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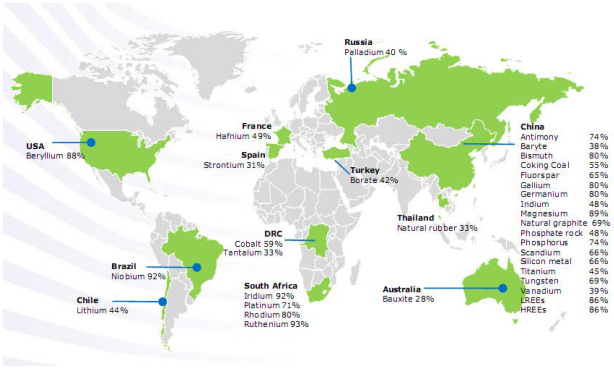
Discussion-Opinion-Editorial™

Why it is Likely to be Minerals - Led Global Politics in the Future and that is not a Good Case (Part-1)

Globally, minerals inventory and supply are characteristically defined as: resource availability skewness, little new discovery, supply disruptions, poorer quality of minerals. Match this with burgeoning demand of most minerals, societal inequities and pre-dominance of monopolistic political culture. Moreover, minerals, when considered for extraction, are in the public discourse where the typical NIMBY (Not-in my-backyard) rules apply. People need minerals no less than before but not in their backyard. Opposing politicians proffer the light to the outcry.



Secure and sustainable supply of both primary and secondary raw materials, in particular of critical raw materials, for key technologies and strategic sectors as renewable energy, e-mobility, digital, space and defense is one of the pre-requisites to achieve climate neutrality. Most powerful countries are trying to diversify the sources; a typical policy pursues a diversification strategy for securing non-energy raw materials for industrial value chains and societal well-being. Diversification of supply concerns reducing dependencies in all dimensions – by sourcing of available raw materials within own boundaries and third countries, increasing secondary raw materials supply through resource efficiency and circularity, and finding alternatives to scarce raw materials.

Critical raw materials are considered to be those that have high economic importance for the whole world and some countries having little bargaining position in particular, and an aggravated high supply risk after the Ukraine crisis. Interestingly, there is little engagement even among the academics and researchers to underscore the full importance of the matters related to the critical raw materials. Developed by the European Commission in cooperation with the Ad hoc Working Group on Defining Critical Raw Materials (AHWG) in 2017, the first assessment (2011) could only identify 14 Critical Raw Materials (CRMs) out of the 41 non-energy, non-agricultural candidate raw materials. In the 2014 exercise by the same group, 20 raw materials were identified as critical out of 54 candidates. In 2017, 27 CRMs were

Industrial and construction minerals	aggregates, baryte, bentonite, borates, diatomite, feldspar, fluorspar, gypsum, kaolin clay, limestone, magnesite, natural graphite, perlite, phosphate rock, phosphorus, potash, silica sand, sulphur, talc
Iron and ferro-alloy metals	chromium, cobalt, manganese, molybdenum, nickel, niobium, tantalum, titanium, tungsten, vanadium
Precious metals	gold, silver, and Platinum Group Metals (iridium, palladium, platinum, rhodium, ruthenium)
Rare earths	Heavy rare earths (dysprosium, erbium, europium, gadolinium, holmium, lutetium, terbium, thulium, ytterbium, yttrium); Light rare earths (cerium, lanthanum, neodymium, praseodymium and samarium); and scandium
Other non-ferrous metals	aluminium, antimony, arsenic, beryllium, bismuth, cadmium, copper, gallium, germanium, gold, hafnium, indium, lead, lithium, magnesium, rhenium, selenium, silicon metal, silver, strontium, tellurium, tin, zinc, zirconium
Bio and other materials	natural cork, natural rubber, natural teak wood, sapele wood, coking coal, hydrogen and helium

2020 Critical Raw Materials (30)			
Antimony	Fluorspar	Magnesium	Silicon Metal
Baryte	Gallium	Natural Graphite	Tantalum
Bauxite	Germanium	Natural Rubber	Titanium
Beryllium	Hafnium	Niobium	Vanadium
Bismuth	HREEs	PGMs	Tungsten
Borates	Indium	Phosphate rock	Strontium
Cobalt	Lithium	Phosphorus	
Coking Coal	LREEs	Scandium	

2020 CRMs vs. 2014 CRMs			
Antimony	Indium	Baryte	Bismuth
Beryllium	Lithium	Bauxite	Phosphorus
Borate	Magnesium	Hafnium	Strontium
Cobalt	Natural Graphite	Natural Rubber	
Coking Coal	Niobium	Scandium	
Fluorspar	PGMs	Tantalum	
Gallium	Phosphate Rock	Titanium	
Germanium	Silicon Metal	Vanadium	
HREEs	Tungsten		
LREEs			

Legend

Black: CRMs in 2020 and 2014

Red: CRMs in 2020 that were not CRMs in 2014

Green: CRMs in 2020 that were not included in the assessment in 2014

Table 1. Major global supplier countries of CRMs – individual materials

	Material	Stage[6]	Main global supplier	Share		Material	Stage	Main global supplier	Share
1	Antimony	E	China	74%	23	Magnesium	P	China	89%
2	Baryte	E	China	38%	24	Natural graphite	E	China	69%
3	Bauxite	E	Australia	28%	25	Natural rubber	E	Thailand	33%
4	Beryllium	E	USA	88%	26	Neodymium	E	China	86%
5	Bismuth	P	China	80%	27	Niobium	P	Brazil	92%
6	Borate	E	Turkey	42%	28	Palladium	P	Russia	40%
7	Cerium	E	China	86%	29	Phosphate rock	E	China	48%
8	Cobalt	E	Congo,DR	59%	30	Phosphorus	P	China	74%
9	Coking coal	E	China	55%	31	Platinum	P	S. Africa	71%
10	Dysprosium	E	China	86%	32	Praseodymium	E	China	86%
11	Erbium	E	China	86%	33	Rhodium	P	S. Africa	80%
12	Europium	E	China	86%	34	Ruthenium	P	S. Africa	93%
13	Fluorspar	E	China	65%	35	Samarium	E	China	86%
14	Gadolinium	E	China	86%	36	Scandium	P	China	66%
15	Gallium	P	China	80%	37	Silicon metal	P	China	66%
16	Germanium	P	China	80%	38	Tantalum	E	Congo,DR	33%
17	Hafnium	P	France	49%	39	Terbium	E	China	86%
18	Ho,Tm,Lu,Yb	E	China	86%	40	Titanium	P	China	45%
19	Indium	P	China	48%	41	Tungsten	P	China	69%
20	Iridium	P	S. Africa	92%	42	Vanadium	E	China	39%
21	Lanthanum	E	China	86%	43	Yttrium	E	China	86%
22	Lithium	P	Chile	44%	44	Strontium	E	Spain	31%

Legend

Stage	E = Extraction stage P = Processing stage
HREEs	Dysprosium, erbium, europium, gadolinium, holmium, lutetium, terbium, thulium, ytterbium, yttrium
LREEs	Cerium, lanthanum, neodymium, praseodymium and samarium
PGMs	Iridium, palladium, platinum, rhodium, ruthenium

Table 2. Major global supplier countries of CRMs – grouped materials (average)

Material	Stage	Main global supplier	Share
HREEs	E	China	86%
LREEs	E	China	86%
PGMs[7] (iridium, platinum, rhodium, ruthenium)	P	South Africa	75%
PGMs (palladium)	P	Russian Federation	40%

identified among 78 candidates-signifying that the concerns are more acute that what has been thought before. The 2020 assessment covers a larger number of materials: 83 individual materials or 66 candidate raw materials comprising 63 individual and 3 grouped materials (ten individual heavy Rare Earth Elements (REEs), five light REEs, and five Platinum-Group Metals (PGMs)). Five new materials (arsenic, cadmium, strontium, zirconium and hydrogen) have been assessed.

For comparison, 41 candidate materials have been screened in 2011, 54 in 2014 and 61 in 2017. In 2020, results of the 83 individual (66 candidate) raw materials assessed, the following 30 were identified as critical in this assessment.

The table below summarizes the key changes in the 2020 CRMs list compared to the 2014 CRMs list. The 2020 assessment confirmed 19 CRMs from the 2014 list, whereas eight of the non-critical materials in 2014 shifted to being critical in 2020.

The following tables present the major global supplier of the 2020 critical raw materials. Table 1 presents the results for individual raw materials. Table 2 presents the averaged figures on global primary supply for the three material groups: HREEs, LREEs, and PGMs.

Figure 2 is the world map of the main global producers of the raw materials listed as critical for the EU in 2020.

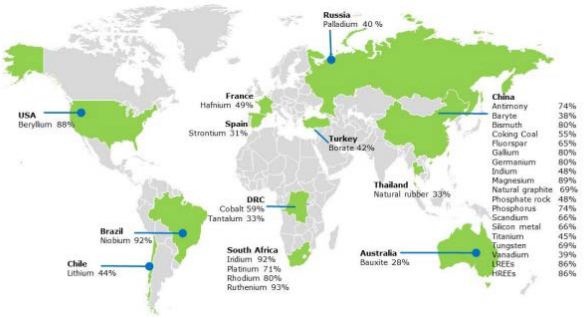


Figure 2. Countries accounting for largest share of global supply of CRMs

An analysis of global supply confirms that China is the largest supplier of several critical raw materials. Other countries are also important global suppliers of specific materials. For instance, Russia and South Africa are the largest global suppliers for platinum group metals, the USA for beryllium and Brazil for niobium. In terms of the total number of CRMs, China is the major global supplier of 66% of the individual critical raw materials. This includes all of the REEs and other critical raw materials such as magnesium, tungsten, antimony, gallium and germanium among others.

Why It Is Likely To Be Minerals — Led Global Politics In The Future And That Is Not A Good Case (Part-2)

Minerals and Politics for the Future

Minerals, oil and gas will be surely used as bargaining chips, at least short term in the future. If the matters in the London Metal Exchange (LME) reactions are any indication, the commodities of minerals, metals oil and gas will rule the dynamics of trade. Let us take few examples:

1. Nickel rose by 61% to $48,078 per ton on March 7, 2022 generating massive calls on cash to meet margin calls and threatening what the LME termed "a systemic risk to the market" with potential "multiple defaults" among LME brokers.

On March 8, 2022 nickel prices more than doubled to over $100,000 a ton as a major Chinese producer Tsingshan Holding was forced to buy large amount to cover its short positions. The market squeeze, which took place amid worries over supply delays emanating from the Ukrainian conflict, prompted London Metal Exchange (LME) to halt trading.

Russia supplies about 10% of the world's nickel, which is used in lithium-ion batteries and to produce stainless steel.

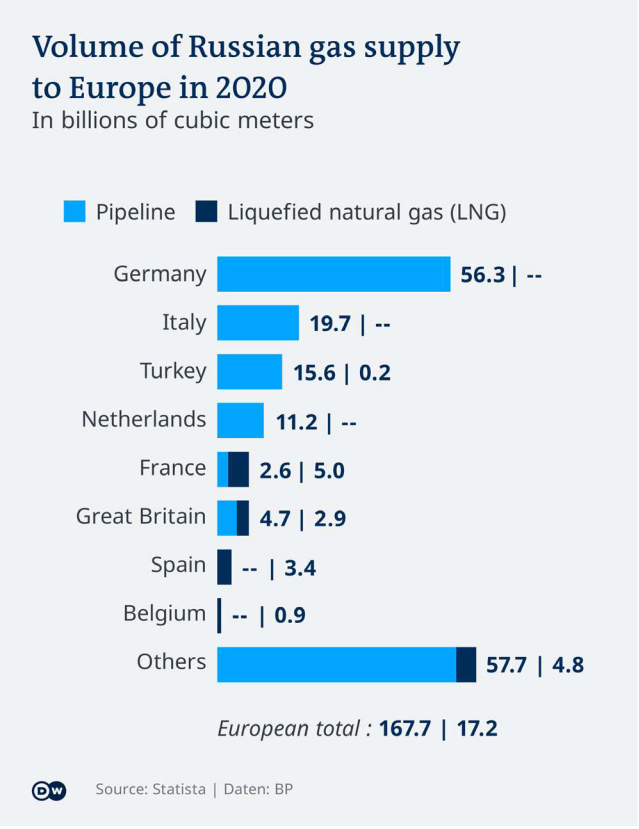
LME nickel prices have since dropped to about $30,000 per ton but remain well above pre-invasion levels.

High nickel prices have added to the troubles of electric-car makers who have been struggling with rising costs of raw materials such as lithium and cobalt over the past few months.

High input costs have forced market leader Tesla to raise prices across various models of its cars. More than a dozen of Chinese electric-vehicle makers have also raised their sales prices in recent months.

2. Zinc shot up to a record high of $4,896 per ton and lead to a 10-year high of $2,700 per ton in the early hours of trading. By the end of the day, both were pretty much back where they started, suggesting the spike was down to a sudden forced exit of short positions.

3. Not all went up, Aluminum moved in the opposite direction, three-month metal dropped from Monday's high of $4,073.50 per ton to $3,498.00. Tin was similarly hit on Wednesday. The long-running bull trend rudely interrupted as the soldering metal slumped from $49,500 to a low of $39,080 per ton.
4. Oil and gas prices have surged over the past months amid supply concerns precipitated by "self-sanctioning" companies refusing to buy or ship Russian oil to avoid falling a foul of sanctions, for moral reasons, or to prevent any reputational damage.
5. Natural gas prices in Europe climbed to an all-time high of €345 per megawatt-hour (MWh) in the month of March'22. They have been relatively stable in recent weeks falling to around €100MWh. However, Russian President Vladimir Putin's decision on Wednesday that "unfriendly" countries purchasing Russian gas would have to pay in rubles instead of euros or dollars added an element of uncertainty in the European gas market.



For those who knew, 1–2% up and down in the commodities are common in a steady state. But going up or down by 5–10% in the intraday trading talks of market volatility. So much volatility would not go unnoticed with the governments who would take hard positions: making money from where they can to compensate for the money they would lose in others. Political wrangling will be rife. That would not be a good case for anybody.

Aluminum's Sanction

Aluminum prices have been skyrocketing over the past month, surpassing the peak they hit in 2008 during the global financial crisis. Traders are fretting over supplies from Russia, which produces around 6% of the world's aluminum supply.

The most recent surge in prices came after Australia decided to ban exports to Russia of alumina and bauxite, which are used to make the metal. Australia supplies almost 20% of Russia's alumina. Canberra's move is expected to further disrupt production at Russian aluminum behemoth UC Rusal.

"Although the ban on bauxite exports is immaterial given that UC Rusal does not import any bauxite from Australia, the ban on alumina exports will have a material impact on the company," Uday Patel of Wood Mackenzie wrote in a note.

"It is becoming increasingly likely that the only option for UC Rusal to source alumina will be via purchases through Chinese entities. One possible outcome could be Chinese buyers purchasing alumina and redirecting sales via eastern Russian ports. However, this poses a significant political challenge for China and its trading relationship with the rest of the world," Patel said.

Ukraine Crisis: The Early Weeks of April' 2022

Russia is one of the largest suppliers of key metals used in low-carbon technologies. It accounted for about 7% of total nickel production and 15% of class 1 nickel in 2021, according to CRU. Nickel is central to many types of lithium-ion batteries. Russia produces 4% of both mined and refined copper, which is key for all electricity-related technologies (including batteries and renewables, particularly in wind technology). Aluminium (Russia is the second-largest producer, accounting for 6% of primary aluminium production) is used in batteries and electrical transmission lines. Palladium and platinum (Russia accounted for 35% and 10%, respectively, of global production in 2021) are used in automotive catalytic converters and hydrogen fuel-cell vehicles. Raw materials account for up to 80%

of battery costs; therefore, the magnitude of the ongoing metal price rally will likely reverse the long-term trend of falling battery costs in 2022, which are the most expensive component of EVs. Climbing manufacturing costs, coupled with the lingering autos chip shortage, could curb EV production capacity this year. They could also dampen the ongoing strong momentum of EV sales, should manufacturers pass price increases onto consumers, particularly in emerging markets, where governments provide little-to-no subsidies for EV adoption.

The elevated cost of new EVs relative to internal combustion engine vehicles remains one of the biggest barriers for EV adoption, according to consumers' surveys. Cost increases affecting profitability are particularly likely for manufacturers with ambitious near-term targets for EV deployment, such as Ford and GM.

Renewable equipment manufacturing could also be affected, as most components require copper, while some also need large quantities of zinc (wind equipment) and polysilicon (solar technologies). This delays installation of new renewable projects: nearly a quarter of planned solar projects in Europe were cancelled in 2021 because of rising raw material costs.