy sector and in transport, becoming more of a raw material for deep petrochemistry.

Oil and Gas Vertical: *Isn't a little bit late to fight for this market? In recent years, many serious players from all over the world have invested in this industry, and there is already enormous competition in this market.*

P. Zavalny: We were not late, but, of course, we are noticeably lagging behind, and not only from Europe and the United States. China will soon close its market with the entire range of petrochemical products. Our task is to f satisfy our market in both large-tonnage and medium and low-tonnage products, and try to occupy some export niches. The rates of development of petrochemicals in our country are really insufficient, lower than even those of some neighbors in the former USSR, obviously, some regulatory solutions are needed, the existing ones are still not enough. Their search will be one of the issue for our committee.

Oil and Gas Vertical: *If I ask you to name briefly a few actual issues, that are also in priority for the committee on in this convocation, what will it be?*

P. Zavalny: For oil - expanding the tax rate, developing landfills for testing new technologies, accelerating the development of petroleum chemistry, and import substitution. For natural gas - regulatory support for the new gasification model, regulatory support for the transition to the common EAEU market and gas pricing in the domestic market, and the related regulatory support.

A very important topic for both industries - the legal regulation of protected zones and zones of minimum distances to main or industrial pipelines, we have already held a round table on this topic and are preparing our recommendations. It is necessary to lay in the legislation a mechanism that, due to various engineering, technical and organizational measures to improve the safety and reliability of pipelines, will allow companies to reduce the zones of minimum distances up to the boundaries of the protected zones, ensuring the safety of people and, at the same time, giving the territories the opportunity to develop.

For the entire fuel and energy complex as a whole, the most important issues that we will work on in this convocation are energy efficiency as well as carbon regulation, the creation of carbon landfills, and, more broadly, environmental problems, and the digitalization of industries.

ILYA TOROSOV:
«WE FOLLOW GLOBAL TRENDS, BUT WE HAVE GONE FURTHER...»

About the differences between the international and Russian taxonomy, the measures taken by government authorities to mitigate the turbulence of energy transition for the Russian business, and why a companies should become «green» Deputy Minister of Economic Development of Russia Ilya Torosov told in an interview with «Oil and Gas Vertical» on the eve of COP26.

Oil and Gas Vertical: *Mr Torosov, the Ministry of Economic Development of the Russian Federation has recently presented a new version of the strategy of low-carbon development of Russia, which contains two scenarios: inertial and target (intensive). What is their difference? What effect can their implementation have on the country's economy? Which of the scenarios is more realistic and preferable for the sustainable development of Russia?*

I. Torosov: The main objective of the strategy is to ensure economic growth in the context of global energy transition. For that we need to understand how to take advantage of the opportunities that the energy transition gives. Inertial scenario implies that we are not taking special measures to adapt the economy to the energy transition. As a result, there is an accelerated reduction in energy exports following a decline in global demand. At the same time, the pace of non-energy exports is slowing down due to the high carbon footprint (we are becoming the «end supplier» in a number of industries). Investments and economic growth rates are declining. The decline of GDP growth and profitability of energy exports reduce budget revenues and the ability to pursue an active social policy. This leads to low rates of income growth of the population also.

Intensive scenario implies active decarbonization measures in order to maintain economic growth rates at a level of at least 3%. As a target, we suggest taking an intensive scenario. It allows us to maintain a 3% GDP growth rate after 2030. The carbon intensity is decreasing at a high rate due to intensive decarbonization measures and the implementation of climate projects in the country. The competitiveness of exports increases, which means that the revenues of the budget system in the long term. The opportunities to conduct an active social policy stays, the growth of real incomes of the population remains at a level of at least 2.3% per year.

Oil and Gas Vertical: *Is there already an understanding in which format the emissions trading will be carried out: on a voluntary basis, cap-and-trade, baseline-and-credit? Who will coordinate the process of buying and selling quotas?*

I. Torosov: We are currently deciding with the regional government and business about the methodology for allocating quotas between companies and the fee for non-fulfillment of the quota.

Oil and Gas Vertical: *As a part the formation of the carbon market, the Ministry of Economic Development of the Russian Federation is working to create an emissions verification system and plans to achieve its recognition at the international level by the end of 2023. Is work currently underway to prepare an agreement with the International Accreditation Forum (IAF) on mutual recognition of greenhouse gas validation and verification bodies? At what stage is this work now, and what has been achieved so far?*

I. Torosov: On behalf of the President of the Russian Federation, Ministry of Economic Development have been prepared amendments on the mandatory verification of carbon reporting, providing for the adoption of more than 30 by-laws in the areas of accreditation, standardization, as well as in the formation of lists of regulated greenhouse gases.

The Russian manufacturers have the opportunity to conclude contracts for services for the validation of climate projects and verification of the results of their activities with legal entities whose independence and competence have been confirmed by the national accreditation body. Greenhouse gas validation and certification bodies are subject to strict requirements for their compliance with established standards. These standards are GOST R ISO 14065-2014 «Greenhouse gases. Requirements for greenhouse gas validation and verification bodies», GOST R ISO 14066-2013 «Greenhouse gases. Competence requirements», GOST R ISO 14064-3-2007 «Greenhouse gases. Requirements and guidelines for the validation and verification of statements concerning greenhouse gases».

According to our information, about ten companies have confirmed their readiness to undergo the accreditation procedure as greenhouse gas validation and verification bodies, including a subsidiary of Gazprom PJSC, Innopolis University, subordinate organizations of the Federal Service for Supervision of Natural Resources, RUDN University, the Bauman Moscow State Technical University. It is remarkable that the Russian Energy Agency (REA), the institution subordinate to the Ministry of Energy of the Russian Federation, has also been actively involved in this project and is already preparing materials for accreditation.

Some of them plan to get accreditation in foreign accreditation bodies of the European Union countries to receive international recognition of the results of their activities.

The Federal Accreditation Service plans to submit an application to expand the field of mutual recognition within the framework of the International Accreditation Forum (IAF) in the field of accreditation of greenhouse gas validation and verification bodies in the first half of 2022.

The result of the expansion of the recognition area will be the opportunity for Russian greenhouse gas validation and verification bodies to use the IAF mark and receive recognition of their activities abroad without the need for accreditation with foreign accreditation bodies in the future.

Oil and Gas Vertical: *Taxonomy is a counting stuff, but the calculation of harmful effects may differ from country to country. Accordingly, how will the international recognition of the Russian taxonomy be achieved in terms of the applied quantitative criteria of «greenness» of projects?*

I. Torosov: Here is needed to separate what an ESG project and an ESG company are. An ESG project is a project that meets the criteria of specific green projects that we have prescribed in the taxonomy. There is described the criteria, types of activities that define the project as green or adaptive. When we talk about the company itself, an ESG company is primarily a company that has priorities in these three areas in its development, in its operational activities, in its daily routine. Specific goals and mechanisms of achievement are indicated. Therefore, when a company says that it has an emission, conditionally, and the company will stick to it, this is not ESG. If the company says that yes, it has such and such an emisson, but it understands that this is a negative effect, the company starts working and has such an investment strategy, it will spend so many rubles on it. As a result, the company will have such and such an

effect on emissions. Such a company can be called committed to the principles of ESG. Based on this, the rating of ESG companies is also formed.

When we worked on the taxonomy, it was important to make such criteria for green projects that would correspond to the European ones, so that in the future there would be the possibility of mutual recognition. The Russian taxonomy of green projects is almost identical to the European one, including additional criteria and counting parameters of projects. The only difference is that we consider the atomic energy as green. Therefore, we will discuss mutual recognition in Glasgow so that foreign investors do not have problems from their creditors with investments in Russia.

The criteria in the taxonomy is not only the reduction of CO2-equivalent emissions. Indeed, now there is a question on the world agenda how to count it. And we will also bring this issue to Glasgow. We base the carbon dioxide emissions accounting system on international ISO standards. These standards establish the basic requirements for reporting, verifiers and national accreditation bodies of verifiers.

But here the question is rather about modernization or the creation of new production facilities. In this case, there is technical documentation for the equipment, according to which it is clear how much CO2 emissions will be reduced. So, there is no need for the enterprise itself to count. It's all known. Therefore, the verifiers will determine compliance with the criteria based on the current emission parameters and those that will be in the case of modernization, according to technical documentation.

Oil and Gas Vertical: *There are risks that with the launch of a sustainable financing system in Russia, some companies will want to be «green» by any means. How clearly does the national taxonomy make it possible to separate really eco-friendly projects from greenwashing?*

I. Torosov: As you yourself said, the criteria for green projects are the strictly countable stuff. In most cases, there are also additional ones that are also registered there. The project that corresponds to them (and then it is green), or not. For example, the production of biodegradable materials. Here, an additional criterion is the absence of microplastic formation during decomposition. It will be necessary to prove its absence both at the verification stage when receiving a green loan, and during the implementation of the project. So, the verifier's control will be repeated. And in case of violations, various measures can be applied, up to the withdrawal of funding.

Oil and Gas Vertical: *What about those businesses that implement adaptation projects according to taxonomy criteria? Will they be able to attract a responsible investor?*

I. Torosov: We follow global trends, but we have gone further. We created the taxonomy of adaptation projects that takes into account Russian specifics. These are unique and individual projects in those industries that are highly developed in our country. For example, the same oil and gas production, processing. They are not de facto green.

It is impossible to completely eliminate emissions in these industries. But if they are significantly reduced, then this is a positive effect for the country.

Any investor who cares directly about the environment, he understands that yes, there is certainly a solar power industry, which is minimal in terms of emissions. But, there is, for example, a project on filters at refineries that reduce emissions. Yes, the process itself is not green, but the ecological effect is significant.

There are many investors whose ESG principles are not so strict. There is an opportunity to open representative offices in Russia and direct part of the funds to adaptation projects, especially the positive impact on the environment of an adaptation project is often higher and more significant than that of a green one.

Oil and Gas Vertical: *What instruments of green lending are provided for small and medium-sized businesses? Can an the small and medium-sized businesses issue green bonds? What steps should the enterprise take in this process?*

I. Torosov: The same sustainable or green financial instruments (for example, loans and bonds) are available for the small and medium-sized businesses as well as for other companies. But here we must understand that loans will be more profitable for the small and medium-sized businesses, because there are associated costs (for example, state duty, exchange commission, consulting services.) when issuing bonds. The bonds will be more profitable with large borrowings. For example, the minimum volume of the green bonds, traded on the stock exchange, is 100 million rubles now.

As for the steps, first of all, the entrepreneur should evaluate independently whether his project meets the criteria of green or adaptation projects and then apply to the bank for financing and further verify the loan as green or adaptive.

Oil and Gas Vertical: *What will happen to the Russian system of green financing in the future? Will the market develop independently?*

I. Torosov: The state has created the regulatory base. We went out and set the standarts. The framework green, as well as adaptive, was formed to exclude the same greenwashing, because objectively companies will be interested in calling everything «green».

Our task is to set these standards so that companies are not severely limited and they have the opportunity to implement these projects. A foreign investor, coming to us, can be sure that according to the European standards, the project is also green, if there is a label «green» according to Russian standards. The green taxonomies are almost identical. And further the state will withdraw.

We initially created the system of green financing at the request of business. And the business did not link the creation of this toolkit with subsidies or tax benefits.

The presence of the label of the green project indicates the sustainability of this project to medium- and long-term risks, including climate, energy transition risks, etc. Therefore, the business is interested in this tool, there is a demand for it even without additional subsidies.

We have created the necessary conditions, but life will show whether they are sufficient. We are ready to constantly upgrade the system together with the business.

«WE MUST BE INITIATORS, AND NOT TAKE THE POSITION OF OUTSIDERS»

Vyacheslav Mishchenko, Director of the Meteorological and Climate Center of the Fuel and Energy Complex of the Gubkin Russian State University of Oil and Gas, said in an interview with "Oil and Gas Vertical" about how Russia can form a national concept of energy transition in the framework of global climate discussions, as well as the role of educational institutions and scientific organizations in this process.

Oil and Gas Vertical: *You headed the Weather and Climate Center of the Fuel and Energy Complex. This is such an interesting symbiosis on the basis of two leading industry research centers: Gubkin University and Hydrometcenter of Russia. What are the tasks and goals of this structure?*

V. Mishchenko: First of all, these are research and educational activities. We need to support or refute the ideas that were voiced during the global discussions of the Climate Agenda, and try to land them on domestic basis. In order not to act within the framework of illusions that can be created by different political forces. We will do this to support government decisions and at the corporate level, so that Russian oil and gas companies feel comfortable in the process of accelerating energy transition.

And of course, one of the main tasks of the center is the training of personnel for our industry, taking into account the new realities.

At the international level, the topic of climate and emissions has been discussed for a long time. In 1997, the Kyoto Protocol was signed, according to which developed countries assumed obligations to reduce greenhouse gas emissions, and this protocol worked until 2020. This included energy-intensive projects, in particular in the steel industry, which included emissions in their investment projects. In Russia, this protocol was also actively used in the 2000s and 2010s, when the topic was relevant, as there was funding from international financial institutions.

The Kyoto Protocol (based on which, in my opinion, no serious and public conclusions were drawn) was replaced by the Paris Agreement. It was signed by 197 countries in December 2015. The fundamental difference from Kyoto is that developing countries have also joined the agreement. Russia is a consistent and active participant in both the Paris Agreement and the Kyoto Protocol. However, Russia did not ratify the Paris Agreement, but accepted it. This did not require changes in any legislative acts at the level of the Parliament. The entry into force of the Paris Agreement was formalized by the decision of the Prime Minister of the Russian Federation. It is important to emphasize here that only national legislation determines the functioning of the restrictions under the Paris Agreement. The meaning of the agreement itself is to keep the increase in the global average temperature by at least 2 °C until the end of the century compared to the pre-industrial era, and ideally to limit its growth to 1.5 °C. And since we have adopted the parameters of the Paris Agreement, we must begin to act. At the state level, this topic is being actively discussed, there are various platforms where legislative initiatives are voiced, and in the scientific community there is a need to combine research efforts in order to form an objective picture of what is happening, since the topic of global warming and climate in the current period is highly politicized.

In 2019, the so-called Green Deal was adopted at the EU level, where the European authorities announced certain obligations and legislatively fixed measures to reduce emissions. The agenda became multifaceted, it included both technological and environmental solutions, as well as tax, financial and social aspects. The European Union has committed itself to complete the energy transition by 2050 and completely move away from fossil fuels and switch to new energy sources - hydrogen, renewable energy, electricity as a replacement for internal combustion engines. By the 30th year, there should already be some intermediate results.

All this cannot but affect the Russian economy and the domestic oil and gas sector, since the European market is key for us in terms of hydrocarbon exports. Our oil and gas industry must be ready for all the changes and it must have an objective picture of the world. At the same time, our industry position should be supported by a research, scientific base, modeling of the international market in the new conditions and our positions on it. In this regard, the interests of Gubkin University and Roshydrometcenter coincided, we need to determine what function and fundamental position of Russia is on the green agenda. We must be the initiators of ideas and solutions, and not take the position of outsiders in the climate race.

We must clearly define what our national, economic and political interests are based on.

It is important to realize at all levels that today there is a complex and rather painful process of destruction of the global economic model that has developed over the past 30 years, and we live in a regional economy. This can also be seen from the sanctions policy that is applied to Russia and other subjects of world politics, trade and economic wars are being waged, which are expressed in the conduct of protective duties, various prohibitions and restrictions. We are building a model of a sovereign state with a strong diversified economy almost on the go. On the one hand, we cannot isolate ourselves and go behind the next political and economic «Iron Curtain», but we must already now think about how we will build our economic activity in the face of growing restrictions and conflicts. We need our own economic parameters, market indicators, development theories. It is risky to build a sovereign economy based only on the data of its global competitors.

Oil and Gas Vertical: *Is this model already looming? It is clear where to move today, what are the priority areas, what we need to specifically develop?*

V. Mishchenko: Russia's position was announced by Russian President Vladimir Putin at the G20 summit in Rome, which took place before Glasgow. We are ready to actively cooperate in all areas. The President announced the terms. What is important in this whole story is the timing of the implementation of the climate program. Russia has set a realistic deadline for itself – no later than 2060. We take another 10-year time lag for the commitments that united Europe has taken on. And we're talking carbon neutral. And Europe is talking about climate-neutral status. By 2050, their economies should be climate neutral.

For the next 40 years, we are ready to deal with these issues. It is possible to implement this strategy at the international level, but it is more practical to implement it within the framework of the national economy.

For example, if we are talking about the production of hydrogen as an energy raw material, then it is easier and more realistic for us to build a hydrogen infrastructure within the country. We will have to do this as part of the regionalization process, since no one is waiting for us with open arms in our key export markets (primarily in Europe). Of course, we can try to deliver our hydrogen somewhere, but what will happen to it next is not entirely clear. Within the framework of the national economy, we can build work on the inclusion of new energy sources - renewable energy sources in projects on Sakhalin, Kamchatka and other

regions of the country. This should be done gradually, experimentally and with a certain economic logic. It is necessary to take into account an important factor, and officials say this, that we are a country with a cold climate. We have a significant part of the territory located in the range of low temperatures, so energy for us is an important basis for human life. We cannot experiment by increasing risks, by destabilizing the energy system of a particular region. All these projects for the inclusion of renewable energy sources, hydrogen raw materials in the country's energy structure should be implemented in stages, without risk to industry and the population.

As I already mentioned, in 2019 the Green Deal was adopted in Europe, a certain image breakthrough was made, but the moment of security of energy supplies was missed. For the second year we have been observing an imbalance in the European direction. The cold winter, the lack of wind and solar resources, plus the shortage of natural gas reserves, which has not yet been compensated by anything, led to abnormally high price hikes that no one could even imagine two years ago - under $2,000 per thousand cubic meters! And this imbalance along the chain extends to the agricultural sector, which, by the way, consumes mineral fertilizers produced from gas. The next stage of the crisis is a sharp rise in the price of food, consumer goods, and so on. We must not allow such an experience.

Oil and Gas Vertical: *What can you say about the results of the Climate Summit in Glasgow? The agenda of the conference correlates with the directions of the Center and you probably followed the event.*

V. Mishchenko: The organizers of the Glasgow Summit (primarily the British authorities and the establishment) positioned this event as another important step, even a breakthrough, towards the implementation of the Paris Agreement. But when the results of the summit (November 14) became known, it became clear that no breakthrough had occurred.

Within the framework of deglobalization, with the emergence of new centers of power, Russia, China, and India are actively delineating their positions. These centers should build a dialogue among themselves. As long as the US and the Euro-Atlantic Partnership do not recognize the right of other powers to leadership and to their own interests, international cooperation will degrade. The first persons of Russia and China were not in Glasgow. And without Russia and China, this summit cannot be called successful. . However, in the Western media this event is presented as a great success. But the media is the media - and it is unlikely that the problem of global warming can be solved at the informational level alone.

What was finally adopted was a document on the reduction of methane emissions, which, together with greenhouse gas, affects global warming. More than 100 states have signed a declaration on the reduction of methane emissions by 30% by 2030. Russia and China did not sign this agreement. The struggle continues around coal as a fossil fuel, which should leave the countries' energy balances in the near future. The task of the summit organizers was to remove coal as a fuel in the horizon until 2030. But countries such as India, where the share of coal is about 40%, refused to follow this agenda, so the phrase "withdrawal completely" was replaced by "reduction". Western media present it as a victory. Vladimir Putin's proposal to reduce deforestation was not included in the final decisions of the summit as a Russian initiative. We own a large number of forests that absorb carbon dioxide, but this balance has not been taken into account. Nevertheless, there is a response to the initiative of the Russian president: in the final declaration of Glasgow, obligations were adopted to reduce deforestation and to develop the forest fund in many countries. But the summit participants did not formulate specific instructions on who does what and who does what.

One more aspect I would like to highlight - earlier, when signing the Paris Agreement, developed countries undertook to organize a climate fund at the UN, which would redistribute financial assistance to developing countries that could suffer from decarbonization processes. During the summit in Glasgow, representatives of developing countries noted that this fund does not work and money is allocated on a very modest scale. and practically do not participate in projects. In this regard, developing countries are accumulating negative experience on the climate agenda and undermining confidence in climate decisions.

And the difference in living standards should always be remembered when adopting climate initiatives. For example, while an ordinary European inhabitant can afford to plan on purchasing a still expensive electric car, an ordinary resident of Southeast Asia, Latin America or Africa is concerned about survival in conditions of hunger and cold. In order to carry out the energy transition without «climate genocide» of a certain part of the planet's population, large-scale funding for the energy transition is needed, which is currently not working. At the last summit in Glasgow, no one made commitments to developing countries, for which the climate agenda is more of a threat than a boon.

Oil and Gas Vertical: *Which position is more beneficial for Russia following the summit, on the climate agenda?*

V. Mishchenko: As far as the coal industry is concerned, of course, the adopted agreements are not beneficial for us. We have capital-intensive projects to expand the Baikal-Amur Railway and the Trans-Siberian Railway, a private-state partnership is being implemented to expand the capacity of the eastern ports, and the Eastern Polygon is being developed

And even if we assume that China will now "fall" as an export destination due to the climate agenda, since the Chinese leadership has committed itself to withdrawing coal-fired power plants and switching to gas, then India is becoming an attractive market for Russian coal producers and exporters. The coal industry must develop. We are second in terms of thermal coal reserves in the world, and we could well use new technologies in the extraction and transportation of coal, and switch to better technological processes. But removing coal from our energy balance for 10 years is wrong.

The same applies to reducing methane emissions. Russia needs to act based solely on its own interests. The time period for reducing emissions should also be longer than until 2030.

We must continue to fight for recognition of our position on the forest fund, since the partners in the Paris Agreement do not recognize Russia's key role as a carbon sink. In the developed methodology, which the members of the agreement are guided by, only cultivated forests are taken into account. If these are wild forests, then the country, as it were, has no direct relation to this, it's just that she was so lucky. This discriminates against

the position of our country and we need to promote new accounting parameters for this forest fund.

Oil and Gas Vertical: *On the eve of the new year, can you make forecasts on the climate agenda, the development of the fuel and energy complex?*

V. Mishchenko: No matter how we feel about Glasgow, this forum determines the global trend. And on the one hand, it is dangerous to be "in the tail", but there is no sense in "running ahead of the locomotive", that is, incurring any obligations that may be risky for the energy sector. The next year will be marked by an active reflection on the trends identified by the summit. We need to analyze all positions and find an industry and general economic consensus in order to identify our priorities. It is necessary to discuss new trends with the same coal companies in terms of their expectations, in terms of compliance with their investment program. By the middle of the year, it is desirable to have already decided on our position at the next climate summit.

Of course, I would like to emphasize once again that the climate agenda creates more and more risks for the oil and gas industry and the domestic oil and gas industry is still the main taxpayer in our country. . However, we see that the process of incorporating the carbon tax into the audit methodology has been launched and the Big Four have already begun to adapt their audit programs to the new climate parameters.

Another very important aspect is that we need to actively work with public opinion regarding global environmental processes. It is desirable that the climate agenda does not destabilize the situation in the country and in the regions, since the social factor plays a significant role in the implementation of climate initiatives. This is especially important for regions where coal and oil are mined.

Climate change is not some distant future - we are already feeling the detrimental effects of global warming in various regions. For example, the past summer season was indicative in this sense. At abnormally high temperatures, we observed a huge amount of precipitation in the southern regions, floods, and floods. This happened on the Black Sea coast of the Caucasus, in the Crimea. This is the echo of the process of global warming. If we assume that the temperature on the planet will increase by the next century within two degrees, then most likely the process will not run linearly, but along a sinusoid. Somewhere in the winter season will be accompanied by a sharp cold snap with snowfalls, in summer there may be abnormal heat with tornadoes and hurricanes.

In social terms, we must adapt ourselves to the fact that everything will change and the measures that states will take in the course of implementing the climate strategy will not always be popular.

Oil and Gas Vertical: *And what about the price environment? This year, prices for all energy carriers have risen in parallel, and for gas prices have risen as never before. What to expect next year? Are markets expecting price shocks?*

V. Mishchenko: We are at the beginning of the energy transition. In this sense, the destabilization of the global energy system is guaranteed. With the approach that we see in the Western community, energy crises are unlikely to be avoided. For example, last winter brought anomalous cold weather throughout the Northern Hemisphere, we remember well the pictures of freezing Texas. peace. In those countries where the climate agenda has prevailed over common sense, there is a high risk of the stability of the energy sector. Look at what is happening now in the countries of the European Union. For obvious reasons, no one in the EU leadership talks about the real causes of this crisis. That they miscalculated with the balance, that they created an artificial shortage of fuel, that pricing was completely transferred to exchange and spot mechanisms, which are subject to strong volatility and, accordingly, speculative attacks. wow. It is entirely possible that the beneficiaries of price hikes are speculators, and not real producers and suppliers of fuel. The speculative part of the markets is warmed up by the imbalance of supply and demand, as well as the lack of a sane and sustainable strategy in relations with resource suppliers. And while there are no prerequisites to believe that the European market will work differently. They will look for someone to blame, and now we have hydrocarbons and large suppliers of hydrocarbons to blame. First of all, Russia. Russia is accused of creating the current European gas crisis. Next year, the economic situation will also be affected by weather disasters and a pandemic. So far, it is impossible to assume the removal of all lockdowns. If the coronavirus infection does not recede, then quarantine measures will be tightened and the movement of goods and passengers will be limited. This of course will affect the amount of fuel consumption. Today, the supply of energy resources from key producers remains stable. For example, gas production can be increased, but whether Russia alone can cope with such surges in demand, I doubt. In the eastern direction for the supply of raw materials, we can consistently interact with such giants as China or India without political conjuncture, while in the European direction, we are still waiting for conflicts and crises.

Oil and Gas Vertical: *What about global warming? How can it affect Russia?*

V. Mishchenko: There are advantages for us. For example, ice-free Northern Sea Route (NSR) and year-round operation of this route. The NSR can become a powerful global driver of international trade, since the routes through the NSR to the Atlantic will be much shorter, cheaper, and this gives us a huge advantage, since this is an internal Russian route.

But at the same time, the precipitation map and temperature values will change. The southern regions of Russia can expect drought, in the middle lane more precipitation is predicted, which will affect our daily life. Seasonal patterns may change.

Oil and Gas Vertical: Will it flood some territories?

V. Mishchenko: An increase in the temperature on the planet by more than two degrees can lead to an increase in the level of the world ocean by four meters or more. The American president at the summit in Glasgow announced the main climate threat to the United States - the flooding of the ocean coast. American cities with a million inhabitants are located on the coast of the ocean and in the event of accelerated melting of glaciers, they will be under a serious threat of flooding in a few decades. Russia is a continental country and such a threat is not so real for us, but nevertheless, it is not correct and frivolous to think that global warming is not as dangerous for us as for other countries.

https://pixabay.com/images/search/coal/

A LUCKY FORCE MAJEURE FOR COAL INDUSTRY

ANASTASIA SHISHKALOVA
Oil and Gas Vertical

We will remember 2021 not only for the furious rally in natural gas prices in Europe but also for the «second coming» of coal - when countries, which sought to quit up coal, had to increase their coal generation at the expense of their climatic goals. It appeared to be not too easy to give up this fossil fuel. Or maybe it was too soon?

For the past decades the world was preparing for the coal's farewell - there was no place left for it in the bright low-carbon future. All developed countries had an ambitious plan to shift away from one of the world's main polluters. Now there are three countries in Europe which have completely excited coal - Austria, Belgium and Sweden. Portugal is going to close its last coal-fired power plant in December 2021. France and Slovakia decided to stop using coal by 2023, Ireland and Italy - by 2025. Finland and the Netherlands plan to become coal-free by 2029, Denmark and Hungary - by 2030. Germany goals at closing its last coal-fired power plant by 2038. Only Poland is not in a hurry - it currently generates up to 70% of its electricity from coal and plans to give it up only by 2049.

Everything seemed to be going to plan. According to the energy think tanks Ember and Agora Energiewende, in 2020 the share of renewables in power generation in Europe (38%) for the first time exceeded the share of fossil fuels (37%). Coal-fired generation decreased by 20% compared to 2019 and totaled only 13%. Of course, there was the COVID-19 impact but the trend was still «correct». However, in 2021 something went wrong.

Coal speeds up

It's not a secret that the coal's main counterpart in power generation is gas. Gas prices, which shrank in 2020, started to grow up in 2021. First they were boosted by the cold winter of 2020-2021, when demand increased and underground gas storage facilities was rapidly emptying, then - by the hot summer that led to an increase of the electricity consumption. At the same time the wind power generation declined because of the windless weather in the North Sea what led to gas demand growth as well. For example, in June 2021 power generation of wind farms in Germany fell by almost 31% compared to the same period in 2020, in July - by 15%. As a result, by June 14 gas prices (at the NCG hub) reached $363 per thousand cubic meters, which was the highest price in three years.

There was also an «Asian factor» which complicated the situation. The post-pandemic economic growth in the Asia-Pacific region - first of all, in China - boosted the LNG demand what led to an increase of its prices. As a result, the most part of the LNG cargoes went to Asia while Europe faced the deficit.

During the summer gas prices were growing, gradually speeding up. At the same time Europeans were nor seeking to fill their underground gas storages (they were afraid of loosing money because of the high prices). By September 17 the European UGS were filled just to 71% (in 2020 this figure was 93,6%, while in 2019 it was 95,1%). By that time gas prices had already risen above $800 per thousand cubic meters.

There was one more destabilizing factor for the European gas market. On September 13 it came that certification of the Nord Stream-2 pipeline may take longer than expected - the German regulator has time till January 2022. This hurt the chances of receiving additional volumes of gas, which could provide the Nord Stream 2, during for the current heating season.

Futures rally on the European gas market was going on - almost every day gas prices hit the records and on October 6 almost reached $2000 per thousand cubic meters.

Such a situation made Europeans turn to coal. For the energy companies it appeared to be easier to pay a carbon tax than to buy extremely expensive gas. Climate ambitions took the second place in that case. According to Ember, in the first seven months of 2021, coal generation in Germany rose by almost 7 p.p. over the same period last year to 26,1%. In September, it rose from 30,6% to 37,1%. The UK, whose energy companies started went bust, even launched the old mothballed West Burton A coal-fired thermal power plant. According to Argus, at the beginning of October total electricity generation from coal in Germany, Spain, the UK and France was about 7 million MWh - a 35% increase from a pervious year.

The growth in demand pushed up coal prices which on October 5 climbed above $300 per tonne (cif Amsterdam-Rotterdam-Antwerp). There was the Eastern influence as well: as in the case with gas, Europe had to compete for coal export flows with Asia, first of all with China. Energy sector of the country depends a lot on coal (it generates more than 60% of its electricity). Due to some factors such as tougher national environmental standards, disruptions in coal supplies because of the anti-COVID-19 measures, reduced supplies from Australia because of the political discords between the two countries and the decline of the hydropower generation led to the coal prices growth. As a result, in some Chinese provinces power supply was limited, which led to a decline in production in a number of energy intensive industries, such as cement, steel and aluminum production. To overcome the crisis the Chinese government started to ramp up coal production and imports.

«The East is jammed, there's no way to get through Ust-Luga»

The situation could be profitable for Russia which is one of the major producers and exporters of coal. However, if we look at the figures, we see that the growth of exports is not so significant. According to the Institute of Natural Monopolies Research (IPEM), in the first ten months of 2021 coal export increased by 9,5% year on year (but we should remember about the pandemic decline in 2020), and by 2,5% compared to 2019.

According to Refinitiv senior analyst Alexey Yarkovoy, the main obstacle to a significant increase in Russia's coal exports is logistics: the country just does not have any capacity for a crucial buildup of supplies. All export flows from Russia to Asia go by two railroads - Baikal-Amur Mainline and TransSiberian Railway - both of them are overloaded.

«If ports are able to accept large amounts of cargo, these transport highways cannot carry more cargoes, they are just jammed. Traders say that it's impossible to get into these transport lines», - said Yarkovoy.

The main Western transport hub Ust-Luga is also completely busy because of the lack of the cars (which are used for the inner supplies). And those private transport companies, which have their own trains, raise prices to such a level that it becomes a disaster.

«The East is jammed, there's no way to get through Ust-Luga...As logistical problems remain, Russia cannot significantly increase coal exports», - the expert concluded.

The question of increasing the capacity of ports and railways naturally arises. Private investors are wary of investing in the construction of new highways (there are concerns about the coal industry future). Moreover, according to the IPEM, in spite of the fact that now prices on foreign markets are three times higher than in 2020, the owner of the railway infrastructure and carries gains nothing.

«The cost of transporting coal for export doesn't cover the full cost of transportation, taking into account the need for return of investments to expand infrastructure for coal transportation. Probably, the more coal will be transported for export, the more cross-subsidization between cargo classes will be necessary», - said Vladimir Savchuk, deputy general director of IPEM.

He points out that Russian Railways implements a large-scale infrastructure development program for the Far East, mainly focused on the transportation of coal for export. Due to its implementation, the total cargo transportation volume will increase to 180 million tonnes by 2024. Development projects on ports of the North-West and South of Russia are also on the way. However, it is important to understand that development of transport infrastructure and resolving of logistic problems is necessary not only for coal supplies, but also for other cargoes.

There is no alternative to coal yet

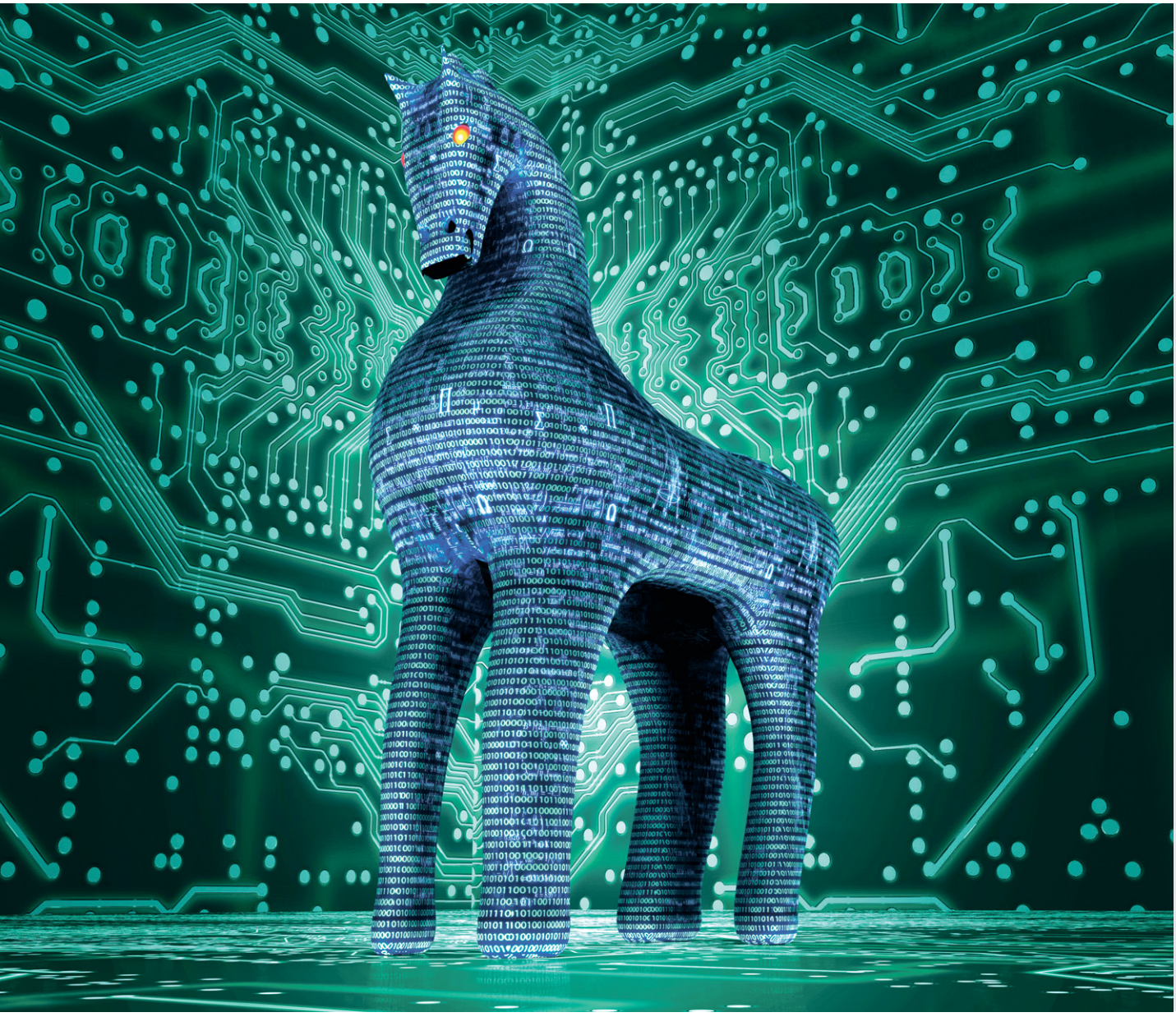
The described shift to coal is mostly considered like a short-term trend. China almost coped with the crisis, supply began to answer demand and prices started to fall. What would be next?

The G20 summit was held in late October 2021, the UN Climate Change Conference in Glasgow - in early November. Coal was on in the focus at both events. The G20 countries agreed to stop financing coal plants abroad. The Glasgow summit resulted in something more vague - «gradual reduction of coal use without emissions capture».

US Climate Envoy John Kerry made it clear that to quit coal right now is impossible. Australia, which accounts for 30% of the global coal market and generates about 80% of electricity from coal, stated that it was not going to phase out coal production. According to the Minister of Energy Angus Taylor, Australia plans to achieve carbon neutrality by 2050 without abandoning coal but using technology to capture and storage. China, which always follows its own way, set the goal to reach coal consumption peak by 2025 and then to reduce gradually its share in the country's energy balance. Meanwhile, China's economic growth boosts energy consumption and that supports coal attractiveness as cheap and reliable energy resource. The country doesn't reject the global rules of the climate game, but it prefers to act carefully. India is not in a hurry to give up coal (70% of its electricity is produced from coal), it plans to become carbon neutral only by 2070.

«There is no alternative to coal yet. There are no energy storages capable to accumulate renewable electricity...Coal energy is constant. There are storage facilities, there are power plants, coal is a reliable source of electricity. I truly believe that coal will remain as a source of power generation for a very long time. Even if we're eager to give up coal we will not be able to do it», - said Alexey Yarkovoy.

https://www.oldw24.ru/assets/images/resources/4491/today.kg.jpg



TROJAN HORSE IN CONCEPT SPACE

ULYANA OLKHOVSKAYA
Oil and Gas Vertical

The indicator of state security is several conceptual factors. One of them is the involvement of domestic intellectual businesses in national projects and economic chains. When the process takes place in the format «in spite of» and «through thorns», this is an unconditional plus in favor of domestic entrepreneurship, but questions remain for state regulation.

In August, Leonid Mikhelson spoke harshly about the fourth line of Yamal LNG: «We must admit that our manufacturing plants still have to learn and learn how to make good products. We have claims against all equipment suppliers», - said Leonid Mikhelson. First of all, these claims relate to manufacturers of compressors and turboexpanders. It would seem that we can immediately draw a conclusion that the quality of our hardware leaves much to be desired and mourn the results of import substitution and still unformed technological competencies. But everything is much more complicated. And the conclusions are not so clear cut.

To analyze how things really are with technologies in oil and gas and related fields, you can apply a fairly simple but effective formula. Identify global projects that are being built in the country by our companies and assess the involvement of domestic suppliers and technological solutions in them.

There seems to be a demand. Or still no

Let's take into consideration such projects as Yamal LNG, Novatek, ZabSibNeftekhim, Amur GCC, Sibur, and the gas-chemical project in Ust-Luga of the tandem of Gazprom and RusGazDobycha.

In principle, market experts fully agree with this selection. As for Novatek's projects, they definitely need to be discussed in conjunction with Yamal-LNG, Arktik-LNG 2 and TsSKMS. Domestic producers supplied products worth 600 billion rubles under the Yamal LNG project.

During the construction of TsSKMS facilities, according to Leonid Mikhelson, up to 90% of the scope of work was performed by domestic enterprises. Localization during the construction of gravity-type foundations (GBS) has reached 70%. It is known that more than 400 supplier companies work within the framework of the Arctic LNG-2 project.

The figures are quite impressive and even optimistic. Russian companies participating in a world-class project must, a priori, receive a quality seal on a product certificate. But the question arises - what is wrong with the equipment of the notorious fourth line?

«It's not bad, it's just made the first time. The second time it will be much better»,- says Alexander Gadetskiy, founder of Engineering & Consulting PFA Alexander Gadetskiy.

It is quite possible that the processes, roughly speaking, have not been worked out to automatism, because projects of this level are not done often, or the competitive environment played a role here, because it is known that there is a competition between Novatek and Rosatom for the energy consumer in the Arctic.

And the companies that assembled the fourth line are the «daughters» of the nuclear monopoly. One can only guess what really «went wrong», however, Novatek is going to fix the notorious line, replacing domestic equipment with import. But there are other examples of «inconsistencies» between large construction projects and domestic suppliers.

Here, for example, are the ZapSibNeftekhim and Amur GCC projects. In these plants, the amount of national business is minimal. "In ZapSibNeftekhim, the share of domestic technological equipment is zero, maybe 5%. On «The Amur», the situation is the same, well, maybe about 20%,»-comments Alexander Gadetsky.

To the question «why», he answers that it is connected with the mentality of the top managers of the company. «The reason for non-implementation is not that the manufacturers of domestic equipment are bad, but that the top managers of companies are opposed to Russian equipment,»- Gadetsky sums up. The column equipment at ZapSibNeftekhim and on the Amur was brought in Korea.

«Why?»,- the expert wonders, «after all, for example, at Tobolskneftekhim, the first gas fractionation column for 3 million tons per year was brought via the NSR from Leningrad». Yes, it was in 1984, when the state called the USSR ended. It turns out that in the mid-eighties, two such columns were brought to the Irtysh port, one was installed, and the other was left to lie in the port for a long 25 years. After that, the Sibur company in 2010 took this equipment from the port and erected it at the Tobolsk plant.

The second gas fractionation column, which had lain in extreme conditions for 25 years, began to work properly. It is clear that such a story demonstrates the quality of our hardware. Then the assumption logically arises that if today they prefer the import, then maybe the import is simply cheaper.

«Most likely it is»,- Gadetsky exclaims, -«but we either support our army or we don't. It's the same with the economy». The well-known futurologist and sociologist Sergei Pereslegin also speaks about this. He refers to the significant functions of the state as follows: protection of borders, protection of domestic and foreign markets - in terms of promoting their businesses, standards and regulations, an exploration of space and the ocean, development of own territory, creation of global projects, formation of development institutions. All these parameters create a conceptual space.

So, if national projects, especially those implemented on the state territory, are dominated by imported technologies, then this resembles the model of the same Trojan horse, which was described by the famous poet Homer. And this horse grazes in the so-called conceptual space of the state. Based on this association and the logic of discourse, the question arises of a flexible fiscal policy in relation to buyers of domestic equipment.

Perhaps something is missing in these institutions and the process needs to be stimulated somehow. Is the system of taxes and benefits thought out enough to integrate national business into current projects? Tax segment experts argue that the Russian tax system has a sufficient set of tools for effective tax incentives. This applies even more so to the oil industry, since, among other things, excise subsidies are actively used in it.

«But with respect to import substitution, there is another problem - the lack of agreed goals and understanding of what exactly is subject to state support», - says economist Boris Lucet.

So in June of this year, Minister of Industry and Trade Denis Manturov reported to the President of the Russian Federation on the reformatting of the import substitution program: «We are resuming the import substitution program, we want to switch to a new format. Before that, we put the main emphasis on the production and import substitution of final pro-

ducts ... We will put the emphasis on the development of our own raw materials, materials and components.» Based on this message, the Government of the Russian Federation should instruct the Ministry of Finance to submit the appropriate follow-ups.

«We can talk about targeted measures, for example, adjusting the investment tax deduction for income tax, or reduced VAT rates when selling equipment or services/works as part of import substitution programs. We can also talk about an integrated approach - a good example here is the so-called tax maneuver in the IT industry. In any case, instructions on tax incentives for import substitution should be included in the overall plan of the Government's work in this direction», - suggests Borys Lutset.

In principle, the initiatives are good. Perhaps targets and tax solutions will be found.

Another interesting example and indicator of how the new format of the import substitution program will be implemented in practice is the gas chemical complex project in Ust-Luga. The Ministry of Finance of the Russian Federation intends to allocate 900 billion rubles from the National Welfare Fund for the implementation of this complex. Anton Siluanov, Minister of Finance of the Russian Federation, said that this money would be used to purchase imported equipment and would not «work» in Russia.

Approximately 10 billion euros will leave the country. This is about 30 percent of the total cost of the project, according to experts. Perhaps this is appropriate. Our sources cautiously assume that there is an expert opinion, where it is established that, nevertheless, without the purchase of certain imported items of equipment, the implementation of this project is impossible today. These are at least pyrolysis ovens and gas carriers for sea transportation. You read related news and find that about 100 local businesses are going to be involved in the construction. According to the idea, Ust-Luga was designed in Soviet times and «sharpened» for the equipment of the national industry.

So, there really are still chances to involve local businesses, especially since they decided to upgrade the import substitution process and turn towards the development of their own products, and, therefore, possibly standards.

«Another question is why should it be funded by the state? Moreover, in the conditions of an excellent price situation in the gas market, the company (Gazprom - ed.) has a good additional financial resource. Considering that the company pays the severance tax on gas in isolation from rising prices, it makes sense to return to the discussion of sources and, if not cancel, then at least reconsider the amount of state funding», - Boris Lutset believes.

Unicorns don't grow here

There are not so many global projects, but the country is big. Therefore, innovative manufacturing and technology companies need to look for markets. Not everyone can «get» into the pool of VIOC suppliers, this is a complicated matter. And not everything is so clear with the «entrance» even on the example of the listed projects.

For example, recently in the Murmansk region, Leonid Mikhelson announced that the fourth line of the Arctic LNG-2 would again be entrusted to domestic producers. «During the construction of the fourth line, domestic equipment will be used, which will be certified»,- Mikhelson said. Our business knows perfectly well what this procedure means.

Ten years ago, the situation unfolded as follows. Domestic technology companies developed and produced superproducts that were competitive in world markets. Usually the scheme was as follows: the intellectual part of the product was developed in Russia, and assembly production or testing sites were organized abroad. The range of technologies is quite wide: instrumentation, chemical and biological development, software.

«It is more difficult and expensive to certify in the Russian Federation, it is easier to make European certification - CE marking, which can be confirmed in Russia»,- businessmen said and opened companies abroad, where they produced products under a foreign brand. «It sells better that way»,- they explained. The world is happy to buy equipment made in Germany and Japan, but not Russian. A device made in Germany and a device made in Russia are two different devices. And not because they are fundamentally different in work, but because made in Germany can cost 15 thousand euros, and made in Russia is much cheaper.

After 10 years with certification in the country, practically nothing has changed.

«We need to develop our own quality standards and certification. Create domestic standards and certify the equipment that we will produce and potentially export. In fact, it is now in the hands of our Western partners, the same American Petroleum Institute API is just dealing with such issues - standards, certificates. And our equipment is not going to be certified, why do they need it? This is competition»,- says Vyacheslav Mishchenko, Director of the Weather and Climate Center for the Fuel and Energy Complex of the Russian State University of Oil and Gas named after I.M. Gubkin.

Yes, in the context of hybrid warfare and deglobalization, which is already being trumpeted from every iron today, our own standards and regulations and the provision of domestic products to the domestic market is considered a logical and reasonable strategy. But while the process slows down.

As far as software is concerned, ten years ago there was an interesting phenomenon.

The software export was not registered under any official parameters. Analysts explained it this way: «Official export-import statistics take into account data based on customs statistics, which mainly implies the physical movement of goods across the border. In the case of software export, the program code is transmitted over the Internet. Our customs is not yet able to physically record such operations.

Unrecorded software exports mean the development of program code on an outsource basis, offshore programming commissioned by foreign (primarily American) customers. We are talking about both writing ready-made IT products and lines of code for individual program modules. As a rule, payment is made to developers directly to personal accounts based on man-hours, lines of code, or by agreement for completed modules».

According to experts, the volume of the IT products export market from Novosibirsk alone (a powerful center for training programmers) in 2012 amounted to more than 100 million dollars a year. Such an assessment of the annual software export from Novosibirsk was based on an assessment of the number of programmers employed in this area and the average monthly income of programmers of outsourcing companies in Novosibirsk, experts specified [2].

But at that time, it was comfortable for IT companies to exist in Russia up to a certain stage, but in order to increase capitalization, it was necessary to «move» abroad because of the need to invest.

After 10 years, experts record a revival in demand for technology and software in the country, but note that scaling a business in their native country is also not an easy task. Becoming a «unicorn» (a start-up company with a market valuation of over $1 billion) is considered virtually fantastic in Russia.

«Today, it is practically impossible for a technologically innovative company to grow into a «unicorn» due to internal investments and the market. To a greater extent, it is precisely because of the small capacity of the Russian market that it will not allow it to become a «ruble unicorn», not to mention the billion dollar bar.

If the idea and technology is relevant and in demand by the consumer, then there is a chance to enter the international market with it and attract venture investors, and even then go to an IPO, but for this, you definitely need to register abroad»,- comments Roman Romanyuk, Chairman of the Board venture fund «Euroventure» (St. Petersburg holding «Euroinvest»).

As an example, the expert talks about the Yakut company inDriver, which created an international service for passenger and freight transportation. It was founded in 2013 in Yakutia, but was able to enter foreign markets and now operates in 35 countries. This fall, the founder of inDriver, Arsen Tomsky, said that the company's valuation was $1.23 billion and that these were investments from world investment funds of the first echelon. He also admitted that it was possible to do this only after his startup and he himself moved to Silicon Valley.

Today, the tax maneuver in the IT industry has activated the segment. This is stated by both officials and the business itself. The first package of measures came into force in 2021. It provides for the establishment for Russian companies of an income tax rate of 3% (in the part to be transferred to the federal budget) and zero - in the part to be transferred to the regional budgets. It also cuts the premium rate from 14% to 7.6%.

Since the adoption of the first package of measures to support the IT industry, the volume of exports of Russian software and services has increased by 13.5% and amounted to more than $5 billion, Deputy Prime Minister Dmitry Chernyshenko said.

«Tax incentives for Russian IT companies have given impetus to the revival of economic activity. The number of accredited domestic IT companies has increased by 3 thousand, at the moment there are almost 15 thousand of them, and the number of software products in the register of domestic software has almost doubled, up to 11 thousand», - the Deputy Prime Minister noted.

In addition, the gross value added of the IT industry grew by almost 20% to RUB 1.2 trillion.

There has been a revival in the IT industry. But the demand for domestic solutions in the domestic market is not particularly growing. «IT solutions are most in demand in those segments in which competition is strongest (trade, banking, transport and logistics, food production). The situation with industry is more complicated, especially where the share of state participation is large»,- notes Valentin Makarov, President of NP RUSSOFT.

It is also worth noting that if the demand for domestic software has appeared, it is not because programmers develop concepts for the level of automatic drilling and production of hydrocarbons on Mars, or calculate optimal bunkering models in the Arctic, but create solutions to optimize business processes.

«Against the backdrop of a slowdown in the fuel and energy complex market, companies associated with the production, processing, and transportation of oil and gas are beginning to optimize their budgets, including the costs associated with the implementation of digital solutions. Today, our large clients, including companies with state participation, purchase software primarily in order to increase the efficiency of their daily business tasks, which will ultimately have a positive impact on the economic performance of the entire company»,- notes Levan Revazishvili, Head of Business Development. sales company MyOffice.

As they say, feel the difference.

Anyway while the business scaling scheme, as well as its integration into global economic chains, is carried out mainly outside the borders of the native fatherland, demand is wider there and investments are not so problematic.

In the current energy transition, when sanctions and trade and political wars are methods of competition, attention to the domestic market and business should be special. Territorial, including energy planning, agreed goals will formulate demand. And a competent fiscal policy, investments, primarily in science and education (in the development and quality of ideas), and a reduction in bureaucratic growths will expand the horizons of supply. And then the Trojan horse will still turn into a unicorn.


https://globalgeoenergy.org/attachments/Masdar/United_Arab_Emirates/Pictures/Abu_Dhabi/Masdar_City_178006_Masdar_City_Masdar_City.jpg

THE CITY OF THE SUN IN THE STYLE OF CYBERPUNK

IVAN MISHIN
Oil and Gas Vertical

400 years after the publication of «The City of the Sun» by Tommaso Campanella, literally the city of the sun is being built in the UAE. Relying entirely on renewable energy, Masdar City attracts investors from all over the world as the center of the green renaissance of the post-pandemic world economy. What is behind of this extremely ambitious project of a smart city that only a few countries on Earth can afford? Is it an utopia or a reality?

A riddle from the new Jacques Fresco

Probably, the mankind has been dreaming of a perfectly well-maintained urban environment ever since a city was invented. But the first man, who described on paper the concept of a «smart» (in understanding of a Renaissance man) city, was Tommaso Campanella. In 1623 his work «The City of the Sun» was published. The philosopher described an urban environment that fully feature both cultural and social needs of a person. The harmony with the universe (planets and stars) and the development of science and technology were put in the basis of public welfare 400 years before the emergence of the concept of sustainable development. However, Jacques Fresco is still closer to us than Campanella.

Advanced users of the Internet and social networks (in the Russian segment, of course), for sure, have at least once met a meme with a fake riddle from Jacques Fresco. And here's an interesting thing, the paradox of the metamodern era! Laughing at this kind of memes, we do not even notice how we are starting to live more and more in that society, in that world, which is based on the ideas of this old gentleman.

Back in 1975, Jacques Fresco established the Sociocyber-engineering project, which in 1994 evolved into the Venus Project. It was Opus Magnum, the life's work of an American engineer and futurist. Since the Great Depression he had been plotting the idea of this project. Jacques Fresco sought to build a socio-economic system where automation and technology would be integrated into all public spheres to improve living standards. At the same time, reasonable, responsible consumption was put at the forefront to take care of the environment. It meant that the human existence was correlated with the bearing capacity of the Earth. Also an experimental city, which should implemented all these ideas, was planned to build. The Venus Project was to lead all mankind to sustainable development.

In 2017 Jacques Fresco died, having managed to gather a real army of followers around the world. Although they still believe in the Venus Project and invest money in it, the success and future of this enterprise is an open question. Moreover, the project is increasingly reminiscent of the cult of Fresco. Anyway, 10 years before the futurologist's death, Masdar City appears in the Arabian desert near Abu Dhabi, UAE.

In this smart city we can see a realization of all the same ideas, and above all, resource conservation coupled with energy self-sufficiency. The city will be fully provided with electricity from renewable sources. It is hard not to take advantage of the gift of nature, which get the Arabian Peninsula. Of course, we are talking about the sun and the insolation potential. For comparison, the closest star to Earth shines in Moscow for less than 1,700 hours a year, and the average annual insolation is 3.57 kWh per m^2. The duration of solar radiation in Masdar City is 3000-4000 hours per year, but the indicators of insolation on average per year are much more striking! It is approximately 2200 kWh/m^2! Therefore, the Arabian smart city is not just surrounded by fields of solar panels. Even lampposts there look like one solid solar battery. It is symbolic that all the electricity, used during the ceremony of laying the first stone of Masdar City, was generated by solar plants. But, as director of Masdar City Anthony Mallows told in 2016, the stone was virtual... It was laid by touching the screen.

Eastworld

The first renderers of Masdar City, published ten years ago, were striking in their futurism. They demonstrated the houses with solar panels, lying on the roof like tiles, lots of palm trees and neat shrubs a la French park, neon lights and happy people. It was no wonder, because Baron Norman Foster himself was responsible for the design of the city. The utopian picture was

complemented by statements by Anthony Mallows that Masdar City should independently collect rainwater and desalinate seawater, and city buildings had to be equipped with a complete waste recycling system. It was planned to move around the city only on electric self-driving cars. Although it would be more correct to call them railcars because they should ride, according to Mellows, on the magnetic rails. The picture is drawn like from some «Blade Runner», «Total Recall» or «Westworld». But those are dystopias. In Masdar City's project, of course, we can see also the style of cyberpunk, but it's still utopian and with a «twist», brought by an Arab flavor.

Does the stated picture correspond to reality? Here we should start with the fact that $22 billion was required for construction, however, the budget in the end the project amounted to $16 billion. The blame for this fact is the economic crisis, which began in 2008, exactly with the laying of the first stone of Masdar City. The deadlines for the construction of the city began to shift as a result. At first, it was planned to finish in 2015, later in the period 2020-2025, but then a pandemic came. Now the project is expected to be delivered no earlier than 2030.

The project began to be implemented for the state money of the UAE. The reports of the city's management company for the past years contain very modest financial results. The real volume of investments is unknown. But, according to Mellowes, since 2015 Masdar City has started earning itself and also returning money, invested from the state treasury. Moreover, self-sufficiency should be achieved by renting buildings. The International Renewable Energy Agency (IRENA) and the regional branch of Siemens have placed their headquarters in Masdar City, and 900 other firms from multinational companies, including even Lockheed Martin, to local startups have official representative offices in the city. However, in many cases these are not traditional offices, but simply rooms with hot desks, as admitted to The Guardian Chris Wan, the design manager of the Masdar City.

Now Masdar City is a half-empty settlement in the desert. The optimistic statements, given in 2016 by Anthony Mallows, that more than 11.5 thousand high-tech companies will be located here in a few years, did not come true. The same fate befell his words that 50 thousand people will live in Masdar City and the same number will come to work. Approximately 3 thousand people live in the city now. There are no unmanned magnetorail cars either, but you can leave your car in the parking lot at the entrance to the city and rent a scooter. Anyway, Masdar City as a reference model of green life is still a mirage. City managers have abandoned the idea of a city with a zero carbon footprint and energy self-sufficiency. Although Masdar's buildings are really very energy efficient and consume about 50% less electricity and water than conventional buildings in the UAE, the city consumes more than it produces. Therefore, Masdar City is connected to the power grid of Abu Dhabi, which is located nearby, at a distance of 17 km.

Smart Keynesianism

There is practically no information and news about Masdar City after 2016. Does this mean that the project has not achieved success? According to Anastasia Perdereau, Internet of Energy Project Manager SKOLKOVO Energy Center, we see the city being built from scratch, which is always accompanied by a certain

risk. «The success of Masdar will depend on the consistency, regularity and thoughtfulness of measures for its development,» Anastasia Perdereau said.

Obviously, it's all about management. In June 2021, Abdulla Balalaa, who headed the Masdar City project instead of Anthony Mallows, stated that «The UAE leadership has made a longstanding commitment to progressive climate action and recognises the integral part that innovation plays in advancing the global green recovery. Now more than ever, we see the critical importance of the green recovery. It is the only way forward to drive sustainable development, and facilitating innovation in key sectors is a fundamental aspect of this journey, one that we are helping to lead at Masdar City». This statement can mean that the state has not just returned to participating in this project, but has also taken it under its care and control. The figure of Abdulla Balalaa also attracts attention. Prior to joining the Masdar City, he was the Commercial director of Etihad Rail (the national operator of the UAE railways), represented the country's interests in the Railway Committee of the Cooperation Council for the Arab States of the Gulf, and even before that he headed the planning department in the Abu Dhabi City Planning Council. The biography of Mr. Balalaa clearly hints that he is a statesman.

The UAE authorities have made Masdar City the only approved research and development cluster in Abu Dhabi. By the way, this is not the only example when the state is forced to take the development of innopolis under its own control. A similar test site for the development of smart and low-carbon technologies is now being built in South Korea. Korean Songdo, as well as its Arabian counterpart, was predicted to become a technological oasis. It was planned to create, for example, a digital ecosystem for managing the urban environment, which featured the interactions through touch panels on the streets, power plants that generate energy from hard-to-recycle garbage, and much more from the field of science fiction. However, the ambitious project worth $35 billion did not find enough investors and did not particularly attract large global companies. Therefore, the financing fell on the budget of the neighboring city of Incheon, with which Songdo shares a common border.

A few years ago, the South Korean innopolis was inhabited by less than a quarter and presented an eerie sight. There were empty wide streets, on which mannequins stood instead of people. They were installed, apparently, to revive urban views. Now Songdo, which almost turned into a real ghost city, is gradually being populated. So, from 2018 to 2020, the number of res-

idents has more than doubled, amounting to 167 thousand people, however, they occupy only half of the urban housing stock. Anastasia Perdereau noted that life in such a city is more expensive than in the rest, and the question of whether the population is ready to live on an experimental site remains open. «Usually such zones are populated by employees working at the factories and companies located there», Anastasia Perdereau said.

It looks like that often the development of projects of smart cities, as well as relevant technologies, is very difficult without the participation of the state. For example, the volume of the Russian market of technological solutions for a smart city amounted to only 81 billion rubles in 2018. This figure has not changed at the end of 2019. And what about now? «The technologies of smart cities have received an additional impetus for development with the launch of the national program «Digital Economy». Thus, the Ministry of Construction, Housing and Utilities of Russia is implementing the Smart City project within the framework of the national project «Housing and Urban Environment». The standard of the smart city (basic and additional requirements) and standards in the field of data and indicators of the smart cities have been formed by the Federal Technical Regulation and Metrology Agency. In Russia, the project is being implemented in more than 200 cities with a population of 100 thousand people, while successful practices are being scaled. There are a lot of pilot projects all over the country now, and this is a great opportunity to develop new ideas and approaches», Anastasia Perdereau said.

Did the cyberpunk world win?

There is no secret that during the COVID-19 pandemic, the state monitored compliance with quarantine measures by citizens through digital services. This gave rise to a form of Luddism in society. It was not just distrust, but fear of the widespread digitalization of everyday life and spheres of public life. No wonder that such a common expression as «digital concentration camp» appeared. Therefore, not everyone shares an optimistic attitude to the global trend for the transformation of ordinary cities into smart ones. So, according to Dmitry Boikov, head of the DB-ARCH STUDIO architectural bureau, managing all spheres of life will not bring a person to good. «A smart city must be even more terrible than a smart house. Full digital control over all systems of the urban environment and life involuntarily causes allusions to the pages of the totalitarian past of some European states in the 20th century. In addition, the virtual world will drag people and, above all, the younger generation, turning the real world into ruin. Let's rather focus on the environmental friendliness of a city», said Boikov.

However, here's necessary to understand where sustainable urban development will move in the foreseeable future. «The term of «smart city» is an umbrella term and covers a wide range of technological solutions for smart cities. Now the sustainable cities are striving for carbon neutrality and multimodality, security, economic attractiveness and accessibility for their residents, maximum energy and resource efficiency», Anastasia Perdereau said.

According to the expert, these tracks can be implemented in various smart projects in the fields of energy (for example, demand management, deployment of energy management systems at the level of a house, apartment, building), gas and water supply (smart accounting systems, resource efficiency improvement, application of innovative cleaning methods), urban environment (smart systems of urban management, planning and land use), mobility (development of low-carbon personal and public transport, management of transport behavior of citizens), participation of citizens in the life of the city and many others.

«Most of the technologies in the field of resource and energy efficiency are recoupable and relatively easy to calculate. The implementation of smart lighting systems reduces costs by up to 50%, smart buildings technologies reduce resource consumption by 10-30%, smart transport allows you to optimize greenhouse gas emissions, reduce vehicle downtime, save time on trips,» Anastasia Perdereau said. However, she considers that the use of particular technologies depends on government policy and the speed of deployment of innovative technologies. As regards the energy self-sufficiency of smart cities and, in particular, the development of renewable energy, then geographical features play a decisive role here.

Whether we want it or not, but technological progress has already ingrained into our everyday life so much that, probably, we will never be able to erase it. So will you be able to leave the house without taking your smartphone with you? Are you ready, like the Luddites during the Industrial Revolution in England, to bring a sledgehammer over a working laptop or a home PC and smash a technological machine? Without noticing it, many of us have been living in the smart cities for a long time. «There are many examples of the successful smart cities in the world such as Moscow, Copenhagen, Amsterdam, Barcelona, London, Berlin», Anastasia Perdereau said.

Moreover, an ecopolis similar to Masdar City is planned to be built on Sakhalin. The ecopolis has to be finally built in 2030. Earlier it was reported that 150 billion rubles will be spent on the implementation of the project, and on September 15, 2021, at a meeting of the regional investment council, the governor of the Sakhalin Region, Valery Limarenko, announced a preliminary agreement with the DOM.RF about the bank's investment of 50 billion rubles in the infrastructure of the ecopolis. Anastasia Perdereau summarizes that the emergence of such projects is conditioned by the desire of the state and business to develop low-carbon technologies, including their own technological developments and approaches to regulating emissions, stimulating and supporting business on the path to sustainable development.

It turns out that now the countries, which have embarked on a low-carbon path, do not need showcases of a «bright future», but experimental sites for the development and testing of appropriate technologies that will ensure sustainable socio-economic development in the medium or long term. It's like conquering space. Pioneer of the Soviet cosmonautics Sergey Korolev dreamed of Mars and believed that in the foreseeable future people would land on the «red planet». Exactly 60 years have passed since the flight of the first man into space, but we are just getting ready to settle on the moon. It's the same with projects like Masdar City. They are the ones who open the way not just to the rest of the smart cities, but to the smart world. However, this world will not finally come out soon. It will probably have to wait as long as the flight to Mars.