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# COMMODITY SUPERCYCLES, INVESTMENTS, AND MINING ANALYTICS

How are golden rush and mining supercycle different? In simple terms, the former is about getting rich fast personally, while the latter is about the mining contribution to the wider economy. And these are not subtle differences. If the former is mostly about luck and is relatively short-lived, the latter is about lasting benefits to wider communities and value created to a broad set of stakeholders.

What do the two have in common? They are both unpredictable but benefit the prepared. Preparedness includes an accommodative mining regulation and well-developed investment infrastructure. An optimal mining regulation needs to have a focus and purpose, be value-driven, stable, and simple, not reactive to the spikes and crashes of commodity prices which are inherently volatile. An economic dimension of the improvements in mining regulation could be moving focus from the realized profit margins to the life-time risks of a mining project and return on capital over the commodity cycles.<sup>1</sup> Once that is fixed, markets will take care of the rest.

A trillion-dollar question for the global mining industry today – is a mining supercycle imminent? Understanding the direction of the mining industry transformation is critically important to investors and regulators alike.

It is not unusual for two mining investors to have at least three different opinions on the future of mining. The optimists are always long the bright future of mining, and the pessimists are constantly looking to sell mining hubris short. Seasoned mining investors know that the best mines succeed even in the worst of times. They also know how investing in mining exploration is different from investing in an operating mine.

There are also industry outsiders who flock into the mining industry from time to time to then run scared after losing big on their hasty investments. They showcase the futility of timing the commodity markets. Earning a fortune in other industries does not guarantee from a loss of money in mining. The hype followers are usually late to the table. They cannot tell the difference between exploration and production, resources and reserves, they tend to overpay for marginally profitable projects, and too often, their funding drains long before the mining cycle reverses.

Indeed, mining is not for the faint-hearted. To prosper in cyclical industries like mining, investors need to survive the guaranteed lean years, sometimes many lean years. If the mining sector is to be described with one word, the word is cyclical.

In the 21st century, we learned that commodity markets could also be super cyclical.

Reflecting on the economic supercycles theories of Nikolai Kondratieff and Joseph Schumpeter, two economists – Bilge Erten and Jose Antonio Ocampo in 2012 published a research of the commodity supercycles.<sup>2</sup> They noted the four supercycles between 1894 and 2010, all broken by a major economic calamity.

The first one peaked in 1917 and ended in 1932, at the bottom of the Great Depression. The second supercycle peaked in 1951 and was terminated by the 1971 oil shock. The third one peaked soon after it started, in 1973, and ran until 1999. According to Erten and Ocampo, the most recent cycle peaked in 2010, but with a few more years of data they might have moved the peak a year or two further.<sup>3</sup> The research stirred a lot of discussions, but the

Total non-oil commodity prices (Bilge Erten and Jose Antonio Ocampo, 2012)				
	1894-1932	1932-1971	1971-1999	1999-ongoing
Peak year	1917	1951	1973	2010
Percent rise in prices during upswing	50.2%	72.0%	38.9%	81.3%
Percent fall in prices during downswing	-54.6%	-43.3%	-52.5%	-
Length of the cycle (years)	38	39	28	-
Upswing	23	19	2	11
Downswing	15	20	26	-

1. Through-cycle investment in mining | McKinsey  
 2. [http://www.un.org/esa/desa/papers/2012/wp110\\_2012.pdf](http://www.un.org/esa/desa/papers/2012/wp110_2012.pdf)  
 3. Maybe the commodities Supercycle is for real | Bloomberg Professional Services  
 4. Is this the start of a commodities supercycle? | Refinitiv Perspectives

markets adopted the terminology of commodity supercycles for good.

Ten years after the commodity prices last peaked, the commodity supercycle discussion is back.<sup>4</sup> Moreover, the number of those calling a new commodity supercycle is growing. Last time the driving force of the supercycle was China. This time around, it is expected to be energy transition and Net Zero targets. In the short term, the impact on commodity prices will be also exerted by global inflation and supply chain disruptions due to COVID19. Still, many believe that these factors are transitory, blurring the longer term trend.

What does it mean to be ready for a supercycle when and if it comes? In no particular order of importance, these are the quality of the resource endowment, the level of development of the mining industry and technology, access to capital, and financial infrastructure for raising it. Last but not least, regulation. It is expected to be conducive to taking mining risks, respecting property rights, and providing fair allocation of the benefits among the host state and the investors.

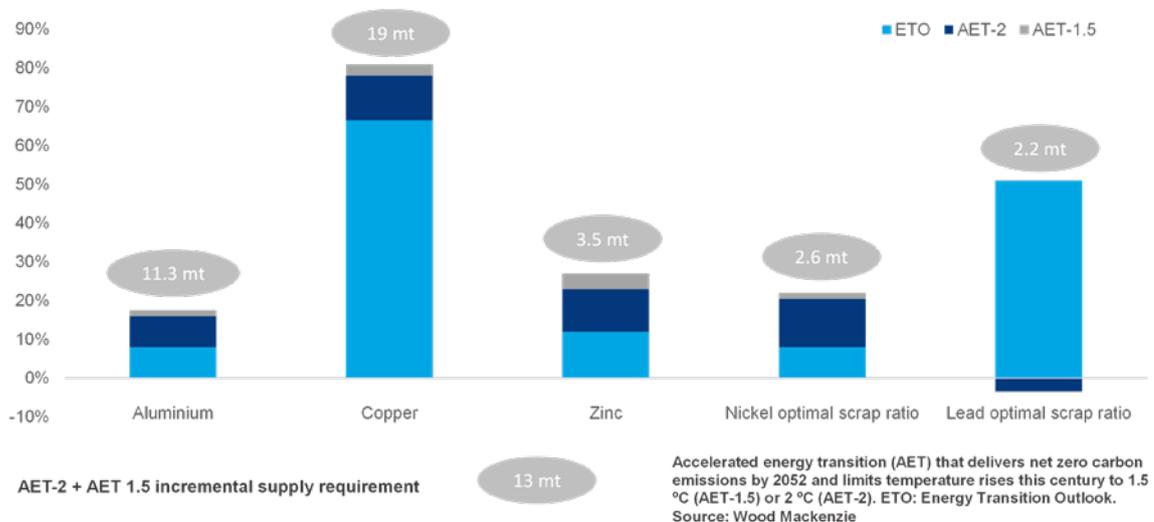
Skyrocketing commodity prices and hefty profit margins inevitably trigger debates if there should be a quick fix in mining taxation to adequately allocate the benefits among the investors and the host countries. History proves that such richly minerally-endowed countries, highly ranked by international investors as Australia, Chile, and Peru were not immune from occasional streaks of regulatory euphoria even at

the risk of losing their investment appeal. There is no universal solution, however the wider use of the return on capital as a metric of benefit flows could help to develop a more balanced approach to taxation of the global mining industry. A world-class mine begins with taking uncountable risks at the prospecting and exploration stages with negligible chances of economic success. Unfortunately, it is impossible to reverse engineer a successful mining investment. To balance the picture, many mining companies indeed enjoy abnormally high returns in the current environment. It may have negative implications to those who are complacent believing the the good times are here to stay and delay transformation plans.

What is unique about the next commodity supercycle? It develops in a world that is getting more digital and more environmentally conscious. The latter puts the global mining industry in context of two contradictory but simultaneously existing narratives. On the one hand, mining industry has a «bad» reputation among investors, while on the hand it is a white knight of hope for the future where the global warming threat is mitigated, the world of Net-Zero. The name of a recent article published by Mining.com, «Five charts ask if mining is in a supercycle, one screams no»<sup>5</sup>, well captures a strange brew of hope and confusion about the future of mining.

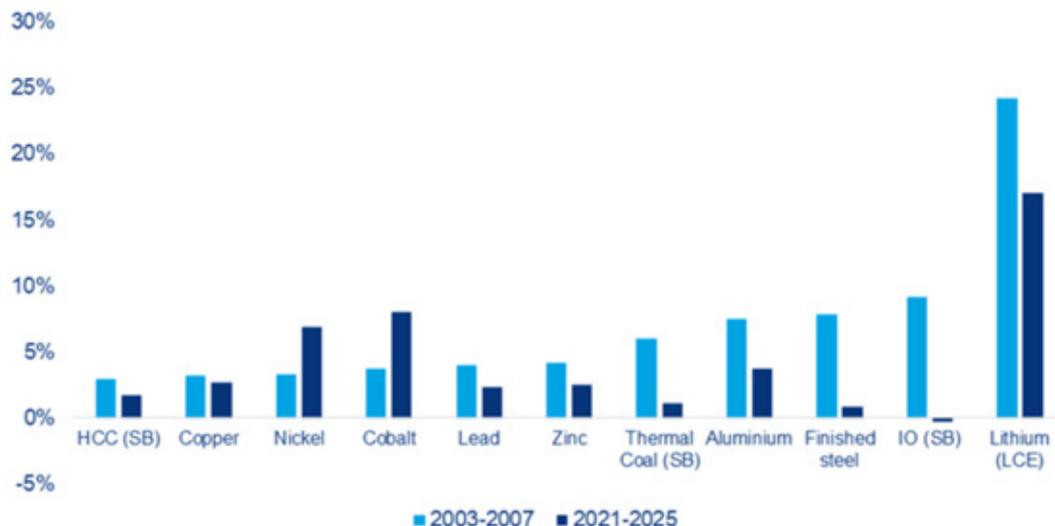
How can the Russian mining industry confront the uncertainties and benefit from the supercycle in

### Energy transition: 2040 primary supply required from currently uncommitted projects

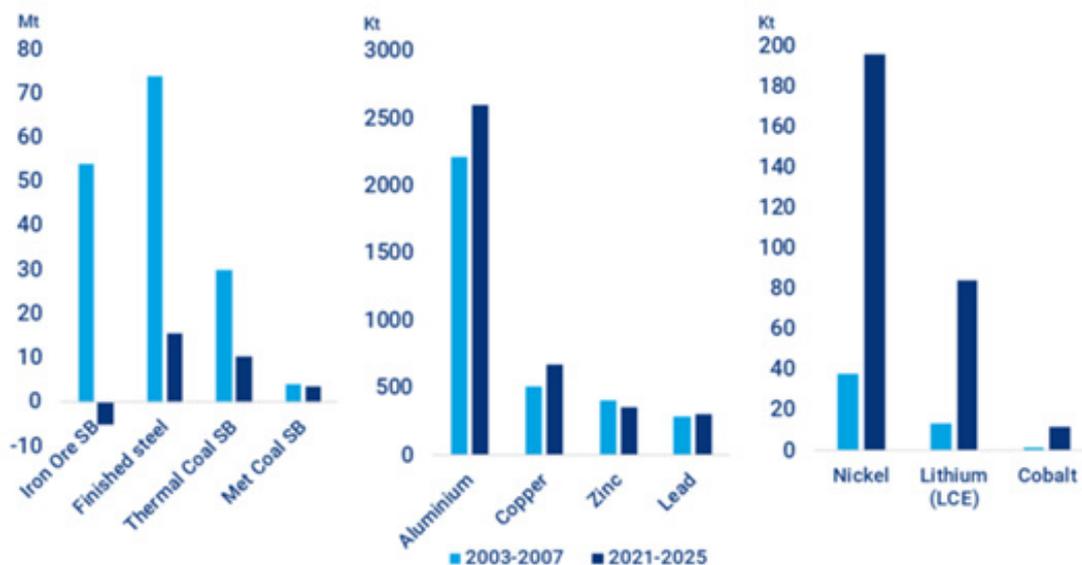


5. Five charts ask if mining is in a supercycle, one screams no- MINING.COM  
 6. <https://www.iea.org/topics/world-energy-outlook>  
 7. COP26: Why base metals should be high on the agenda | Wood Mackenzie  
 8. <https://www.mining.com/forget-gold-iron-ore-is-the-story-of-the-decade/>

### Average annual demand growth for mined commodities, 2021-2025 versus 2003-2007



### Average absolute annual demand growth, 2021-2025 vs 2003-2007



Source: Wood Mackenzie

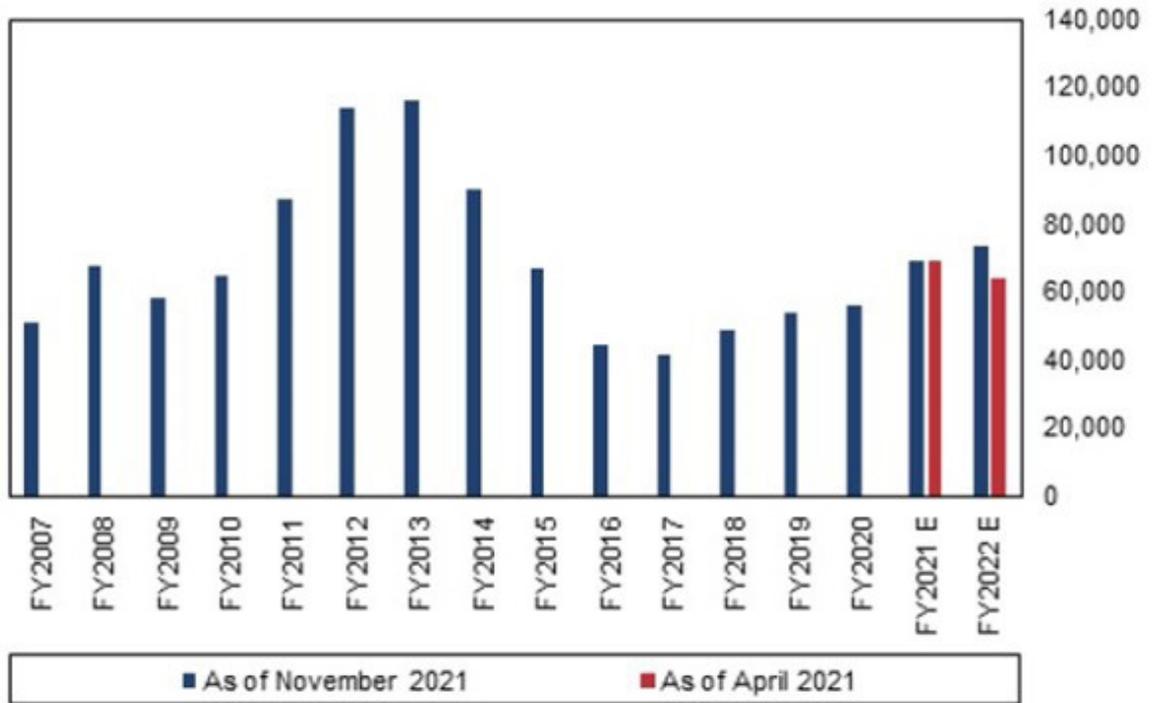
the making? What should the priorities be, and what strategy to pursue in achieving the goals? Trying to answer these questions makes us regret that there are no mining think tanks active in Russia, that monitor the evolving situation in the global mining, of which the Russian mining industry is a part, and offering policy solutions. It is therefore instrumental to look at the mining outlook research published by the international mining consultants and think tanks.

History proves that a change in paradigm of global economic development and achieving the climate goals discussed at COP26 is undoubtedly

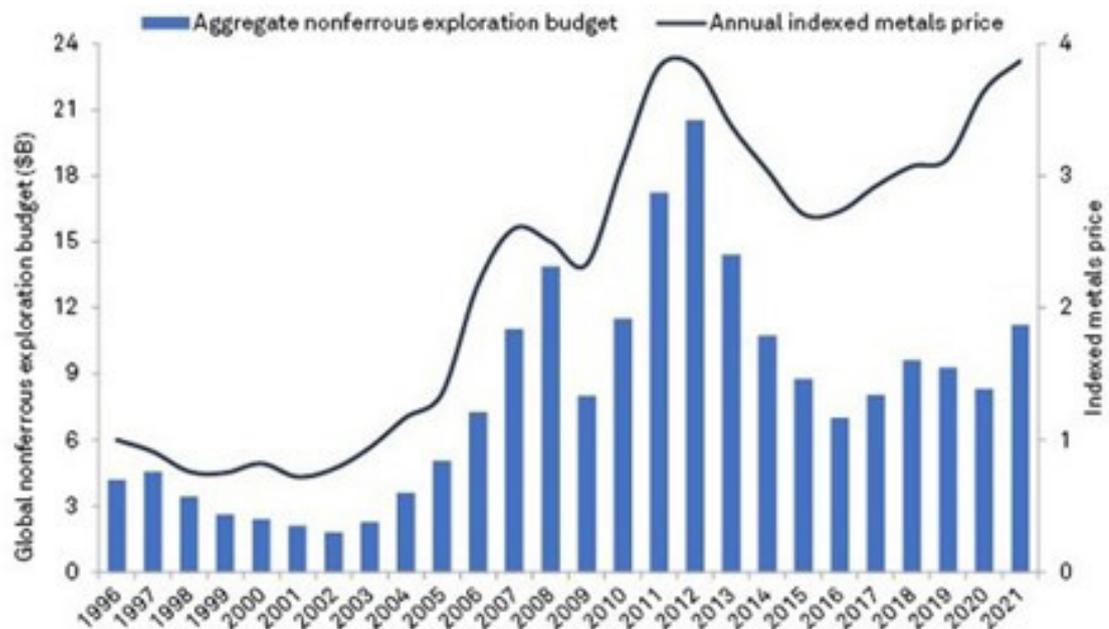
one of them, impacts the demand for metals and minerals. According to IEA WEO 2021 Report<sup>6</sup>, «The rapid deployment of low-carbon technologies as part of clean energy transitions implies a significant increase in demand for critical minerals.» The volumes of metals scrap recycling will also rise, however the primary production needs to increase to the levels achieving which some believe is mission impossible.

A review of the estimates made by Wood Mackenzie help understand the unprecedented scale of investment in the new mines and

**Capital Expenditure of the Top 25 Metal & Mining Firms by Market Capitalization** USD million  
 E = Analysts' estimates as collected by Bloomberg, mostly based on miners' capex guidance. Source: Bloomberg



**Annual nonferrous exploration budgets, 1996-2021**  
 Data as of Sept. 25, 2021. Source: SAP Global Market Intelligence



infrastructure required to produce based metals essential to the technology that will be used in the generation, transmission, storage, and consumption of low-carbon electrical energy. According to Wood Mackenzie, a five-fold increase in base metal supply would be needed to achieve the 1.5° C target set out in the Paris Agreement, requiring an investment of US\$2 trillion over the next 20 years. Even Wood Mac's base case 2.5° C energy transition outlook

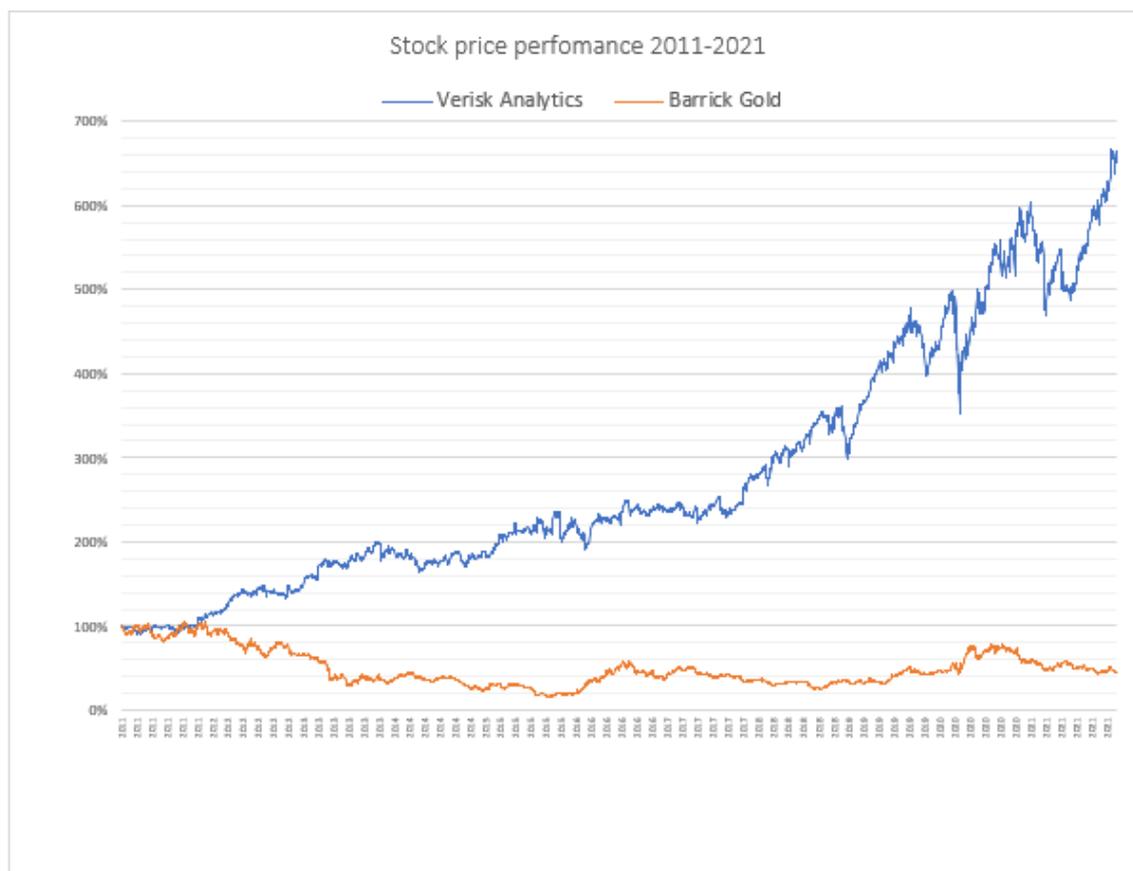
sees demand around two and a half times higher than it is now<sup>7</sup>. Maximizing scrap recovery could significantly reduce the demand for primary supply resulting in much lower CAPEX and much higher carbon efficiency as more mines mean additional CO2 emissions.

While already challenging financially, the goals do not answer a more difficult question – where the new mines will come from? To meet the Net Zero

## THE ECONOMICS OF SUBSURFACE USE

Planned copper consumption and production in China 2021-2025

Copper, '000 tonnes	2020E	2021F	2022F	2023F	2024F	2025F
<b>Consumption</b>	14,379.94	14,523.74	14,668.98	14,899.01	15,112.35	15,425.89
<b>Y-o-Y growth, %</b>		1.0%	1.0%	1.6%	1.4%	2.1%
<b>Production</b>	10,292.00	10,806.60	11,076.76	11,298.30	11,411.28	11,639.51
<b>Y-o-Y growth, %</b>		5.0%	2.5%	2.0%	1.0%	2.0%



2050 targets some 19 million tonnes of additional copper needs to be added which implies a new mine of the size of La Escondida must be discovered and enter production every year for the next 20 years.

At the same time, the near-term increase in demand for metals projected by Wood Mac for 2021-2025 is lower than China's driven demand in 2003-2007. The exceptions are EV battery metals – cobalt and nickel. And even for nickel, despite the expected growth of EV use, stainless steel will remain the top application for at least a decade.

It is worth noting that last time around, iron ore was by far the most profitable commodity performing way better than even gold<sup>8</sup>. The seemingly insatiable demand from China resulted in the benchmark price going from \$13.82 in 2003

(Japan-Australia-Brazil annual benchmark) to \$191.70 a tonne (62% Fe Fines CIF Tianjin) in 2010.

COVID19-related supply disruptions lead to a sharp iron ore price increase in 2020. However it was short-lived, the prices peaked in early 2021 at about \$220 a tonne, and then fell below \$100 a tonne.

The latest developments with the fourth-largest iron ore producer globally, Fortescue Metals Group, may be instructive in understanding the evolving trends in mining. The company was established in 2003 at the beginning of the previous commodity supercycle by Andrew Forrest, now Fortescue's Chairman. Fortescue Metals' market capitalization tripled in the past four years, making its founder the richest man in Australia. However earlier this year it changed chief executive to extend «its transition

from a pure-play iron ore producer to a green energy and resources firm»<sup>9</sup>. The move comes as Andrew Forrest pushes to turn the company into the world's biggest green energy group, focusing on hydrogen at its green power arm, Fortescue Future Industries (FFI).

Investors and analysts remain cautious about how the transition would fit into the mining company's strategy. «Fortescue needs to tread warily to make sure its iron ore business operates to its optimal potential as the cash flow generated will be initially the sole funding for FFI», said Shaw & Partners analyst Peter O'Connor.

Another visible trend is more discipline in spending learned by the mining companies the hard way after the price collapse in 2012 resulted in billion-dollar losses and impairments. The mining CAPEX usually correlates with price dynamics, but this time, we see a more cautious approach to investing in new mines and exploration despite even the decelerating China is still a significant major demand factor.

Moreover, the banks are far from reaching an agreement on the price expectations. Some, like Goldman Sacks, called copper «most mispriced commodity», claiming that the current level of prices will drive the markets into a deficit of copper which, as the bank believes, will result in an average copper price of \$11,875 a tonne in 2022 and \$15,000 in 2025<sup>10</sup>. Others like BMO Capital Markets expect a tonne of copper to sell at \$7,875 in 2022, declining to \$6,625 in 2023. The November 2021 Consensus Economics forecast sees the price of copper at \$8,551 in 2022 and \$8,311 in 2023.

The rationale behind the bearish forecasts is a slowing China, particularly its property sector and despite the targets set in the 14th five-year plan adopted in April 2021 that anticipates a steady increase in consumption and production of copper in 2021-2025 (See Chart X).

There is another signal that the Russian mining industry should not miss notwithstanding the enthusiasm around the coming commodity supercycle. It is the continuing consolidation of the energy and minerals consulting and intelligence sector. The latest news was the acquisition by Wood Mac of Roskill, a mining consultancy with a focus on base metals. Edinburgh-based Wood MacKenzie, in turn, is owned by Verisk Analytics

which paid \$2.8bn for it in 2015. Verisk Analytics specializes in commercial intelligence for the natural resources sector and has more than \$36bn market capitalization. It was built by successive acquisitions and owns PowerAdvocate, a provider of data analytics and consulting services for the utilities and oil & gas industries, bought in 2017 for approximately \$280 million, and Atmospheric and Environmental Research (AER), an environmental and climate research agency.

Hardly anything is more important under the 'import substitution concept than the 'import substitution of knowledge. No matter supercycle or not, Russian mining needs a solid analytical backup. The mining analytics problem, or rather a problem with the lack of national mining analytics, was recently addressed by the Mining Industrialists Council Chairman, Y. K. Shafranik<sup>11</sup>. Speaking at the 2021 Council's Forum, he noted that his only choice is often limited to foreign analytics since no equivalent information sources are available from Russian providers. It doesn't mean internationally sourced analytics is inferior in any respect or not reliable. It illustrates a glaring mismatch between the vast mineral endowment of Russia and the lack of mining analytics.

The best illustration of a now proverbial maxima «data is the new oil» is the relative valuations of Verisk and Barrick Gold. In the ten years after the commodity prices peaked in 2011, Verisk Analytics' share price increased seven-fold valuing the company at \$36.5bn. Over the same period Barrick's Gold market capitalization fell from about \$50bn in 2011 to \$31.9bn at the end of 2021. Data proved to be more valuable than gold to investors.

*To sum it all up, the mining industry needs to monitor the early signs of the changing demand pattern and investor sentiment. If and when the supercycle gains momentum, the Russian mining industry has to be ready to offer a competitive investment climate, accommodative and transparent regulation. Unless these are in place, there is always the risk that investors' funds will be directed to other mineral-rich jurisdictions. The other attributes critical for a mature mining industry are a liquid mining sector on the stock market and globally competitive analytic support available to regulators, companies and investors. The rest markets are good at managing. XXI*

9. Fortescue CEO to step down as miner expands green energy push- MINING.COM

10. Copper Pricing to scarcity (orocoresourcecorp.com)

11. Основные вызовы и перспективы развития отраслей горнопромышленного комплекса России на 2022-2024 гг. - YouTube