

## EUROPE'S ENERGY SUICIDE

The International Energy Agency (IEA), on March 3, followed by the European Commission (EC), on March 8, promulgated proposals aimed at making Europe less dependent on Russian gas. The IEA's plan of 10 points raises the possibility for Europe to reduce natural gas imports from Russia by a third already by the end of this year, and the EC's REPowerEU programme calls for phasing Russian gas out by two-thirds over the same period. That is, these plans envision reductions of Russia's gas imports by 50 and 100bn m<sup>3</sup>, respectively, within a year. What is being proposed is, in effect, a kind of "buyer's embargo" on Russian energy resources. EC leadership makes no secret of that and intends to make Europe fully independent from Russian energy supplies by 2030. At the same time, the EC admits that EU gas consumption is 90% dependent on natural gas imports, Russia's share of which is as high as 45% on the average (figures vary widely across individual EU countries).

Russia also accounts for a quarter of the EU's oil imports and 45% of its coal imports.

Something similar to the current situation had already occurred earlier in history. I refer to the oil market of the 1970s. It is therefore useful to look back at the historical experience and compare it with the present-day realities.

### Lessons learned from the "oil shocks" of the 1970s

The 20-fold increase in oil prices in the 1970s (a four-fold increase by OPEC in 1973 in the wake of the Yom Kippur War followed by a further five-fold increase in 1979 in the wake of the Iranian revolution), and the two related supply restrictions (seller-initiated in 1973 and buyer-initiated in 1979), led to a sweeping disruption of the established price proportions in the world economy.

GDP energy intensity had exceeded the Bashmakov constant's threshold of 10-11% beyond which economic growth ceases to be sustainable.

It took 30 to 40 years and four technological waves of different lengths, launched one after the other, to bring GDP energy intensity back to within the limits determined by the Bashmakov constant. The effects of each successive wave were superimposed on the combined effects of the previous ones, plus one behavioural wave the effect of which had persisted all the time. As a result, the energy wasteful paradigm that ruled the developed world's economy up until the early 1970s was replaced by the current, predominantly energy-efficient one.

Energy saving — a new and very important energy resource of technological or intellectual, rather than natural, origin has firmly established itself in the global energy balance. The world's developed countries have succeeded in breaking the correlation between energy consumption and economic growth.

The "behavioural" wave is the natural result of consumers' shocked reaction to price hikes manifested as gradual adaptation to a less energy-consumptive lifestyle. Obtaining direct energy savings by changing the model of consumption, i.e. introducing "purse control" ("turning off the lights as you leave", setting heating systems to lower and AC systems to higher indoor temperatures, etc.) and imposing various administrative restrictions (e.g., speed limit of 55 mph, etc.) will not help resolve the problem if we continue sticking to the previous technological paradigm.

The first technological wave was aimed at moving away from OPEC's oil. It was an attempt at replacing it with the oil from new, non-OPEC, fields, primarily in the oil-importing countries (Alaska, the North Sea). The expectations of Western governments that this would help reduce oil prices did not materialise: the high official sale prices set by OPEC acted as marginal costs — a target reference point (upper competitive limit similar to replacement costs of alternative fuels) for global oil prices to orient on. Therefore, this wave did not lead to a reduction of price-valued GDP energy intensity in the developed oil-importing countries, which, by inertia, remained within their energy wasteful paradigm.

The hallmark of the second wave was "moving away from oil" and replacing it with relatively cheaper alternatives, such as natural gas, coal, and nuclear or renewable electricity. It was then, in the 1970s, when the roots of a more competitive structure of global energy mix had begun growing, laying the beginning of the end of the system dominated by a single energy resource.

These two waves were both on the supply side. Oil production growth outside OPEC required a sweeping diversification of oil supply infrastructure, taking into account the increased requirements for continuity of service, which meant building oil terminals and tankers and creating commercial and strategic stocks (it was precisely for the latter purpose that IEA was established in 1974 in order to protect against possible embargoes imposed by oil producers).

The expansion of oil supply geography led to changes in the logistics with portfolio supplies being added to direct ones.

These processes took about a decade and were, in fact, the evolution of the conventional oil supply system. In the early 1980s, the reliability of oil supplies was already ensured not by the oil producing companies belonging to the International Oil Cartel, as it had been until the early 1970s, and not by the de facto cartel of oil producing countries (OPEC, after 1973), but by a widely diversified global system of oil supply with an extensive production, transportation and marketing infrastructure.

That was when a lengthy process of innovative investment was launched to develop new, unconventional energy resources. Developed since 1974 as the Nixon Program, but adopted in 1977 already as the Carter Program, the US Energy Independence Program envisioned government funding for basic R&D, in which new energy sources could potentially be developed in the US in the future, including only 14 prospective research areas in gas.

The first two to materialise were coalbed methane and shale gas. It took exactly 30 years before the triumph of the US shale revolution in the second half of the 2000s marked by a vertical growth of shale gas production, followed by a rapid growth of shale oil production in the mid-2010s.

The next two technological waves were on the demand side and involved replacement of energy resources with the other ones, such as labour and capital, in the structure of public production.

The third wave was marked by the substitution of energy with human labour, and in practice this meant the withdrawal of energy-intensive production from the developed oil-importing countries and deploying them in the Third World. The primary objective was to mitigate the growing energy component in the cost of energy-intensive products by the lower cost of labour in developing countries compared to the developed ones. In addition, this helped resolve environmental issues in the developed world through moving energy-intensive processes and related emissions to the Third World.

Finally, the fourth wave is the one of replacing energy with capital through the introduction of innovative energy-efficient technologies. It is clear that this innovation-investment cycle was the longest and the most costly one as it required changing the whole technological paradigm. Therefore, it was the last one on the queue, and was launched only after the second price increase in the late 1970s. But precisely this cycle led to the most important result — breakage of the correlation between economic growth and energy consumption.

In the developed countries this occurred in the early 2010s.

The shift of the developed world from the energy wasteful to a predominantly energy-efficient technological mode (that is, on the consumption side) took about the same 30 years, only with a ten-year lag, as did the processes on the production side (the formation of reproductive chains of new energy production).

Therefore, the infrastructural interrelations and interdependencies that had established themselves over the 45 years (1928–1973) of International Oil Cartel dominance had changed under the influence of the radical perturbations of the 1970s (initiated by OPEC) over a period of 30-40 years (1973–late 2000s/early 2010s). These processes deprived the International Oil Cartel of its systemic role, while OPEC has managed to preserve its positions and even to expand them by transforming into OPEC+.

The expanded cartel of sovereign states that independently manage their natural resource rent remains an important player on the oil market, despite the multidirectional and frequent changes in the global energy domain. There has been no success in overcoming the coordinated influence of sovereign states on the global oil market, which, over time, has turned into a two-tier structure with a physical basis (cross-border production and supply chains) and a drastically expanded financial superstructure (global trade in futures contracts and derivatives as part of the global capital market).

### **March ideas of the IEA and the European Commission**

Presenting the REPowerEU plan in Strasbourg on March 8, EC president Ursula von der Leyen said: “We must become independent from Russian oil, coal and gas. We simply cannot rely on a supplier who explicitly threatens us. We need to act now to mitigate the impact of rising energy prices, diversify our gas supply for next winter and accelerate the clean energy transition. The quicker we switch to renewables and hydrogen, combined with more energy efficiency, the quicker we will be truly independent and master our energy system.”

Yet before 2030, the EU expects to cut its natural gas consumption by at least 155 bn m<sup>3</sup>/year, which is equivalent to annual imports from Russia in 2021.

According to the European Commission, two-thirds of this reduction (100bn m<sup>3</sup>/yr) could already be achieved by the end of this year, “ending the EU's overdependence on a single supplier.”

In my opinion, the targets declared by IEA and EC are not realistic within the given timeframe, much less as soon as by the end of this year. Almost all efforts projected to break free from the dependence on Russian energy resources are either capital-intensive (RES, hydrogen, energy efficiency) or rely on a distorted vision of today's market realities (such as the idea of replacing guaranteed pipeline supplies with flexible, global market arbitrage operations-oriented LNG). They are more of a propagandistic nature, aimed at unenlightened laymen. I do not doubt the professionalism of colleagues from the IEA, many of whom I have known personally for a long time, but I fear that the “reputation of the firm” has once again been tarnished by “political orders” coming from the agency's governing bodies, whose members are from the high ranks of the governments of the founding states.

The IEA plan of 10 points calls for no more contracts to be signed with Gazprom and receiving gas from alternative sources instead. It has to be noted that pipeline deliveries from small-scale producers developing individual fields (such as Azerbaijan's Shah Deniz via the Southern Gas Corridor to the EU, or from Eastern Mediterranean, or from North Africa) are less reliable (due to geological risks) than Gazprom's supplies via the integrated and interlinked gas transportation system (GTS, where geological or technical risks are reduced to a minimum). Regarding LNG, it is shipped to where its price is higher, more often to Asia than to

Europe (EU's LNG regasification terminals have been operated at half-capacity over the last two years). Since the LNG market is now in a long streak of being "seller's", the European market will remain less attractive than the Asian one for a long time to come and even despite the growth of LNG supplies to EU in January and February (10bn m<sup>3</sup> were delivered in January in the wake of skyrocketing hub prices).

Moreover, replacing Russian gas with imported LNG will require reforming the existing gas supply logistics within Europe itself. According to the Quo Vadis project of the EC, status as of 2017–2018, the EU's pipeline capacities available for delivering natural gas obtained by LNG regasification to various destinations within the continent where the main delivery points of Russian gas are located, were only sufficient to handle a quarter of the EU's LNG receiving terminals capacity.

Construction of new gas pipelines in the EU is virtually impossible due to the November 2019 decision of the European Investment Bank (EIB) to halt any investment in fossil fuel-related projects, including natural gas infrastructure, effective from 2022. The circle is closed.

The EC's REPowerEU plan, which is even more ambitious than the IEA plan, calls for replacing guaranteed Russian gas supplies with "flexible" (non-guaranteed) LNG imports. Under the plan, LNG imports are expected to be the key element ensuring 50bn m<sup>3</sup>/yr of supply. It is worth recalling that LNG exporters are running around the world in pursuit of higher price premiums. Another 10 bn m<sup>3</sup> are expected to come from new pipeline projects of non-Russian origin. Let me stress: the EC's plan is "additional" to the Fit for 55 to 2030 package of measures from July 2021, that should produce results already by the end of this year, that is, in the nine months to come. Are there any guarantees of these replacement deliveries to be arranged that quickly? The answer is no.

The IEA talks about imposing some minimum obligations of filling the underground gas storage facilities (REPowerEU proposes filling about 90% of UGS facilities by the beginning of a heating season), but the document does not specify who and at whose expense this is supposed to be achieved. Say hello to the State Plan, GOSPLAN Brussels-style?

The proposed accelerated construction of new wind (WPPs) and solar (SPPs) power plants predetermines the need for securing backup sources based on traditional (gas and/or coal) generation since weather-dependent renewable energy systems (RES) cannot be synchronised with load schedule. The increase in electricity production based on biogas and nuclear power plants (NPPs) suggests that NPPs will become the source of choice (it shall be used in base-load) relegating RES to the sidelines. This will further narrow the scope of RES application as the obligatory source under the EU regulations (must-run electricity), will reduce their installed capacity utilisation factor (ICUF) and worsen their operational economy (in the EU's top five electricity producing countries RES had the lowest ICUF values among power generating types equaling 30% for WPPs and 13% for SPPs in 2020–2021). This means that only one out of three euros in WPPs or one out of seven euros in SPPs generated returns on investments.

State subsidies to the low-income strata of the population partially compensates their electricity bills, but does not help reduce their electricity consumption. It is proposed to replace gas boilers with heat pumps, but this is a long-term measure: the proposed doubling of the tempo of their installation means an increase up to 10mn units over the next five years.

Here it is worth noting that eligible recipients of electricity subsidies in the EU number 50mn people.

Heightened measures aimed at increasing the efficiency of electricity use by households and industry will generate returns not that soon as in the current year and the size of these returns is unclear. Reducing the temperature in buildings and reducing peak electricity loads covered mostly by gas generation (that is, in the morning and evening hours, when consumption comes mostly from households) are socially sensitive measures (remember the French "yellow vests").

The EC's plan includes two sets of measures: diversification of gas supplies by increasing imports of LNG and pipeline gas from non-Russian sources (we have already commented on these above), as well as increased production and imports of biomethane and renewable hydrogen plus accelerated reduction of the use of fossil fuels at all locations through energy efficiency, increased use of renewables, electrification and elimination of bottlenecks in the energy infrastructure.

The use of renewable hydrogen is a long and unobvious way to go. The goals stated in the July 2020 EC Hydrogen Strategy (40 GW of electrolyzer capacity inside and as much outside the EU, to produce and then import renewable hydrogen into the EU) are technologically unattainable. There are restrictions on land allotment for RES facilities and on distilled water for electrolyzers in the EU, and there are unresolved issues of hydrogen transportation from outside the EU with the obvious technological inadmissibility of transporting hydrogen and/or methane-hydrogen mixtures through existing gas pipelines (due to inevitable "hydrogen embrittlement"), although the EU spokespeople persist in arguing the contrary. The costs of renewable hydrogen production, which are prohibitively high today, were planned to be lowered by reducing the cost of electrolyzer production (contributing 30% to the hydrogen production cost) and purchasing renewable electricity (contributing 70% to the hydrogen cost) at zero or even negative prices. The cost of electrolyzer production was planned to be reduced through the economy of scale to be achieved by means of massive exports of EU or German-made electrolyzers to neighbouring countries for producing renewable hydrogen there (with WPP or SPP generated electricity in countries with suitable conditions, like North Africa or Western Balkans or Ukraine, as well as with NPP or HPP-generated electricity in Russia) and its subsequent supply to EU (which is precluded by the unresolved issue of hydrogen transportation within the country through existing GTS — see above). Again, the circle is closed.

As regards renewable electricity, its price was expected to be low thanks to ICUF reaching up to 40-45% for "superfluous" RES-generated electricity. But the latter ICUF was only as low as 2.5% in Germany in 2019. Thus, the proposed scenario does not work to resolve the problem.

Debottlenecking of the energy infrastructure is blocked by the EIB's decision (see above), which also prevents the completion of previous EC's political programme to create an EU internal common gas market by building sufficient interconnector pipelines at the boundaries of the EU market zones to ensure unimpeded flows of natural gas inside EU. Incidentally, this is one of the factors behind the surge in gas prices in the EU in the fall of 2021.

### **Illusions of self-sufficiency**

Therefore, both the IEA's ten points and the EC's REPowerEU plan are, in my opinion, more a propaganda than a realistic technical and economic scenario.

The proposed scenarios of rejecting Russia's energy resources are designed for producing an emotional impact on the unenlightened European laymen. They fail to take historical realities into account and that it takes time and money to rebuild a highly capital-intensive energy infrastructure — the immovable cross-border engineering systems — to meet new radical political challenges.

If the EU chooses to proceed from economic expediency considerations, they will understand that Europe cannot reject, much less completely, supplies of Russian energy resources. Not to mention that neither side would benefit from such a decision. We are too interdependent in the energy sphere, and the price of such divorce would be too high for both sides.

Russia as a producer and exporter of natural gas and EU as a gas importer and consumer are inextricably linked by a cross-border fixed capital-intensive diversified energy infrastructure as parts of a "Broader Energy Europe".

This is where the current situation with natural gas is fundamentally different from the situation with oil half a century ago. Back then, the OPEC countries (producers) and the developed world countries (consumers) were not connected with each other by a fixed oil infrastructure, like the EU and Russia are connected by gas infrastructure today. Severing these ties will only mean to deaden these common immobile gas assets (the RF-EU GTS), rather than redirecting transportation assets to other markets (such as mobile tanker fleet).

### **Lessons learned from the past crises**

History teaches us that the confrontation between developed world (importers) and OPEC in struggle for reorganisation and control of the oil market went through different phases and eventually "changed the sign," making a full circle from opposition to cooperation. First, the developed world consolidated under the umbrella of the IEA, which was established for that purpose in 1974, to oppose OPEC retaliating to the embargo imposed in November 1973 and the quadrupling of oil prices (a confrontation of antagonists).

Then followed the timid and clandestine attempts at establishing informal contacts between the IEA and OPEC leaders (here it is worth recalling how the late IEA director general Helga Stieg told me a semi-detective story about how in the spirit of secret operations her first meeting with the then OPEC secretary general was prepared, which laid the beginning for the process of gradual normalisation of relations between the two organisations, when the two leaders met as if by chance, being equally accidentally in the same hotel in the same city in the same country... — that was the extent, which the antagonistic animosity between the two organisations had reached at that point) when the understanding began to emerge of the need for interaction (a bad peace is always better than a good war) and peaceful coexistence (just like it is between the nuclear powers).

As a result, the IEA and OPEC jointly organised the International Energy Forum — an informal international organisation for regular meetings of energy department heads of sovereign states who wished to participate in its activities to exchange opinions on long-term energy development prospects.

Therefore, some time will pass, and events in Ukraine will pass, and Europe will inevitably sober up to make its final choice. Either Europe can continue to follow the path of North Atlantic solidarity and Anglo-American sanctions against Russia, while incurring major additional costs that impair the well-being of EU citizens and the EU's competitiveness in world markets. Or Europe can acknowledge its inextricable linkage to and interdependence with Russia for half a century in the energy sector and for many centuries culturally and historically and come to understand that the key to its prosperity lies precisely in mutually beneficial cooperation with Russia. This is exactly what the US is afraid of, because cooperation between Europe and Russia poses a serious competitive threat to the US in the global economy, where energy ties are the basis of mutually beneficial interaction between Russia and the EU.

The last surviving mechanism of informal interaction between Russia and the EU in the energy sphere and the "remnants" of the EU–Russia energy dialogue was until last week Work Stream 2 "Internal Markets" (WS2) of the Russia–EU Gas Advisory Council (GAC) under the energy dialogue coordinators — the EU energy commissioner and Russia's energy minister. Though GAC activities have been frozen since 2014 on the political level, WS2 GAC continued its work and even intensified it in the wake of the pandemic, transiting to online mode. The latest meeting was held in December 2021 to discuss the results of the climate summit (COP-26) in Glasgow. In February the EU side took a timeout. And on March 21, the EC informed that "the EU's engagement under GAC WS2 is suspended for a non-determined period of time."

I hope that our colleagues from the EC will not succumb to emotions and sanctions hysteria, stirred up by Western politicians and the media, and, after a necessary pause, the informal dialogue will resume in order to give the parties an opportunity to return to discussing, on a professional level, scenarios for mutually beneficial cooperation between Russia and EU in the energy sphere. We are too much interdependent on each other to break these ties. Beneficiaries of such a break will stay far beyond “Broader Energy Europe”.

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