



LEAD AND ZINC: THE SUPPLY-SIDE RESPONSE TO THE COVID19 PANDEMIC

Summary

The first signs of the novel coronavirus outbreak appeared on December 31 last year, when China alerted the World Health Organization (WHO) to several cases of unusual pneumonia in Wuhan, a city in Hubei province. When the WHO declared this outbreak a global pandemic on March 11, Europe had become the epicentre, with Italy and Spain being particularly affected. The EU took the unprecedented step to suspend rules on public deficits, allowing countries to inject spending into the economy as needed. At the end of March, the US had more confirmed COVID19 cases than any other country in the world.

Since then, this outbreak has further expanded, compelling governments to respond by restricting the population's movements, or in some cases, by imposing nationwide lockdowns aimed at limiting the spread of the pandemic. In a number of countries international borders have been closed and economic activities kept to a minimum, allowing only essential businesses to continue running.

Such restrictive measures are having a major impact in the world's economy and, as expected, in the global lead and zinc markets. Substantial declines in Chinese production during the first two months of 2020 have been reported and included on the Group's April Statistical Bulletin. Mining activity and particularly the recycling of lead have fallen sharply, since an important share of the Chinese secondary lead processing capacity is located in some of the most affected provinces. Outside of China, the impact on the lead and zinc industries caused by the pandemic became more noticeable in March and April, when major producing countries including Bolivia, Mexico, Peru and South Africa announced strict social and economic restrictions aimed at limiting the spread of the pandemic. In some of these countries, activity in the mining and smelting sectors has been completely halted. This has reduced the transnational flow of concentrates impacting major importers such as China, where smelting activity is now recovering.

Unless otherwise stated by the company it has been assumed that the mines or smelters that have been closed will remain suspended for an average of 2 months. Based on this it is estimated that a total 146kt and 635kt of lead and zinc mining capacity respectively has so far been lost due to the COVID19 pandemic. Refining capacity has been reduced by 106kt in the case of lead and 113kt for zinc. Full details are listed in the appendix on page 13.

Demand for refined lead and zinc has also been negatively affected. Figures published for the automotive industry, which is a major user of lead batteries and galvanized steel, show that

new car sales plummeted in key markets including China, Europe and the US over the past three months. According to the European Automotive Manufacturers Association, new passenger car sales in the region declined by 55% year-on-year in March, with new car registrations falling by 44% in the UK, 85% in Italy, 72% in France, 69% in Spain and 38% in Germany. In April, Italian new car sales are estimated to have collapsed by a remarkable 97%. S&P's Platts reported on 6 April that more than one hundred automotive assembly plants in Europe had been shut down, removing an estimated daily production of 61,000 automobiles. In the US, the Detroit-area "Big Three" automakers - General Motors, Ford and FCA US, together with Honda, Hyundai and Toyota announced they would temporarily suspend production at their north American plants.

However, in the past couple of weeks, there have been some signs of a slow recovery. Production has resumed at some plants in Europe. These included Volkswagen, which restarted its passenger car assemble at Wolfsburg plant in Germany, the largest in Europe, where operations had been halted in mid-March. At the same time, around 2,600 suppliers, the majority located in Germany, have also resumed production. Other Volkswagen units, including the Zwickau and the Bratislava, Slovakia plants have also recently restarted activity. On 27 April, it was announced that Fiat Chrysler Automobiles would restart production at its joint venture with PSA Group at the Sevel plant in Italy and that Japanese carmaker Nissan is now resuming its operations in the UK. The European automotive market is expecting shortly the introduction of incentives – similar to those seen during the 2008/09 financial crisis – to boost car sales.

Further information on the economic, commercial and financial impact of this pandemic and the major economic rescue and stimulus packages being employed to resuscitate the global economy can be found in the ILZSG Insight No. 47 - *An Analysis of the Economic Fallout of the COVID-19 Pandemic and Subsequent Stimulus Packages* - sent out to member countries on 28 April.

In order to help quantify the impact of recent developments, this Insight provides details of significant events impacting the lead and zinc markets over the past three months. It also includes quick reference table with estimates of the production capacity that has been affected in spreadsheet form as an appendix.

Comments or Questions

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Supply-Side Overview by Country

Australia

The Australian lead and zinc industry has so far largely avoided any production impact from the COVID-19 pandemic, since the Australian Government has identified mining as an essential activity and has not imposed lockdown measures as strict as those seen in other countries. The Minerals Council of Australia issued a statement on 16 April highlighting that their approach was to keep Australia's minerals sector running by focusing on the health response, economic impact and maintaining Australians in work.

However, restrictions have been imposed by the federal and state governments on travel between states (and in Western Australian, restrictions between regions of that state). Other limitations on the transit of people and goods include Queensland's 14-day offshore quarantine on ships entering its ports from other countries.

Analysts cite border closures, shipping restrictions, the proximity often required by workers in mines and the need to protect the health of Aboriginal communities as major challenges being faced by the lead and zinc industry in Australia due to the COVID19 pandemic. The capability of miners in Australia to maintain production at normal levels, in particular in the case junior explorers, could therefore become increasingly difficult in the medium term.

This has been the case of Auctus Minerals and Heron Resources that suspended production at the Mungana mine and Woodlawn tailings operation.

Closures

- Auctus Minerals placed its 22kt per year of zinc in concentrates Mungana mine on care & maintenance on 24 March.
- Production at Heron Resources' Woodlawn tailings operation with a capacity of 35kt of zinc in concentrates per year was suspended in late March. This project had been commissioned one year earlier.

Belgium

Although there have been no reports that smelting activity in Belgium was affected by the COVID19 pandemic, Umicore's lead refinery plant in Hoboken has been shut down after a fire.

Closures

- Production at Umicore's 125kt per year secondary lead refinery was suspended on 2 March.

Bolivia

After declaring a public health emergency, the Bolivian government imposed stringent measures in the second half of March aiming to slow down the spread of COVID19. The country's borders were closed, international flights suspended, interprovincial land transport

limited to merchandise only, and a nationwide quarantine was put in effect from 22 March, with all but essential economic activities suspended. This had an immediate effect on its lead and zinc mining industry, which produced 88Kt of lead and 527kt of zinc contained in concentrates in 2019.

Closures

- In early April, activity was suspended at Comibol's Colquiri mine, Pan American Silver's San Vicente unit and Sumitomo Corporation's San Cristobal mine, which is the largest in Bolivia. The export of concentrates by these companies was also halted. Operations are also believed to have been suspended at other lead/zinc mines operating in Bolivia, including the Bolivar, Caballo Blanco and Porco units, all co-owned by Glencore. The combined capacity of the Bolivian mining sector currently stands at 100Kt and 550Kt of lead and zinc in concentrates respectively.

Brazil

In a statement released on 13 April, Nexa Resources asserted that its Brazilian operations were operating normally.

Delays

- Nexa Resources announced in mid-April that its Aripuanã project would be postponed and further details made known in the second quarter of 2020. The Aripuanã mining project in Mato Grosso will have a production capacity of 50Kt lead and 80Kt zinc in concentrates per year. Initially scheduled for 2021, its startup could now be delayed.

Burkina Faso

Trevali announced on 9 April that its Perkoa mine, which produced 82kt of zinc contained in concentrates in 2019, was operating normally.

Canada

Despite the government of Quebec's order to minimize all non-essential activities in the province in response to the COVID19 pandemic, certain manufacturing activities have been considered priority activities. These include Noranda Income Fund's electrolytic zinc processing operation. The company stated that "measures implemented have not had a significant impact on its operations, and previously released guidance regarding 2020 sales and production levels remain unchanged".

Teck Resources also announced that production at its Trail operations, located in British Columbia, were continuing to operate at planned production levels but had temporarily reduced the number of employees on site by one third. Teck and Noranda Income Fund together accounted for almost 30% of the total lead and 85% of the total zinc refined in Canada in 2019.

On 15 April the Quebec government ordered all non-essential businesses to remain closed until May, extending the three-week shutdown announced one month earlier. However,

mining activity was then redesignated as an essential service and allowed to resume. On that same day, Glencore announced that it was assessing options to restart its Matagami zinc mining operations in Quebec, which had been suspended three weeks earlier.

Closures

- Agnico Eagle closed its La Ronde mine in Quebec for 3 weeks in early April. This unit produced 13kt of zinc in concentrates in 2019.
- Coeur Mining announced in late February the suspension of operations at the Silvertip mine, which produced 8kt of lead and 9kt of zinc in concentrates last year.
- On 26 March Glencore suspended its Matagami zinc mining operation in Québec, which typically fed the CEZinc Refinery in Salaberry-de-Valleyfield. Matagami complex, comprising Bracemac-McLeod and Kidd mines, generated 111kt of zinc in concentrates in 2019. The company has subsequently announced that it was assessing options to restarting production before May, following the state's government redesignation of mining activity as an essential service.
- Trevali Mining announced on 13 March the transition to care and maintenance of its Caribou mine in New Brunswick, which produced 12kt lead and 34kt zinc in concentrates in 2019. The miner cited "the plunging price of zinc and the COVID19 pandemic" as the cause of this suspension and no potential date for restart has been announced.

China

The city of Wuhan in Hubei province, an important commercial and manufacturing hub in China with a population of 11.9 million people, was the first epicenter of the COVID19 pandemic. China dealt with the pandemic by imposing draconian methods including strict lockdowns on virus cluster areas and monitoring social interactions through mobile applications. Companies in this area were either forced to close down or to severely reduce capacity, with logistical and staffing issues also impacting the transportation of raw materials and products to and from other regions in the country. China's industrial output declined by 13.5% over the first two months of the year, a sharp reversal from the 6.9% growth recorded in December. The country's retail sales fell by 20.5% over the same period, while fixed asset investment dropped by 24.5%.

Regarding the lead and zinc market in China, and according to the data included in the ILZSG's latest monthly Bulletin, both lead and zinc mine production dropped by around 12% in the first two months of 2020 compared to the same period of 2019. Refined lead production fell by 14% with the secondary sector being particularly affected. Refined zinc production, which had progressively increased during 2019, rose by 1.8% in the first two months of 2020, compared to Jan-Feb 2019.

According to a recent news conference, China Nonferrous Metals Industry Association (CNIA) expects the Chinese nonferrous metals sector to recover gradually in the second quarter of this year and to be fully back on track by the second half of the year. CNIA said China's major lead and zinc smelters have largely maintained normal production levels during the outbreak. Operating rates at lead and zinc smelters averaged 80.2%, however, some smelters are at risk of closure or reduced output due to rising sulphuric acid inventories and shortages of raw materials and fuel. Top zinc concentrate exporting countries Peru, Mexico and Bolivia have all

enforced strict and lasting measures to prevent the spread of the novel coronavirus, leaving China short of supply at a time when demand is starting to come back. Therefore, zinc concentrate treatment charges (TCs) are dropping in China.

In terms of lead and zinc usage, construction activity and the demand from the storage battery, electroplating, air conditioner and electronic goods sectors has dropped as many of the country's workers and consumers remained housebound. However, and according to data on orders intake of infrastructure contractors released in the second half of April, after being severely affected during the first quarter of 2020, it is expected that the construction sector is will recover in the medium term, since there is a strong pipeline of projects ready to be initiated. Also in the lead-acid battery sector, crucial for the demand of lead metal, most major producers have resumed production following the typical Chinese New Year interruptions, this year aggravated by the country's response to control the spread of COVID19. According to an article released by Shanghai Metals Market on 26 February, "Producers that reopened in the previous two weeks have ramped up to an operating rate of above 50%, as migrant workers returned following the end of self-quarantine (...) major producers have reached rates of 60%-70% and the ramp-up is expected to continue through early March." While the risk of resurgence in infection rates remains, things are starting to return to normal in China.

Closures

- Hulunbeier Chihong Mining zinc smelter based in Inner-Mongolia suspended production for a month starting on 26 February 2020. Annual smelting capacity: 140kt refined zinc.

Cutbacks

- Production at the Yuguang Zinc Industry's 300kt per year primary zinc smelter located in Henan province was cut by 50% during the first half of February. Smelting capacity lost: 150kt zinc.

Congo DR

Delays

- Ivanhoe Mines stated on 9 April that its Kipushi zinc project in the Democratic Republic of Congo had moved to suspend all operations, transitioning the asset to care and maintenance. The Kipushi project has a potential capacity of 225kt per year zinc in concentrates and was expected to come on stream within the next two years.

Finland

First Quantum Minerals announced on 28 March that production at its Pyhäsalmi mine remained stable in the current environment and maintained its production guidance for the year.

On 30 March, Boliden stated that normal production level was being maintained at their smelters in Finland (Kokkola) and Norway (Odda).

Germany

Recylex announced on 25 March that it would discontinue output at its Weser-Metall unit, the largest lead smelter and refinery in Germany, until further notice, “to adapt to the strong drop in demand, especially in the automotive industry, in a context of sharply lower metal prices”. This unit, which typically has taken in 25% concentrate and 75% recycled battery as feedstock, produced close to 105kt of refined lead in 2019.

Closures

- The Weser-Metall lead smelter owned by Recylex was closed on 26 March. Annual capacity: 180kt refined lead metal.

Greenland

The Greenland government announced during the first week of April that all companies with exclusive mineral exploration licenses in Greenland will be exempt of paying mineral exploration license obligations and expenditures through to year end as part of its relief package to the mining sector amid the COVID-19 pandemic. The government's aim is to help companies operating in Greenland retain their projects in challenging market conditions. Currently there are two lead/zinc mining projects under consideration in Greenland: Black Angel and Citronen with a combined potential production capacity of 23kt lead and 205kt zinc in concentrates per year.

India

Hindustan Zinc suspended its domestic operations in the northern Indian state of Rajasthan, after India's government imposed a complete nationwide lockdown from March 22 to early May. However, mining and smelting activities were later considered essential to the country's economy, which allowed Hindustan Zinc to resume its operations. The length of Hindustan Zinc's suspension is believed to have been less than two weeks.

On the demand side, Exide Batteries, the biggest buyer of lead in India, suspended its operations and declared force majeure amid the nationwide lockdown.

Closures

- Hindustan Zinc mining and smelting complex in Rajasthan is one of the largest lead and zinc producers in the world, with a total annual capacity of close to 150ky of lead in concentrates, 845kt of zinc in concentrates, over 250kt of refined lead and 830kt of refined zinc.
- There are numerous small sized lead recyclers spread throughout India's vast territory, with a total combined capacity estimated at over half a million tonnes per year of refined lead.
- The estimated loss in capacity caused by the temporary suspensions stands at 8kt of lead and 36kt of zinc in concentrates. In the smelting activity, 31kt of refined lead and 37kt of refined zinc are estimated to have been lost.

Ireland

Boliden announced on 28 March that it had halted production in the Tara mine, Europe's largest zinc mine, in line with Irish government strict restrictions aimed at limiting the spread of the COVID19 pandemic. However, dialogues were held with authorities as well as union representatives regarding actions taken to safeguard the health of employees and contractors at the Tara mines, which resulted in a prompt resumption in production, reportedly on 2 April.

Italy

Glencore announced the closure of its primary lead refinery located at San Gavino, Sardinia on 23 March. However, according to Fastmarkets, the company's two other units located in Sardinia, a zinc electrolytic refinery and kivcet facility that produces lead bullion, continued operating.

Closures

- Glencore's primary lead plant located in San Gavino, Sardinia is operated by its subsidiary Portovesme S.r.l. and has an annual capacity of 80kt refined lead.

Mexico

On 31 March, Mexico's federal government published a decree mandating the temporary suspension of all nonessential activities until April 30 as part of a nationwide effort to help curb the spread of the COVID-19. Mining has not been deemed an essential activity under the Mexican decree.

Major producers including Grupo Mexico, Gold Resource Corporation and Newmont Corporation, the co-owner of Peñasquito mine, Mexico's largest lead and zinc mine, quickly responded to the governmental new regulations by announcing the immediate ramp down of their mining operations.

There is no information that production in the smelting sector has been suspended, however, it is believed that output has been reduced due to disruptions in the supply of concentrates.

Closures

- There is a substantial number of lead and zinc mines operating in Mexico's territory, with an estimated total capacity of over 300kt and 800kt lead and zinc in concentrates respectively. This capacity has been increased by the recent commissioning of new projects and the reopening of mines, a trend that was due to continue during 2020. Mexican mine production was 260kt of lead and 700kt of zinc contained in concentrates in 2019, around 7% of the world total.
- Mexico's lead refining capacity stands above 650kt per year, and its output was 447kt last year.
- Mexico's zinc smelting capacity increased to a total of 455kt refined zinc per year in 2019, after the 120kt expansion of Peñoles' Torreon primary smelter. Zinc metal production in Mexico, at almost 400kt in 2019, was expected to increase this year.

Morocco

Morocco imposed a state of emergency across the country and has taken a series of safety measures including the suspension of all incoming and outgoing flights and a nationwide lockdown that implies the need of an authorization for anyone to be outside their home. Mining activity is believed to have been affected by these measures, although its extent is yet to be assessed. Moroccan lead mine production was 43kt of lead and 51kt of zinc in concentrates in 2019.

Namibia

Vedanta Zinc International announced on 30 March it was temporally shutting its Skorpion Namibian zinc unit at the end of April, partly motivated by technical problems in the last few months. The site's zinc refinery was set to go into care and maintenance just weeks after the operation resumed production following a four month closure due to a lack of local zinc oxide ore. Since the mining operations of the complex will also be suspended, analysts noted the risk of a subsequent gap in ore supply that could last more than 10 months.

In contrast, Canadian miner Trevali announced on 9 April that its Rosh Pinah mine in Namibia was operating normally.

Closures

- Vedanta's Skorpion Zinc complex in Namibia comprises an open-pit mine producing zinc oxide ore that feeds an adjacent refinery using a solvent extraction and electrowinning two-stage process. Despite recent technical issues, which included pit failures, according to Vedanta, the integrated mining and refining units have a total capacity of 150kt of zinc metal per year.

North Macedonia

The North Macedonian government declared a state of emergency on 18 March, which includes the closure of borders and controlled movement of people and trade vehicles. However, Central Asia Metals, the owner of the Sasa mines, announced in mid-April that lead and zinc production remained on track to meet its guidance for 2020. The company stated that its Macedonian unit was still able to continue to dispatch materials across the border and had agreements in place regarding the curfew to enable its nightshift to continue to operate.

Peru

Peru's government declared a state of emergency on 15 March in an effort to halt the spread of COVID-19 infections. This included strict measures such as a country-wide lockdown, the closing of borders, restricting domestic travel and forbidding nonessential business operations, in which the mining sector was not included.

A number of mining companies including Teck Resources, Mitsui, Pan American Silver, Volcan, Hochschild, Newmont, Casapalca, Buenaventura and Los Quenuales have subsequently announced the suspension of their mining activities in Peru.

The Peruvian government has allowed some mines, including Antamina, the world's third-largest in terms of zinc output, to operate at reduced rates after the national state of emergency was firstly declared. However, with the state of emergency being extended to April 26, it has been reported that nearly all mining activity is now halted, and that Antamina has demobilized the majority of its remaining 2,400-person workforce.

On 13 April, Nexa Resources stated that it would keep mining operations closed during the national emergency. The Cajamarquilla smelter, on the other hand, would continue to run at a reduced rate by processing stockpiled ore.

Closures

- Peru's zinc in concentrates output stood above 1.4 million tonnes in 2019, more than 10% of the world's total, which made Peru the world's second largest producer. Production of lead in concentrates was 308kt, equivalent to 7% of the global output in 2019. Numerous transnational mining companies currently operate close to eighty lead/zinc mines in Peruvian territory, with an estimated total capacity of over 365kt and 1,700kt lead and zinc in concentrates respectively.

Cutbacks

- Nexa Resources' 350kt per year zinc smelter located in Cajamarquilla is operating at a reduced rate and processing stockpiled ore. Its production stood at 344kt of refined zinc in 2019.

Portugal

Lundin Mining announced on 26 March that there had been no material impact to production or shipment of concentrate, nor significant disruptions to the supply chain, from any of the company's operations to date as a result of the COVID-19 pandemic. The company has however temporally suspended its expansion project of the Neves-Corvo mine in Portugal.

Delays

- Lundin Mining has put the expansion of its Neves-Corvo mine in Portugal on hold. With a target completion of the second half of 2020 before this recent delay, the expansion will be a major addition to market mine supply when it goes ahead, bringing an extra 80kt per year of zinc in concentrate on top of the mine's current output of 75kt.

Russian Federation

In Russia, a presidential decree establishing a non-working week from March 28 to April 5 was announced on March 25. This is not believed to have had an impact on the country's metals production as it does not apply to continuously running industries.

South Africa

The South African government announced a nationwide lockdown for 21 days from 26 March, ordering the country's metals and mining operations to be placed on care and maintenance.

The confinement obligation was later extended to 30 April, however on 17 April, it was announced that mining companies could apply to increase activities by not more than 50% during the country's lockdown. Applications to restart and increase production beyond this level were allowed to be put in place, as long as the companies implemented measures including a rigorous screening and testing program as employees returned to work, the provision of quarantine facilities for employees who had tested positive for the virus, the submission of data collected during the screening and testing program to the relevant authority and the transport by mining companies of South African employees from their homes to work.

The Minerals Council South Africa estimate that the direct impact on the mining industry of the national lockdown will be significant.

Closures

- Currently there are two lead and zinc mines operating in South Africa, both owned by Vedanta Zinc International: Black Mountain and Gamsberg. Although the total combined capacity stands at 67kt lead and 290kt zinc in concentrates per year, the Gamsberg unit was still ramping up to full production, after its commissioning last year. South Africa's total production of metal contained in concentrates was 43kt of lead and 125kt of zinc, but larger figures were expected for this year.

Delays

- Orion Minerals announced that the updated feasibility study work for its Prieska copper-zinc project in South Africa is being undertaken remotely, with the site being shut-down temporarily.

Sweden

Lundin Mining announced on 26 March that there had been no material impact to production or shipment of concentrate, nor significant disruption to the supply chain, from any of the company's operations to date as a result of COVID-19 pandemic.

However, on 20 April, a fire broke out in the underground mine of its Zinkgruvan operation in Sweden. The company added that it was too early to determine the impact on the underground mine, and when operations can be restarted, but one week later mining has been resumed in the unaffected areas.

Closures

- According to Lundin, the mine was projected to produce between 77kt and 82kt of zinc in concentrates this year.

United States

Teck Resources stated at the beginning of April that production at its Red Dog zinc mine in Alaska, which produced over half a million tonnes of zinc in concentrate in 2019, remained at planned levels, despite the significant travel restrictions and modified schedules required to maintain safe operations. Also Hecla Mining, owner of Greens Creek and Lucky Friday mines,

stated this month that operations remained normal.

One month earlier, American Zinc Recycling had announced the production restart at its secondary zinc smelter in Mooresboro, North Carolina. The company aimed for the facility to reach full capacity by the first quarter of 2021, when the plant is expected to produce 155kt of special high grade zinc. The restart at this facility has been awaited since operations were halted after a fire broke out at the smelter in April 2019.

APPENDIX: SUMMARY OF CAPACITY CUTS IN 2020

(announced since the publication of the ILZSG forecasts on October 2019)

Production and capacity are measured in kt (mines: contained metal in concentrates)

*Assuming that the mines or smelters that have been closed will remain suspended by an average of 2 months

Lead /Zinc Mines

Country	Company	Mine	Pb Capacity	Zn Capacity	Pb Output 2019	Zn Output 2019	Estimated Pb Capacity Loss*	Estimated Zn Capacity Loss*	Comments
Australia									
Bolivia	COMIBOL	Colquiri							Closed 22 March
Bolivia	Glencore - Sinchi Wayra	Bolivar/Porco/ etc							Closed 22 March
Bolivia	Sumitomo Corp	San Cristobal	100	550	88	527	17	92	Closed 22 March
Bolivia	Pan American Silver Corp	San Vicente							Closed 22 March
Bolivia	Other	other							Closed 22 March
Canada	Agnico Eagle	La Ronde	0	15	0	13	0	5	Closed 26 March but could reopen in May
Canada	Coeur Mining	Silvertip	10	10	8	9	3	3	Closed late February
Canada	Glencore	Matagami	0	125	0	111	0	21	Closed at the beginning of April but could reopen in May
Canada	Trevali	Caribou	15	40	12	34	5	13	Closed 13 March
India	Hindustan Zinc Limited	Rajpura-Dariba	10	40			0	2	Closed for half a month as mining & smelting was classified as essential
India	Hindustan Zinc Limited	Rampura Agucha	75	500			3	21	Closed for half a month as mining & smelting was classified as essential
India	Hindustan Zinc Limited	Sindesar Khurd	54	165	200	713	2	7	Closed for half a month as mining & smelting was classified as essential
India	Hindustan Zinc Limited	Kayad	18	100			1	4	Closed for half a month as mining & smelting was classified as essential
India	Hindustan Zinc Limited	Zawar (4 mines)	50	40			2	2	Closed for half a month as mining & smelting was classified as essential
Ireland	Boliden	Tara	30	150	16	122	0	2	Suspended between 28 March and 2 April
Mexico	other	other	300	800	260	700	50	133	Closed 31 March
Namibia	Vedanta Zinc International	Skorpion	0	150	0	65	0	50	Closed 30 March
Peru	other	other	350	1600	308	1404	53	240	Closed 15 March
South Africa	Vedanta Zinc International	Black Mountain	55	40	43	125	7	5	Closed 26 March but mines could reopen 50% of capacity in mid April
South Africa	Vedanta Zinc International	Gamsberg	12	250			2	31	Closed 26 March but mines could reopen 50% of capacity in mid April
Sweden	Lundin Mining	Zinkgruvan	35	85	24	67	1	4	Partially closed 20 April due to a fire
Total			1114	4660	959	3890	146	635	

Lead Smelters

Country	Company	Smelter	Pb Capacity	Pb Output 2019	Estimated Pb Capacity Loss*	Comments
Germany	Recylex	Weser-Metall	180	105	60	Closed 26 March
India	Hindustan Zinc Limited	other smelters	250	185	10	Closed for half a month as mining & smelting was classified as essential
India	other Companies	other smelters	+500	455	21	Closed for half a month as mining & smelting was classified as essential
Italy	Glencore / Portovesme	San Gavino Pb	80	?	13	Closed 23 March
Mexico	Industrias Peñoles	Torreon	180	119	15	Output impacted by disruptions in the supply of concentrates
Total			1190	864	106	

Zinc Smelters

Country	Company	Smelter	Zn Capacity	Zn Output 2019	Estimated Zn Capacity Loss*	Comments
China	Hulunbeier Chihong Mining	Inner-Mongolia	140	?	12	Suspended for a month starting on 26 February
China	Yuguang Zinc Industry	Henan smelter	300	?	25	Production cut by 50% in February
India	Hindustan Zinc Limited	other	830	687	35	Closed for half a month as mining & smelting was classified as essential
India	other	other sec smelters	40	21	2	Closed for half a month as mining & smelting was classified as essential
Mexico	Grupo Mexico	San Luis Potosi	110	105	9	Output impacted by disruptions in the supply of concentrates
Mexico	Industrias Peñoles	Torreon	350	284	29	Output impacted by disruptions in the supply of concentrates
Namibia	Vedanta Zinc International	Skorpion	150	65	38	Closed 30 March
Peru	Nexa resources	Cajamarquilla	350	344	29	Operating at a reduced rate
Total			2770	1858	113	