



## Russian climate policies and activities

Q1 2023



Poster of the early 1930's: "We shall achieve the complete technical independence of the USSR"

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**Russian climate policy review**

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# 1 Russian economy in 2022: the angle of incidence

In 2022, the Russian economy appeared to be more resilient to sanctions, than expected. The trust in Rosstat's data on GDP evolution is declining. In 2022, the components of GDP expenditures were 2.4% above GDP outputs, which is the largest statistical discrepancy ever reported.

In 2022, federal budget revenues amounted to 27,825 billion rubles and so were 10% above the 2021 level. This growth was exclusively determined by the fact that oil and gas revenues skyrocketed 28% up to 11,586 billion rubles. Additional oil and gas revenues were the major driver for the aggregated demand growth in 2022. However, they peaked in April 2022 and have been scaling down ever since. In order to balance the financial demand with the revenues, the government requested Gazprom to donate additional 1,2 trillion rubles to the federal budget during October-December 2022. Had it not been for this additional Gazprom donation, the federal budget would have run a 4,5 trillion rubles deficit (=3% of GDP), rather than 3,3 trillion rubles deficit, as reported by the Russian Ministry of Finance. By the end of November 2022, there was a consolidated budget surplus of 1 645 billion rubles. However, by the end of 2022, it turned into a 2,108 billion rubles deficit (=1.4% of GDP). Looking to fill in the budget gap, the government is already trying to collect 300 billion rubles (initially proposed as 'voluntary contributions') from large businesses, who benefitted in 2022 from windfall profits from the exports of many basic materials, the prices of which have gone through the roof.

In 2016-2021, Russia managed to confine the consumer inflation to single-digit values; in 2022, it was 14%. GDP deflator was 14.3% up, industrial producers price index 11.4% up, investment goods 15.1% up, and transport tariffs were 14,7% up.

After years of growth (or relative stability) in basic materials production in Russia, February 2022 heralded the beginning of the era of decline for many of them. Much severer negative effects are detected for the basic materials under sanctions.

The results of Russian 2022 foreign trade have confirmed the 1-year-old conclusion, that energy price growth will overcompensate the sanctions-driven revenue loss.<sup>1</sup> In 2022, the Russian Central Bank reported the balance of goods and services at US\$ 282.3 billion, and the balance of current accounts at US\$ 233 billion. In 2022, oil and gas exports additionally generated US\$ 98 billion, but under the sanctions oil and gas revenues are on a declining trend, and December 2022 values got back to the January 2022 levels.

In real terms, the imports declined by substantial 22%, forcing Russian businesses to reshape their supply chains, share their revenues with intermediaries and transport companies, consent to more complicated and costly logistics, and finally, to go for smaller-scale, lower-quality, and more expensive imports (even with a strong ruble). As trade routes are changing and becoming longer, logistics and insurance become more expensive, and the 2022 deficit of the balance of services is US\$ 22 billion.

In 2022, the Russian economy obviously demonstrated certain resilience to the sanctions. This was mostly enabled by abundant oil and gas revenues. There is no reason to believe that this resilience will persist into 2023. The 10 sanction packages have eventually gained momentum and substantially impacted the Russian economy, especially in the last quarter of 2022. Late 2022 and early 2023 have revealed the problems Russia is expected to face later in 2023. Major expected effects of, and unwise reactions to, the sanctions include:

- Decline in oil and gas revenues caused by the ban on petroleum exports to the EU; oil and petroleum products price cap; not sanctions-driven decline in gas supply; stabilization of, or decline in, energy prices;

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<sup>1</sup> Bashmakov I., V. Bashmakov, K. Borisov, M. Dzedzichok, A. Lunin, I. Govor, 2022. Russia's carbon neutrality: pathways to 2060. CENef-XXI. <https://cenef-xxi.ru/articles/russia's-carbon-neutrality:-pathways-to-2060>.

- With a limited ability to increase non-oil and gas exports and lower expected prices for traditional Russian exports, deterioration of the Russian trade balance will substantially weaken the ruble making imports more expensive and so less attractive, while the Russian businesses will have a very limited ability to substitute high-tech imports;
- Consolidated and federal budgets will face severe deficits, and attempts to improve the situation will be accelerating the inflation. The use of the resources of the Sovereign Wealth Fund may mitigate the 2023 financial problems at the price of having to deal with a very unstable situation beyond this horizon. Fiscal pressure on the non-oil and gas businesses will work to further undermine their profitability and investment potential;
- With the military priorities in mind, very limited resources will be available to finance social programmes and stimulate domestic economy. Therefore, government investments, as well as total investments, will be shrinking in real terms and thereby enlarging the “angle of incidence”;
- The declining trend in private consumption in real terms, which started back in 2008, will persist. The government will only have resources to partially mitigate the aggravating decline in the standard of living;
- The continuing decline in the elements of aggregated demand, such as investments and private consumption, will bring down the demand for new buildings, machinery, and appliances. The militarization of the economy can only partly mitigate these effects, especially with an account of the problems related to Russian supplies to the foreign markets. All this will be pushing the industry into yet deeper recession, with production at 10-30% below the 2021 levels;
- Even if Russia is able to maintain its 2023 oil production close to the maximum possible level, smaller gas and petroleum exports and production will push OG GDP down;
- In addition, NOG GDP will be declining, as foreign and domestic demand shrinks and the country is facing problems related to tuning alternative foreign supply chains at affordable cost;
- Trying to cover-up these effects, the government may want to add more statistical mist.

## 2 Exports go East

In 2021, fuels and basic materials were responsible for 80% of Russian goods exports. Geographically, the trade vector was west-bound. In 2022, Russia’s “turn-to-the-East” policy favoured trade partners, such as China (+US\$ 34 billion, or +43%), India (+US\$ 32 billion, or about 5-fold growth), and Turkey (+US\$ 30 billion, or more than double growth).

Before March 2023, Russian oil business was demonstrating high resilience to sanctions. EU sanctions on petroleum products were only introduced in February 2023 with some exceptions, so they had no impact on the 2022 statistics.

The “gas weapon” appeared to have a substantial recoil: Russian 2023 pipeline gas supply may halve compared to the 2021 level. In 2022, Russian pipeline gas supply (excl. Belarus, Kazakhstan, and other NIS countries) was 101 bcm,<sup>2</sup> or 74 bcm below the 2022 level. In 2023, Russian gas supply to the EU will be 4-7 times below the 2015-2022 levels. For pipeline natural gas, the “turn-to-the-East” may take decades; however meanwhile, China’s gas market may be penetrated by other suppliers, against the background of gas use peak expected in 2030-2035 with a subsequent decline in demand. Russian LNG exports remain unaffected, and in 2022 were 8% up.

In 2022, sanctions plus treating Russian goods as toxic resulted in US\$ 24 billion reduction in total non-fuel exports, including to the EU, US, UK, Japan, and South Korea by US\$ 19 billion, of

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<sup>2</sup> [Gazprom gas far abroad exports 2022 | Statista.](#)

which US\$ 11 billion reduction was to the EU alone. China, India and Turkey failed to absorb Russian non-fuel exports lost in OECD countries.

### **3 Russian 2022 imports: double-headed eagle can't fly with both heads looking East**

In oil and gas exporting countries, including Russia, imports substitute much of local manufacturing in producing goods and providing services to domestic consumers. Investments, local machinery and electronics production show the greatest vulnerability to the sanctions on import. Mostly machinery and equipment exports to Russia were prohibited. Therefore, the sanctions on exports to Russia may have visible effects either in the short term (lack of spare parts) or in the longer term (lack of equipment for new investment projects). In 2022, Russian import of machinery and equipment (for several SITC groups) from 34 largest economies were nearly US\$ 14 billion below the 2021 level. In general, the real effect of the sanctions on imports was not as severe, as initially expected, and the Russian business has demonstrated substantial adaptivity. The key risks are as follows:

- politically dangerous reliance on imports has switched from a variety of western countries to just one country – China;
- growth in production costs is accompanied by simultaneous reduction in the quality of goods;
- production and investment are declining.

A survey conducted among Russian industrial companies in February 2023 allowed to draw up the key effects of sanctions:

- 64% of companies reported growth in production costs. Only 7% reported a decline in the production costs due to cheaper supplies;
- 19% of the enterprises have encountered reduction in the products quality due to the substitution of imported components;
- only a third of domestic businesses managed to "participate" in the import substitution;
- only 38% of the respondents managed to substitute the restricted machinery with domestic analogues, 66% are using Chinese-made substitutions;
- over one third of the enterprises were forced to reshape their technological chains, because they were unable to substitute the restricted components; over a quarter could not find the required components in the "friendly" countries;
- parallel import of restricted goods was used by 15% of companies for machinery, 22% for spare parts, and 23% for components;
- 22% of companies can no longer run previously imported equipment, because no maintenance service is available to them;
- 13% and 17% of enterprises have cut production or investments respectively, as they are facing shortages of foreign supplies. At the same time, 22% of companies have invested in import substitution;
- 50% of enterprises pointed out that they expect high prices of equipment and costly construction to be the main barriers to the 2023 investment activity.

The last 20 years in Russia were poisoned with the abundant inflow of petrodollars and lost for the diversification of the Russian economy and import substitution. Reliance on a variety of western countries is now being substituted with a more dangerous reliance on a single eastern country – China. In many respects, technically Russia is lagging behind China, and without supplies from the West this technological gap is likely to increase.

## 4 Long-term effects of sanctions on Russian foreign trade

Import restrictions on the equipment which is required throughout the whole Russian oil supply chain, may have stronger medium- and long-term effects on oil production and export volumes, than sanctions on physical exports. Production at Russian old oil fields is expected to scale down to 380 Mt in 2030, 280 Mt in 2040, 205 Mt in 2050, and 150 Mt in 2060. New sophisticated technologies are required to offset this decline. Sanctions prevent timely access to these technologies and, unless lifted, will not allow for a full compensation of the production loss and oil production decline in the decades to come. According to the Russian Ministry of Energy, import reliance in 2014 was 60% for oil and gas equipment, and for certain positions no Russian analogues were available whatsoever. In 2020, this reliance was down to 50% and in 2022 to 40%. The long-term effects of the sanctions will depend on how the Russian manufacturing sector will be progressing towards reducing the imports reliance.

Production at Russian old gas fields is expected to scale down to 490 bcm in 2030, 370 bcm in 2040, 275 bcm in 2050, and 200 bcm in 2060. It might be even worse. Late-March 2023, there was an information leakage about N. Shulginov, Russian Minister of Energy, writing in his letter of December 2022 and then stating in his March 28, 2023, presentation at the collegium of the Ministry, that by 2040 gas production at the largest West Siberia gas fields may drop from 468 bcm in 2023 to 184 bcm in 2030 and to 73 bcm in 2040.<sup>3</sup> Therefore, natural gas production decline at the existing fields may amount to 395 bcm and much exceed both historical and projected export volumes. If not compensated by new hard-to-recover fields (which are nowadays much harder-to-recover with just a limited access to the required technologies), and if domestic gas use is close to the present levels, Russian gas export potential will be undermined, if not fully destroyed. In order to offset this decline and to meet domestic and export demand, new high-tech technologies are needed to explore new fields and to transport gas to consumers. Technological sanctions may impede meeting this demand. Increasing LNG exports becomes the most promising option; however, some of the announced projects have faced Western sanctions in terms of access to financing and liquefaction technologies. Therefore, these projects will likely be delayed. Reliance on the imported technologies for LNG production is estimated at 70%.

Coal production in Russia will be affected by sanctions on coal import from Russia, on the one hand, and sanctions on coal mining and enriching equipment supply to Russia, on the other. Reliance of the Russian coal industry on the imports of equipment is even higher, than of the oil and gas industry, and was growing in 2014-2022. Reliance on imported equipment for coal mining was 64% in 2014 and grew up to 68% in 2017. All additional coal production since 2010 (115 Mt) was based on imported equipment.

With the destroyed supply chains and very weak Russian competitive positions in many global machinery and equipment markets, hampered access to high-tech and financing, any substantial import substitution and export expansion are unlikely. In 2022, the sanctions brought machinery import US\$ 25 billion down. In the coming years, this decline may be growing and undermining the growth and import substitution potential of the Russian economy. For many machinery manufacturing subindustries, the level of localization is below 70% and demonstrating very slow progress.

The theoretical results show, that if import substitution fails to provide local products of comparable quality at comparable costs, potential GDP declines. The impact of sanctions on investment goods was already felt in 2022. The share of machinery and equipment in the structure of gross fixed capital formation in 2022 was 3% down from its record 39.5% level in 2021.

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<sup>3</sup> [“Izvestia”: Minenergo saw the risks of one third gas production decline in Russia by 2040 because of reserves depletion - Novosti – Business – Kommersant \(kommersant.ru\).](#)

Russia can only reduce its import reliance through the re-integration into global supply chains and by pursuing thoughtful sustainable and efficient technology development policies based on competition and innovation and appropriate education and training.

## 5 Global decarbonization and Russian foreign trade: long term effects

Energy security and affordability policies coupled with decarbonization policies forced the proportion of fossil fuels in global energy mix to decline faster, than expected in 2021

The conclusion made by CENef-XXI in April 2022 – that Russian fossil fuel exports and production will never return to the 2021 levels<sup>4</sup> – was half a year later echoed by IEA. In none of the available (developed after 2022) global long-term projections to 2050-2060 does petroleum export from Russia exceed half of its 2021 level; some projections expect order of magnitude decline by 2060. It is unlikely that the declining petroleum exports from Russia can be compensated by higher domestic petroleum use, and therefore, Russian oil production peak is behind, and only a decline can be expected in the coming decades.

For at least 20 years (2025-2045) Russian pipeline gas export is not expected to exceed 100 bcm, which is half of the 2017-2021 levels. In April 2022, it was hard to anticipate how gas supply from Russia will be evolving. CENef-XXI came up with three trajectories.<sup>5</sup> Russian pipeline gas export projections made later by IEA and BP nearly reproduced CENef-XXI's lowest trajectory, which goes steeply down in volume to 65-78 bcm in 2025, stays nearly frozen there until 2035, and possibly varies between 50 and 100 bcm thereafter. The conclusion drawn up in April 2022 that gas exports and production in Russia will never exceed the 2021 level<sup>6</sup> has got a large support. No return: Russia's natural gas production will never again get back to the formerly high levels. Since domestic gas use is not expected to grow above the 2021 level, Russian gas production will not return to 700 bcm in the decades to come.

'Slowbalisation'<sup>7</sup> will limit the Russian export potential. For traditional exports, such as iron and steel, aluminum, cement, fertilizers, wood, wood products, and food, global markets are unlikely to expand much,<sup>8</sup> and Russia is unlikely to get an additional share in these markets. Sanctions-driven revenue loss for the Russian exports of CBAM goods to the EU can be estimated at \$4.1-5.4 billion. This loss amounts to more than a half of pre-2022 CBAM goods export revenues from Russia to the EU and goes far beyond any loss that had been expected from CBAM.

A glittering future is awaiting materials that are critical for the global decarbonization, including nickel and copper. Another potential market for Russia is chemicals and petrochemicals, including pharmaceuticals.

In 2021, global export of machinery and transport equipment (US\$ 7,653 billion) was 3 times larger, than fossil fuel export (US\$ 2,558 billion). As decarbonization progresses, this ratio will be further growing. For Russia, access to global machinery and equipment market is a challenge, as this product group generated only US\$ 25.7 billion in export revenues in 2021 and US\$ 20.4 billion in 2022, or just 0.33% of total global machinery and equipment exports.

Export promotion and import substitution can only happen on condition of laxer or lifted sanctions on high-tech imports; competition-based incentives to invest in new technologies; and re-gained

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<sup>4</sup> Bashmakov I., V. Bashmakov, K. Borisov, M. Dzedzichuk, A. Lunin, I. Govor. 2022. Russia's carbon neutrality: pathways to 2060. CENef-XXI. <https://cenef-xxi.ru/articles/russia's-carbon-neutrality:-pathways-to-2060>.

<sup>5</sup> Ibid.

<sup>6</sup> Ibid.

<sup>7</sup> Goldman Sachs. 2022. Daly K and T. Gedminas. Global Economics Paper. The Path to 2075 — Slower Global Growth, But Convergence Remains Intact. 6 December 2022 |

<sup>8</sup> IEA. Energy technology perspectives. 2023.

access to international financing. China is the major Russia's competitor in low carbon technologies markets, followed by the EU and US, which recently adopted regulations to support the localization of low carbon technologies. Russia is facing the risk of a devastating reliance on China for low carbon technologies. It is better sooner, rather than later, to launch support for low carbon technologies localization.

## **6 Long-term prospects: from bad to worse**

After the bottom of the crisis is reached in 2023-2025, Russian economy will be very slowly reviving; average annual GDP growth from 2023 to 2050-2060 will be limited to 1-1.5%. Problems are expected to aggravate by 2025 and beyond.

No long-term projections have been recently published by the Ministry of economic development of the Russian Federation (MED RF), and so Russia has no long-term official vision of how the military operation and subsequent sanctions might affect its economic future. For the medium-term, as always, MED RF's projections are very optimistic. According to these projections, GDP loss in 2023 is expected at just 0.8% with a subsequent 2.6% growth in 2024-2025. Real long-term economic problems and risks faced by Russia are not being addressed by Russian banks and analytical centers, which cannot see beyond 2025.

Russia is losing its economic future – that's the overall takeaway from the first assessments of the long-term sanctions and decarbonization effects. In none of the new (2022-2023) long-term projections provided since 2022 AAGRs from 2023 to 2050-2060 exceed 1.5%. This shows an agreement between the most recent (2022-2023) long-term projections by CENef-XXI (2022), IEA (2022), BP (2023), OPEC (2022), Goldman Sachs (2022), Shirov (2023), and Gusev (2023).

## **7 Contradictory statements by Russian policymakers about climate mitigation policies**

Russian Union of Industries and Entrepreneurs (RSPP) is always against any government's attempt to advance the environmental or climate agenda. In 2016, during the preparation of the State Report for the Year of Ecology in Russia, Igor Bashmakov often had to confront RSPP and its Head, A. Shokhin on these grounds. In March 2023, Shokhin argued that Russia needs to reconsider its climate mitigation policies and refuse anything "from the West", including adherence to the European renewables projects. He also urged the government to have a critical look at the carbon neutrality targets.

Ruslan Edelgeriev, Special presidential envoy for climate, suggests: "Now we have to come up with a new model, where we will not be settling down somewhere, will not be led anywhere, and no ideas, or values, or technologies, will be imposed on us. We should make up a model with a pool of friendly countries on the BRICS and EAEU platforms". He emphasized, that "by no means" to revise means to refuse climate change mitigation; however, he did not outline the shape of such new model.

Fortunately, not all of the top officials share this point of view. Sergey Ivanov, Presidential envoy and permanent member of the Security Council: "I don't think that the "green agenda" is dead; it will be increasingly important in the future. Russia is still determined not to diverge from the chosen path. We are not going back on our Paris commitments. We are going to comply".

## **8 Race for import substitution in wind energy**

In February – March, 2023, the Russian Association of Wind Industry (RAWI), together with the Russian Renewable Energy Development Association (RREDA) held three webinars with the participation of Russian wind energy equipment manufacturers and experts.



***“From import substitution to the technological independence. Production of a domestic multi-megawatt wind generator”***. The fast and inevitable withdrawal of wind plant OEMs from the Russian market had a knockdown effect. However, the severity of sanctions made the situation obvious and the reaction unequivocal: Russia needs to have domestic production of multi-megawatt wind turbines. Technically and financially, the country is ready for it. Vestas and Siemens completely closed down the production of wind turbine components in Russia and renounced their maintenance and wind project construction obligations.

Tatneft is currently negotiating the purchase of a 4-5 MW full-cycle wind technology from China. Serial production is scheduled for 2026-2027. VetroStroyDetal has developed, and launched the production of, a modular steel tower for wind turbines. Vindar Severstal has launched 80%-domestic production of towers for wind plants. NovaWind (a Rosatom division) launched the production of generators and nacelles for a 2.5 MW gearless wind turbine LP2 L100 (120 sets, i.e. 300 MW, per year).

Rosatom will invest 2 billion rubles in its own production of blades. The plant will be located in the Vestas' premises. The start of production is scheduled for 2025 and the plan is to completely refuse the procurement of blades by GE-owned Indian company LM. Rosatom's plant will be producing 360 to 380 51-meter-long blades per year.

B&B Industries is into R&D towards import substitution of wind turbine components and new engineering solutions for wind turbines. B&B Industries is drawing up a list of manufacturers of wind plant components with a view to create a 4-5 MW domestic turbine by 2025 and to bring the ready-to-use product to the market in 2027.

***“RE in Russia: technological sovereignty perspectives”***. The market participants believe, that the role of renewable energy will be increasing over time. Projected wind capacity in Russia is 8 GW in 2035. Therefore, technological sovereignty in renewable energy can be attained through import substitution and technological independence in wind turbines / components production. Today, Russia is trying to address these problems in two ways:

- Development of a full-scale project, including R&D and serial production, for a domestic (independent of foreign vendors) wind turbine;
- Purchase of a foreign technology by Russian companies with a view to launch mass-scale production of domestic wind turbines.

***“Overview of the 2022 wind energy market in Russia”***. Compared to 2021, installed wind capacity in Russia grew up 1.6-fold from 1,439 MW to 2,298 MW. In 2022, 75 wind plants (230 MW total) were installed. 325 wind plants are at different construction stages; 286.1 MW were frozen. 501 MW wind energy projects were not accomplished in Russia in 2022 (postponed to 2023-2024), including: Fortum – 250 MW, NovaWind – 220 MW, Enel Russia – 31 MW. In 2023, the construction of 2,861 MW will be frozen; other projects (727 total capacity) will be allegedly commissioned before 2024. RE capacity supply agreement competition 2.0 is scheduled for March 23 and April 10, 2023.

The RAWI 2022 Review focuses on two important issues. The first one is the goal of producing a domestic multi-megawatt wind generator. Today, absolutely all components for domestic multi-megawatt wind turbines can be, or already are, produced by 40 Russian enterprises (except for blades, but all the necessary competencies for blades production are in place). Russia can set production of all critical components of wind turbines and control the entire production chain. Then, in the medium-term, Russia will also have wind energy export potential, because this market has a strong commercial potential.

Second is the creation of a wind energy market. The price of electricity from a modern wind plant is 3.5-4 rubles per kWh. In addition, this price could be fixed for a long period (more than 15 years). The costs pay off in 7 to 8 years; a significant economic effect is seen on a 12-13 year

horizon. A wind plant construction requires substantial upfront investment; operation costs are not high, and do not include the volatile fuel component.

## 9 The future of industrial decarbonization plans

One direction for green technological advancement in Russia's metallurgical industry is direct reduced iron and hot briquettes iron (DRI/HBI) and electric steel production.

In 2021, Russia produced 7.7 million tons of DRI/HBI. Large Russian metallurgical companies have plans for substantial new DRI/HBI capacity commissioning. On the 2030 horizon, new DRI/HBI capacity commissioned by Metalloinvest, OMK, and NLMK may exceed 9 million tons.

Metalloinvest's development strategy requires that new HBI capacity be commissioned before 2026 to produce 4.08 million tons of briquettes and potential subsequent transition to hydrogen consumption. In 2021, Metalloinvest signed agreements with Primetals Technologies consortium and Midrex Technologies for equipment supply for the new HBI plants in Lebedinsky MPP and in Zheleznogorsk. Midrex Technologies and Primetals Technologies were responsible for the engineering, key process equipment supply, and overall supervision. However, because of the sanctions European-produced process equipment supply under the projects was terminated. Therefore, construction projects for new HBI facilities are being re-considered and postponed until further arrangements.<sup>9</sup>

In 2021, a full-cycle environmentally friendly electrometallurgical plant construction project was launched at the premises of Vyksa Metallurgical Plant (Ekolant project). The plant to be built will include DRI metallized pellets production, electric steel production, and two continuous casting machines. In addition, the plan is to build an on-site power plant, which will be using the waste gases from the metallurgical plant. The investment demand from Ekolant project is 150 billion rubles. Ekolant project's specific feature is that it will not have a full-cycle coke/blast-furnace/converter production, which is typical of most Russian metallurgical plants. The plan is to use both Russian and foreign equipment for the construction. Design, manufacture, and installation of the key process equipment will be accomplished by by Danieli (Italy) and Primetals Technologies (Austria); non-process equipment will be provided by the Ural Heavy Machine Building Plant, Troitsky crane plant, Tekvin and Aquateko companies. Process and non-process equipment supplies are scheduled for 2022-2023.

In 2024, construction of new plants that will be using green technologies (including for the production of HBI/DRI) is to be launched on the Stoilensky MPP premises. The project includes the expansion of the quarry to increase ore production from 43 to 67 million tons per year; construction of new iron ore enrichment capacity; construction of a metallized pellets plant and a HBI plant. The Stoilensky MPP expansion project is scheduled for 2024–2027; it will be commissioned in a few stages between 2027 and 2028.

In 2019, Novolipetsky Iron and Steel Works (NISW) launched construction of a heat recovery power plant (UTETs-2) to be fired by furnace and converter gases from iron and steel production. The capacity of UTETs-2 is 300 MW(e). This project aims to increase the proportion of NISW's on-site power generation in its total electricity consumption from 64% to 95%. It will also yield 650 thousand tons in CO<sub>2</sub> emission reductions per year. The project is unique in that it implies the construction of the first system for converter gas collection and storage in Russia. Today, converter gas is not recovered at the NISW, but flared on candle-burners. Collection of converter gas for energy use will become real due to the renovation of the converter gas exhaust ducts. Construction of UTETs-2 is expected to be accomplished in 2023. Total project investment will be 35 billion rubles.

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<sup>9</sup> Interfax: "Metalloinvest" to revise the goals and timelines of capacity development strategy <https://www.interfax.ru/business/867458>.

In 2021, a contract was signed between NOVATEK and the German company Uniper SE for the supply of 1.2 million tons of low carbon “blue” ammonia from the future Obsky MCC project. The project is supposed to ensure the capture and underground storage of CO<sub>2</sub> (CCUS technology). Total investments in the Obsky MCC project are estimated at US\$ 2.2-2.4 billion. The sanctions forced Uniper SE to leave the project. All of its investments have been suspended. The future of the low carbon “blue” ammonia supply project is unknown. The sanctions prohibit delivery of the process equipment for LNG production to Novatek. Formally, sanctions do not apply to low carbon “blue” ammonia, which is part of the gas chemical industry. However, it is not clear, on which terms European equipment could be provided for the Obsky MCC project. The hydrogen and “blue” ammonia project is suspended.

## 10 Compensation of fossil fuel losses in domestic markets

As unloaded capacities are increasingly seen in gas, mazut, coal and power production, the race for domestic consumers is gaining momentum in the attempt to offset export losses.

Gazprom’s profit was more than three times down in 2022.<sup>10</sup> Its losses in the EU markets are estimated at more than US\$ 40 billion. These can be offset by either 4-fold domestic consumption increase; or by 4-fold tariff growth; or by a combination of these two.<sup>11</sup> To this end, there are plans for gasification; expansion of low tonnage LNG; development of the motor fuel market. In 2021–2025, the plan is to provide nearly 800 billion rubles in investment for gasification; provide gas to more than 3.6 thousand settlements; switch to gas more than 3.2 thousand boiler-houses; build more than 24 thousand km of gas pipelines between villages. In 2021, methane consumption by transport amounted to 1.37 billion m<sup>3</sup>. It is growing very slowly, despite the subsidies provided by the government for the construction of gas stations and fuel switch. The ambitious target for 2030 is to increase consumption by transport to 6.8 billion m<sup>3</sup>.<sup>12</sup>

These measures will reduce domestic coal and liquid fuel demand. LUKOIL is concerned by oil refineries flooded with fuel oil and suggests temporary re-direction of the fuel oil to CHPP for energy use. Then fuel oil will replace gas and coal. There are proposals to use extra electricity for residential space heating. None of these proposals takes into account the economics of the fuel switch. Like one workshop participant mentioned – “social and political factors come first”. It is not clear, why Gazprom’s interests are one such factor, but one thing is certain: if there is no room for the economics in the decision-making process, the poverty comes. Fuel oil is more expensive, than gas; gas is more expensive, than coal, fuel wood, or pellets. Gas prices will be growing. There will be a drop in the economy in 2023 and a long stagnation period thereafter. Many consumers are aware of these risks, and so the competition between fuel suppliers for domestic markets will be intense.

Interestingly, these discussions do not take into account the energy saving potential. The research accomplished by CENEf-XXI for the Russian Auditing Chamber (the findings were presented in February 2023) showed, that where energy efficiency retrofits bring specific energy consumption down to the baseline level, 42-45% in energy savings can be delivered; where they can bring specific energy consumption down to the A++ level, 77-78% in energy savings can be delivered. Potential energy savings in DHW supply amount to 27%; potential electricity savings for all-house needs are 36%. CENEf-XXI proposed to develop and launch a national programme to support energy efficiency retrofits in multifamily buildings “Profound and large-scale energy efficient renovation” with 15 billion rubles annual budget in 2022 prices to promote energy efficiency

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<sup>10</sup> [What will Gasprom choose to do: increase fuel sales 4-fold or raise domestic prices? \(versia.ru\)](https://versia.ru).

<sup>11</sup> <https://versia.ru/chto-vyberet-gazprom-v-chetyre-raza-uvlichit-obemy-realizacii-topliva-ili-podnyat-vnutrennie-ceny>.

<sup>12</sup> [Russia is planning to increase domestic gas consumption \(neftegaz.ru\)](https://neftegaz.ru).

retrofits in about 7,500 multifamily buildings per year. Gas production is 3-5 times cheaper in Russian buildings, than in Yamal.

The Russian Ministry of Economic Development is working on an energy efficiency programme to 2035, but this is a rather sluggish process.

## **11 “Achieving carbon neutrality in Russia no later than 2060” Report by Vnesheconombank (VEB) Institute of Research and Expertise. January 2023**

This report is only estimating the prospects to 2050, and it is unclear, why 2060 is mentioned in the title. The Institute comes up with the following findings:

- Despite the current geopolitical tension, decarbonization remains in the Russian agenda;
- CO<sub>2</sub> emission will go down to 1,825 Mt CO<sub>2</sub> in 2050 in the conservative scenario and to 1,428 Mt CO<sub>2</sub> in the optimistic scenario;
- The LTS 630 Mt CO<sub>2</sub> net target of the Strategy can only be attained with an account of the absorption capacity of forests and decarbonization measures; otherwise, net CO<sub>2</sub> emission will be 1,255 Mt CO<sub>2</sub>, according to the VEB Institute;
- Higher decarbonization rate will annually require 46.9 trillion rubles in 2021 prices, or 0.73% GDP, in capital investment in 2022-2050. In the conservative scenario, the Strategy requires 20.4 trillion rubles in 2021 prices, or 0,46% GDP, annually to 2050. Albeit this is not specifically mentioned in the Report, incremental capital costs do not exceed 0.26% GDP;
- Because of the sanctions imposed by the West, some decarbonization measures in Russia are limited, especially in terms of energy efficiency improvement, RE development and hydrogen use, because decarbonization largely relies on imported equipment and technologies;
- It is important to develop energy efficiency and energy use reduction technologies;
- The reliance on imports in the oil sector is 55%; in the coal sector 45%; in the power sector 31%. Russia may become uncompetitive in the sectors where it has a certain share in the international markets.

The Report lists the technologies which should be developed in the first place. However, it is not clear, how the estimates were obtained. The recommendations need to be substantially supported. It is important, however, that financial institutions maintain interest in the decarbonization agenda.

## **12 Energy and mitigation workshops**

Decarbonization agenda is still in the focus of Russian expert and business communities. A few workshops were conducted in Q1 2023.

RAWI held three seminars and webinars on wind energy development in Russia (see above).

On February 15, 2023, “The Institute for Urban Economics” Foundation organized a workshop “Green agenda of sustainable urban development”.

On February 15, Faculty of geography and geoinformation technology of the Higher School of Economics held a round-table on climate projects. The presentations included:

- Kurichev N.K. Russian and global climate projects: key challenges and must-do’s.
- Schvarts E.A. Role of climate solutions in forestry in Russia’s low carbon strategy.
- Ptichnikov A.V. Russian and global approaches to climate solutions: potential, costs, and quality of carbon units for the decarbonization of companies.
- Korotkov V.N. Projection of the carbon sequestration potential in forestry projects.

On March 10, the Global Energy Dialogue Forum of the Institute of Global Economy and International Relations held a workshop “Low Carbon Future: Greenhouse Gas Absorption Potential in Russian Forests and Land Use”. The key speakers included:

1. Anna Romanovskaya. Russia’s low carbon future: GHG absorption potential in forests and land use. The major finding was as follows: the focus on government policies and climate projects will unlikely ensure substantial contribution to Russia’s GHG reduction targets.
2. Evgeny Schwarts. Climate solutions for Russia’s low carbon Strategy and forestry development. The key finding was: analysis of the official reporting documents under UNFCCC/IPCC and FAO does not show that the role of Russia’s forests in global carbon balance is much underestimated. In Canada, the country closest to Russia in terms of climate conditions, specific absorption is much lower.

March 30, 2023. On-site solar generation. How it became affordable and why it is profitable. Russian Greenpeace. N. Lanshina, V. Asikritov, N. Popov, and N. Driga.

March 30. Semikashev V.V. and M.S. Gaivoronskaya. Analysis of the state and development prospects of gas industry of Russia in the new conditions. Institute of Economic Forecasting RAS. Presentation at the Seminar on Economics of Energy and the Environment. Moscow School of Economics.

April 5-7, Kazan. Tatarstan international energy and energy/resource efficiency forum, including a workshop and exhibition “TatEnergyExpo-2023”, organized by the government of the Tatarstan Republic, Ministry of industry and trade of the Tatarstan Republic, and Center for energy and resource efficiency technologies of the Tatarstan Republic. A meeting of the Tatarstan government “On the implementation of the national programme “Energy and resource efficiency in Tatarstan” in 2022 and the 2023 targets” was held within the framework of the Forum.