AozoraStep

Rates, Energy, the Transition towards EVs and the War for Raw Materials

As the EU announced to stop seaborne oil imports from Russia, a fire at the Texas Freeport LNG liquidation export hub caused the facility to shut down for at least three weeks (16%-20% of US LNG exports), and as Russia is curbing gas supply to Germany, are we heading for new all-time highs in the energy space? Or is this only a short-term phenomenon? I believe there can be made a case for both. At the same time, the SNB surprised with a 50bps hike today and after the Fed's 75bps yesterday, this has caused for a major market correction, suggesting that central banks will succeed in fighting commodity induced inflation.

The end of the central bank put

What makes this market correction so unique is the simultaneous sell-off in rates and equity. Central banks have been clear – with the only exception of the ECB and BOJ perhaps – fighting inflation is their top priority. The FTSE 100 has been spared due to the exposure to commodities so far, but this week's downturn could be a turning point. The table below shows market pricing for hikes at the Fed, BoE and ECB. Despite being far away from target rate hikes over the coming months, the correction is already quite intense and seems far from over…

Rate hike expectations

Fed	Rate (priced 15th June eod)
June	1.68
July	2.25
September	2.83
November	3.45
December	3.60

BoE	Rate (priced 15th June eod)
June	1.36
August	1.69
September	2.22
November	2.51
December	2.72

57 Lansdowne House, Berkeley Square, London W1J 6ER
www.aozorastep.com · david@aozorastep.com

ECB	Rate (priced 15th June eod)
July	-0.25
September	0.00
October	0.41
December	0.92

Source: Barchart

An oversupply of oil?

The EU imports around 2.2mio barrel of oil per day and 1.2mio barrel of oil products a day from Russia, of which 800k are imported via pipeline and the rest seaborne[1]. This means a minimum of 1.4mio barrel of oil per day and 1.2mio barrel of oil products per day need to be sourced from somewhere else – at least in around 6-months from now. With OPEC increasing their output by around 432k barrels per day in June and 648k barrels per day over the month of July and August, further output hikes anticipated over following months and a good amount of oil being rerouted from Russia to India and China, this could eventually lead to an oversupply of oil. This takes into account that OPEC really fulfills their quotes, but given the strong pricing, this is more likely than in the past now. Data from Bruegel suggest that Russia is able to divert their oil from Europe to India and China so far with strong exports in May and a 4.4x increase of exports to non-EU, non-G7 countries.[2] Some trends of oil price increases over the last two years also mimic those of 2007-2009 when oil peaked in July.[3] Another lockdown in China could perhaps trigger demand destruction by early autumn. On the other hand, by that time the 1mio barrel of oil daily SPR release comes to a halt… (vs. 13mio barrels of oil total daily oil demand from China though)

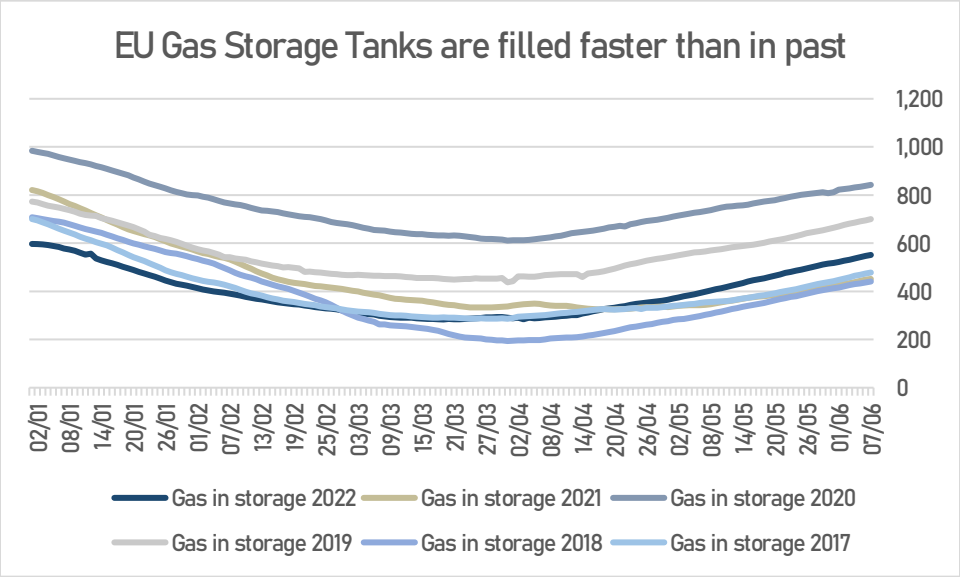
The gas storage problem

Baseload day-ahead natural gas prices in the UK have recently traded back to pre-pandemic levels at around 40GBp per therm[4]. This was due to US LNG carriers arriving in the UK, limited storage in the UK and limited amount of gas able to be distributed at once from the UK via the interconnector to Europe. The total amount of gas storage in Europe is only around ¼ of its annual consumption. At current import

[1] https://www.bbc.co.uk/news/58888451
[2] https://www.bruegel.org/publications/datasets/russian-crude-oil-tracker/
[3] https://twitter.com/JavierBlas/status/1534172799346122755
[4] https://www.thetimes.co.uk/article/glut-of-gas-in-uk-drives-wholesale-price-down-to-pre-crisis-levels-pd5s5shzk

57 Lansdowne House, Berkeley Square, London W1J 6ER
www.aozorastep.com · david@aozorastep.com

rates, the EU could actually exceed their goal of 80% of storage tanks full by September with around 10TWh per week being stored and achieve 100% before the end of September 2022. This could put pressure on natural gas prices and perhaps move the whole curve lower. However, with Russia reducing gas flow to Germany, after cutting around 18bn cubic metres (11.5% of EU annual consumption) amid non-compliance of the new rouble payment system, it seems unlikely this pace of filling the storage tanks will remain.



Source: AGSI

Countries/companies cut off from Russian gas

Company	Country	Amount in bn cubic metres
PGNiG	Poland	10
Bulgargaz	Bulgaria	2
Amber Grid	Lithuania*	2
GasTerra	Netherlands	2
Shell	Germany	1.2
Orsted	Denmark	1
Gasum	Finland	0.1

Source: Reuters

57 Lansdowne House, Berkeley Square, London W1J 6ER
www.aozorastep.com · david@aozorastep.com

The EV transition

Most car manufacturers have announced their transition plans towards phasing out the internal combustion engine (ICE) by now. Norway is way ahead of the curve with a ban of ICE cars by 2025, as ICE car sales have already plummeted to only 15% of total sales in May 2022[5]. The problem with the transition is not only the lagging charging infrastructure, but also waiting times for new Electric Vehicles (EVs) are now as long as one year – this is as EVs have a global market share of just 8.3%[6]. But the biggest problem yet to be tackled will be the shortages of raw materials to support the transition towards battery powered vehicles, namely nickel, cobalt and lithium.

ICE phase-out plans

Norwa	Phase out year of ICE
Jaguar/Land Rover	2025
Aston Martin	2026
Audi	2026
Bentley	2030
Cadillac	2030
Cupra	2030
Mercedes	2030
Porsche	2030
Rolls Royce	2030
Volvo	2030
Chevrolet	2035
GM	2035
Volkswagen	2035
Ford	2040
Honda	2040
Hyundai	2040
Toyota	2040
Peugot	2023*
DS	2024*
Lancia	2026*
Abarth	2027*
Alfa Romeo	2027*
Fiat	2027*
Opel	2028*
Renault	2030*
Kia	2035*

Region	Phase out year of ICE
Norway	2025
UK	2030
EU	2035
US	2035
UN	2040

Source: Statements from individual car manufacturers *Europe only

[5] https://insideevs.com/news/590149/norway-plugin-electric-car-sales-may2022/
[6] https://www.ev-volumes.com/

57 Lansdowne House, Berkeley Square, London W1J 6ER
www.aozorastep.com · david@aozorastep.com

The war for raw materials

Back in the 1920s, the world was moving rapidly from the horse (as a means of transportation) towards the ICE. This has brought about strong demand for oil and often became a trigger of wars in a de-globalising world. Today this is no different as we move from the ICE towards EVs with different raw materials getting high in demand. Many people have said Putin miscalculated the West. I think Putin has not miscalculated anything apart from a perhaps irrational Western response, because based on raw materials & energy and Europe's dependence on Russia makes it impossible for Europe to "win" against Russia, if it wasn't the US helping Europe out. This can be seen with Germany being very cautious, blocking Spain from sending Leopard 2A4 tanks to Ukraine and sending air defense tanks to Ukraine in July – by that time Russia has probably already conquered the Donbas and will just continue with ground forces. Germany will probably keep their language anti-Russia, but their actions won't follow due to their dependence on Nordstream pipeline gas. Nevertheless, with the Freeport explosion Russia levered their position by reducing gas flow to Germany now as well, leading to another spike in gas prices. The war for raw materials could start sooner than one might think…

Back in March 2022, Biden has authorized the use of the Defense Production Act to secure US production of critical materials, including lithium, nickel, cobalt, graphite and manganese[7]. The list below shows the largest producing countries of key energy, food, minerals and metals. It is clear that Europe will once again be dependent on other nations for their raw materials as their transition to EVs and renewables. There will also be heightened security risks in bringing these raw materials home. Specifically, relationships with the following countries will be key:

Important trade routes

Country	Sea pathways
Egypt	Suez Canal
Iran/UAE/Oman	Strait of Hormuz
Yemen/Djibouti/Eritrea	Bab al-Mandab Strait
Morocco	Strait of Gibraltar
Turkey	Black Sea/Bosphorus
Panama	Panama Canal
Malaysia/Singapore/Indonesia	Malacca Strait

Source: Google Maps

[7] https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/metals/033122-biden-to-authorize-defense-production-act-for-battery-metals-white-house

57 Lansdowne House, Berkeley Square, London W1J 6ER
www.aozorastep.com · david@aozorastep.com

AozoraStep

Largest producing countries of key energy, food, minerals and metals

Type	Raw Material	Uses	#1 country of supply	% of world share	#2 country of supply	% of world share	#3 country of supply	% of world share
Energy	Oil	Fuels and plastics	USA	14.50%	Russia	13.10%	Saudi Arabia	12.10%
Energy	Coal	Power	China	50%	India	10.46%	Indonesia	7.40%
Energy	Gas	Power	USA	23.70%	Russia	16.60%	Iran	6.50%
Energy	Uranium	Power	Kazakhstan	43%	Canada	13.00%	Australia	12.00%
Food	Corn	Food	USA	31.00%	China	23.40%	Brazil	9.00%
Food	Wheat	Food	China	18%	India	14.20%	Russia	11.30%
Minerals	Copper	Electrical equipment	Chile	26.60%	Peru	10.90%	China	8.90%
Minerals	Silver	Electronics, coins, photography, jewelry	Mexico	23%	Peru	14.00%	China	12.00%
Minerals	Gold	Jewelry, electronics, coins	China	11.70%	Australia	9.90%	Russia	9.30%
Minerals	Iron ore	Steel	Australia	38%	Brazil	16.70%	China	14.17%
Minerals	Platinum	used in catalytic converters (diesel)	South Africa	72.00%	Russia	12.20%	Zimbabwe	8.30%
Minerals	Palladium	used in catalytic converters and as a catalyst agent (gasoline)	South Africa	38%	Russia	35.20%	Canada	8.10%
Minerals	Rhodium	used in catalytic converters, electrical components and as a catalyst (N2O)	South Africa	84.60%	Russia	6.94%	Zimbabwe	5.50%
Minerals	Aluminum	used in almost all sectors of the economy	China	56%	India	5.80%	Russia	5.60%
Minerals	Titanium	used as a white pigment or metal alloys	China	52.40%	Japan	23.80%	Russia	15.70%
Minerals	Cobalt	used in rechargeable batteries and superalloys	DRC	70%	Russia	4.30%	Australia	3.60%
Minerals	Nickel	used to make stainless steel, superalloys and rechargeable batteries	Indonesia	30.40%	Philippines	12.80%	Russia	11.20%
Minerals	Lithium	used for rechargeable batteries	Australia	55%	Chile	26.00%	China	10.86%
Minerals	Graphite	used for lubricants, batteries and fuel cells	China	79.00%	Brazil	6.50%	Mozambique	2.90%
Minerals	Manganese	used in steelmaking and batteries	South Africa	34%	China	16.20%	Australia	15.70%
Minerals	Vanadium	primarily used as alloying agent for iron and steel	China	60.00%	Russia	17.00%	South Africa	7.00%
Minerals	Zinc	primarily used in metallurgy to produce galvanized steel	China	47%	South Korea	6.50%	India	5.40%
Minerals	Tungsten	primarily used to make wear-resistant metals	China	83.50%	Vietnam	5.70%	Russia	3.00%
Minerals	Magnesium	used as an alloy and for reducing metals	China	78%	Russia	6.40%	USA	4.90%
Minerals	Beryllium	used as an alloying agent in aerospace and defense industries	USA	65.40%	China	26.00%	Mozambique	3.00%
Minerals	Ruthenium	used as catalysts as well as electrical contacts and chip resistors in computers	South Africa	91%	Russia	4.00%	Zimbabwe	2.00%
Minerals	Iridium	used as coating of anodes for electrochemical processes and as a chemical catalyst	South Africa	?	Russia	?	Zimbabwe	?
Minerals	Tin	used as protective coatings and alloys for steel	China	27%	Indonesia	25.80%	Myanmar	17.40%
Minerals	Scandium	used for alloys, ceramics and fuel cells	China	99.00%				

57 Lansdowne House, Berkeley Square, London W1J 6ER
www.aozorastep.com · david@aozorastep.com

Minerals	Ytterbium	used for catalysts, scintillometers, lasers and metallurgy	China	99%				
Minerals	Yttrium	used for ceramic, catalysts, lasers metallurgy and phosphors	China	99.00%				
Minerals	Germanium	used for fiber optics and night vision applications	China	68%	Russia	4.30%	USA	2.10%
Minerals	Gallium	used for integrated circuits and optical devices like LEDs	China	95.00%				
Minerals	Hafnium	used for nuclear control rods, alloys and high-temperature ceramics	France	45%	USA	41.00%	Ukraine	8.00%
Minerals	Rubidium	used for research and development in electronics	Namibia	?	Zimbabwe	?	Canada	?
Minerals	Cerium	used in catalytic converters ,ceramics, glass, metallurgy and polishing compounds	China	?				
Minerals	Tantalum	used in electronic components, mostly capacitors and in superalloys	DRC	37.70%	Brazil	25.30%	Rwanda	14.50%
Minerals	Erbium	used in fiber optics, optical amplifiers, lasers and glass colorants	China	?	Russia	?	Malaysia	?
Minerals	Barite	used in hydrocarbon production	China	34.00%	India	19.40%		
Minerals	Antimony	used in lead-acid batteries and flame retardants	China	54%	Russia	?	Tajikistan	?
Minerals	Indium	used in liquid crystal display screens	China	57.60%	South Korea	21.70%	Canada	6.50%
Minerals	Bismuth	used in medical and atomic research	China	73%	Laos	16.00%	South Korea	5.00%
Minerals	Gadolinium	used in medical imaging, permanent magnets and steelmaking	China	?	Russia	?	Malaysia	?
Minerals	Samarium	used in permanent magnets, as an absorber in nuclear reactors and in cancer treatments	China	?	USA	?	Brazil	?
Minerals	Praseodymium	used in permanent magnets, batteries, aerospace alloys ceramics and colorants	China	67.00%	Myanmar	12.00%	Australia	10.00%
Minerals	Dysprosium	used in permanent magnets, data storage devices and lasers	China	99%				
Minerals	Terbium	used in permanent magnets, fiber optics, lasers and solid-state devices	China	?	USA	?	India	?
Minerals	Holmium	used in permanent magnets, nuclear control rods and lasers	China	?	Russia	?	Malaysia	?
Minerals	Neodymium	used in permanent magnets, rubber catalysts and in medical and industrial lasers	China	80.00%				
Minerals	Europium	used in phosphors and nuclear control rods	USA	?	China	?	Russia	?
Minerals	Cesium	used in research and development	Canada	?	Zimbabwe	?	Namibia	?
Minerals	Lutetium	used in scintillators for medical imaging, electronics and some cancer therapies	China	?	Russia	?	Malaysia	?
Minerals	Arsenic	used in semi-conductors	China	42.40%	Chile	19.50%	Morocco	11.90%
Minerals	Tellurium	used in solar cells, thermoelectric devices and as alloying additive	Russia	12%	Sweden	11.60%	Japan	10.60%
Minerals	Zirconium	used in the high-temperature ceramics and corrosion-resistant alloys.	Australia	43.00%	South Africa	28.70%	Senegal	9.50%

57 Lansdowne House, Berkeley Square, London W1J 6ER
www.aozorastep.com · david@aozorastep.com

Minerals	Fluorspar	used in the manufacture of aluminum, cement, steel, gasoline and fluorine chemicals	China	63%	Mexico	11.60%	Mongolia	9.40%
Minerals	Thulium	used in various metal alloys and in lasers	China	97.00%				
Minerals	Niobium	used mostly in steel and superalloys	Nbrazil	88%	Canada	9.90%		
Minerals	Chromium	used primarily in stainless steel and other alloys	South Africa	44.00%	Kazakhstan	17.00%	Turkey	17.00%
Minerals	Lanthanum	used to produce catalysts, ceramics, glass, polishing compounds, metallurgy, and batteries	USA	?	Brazil	?	India	?
Wood	Lumber	Buildings, furniture (industrial roundwood)	USA	18.00%	Russia	11.00%	China	9.00%

Source: USGS.gov, Statista, MMTA, OPEC, multiple other sources

57 Lansdowne House, Berkeley Square, London W1J 6ER
www.aozorastep.com · david@aozorastep.com

Legal Disclaimer

The contents of this publication have been prepared solely for the purpose of providing information about AozoraStep Capital LLP and the services and products it intends to offer, which are targeted for UK based professional investors only. The opinions and views expressed are those of AozoraStep, may change without notice and should not be construed as investment, tax, legal or other advice. AozoraStep does not guarantee the completeness and accuracy of the information provided and all content can become out of date. Products or services mentioned on this site are subject to legal and regulatory requirements in applicable jurisdictions and may not be available in all jurisdictions. Accordingly persons are required to inform themselves and observe any such restrictions. In respect to investments described on this website, past performance is not a guide to future performance. The value of investments and the income of any financial instruments mentioned on this website may fall as well as rise and may have tax consequences. The performance of AozoraStep is based on a personal track record and approved by Sedulo for the time period Q1 2019 - Q1 2021 only with further examinations being done on an occasional basis. AozoraStep Capital LLP is currently not authorized by the FCA, but is in the process of authorization. AozoraStep Capital LLP is registered in England and Wales with registered number OC436835. Registered Office: 57 Lansdowne House, Berkeley Square, London W1J 6ER, United Kingdom. Reproduction or distribution of any materials obtained in this presentation or linking to this presentation without written permission is prohibited.

57 Lansdowne House, Berkeley Square, London W1J 6ER
www.aozorastep.com · david@aozorastep.com