COMMODITY MARKET STUDY

Update V

ULAANBAATAR 2021

“COMMODITY MARKET STUDY”

Update V

Team Leader:	**Tuvshintugs Batdelger /Ph.D/**
Members:	**Manlaibaatar Zagdbazar**
	Oyuntugs Davaakhuu
	Khorol-Erdene Bayartsogt
	Enkhsaikhan Usny-Ekh
	Unurjargal Davaa

ULAANBAATAR 2021

Contents

List of Figures

List of Tables

INTRODUCTION

1. COPPER

1.1 WORLD MARKET

DEMAND SIDE

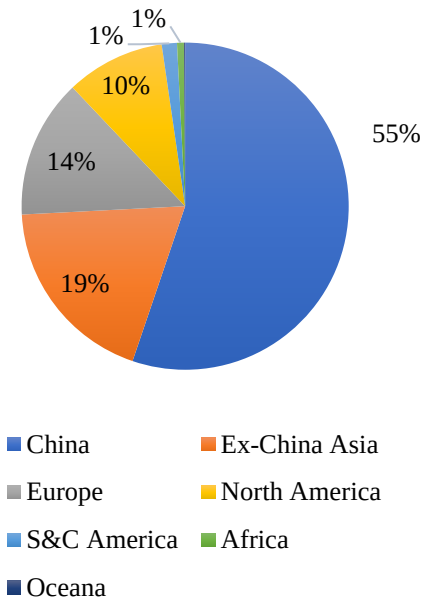
The world demand for refined copper has grown significantly in the last 5 decades with the expansion of the construction sector coupled with the increased production of electronics, industrial machinery and equipment, consumer, and general products. This expansion is mainly due to Chinese industrialization.

World refined copper usage grew 3.7 percent in the first quarter of 2021. As of May 2021, however, world refined copper usage declined about 3 percent. This was mainly attributed to a 3.6 percent decrease in Asian consumption. On a regional basis, Asia accounted for 74 percent of total demand (Figure 1). Out of this, China alone constituted about 55 percent of demand, accounting for about 5.5 Mt. Europe, the second-largest refined copper user, consumed about 1.4 Mt of copper, accounting for 14 percent of total world demand (Table 1).

Table 1. World demand for refined copper, thousand tonnes

Year	2020				2021	
Quarter	**I**	**II**	**III**	**IV**	**I**	**As of May**
Global Total	5724	6237	6570	6449	5936	10102
North America	605	528	584	570	585	976
USA	459	423	436	431	440	724
S & C America	112	55	71	114	86	150
Europe	872	801	770	794	808	1371
Germany	265	266	261	260	240	410
Asia	4045	4757	5085	4870	4332	7406
China	2859	3786	4081	3764	3210	5512
Japan	230	199	187	242	221	378
India	127	70	104	121	126	213
Oceania	7	7	7	7	7	12
Africa	39	36	38	40	40	68

Figure 1. Copper demand on regional basis as of May 2021, percent



Source: Bloomberg

According to the latest forecast from the International Copper Study Group (ICSG), world refined copper usage is expected to remain unchanged in 2021 and increase by around 2.4 percent in 2022. In particular, the continued recovery of the world economy in 2020 is expected to benefit copper processing and final-usage sectors such as home appliances, automotive and electricity, and should sustain a growth of about 2.5 percent.

Meanwhile, Fitch Ratings evaluated the impact of the shift towards environmental sustainability on copper demand and revised world copper demand forecasts. Currently, demand for copper can be divided into three categories: building construction, infrastructure, and manufacturing. However, Fitch Ratings note that the demand for copper will change as decarbonization goals accelerate in 2021 and lead to much more demand from the energy and automotive sectors. As a result of the energy transition, Fitch Ratings expect the demand for green copper to grow from about 5.6 percent in 2021 to 15.7 percent in 2030. Overall, demand for green copper is forecasted to grow at an average annual rate of 13 percent over the next decade. The two most important areas for growth in green copper demand are renewable energy and vehicle electrification (Mining.com, 2021).

Chinese demand

China consumes half of the world's global refined copper. China's demand for refined copper grew 12.3 percent in the first quarter of 2021, reaching 3.2 Mt. As of May 2021, however, the country's demand for refined copper declined by 3.9 percent, reaching 5.5 Mt (Table 1). Chinese copper imports fell every month since October 2020, with the exception of March 2021. This was attributed to strong imports in the middle of 2020 when the Chinese economy rebounded strongly from the COVID-19 pandemic. In addition, China's copper imports dropped 41 percent year-on-year in August to their lowest since June 2019. This was due to high prices and flat economic growth that dampened demand (Mining.com, 2021). According to the ICSG, the amount of refined copper imported is likely to fall 5 percent in 2021 (ICSG, 2021).

China's "new infrastructure" development plans, especially for new energy vehicles, 5G stations, high-voltage power lines, and high-speed intercity railways, are expected to increase demand for metals such as copper and cobalt. In particular, the new infrastructure will require a total of 150 thousand tonnes of copper. China has also been supporting the use of cobalt and copper in policies and strategies, implementing policies such as extending subsidies for new energy vehicles until 2022. In addition, China is taking special measures to develop electric cars with individual regions in China announcing plans to ban the production and sale of diesel and gasoline-powered cars in the future (China Daily, 2020).

World demand (excluding China)

Excluding China, major refined copper users include the United States, Germany, Japan, and India. Refined copper usage in 2020 fell temporarily due to the COVID-19 pandemic. Similarly, in the first quarter of 2021, world refined copper consumption, excluding China, decreased 4.8 percent year-on-year, and decreased 0.5 percent year-on-year in the first 5 months of 2021. However, copper demand is expected to recover and grow as copper is essential to economic activity and the modern technological society.

The 2020s are expected to be a significant period for world copper demand excluding China, particularly for the United States and India. Additionally, President Biden's USD 1.2 trillion infrastructure plan is expected to increase the demand for and prices of metals such as copper, cobalt, steel, and lithium. The Infrastructure Bill was approved by the US Senate on November 5, 2021. As a result, US demand for industrial metals and metal prices are expected to rise sharply in the near term. North American copper demand is expected to increase 7.6 percent year-on-year in 2021 (Grant Sporre, 2021).

India's copper demand grew about 26 percent year-on-year in the first quarter of 2021, and 50.5 percent year-on-year as of May 2021 as the cases of COVID-19 declined and the country reopened. According to Bloomberg Intelligence, India's copper demand is expected to increase about 8.2 percent year-on-year in 2021 overall. Furthermore, Japan's copper demand forecast for 2021 indicates a demand increase of 8.9 percent followed by a 1.3 percent increase in 2022 (IWCC, 2021). Overall, according to the ICSG, world copper demand excluding China is expected to increase by 6.5 percent in 2021.

SUPPLY SIDE

Mine production

In the first quarter of 2021, world copper mine production reached 5.1 Mt, increasing 3.4 percent from the first quarter of 2020, as countries around the world have started to adapt to the COVID-19 pandemic and mining operations have resumed (ERI, 2021).

Additionally, in the first 5 months of 2021, world copper mine production grew 4.5 percent year-on-year, reaching 8.6 Mt (

Table 2). Overall, while world mine production began to recover in June 2020, COVID-19 related government restrictions continued into 2021.

Table 2. World mine production, by quarter, thousand tonnes

	2020				2021	
	I	**II**	**III**	**IV**	**I**	**As of May**
Global	4974	4984	5225	5430	5144	8622
N. America	632	614	648	663	631	1057
S & C America	2003	1948	2083	2194	1975	3347
Chile	1403	1430	1429	1471	1373	2321
Peru	515	434	564	635	531	900
Others	86	83	90	87	71	126
Europe	418	441	436	458	433	711
Asia	940	977	1010	1084	1051	1748
Oceania	236	242	235	238	245	409
Africa	564	618	630	607	605	1013

**To highlight the impact of top producers, South & Central America was divided into Chile, Peru, and others*

Source: Bloomberg

Chilean production

Chile is the world's largest copper producer, regularly accounting for more than a quarter of the world's annual copper mine production. Chilean copper mine production dropped 2.1 percent in the first quarter of 2021 compared to the same period of 2020. Likewise, Chilean production declined 1.9 percent in the first five months of this year as a result of lower ore grades (

Table 2). Copper mine production may continue to face disruptions in 2021. According to industry experts, Chile is expected to remain the world's largest copper producer in the coming years, but the country's copper sector will face challenges such as declining ore grades, a shortage of clean water, and continuing labor unrest in the near term.

The following sections look into the production information of major mines in Chile.

Escondida: Escondida, owned by BHP Billiton (57.5 percent), is a leading producer of copper concentrate and cathodes located in northern Chile. As of the first six months of this year, Escondida mined 871.7 thousand tonnes of copper concentrate, reporting a 5.9 percent year-on-year decrease. This was due to a decrease in ore grades.

According to BHP Billiton's latest forecast, Escondida's production is expected to be between 1,000 and 1,080 thousand tonnes in 2022. Moreover, labor and material resource restrictions due to the COVID-19 pandemic will likely affect production levels in 2021 and 2022. Furthermore, the copper grade of concentrate is expected to decrease by about 2 percent in 2022. However, the production guidance, an average of 1.2 Mt of copper per year, for the next 5 years remained unchanged (BHP, 2021).

Codelco: Codelco is a state-owned company and the world's largest copper producer. The company engages primarily in the exploration, development, and extraction of copper ores and by-products as well as the processing of ore into refined copper and the international sale of refined copper and byproducts. Codelco operates seven mines and four smelters, all located in Chile.

Codelco extracted 850 thousand tonnes of copper in the first six months of 2021, growing 6.8 percent in comparison to the same period of 2020. Broken down, higher production at Chuquicamata and El Teniente were the main drivers of this growth and more than offset the decline at Radomiro Tomic (Codelco, 2021). However, Codelco's production declined 7.6 percent year-on-year in the third quarter of 2021. This was due to labor disruptions and the mining sector's response to the COVID-19 pandemic (Bloomberg, 2021). However, rising copper prices offset the decline in production, allowing the company to increase sales by 22 percent to USD 4.85 billion. This is also beneficial as Chile needs funding for policies to fight inequality following public protests in late 2019.

Chile has attracted significant mining investment in recent years, with growth forecasts for the near term largely attributed to the launch of BHP Billiton's Spence Growth. In the long run, declining average ore grades in Chile are a major risk factor in decreasing production forecasts. According to Fitch Ratings, the ore grade will decrease, and more ore will be needed to produce the same amount of copper. Although Chile is the world's largest copper producer, Fitch Ratings hopes Australia and Canada will lead with new projects (Mining.com, 2021).

Meanwhile, Australian economists expect Chile's mine output to steadily grow over the coming years, facilitated by Codelco's USD 40 billion mine redevelopment plans. In January 2021, the first stage of the El Teniente redevelopment plan began and is expected to lift capacity to 500 thousand tonnes of copper concentrate by 2023 (DISER, 2021).

Peruvian production

Peru is the world's second largest copper producer. As of the first five months of 2021, Peruvian copper mine production increased 17.1 percent year-on-year, reaching 0.9 Mt (

Table 2). Between March and May, production was up 35 percent compared to the same period in 2020 during which the sector was severely impacted by COVID-19 related lockdowns.

In 2021, Peruvian copper production is expected to recover by 16.2 percent to 2.5 Mt. Furthermore, if new projects begin as expected, Peru could produce up to around 3 Mt in 2023. Growth will also be supported by the production recovery of existing mines such as Cerro Verde, Las Bambas, Toromocho, Antapakkai and Constancea to pre-COVID-19 levels (Reuters, 2021).

However, in September 2021, Peru's Minister of Energy and Mines announced the government's desire to revise the framework for the country's mining sector, redrafting the umbrella law that regulates the sector, as well as the legislation that sets royalty payments. Moreover, President Pedro Castillo wants to raise taxes on mining companies to fund social programs. This may adversely affect the investments of new projects (Rochabrun, 2021).

Cerro Verde: Cerro Verde is an open-pit copper and molybdenum mining complex in Peru. The Cerro Verde concentrator produced an average of 380,000 tonnes of ore per day in the third quarter of 2021, a 6.7 percent increase from the year prior. As mentioned the previous commodity update (ERI, 2021), Cerro Verde was expected to produce 360,000 tonnes of copper ore per day in 2021. However according to Freeport-McMoran's latest estimates, it is forecasted that the mine will extract 420,000 tonnes of copper ore per day in 2021 and 400,000 tonnes of copper ore per day in 2022 as restrictions and community dispute issues are resolved. Moreover, Cerro Verde's expanded operations benefit from its large-scale, long-lived reserves and cost efficiencies and have continued to perform well. De-bottlenecking projects and additional initiatives to enhance operating rates continue to support production (Freeport-McMoRan, 2021).

Peru's copper production is likely to decline in the near term. Las Bambas, one of the world's largest copper mines in Peru, is facing production problems at its mine. The mine is facing environmental problems due to congestion on local roads and the spread of mineral dust, which is considered a risk to the region's agriculture. Moreover, the regulation of royalties is also being discussed in Peru, and the President is pursuing a policy of increasing royalties (DISER, 2021). On the other hand, Anglo America's Quellaveco mine (estimated capacity of 300,000 tonnes per year), is expected to come online in 2022.

Asian production

Key copper suppliers in Asia include China (45 percent of total Asian output as of 2020), Kazakhstan (18 percent), Indonesia (12 percent) and Mongolia (7 percent). In the first quarter of 2021, Asian copper mine production grew 11.8 percent and reached 1 Mt owing to increased Indonesian production (ERI, 2021). Likewise, Asian copper production grew by 9.7 percent year-on-year in the first five months of 2021, reaching 1.7 Mt (

Table 2).

China: Chinese copper mine production grew by 5.4 percent in the first quarter of 2021 and by 3.5 percent as of May 2021. As mentioned in the previous commodity update, Chinese copper mine production is expected to grow an average of 1.5 percent per year over 2021-2029, compared to an average growth rate of 4.6 percent over the past decade due to the closure of low-grade copper mines China coupled with delays in planned capacity expansions (ERI, 2021). According to the ICSG's latest calculation, Chinese copper mine production is anticipated to grow about 5 percent in 2022 (ICSG, 2021).

Indonesia: Indonesia is one of the world's top exporters of copper concentrate. In the first quarter of 2021, Indonesian mine production increased about 91 percent, led by the continued ramp up of underground production at the Grasberg mine. As of May 2021, the country's copper production increased a considerable 71.1 percent.

Grasberg is the world's second largest copper mine located in Indonesia. As mentioned in the previous commodity update, PT Freeport Indonesia (PT-FI) completed mining the final phase of the Grasberg open pit and started to shift to mining the Grasberg Block Cave (GBC) underground mine in the fourth quarter of 2019. The company's copper production grew about 57 percent in the first nine months of 2021, reaching 175 thousand tonnes due to the beginning of underground mining production and an increase in production capacity. During the first nine months of 2021, a total of 26 new draw bells were added at the Grasberg underground mines and Deep Mill Level Zone bringing cumulative open draw bells from 370 in 2020 to over 490. In September 2021, PT-FI milled more than 177 thousand tonnes of ore per day. PT-FI is projected to grind an average of 175 thousand meters of ore per day in the fourth quarter of 2021 and continue at this rate until additional milling commences following the mine's planned increase in capacity in 2023 boosts the ore processing plant's capacity to 240 thousand tonnes per day. In 2021, PT-FI expects to produce 650 thousand tonnes of copper and 1.3 million ounces of gold, almost double its 2020 production level (Freeport-McMoRan, 2021). If the mine is developed as planned, it will produce 1.7 Mt of copper concentrate per year from 2024 onwards (Mining Technology, 2021).

North American production

As of the first quarter of 2021, North American copper mine production declined by 0.2 percent, reaching 0.6 Mt. However, production grew slightly by 2.9 percent in the first five months, reaching 1 Mt (

Table 2). According to the ICSG's latest press release, North American copper mine production will grow approximately 0.7 percent in 2021 and 4.9 percent in 2022 (ICSG, 2021). Moreover, the International Wrought Copper Council forecasted that the refined copper demand for this region is estimated to increase by 5.7 percent to 2.3 Mt in 2021 with a further increase of 2.8 percent in 2022 (IWCC, 2021).

African production

In the first quarter of 2021, African copper mine production grew 7.3 percent due to additional output from new or expanded operations in the Democratic Republic of Congo (DRC). As of May 2021, Africa copper mine production increased 4.6 percent, reaching 1 Mt (

Table 2).

Zambia is a major copper producer in Africa and in the first 5 months of 2021, Zambia produced 0.3 Mt of copper, displaying a 4.1 percent year-on-year increase. In 2021, Zambian copper production is expected to recover from the COVID-19 pandemic and increase 4 percent. In the long run, annual copper production growth is forecasted to average 2.2 percent in 2012-2030. However, the country's nationalistic sentiments towards its natural resources are a major obstacle to further investment in copper mining (Fitch Solutions, 2021). Though, if the sector can agree with the new administration of President-elect Hakainde Hichilema to reduce royalties, Zambian copper producers announced a readiness to launch a USD 2 billion expansion project in 2022.

The DRC is the top copper producer in Africa and the fourth largest copper producer in the world. In the first five months of 2021, the DRC produced 0.6 Mt of copper, displaying a 5.4 percent year-on-year increase. Katanga, the biggest mining company in the DRC, produced 131.6 thousand tonnes of copper in the first half of 2021, about the same amount produced in 2020. Production performance remains high due to the restart and upgrade of the Katanga mine (Glencore, 2021). In addition, Kamao-Kakula is expected to make significant contributions to DRC's future production. Kamao-Kakula, a high-grade copper mine, started its first operation in May 2021 after an investment of USD 1.3 billion. The plant has the capacity to process 3.8 Mt of ore per year and 200 thousand tonnes of copper concentrate. The next concentrator of the project will be commissioned in March 2022. As a result, Kamao-Kakula's capacity will reach 7.6 Mt of ore and 400 thousand tonnes of copper concentrate annually. With the start of these new projects, the outlook for African copper production is optimistic in the near term.

Short-term outlook of global copper mine production

As noted by Fitch Ratings, global copper mine production is forecasted to increase by 7.8 percent year-on-year in 2021 as multiple new projects come online in comparison to the reduced output observed in 2020. Moreover, Russia and Kazakhstan's productions are expected to grow as the joint development of the Tarutinsky copper mine in Russia's Chelyabinsk region is finalized. The mine has a production capacity of 750 thousand tonnes per year over a 9.5-year life and is expected to focus on the export market.

According to the ICSG, word copper mine production is expected to increase by about 2.1 percent in 2021 and 3.9 percent in 2022. Major projects to be launched in 2021-2022 include Kamoa-Kakula in the DRC, Quellaveco in Peru, Spence-SGO and Quebrada Blanca QB2 in Chile, and Udokan in Russia (ICSG, 2021).

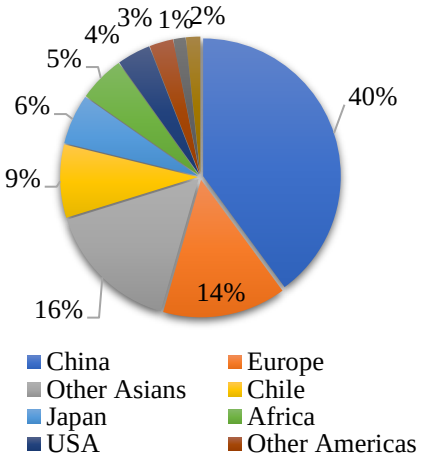
Refinery production

World refinery production increased 3.3 percent in the first five months of 2021, reaching 10 Mt (Table 3). By region, Chilean refined copper production (9 percent of total world refined copper production) declined 7.2 percent, negatively impacted by a 9.8 percent reduction in electrowinning refined production. Owing to the ramp up of new or expanded SX-EW plants, refined production was up 21.9 percent year-on-year in the DRC. Moreover, refined production in the United States increased by 14.5 percent in the first five months of 2021, largely due to recovered smelter operations. Globally, secondary refined production (waste) increased by 7 percent with China contributing the most.

Table 3. Global refinery production, thousand tonnes

Year	2020				2021	
Quarter	**I**	**II**	**III**	**IV**	**I**	**As of May**
Global Total	**5824**	**5972**	**6093**	**6130**	**6002**	**10107**
North America	408	383	408	412	427	717
USA	225	212	230	247	248	419
S & C America	700	695	645	685	634	1066
Chile	580	601	555	594	543	914
Europe	911	935	937	953	927	1543
Asia	3333	3522	3658	3610	3503	5922
China	2289	2527	2615	2608	2487	4244
Japan	405	382	400	395	376	627
Oceania	97	95	95	97	106	179
Africa	313	279	285	319	345	576

Figure 2. Refinery production on regional basis as of May 2021, percent



Source: Bloomberg

Short-term outlook of global refinery production

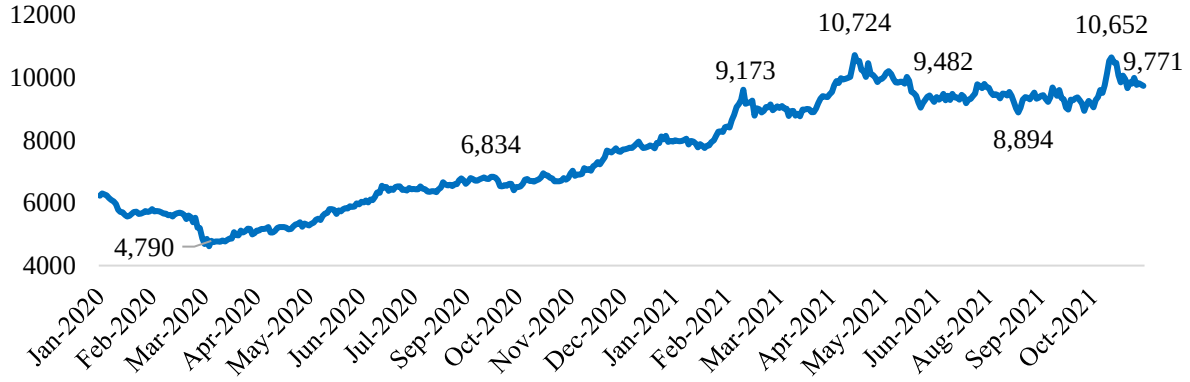
As reported by the ICSG, world refined copper production is expected to rise by about 1.7 percent in 2021. Potential growth in 2021 was offset by declining SX-EW production in Chile and Myanmar, operational problems in Japan, Australia and Russia, energy restrictions in China, and some unforen maintenance. This, however, is expected to be mitigated by anticipated Chinese refined production growth. Additionally, after two consecutive years of decline, global secondary refined copper production (waste) is expected to grow by 6.5 percent, supported by the end of China's scrap import restrictions and the steady improvement in global waste availability. Moving forward, total global refined copper output is expected to increase by 4 percent in 2022 as concentrate supply increases, SX-EW production recovers, and secondary refined production increases.

PRICE

Copper prices increased about 18 percent in the first quarter of 2021, averaging about USD 9,000 per tonne in March. As reported by the London Metal Exchange (LME), at the beginning of May 2021, copper prices reached about USD 10,724 per tonne, the highest in a decade (Figure 3). These price increases can be attributed to strong Chinese demand as well as ongoing global recovery (ERI, 2021). In the third quarter of 2021, however, copper prices fell by 3 percent from the previous quarter and by 7 percent in comparison to the peak experienced in May 2021. This decrease was driven by a slowdown in China’s real estate market along with weaker global automotive production. As of November 2021, copper prices continue to remain high, valued at around USD 9,700 per tonne.

According to the World Bank, copper prices are forecasted to fall 5 percent in 2022 as supply increases after an estimated increase of 51 percent in 2021. Over the next two years, new mines are expected to increase supply sharply, especially the DRC’s Kamoa-Kakula, in addition to projects in Chile, Indonesia, Peru, Russia and Serbia. Overall, copper will be a major beneficiary of the energy transition and the increased use of copper in electric vehicles, charging, renewable energy generation, and power storage is expected to boost consumption (World Bank, 2021).

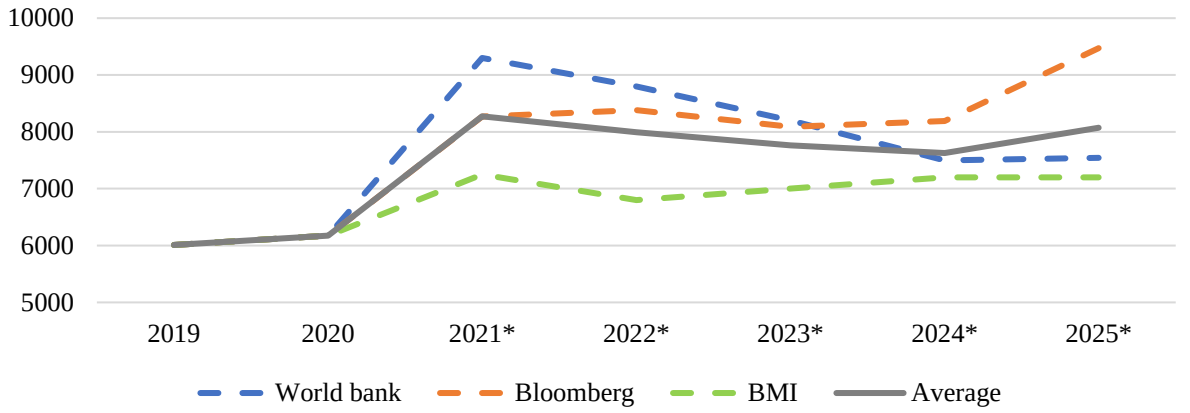
Figure 3. LME copper price, USD per tonne



Source: London Metal Exchange Copper

According to the World Bank's latest update, copper prices are anticipated to drop 5.4 percent and reach USD 8800 per tonne in 2022 as mine operations return to normal and new high ore grade projects begin. Bloomberg expects copper prices to reach USD 8269 per tonne in 2021, hover around USD 8000 per tonne until 2024 and reach USD 9400 per tonne in 2025. BMI research, on the other hand, expects copper prices to reach USD 7250 per tonne and USD 6800 per tonne by 2021 and 2022, respectively (Figure 4).

Figure 4. Price projection, USD per tonne



Source: World Bank, BMI Research, Bloomberg

The IMF's base metal price index is projected to be 57.7 percent higher in 2021 than in the previous year and to decrease by 1.5 percent in 2022. While the prospects are balanced, the delta variant of COVID-19 is a major source of uncertainty as a new wave of cases could suppress demand for copper and disrupt supply. The expected demand of copper and several other metals also depend on the speed of the world's transition to clean energy (IMF, 2021).

According to the aforementioned forecasts from international organizations, copper prices will be high in 2021 but will then decrease slightly going into 2022. However, prices will be relatively stable over time with the spike in copper supply being met by increased copper demand as the world transitions to renewable energy along with vehicle electrification.

1.2 MONGOLIAN MARKET

DEMAND SIDE

Mongolia has rich reserves of copper and began producing and exporting copper concentrate in the 1980s. Its copper refining sector, on the other hand, is much newer and only began developing in the last 15 years.

Domestic demand

As mentioned in the previous commodity update, Mongolian domestic demand for refined copper is supplied by Erdmin LLC and Achit Ikht LLC. As of September 2021, Mongolian apparent refined copper usage was approximately negative 256.9 tonnes (Table 4). This was largely due to companies exporting stock that had previously been produced.

Table 4. Mongolian refined copper export, import and production, tonnes

	2019	2020	As of Sept 2020	As of Sept 2021	2020/2021 Growth rate
Export	11,933.0	9,801.8	6,318.4	7,872.9	24.6%
Import	221.1	138.2	113.1	116.4	3.0%
Production	11,757.6	9,479.9	6,873.8	7,499.6	9.1%
Apparent usage[1]	45.8	-183.6	668.5	-256.9	-138.4%

Source: NSO and Customs Office

Mongolia imported 116.4 tonnes of refined copper as of September 2021, a 3 percent year-on-year increase (Table 4). This was driven by recovered economic activity as compared to the initial outbreak of COVID-19 in late 2019 and early 2020. Overall, the economy grew 6.3 percent year-on-year in the first half of 2021 though the construction sector saw a decrease of 40 percent year-on-year.

Copper export

Copper is one of Mongolia's key exports, constituting about 36 percent of Mongolia's total exports in the first nine months of 2021 (Bank of Mongolia , 2021). Most Mongolian copper concentrate is exported to Chinese smelters.

Refined copper: Erdmin LLC and Achit Ikht LLC are the main producers of Mongolian refined copper. As of September 2021, Mongolia's export of refined copper was 7.9 thousand tonnes, increasing 24.6 percent year-on-year (Table 4). The easing of COVID-19 regulations compared to 2020, particularly border closures, allowed mining companies to export their produced and stockpiled resources.

Copper concentrate: Mongolian copper exports define foreign demand for Mongolian copper and is particularly reliant on Chinese demand. As of the first 9 months of 2021, mining products accounted for 91 percent of Mongolia's total exports with copper concentrate exports constituting 36 percent. Exports of copper concentrate surpassed those of coal due to historically high world copper prices. As of the third quarter of 2021, copper concentrate export revenue increased by around 98 percent year-on-year to USD 2.3 billion. However, the quantity of copper concentrate exported remained the same as in 2020.

As of September 2021, Oyu Tolgoi exported 503.3 thousand tonnes of copper concentrate, a 3.1 percent increase in comparison to the same period of 2020. This was lower than anticipated, especially considering record high world copper prices. In particular, the company was unable to meet its export requirements due to border restrictions and declared force majeure on March 30, 2021. According to Oyu Tolgoi, cross-border concentrate shipments into China have resumed with some measures in place to transport greater volumes safely and efficiently, however, uncertainty continues to exist due to the high number of COVID-19 cases in Mongolia.

Demand for Mongolian copper concentrate is expected to remain high in the medium term, supported by increased electric vehicle production and new infrastructure development plans in China. However, the emergence of new regional mines such as the Russian Udokan copper mine may lead to more competition (Box 1).

[1] According to the ICSG's World Copper Factbook 2014, Apparent usage = Production + Imports - Exports + Beginning stocks - Ending stocks. Unfortunately, Mongolian companies do not publish stock data and the research team calculated apparent refined copper usage using available production, import and export data. As a result, apparent refined copper usage was negative.

Box 1. Udokan copper mine

The Udokan copper mine is located in the North of Zabaikalye Region in Russia and is owned by Baikal Mining. The Udokan deposit, the world's third-largest undeveloped copper deposit, has over 26.7 Mt of copper in reserves, comparable to Oyu Tolgoi's reserves of 31.4 Mt of copper. Udokan also plans to sell the mined ore as copper cathode on the world market. A total of USD 1.35 billion is needed to set up this project.

The mine's concentrator and infrastructure investment began in December 2019. Udokan plans to produce its first refined copper by 2022. According to a 2019 report by the International Copper Association, Asian countries such as China will be the main buyers of Udokan copper products.

The Udokan mine plans to process 12 Mt of copper ore per year and produce 125,000 tonnes of refined copper. In comparison, Erdenet Mining Corporation produces 30-32 Mt of copper ore from which more than 130 thousand tonnes of refined copper is produced. Meanwhile, Oyu Tolgoi concentrates more than 40 Mt of ore, around 150 thousand tonnes of refined copper, a year. Therefore, Udokan's production capacity is similar to Erdenet Mining Corporation and closely behind Oyu Tolgoi. Udokan is expected to produce 15.1 Mt of copper over its life. For comparison, Oyu Tolgoi expects to produce 10.2 Mt over its life, almost 5 Mt less. Furthermore, the Udakon deposit is an open pit mine, which means that it will be mined at a lower cost than Oyu Tolgoi.

Figure 5. Copper reserves of Oyu Tolgoi and Udokan, million tonnes

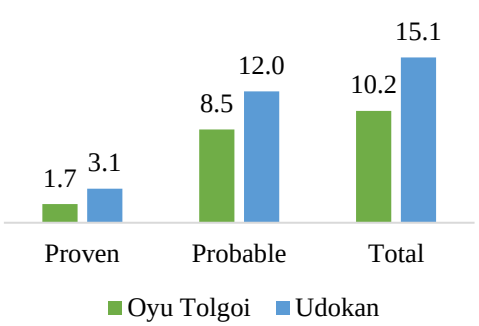
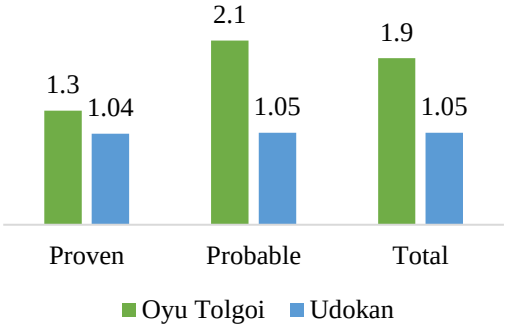


Figure 6. Copper grade of Oyu Tolgoi and Udokan, percent



Source: Baikal Mining - 2014 JORC report, Oyu Tolgoi-2020 Technical report

In terms of infrastructure, Udokan is located 30 km from the Baikal-Amur railway. Meanwhile, the road from Oyu Tolgoi to the Chinese border port is 104 km long. One of Oyu Tolgoi's disadvantages is the lack of a railway to the border, limiting its product transportation to road trucks.

As part of the Udokan plant's external infrastructure, a 220-kW transmission line will be laid 25 km from the current project site. The first phase of the 50-megawatt substation was commissioned in 2020. In the second phase, a 146-MW substation will be commissioned in 2021.

In contrast, Oyu Tolgoi's energy consumption in 2019 was equal to more than 20 percent of Mongolia's consumption, and the energy was sourced from China. Oyu Tolgoi imports an average of 1.3 billion kW of electricity a year. When Mongolia can domestically supply power to Oyu Tolgoi, it will be able to substitute more than USD 200 million in electricity imports. If a copper processing plant is built, energy consumption will also increase. Therefore, in order to move the Oyu Tolgoi project forward, the planned Tavan Tolgoi power plant needs to be built as soon as possible.

SUPPLY SIDE

According to the MRPAM, Mongolia's copper reserves as of December 2020 were 61 Mt. The majority of copper reserves are located at the Erdenet-Ovoo deposit, the Kharmagtai deposit, and the Oyu Tolgoi deposit.

Refined copper production

The two largest refined copper producers in Mongolia are Erdmin LLC and Achit Ikht LLC. Achit Ikht produces copper cathode utilizing SX-EW technology and exports all of its output to Chinese copper refineries whereas Erdmin produces not only copper cathode but also copper wire products and supplies the domestic market. As of the third quarter of 2021, the production of Mongolia's refined copper was 7.5 thousand tonnes, increasing 9.1 percent from the third quarter of 2020.

Additionally, Erdenet Mining Corporation plans to establish a metallurgy-chemical plant complex. The complex plans to include a copper smelter estimated to produce 125.5 thousand tonnes of cathode copper. With the development of this complex, Mongolia's refined copper production is expected to increase in the medium-term.

Copper concentrate production

Mongolia's main copper concentrate suppliers are Oyu Tolgoi and Erdenet Mining Corporation. As of the end of September 2021, Mongolia produced 996.2 thousand tonnes of copper concentrate, increasing 5.8 percent from the previous year. This increase was driven by Oyu Tolgoi's production (Table 5).

Table 5. Copper concentrate production, thousand tonnes

	2020	**As of 2020Q3**	**As of 2021Q3**
Total production	**1275.7**	**941.3**	**996.2**
Of which:			
1. OT mine	693.1	502.9	567.0
OT- Average concentrate grade	21.6	21.5	21.9
OT – (Cu)	149.6	108.1	124.2
2. Erdenet	582.6	438.4	429.2
(Cu)	131.5	99.0	96.9
Total export	**1395.1**	**1020.7**	**1020.9**
Of which:			
1. OT mine	669.6	488.1	503.3
OT- (Cu)	137.8	104.9	110.2
2. Erdenet	725.5	532.6	517.6
(Cu)	166.9	120.2	116.8

Source: Oyu Tolgoi Quarterly report, NSO, Customs Office

As of the third quarter of 2021, Erdenet Mining Corporation produced 429.2 thousand tonnes of copper concentrate, displaying a 2.1 percent year-on-year decrease. On the other hand, Oyu Tolgoi mined 567 thousand tonnes of copper concentrate, increasing 12.7 percent from last year. This growth was caused by the company's continued access to higher copper and gold grades as well as high world copper prices. However, progress on the underground mine continues to be significantly affected by COVID-19 constraints. As reported by Oyu Tolgoi, housing management and manpower levels at the mine site improved last quarter but remained at 25 to 50 percent of planned levels due to COVID-19 constraints. By the end of September 2021, additional restrictions are estimated to have added USD 140 million to project costs. Moreover, due to the COVID-19 pandemic and the non-technical undercut criteria, the underground mine's first sustainable production was delayed from October 2022 to January 2023 (Oyu Tolgoi, 2021). Oyu Tolgoi's copper production guidance for 2021 remains within the ranges of 150,000 to 180,000 tonnes of copper (Turquoise Hill, 2021).

Short-term outlook of Mongolian copper supply

Mongolian copper concentrate production is predicted to increase in the near term. As mentioned in the previous commodity update, Mongolian copper concentrate production in the medium-term is expected to be boosted by 330 thousand tonnes with the completion of Oyu Tolgoi's underground mine development. However, the commissioning of the underground mine was postponed from October 2022 to January 2023. This is due to the impact of the COVID-19 pandemic and the non-technical undercut

criteria. The delay in the commissioning of the underground mine required significant additional funding. The Government of Mongolia and Rio Tinto, the main investor in the Oyu Tolgoi project, are negotiating this issue.

According to the Draft Law on the 2022 State Budget, the export of Mongolian copper is expected to reach 1.2 Mt in 2022, higher than the volume exported in 2020 (Ministry of Finance, 2021). In addition, according to the Medium Term Fiscal Framework for 2022-2024, Mongolia is forecasted to export 1.2 Mt, 1.5 Mt and 1.6 Mt of copper in 2022, 2023 and 2024, respectively. This optimistic outlook is in large part due to high world copper prices.

1.3 CONCLUSION

World copper prices remained elevated throughout 2021, with the price in November reaching USD 9,700 per tonne. In the third quarter of 2021, however, copper prices fell by 3 percent from the previous quarter and was 7 percent lower than the peak experienced in May 2021. According to forecasts from international organizations, copper prices will be high in 2021 but are expected to decrease slightly in 2022. These fluctuations are expected to be relatively minor as copper prices tend to be relatively stable over time. Stable copper prices are supported by the expected increase in demand due to the transition to renewable energy production and vehicle electrification.

World refined copper usage is expected to be unchanged in 2021 and to increase by around 2.4 percent in 2022. World refined copper demand will then steadily rise in the medium-term due to increasing demand from the power and construction sectors coupled with rising electric vehicle production.

On the other hand, global copper mine production is forecasted to increase by 7.8 percent year-on-year in 2021 as a result of multiple new projects coming online such as Kamoa-Kakula in the DRC, Quellaveco in Peru, Spence-SGO and Quebrada Blanca QB2 in Chile, and Udokan in Russia. Furthermore, low base output in 2020 will increase production levels in 2021.

Demand for Mongolian copper concentrate is expected to remain high in the medium-term due to the increase in electric vehicle production and new infrastructure development plans in China. Mongolia’s copper production is expected to grow in the medium-term due to Oyu Tolgoi’s underground mine and the development of a metallurgy-chemical plant complex in Erdenet. However, it should be noted that there is still considerable uncertainty associated with these projects.

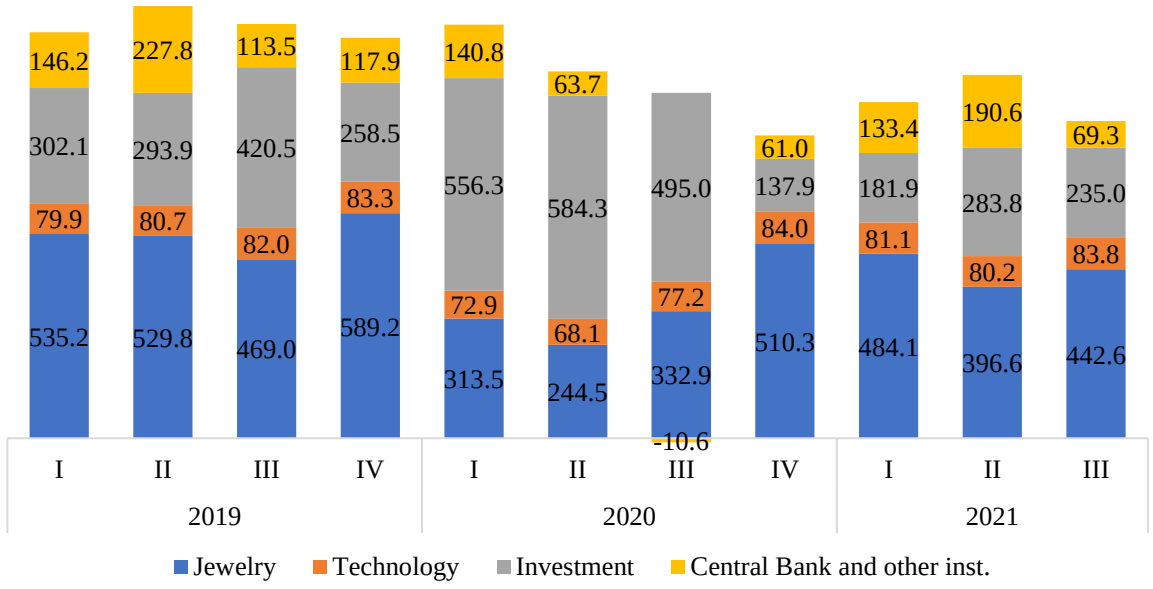
2. GOLD

2.1 WORLD MARKET

DEMAND SIDE

World gold demand consists of gold demand for jewelry, technology, investment, and reserve assets by central banks. While demand for gold jewelry traditionally is the largest subsection of overall demand, this was overtaken by demand for gold investments during the COVID-19 pandemic. However, moving into 2021, gold demand for jewelry has recovered significantly owing to global economic recovery. Conversely, gold demand for investments has normalized and shrunken significantly from the historic highs observed during the COVID-19 pandemic. Overall, total gold demand fell 9.4 percent in the first three quarters of 2021 compared to the same period in 2020 (Figure 7).

Figure 7. World Gold Demand, by quarter, 2019-2021Q3, tonnes



Source: World Gold Council

Jewelry

In 2020, overall gold jewelry demand reached an all-time low due to the COVID-19 pandemic and the associated economic slowdown. Fortunately, as countries became more adept at dealing with the pandemic and the global economy showed signs of recovery, jewelry demand ramped up in tandem. In particular, world gold jewelry demand in the first three quarters of 2021 reached 1323.3 tonnes, a 49 percent year-on-year increase (Table 6). This was spearheaded by recovered Indian and Chinese gold jewelry demand, the largest components of total world gold jewelry demand.

As mentioned in the previous commodity update, Indian gold jewelry demand fell more than 40 percent in 2020 due to the COVID-19 pandemic, its related lockdowns and economic slowdown. High gold prices also dampened overall demand. However, as the second wave of COVID-19 in India has subsided somewhat in the third quarter of 2021, gold jewelry demand ramped up again and in the first three quarters of 2021, Indian gold jewelry demand rose 45 percent compared to the low levels observed throughout 2020 (Table 6). This bodes well for future Indian gold demand as overall demand is highly reliant on people's income (WGC, 2021) and according to the IMF, the India's GDP is projected to grow 9.5 percent in 2021 and 8.5 percent in 2022 (IMF, 2021). Moreover, on June 16, 2021, India's Ministry of Consumer Affairs, Food & Public Distribution announced the mandatory hallmarking of

gold[2] (Motiani, 2021). This ensures the purity of gold products and aids in instilling consumer confidence in buying gold jewelry. Thus, barring another wave of COVID-19 cases and unsupportive government policies, such as an increase in import duties as the majority of Indian gold is imported, Indian gold demand is expected to be robust going into 2022.

Table 6. Chinese and Indian gold jewelry demand, by quarter, tonnes

	2020Q1-Q3	2021Q1-Q3	Y-o-Y Δ%
World	890.9	1323.3	49%
India	178.6	258.9	45%
China	284.2	515.2	81%

Source: World Gold Council

Likewise, Chinese gold jewelry demand recovered significantly in 2021, increasing 81 percent year-on-year in the first three quarters of 2021, reaching pre-pandemic levels (Table 6). This was largely due to economic recovery as the Chinese GDP grew 4.9 percent in the third quarter of 2021 and 9.8 percent overall in the first three quarters of 2021 (NBS, 2021). While this significant growth may slowdown in the final quarter of 2021 due to the resurgence of COVID-19 cases in several provinces as well as power supply restrictions that may dampen economic output, it still points to overall economic recovery (Global Times, 2021). In line with this, Chinese gold jewelry demand is expected to remain stable going in 2022 as gold retailers focus on improving pricing transparency, expanding their range of products, and appealing to younger consumers (WGC, 2021).

As with India and China, gold jewelry demand in the Middle East recovered in the first three quarters of 2021, reaching over 114 tonnes and increasing 43 percent year-on-year. This was due to stable gold prices and the easing of COVID-19 related restrictions. Similarly, in the first three quarters of 2021, US and European gold jewelry demand also grew 38 percent year-on-year and 24 percent year-on-year, respectively, owing to the re-opening of several economies following lockdown measures and successful vaccination campaigns (WGC, 2021). Moving forward, gold jewelry demand is expected to continue recovering throughout 2021 and into 2022. However, this is highly contingent on Indian and Chinese demand and the risk of a resurgence of COVID-19 still persist.

Investment

Gold investment demand is comprised of bar and coin demand and demand for exchange traded fund products (ETFs). While gold investment demand flourished in 2020 owing to an unprecedented increase in demand for ETFs, this did not continue into 2021. In particular, gold investment demand fell 57 percent year-on-year in the first three quarters of 2021, reaching 700 tonnes (WGC, 2021). Within this, bar and coin demand increased 36 percent year-on-year in the first three quarters of 2021, due to a 58 percent year-on-year increase in physical bar demand, the largest component of bar and coin demand.

As an investment option, gold is perceived as a low-risk source of long-term returns and is commonly used to diversify investment portfolios. Its value is based on geopolitical stability, the value of the USD, interest rates and the overall global economy. As a stable investment, its value increases as perceived global instability rises.

During the initial outbreak of COVID-19, its value as an investment rose sharply, leading to an unprecedented demand for gold ETFs. However, as the global economic outlook became more optimistic, the demand for gold ETFs fell as a result. In particular, when the returns from investments into other options such as bonds are higher, after taking inflation into consideration, the demand for gold decreases in response. Thus, in the first three quarters of 2021, there was an overall ETF outflow of 156 tonnes. Within this, the majority of the outflows occurred in the first quarter of 2021. While this is a far cry from the 1005 tonne inflow observed in the first three quarters of 2020, this was due to the

[2] Gold hallmarking is "the accurate determination and official recording of the proportionate content of precious metal in precious metal articles." It is a guarantee of gold content and purity (WGC, 2021).

unprecedent demand observed throughout 2020 when global uncertainty and gold prices peaked. Despite these fluctuations, overall ETF holdings remained fairly stable at 3592 tonnes, falling 8 percent year-on-year in the first three quarters of 2021 (WGC, 2021).

This decrease was not uniform across regions however as the majority of ETF outflows were localized to the North American region and the United States in particular. The decline in ETF purchases in the United States were due to the slight drop in gold prices, the stronger US dollar, and investors' attitudes. As gold ETFs are highly liquid, investors have the option to sell if they expect gold prices to fall. Many US investors decided to do this as gold prices averaged USD 1790 per ounce in the third quarter of 2021 as opposed to USD 1900 per ounce in the same period the previous year (PTI, 2021). Additionally, the US Federal Reserve announced it would begin to taper off bond purchases by the end of the year, briefly strengthening the US dollar (US Federal Reserve, 2021). There was also a rise in interest yield rates in the third quarter of 2021, further driving investors away from gold ETFs as other investments become more attractive (World Bank, 2021).

On the other hand, investment into gold ETFs continued in Europe, somewhat offsetting the outflows observed in the United States. This ms to suggest investors' differing views on inflation, the global economic outlook and the future direction of gold. In particular, European investors m to consider gold an effective hedge against inflation while the US Federal Reserve has maintained ongoing inflation as transitory. Investors' decisions make sense as gold is considered to perform well as an investment in times of sharp increases in inflation but not as well as other commodities in times of moderate inflation (Hamer & Boyde, 2021). Thus, the differences in investment decisions highlight the regional difference in perception by investors

As with Europe, Asia reported inflows into gold ETFs throughout 2021 and was the only region to do so in the first half of the year. As mentioned in the previous commodity update, this was likely due to the increase in the number of ETFs offered coupled with lower than anticipated stock returns on the Chinese stock exchange, boosting gold's appeal as a stable investment (WGC, 2021).

As mentioned in the previous commodity update, gold ETFs did not perform in 2021 as well as they had in 2020 when they enjoyed unprecedented demand. This can be attributed to factors such as higher perceived global stability, a more optimistic economic outlook, the success of COVID-19 vaccination campaigns in major countries and the lower price of gold. However, investment decisions differed by region based on investors' perception of gold's investment function in light of complex economic factors. Overall, gold investment demand is expected to be weaker in 2021 than in 2020, despite higher bar and coin demand, due to lower gold ETF demand.

Technology

Gold demand for technology consists of electronics, other industrial needs and dentistry with electronics accounting for the majority of total demand. While gold demand for technology fell throughout 2020 as the outbreak of the COVID-19 pandemic dampened overall consumer demand for electronics and other consumer goods, gold demand for technology recovered in 2021 as the global economy recovered and countries adapted to COVID-19 related restrictions. In particular, overall gold demand for technology grew 12.3 percent year-on-year in the first three quarters of 2021 as both demand for electronics and other industrial needs grew 12.5 percent and 15.5 percent year-on-year, respectively. Conversely, gold demand for dentistry fell a negligible 2.7 percent year-on-year (WGC, 2021).

As mentioned above, the rise in gold demand for technology can be attributed to improving consumer confidence as the world slowly recovers from the worst of the COVID-19 pandemic. This consumer confidence boosted demand for larger items such as vehicles and expensive consumer items. Within the electronics sector, gold is used in printed circuit boards[3], the smartphone sector and the wireless 5G

[3] Printed circuit boards are boards that connect electronic components and are staples used in most electronics across a variety of industries, including consumer electronics (EMSG, 2021).

sector. The production of printed circuit boards was supported by strong demand from high-performance computing, artificial intelligence and the wireless 5G sectors. Similarly, the smartphone sector saw a boost in demand with the launches of new products from companies such as Samsung and Apple. Continued 5G infrastructure deployment in many countries and the fact that many new smartphones are 5G-enabled also aided in gold demand for electronics (WGC, 2021).

According to the World Semiconductor Trade Statistics Organization, the global electronics sector is slated for growth as the world semiconductor[4] market is expected to grow to USD 551 billion in 2021, displaying a growth rate of 25 percent (WSTS, 2021). However, it is unclear if producers will be able to keep up with this increase in demand. For instance, Apple may have to cut its production of its new smartphone as chip suppliers struggle to deliver the components needed (Nellis, 2021). Additionally, many major electronics manufacturers are located in China and with the government's recent power ration and enforced power cuts to meet reduced energy and emission targets, the electronics sector may face supply chain disruptions in the near future (Jia, 2021). Moving forward, gold demand for technology is expected to grow in tandem with the electronics sector. However, the electronics sector's expected growth may be dampened by the productions risks mentioned above.

Reserves

In the first three quarters of 2021, central banks purchased 393.4 tonnes of gold to their reserves. This accounted for 15 percent of total gold demand. As in recent years, India, Kazakhstan, and Uzbekistan all made central bank purchases in the first three quarters of 2021. Interestingly, China and Russia, traditionally major players in terms of central bank purchases, were largely passive in 2021 as countries such as Brazil, Hungary and Thailand made sizable purchases, their first in a number of years.

In the first three quarters of 2021, the Indian central bank added 68.2 tonnes of gold to its reserves, reaching over 700 tonnes in reserves in the second quarter of 2021 (WGC, 2021). Central banks buy gold to reduce sovereign credit risk, reduce investor uncertainty, and is particularly effective in times of economic crisis. Gold reserves also aid in the diversification of international reserves (Hindu Business Line, 2021).

Additionally, as mentioned in the previous commodity update, gold reserves may be used in economically difficult times to bolster government revenue as gold is a highly liquid asset. This was the case in Japan as it sold 80 tonnes of gold it had slated to mint coins to another arm of the government in order to finance the government's stimulus package in response to the COVID-19 pandemic (Kajimoto, 2020). Following this large sale, Japan reported an 80.8 tonne increase in its gold reserves in the first quarter of 2021. This transaction, however, was between different divisions within the Ministry of Finance and is an intergovernmental transfer rather than a new purchase (WGC, 2021)

Kazakhstan and Uzbekistan are major producers of gold and continued to bolster their central bank reserves in 2021. In particular, the aforementioned countries purchased 4.8 and 51 tonnes of gold in the first three quarters of 2021, respectively (WGC, 2021). This makes sense in light of increased gold mine production, relatively high gold prices, albeit lower than in 2020, and the ongoing economic risk of the COVID-19 pandemic.

In the first three quarters of 2021, the Brazilian central bank purchased 62.3 tonnes of gold (WGC, 2021). This is notable as it is the first purchase by the Brazilian central bank since 2012 and the largest purchase since 2000 (Manly, 2021). While the rationale behind these purchases have not been disclosed, it makes Brazil one of the largest purchasers in 2021. Likewise, the central bank of Thailand purchased 90.2 tonnes of gold in the first three quarters of 2021, marking its first purchase since 2011 (Manly, 2021).

[4] Semiconductors are a component of electrical circuits and an integral part of the overall electronics sector.

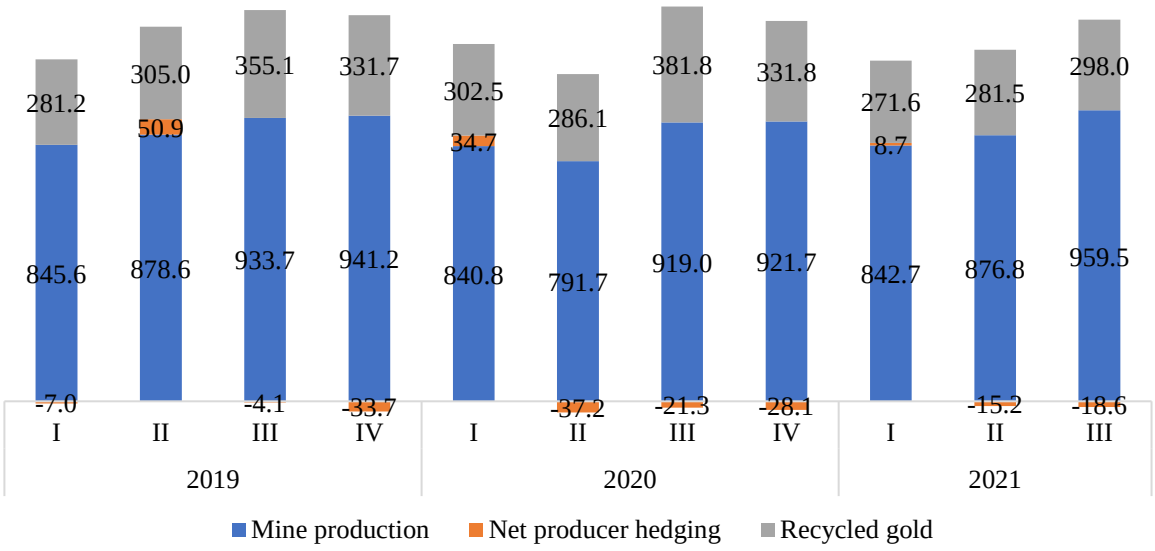
Similarly, the Hungarian central bank purchased 63 tonnes of gold in the first three quarters of 2021. This was the first time the Hungarian central bank has purchased gold since October 2018 (Manly, 2021). According to a press release, Hungary's decision to triple its gold reserves was in light of the country's long-term national and economic policy strategy objectives. Additionally, the risks associated with the COVID-19 pandemic, global spikes in government debts and inflation concerns further increased the importance of gold as a safe-haven asset and a store of value (MNB, 2021).

While central bank purchasing trends are hard to determine due to large, sporadic purchases, many central banks m to be turning to gold reserves as a safe investment and a hedge against inflation and other financial risks (Christensen, 2021). For instance, countries such as Serbia and Ghana have announced plans to purchase gold reserves in light of accelerating inflation (Mining.com, 2021). Similarly, the Polish central bank publicized intentions to purchase 100 tonnes of gold in 2022 to boost the country's financial stability and prepare for unfavorable circumstances (Golubova, 2021). In light of these announcements, central bank gold purchases are expected to increase moving into 2022.

SUPPLY SIDE

World gold supply is made up of mine production, gold recycling and net producer hedging. While total gold supply fell in 2020 owing to production disruptions in many gold mines due to COVID-19 related restrictions, 2021 saw a 0.2 percent year-on-year increase in total gold supply in the first three quarters of 2021. As a result, total gold supply reached 3505 tonnes (Figure 8). Within this, mine production grew 5 percent year-on-year though net de-hedging persisted and gold recycling decreased 12.3 percent year-on-year as gold prices fell marginally (WGC, 2021).

Figure 8. World Gold Supply, by quarter, 2019-2021Q3, tonnes



Source: World Gold Council

Mining production

In the first three quarters of 2021, gold mine production reached 2679 tonnes, displaying a 5 percent year-on-year growth (Figure 8) and a shift away from the trend of declining production experienced in 2019 and 2020 (WGC, 2021). This increase was in part due to fewer COVID-19 related disruptions in mine operation and was led by increased production in Canada, Peru, and South Africa.

According to the Australian Department of Industry, Science, Energy and Resources, Canada, the fifth largest gold producer in the world, reported a 57 percent year-on-year in the first half of 2021 due to higher ore grades in the Meadowbank, Canadian Malartic and La Ronde gold mines. This was also

aided by the return of the Musselwhite gold mine to full production following a fire in the first quarter of 2019 (DISER, 2021).

Additionally, gold production in Peru increased 50 percent year-on-year in the first half of 2021 (DISER, 2021) and 25 percent year-on-year in the third quarter of 2021 as COVID-19 and its related restrictions eased (WGC, 2021). Similarly, South African gold production rose 46 percent year-on-year in the first half of 2021, driven by higher ore grades and the easing of restrictions (DISER, 2021) and increased 18 percent year-on-year in the third quarter of 2021 as production restored in deep underground operations (WGC, 2021).

Conversely, China, Turkey and Australia experienced declines in gold production in 2021. Chinese gold production decreased 10 percent year-on-year in the first half of 2021 due to fatal mine accidents in Shandong province. As a result, production in the region was suspended in order to conduct safety checks (DISER, 2021). This suspension, coupled with China's shift towards environmental sustainability led to a 6 percent year-on-year decrease in gold production in the third quarter of 2021 (WGC, 2021). The imposition of stricter environmental and safety restrictions is expected to drop Chinese gold production by 11 percent year-on-year in 2021 overall (DISER, 2021).

Turkish gold production fell 18 percent year-on-year in the third quarter of 2021 owing to lower ore grades at the Kisladag and Oksut mines (WGC, 2021). Australian gold production, on the other hand, decreased 4.1 percent year-on-year in the first half of 2021 due to labor shortages, maintenance, and lower ore grades (DISER, 2021).

Despite these setbacks, gold production is expected to grow in the near term. According to one estimate, world gold production in 2021 is forecasted to increase 2.7 percent year-on-year to 4,840 tonnes aided by a 24 percent, 6.5 percent and 3.2 percent year-on-year increase in US, Canadian and Australian gold production, respectively. US and Canadian production are expected to be supported by new project streams such as the Pure Gold mine located in Ontario, Canada and the expansion of the Castle Mountain gold mine in California, USA. Similarly, gold production in Latin America is also slated to recover in 2021, with Mexican, Peruvian, and Brazilian gold production forecasted to grow 14 percent, 15 percent and 3.4 percent year-on-year in 2021 (DISER, 2021). According to another estimate, gold production is expected to increase 5.5 percent year-on-year in 2021 and sustain a 2.9 percent compound annual growth rate until 2024 (GlobalData, 2021). While these calculations differ, they detail a similar trajectory and point to gold production growth as mines continue to recover from COVID-19 related setbacks.

Net producer hedging

In the first three quarters of 2021, producers de-hedged 25 tonnes of gold (Figure 8). Gold hedging is a method producers may use to lock in a set selling price for future gold production. It protects producers against gold price falls and is a way for producers to manage their operations and expected cashflows. Many producers also engage in hedging to safely finance costly developments. However, in exchange for this safeguard against price risks, producers are unable to enjoy any positive changes in gold prices.

Many Australian companies engage in producer hedging at the risk of possible losses when the price of gold remains high. For instance, despite reporting a significant loss in previous gold hedges in 2020, Gold Fields hedged 1 million ounces of gold of expected production for 2021 at an average price of AUD 2190 per ounce. While the company mentioned engaging in producer hedging to protect cash flows in times of significant expenditure, for specific debt servicing requirements and to safeguard the viability of higher cost operations, the company also reported a realized loss of USD 15.6 million in the first half of 2021 due to their hedging decisions (Gold Fields, 2021). Similarly, Northern Star Resources reported a combined loss of USD 300 million over three months in the beginning of 2021 on the Australian Securities Exchange due to previous hedging decisions. As a result, the company promised to limit future hedges to no more than 15 percent of production in the next 3 years (Ker, 2021). This is in line with the general trend towards net de-hedging detailed in the previous commodity update.

Moving forward, producer hedging is expected to remain low as producers m willing to keep their production exposed to changing gold prices. Additions are expected to remain contained to companies that may hedge to meet debt finance requirements (WGC, 2021).

Recycled gold

While the supply of recycled gold grew marginally in 2020, gold recycling fell 12.3 percent year-on-year in the first three quarters of 2021 (Figure 8). As mentioned in the previous commodity update, the decision of whether people recycle gold is based largely on the general economic outlook as well as the price of gold. In other words, people are inclined to recycle gold in times of perceived financial crisis and when the price of gold is high.

The decrease in gold recycling in the first three quarters of 2021 highlights people's anticipation of economic recovery as COVID-19 vaccination levels rise coupled with a fall in gold prices, reducing incentives to recycle gold (WGC, 2021). Moving forward, gold recycling is expected to remain subdued with one estimate forecasting world gold recycling to fall 5.2 percent year-on-year to 1211 tonnes in 2021. Further, lower gold prices and improving economic situations are likely to discourage gold recycling with gold scrap supply forecasted to fall by 5 percent in 2022 and 8 percent in 2023 (DISER, 2021).

PRICE

The price of gold is determined by world demand and supply coupled with investment factors such as the global economic outlook and possible risk factors.

In terms of demand, global economic recovery and improved consumer sentiments are expected to support increased jewelry and technology demand. While central bank reserves are harder to predict due to sporadic purchases, several countries have announced commitments to purchase more gold. Gold investments, however, are unlikely to reach the heights experienced in 2020 as investors adjust to the pandemic and vaccination efforts assuage some COVID-19 related concerns.

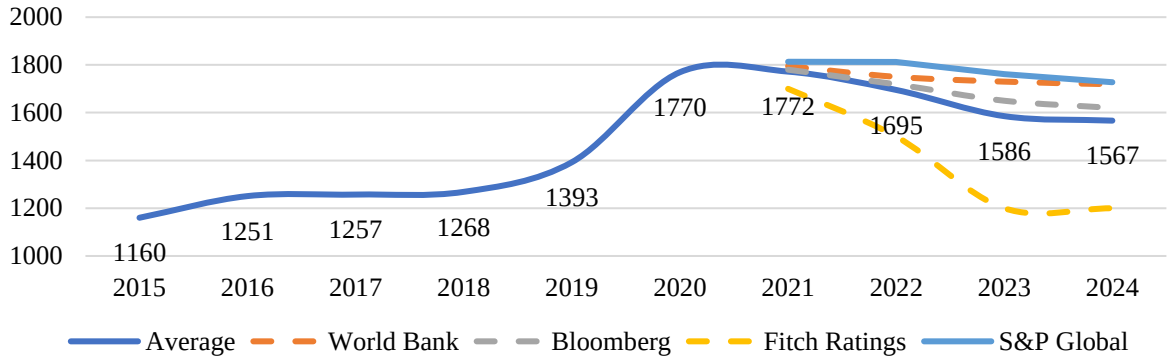
On the supply side, mine production is expected to continue to grow as COVID-19 related disruptions decrease. In particular, North and Latin American production is expected to increase in the near term with the United States and Peru at the forefront. Conversely, gold recycling and producer hedging are likely to be dampened as the price of gold dips slightly.

Gold prices have remained high throughout 2020, averaging USD 1700 per ounce, as the outbreak of COVID-19 destabilized global economies. As countries adjusted to COVID-19 related restrictions and began aggressive vaccination programs, the world economy showed signs of recovery in the second half of 2020. As a result, gold prices normalized from the highs experienced in the first half of 2020 but still remained generally high.

According to the average of forecasts made by the World Bank, Bloomberg, Fitch Ratings and S&P Global, gold prices are expected to remain high in 2021 and going into 2022. The long-term trend of price normalization still persists, albeit at a slower pace than anticipated in previous estimations (

Figure 9).

Figure 9. World gold price forecasts, USD per ounce



Source: World Bank, Fitch Ratings, Bloomberg

In particular, the World Bank expects gold prices to remain just under USD 1800 per ounce in 2021 before falling steady to USD 1600 per ounce in 2025. This is a significant increase in short-term prices from its previous outlook of USD 1700 per ounce in 2021 but long-term predictions remain steady (World Bank, 2021). Similarly, the median Bloomberg forecast was more optimistic than in the previous commodity update with gold prices expected to be USD 1780 per ounce in 2021 before falling steadily to USD 1620 by 2024. Interestingly, the average price forecast was very high in comparison, pointing to the very confident price outlooks held by some analysts. On the other hand, Fitch Ratings' forecast remained well below the average, highlighting their conservative stance, particularly in periods of rising prices (Fitch Ratings, 2021). Still, there was a modest increase in gold price assumptions with prices expected at USD 1700 per ounce in 2021 before falling sharply to USD 1500 in 2022. S&P Global's gold forecast was the most optimistic, with gold prices at USD 1813 per ounce in both 2021 and 2022. This estimate was based on the US Federal Reserve's indication to keep interest rates low to combat unemployment despite rising inflation (S&P Global, 2021). Overall, while the price consensus for gold remains high in the short-term, the expectation that prices will fall and normalize in the medium to long-term remains unchanged.

Mongolian gold prices are directly linked to world gold prices. In particular, the Bank of Mongolia's gold purchasing prices are based on the gold prices set by the London Bullion Market Association and adjusted by the exchange rate. As such, Mongolian gold prices are expected to follow world price trends by remaining high in the short-term before falling and normalizing in the long-term.

2.2 MONGOLIAN MARKET

DEMAND SIDE

Mongolian gold demand is made up of gold exports and domestic consumption. Domestic consumption, in turn, is determined by gold purchases by the Bank of Mongolia as it purchases all domestically produced gold that is not directly exported.

Table 7. Local gold export, by quarter

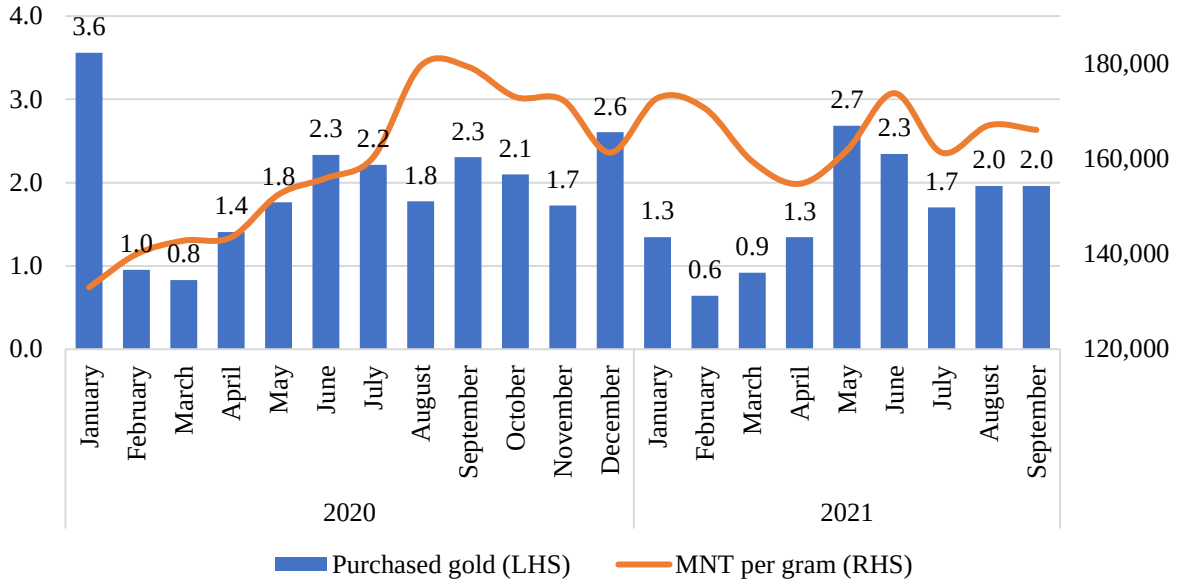
	2020Q1-Q3			2021Q1-Q3			Change (2021/2020)	
	Volume (tonnes)	Value (mln USD)	%*	Volume (tonnes)	Value (mln USD)	%*	Change	%*
Non-monetary gold	20.2	1166	23%	7.87	460	7%	-61%	-14%

Note: % - Contribution to total growth* *Source: Bank of Mongolia*

Mongolia exported 7.87 tonnes of gold, valued at USD 460 million, in the first three quarters of 2021. This is a significant drop compared to the 20.2 tonnes of gold, valued at USD 1.1 billion, exported in the same period in 2020. As a result of this decrease, the contribution of gold exports to total growth fell from 23 percent in 2020 to 7 percent in 2021 (Table 7). Similarly, precious metals purchased by the Bank of Mongolia also fell, though to a less significant extent. In particular, precious metals purchased

by the Bank of Mongolia fell 46 percent year-on-year in the first quarter of 2021, before increasing 16 percent year-on-year in the second quarter and again falling 11 percent year-on-year in the third quarter of 2021 (Figure 10). Overall, as of September 2021, the Bank of Mongolia purchased 14.9 tonnes of precious metals, a 13 percent decrease compared to the same period last year (Bank of Mongolia, 2021).

Figure 10. Precious metal purchased by the Bank of Mongolia (tonnes) and gold buying price (MNT per gram), 2020-2021



Source: Bank of Mongolia

This decrease may in part be attributed to the Bank of Mongolia's gold buying price. For instance, the gold buying price consistently increased from MNT 132 thousand per gram from January 2020 before peaking at MNT 179 thousand per gram in August 2020 before staying in the MNT 170 to 160 thousand per gram range for the remainder of the year (Figure 10). Conversely, the gold buying price fluctuated greatly in 2021, ranging from MNT 172 thousand per gram at the start of the year to MNT 154 thousand per gram in April 2021 and back up in June 2021. This constant oscillation may have deterred producers from selling gold to the Bank of Mongolia as they waited to get a better gauge of the gold buying price.

The Bank of Mongolia's gold purchasing decisions are guided by the Gold-2 national program. Since its approval in 2017, the Gold-2 national program was focused on reinvigorating Mongolia's gold sector, supporting domestic gold producers while also bolstering Mongolia's foreign exchange reserves. In line with the program, the Bank of Mongolia has steadily increased its gold purchases in order to reach its goal of purchasing 20 to 25 tonnes of gold annually.

As mentioned in the previous commodity update, within the scope of the program, the Bank of Mongolia began offering gold producers loans to boost overall gold production during the COVID-19 pandemic. This loan program was extended in 2021 with the repayment period of short-term loans extended until the end of 2021 and the repayment period of long-term loans extended from 24 months to 36 months (D.Ulziisaikhan, 2021). While this bodes well for future domestic production, the Gold-2 national program's implementation period ended in 2020 and there have been no talks to extend or replace the program (E.Odjargal, 2021). As such, it is unclear whether the Bank of Mongolia will continue ramp up its gold purchases and the overall trajectory of domestic demand is uncertain.

SUPPLY SIDE

In the first three quarters of 2021, Mongolia produced 14.1 tonnes of gold, excluding Oyu Tolgoi's gold production (Table 8). This was a slight 5.4 percent year-on-year decrease compared to the amount

produced in the same period last year and suggests robust production levels despite the small dip in world gold prices.

Table 8. Mongolian gold production, by quarter, tonnes

	2020Q1-Q3	2021Q1-Q3	Y-o-y Δ%
Gold production /except OT/	14.9	14.1	-5.4%
Oyu Tolgoi production	2.7	11.1	315%

Source: NSO, OT website

Conversely, Oyu Tolgoi gold production increased significantly in the first three quarters of 2021, reaching 11.1 tonnes (Table 8). This is more than a 4-fold increase in production levels compared to the same period in 2020 and was largely due to access to higher ore grades. While access to higher copper and gold ore grades are expected throughout 2021, the gold production guidance for 2021 was revised down from 14.2 to 15.6 tonnes to 11.3 to 13.6 tonnes due to COVID-19 related measures. In particular, due to an increase in the number of COVID-19 cases across Mongolia, Oyu Tolgoi implemented a 2-week site-wide lockdown in March to limit potential transmission risks (Oyu Tolgoi, 2021). Moreover, Oyu Tolgoi was forced to declare force majeure on their shipments from March 30 due to Chinese border restrictions. While concentrate shipments resumed on April 15, border restriction risks remain (Oyu Tolgoi, 2021).

Increased domestic cases of COVID-19 also led to lockdowns in the South Gobi region, limiting Oyu Tolgoi's ability to routinely change its employment roster. Thus, the number of employees at the site were at times below 25 percent of the planned requirements in the second quarter of 2021. As a result of these setbacks, the projected progress of open pit operations and the underground mine development were adversely affected (Oyu Tolgoi, 2021). For instance, COVID-19 related employee restrictions and the inability to bring experts to the mine site are expected to result in a 9-month delay in the commissioning of shaft 3 and 4 of the underground mine. Overall, compliance to the additional COVID-19 related restrictions is estimated to cost Oyu Tolgoi an extra USD 140 million as of September 2021 (Oyu Tolgoi, 2021).

On a more positive note, Oyu Tolgoi and the Government of Mongolia announced reaching a binding agreement on the funding plan for Oyu Tolgoi's underground project. The new funding plan addressed the remaining funding requirement estimated at USD 2.3 billion and replaced a former agreement made in September 2020 (Turquoise Hill, 2021). The costs of the underground expansion have increased from USD 5.3 billion in 2016 to USD 6.75 billion according to the latest estimates. However, while disagreements with the Government of Mongolia have subsided for now, other investors have expressed their concerns about delays in the underground development and its growing cost (Jamasmie, 2021). One such investor, Pentwater Capital Management, filed a claim in US court against Rio Tinto[5] and its handling of the underground development (Jamasmie, 2021). Such disputes, in addition to COVID-19 related delays, pose as persistent risks for Oyu Tolgoi and its future production, though short-term production will be supported by access to higher copper and gold ore grades.

In addition to Oyu Tolgoi, Mongolia has several new project streams. One such project is the Bayan Khundii gold mine owned by Erdene Resource Development (ERD). Following ERD's acquisition of the Ulaan exploration license detailed in the previous commodity update, the company began an expansion drill program in the area. Based on several rounds of drilling in August, September, and October of 2021, ERD reported confirming high grade gold mineralization in the area. Additionally, based on the July 2020 Feasibility Study for the open pit mine at the Bayan Khundii gold mine, the company is expected to produce an average of 1.8 tonnes of gold per year over a period of 7 years. Currently, production is expected to begin in 2023 according to the revised project schedule (ERD,

[5] Rio Tinto has a majority stake in Turquoise Hill while Pentwater Capital Management has a minority share of 9 percent. Turquoise Hill, in turn, has a 66 percent interest in Oyu Tolgoi.

2021). As continued exploration efforts lead to the discovery of more gold deposits in the area, future gold production looks optimistic.

Similar exploration efforts continued at Xanadu Mines' Kharmagtai copper and gold project located in the South Gobi region of Mongolia. For instance, the company drilled 13 new holes using 3 rigs in the third quarter of 2021 and continued the update of the mineral resource estimates for all deposits at Kharmagtai. About 61,500 meters of drilling were completed since the last mineral resource estimate released in 2018 and the new estimate is expected to be completed and released at the end of 2021 (Xanadu Mines, 2021). Additionally, Xanadu Mines obtained 100 percent ownership of the Red Mountain copper-gold deposit with the termination of the joint exploration agreement on November 30, 2021, with the Japan Oil, Gas and Metals National Corporate (JOGMEC). The Red Mountain deposit is located east of Kharmagtai and AUD 3.6 million was spent on its exploration as of September 2021 under the joint exploration agreement with JOGMEC. Deeper drilling is slated to continue in 2022. According to Xanadu Mines, consolidation of Red Mountain streamlines the company's ownership of assets in Mongolia and strengthens its project pipeline (Xanadu Mines, 2021).

Production continued at Steppe Gold's Altan Tsagaan Ovoo (ATO) mine. As of the third quarter of 2021, ATO reported an estimated 1.13 tonnes of gold in inventory and progress on its construction of a new crushing unit that is expected to be operational by the end of 2021. Moving forward, Steppe Gold is focused on maximizing their inventories to set up for a strong production year in 2022 (Steppe Gold, 2021). Additionally, the company released its Feasibility Study for the ATO mine project, according to which the project is expected to make a total gross revenue of USD 1.72 billion over 12.5 years with first concentrate production anticipated in the fourth quarter of 2023 (Steppe Gold, 2021). The company is expected to produce the equivalent of 3 tonnes of gold in concentrate per year in the first 5 years of production (Bloomberg, 2021). These developments bode well for Mongolian gold production in the coming years.

On the other hand, no major developments have been made on the Kazakhstan-Mongolia gold and silvery refinery detailed in the previous commodity update. According to Erdenes Alt Resources, the signatory of the refinery agreement with Kazakhstan on behalf of Mongolia, the company has spent the last 2 years focused on vital preparatory work such as obtaining state licenses, deciding where the refinery should be located, and conducting a feasibility study as well as an environmental impact assessment (Erdenes Alt Resources, 2021).

Mongolia's gold reserves decreased marginally going into 2021. As of September 2021, reserves of quartz vein gold decreased 9 percent year-on-year to 73.6 tonnes while reserves of placer gold increased by 0.9 tonnes to 3.4 tonnes (Table 9). Despite this, the number of active gold mining licenses registered by the Mineral Resources and Petroleum Authority of Mongolia increased from 531 licenses at the end of 2020 to 541 as of September 2021 (MRPAM, 2021).

Table 9. Local gold reserves

Gold reserves	Measurement	As of Sept 2020	As of Sept 2021
Quartz vein gold	tonnes	80.9	73.6
Placer gold	tonnes	2.5	3.4

Source: Mineral Resource and Petroleum Authority of Mongolia

Mongolian gold production is expected to remain positive in the short-term supported by stable reserves, new project streams and Oyu Tolgoi's higher ore grades. The completion of Oyu Tolgoi's underground project and the beginning of commercial production of new project streams are expected to support production in the medium to long-term. Additionally, as mentioned in the previous commodity update, the Government of Mongolia expects to export 20 tonnes of gold at USD 1950 per ounce in 2021 and 16 tonnes of gold from 2022 to 2024 at an average price of USD 1730 per ounce in 2022 and USD 1750 per ounce in 2023-2024 (GoM, 2021). However, it is worth noting that the

Government of Mongolia has not expressed any intentions to replace or extend the Gold-2 national program through which the government and the Bank of Mongolia supported domestic production.

2.3 CONCLUSION

World gold demand fell 9.4 percent in the first three quarters of 2020, owing to a significant decrease in gold investment demand despite increased demand in all other categories. Global economic recovery and restored consumer confidence saw an increase in gold demand for jewelry and technology. In particular, world gold jewelry demand rose 49 percent year-on-year as Indian jewelry demand increased substantially and Chinese jewelry demand recovered to pre-pandemic levels. Technology demand also saw a 12.3 percent year-on-year growth in the first three quarters of 2021 due to robust demand for electronics, particularly smartphones. Additionally, central banks added just under 400 tonnes of gold to their reserves as Brazil, Hungary and Thailand made sizable purchases for the first time in many years. These improvements, however, were overshadowed by a 57 percent year-on-year fall in gold investment demand as the first three quarters of 2021 saw an overall ETF outflow of 156 tonnes. This reflects investors' anticipation of better global economic conditions as gold is considered a stable investment whose value decreases as global stability increases. Looking forward, jewelry demand is expected to continue recovering as both Indian and Chinese demand ramp up. Gold demand for technology is also forecasted to grow, supported by the overall growth of the electronics sector. Likewise, central bank purchases are expected to increase in the near term as countries such as Serbia, Ghana and Poland announced their plans to make gold purchases. On the other hand, investments are likely to remain dampened as economies adjust to and recover from the COVID-19 pandemic, increasing the attractiveness of other investment options.

World supply grew a marginal a 0.2 percent year-on-year in the first three quarters of 2021, owing to a 5 percent year-on-year increase in mine production. Mine production saw fewer COVID-19 related disruptions in mine operation and was supported by higher ore grades and increase production in Canada, Peru and South Africa. Conversely, producers de-hedged 25 tonnes of gold in the first three quarters of 2021 as producers were more willing to keep their production exposed to the gold spot price. Gold recycling also fell 12.3 percent year-on-year in the first three quarters of 2021, highlighting people's optimistic economic outlook coupled with lower gold prices. Moving forward, world supply is expected to grow, supported by increased mine production while producer hedging, and gold recycling are forecasted to remain subdued.

Based on these supply and demand expectations, the price of gold is forecasted to fall slightly in 2022 but remain high at USD 1695 per ounce on average. However, financial institutions and organizations remain firm in their expectation that the price of gold will normalize from the highs experienced in 2020 and fall in the medium to long-term.

As a price taker, Mongolian gold prices are also expected to fall in 2022, following global gold price trends. Mongolian gold demand forecasts are less clear. On one hand, the Bank of Mongolia continues to support domestic producers, extending the issuance of loans to gold producers into 2021, and the Government of Mongolia expects to export substantial amounts of gold as stated in budgetary documents. On the other hand, the Government of Mongolia has not expressed any indication of extending or replacing the Gold-2 national program whose implementation period ended in 2020. As for supply, short-term production is likely to be strong, supported by Oyu Tolgoi's access to higher ore grades. While Oyu Tolgoi's underground mine development continues to face delays, its eventual completion and the beginning of new project streams are expected to increase Mongolian gold supply in the medium to long-term.

3. COAL

The coal market consists of two types: coking coal and thermal coal. Coking coal accounts for most of Mongolia's coal production and exports. Coking coal, also referred to as metallurgical coal, is primarily used to produce steel and contains more carbon and less ash and moisture than thermal coal. Mongolia is the third largest exporter of coking coal and around 95 percent of its coal exports are to China. The following sections will mainly focus on the coking or metallurgical coal market.

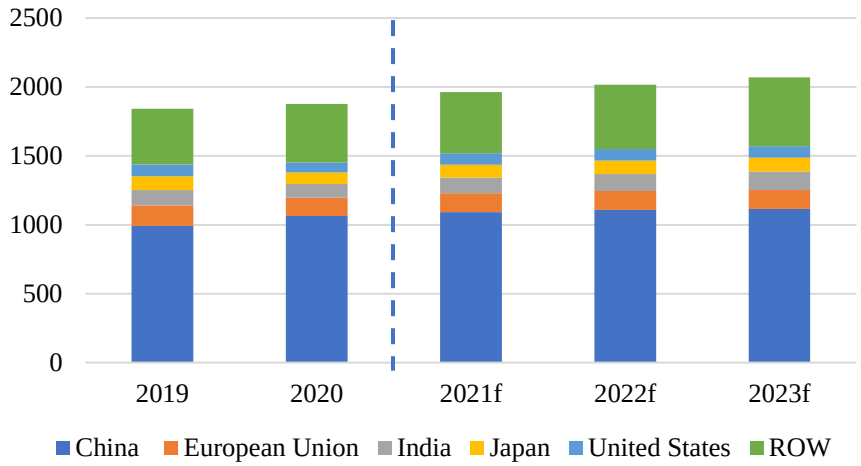
3.1 WORLD MARKET

Demand for metallurgical coal has been rapidly increasing; however, supply remains low. The rapid growth in demand for metallurgical coal can be explained by an increase in the purchase and production of cars and other manufactured products; this spending frenzy comes after two years of savings by most Western countries. On the supply side, the COVID-19 pandemic and associated restrictive measures have limited mine production and transportation, creating a delay in supply recovery. Additionally, China's informal import restriction on Australia adds to the challenge of reconfiguring the supply chain.

DEMAND SIDE

Growth in steel production is the main driver for rising global demand for metallurgical coal. According to the World Steel Association's April 2021 forecasts, steel demand will increase by 5.8 percent in 2021 and 2.7 percent in 2022. However, these forecasts were downgraded slightly in October to be 4.5 percent (1855 Mt) in 2021 and 2.2 percent in 2022 (1896 Mt). The adjustment in steel demand forecast is due to a deceleration in Chinese steel demand. However, global steel demand excluding China is expected to return to its pre-pandemic level in 2021. This is assuming that vaccinations continued to be administered worldwide and the current COVID-19 variants are less detrimental to the supply chains than the initial waves of COVID-19 (World Steel Association, 2021).

Figure 11. Crude steel production, Mt



Source: World Steel Association (2021), Department of industry, Science, Energy and Resource (2021)

China

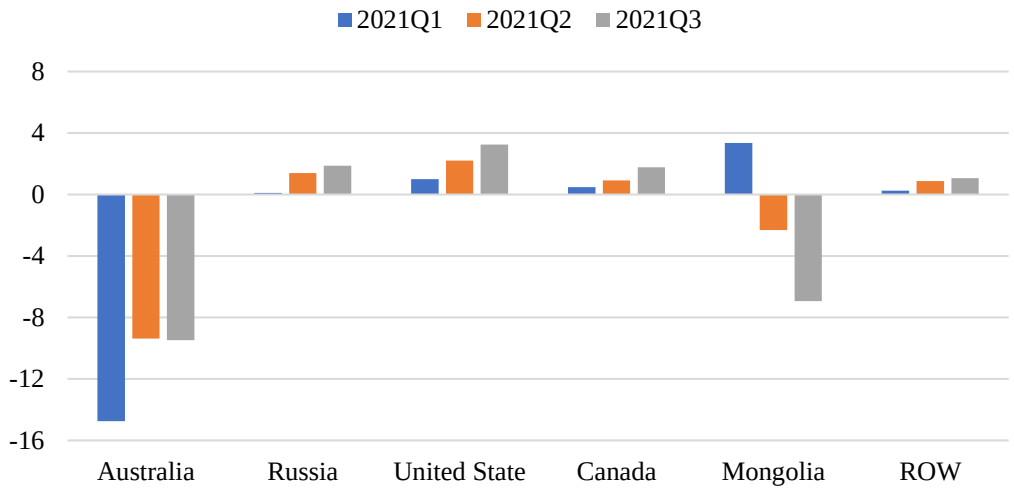
In 2020, most of the the major crude steel producing countries, except China, experienced a contraction due to the COVID-19 pandemic. Chinese crude steel production increased 5.6 percent year-on-year to reach a historical level. The rapid economic recovery experienced by China during the first half of 2021 began to slow down from June. The downturn in steel consuming sectors since July led to steel demand to decline by 13.3 percent year-on-year in July and 18.3 percent year-on-year in August. The decline was mainly due to the downturn in the real estate sector and government restrictions imposed on the

Chinese steel industry. According to the World Steel Association, overall steel demand is expected to decline by 1.0 percent in 2021.

In September 2020, China announced its intention to become carbon neutral before 2060. As part of the decarbonization effort, the Chinese government announced it will curb steel output, with a goal to constrain volumes in 2021 to 2020 levels (Ng, 2021). Steel output growth in the first half of 2021 and demand recovery for manufacturing products are likely to put a strain on the policy.

China's total metallurgical coal imports fell 40.9 percent in the third quarter of 2021. Mongolia has been a major importer since the imposition of informal Chinese import restrictions on Australia. Since April 2021, border crossings became constrained as the number of COVID-19 cases increased in Mongolia. This situation has led to Russia, Canada, and the United States to become the main metallurgical coal exporters to China. The current level of Chinese imports does not meet domestic demand and as a result, the price of high-quality coal in the Chinese domestic market reached USD 442 per tonne in October. However, Chinese metallurgical coal imports are expected to increase in the fourth quarter of 2021. For instance, imports from Mongolia began to increase from the end of September and some Australian coals have been processed through the Chinese customs and ports. An estimated 4 to 5 Mt of metallurgical coal from Australia, stranded at the Chinese port prior to the informal restriction, was freed up.

Figure 12. China's metallurgical coal imports, year-on-year change, million tones



Source: Bloomberg

Rest of the World

Global steel demand, excluding China, declined by 9.5 percent in 2020. In 2021, the situation is expected to reverse. Demand for steel from all countries except China is expected to grow by 11.5 percent.

India is the world's second largest steel producer and the second largest importer of metallurgical coal. In 2020, India imported 51 Mt of metallurgical coal, a decline of 12.1 percent year-on-year from 58 Mt in 2019. The Indian economy was hit hard by the second wave of the COVID-19 pandemic in April-June 2021, which led to a downturn of all the sectors in the economy. However, the number of COVID-19 cases began to decline in June and the Indian government eased containment measures. As a result, the economy began to recover in July and a strong overall steel demand is expected for the year 2021.

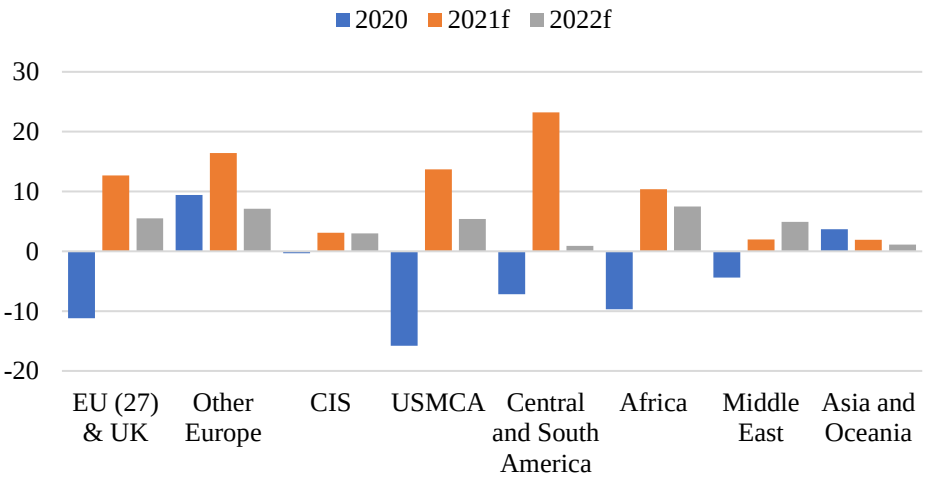
Recovery in EU steel demand, which started in the second half of 2020, has continued with all steel-using sectors continuing to recover despite the ongoing COVID-19 pandemic. Steel consumption increased by 40.5 percent year-on-year in the second quarter of 2021. Growth in Europe's steel-using

sectors, such as construction, mechanical engineering, and automotive, are expected to continue through to the end of 2021 (Virchenko, 2021).

In advanced Asian countries, despite the deteriorating COVID-19 situation in 2021 and slow vaccination rates, strong rebound in world trade and government infrastructure programs are driving the recovery in steel demand. In Japan, increasing export, investment, and consumption are leading the gradual recovery in steel demand. The recovery in consumption and investment are expected to support growth in all steel-using industries in 2022. In South Korea, growing exports and industrial investment are expected to push steel demand for 2021 to 2019 level. South Korea saw a jump in new shipbuilding orders in 2021, which will likely boost South Korea's steel demand in the near term (World Steel Association, 2021).

Although new waves of infections, low vaccination rates, and a slow recovery in tourism are constraining developing economies, the steel demand in these economies have improved slightly in 2021. In 2022, the situation in developing countries is expected to further improve as more of the populations receive vaccinations. However, the pandemic is expected to have a long-term impact on these economies due to the weakened financial positions and accumulated structural challenges (poor infrastructure, bad governance, and differential growth opportunities).

Figure 13. Steel demand forecast



Source: World Steel Association

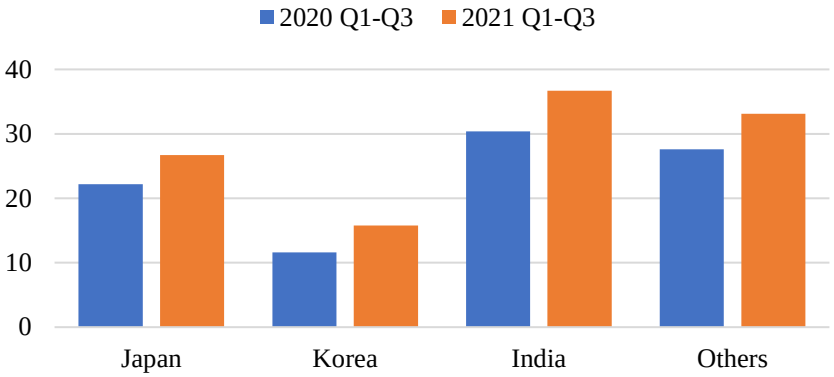
SUPPLY SIDE

Global metallurgical coal supply continues to lag pre-pandemic levels due to COVID-19 and associated containment measures. World exports are expected to reach 315 Mt in 2021, up 5.7 percent from the previous year, but 6.9 percent lower than in 2019.

Australia

In 2020, Australian metallurgical coal supply declined 6.5 percent year-on-year largely due to the informal import restriction imposed by China. Therefore, Australian metallurgical coal exporters had to find new markets. Australian exports have now integrated into new supply chains independent from Chinese demand (Gibbons, 2021). During the first eight months of 2021, exports to Japan increased by 39.8 percent year-on-year, exports to South Korea by 56 percent, and exports to India by 44.9 percent (Figure 13). European importers have also sought Australian supply, which is costs relatively less than coal from the United States. As trade volumes have fully recovered, the build up of Australian metallurgical coal inventories caused by China’s informal import restriction, have cleared.

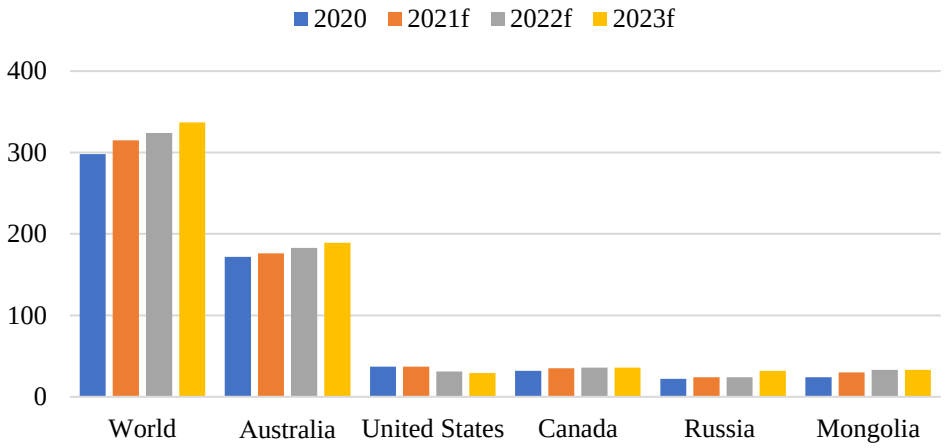
Figure 14. Australian metallurgical coal export, Mt



Source: Bloomberg

Australia's metallurgical coal supply is expected to be supported by the expansion of the Russell Value coal mine of Wollongong Coal Limited (WCL) in the near term. The mine received the necessary environmental permits on its expansion plan in early September. WCL ks to extract an additional 3.7 Mt of metallurgical coal from the colliery 8 kilometers north of Wollongong over the next five years and the project could provide up to 200 jobs and provide a USD 200 million boost to the economy (Fuller , 2021). Australian exports are expected to grow 1.1 percent to 176 Mt in 2021 and continue to grow to 189 Mt in 2023.

Figure 15. Metallurgical coal exports, Mt



Source: IHS (2021); Department of Industry, Science, Energy and Resources (2021)

Despite the fact that China is facing an energy crisis and the price of coking coal is at an all-time high due to supply shortages, analysts predict that China is not likely to lift the informal import restriction on Australia in the near term. Although the informal import ban is still in place, China has started to unload a small volume of the Australian coal shipments which were stuck at the ports prior to the ban. There is an estimated 4 to 5 Mt of coking coal from Australia at Chinese ports (Chong, 2021).

Rest of the World

In recent months, Russian exports have been plagued by seasonal rail repairs and the collapse of a bridge on the Trans-Siberian Railway but have also continued to benefit from China's restriction on Australian coal. As of the third quarter of 2021, Russia's exports to China surged by 58.2 percent compared to the same period last year. Russian coal exports are expected to reach 24 Mt by the end of 2021 and 32 Mt by 2023 (Figure 15). The increase in coal exports between 2021 and 2023 is due to the commission of new transport capacities during the period.

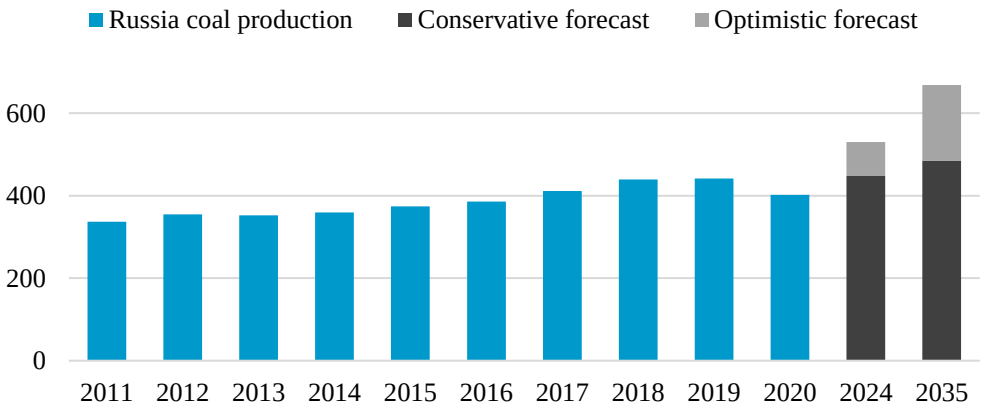
Russia has been investing heavily in new mining capacity and railway and port expansions, which is expected to increase its export capacity to EU and South Asian markets. Currently, a RUB 720 billion (USD 9.8 million) project is underway to expand Russia's two longest railways – the Tsarist-era Trans-Siberian railway and the Soviet Baikal-Amur Mainline that link western Russia with the Pacific Ocean. The project will increase the transport capacity of coal and other goods to 182 Mt per year by 2024 (Fedorinova & Quinn, 2021).

Figure 16. Trans-Siberian railway and BAM railway

Source: Bloomberg

Russia's shared border and good relations with China may allow for Russia to become the largest exporter of coal to China, a country that consumes more than half of global coal exports. This is further assisted by the fact that Australia, the current largest exporter of coal, is facing trade restrictions from China. President Putin urged for swifter modernization of the railways during a meeting with coal miners in March 2021. The state-owned Russian Railways has mobilized military units to work on the modernization of the Baikal-Amur Mainline (BAM) to make up for the shortage in foreign workers due to the COVID-19 pandemic. In April 2021, the Russian military began construction of the railway in the Amur region near China and has started to expand the 340 kilometer section of the single-track into double-track. The 10 railway brigades providing logistical support shall be deployed until at least 2023 at a cost of RUB 2.5 to 3 billion (USD 34 to 41 million) (Ishikawa, 2021).

Figure 17. Russian coal production and forecast, Mt



Source: Russia Energy Ministry, IEA

Despite a relatively high production cost, the United States has long been the second largest exporter of metallurgical coal after Australia. Although the United States supply was stagnant for the most of

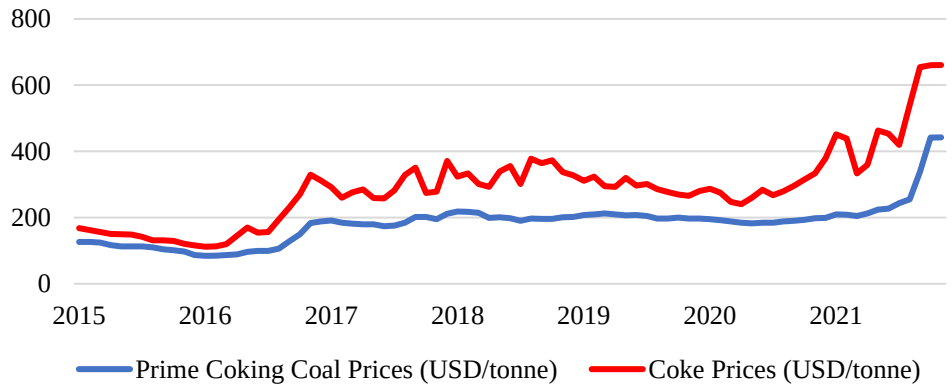
the first half of 2021, coal exports in 2021 are expected to be higher than the 2020 levels. However, a slight decline is expected in 2022 (Figure 15). As the surge in EU demand for steel passes, the competitiveness of high-cost US metallurgical coal will decline.

Canada has increased its exports in response to China's restriction on Australian coal imports. However, in recent months, operations of Teck Resources, Canada's largest coking coal producer, and rail services between Canadian west coast terminals have been disrupted by wildfires (Li & Lu, 2021). As a result, Teck Resource was unable to meet its target level of exports. However, the situation for Canadian exporters is improving and exports are expected to reach 35 Mt in 2021 (Figure 15).

PRICE

In October 2021, the price of coking coal reached a record high in China due to supply shortages (Figure 18). Coking coal prices have been on the rise since early April in response to tight supply amidst ongoing safety and environmental checks in main mining regions in China (The Coal Hub, 2021). Additionally, restrictions on Australian coal imports and a significant drop in Mongolian coal imports have pushed up prices even further. However, the surge in coking coal prices have slowed as previously stranded Australian coal supply is freed up and Mongolian coal exports have been increasing since October.

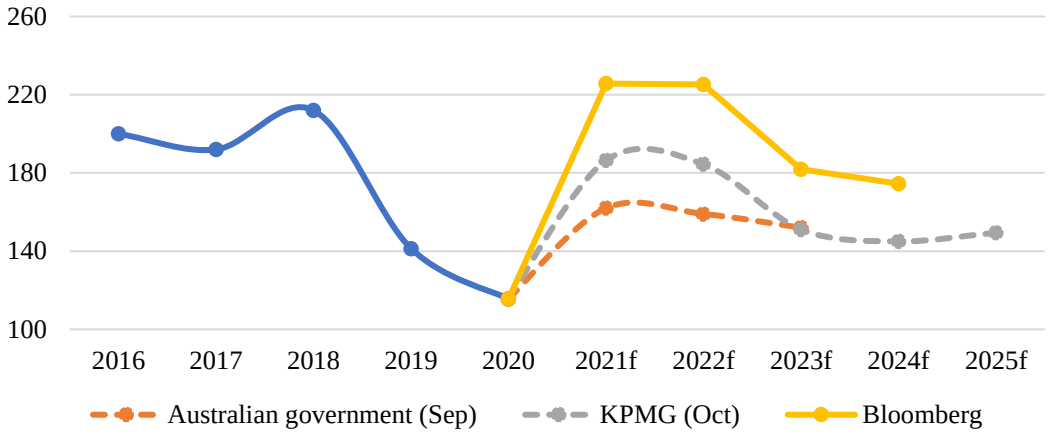
Figure 18. China metallurgical coal price, USD per tonne



Source: Bloomberg

On the other hand, Australian coking coal prices have increased sharply in September. However, prices are expected to weaken over time as importers in key markets such as South Korea, Taiwan, Japan, and India k to increase coal supplies to meet growing demand from steel producers. According to the Australian government's Department of Industry, Science, Energy, and Resources, the price of Australian hard coking coal are expected to decline to USD 162 per tonne in 2021, USD 159 per tonne in 2022, and USD 152 per tonne in 2023, on average.

Figure 19. Australian premium HCC spot price forecast, USD per tonne



Source: Department of Industry, Science, Energy and Resources (2021), KPMG, Bloomberg

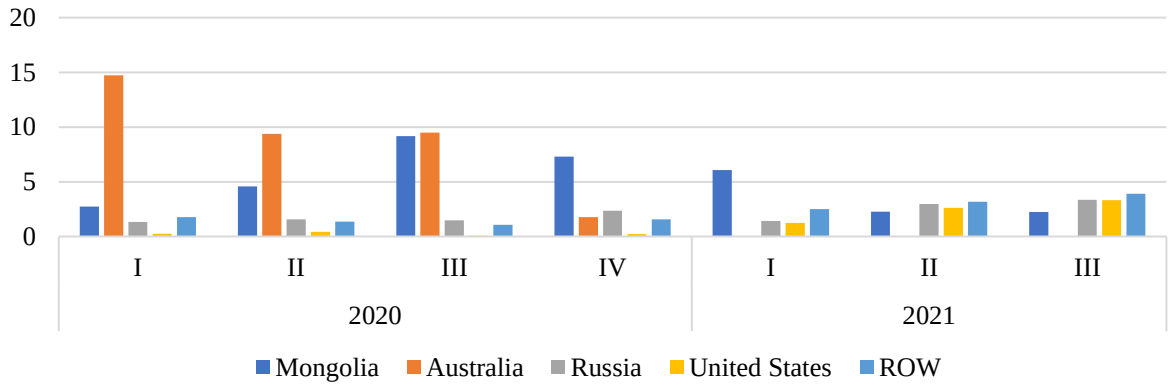
3.2 MONGOLIAN MARKET

The main challenge for Mongolia's coal industry in 2020 was border and port closures. Currently, Mongolian coal exports are still be transported via coal trucks, which have faced delays and halts with border port decontamination measures or closures. These circumstances have highlighted the necessity of coal transportation via the railways, a project which has been postponed for a number of years. The necessity of railways is more prominent during the COVID-19 pandemic as rail freights are operating relatively normally while roads are facing bottlenecks and backlogs. In 2021, border and port issues continued to persist and the number of coal trucks crossing the border was less than it was in 2020. In addition, the main coal port (Gashuunsukhait-Gantsmod) was closed in the second and third quarter of 2021 due to the COVID-19 pandemic. Since late September 2021, the situation faced by the Mongolian coal industry has begun to improve.

DEMAND SIDE

Mongolia became China's main supplier of coking coal in October 2020 due to the informal import ban on Australian coking coal. Mongolia maintained this status until the first quarter of 2021. In the first quarter of 2021, Mongolian coal exports to China doubled relative to the same period the previous year. As new cases of COVID-19 surged in Mongolia in the second quarter of 2021, operations at ports near the Sino-Mongolian border were limited or restricted causing a decline in coal trucks.

Figure 20. China metallurgical coal imports, Mt



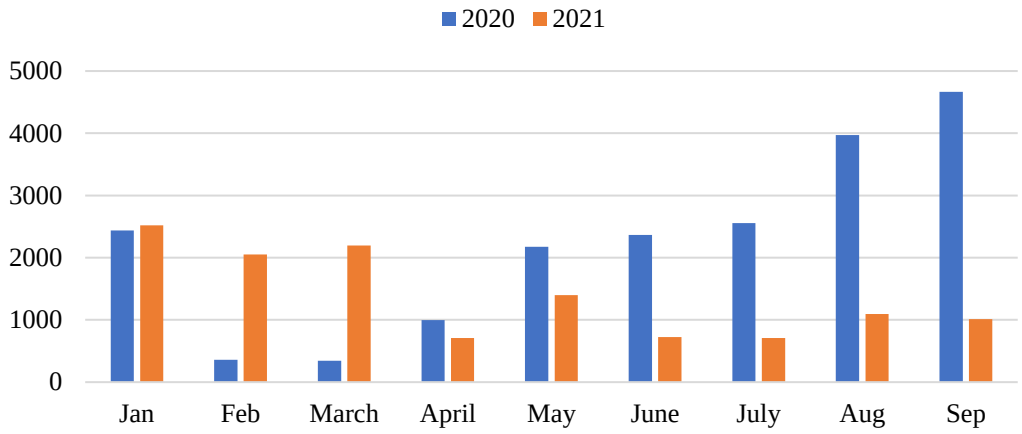
Source: Bloomberg

Due to coking coal supply shortages in China, China has expressed an interest in increasing its supply and imports since early September. During a virtual meeting between the Mongolian Deputy Prime Minister and the Chinese Minister of Commerce on 4 September 2021, the issue of purchasing additional mineral and agricultural products from Mongolia was raised (Wang, 2021). Furthermore, during another virtual meeting with the Mongolian Prime Minister and the Chinese Secretary of State on 12 October 2021, the desire to increase coal trade between China and Mongolia was expressed (Guo, 2021). Mongolian coal exports to China have been increasing since late September.

SUPPLY SIDE

According to the Mongolian Customs Agency, Mongolia's coal exports totaled 11.99 Mt during the first nine months of 2021, down 39.5 percent from the same period the previous year. Of total coal exports, 95 percent were to China, in other words, 11.38 Mt of coal was exported to China. The decline in exports was mainly due to border crossing bottlenecks and border closures.

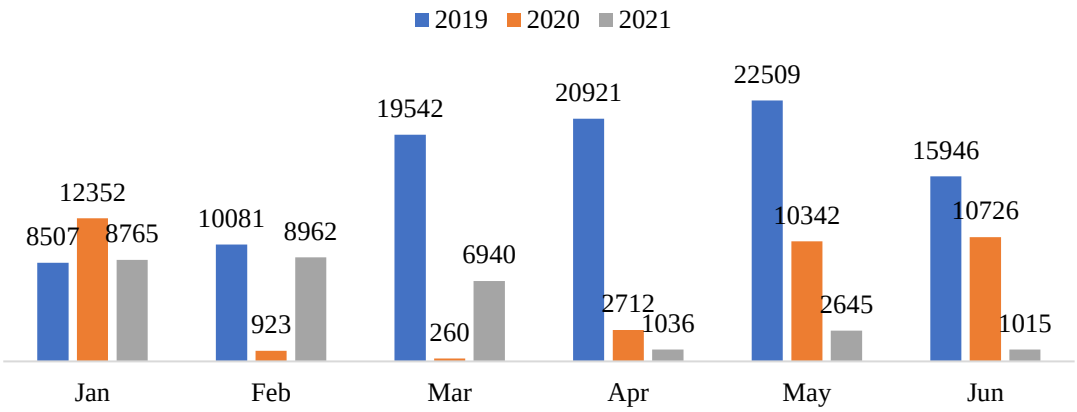
Figure 21. Mongolian coal export, thousand tonnes



Source: Mongolia's customs agency

In the first quarter of 2021, Mongolia exported 6.2 million tonnes of coal to China, accounting for more than 50 percent of China's total imports. However, at the end of March 2021, a case of coronavirus infection was reported in the mining area of Oyu Tolgoi located in the Khanbogd soum of Umnugovi province, and the Chinese side reduced its coal imports from Mongolia (Mishigsuren, 2021). As a result, Gashuunsukhait port, which accounts for about 70 percent of total coal exports, has n a sharp decline in coal exports, with 40 to 50 trucks passing through the border each day at the end of March (an average of 650 coal trucks crossed the border in the first half of 2020). Although Mongolia and China managed to double the number of coal trucks crossing the border by mid-April, border crossings halted in June and August as the number of infections increased (Delgertsetseg, 2021).

Figure 22. All coal-loaded trucks monthly throughput via GS-GM during January to June in 2019-2021



Source: Mongolian Mining Corporation Interim report (2021)

However, since the end of September, the number of coal trucks crossing the border has increased. In the three weeks to October 14, 6,919 coal trucks crossed the border, an increase of 60 percent over the same period last year (Unursaikhan, 2021). In addition, the construction of container terminals at key Mongolian ports, which account for 95 percent of coal exports, is expected to boost coal exports in the fourth quarter of 2021. These container terminals will allow Mongolian coal truck drivers to export without delays as the drivers no not have to exit their trucks or cross the border. This arrangement would allow for both sides to continue trade without risk of infection. Additionally, these terminals would be operational 24 hours a day, allowing for increased trade. The utilization of these terminals has not yet been approved by the Chinese counterpart.

The figure below shows the location of strategic coal deposits and border crossings (

Figure 23). Construction of the container terminal at the Gashuunsukhait port was completed in September 2021. During the night shift (between the hours of 20:30-07:30), the Mongolian Customs will weigh the goods being exported and offload the registered containers at the designated area before loading the empty containers. During the day shift (between the hours of 08:00-20:00), the Chinese counterpart will offload the emptied containers at the designated terminal area before loading the registered containers and transporting it to the Chinese port of Gantsmod. It is planned that around 27 thousand tonnes of coal will be exported via the container terminal per day and 8 Mt per year. Eventually, the capacity of the terminal will be double. In addition to the Gashuunsukhait port terminal, coal shall be exported via the Shiveekhuren port. The Shiveekhuren port commissioned four container crossing and a border checkpoint in July 2021 and the groundwork is currently underway to construct a terminal. The port currently has an annual capacity to export 12 Mt of coal and with the commission of the new terminal, its annual export capacity will increase by 10 Mt (Odjargal, 2021).

Figure 23. The main ports for mining exports

Source: Asian Development Bank

In addition to transport logistics issues amidst the pandemic, another factor impacting Mongolian coal exports is mineral royalties and the benchmark used to calculate it. On 25 October 2021, a discussion was held among coal mining companies regarding reference price set by the Ministry of Finance and calculation of mineral royalties (Dulam, 2021). During the discussion, mining companies agreed that the Ministry of Finance set unrealistic monthly benchmarks for coal prices, which in turn increase the tax burden on coal mining companies. Although linking the reference price used in calculating mineral royalties with world market price is appropriate, the current reference price is higher than the sales prices dictated in contracts. This forces coal companies to pay higher taxes on mineral royalties and causes significant operational losses to these companies. Due to this, Erdenes Tavan Tolgoi JSC, Mongolia's largest coal export, has halted sale of semi-coking coal and thermal coal since October 20th.

MONGOLIAN THERMAL COAL

The Baganuur coal mine, which supplies the majority of the coal used by power plants in the central region of Mongolia, and Tavan Tolgoi Fuel LLC, the main producer of coal briquettes, have begun their winter preparations for 2021-2022. The Baganuur coal mine currently has 213 thousand tonnes of coal ready for purchase and expects to strip 11.2 million m3 of soil to gain access to 3133.8 thousand tonnes of soil and sell 3089 thousand tonnes of coal in the winter of 2021-2022. Tavan Tolgoi Fuel LLC, on the hand, has been operating at full capacity since October 2021 and expects to produce 582,900 tonnes of coal briquettes in the winter of 2021-2022 to supply households located in Ulaanbaatar where the burning of raw coal is prohibited. According to these calculations, each household is expected to receive 3.4 tonnes of coal briquettes. For reference, Tavan Tolgoi Fuel LLC supplied 572,175 tonnes of coal briquettes in the winter of 2020-2021 to 171,482 households, averaging about 3.3 tonnes per household.

The Government of Mongolia plans to build a coal-fired power plant to supply electricity to Tavan Tolgoi, Oyu Tolgoi and other regional mining projects. The power plant will be built next to the Erdenes Tavan Tolgoi JSC coal concentrator located in the Tsogttsetsii soum of Umnugovi province. The construction of the power plant is slated to finish in 2024-2025 and annual domestic coal consumption is expected to increase by 1.4 tonnes with its completion. Currently, Oyu Tolgoi imports electricity from China and reported importing USD 126 million worth of electricity in 2020. The construction of

the power plant will improve the economic viability of strategic mining deposits in the Gobi region and will allow for the use of electricity from the domestic power system.

PRICE

Although demand for Chinese steel began to decline in the second half of 2021, coking coal prices in China continue to surge due to supply shortages. The price of Mongolian coal has followed the rising trend in Chinese prices as it reached a peak in October. However, coal prices have begun to decline in recent months as supply increased. In connection to this, the price of Mongolian coking coal declined in November. As of 5 November 2021, the price of Mongolian raw coking coal at Gantsmod was around CNY 2550-2700 (USD 398-422). Relative to the previous month, the price has declined by CNY 150-250 (USD 23.5-39.1). As for washed coking coal, the price was CNY 3050-3100 (USD 477-485) in November 2021, a decline of CNY 330 (USD 51.6) from the previous month.

According to the draft budget law, around 36.7 Mt of coal will be exported in 2022 at a price of USD 130-160 per tonne. Although 37.2 Mt of coal was planned to be exported in 2021, only 11.9 Mt of coal has been exported during the first three quarters of 2021. The export forecasts utilized in the draft budget law is overly optimistic. Additionally, even though coal export volumes in 2021 was low, prices were higher than expected which in turn prevented revenue shortfalls. However, in 2022, there is a risk that budget revenues may fail to meet projections as global coal supply stabilizes and prices fall.

3.3 CONCLUSION

Demand for steel, one of the main demand drivers for coking coal, is reaching pre-pandemic levels as the industry and economies recover. However, Chinese crude steel production began to decline in the first half of 2021 despite rising demand. Global steel demand is expected to reach pre-pandemic level by the end of 2021, except in China where steel demand is expected to decline in 2021 relative to the previous year.

Coking coal supply was disrupted by restrictive or lockdown measures implemented amidst the COVID-19 pandemic. As a result, the price of coking coal has soared in the reporting year. However, prices are expected to decline from 2022 as supply stabilizes.

The greatest challenge facing the Mongolian coal market is cross border trade restrictions. Due to the COVID-19 pandemic, ports, which account for a majority of coal exports, were forced to halt trade twice in 2021. The situation has been improving in recent months as exports to China have increased and is expected to continue improving as container terminals are put into operation at key ports.

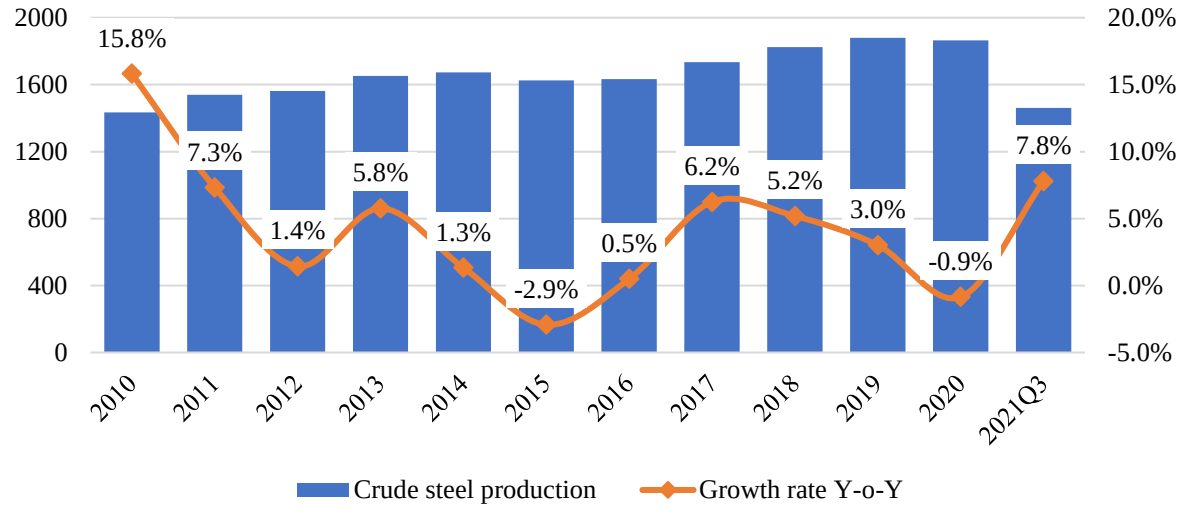
4. IRON ORE

4.1 WORLD MARKET

DEMAND SIDE

The steel industry is the main driving force of coking coal and iron ore demand as both commodities are utilized in the steel-making process. Similar to coking coal, steel production and its projections determine the demand for iron ore. After a decline in crude steel production in 2020 due to COVID-19, production relatively increased in 2021. During the first three quarters of 2021, world crude steel production increased 7.8 percent year-on-year to reach 1461.2 Mt (Figure 24).

Figure 24. World steel production, Mt



Source: World Steel Association

As mentioned in the previous commodity update, China, the largest crude steel producer, produced 1053Mt of crude steel in 2020, an increase of 5.2 percent year-on-year. This growth continued in the first half of 2021 as crude steel production in China hits an unprecedented level (increased 12 percent year-on-year). As China's government pursues a policy of keeping steel production at 2020 levels, steel mills will need to cut their productions substantially during the fourth quarter. During the first three quarters of 2021, China produced 805.9 Mt of crude steel, an increase of 2 percent year-on-year. Therefore, Chinese steel production is likely to be reduced in the fourth quarter to meet the overall target level for the year. As China aims to improve its air quality for the 2022 Winter Olympics, steel mills in the northern provinces must curtail steel production output by at least 30 percent during the period from January 1st to March 15th in 2022 relative to the previous year (Reuters, 2021).

Crude steel production increased moderately in 2021 in other major steel-producing countries despite the difficult situation posed by the pandemic. The increase in crude steel production was mainly due to high steel demand. For more details regarding crude steel production, please refer to the Coal section above. According to the Australian government's Department of Industry, Science, Energy and Resource (DISER), the annual world crude steel production is forecasted to increase by 4.5 percent and 2.8 percent in 2021 and 2022, respectively. Within this, China's production is forecasted to increase by 2.6 percent and 1.2 percent in 2021 and 2022, respectively (DISER, 2021).

SUPPLY SIDE

World iron ore production has decreased slightly over the last two years. The decline was primarily driven by a decrease in Brazilian iron ore production and restrictions related to the COVID-19 pandemic. In 2020, iron ore production fell by 2 percent to 2400 Mt (Table 10). According to Fitch

Ratings, global iron ore production growth will likely accelerate in the coming years and forecasted an average growth rate of 3.6 percent annually over 2021-2025.

Table 10. World iron ore production, Mt

	2017	2018	2019	2020
Australia	883	900	919	900
Brazil	425	490	405	400
China	360	340	351	340
India	202	200	238	230
Other	560	570	537	530
World	**2430**	**2500**	**2450**	**2400**

Source: United States Geological Survey

The world largest supplier of iron ore is Australia. As mentioned in the previous commodity update, Australia's iron ore production decreased by 2 percent in 2020. According to DISER, during the first half of 2021, Australia's iron ore production increased by 0.5 percent year-on-year to reach 442 Mt. Production at the three largest iron ore mining companies in Australia increased by 1 percent year-on-year during the first three quarters of 2021. The production at Rio Tinto and BHP Billiton declined 4.8 percent and 2.4 percent year-on-year, respectively, during the first nine months of 2021 (Table 11). Meanwhile, iron ore production of Fortescue increased 13.8 percent year-on-year during the first three quarters of 2021. The decrease in production observed by Rio Tinto and BHP Billiton was due to bad weather and storms and labor shortage caused by COVID-19 restrictions. Additionally, iron ore production of Rio Tinto is expected to lower than previously anticipated in 2021 as there are slight delays in the completion of the new mine at Koodaideri and Robe Valley mine replacement project due to the tight labor market. Despite the bad weather and tight labor market, production of Fortescue is expected to increase in 2021. This is due to the commission of the Eliwana mine with an annual capacity of 30 Mt in December 2020. As production of South Flank intensifies, production of Rio Tinto and BHP Billiton are expected to increase. Australian iron ore production is expected to grow 4.8 percent year-on-year in 2021 and 4.3 percent in 2022 (DISER, 2021). Fitch Ratings forecasts that the annual growth of iron ore production in Australia will be 1.8 percent on average over the period 2021 to 2025.

Over the last two years, Brazilian iron ore production has declined due to the dam collapse at Vale's Brucutu mine. However, Vale's iron ore production began to slowly recover since 2021. During the first three quarters of 2021, Vale and Anglo-American's iron ore production increased by 8 percent and 7.3 percent year-on-year, respectively. In the case of Vale, production increased due to better weather conditions and a recovery in operation since the tailing dam collapse. For Anglo-American, increase in production was caused by improvement performance of the Kumba mine. According to the August 2021 forecasts by Fitch Ratings, Brazil's iron ore production is forecasted to increase annually by an average rate of 10.6 percent over the period from 2021 to 2025. However, in September 2021, Vale announced that it will cut its target production capacity in 2022 by 30 Mt to 370 Mt. The cut is attributable to issues faced by it north Brazilian operations, delays in securing permits for a project at the Serra Norte complex, and additional waste-processing facilities at S11 (Bloomberg, 2021). Due to these reasons, recovery of Vale's iron ore production is expected to be slow. On 9 November 2021, Anglo-American announced that it will invest USD 797 million into its Minas-Rion iron ore mine by 2025 and increase its annual capacity by 26.5 Mt (Fastmarket MB, 2021).

According to Bloomberg, Chinese iron ore production is expected to increase 3 percent year-on-year in 2021. In May 2021, the Chinese government announced that it will aim to diversify its current iron ore import. Australia currently accounts for more than 60 percent of the country's iron ore imports. China's new goal includes a target of becoming 45 percent self-sufficient in steelmaking raw materials by 2025 (DISER, 2021). To reduce reliance on imports, local governments are encouraging iron ore mines to resume production and commission new capacity. Additionally, Chinese companies have invested in

overseas iron ore mines in West Africa and western Australia. According to Fitch Ratings forecasts, China's iron ore production is expected to increase over the next 3 to 4 years.

Table 11. Iron ore production by major companies, Mt

Company	Country	2020Q3	2021Q3	Change/%/
Vale	Brazil	215.9	233.1	8.0%
Rio Tinto	Australia	247.4	235.6	-4.8%
BHP Billiton	Australia	193	188.4	-2.4%
Fortescue	Australia	157.5	179.3	13.8%
Anglo-American	Brazil and South Africa	45.5	48.8	7.3%
ArcelorMittal	North America, Asia	42.7	37.5	-12.2%

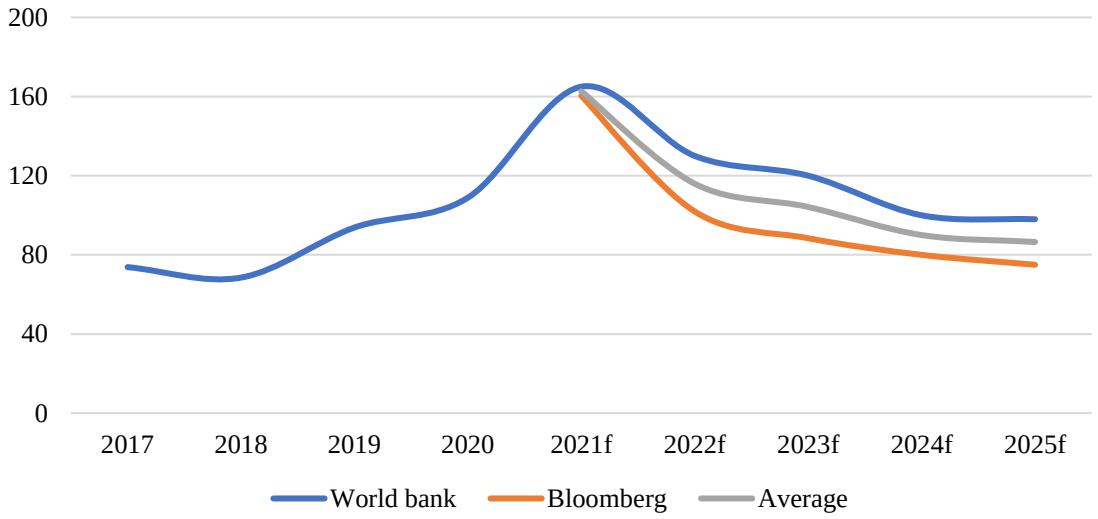
Source: Anglo-American, ArcelorMittal, BHP Billiton, Fortescue Metals Group, Rio Tinto, and Vale

As of the first half of 2021, Australian iron ore exports at the same level as the previous year of around 426.7 Mt. Australian export volumes are expected to rise in the second half of 2021. The main drivers of this increase will be the resumption of major ports at full capacity, improved weather conditions, and commission of new mines (DISER, 2021). During the first half of 2021, iron ore exports of Brazil increased 15 percent year-on-year, reaching the highest level since the collapse of the tailings dam in 2019. However, Brazilian iron ore exports decreased in the third quarter of 2021 as China's demand for iron ore decreased sharply. Therefore, the increase in Brazil's iron ore exports reduced slightly to 7.6 percent year-on-year during the first three quarters of 2021 as export volumes reached 267.1 Mt.

PRICE

Iron ore prices have been steadily increasing since 2018 and reached an all-time high in 2021. As mentioned in the previous commodity update, over the last two years, iron ore price increased sharply due to high steel production in China and a decrease in Brazilian iron ore production.

Figure 25. Iron ore 62% Fe price forecast, USD per tonne



Source: World Bank and Bloomberg

During the first seven months of 2021, iron ore prices remained elevated and reached a peak in July 2021 of USD 214.4 per tonne. This increase was due to an increase in China's steel production. However, from August 2021, iron ore price decreased sharply. As of September 2021, iron ore price was USD 124.5 per tonne (World Bank, 2021) and has continued to decline in the months after. The sharp decline in iron ore prices was due to a decline in Chinese steel production and an increase in iron ore exports from Australia and Brazil. According to Fastmarket MB, the seaborne price of iron ore at the Chinese port of Quindao was USD 100.1 per tonne on 4 November 2021. Moreover, in October

2021, World Bank increased its iron ore price forecast from its April 2021 forecast by USD 30 to 40 per tonne. According to the October 2021 World Bank forecast, price of iron ore will be USD 165 per tonne in 2021 before decreasing 21.2 percent year-on-year to reach USD 130 per tonne in 2022 (Figure 25). As of mentioned in previous commodity update, from 2022 and on, the price of iron ore is forecasted to decline due to an expected surge in supply. Iron ore supply will likely increase due to high iron ore prices and as Brazil's iron ore production recovers.

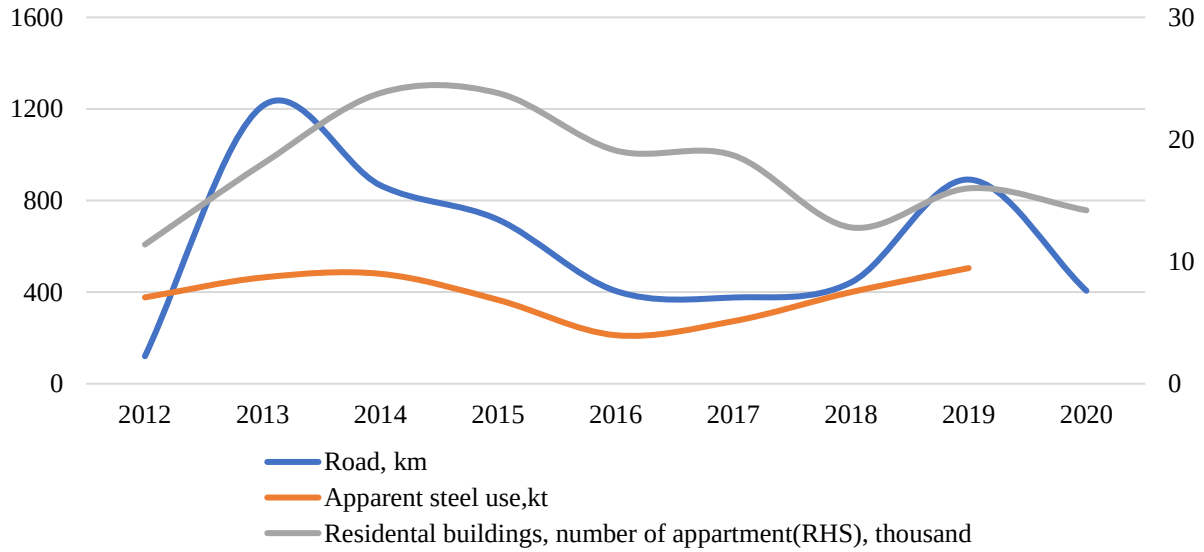
4.2 MONGOLIAN MARKET

DEMAND

Steel consumption tends to follow growths in the infrastructure and construction subsectors as these sectors are the main consumers of steel. As mentioned in the previous commodity update, in 2020, some activities and sectors in Mongolia underwent several curfews and restrictions due to COVID-19. Due to these restrictions, the infrastructure and construction subsectors' output decreased by 54.5 percent and 11.2 percent year-on-year, respectively. This trend is expected to continue until the end of 2021. During the first half of 2021, output of the construction sector (includes the infrastructure and construction subsectors) decreased by 39.7 percent year-on-year.

Prior to 2020, Mongolia's steel consumption had been on the rise due to steady economic growth. In 2019, Mongolia's steel consumption reached 550 thousand tonnes, the highest level in a decade. However, this trend was not maintained in 2020 and is not expected to be reached in 2021 either. However, due to the low capacity of domestic steel production, domestic steel consumption has a limited impact on demand for Mongolian iron ore.

Figure 26. Finished construction, road, and steel use

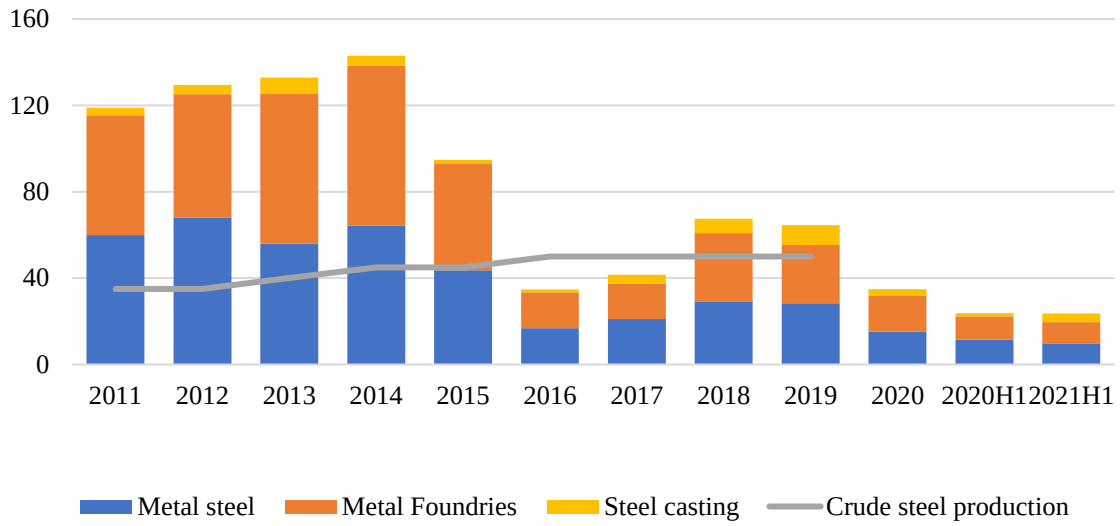


Source: National Statistics Office and World Steel Association.

There are a few small-scale plants that produce steel products in Mongolia. Domestic demand for iron ore is relatively low as Mongolian steel producers mainly utilize steel scraps in their steel production. As mentioned in the previous commodity update, Mongolian steel production declined sharply due to circumstances regarding the COVID-19 pandemic. In 2020, production of metal steel, metal foundries, and steel casting decreased by 46 percent, 38 percent, and 67 percent year-on-year, respectively. This trend is expected to continue in 2021. As of the first half of 2021, production of metal steel and metal foundries drop by 17.3 percent and 6.5 percent year-on year, respectively; while production of steel casting increased by 1.6 times to reach four thousand tonnes. The decline in production during the first half of 2021 was due to the three strict lockdowns implemented nationwide. The Mongolian government

is not expected to impose another lockdown for the rest of 2021. In light of this, the production of steel products might increase in the second half of 2021.

Figure 27. Production of crude steel and steel products, thousand tonnes



Source: MRPAM and World Steel Association

As mentioned in the previous commodity update, the Government of Mongolia has resolved to further develop the metallurgy industry, a resolution which has been reflected in a number of policies. However, despite the inclusion of this goal within the policy framework, the government has not taken any actionable steps in developing the metallurgical industry.

For instance, the government set a goal to develop a ferrous metallurgy plant in the Darkhan-Selenge region based on the Darkhan Metallurgical Plant; however, implementation has been slow. On 30 September 2021, the feasibility study of the "Mongol Steel Complex-1" was approved by the Minerals Council within the Ministry of Mining and Heavy Industry. The Darkhan Metallurgical Plant plans to implement the "Mongol Steel Complex-1" over the period from 2021 to 2025 with the purpose of processing iron ore and producing steel products.

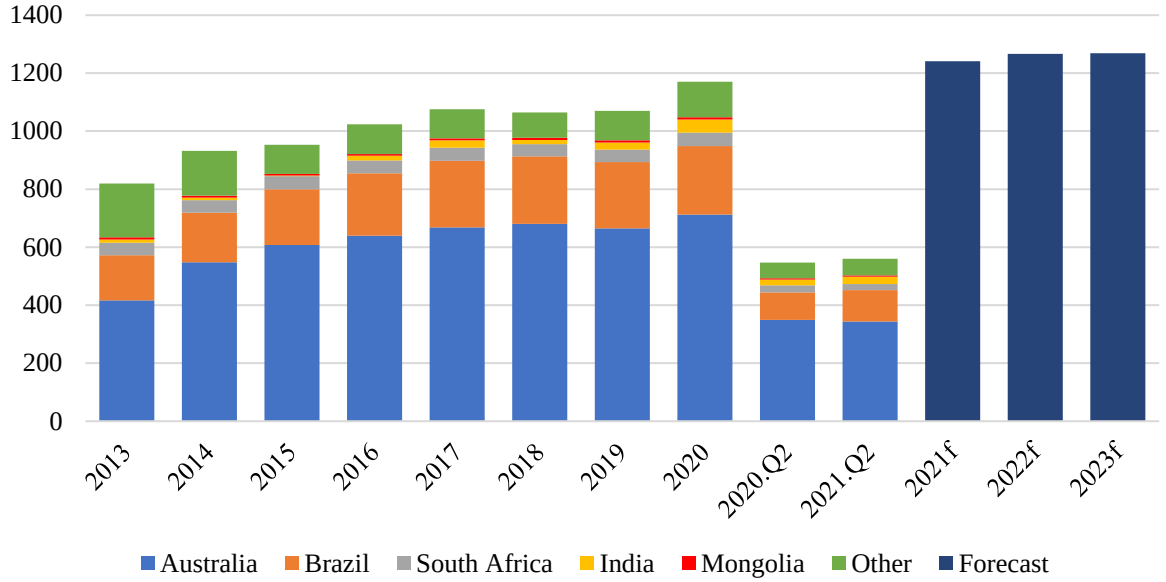
Due to the limited capacity of domestic steel producers, a large majority of Mongolia's steel demands and needs are met by imports. Therefore, the main market for Mongolian iron ore is China. As mentioned in previous commodity update, China's total iron ore imports increased 9.3 percent year-on-year, to reach 1170 Mt, in 2020 (

Figure 28). Of the 1170 Mt, 60.9 percent was from Australia, 20.1 percent from Brazil, and 0.7 percent from Mongolia. In 2020, Chinese iron ore import from Australia, Brazil and Mongolia increased by 7.3 percent, 2.9 percent, and 0.7 percent, respectively, from the previous year.

In the first half of 2021, Chinese total iron ore imports increased 2.6 percent year-on-year. On one hand, imports from Brazil and India increased by 14.1 percent, and 29 percent year-on year, respectively. On the other hand, imports from Australia and South Africa decreased by 1.4 percent and 18.3 percent year-on-year, respectively (

Figure 28). Imports from Mongolia decreased by 4.9 percent in first three quarter of 2021 relative to the same period the previous year. This decline was due to the restrictions imposed at the border. In general, total iron ore imports from Mongolia are expected to decline in 2021.

Figure 28. Chinese iron ore import, Mt



Source: Department of Industry, Science, Energy and Resources and International Trade Center

According to the forecasts by DISER, Chinese iron ore imports are expected to increase in the near term. Total Chinese iron ore imports are expected to reach 1218 Mt in 2021 as Chinese steel demand increases (DISER, 2021).

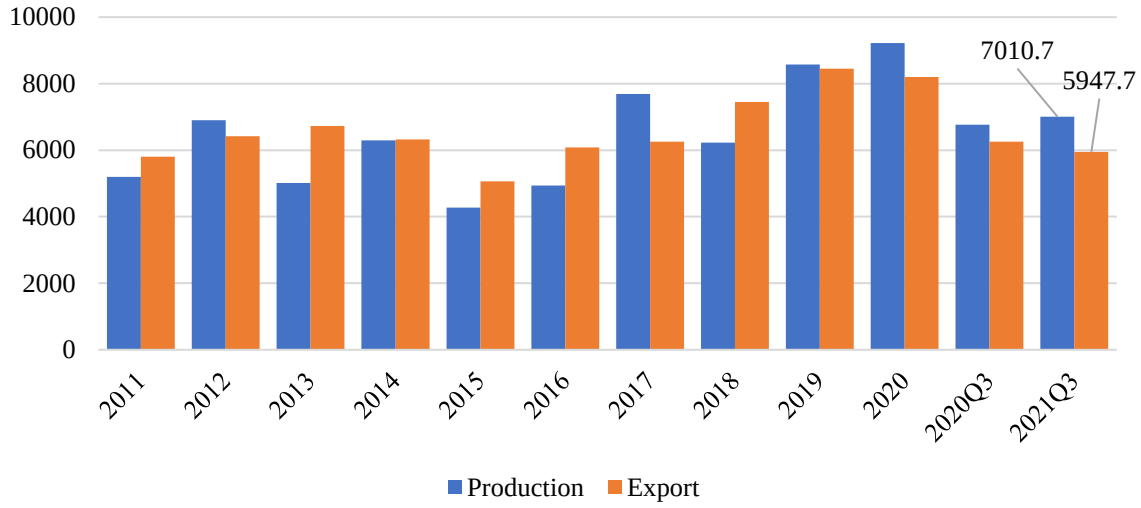
SUPPLY

Iron ore is one of Mongolia's main export products and accounted for 8.4 percent of total exports in 2020. As mentioned in the previous commodity update, Mongolia's iron ore production was 9.2 Mt in 2020, an increase of 7.6 percent year-on-year, while iron ore exports were 8.2 Mt, a decrease of 2.9 percent year-on-year. These trends in production and export continued in 2021. As of September 2021, iron ore production was 7 Mt, an increase of 3.6 percent year-on-year – this increase was driven by high iron ore price. Meanwhile, Mongolia exported 5.9 Mt of iron ore during the first three quarters of 2021, a decrease of 4.9 percent year-on-year (

Figure 29). The decline in iron ore exports was due to COVID-19 related restrictions at the border. These restrictions are expected to continue until the end of 2021 as Mongolia continues to record high number of COVID-19 infections. Iron ore is typically exported through the Zamiin-Uud and Erenhot ports via railways. However, on 19 Octocber 2021, a strict lockdown was imposed in the Chinese port of Erenhot due to a case of COVID-19 and road traffic through the Zamiin-Uud and Erenhot ports halted and freight transport via the railway was slowed (Montsame, 2021). As a result, iron ore is being exported to China through the Khangi (Mongolian) and Mandal (Chinese) port by truck on unpaved road, causing an increase in transportation costs. The Khangi port is located in the Khatanbulag soum of Dornogovi province, 320 kilometer from Dornogovi's provincial center and 770 kilometer from Ulaanbaatar. The Khangi border is closer to Baotou Metallurgic Company, the largest consumer of Mongolian iron ore, than the Zamiin-Uud port Please refer to the Coal section for a visual representation of the Khangi and Mandal port locations.

As mentioned in previous commodity update, the Government of Mongolia is planning to construct the Zuunbayan-Khangi railway. The new railway is expected to increase the export capacity of iron ore and decrease freight costs as the Khangi border is closer to Baotou Metallurgic Company.

Figure 29. Mongolian iron production and export, thousand tonnes



Source: National Statistics Office, Customs

4.3 CONCLUSION

In the first half of 2021, Chinese steel production rose sharply causing a surge in iron ore prices as an all-time high was reached in July 2021. In the second half of 2021, the Chinese government set a target of maintaining steel productions at 2020 levels and to reduce air pollution. To reach the goal, the Chinese government plans to restrict steel production until March 2022, which has led to a sharp decline in steel production. Additionally, as Brazilian iron ore production recovers and iron ore supply increases, iron ore price has been declining since August 2021. Iron ore prices are expected to fall gradually until it reaches USD 86 per tonne by 2025.

Although there were three nationwide lockdowns that spanned between 14 and 28 days, Mongolian iron ore production increased by 7.6 percent year-on-year during the first three quarters of 2021. Although production increased, iron ore exports declined due to COVID-19 related bottleneck issues at the Sino-Mongolian border. This trend is expected to continue for the rest of 2021 and until the beginning of 2022. In the short-term, if border restrictions are relaxed and the COVID-19 pandemic eases, iron ore exports might increase. In the long-term, a new railway via the Sainshand-Khangai-Mandal-Bugat route in the southern region of Mongolia could increase export capacity and reduce transportation costs.

REFERENCES

COPPER

Bank of Mongolia. (2021). Mongolia's Forign trade review- Sep, 2021. Ulaanbaatar: Bank of Mongolia.

BHP. (July 2021). BHP Operational Review for the Year Ended 30 June 2021. BHP.

Bloomberg. (2021, Oct 29). Strike Drags Down Copper Output at World's Top Supplier Codelco. Retrieved from Bloomberg: https://www.bloomberg.com/news/articles/2021-10-29/codelco-copper-sales-jump-as-higher-prices-counter-lower-output

China Daily. (2020, July 15). Demand for copper and cobalt set to see rapid growth. Retrieved from China Daily: https://www.chinadaily.com.cn/a/202007/15/WS5f0e5a3fa310834817259837.html

Codelco. (2021). Codelco At a Glance June 30, 2021. Santiago: Codelco.

Department of Industry, Science, Energy, and Resources. (2021). Resources and Energy Quarterly September 2021. Commonwealth of Australia.

ERI. (2021). Commodity Market Study. Ulaanbaatar: ERI.

Fitch Solutions. (2021, August 11). Zambia Copper Production To Slow From 2022 As Resource Nationalism Deters Investment. Retrieved from Fitch Solutions: https://www.fitchsolutions.com/commodities/zambia-copper-production-slow-2022-resource-nationalism-deters-investment-11-08-2021

Freeport-McMoRan. (2021). SOUTH AMERICA. Retrieved from Freeport-McMoRan: https://www.fcx.com/operations/south-america

Glencore. (2021). Half-Year Production Report 2021. Glencore.

Grant Sporre, A. C. (2021). Global Copper 2021 Midyear Outlook. Bloomberg Intelligence.

ICSG. (2021). Copper Market Forecast 2021/2022. Libson: ICSG.

ICSG. (Oct 2021). Copper Market Forecast 2021/2022. Libson: International Copper Study Group.

IMF. (Oct 2021). World Economic Outlook- October. Washington D.C: International Monetary Fund.

IWCC. (2021, October). IWCC Short-Term Forecasts for Copper. Retrieved from International Wrought Copper Council: http://www.coppercouncil.org/iwcc-press-release-short-term-forecasts-for-copper-oct-2020

Mining Technology. (2021, Oct 13). Freeport begins construction of $3bn Indonesian copper smelter. Retrieved from Mining Technology: https://www.mining-technology.com/news/freeport-construction-indonesian-smelter/

Mining.com. (2021, Sep 7). Copper price down as China's imports drop to lowest in two years. Retrieved from Mining.com: https://www.mining.com/copper-price-down-as-chinas-imports-hit-lowest-since-june-2019/

Mining.com. (2021, June 28). Green copper demand to average 13% annual growth over next 10 years – report. Retrieved from Mining.com: https://www.mining.com/green-copper-demand-to-average-13-annual-growth-over-next-10-years-report/

Mining.com. (2021, Oct 11). World's top copper projects by capex — report. Retrieved from Mining.com: https://www.mining.com/worlds-top-copper-projects-by-capex-report/

Ministry of Finance Mongolia. (2021). Budget Bill 2022. Ulaanbaatar: Ministry of Finance Mongolia.

Oyu Tolgoi. (2021, October). Oyu Tolgoi announces Q3 2021 performance results. Retrieved from Oyu Tolgoi: https://www.ot.mn/

Reuters. (2021, March 10). UPDATE 1-Peru mines minister predicts record copper output for 2021. Retrieved from Reuters: https://www.reuters.com/article/peru-copper-idUSL1N2L71I8

Rochabrun, M. (2021, Sep 22). Peru seeks to redraft legal framework for mining industry, minister says. Retrieved from Reuters: https://www.reuters.com/world/americas/peru-seeks-redraft-legal-framework-mining-industry-minister-says-2021-09-22/

Turquoise Hill. (2021). Quarterly Financial Report for the Three and Nine Months Ended September 30, 2021. Turquoise Hill.

World Bank. (Oct 2021). Commodity Markets Outlook. World Bank.

GOLD

Bank of Mongolia. (2021, October 8). The Bank of Mongolia purchases 2 tonnes of precious metals in September 2021. Retrieved from Bank of Mongolia: https://www.mongolbank.mn/news.aspx?id=5878&tid=1

Bloomberg Mongolia. (2021, October 28). Steppe Gold introduces the ATO's feasibility study for the second phase of the project. Retrieved from Bloomberg TV Mongolia : http://bloombergtv.mn/

Christensen, N. (2021, May 26). Central banks turning to gold again, Bank of Thailand buys 43.5 tonnes in April. Retrieved from Kitco: https://www.kitco.com/news/2021-05-26/Central-banks-turning-to-gold-again-Bank-of-Thailand-buys-43-5-tonnes-in-April.html

D.Ulziisaikhan. (2021, March 20). Loans to gold producers extended. Retrieved from Montsame: https://montsame.mn/mn/read/257528

DISER. (2021). Resources and Energy Quarterly September 2021. Commonwealth of Australia. Retrieved from Department of Industry, Science, Energy and Resources.

E.Odjargal. (2021, April 20). Billion dollar sector. Retrieved from Mongolian Mining Journal: https://www.mongolianminingjournal.com/a/71535

EMSG. (2021). Top 10 Applications for PCBs. Retrieved from Electronics Manufacturing Services Group, INC: https://emsginc.com/resources/10-common-pcb-applications/

ERD. (2021, October 20). ERDENE CONTINUES TO EXPAND NEW ULAAN GOLD DISCOVERY 77 METRES OF 3.2 G/T GOLD, INCLUDING 27 METRES OF 8.7 G/T GOLD AND 152 METRES OF 1.7 G/T, INCLUDING 65 METRES OF 3.1 G/T GOLD. Retrieved from Erdene Resource Development: https://erdene.com/site/assets/files/4309/epr_en.pdf

Erdenes Alt Resources. (2021, January 20). B. Achitsaikhan: The gold refinery is of great strategic importance . Retrieved from Erdenes Mongolia : http://erdenesmongol.mn/index.php?view=article&type=item&val=814

Fitch Ratings. (2021, May 26). Fitch Ratings Raises Short-Term Global Metals and Mining Price Assumptions. Retrieved from Fitch Ratings: https://www.fitchratings.com/research/corporate-finance/fitch-ratings-raises-short-term-global-metals-mining-price-assumptions-26-05-2021

Global Times. (2021, October 18). China's Q3 economic growth slows to 4.9% amid power crunch, supply bottleneck. Retrieved from Global Times: https://www.globaltimes.cn/page/202110/1236577.shtml

GlobalData. (2021, February 2). Global gold production to bounce back with 5.5% growth in 2021 after COVID-19 hit output in 2020. Retrieved from GlobalData: https://www.globaldata.com/global-gold-production-bounce-back-5-5-growth-2021-covid-19-hit-output-2020/

Gold Fields. (2021). Hedging/derivatives. Retrieved from Gold Fields: https://www.goldfields.com/reports/q2-2021/hedging.php

Golubova, A. (2021, October 6). Polish central bank to buy 100 tons of gold in 2022 to boost nation's financial security . Retrieved from Kitco: https://www.kitco.com/news/2021-10-06/Polish-central-bank-to-buy-100-tons-of-gold-in-2022-to-boost-nation-s-financial-security.html

GoM. (2021). STATEMENT OF THE GENERAL BUDGET FRAMEWORK OF MONGOLIA FOR 2022, INTRODUCTION TO THE DRAFT LAW ON THE PROJECT OF THE BUDGET FOR 2023-2024. Ulaanbaatar: Government of Mongolia.

Hamer, A., & Boyde, E. (2021, August 11). European investors pour nearly $1bn into gold ETFs in July. Retrieved from Financial Times: https://www.ft.com/content/a65a1afb-fd22-4789-a410-4abbc88ddd26

Hindu Business Line. (2021, October 2). Higher central bank gold reserves reduce sovereign credit risk: IGPC Study. Retrieved from The Hindu Business Line: https://www.thehindubusinessline.com/news/higher-central-bank-gold-reserves-reduce-sovereign-credit-risk-igpc-study/article36789361.ece

IMF. (2021, October). Projections Table. Retrieved from International Monetary Fund: https://www.imf.org/en/Publications/WEO/Issues/2021/10/12/world-economic-outlook-october-2021#Projections

Jamasmie, C. (2021, March 25). Class action against Rio Tinto over Oyu Tolgoi escalates. Retrieved from Mining.com: https://www.mining.com/class-action-against-rio-tinto-over-oyu-tolgoi-escalates/

Jamasmie, C. (2021, September 30). Rio Tinto disputes report saying mismanagement caused Oyu Tolgoi’s woes. Retrieved from Canadian Mining : https://www.canadianminingjournal.com/news/rio-tinto-disputes-report-saying-mismanagement-caused-oyu-tolgois-woes/

Jia, R. (2021, October 1). Gold’s strategic role could shine as Chinese economic pressure intensifies. Retrieved from Goldhub.com: https://www.gold.org/goldhub/gold-focus/2021/10/golds-strategic-role-could-shine-chinese-economic-pressure-intensifies

Kajimoto, T. (2020, December 17). In rare move, Japan sells gold to fill budget hole. Retrieved from Reuters: https://www.reuters.com/article/us-japan-economy-mof-idUSKBN28R0LY

Ker, P. (2021, February 10). Chastened Northern Star vows to cut the hedge. Retrieved from Financial Review: 2021https://www.afr.com/companies/mining/northern-star-vows-to-cut-the-hedge-20210210-p5713p

Manly, R. (2021, August 4). Brazil's Central Bank refuses to answer any questions about its Gold Reserves. Retrieved from Bullion Star: https://www.bullionstar.com/blogs/ronan-manly/brazils-central-bank-refuses-to-answer-any-questions-about-its-gold-reserves/

Mining.com. (2021, July 5). Gold price boosted by recovery in central bank buying. Retrieved from Mining.com: https://www.mining.com/gold-price-boosted-by-recovery-in-central-bank-buying/

MNB. (2021). MAGYAR NEMZETI BANK TRIPLES HUNGARY'S GOLD RESERVES TO 94.5 TONS. Retrieved from Magyar Nemzeti Bank: https://www.mnb.hu/en/pressroom/press-releases/press-releases-2021/magyar-nemzeti-bank-triples-hungary-s-gold-reserves-to-94-5-tons

Motiani, P. (2021, Novemeber 2). Gold hallmarking becomes mandatory but with several exemptions. Retrieved from The Economic Times :

https://economictimes.indiatimes.com/wealth/spend/gold-hallmarking-becomes-mandatory-from-today-but-with-several-exemptions/articleshow/83566342.cms?from=mdr

MRPAM. (2021, October 18). Mineral Statistics Monthly Report September 2021. Retrieved from Mineral Resources and Petroleum Authority of Mongolia: https://mrpam.gov.mn/public/pages/169/2021.09.stat.report.mon.pdf

NBS. (2021, October 10). Preliminary Accounting Results of GDP for the Third Quarter of 2021. Retrieved from National Bureau of Statistics of China: http://www.stats.gov.cn/english/PressRelease/202110/t20211019_1823616.html

Nellis, S. (2021, October 13). Apple likely to cut iPhone 13 production due to chip crunch. Retrieved from Reuters: https://www.reuters.com/technology/apple-set-slash-iphone-production-due-chip-crunch-bloomberg-news-2021-10-12/

Oyu Tolgoi. (2021, May 24). Oyu Tolgoi announces Q1 2021 performance results. Retrieved from Oyu Tolgoi: https://www.ot.mn/oyu-tolgoi-announces-q1-2021-performance-results/

Oyu Tolgoi. (2021, July 23). Oyu Tolgoi announces Q2 2021 performance results. Retrieved from Oyu Tolgoi: https://www.ot.mn/oyu-tolgoi-announces-q2-2021-performance-results/

Oyu Tolgoi. (2021, October 27). Oyu Tolgoi announces Q3 2021 performance results. Retrieved from Oyu Tolgoi: https://www.ot.mn/oyu-tolgoi-announces-q3-2021-performance-results/

PTI. (2021, October 28). Global Q3 gold demand down by 7% at 831 tonnes ETF outflows: WGC. Retrieved from The Hindu: https://www.thehindu.com/business/markets/global-q3-gold-demand-down-by-7-at-831-tonnes-etf-outflows-wgc/article37205518.ece#

S&P Global. (2021, August 17). Consensus price forecasts — Gold prices rise on Fed's dovish stance. Retrieved from S&P Global market Intelligence: https://www.spglobal.com/marketintelligence/en/news-insights/blog/consensus-price-forecasts-gold-prices-rise-on-feds-dovish-stance

Steppe Gold. (2021, October 27). Completion of the Feasibility Study for the ATO Gold Project Successfully Demonstrates a Robust, Long Life Operation. Retrieved from Steppe Gold: https://steppegold.com/completion-of-the-feasibility-study-for-the-ato-gold-project-successfully-demonstrates-a-robust-long-life-operation/

Steppe Gold. (2021, October 13). Steppe Gold Provides Third Quarter Update Inventory Build up Continues and Near-Term Catalysts. Retrieved from Steppe Gold: https://steppegold.com/steppe-gold-provides-third-quarter-update-inventory-build-up-continues-and-near-term-catalysts/

Turquoise Hill. (2021, April 9). Turquoise Hill Resources and Rio Tinto Reach Binding Agreement on Funding Plan for Oyu Tolgoi. Retrieved from Turquoise Hill: https://turquoisehill.com/site/assets/files/5266/turquoisehill-nr-april-9-2021-fnl.pdf

US Federal Reserve. (2021, November 3). Federal Reserve issues FOMC statement. Retrieved from Federal Reserve: https://www.federalreserve.gov/newsevents/pressreleases/monetary20211103a.htm

WGC. (2021, September 14). 2021 Chinese gold jewellery market insights: mainstream, younger and more transparent. Retrieved from World Gold Council: https://www.gold.org/goldhub/research/2021-chinese-gold-jewellery-market-insights

WGC. (2021, April 29). Gold Demand Trends Q1 2021. Retrieved from World Gold Council: https://www.gold.org/goldhub/research/gold-demand-trends/gold-demand-trends-q1-2021/central-banks

WGC. (2021, October 28). Gold Demand Trends Q3 2021. Retrieved from World Gold Council: https://www.gold.org/goldhub/research/gold-demand-trends/gold-demand-trends-q3-2021

WGC. (2021, October 13). Mandatory hallmarking: a step towards improving trust among Indian consumers. Retrieved from World Gold Council: https://www.gold.org/goldhub/research/market-update/mandatory-hallmarking-improving-trust-among-indian-consumers

WGC. (2021, October 19). The drivers of Indian gold demand: India gold market series. Retrieved from World Gold Council: https://www.gold.org/goldhub/research/drivers-indian-gold-demand-india-gold-market-series

World Bank. (2021, October). Commodity Markets Outlook October 2021. Retrieved from World Bank: https://openknowledge.worldbank.org/bitstream/handle/10986/36350/CMO-October-2021.pdf

WSTS. (2021, August 16). WSTS has published the Q2 2021 market figures. Retrieved from World Semiconductor Trade Statistics : https://www.wsts.org/76/Recent-News-Release

Xanadu Mines. (2021, October 28). September 2021 Quarter Highlights. Retrieved from Xanadu Mines: https://www.xanadumines.com/site/PDF/b3967ccd-f7a5-481d-aa86-bf9d9cf17595/QuarterlyActivitiesReportandAppendix5B30Sept2021

Xanadu Mines. (2021, October 27). XANADU CONSOLIDATES 100% OWNERSHIP OF RED MOUNTAIN. Retrieved from Xanadu Mines: https://www.xanadumines.com/site/PDF/12edca62-d9b4-4a5d-9294-5e22da006dd3/Xanaduconsolidates100ownershipofRedMountain

COAL

Bold, B. (2021, October 21). Монголоос гарч буй нүүрсийг Ганцмод боомтод БНХАУ-ын талд шилжүүлэн ачна. Retrieved from Montsame: https://www.montsame.mn/mn/read/278796

Chong, P. (2021, October 28). China starts to clear pre-ban Australian coking coal. Retrieved from Argus Media: https://www.argusmedia.com/en/news/2268209-china-starts-to-clear-preban-australian-coking-coal

Delgertsetseg, B. (2021, August 24). Гашуунсухайт-Ганцмод боомт өнөөдрөөс "тэг" зогслоо. Retrieved from News: https://news.mn/r/2466191/

Dulam. (2021, October 25). АМНАТ–ийн жишиг үнэ нь татварын дарамт үүсгэж байна гэв. Retrieved from Mongolian Mining Journal: https://www.mongolianminingjournal.com/a/71818

Dulam, R. (2021, October 15). АМНАТ-ийн жишиг үнэ нь татварын дарамт үүсгэж байна гэв . Retrieved from Mining Journal: https://www.mongolianminingjournal.com/a/71818

Fedorinova, Y., & Quinn, A. (2021, May 30). Putin Is Betting Coal Still Has a Future. Retrieved from Bloomberg: https://www.bloomberg.com/news/articles/2021-05-30/russia-to-modernize-railroads-for-coal-exports

Fuller , K. (2021, September 3). Wollongong Coal's mine extension approved by federal government despite company's $1 billion debt . Retrieved from ABC: https://www.abc.net.au/news/2021-09-03/wollongong-coal-russell-vale-mine-federal-approval/100432756

Gibbons, M. (2021). Resources and Energy Quarterly September 2021. Department of Industry, Science, Energy and Resources .

Guo, A. (2021, October 14). China happy to boost coal trades with Mongolia, Premier Li. Retrieved from SXCOAL: http://www.sxcoal.com/news/4637182/info/en

Ishikawa, Y. (2021, June 13). Russia uses military to modernize Far East railway. Retrieved from NikkeiAsia: https://asia.nikkei.com/Business/Transportation/Russia-uses-military-to-modernize-Far-East-railway

Li, J., & Lu, J. (2021, July 6). Forest fires disrupts Canadian miner Teck's met coal rail service in British Columbia. Retrieved from S&P Global: https://www.spglobal.com/platts/en/market-insights/latest-news/coal/070621-forest-fires-disrupts-canadian-miner-tecks-met-coal-rail-service-in-british-columbia

Mishigsuren, D. (2021, March 24). Өдөрт 40-50 машин нүүрс хилийн боомтоор гарч байна. Retrieved from Montsame: https://montsame.mn/mn/read/258050

Ng, A. (2021, August 1). China wants to curb steel production. Some say it's 'virtually impossible'. Retrieved from CNBC: https://www.cnbc.com/2021/08/02/china-wants-to-curb-steel-production-some-say-its-virtually-impossible.html

Odjargal, E. (2021). Coal in container. Mining Journal №009 (151), 38.

The Coal Hub. (2021, May). China's coking coal demand unpertubed by price rises. Retrieved from The Coal Hub: https://thecoalhub.com/chinas-coking-coal-demand-unperturbed-by-price-rises.html

Unursaikhan, S. (2021, October 20). In the three weeks to October 14, 6919 coal trucks crossed the border. Retrieved from Bloomberg: http://bloombergtv.mn/

Unursaikhan, S. (2021, Novermber 8). SXCOAL: 222 COAL TRANSPORTATION VEHICLES PASSED INTO JANTSMOD PORT IN ONE MONTH UNTIL NOVERMBER 4. Retrieved from Bloombertv : http://bloombergtv.mn/

Virchenko, E. (2021, October 29). EU recovery in steel demand to stay vulnerable until Q1 2022, Eurofer says . Retrieved from Metalbulletin: https://www.metalbulletin.com/Article/4014095/long-products/EU-recovery-in-steel-demand-to-stay-vulnerable-until-Q1-2022-Eurofer-says.html

Wang, O. (2021, September 4). China eyes more coal improts from Mongolia as supply shortage bites . Retrieved from South China Morning Post : https://www.scmp.com/economy/china-economy/article/3148035/china-eyes-more-coal-imports-mongolia-supply-shortage-bites

World Steel Association. (2021, October 14). worldsteel Short Range Outlook October 2021. Retrieved from Worldsteel Association: https://www.worldsteel.org/media-centre/press-releases/2021/worldsteel-Short-Range-Outlook-October-2021.html

IRON ORE

Anglo American. (21 October 2021). News Release. Anglo American.

Arcelor Mittal. (2021). Interim financial report. Arcelor Mittal.

BHP Billiton. (2021). BHP annual report. BHP Billiton.

BHP Billiton. (2021). BHP operational review for the Q3 2021. BHP Billiton.

Bloomberg. (2021, September). Bloomberg. Retrieved from https://www.bloomberg.com/news/articles/2021-09-09/vale-cuts-iron-ore-capacity-estimate-to-370m-mt-by-end-2022

Bloomberg Intelligence. (2021, Oct 12). Iron Ore Commodity Research.

DISER. (2021). Resources and Energy Quarterly, Q3. Department of Industry, Science, Energy and Resources, Australian Government.

Fastmarket MB. (2021, November 9). Metalbulletin. Retrieved from https://www.metalbulletin.com/Article/4015990/steel/Anglo-American-signs-deals-to-invest-797mln-in-Minas-Rio-iron-ore-unit.html

Fortesque. (2021, Q3). Quarterly report. Fortesque.

Mineral resources and petroleum authority. (2021, September). Statistics of Mineral.

Montsame. (2021, Oct 26). Montsame. Retrieved from https://montsame.mn/mn/read/279215

National Statistical Office of Mongolia. (2021). www.1212.mn.

Reuters. (2021, October 13). Reuters. Retrieved from https://www.reuters.com/article/china-steel-idINL1N2R907P

Rio Tinto. (2021, Q3). Quarterly report. Rio tinto.

S&P Global. (2021, Apr 07). spglobal.com. Retrieved from https://www.spglobal.com/platts/en/market-insights/latest-news/metals/040721-china-may-struggle-to-drive-steel-output-lower-in-2021-as-global-prices-soar-analytics

Vale. (2021, Q3). Vale's production and sales. Vale.

World Bank. (Oct 2021). Commodity Market outlook, October.

World Steel Association. (October, 2021). Short range Outlook. WSA.

World Steel Association. (September 2021). Press release. World Steel Association.