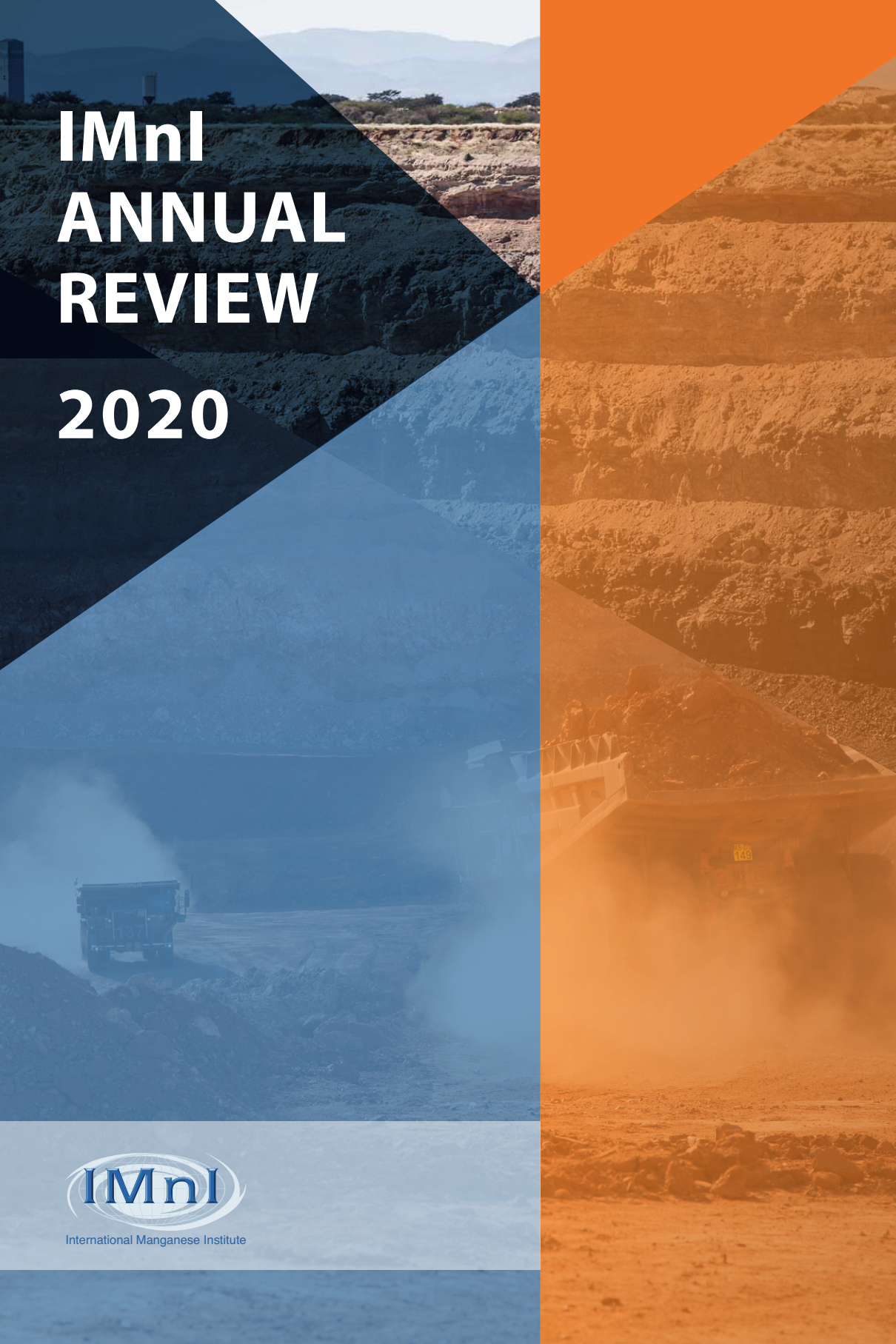
IMnI ANNUAL REVIEW 2020



IMnI

International Manganese Institute

The International Manganese Institute (IMnI) is a not-for-profit industry association that represents manganese ore and alloy producers, manufacturers of metallurgical products or chemical compounds, trading houses, industry service providers, companies involved in Mn business development, universities and research organizations around the world.

Founded in 1975, with headquarters in Paris, France, IMnI's mission is to provide vision and guidance to the Mn industry by promoting economic, social and environmental responsibility and sustainability to all stakeholders.

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MESSAGE FROM THE CHAIRMAN

"China's dominance in the Manganese industry became even more evident during 2020"

Esteban Rivero
IMnI Chairman
Corporate Vice President - AUTLAN

Without any doubt the year 2020 will be remembered as one of the most challenging periods in modern history due to the COVID-19 pandemic. Specifically, 2020 marked a significant change for the Manganese industry, with demand from the steel sector slowing down for the first time since 2015 driven by production disruptions in most countries. Meanwhile, and opposite to the rest of the world, China continued to increase its domestic steel production and consumption.

The existing challenges faced by the Manganese industry over the last few years have expanded: China has become even more dominant in terms of steel production and Manganese ore consumption. While steel production in most regions of the world slows down, Manganese ore output remains remarkably high. In this context, overcapacity in any industry should be a concern and the Manganese industry is no exception.

Despite an overall difficult year, the International Manganese Institute (IMnI) was able to reach new milestones: 10 new additional Members, several digital events, improved finances, and new reports available to Members. Following safety guidelines, most IMnI events planned where cancelled and others have been postponed to 2021. However, a physical event was able to take place in Dali, Yunnan province, China, in September, gathering delegates from 30 Manganese companies.

IMnI's Annual Conference remains the Manganese ore and Manganese ferroalloy industries' premier event, and the 46th edition in 2021 is planned to gather the global manganese community in Cape Town, South Africa, on the theme "South Africa at crossroads: diversified Manganese producer, or China's miner?" If global health conditions are improved in 2021, do not miss this opportunity to learn from industry experts, connect with the Mn community and visit several manganese mines (including South32's Mamatwan, UMK, Kudumane, Tshipi, Kalagadi, Assmang's Gloria & Assmang's Nchwaning), a Mn alloy smelter (Transalloys), a Mn metal producer (Manganese Metal Company, MMC) and Transnet's Mn terminal at Port Elizabeth and Coega.

I will conclude my term as Chairman at the next General Assembly. Allow me to take this opportunity to thank all our Members and IMnI staff for their support over the past three years. I feel optimistic about the future since the International Manganese Institute has become the lifeblood of the Manganese industry and is well prepared to face the challenges and opportunities that lie ahead.

MESSAGE FROM THE EXECUTIVE DIRECTOR

"IMnI continued growing in 2020 in spite of the pandemic"

Aloys d'HARAMBURE
IMnI Executive Director

Although most IMnI events had to be postponed to 2021, IMnI continued its development in 2020, welcoming 10 additional Members, funding new scientific studies, and improving its market research reports.

10 News Members joined IMnI in 2020	Category	Country
Adelphi Mineral Cooperation	Ordinary	Zambia
Gerdau Acos Longos S/A	Affiliate	Brazil
Inner Mongolia Chayouqianqi Tengfei	Ordinary	China
Inner Mongolia Xinchuang	Ordinary	China
NG Global Energy Solutions (Pty) Ltd.	Ordinary	South Africa
Shanxi Dongfang	Ordinary	China
Shaoxing Haili	Ordinary	China
Urangesellschaft MBH	Affiliate	Germany
Xallas Electricidad y Aleaciones, S.A.U.	Ordinary	Spain
Xinmeng New Materials	Ordinary	China

IMnI now represents 87 Members – a record high since 2012 – including 25 Chinese companies. IMnI Members are major Manganese producers and industry service providers, committed to develop their industry and promote the benefits of Manganese, while remaining proactive on compliance. Thanks to the active and dedicated engagement of its four Committees - HSE, Statistics, EPD and China - as well as the valuable involvement of its staff, IMnI continues to be the global voice of the Manganese industry.

In terms of events, in 2020 IMnI organised a physical Members meeting in Dali, Yunnan province, China, in September, attended by 30 companies, and a webinar in October, which attracted more than 100 delegates. The electrolytic products conference, traditionally organised in China in March, the Annual Conference planned for June in Cape Town and the Technical & HSE Workshop scheduled in September in China were postponed to 2021 given the travel constraints and to ensure the safety of IMnI Members.

IMnI Members benefit from the best market research available globally, collected directly from Manganese producers all over the world, and aggregated by the IMnI staff to ensure confidentiality of individual data. As part of its mission to keep its Members updated on new projects and new Mn applications, IMnI published in 2020 an update of the Manganese in lithium-ion batteries report, with a new section dedicated to Manganese monoxide.

New technical presentations on furnace optimisation, energy savings and major Manganese producers have been added to the IMnI extranet (available only for IMnI Members).

If global health conditions improve in 2021, IMnI is planning a major conference in South Africa, with 10 visits of Manganese operations (7 mines, 1 smelter, 1 EMM producer and Transnet's loading facilities at Port Elizabeth). Several scientific studies will also be funded to better understand the effects of Manganese on the environment and analyse how Manganese contributes to a greener world through its growing use in batteries.

IMnI in 2020

As more information has become available regarding the spread of the virus and further restrictions on travel and quarantine protocols in certain countries, the IMnI has decided the best course of action to ensure the safety of all our Members and conference delegates is to postpone all its physical events.

To ensure business continuity and maintain uninterrupted service, the IMnI team works remotely from home. While travels and social interactions have been halted, Market Research reports and HSE & Regulatory Affairs newsletter are published as usual.

Despite these challenging times, several new Members joined the IMnI in 2020, and participation in virtual events and partnership with other organizations was very active and productive.

January – March

• IMnI EPD (Electrolytic Products Division) Conference is postponed due to Covid19

• IMnI China Banquet is postponed due to Covid19

• Sunite Right Banner Xinmeng New Material Ltd. join as Ordinary Member

pac, Jian Zhou, Chairman of Guangxi Guikang New Materials, Lei Fei, General Manager, Carbon Steel Alloys Department of China Minmetals Corporation and Edward Li, Deputy General Manager of Qunxian.

April – June

• IMnI's Annual Conference is postponed due to Covid19

• Mrs. Tianchi Mignard joins the IMnI as International Business Analyst. Tianchi is in charge of monitoring the metal and battery markets, collecting statistical information, and preparing market research reports for the IMnI Members

• Adelphi Mineral Cooperation Ltd. & NG Global Energy Solutions (Pty) Ltd. join as Affiliate Member and Inner Mongolia Xinchuang & Xallas Electricidad y Aleanciones S.A.U. and NG Global Energy Solutions (Pty) Ltd. as Ordinary Members

July - September

• IMnI partners with with Mysteel for the 2020 Ferroalloys Industry Summit in Inner Mongolia in June 2020

• IMnI presents during the 3rd School on Manganese Ferroalloy Production, a webinar organised in August by SAIMM (The South African Institute of Mining & Metallurgy), and shared several technical presentations to all IMnI Members

• IMnI presents during the Ferroalloy.net conference in Dali, China in September 2020

• IMnI organises a Members meeting in September in Dali, Yunnan province, China, physically attended by 30+ companies (Chinese IMnI Members + some Western companies with offices in China)

• IMnI partners with Fastmarkets for their end of year virtual events

• IMnI publishes on its website an interactive map for Manganese ore and alloys production. The map shows monthly production figures of HC FeMn, Ref FeMn, SiMn and Mn ore from 2015 to 2020, and will be updated on a monthly basis

• Shaoxing Haili Goods and Materials Co., Ltd., Inner Mongolia Chayouqianqi Tenfei Ferroalloy Co., Ltd. & Shanxi Dongfang Resources Development Co. Ltd. join as Ordinary Members and Urangesellschaft BMH & Gerdau Acos Longos S/A as Affiliate Members

October - December

• IMnI organizes its first virtual webinar around the theme "How the Manganese industry evolved in 2020, and what comes next?" 110 participants join the event

• IMnI partners with CRU for the Ryan's Notes Ferroalloys 2020 Virtual Conference on Oct. 26-29 2020

• IMnI presents during Roskill's Webinar: Key narratives for the manganese industry

• Mrs Constanza Alzamora starts as incoming IMnI HSE & Regulatory Affairs Manager, in replacement of Brandon Cline, who has decided to move abroad for another position.

Manganese in 2020

Quarter 1

• Jupiter Mines to increase manganese ore output from Tshipi Borwa by 50% to 4.5 million tonnes per year over three years

• Brazil's mining regulatory body ANM approved a trial mining licence at Meridian Mining's Espigao project to produce 30,000 t/y of manganese oxide concentrate

• South32 sold UMK stake in Q4 2019

• LG Chem signed a contract to buy NCM (nickel, cobalt, and manganese) cathode materials for its electric vehicle (EV) battery business from Posco Chemical for three years

• Euro Manganese assigns 10% of the high-purity manganese from its Chvaletice demonstration plant to JFE Steel

• The Port of Lüderitz in Namibia is on the trajectory of doubling the volume of South African Manganese shipments

• Eurasian Resources Group is assessing options for the construction of a plant to produce NCM precursor materials for use in lithium-ion batteries in electric vehicles

• Euro Manganese has allocated 55% of the first year's production at its Czech Republic demonstration plant to testing and supply chain qualifications for five potential customers

• LG Chem and General Motors are planning to use the new NCMA (nickel, cobalt, manganese and aluminium) batteries for a new EV model that will be launched in 2022

• South African miners declare force majeure after lockdown announcement on March 25 after South African president announced a national lockdown for 21 days

Quarter 2

• South African government extended the national lockdown till end of April and mining operations are allowed to operate at a reduced capacity of not more than 50%

• Malaysia's OM Materials is embarking on an expansion project of its ferrosilicon and manganese alloy smelting plant in Sarawak, which will add additional two to four sets of manganese alloy furnaces

• Manganese ore producer Tshipi é Ntle Manganese Mining returns to full production from May 1

• Korea Electric Power Corporation has developed a new large-capacity secondary battery that uses manganese oxides as a positive material to reduce costs

• Element 25 has completed a pre-feasibility study which shows its Butcherbird project in Western Australia can produce around 312,000 t/yr of medium-grade lump manganese

• LG Chem starts using NCM712 cathode material for its battery production in Poland

• BASF has started construction on a battery materials plant in Finland and will supply NCM materials ranging in ratio from 1-1-1 to 8-1-1 and NCMA cathode materials

• Element 25 has been awarded a mining lease for its Butcherbird manganese project by the Department of Mines, Industry Regulation and Safety

Quarter 3

• Tshipi é Ntle Manganese Mining has signed a 5-year agreement to export via Lüderitz Port in Namibia, and the agreement is for 720,000 tonnes per annum

• Bryah Resources plans to expand its drilling projects in Western Australia and secured financing for the next round of exploration

• Vale suspended manganese ore production at the Azul mine in Brazil, and the suspension will likely stand until December 2020

• South Africa's Transalloys is to reduce its SiMn target output for the 2020 financial year to 120,000 t from 170,000 t, on account of the impact of the Covid-19 lockdown, high electricity tariffs and adverse market conditions

• South32 will sell its entire stake in manganese alloy smelter Tasmanian Electro Metallurgical Co (Temco) to UK-based conglomerate GFG Alliance

• Australia's Eclipse Metals is ready to launch into the second phase of diamond drilling at its Amamoor project in Queensland for battery-grade manganese

• South Africa manganese ore exports hit record levels in July, reaching 2.1 million mt

• Luongo Manganese Mine, with an initial investment of US$10 million, is scheduled to become operational in Chipili district, north of Zambia, before the end of the year

• OM Holdings is considering converting idled ferro-silicon furnaces to silico-manganese at its 16-furnace Sarawak complex in Malaysia

• Vale expects to end production of manganese ferroalloys in Simoes Filho, Bahia state, northeastern Brazil, by the end of the year

Quarter 4

• Eramet's Moanda Metallurgical Complex has switched from the production of manganese metal to manganese oxide

• East Manganese, located near the Northern Cape town of Hotazel, was recently granted a mining right and water-use license, one step closer to opening

• Posco has cooperated with ExxonMobil to speed up the application of its high-manganese steel to liquefied natural gas (LNG) carriers, pipes and storage tanks

• Element 25 has agreed offtake terms with Singapore-based smelting and trading firm OM Holdings for manganese ore from the first stage of the Butcherbird project in Western Australia

• African Rainbow Minerals is investigating new smelting technology that could enable South Africa's ferroalloys sector to circumvent electricity tariff increases

• United States Defense Logistics Agency(DLA) has awarded American Manganese a grant to perform work on the United States Government's manganese ore stockpile located near Wenden, Arizona, with the goal of producing electrolytic manganese metal for the nation

IMnI MARKET RESEARCH

IMnI provides the most comprehensive manganese industry market research available.

Circulated on a monthly basis, IMnI reports examine both production and consumption, and the balance between the two, looking at the industry from both sides of the supply demand equation. The primary objective of these reports is to offer an analysis of the immediate past, which can provide the basis for Members to develop a greater understanding of their business.

IMnI Executive Director Aloys d'Harambure examines manganese ore and alloy consumption as they relate to the steel industry with the application of an industry model. This systematic approach provides increased accuracy to better understand and anticipate changes in the industry. A detailed analysis of IMnI data is also published on a monthly basis.

Our China and Rest of the World Weekly Reports summarize the most important news of the industry during the week.

IMnI also issues monthly trade matrices for Mn Ore, Alloys, EMM and EMD, steel production statistics by country, and a database of current and future manganese producers.

All IMnI data is available to IMnI Members via our website www.manganese.org

MESSAGE FROM THE STATISTICS COMMITTEE CHAIRMAN

"New technical presentations, to better meet the needs of IMnI Members"

Guillermo RECIO
IMnI Statistics Commitee

In 2020, the Covid19 pandemic prevented the IMnI from organising the technical visits planned in South Africa and China, so these field trips have been postponed to 2021. However, the IMnI market research service continued improving, to better meet the needs of all the IMnI Members.

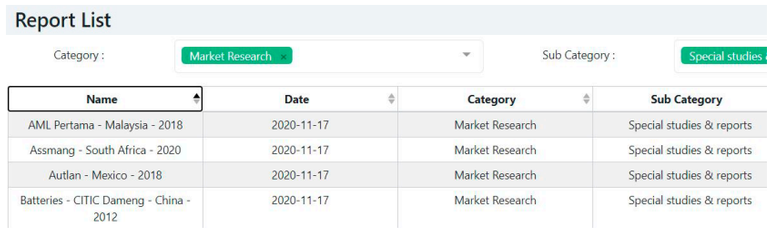
In 2020, IMnI improved its trade matrices, which now show the port/province of origin/destination for exports/imports of China, India, Brazil, Japan and Australia, allowing IMnI Members to run more detailed analysis of the Manganese market in these countries.

On the IMnI extranet, IMnI Members can now access all IMnI reports and publications, including the Online Database of IMnI statistics (updated monthly), but also dozens of technical presentations on various Manganese miners, smelters and other facilities all around the world. These presentations are available in the "Reports" menu of the extranet, under the category "Market research", sub-category "Special studies & reports".

An updated version of the report on Manganese in lithium-ion batteries was also published, with a new section dedicated to Mn monoxide (MnO), in addition to new production figures for Mn sulphate, with a breakdown between standard and high-purity Mn sulphate. We also published updated statistics for electrolytic Manganese dioxide (EMD) production by grade (alkaline, lithium manganese oxide, and carbon-zinc grade).

Today, statistics and market research reports represent one of the most important services IMnI Members benefit from. Our statistics are considered the most accurate in the manganese community, as they are based on data collected on a monthly basis from major manganese ore, alloy and metal producers. Confidentiality for producers is ensured with a 6-month time-lag in production data by country, but production figures by region are published with a time-lag of only 1 month (i.e in January, December's data is published). IMnI reports analyse production, demand, but also inventory, imports and exports for several Manganese products.

In the future, we plan to continue improving the quality of IMnI reports by publishing more technical information.


Report List

Category : Market Research

Sub Category : Special studies

Name	Date	Category	Sub Category
AML Pertama - Malaysia - 2018	2020-11-17	Market Research	Special studies & reports
Assmang - South Africa - 2020	2020-11-17	Market Research	Special studies & reports
Autlan - Mexico - 2018	2020-11-17	Market Research	Special studies & reports
Batteries - CITIC Dameng - China - 2012	2020-11-17	Market Research	Special studies & reports

(please note additional presentations on reduction of dust emissions, energy efficiency, and much more, are available in the same "Reports" menu of the IMnI extranet, under the category "Health, safety & environment").

STATISTICAL PACKAGES ARE AVAILABLE FOR NON-MEMBERS: ENQUIRE AT

stats@manganese.org

Company type	Product type	Product details	Country	Region	Parent company/group	Company/mine/plant	Capacity (in '000 mtpy)	Production Status/Expected start date	Details
Mn producer	Mn ore	high grade oxidised c	Gabon	Africa	Eramet	Comilog SA - Compagnie minière de l'Ogoo	7 000	active	
Mn producer	Mn ore	high grade oxidised c	Australia	Oceania	South32	Groote Eylandt Mining Company (GEMCO)	5 600	active	South32 owns a 60% interes
Mn producer	Mn ore	low grade carbonatec	Ghana	Africa	Ningxia Tianyuan Manganese Industry C	Ghana Manganese - Nsuta	7 000	active	used for EMM production in
Mn producer	Mn ore	high grade oxidised c	South Africa	Africa	South32	Mamatwan	3 800	reduced	South32 owns a 44.4% inter
Mn producer	Mn ore	mid grade semi-carb	South Africa	Africa	United Manganese of Kalahari (Pty) Ltd	United Manganese of Kalahari (UMK)	3 800	active	is a wholly owned subsidiary
Mn producer	Mn ore	mid grade semi-carb	South Africa	Africa	Ntsimbintle Mining (Pty) Ltd	Tshipi é Ntle Manganese Mining (Pty) Limite	3 600	active	The mine has an ore reserve
Mn producer	Mn ore	mid grade ore 37%M	South Africa	Africa	Ore & Metal Company Limited	Black Rock - Gloria	3 360	active	co-owned with African Rainb
Mn producer	Mn ore	mid grade ore 38%M	South Africa	Africa	Kalagadi Resources	Kalagadi Manganese Pty Ltd	3 000	active	Mine started in Q1 2018; Ma
Mn producer	Mn ore	mid grade semi-carb	South Africa	Africa	Asia Minerals (AML)	Kudumane Manganese Resources (Pty) Ltd	2 500	active	
Mn producer	Mn ore	high grade oxidised c	Brazil	South America	Vale International SA	Mina do Azul	1 727	active	
Mn producer	Mn ore	mid grade ore 33%M	Kazakhstan	CIS	TriPoint Group	Keregetas (& other mines)	2 200	active	stopped 2014 & 2015, restar
Mn producer	Mn ore	mid grade ore 41%M	Australia	Oceania	Ningxia Tianyuan Manganese Industry C	Consolidated Minerals - Woodie Woodie	1 600	active	suspended operations at its
Mn producer	Mn ore	mid grade ore 39%M	Ukraine	CIS	Privat	Ordzhonikidze Ore Mining & Processing Co	1 600	active	resumed output of manganes
Mn producer	Mn ore	mid grade ore 42%M	Brazil	South America	Mineracao Buritirama S.A.	Mineracao Buritirama S.A.	1 200	active	5 open pit mining areas; in E
Mn producer	Mn ore	mid grade ore 34%M	Australia	Oceania	OM Holdings Limited	Bootu Creek	1 280	active	
Mn producer	Mn ore	mid grade ore 38%M	Ukraine	CIS	Privat	Marganetsky Ore Mining & Processing Com	1 000	active	ramped up manganese ore c
Mn producer	Mn ore	mid grade ore 38%M	South Africa	Africa	South32	Wessels	1 000	active	South32 owns a 44.4% inter
Mn producer	Mn ore	mid grade ore 36.4%	South Africa	Africa	Ore & Metal Company Limited	Black Rock - Nchwaning	1 000	active	co-owned with African Rainb
Mn producer	Mn ore	mid grade semi-carb	South Africa	Africa	Guangxi Dameng & Xinsidi-Sincerity (joi	Paling & Bishop & Lidino mines	1 000	active	in Postmasburg, Northern Ca
Mn producer	Mn ore	mid-grade carbonate	Gabon	Africa	CITIC Dameng Mining Industries	CICM Hwazhou - M'Bembele	1 000	active	M'Bembele deposit in Ndjole
Mn producer	Mn ore	mid grade ore 38%M	Georgia	CIS	Georgian American Alloys	Georgian Manganese LLC - Chiatura	731	active	in Georgia's Imereti region. A
Mn producer	Mn ore	low grade carbonatec	China - Guangxi	Asia	CITIC Dameng Mining Industries	Daxin	1 600	reduced	open pit and underground; 1
Mn producer	Mn ore	low grade carbonatec	China - Xinjiang	Asia	Western Gold	Xinjiang Aketao Kebang Manganese Industr	1 200	active	
Mn producer	Mn ore	low grade carbonatec	China - Guangxi	Asia	Baikuang Group	Jingxi Manganese	600	active	2019 output plan: 400,000 w
Mn producer	Mn ore	low grade carbonatec	China - Guangxi	Asia	CITIC Dameng Mining Industries	Tiandeng New Materials - Chongzuo - Daxin	300	reduced	will start underground mining
Mn producer	Mn ore	low grade carbonatec	China - Guangxi	Asia	Baikuang Group	Jingxi Manganese	270	active	2019 output plan: 400,000 w

IMnI offers the most comprehensive and detailed statistics available on manganese

Manganese production, demand and inventory statistics collected directly from IMnI Members on a monthly basis.

Monthly import and export data by country for manganese ore, silico-manganese, high-carbon and refined ferro-manganese, manganese metal and manganese dioxide.

Steel production report, country-by-country every month.

Complete database of manganese producers and future projects, with filter by product and by country, with capacity.

2 – Silico-manganese (SiMn) production

Global SiMn production increased by 10% MoM in October to 1.6 million mt, mostly because of higher output in China. Global year-to-date production was 25% higher than in the January to October period of last year, as all regions except the Americas increased supply so far this year.

- **Asia & Oceania:** production rose by 11% MoM, driven by China and India. YTD supply was 29% higher YoY, as Indian smelters increased output on firm domestic demand, and Chinese smelters anticipated rising demand because of the new rebar standard, which came into effect on November 1. "*Following the start of the new rebar rules, silicomanganese stocks have been sold out, to Chinese steel plants,*" Chinese sources reported.
- **CIS:** production remained stable in October, and year-to-date supply rose by 13% YoY as higher output in Georgia and Ukraine offset production cuts in Russia.

SiMn Supply & Demand in October 2018

(in '000 mt)	Supply	MoM % Change in Supply	YoY % Change in Supply	YoY % Change in supply since Jan.	Demand	MoM % Change in Demand	YoY % Change in Demand	YoY % Change in demand since Jan.	Supply & Demand Balance
Asia & Oceania	1 367	11%	18%	29%	1 176	2%	27%	31%	191
C.I.S.	139	0%	6%	13%	63	3%	2%	3%	75
Europe	51	3%	16%	15%	101	7%	-2%	0%	-49
Americas	35	4%	2%	-1%	73	3%	0%	1%	-38
Africa & Middle East	23	10%	19%	16%	26	-3%	9%	11%	-2
World	**1 616**	**9,9%**	**16,1%**	**25,5%**	**1 439**	**2,7%**	**20,9%**	**24,3%**	**177**

Source: International Manganese Institute (IMnI)

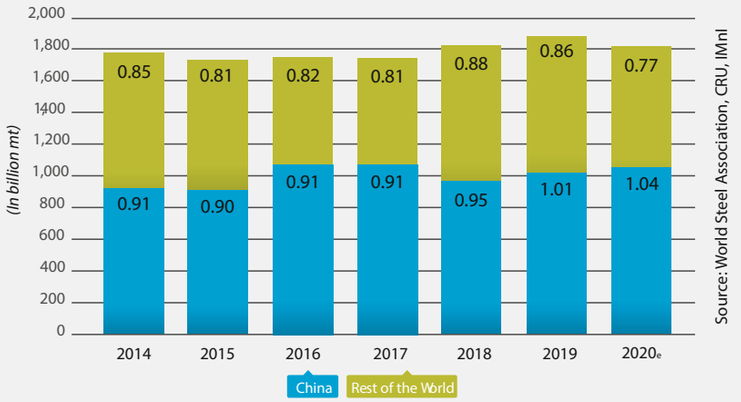
MANGANESE MARKET OVERVIEW

"In 2020, the global Manganese industry was strongly impacted by the sanitary crisis, with the alloy sector more affected than the ore."

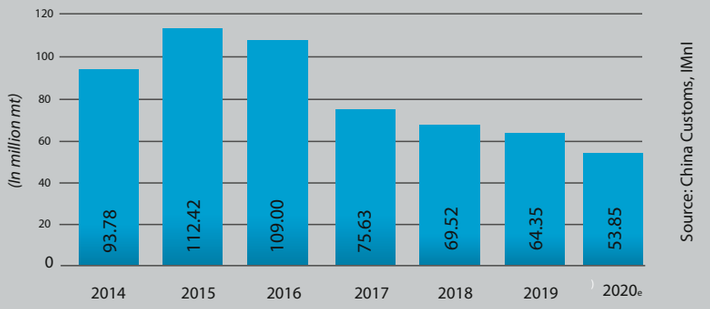
STEEL: Global steel production decreased in 2020 as many mills idled capacity in H1 2020 due to the Covid crisis, but China's production continued rising.

Global crude steel production decreased in 2020 by 3% from the record high of 1.87 billion mt in 2019, to around 1.81 billion mt in 2020 according to a first estimate based on CRU data. Around 56 million tons were cut globally in 2020 compared to the previous year. China remained the growth engine of steel output as the country came out of the lockdown earlier than others, and all major steel-using sectors were back to near full productivity by the end of April. China's total steel output reached an estimated 1.04 billion mt in 2020, up by 3.7% from 1 billion mt in 2019. China now represents 58% of global output. China's steel demand was largely boosted by government infrastructure stimulus and a strong property market. With robust domestic demand, China steel exports continued falling in 2020, to 54 million mt (-16% YoY), despite higher domestic output. However, production in the rest of the world contracted by 10.8% from the previous year due to slowing demand and production cuts during the pandemic crisis. The recovery outside China remains fragile at the end of 2020, due to the second wave of infections in Europe and the Americas. Outside China, only Turkey increased output in 2020 (+3%), while production contracted in India (-16%), the United States (-19%), Japan (-19%), Germany (-16%), Italy (-17%), Mexico (-14%) and to a lesser extent South Korea (-8%) and Russia (-1%), according to partial data published by World Steel Association. Steel production statistics by country are available here (for IMnI Members only).

Steel Production in China vs the rest of the World
2014-2020

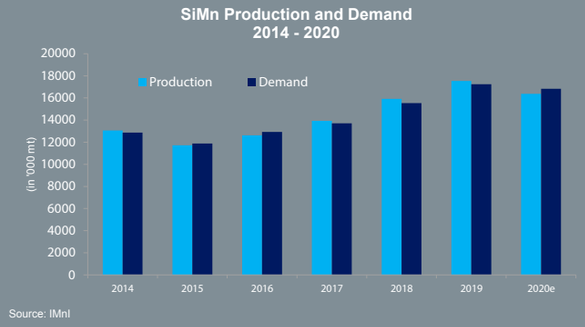


Steel exports from China
2014-2020

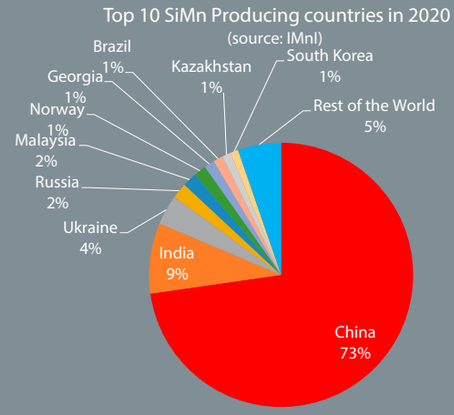


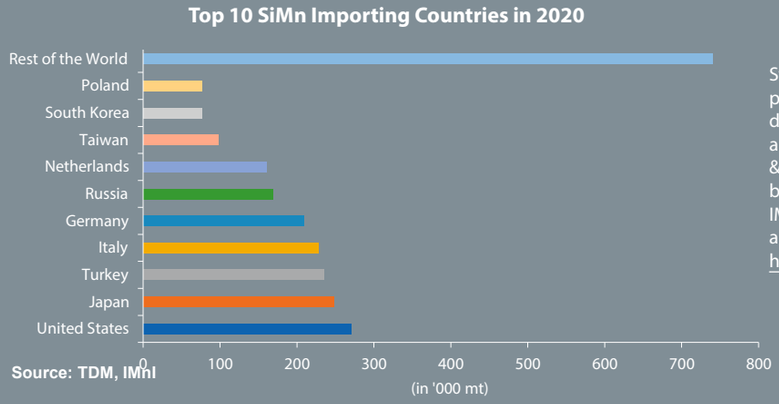
SiMn

Global SiMn production contracted by 7% in 2020 to around 16 million mt, after rising for four consecutive years, due to dwindling demand from the steel sector. Among all major SiMn producing countries, only Russia recorded a production growth (+10%). China's SiMn output decreased by 4% in 2020 despite rising steel output, because of destocking at both ferro-alloy plants and steel mills. Production recorded double-digit decreases in India, Ukraine, Norway, Georgia, and Kazakhstan. China now accounts for a huge 73% of global silico-manganese production, followed by India with 9% and Ukraine (4%).



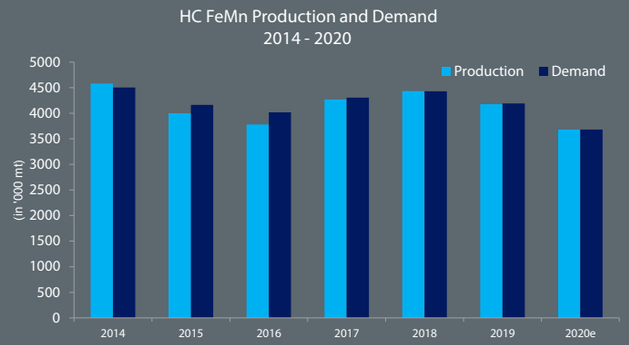
Source: IMnI





Source: TDM, IMnI

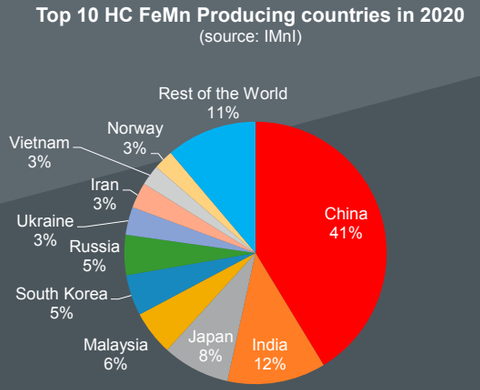
Statistics for production, demand, inventory and trade of Mn ore & alloy are available by region here (for IMnI Members only), and by country here.

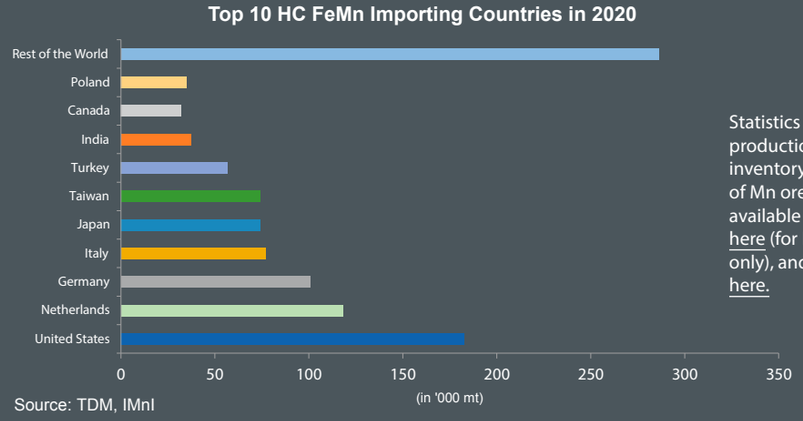


Source: IMnI

HC FeMn

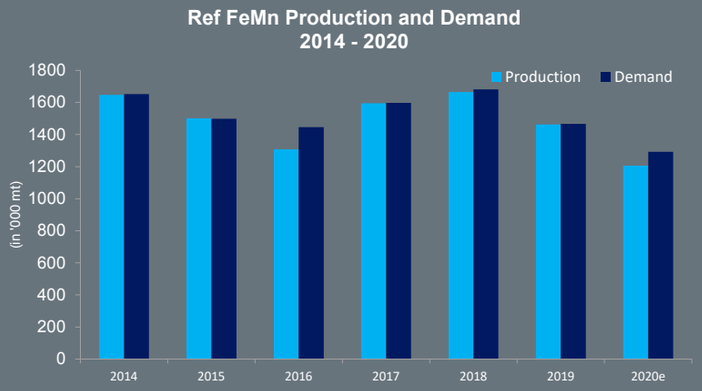
The world's output of high-carbon ferro-manganese decreased in 2020, to around 3.7 million mt, down by 12% from the previous year. Production declined in all major producing countries, including China, Malaysia, Iran, Vietnam, Norway and to a lesser extent India, Japan, South Korea, Russia, and Ukraine. China now accounts for 41% of global HC FeMn production, followed by India (12%) and Japan (8%).





Source: TDM, IMnI

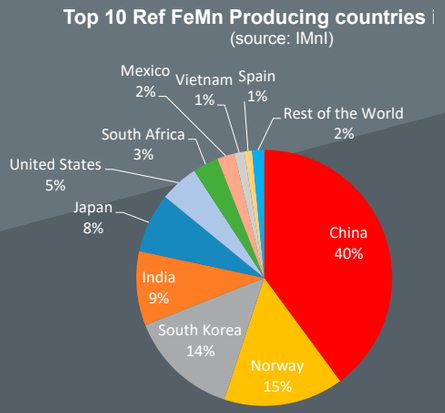
Statistics for production, demand, inventory and trade of Mn ore & alloy are available by region here (for IMnI Members only), and by country here.

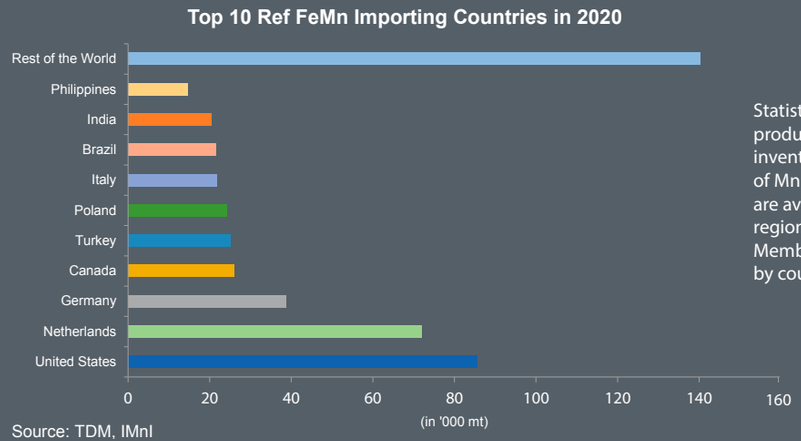


Source: IMnI

Ref FeMn

Global production of refined ferro-manganese declined in 2020 to 1.2 million mt, down by 18% from the previous year. All the Ref-FeMn producing countries cut output, including China (-11%) and South Africa (-50%). China now accounts for 40% of global refined FeMn production, followed by Norway (15%) and South Korea (14%).



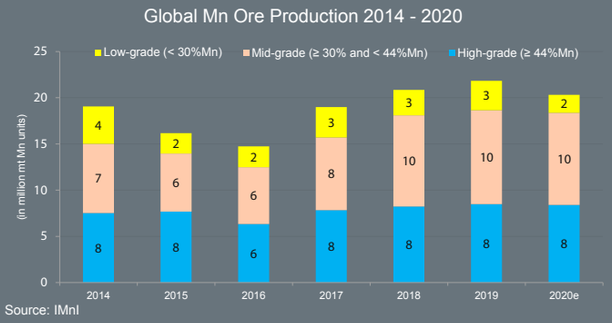


Source: TDM, IMnI

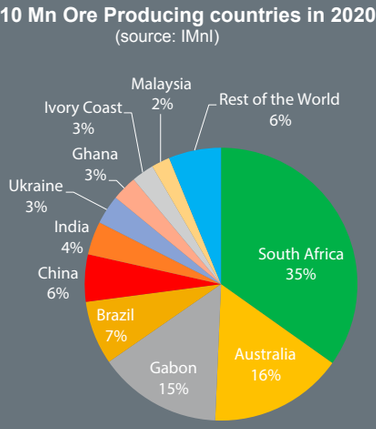
Statistics for production, demand, inventory and trade of Mn ore & alloy are available by region here (for IMnI Members only), and by country here.

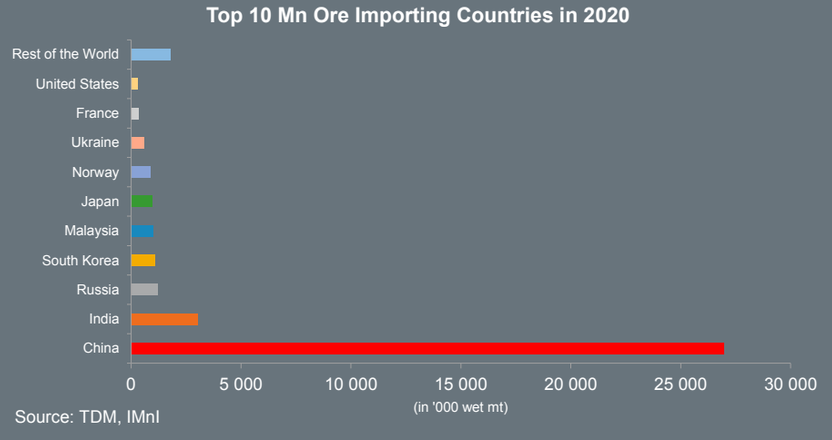
Mn Ore

The world's output of Manganese ore decreased to 20.3 million mt Mn units in 2020, down by 7% from the previous year. The decrease largely comes from production cuts of low-grade ore (-39%) while the supply of mid-grade and high-grade ore remained stable from last year. Production contracted in South Africa, Brazil, China, Ukraine, Ghana, Malaysia and the rest of the world, while output rose in Australia, Gabon and Ivory Coast. South Africa now accounts for 35% of global Mn ore production, followed by Australia (16%) and Gabon (15%).



Source: IMnI





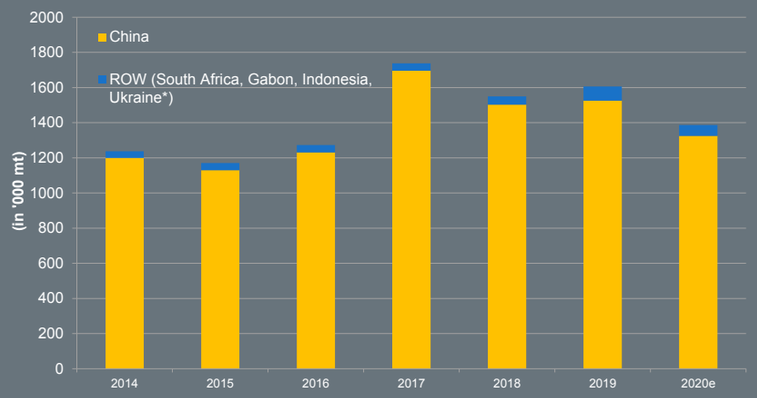
Source: TDM, IMnI

A database of manganese producers and future projects is available here (for IMnI Members only).

MANGANESE METAL

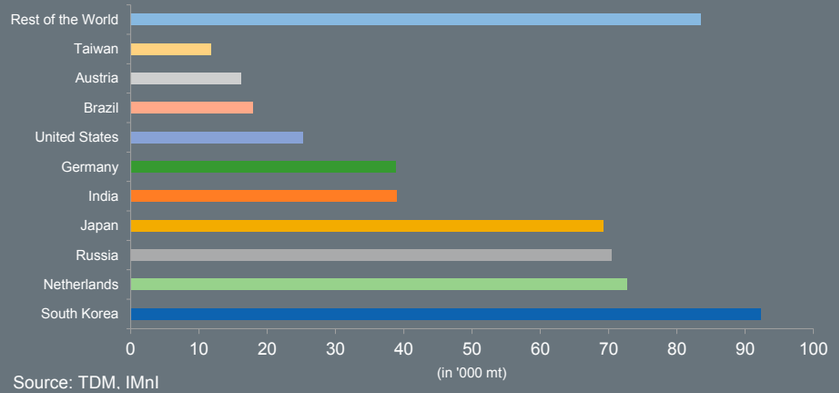
Manganese metal production contracted in 2020, by 14% from 2019 to 1.387 million mt. The drop is mainly due to production cuts by Chinese producers as the domestic EMM price remained low in 2020, sometimes even below the production cost. Production also slumped significantly in Gabon and Ukraine, and to a lesser extent in South Africa. China now accounts for 96% of the global output of Mn metal.

Manganese Metal Production in China vs the rest of the World 2014 - 2020



* Manganese metal produced at Privat's plant Zaporozhye in Ukraine aluminothermic manganese metal, not electrolytic

Top 10 EMM Importing Countries in 2020

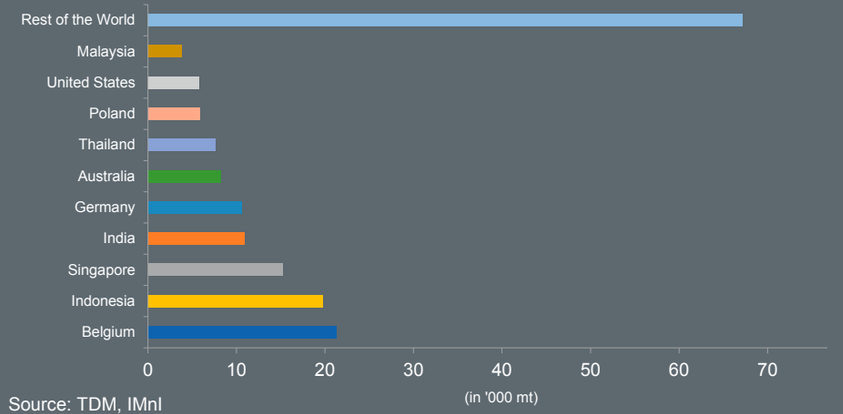


Source: TDM, IMnI

EMM production statistics are available here (for IMnI Members only):
- by country in **IMnI Monthly Manganese Metal Production Data**
- by province in China in **IMnI Monthly Data – China**

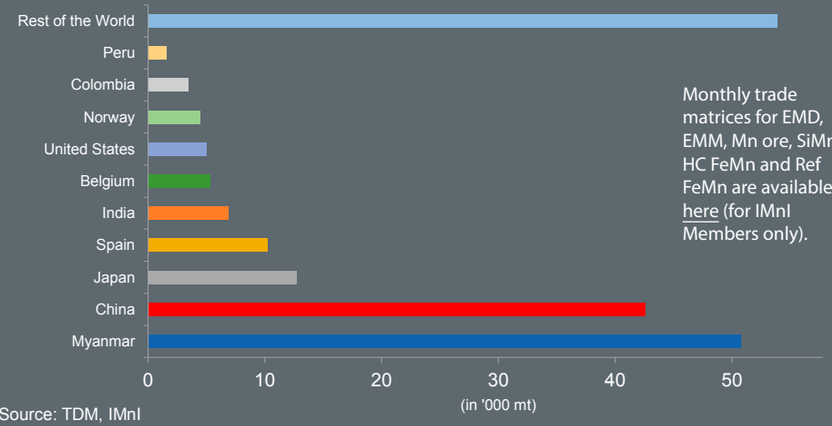
ELECTROLYTIC MANGANESE DIOXIDE (EMD)

Top 10 EMD Importing Countries in 2020



Source: TDM, IMnI

Top 10 EMD Exporting Countries in 2020



Source: TDM, IMnI

Monthly trade matrices for EMD, EMM, Mn ore, SiMn, HC FeMn and Ref FeMn are available here (for IMnI Members only).

HSE: Social Responsibility

The mission of the HSE Committee is to develop the IMnI as the platform for providing the Mn industry with guidance, tools and information that will allow it to anticipate occupational health, environment and safety demands whilst improving worker safety, sustainability and ensuring industry profitability. To support this mission, the committee answers three main objectives:

- To identify those HSE topics that can impact on the Mn industry and to provide answers.
- To establish and employ a global network that can provide appropriate HSE expertise to IMnI, when necessary.
- To provide relevant information and support to members enabling them to promote and pro-actively ensure their interests when faced with new regulatory demands.

MESSAGE FROM THE HSE COMMITTEE CHAIRMAN

"A year of achievements leading to new endeavors"

Rockin REED
IMnI HSE Commitee Chairman

The pandemic affected some of the work of the committee, limiting opportunities for face to face interaction, for instance the manganese conference planned in the US, resulting in delays, alterations to workplans or approach to planned interactions. However, 2020 was a year of accomplishments for the HSE Committee with the conclusion of the health studies work initiated in 2018/2019. The work will culminate in papers to be submitted for publication in 2021. This closes an important cycle resulting in increased knowledge of primarily the health aspects of the manganese industry, and by these means increased protection of the industry.

The work with the US Manganese Interest Group (MIG), a coalition interested in the scientifically sound evaluation and regulation of manganese, facilitated completion of a second consultancy review study. A paper counteracting earlier analysis by the US EPA of health impacts linked to monitoring data with conclusions that affect the industry has been submitted for publication in December 2020. IMnI is also supporting MIG with benchmark data on European quality standards for Mn in ambient air and surface waters to provide supportive information in discussions with the EPA, given that no quality standards for Mn exist in the EU in the respective media. Also, benchmark data on state-of-the-art monitoring of emissions at the source and ambient air monitoring was provided. This with the aim of changing the paradigm to a source of emissions perspective and preventative measures at the source.

Risk Sciences International (RSI), the IMnI partner for the manganism project, held a workshop on manganism during 2020. This workshop was attended by experts in manganese toxicity and was focused on redefining the diagnostic criteria for manganism. These will be reviewed and validated by an independent medical panel at the beginning of 2021. The redefined diagnosis criteria will be a powerful guideline for industry, health practitioners and employees.

A project was initiated with Canada-based Salient Energy and its MnO2 electrodes to further the development of rechargeable aqueous Zin-ion battery (ZIB) technology. The goal of the project is to replace Li-ion batteries for stationary energy applications, and therefore increase the use of manganese in batteries.

The involvement with the China Associations Coordination Group (CACG), initiated last year with the object to develop risk assessments for metals to harmonize China with other jurisdictions, continues its course. In 2021, the group will continue the collaboration with the Solid Waste and Chemicals Management Center (SCC), Ministry of Eco-

logy and Environment, to develop the Metal Environmental Risk Assessment Guidance (MERAG).

IMnI pursued involvement with the International Council on Mining and Metals (ICMM) and is following the project for development of a progressive industry perspective on the use of particulate real-time monitoring. The focus is on use of precision and equivalency with regulatory requirements, and a risk-based approach to the use of real-time monitoring. The outcome of this work to be completed in 2021 is expected to be of much use to IMnI Members.

The HSE Committee looks forward to providing continued support to IMnI members to enable them to successfully manage the increasing challenges in the HSE field.

Rockin REED
IMnI HSE Commitee Chairman

2020 REGULATORY HIGHLIGHTS

Quarter 1

- Mn to undergo further ecological risk assessments in Canada
- Japan to define possible new Mn limits on welding fumes
- New aquatic life criteria for Mn in Kentucky in the US
- India issues third draft of Chemicals (Management and Safety) Rules
- Malaysia updates hazard classifications of chemicals including Mn
- New use rules in the US for six substances including calcium manganese titanium dioxide

Quarter 2

- Harvard study on how metals (including manganese) affect late-life cognitive health will run for the next four years
- US opens comment period for new Mn dye
- Japan removes Mn from the list of Priority Assessment Chemicals Substances
- US antidumping duty order on electrolytic manganese dioxide (EMD)

Quarter 3

- Multiple jurisdictions initiating plans for REACH-like registrations
- South Korea cuts data access costs for substance registration for REACH-Korea

Quarter 4

- Manganese in e-cigarettes in Europe considered low risk
- China limits content of mercury, cadmium and lead in standardized zinc manganese dioxide batteries, zinc oxide batteries and zinc air batteries

UPDATE ON HSE SPECIAL PROJECTS 2020

IMnI STUDIES

Relationship of hair manganese and internal tissue Mn accumulation as a biomarker for internal Mn dose responses

This project was funded late 2018 and will finish in 2021, with a paper to be submitted in the first quarter of 2021. The joint efforts of Albert Einstein College of Medicine and Purdue University in the USA demonstrate that manganese levels in rodent hair are not representative of actual internal manganese exposure. The results show that, unlike mercury, manganese accumulation in mouse or rat hair does not appear to correlate with subcutaneous administration of manganese. The importance of the work is that it questions the utility of human hair as a reliable biomarker for manganese exposure. The utility of hair as a biomarker in humans needs to be validated if any conclusions are to be drawn in correlating hair manganese levels with adverse health effects.

Can toenail Mn levels predict brain Mn levels?

Purdue University received funding in late 2018 to study if toenails can predict brain Mn levels following workplace exposure in welders. Preliminary results show that Mn concentrations in toenails produce strong correlations with exposures during previous 7-12 months, and that toenail concentrations also correlate with motor function test results. Toenail concentrations from toenail clippings acquired at the same time as the MRI exam are however not correlated with brain MRI, which only correlate with exposures during the last three months. Data acquisition and analysis on toenail concentrations acquired at timepoints 3m, 6m, 9m and 12m after the MRI are still in progress. The expectation is that toenail Mn levels acquired 6m past the MRI exam would predict the MRI brain Mn levels better, since in this case both biomarkers would correlate with exposure at 3m prior to the MRI exam.

A $3.5M grant from the National Institute of Health (NIH) for the next 5 years was obtained thanks to the preliminary work funded by IMnI. The objective is to study toxico-kinetics of Mn exposure in welders with neuroimaging, in particular uptake of Mn from baseline at non-exposure, as well as wash-out of Mn after end of exposure. By these means the IMnI study will be completed at a much larger scale. There are three papers planned to be submitted for publication in 2021.

Investigation of metabolites related to manganese exposure in metalworkers using targeted mass spectrometry methods

Funded early in 2019, the University of Washington is analyzing urine metabolites of welders exposed to Mn fumes. Targeted metabolomics are being utilized to investigate not only metabolite differences between groups defined by exposure, but also pathway perturbations related to Mn exposure. A targeted assay of 394 aqueous metabolites was undertaken via LC-MS/MS on the urine samples collected from Mn exposed and unexposed workers in the Puget Sound region of the United States. Metabolite levels were compared between exposed and unexposed workers. Some metabolites were found to be elevated in Mn-exposed workers, including anserine, beta-alanine, and isobutyrylglycine. Further analyses are investigating if there are particular pathways that are perturbed, and the biological relevance of the perturbed pathways and metabolites. Additional validation of these metabolites in this and other cohorts could inform Mn-workplace biomonitoring and exposure assessment. A paper is planned for submission in January 2021.

Factors Impacting Zinc Cation Intercalation into Manganese Oxide Structures for Rechargeable Aqueous Zinc-Ion Batteries

Fundamental characterizations of Canadian-based Salient Energy's MnO2 electrodes were initiated in collaboration with the University of Alberta including the following studies at different stages of discharging and charging of zinc-ion battery cells: X-ray diffraction (XRD), scanning electron microscopy (SEM), transmission electron microscopy (TEM), energy dispersive X-ray spectroscopy (EDX), and electrochemical measurements.

The initial grant form IMnI allowed Salient to be awarded a $3M grant from Sustainable Development Technology Canada (SDTC) to construct a pilot plant in 2021 and begin manufacturing their zinc-ion batteries.

The goal of the project is to replace Li-ion batteries with rechargeable aqueous zinc-ion battery (ZIB) technology for stationary energy storage and by these means increase use of Mn in batteries. A paper is planned to be submitted for publication in June 2021.

Manganism

The project was originally commissioned to Risk Sciences International (RSI) at the beginning of 2018. Phase 1A of this project, which involved a comprehensive review of criteria for measuring neurological impairment, was completed in 2019. Subsequently, phases 1B (review of manganese pharmacokinetics and imaging) and 1C (review of manganese biomarkers) were completed and used as background information for the International Workshop on Diagnosis Criteria for Manganism that took place in 2020, with participation of international experts in manganese toxicity. The objective is to redefine diagnosis criteria for manganism as present criteria appear dated given that Mn exposure is far lower than it was historically. This will provide workers and employers in the manganese industry with a stronger basis for ensuring occupational health. Presentations and discussions involved current diagnosis criteria of manganism, environmental biomarkers, occupational biomarkers, magnetic resonance imaging markers, pharmacokinetics of manganese, indicators of neurological disfunction and differentiation with parkinsonism. The draft Clinical Diagnosis Criteria will be reviewed and validated by a medical panel (phase 2B) in 2021

Manganese Interest Group (MIG)

To balance negative industry impacts in the United States, the Manganese Interest Group (MIG) commissioned a review to evaluate the conclusions of studies funded by the US Environmental Protection Agency (USEPA). The second scientific consultancy review was submitted for publication December 2020.
IMnI continued to work with and support the efforts of MIG by providing benchmark data for monitoring of emissions at the source and ambient air quality monitoring per international best practice. To support discussions with the administration, data about European Directives for ambient air and water quality directives was provided, as well as for classification, registration and labelling of substances for manganese.

ELECTROLYTIC PRODUCTS DIVISION (EPD)

- Focuses on electrolytic manganese metal (EMM), electrolytic manganese dioxide (EMD) and other manganese chemicals (MnSO4, Mn3O4, MnO, etc.)
- Collects production and trade data on electrolytic products
- Provides coverage and weekly analysis of EMM and EMD markets in China through on the ground investigation by our IMnI China Representative
- Acts as a forum for discussion of industry matters, particularly those relating to health, safety, environment and regulatory affairs

THE IMNI ELECTROLYTIC PRODUCTS DIVISION (EPD) CONFERENCE

Due to the Covid-19 pandemic, the 12th International Forum on Manganese Electrolytic Products & IMnI's 17th EPD Conference scheduled in March, 2020 in Chengdu, Sichuan has been postponed to 2021.

Around the theme "What are the latest developments for the EMM, EMD and Mn chemical products?", experts and specialist of Manganese industries, representatives from upstream and downstream enterprise home and abroad will be invited to share their points of views of how to realize the high quality development of manganese industry in the new era.

A technical visit to the production units of Sichuan Zhongzhe New Material Technology Co. Ltd. will be scheduled after the conference.

Hosts:

- International Manganese Institute (IMnI)
- National Committee of Manganese Industry Technology (NCMIT)
- Manganese Industry Branch of China Mining Association
- Guangxi Manganese Institute

Organizers:

- CITIC Dameng Mining Industries Limited
- Shenyang Bangpin Trade Limited
- International Manganese Institute China Committee

Sponsor to date:

- Jingjin Environmental Protection co. Ltd.

For more information about the IMnI and its events, please contact events@manganese.org or follow us on LinkedIn.

UPDATE ON THE CHINA COMMITTEE

In September 2020, the IMnI China Committee elected Mr. Jian Zhou (Guangxi Guikang New Materials) as Chairman, in replacement of Mr. Li Weijian (Citic Dameng). The IMnI thanks Mr. Li Weijian for his efforts to bring together all the major Manganese companies in China over the last few years.

With 5 new Chinese companies joining the IMnI in 2020, the China Committee now represents a total of 25 Chinese IMnI Members, including 15 major producers of Mn alloys, 1 producer of electrolytic products and Manganese ore, and 9 prominent trading companies.

The China Committee aims to assist IMnI in enlarging its membership base in China, to provide IMnI Members with accurate statistics on China, to facilitate the networking between Chinese companies and IMnI Members from the rest of the world, and to support Chinese Members in terms of HSE, market research and technical information. Mrs. Eva Yang (evayang@manganese.org), based in Shanghai, is the IMnI China Representative.

Although the traditional IMnI Technical & HSE Workshop, planned this year in Guangxi province, could not be organised because of the Covid19 travel restrictions, IMnI Chinese Members met in September 2020 in Dali, Yunnan province, China (31 companies attended this meeting, including 22 Chinese).

The China Statistics sub-committee also organised several teleconferences, animated by IMnI China Representative Ms. Eva Yang, to discuss the latest IMnI statistics.

In 2021, IMnI plans to organise a Technical & HSE Workshop in Guangxi province, to visit Guikang New Materials, and hold technical discussions on energy consumption and furnace optimization etc.

THE ANNUAL CONFERENCE
IMnI's Premier Event

As more information has become available regarding the spread of the virus and further restrictions on travel and quarantine protocols in certain countries, the IMnI has decided the best course of action to ensure the safety of all our Members and conference delegates is to postpone its 46th Annual Conference, originally scheduled for June 2020. **This event will be held in Q4 2021, in Cape Town, South Africa.**

Structured around the theme "South Africa at crossroads: diversified Manganese producer, or China's miner?", main speakers will include: **Robert Ward,** Director of Geoeconomics & Strategy and Japan Chair at the International Institute of Strategic Studies (IISS); **Goolam Ballim**, Chief Economist of Standard Bank Group, **Maxime Vandersmissen**, Associate Partner, Basic Materials of McKinsey & Company, **Steven Vercammen**, Senior Expert in the Basic Materials Institute of McKinsey & Company, **Gajanan U. Kapure**, Head, Ferro Alloy Minerals Research Group of Tata Steel Limited, **Ramsey Yavuz**, Analyst for Roskill Information Services, **Aloys d'Harambure**, IMnI Executive Director, **Kevin Fowkes**, Managing Consultant for AlloyConsults, **Rorie Wilson**, Managing Director of Ore & Metal Company, **Navesh Rangoonanthun**, Group General Manager: Business Development of Transnet, **Sebastian Kreft**, Managing Director of Metals Hub GmbH, **Bingbing Song**, Secretary of the CCC Sub-Committee of the International Maritime Organisation (IMO) and **John Bell**, CEO of S.H. Bell Company.

A panel discussion on manganese will be part of the program.

Pre and post conference, technical tours to open-pit and undergroung mines (Kudumane, South32 Mamatwan, Tshipi, UMK, Assmang Gloria & Nchwaning), plants (Manganese Metal Company and Transalloys) and ports (Transnet Port Elizabeth & Coega) will be scheduled.

Sponsors to date for this event include Assore, Autlan, Kudumane Manganese Resources (Pty) Ltd., South32, South32, Transalloys (Pty) Ltd., Tshipi & Ntle Manganese Mining and United Manganese of Kalahari (UMK).

For more information about the IMnI and its Annual Conference, please contact events@manganese.org or follow us on LinkedIn.

IMnI COMMITTEES 2020

The life of the Institute is regulated by the work done by its committees. There are three standing committees: Health, Safety and the Environment (HSE), Statistics and the China Committee. They meet on average between two and four times a year, and are open to both Ordinary and Affiliate members. Each committee is chaired by a member, while the secretariat is handled by a permanent IMnI staffer. Each also has about a dozen members.

The China Committee has three Sub-Divisions: statistics, technical issues and regulatory affairs.

The Electrolytic Products Division (EPD) operates like a committee and is formed of producers of electrolytic manganese metal and electrolytic manganese dioxide.

Committees are the lifeblood of the IMnI, providing vision, ideas and direction to nourish its fundamental missions.

Statistics Committee

Guillermo Recio (Chairman)	*Autlán*
Juan Bosco Álvarez	*Autlán*
Jay Cho	*Asia Minerals*
Wang Ning	*China Minmetals Corporation*
Antoine Delavenne	*Eramet Comilog Manganese*
Marco Levi	*Ferroglobe*
Jian Zhou	*Guangxi Guikang New Materials, Co. Ltd.*
Toshiaki Abe	*Japan Ferroalloy Association*
Thembelani Gantsho	*Kudumane Manganese`*
Andreas Schüssler	*L & M Rohstoffhandels GmbH*
Luis Pessoa	*Maringá Ferro-Liga S.A.*
Martin Levcik	*OFZ, a.s.*
Jeff Jiang	*Oldendorff Carriers*
Katharine Koh	*South32*
Carel Marlan	*Tshipi é Ntle Manganese Mining*
Aloys d'Harambure	*IMnI Executive Director*

Health, Safety & Environment Committee

Rocklin Reed (Chairman)	*Ore & Metal Company Ltd.*
Jenny Cronje	*South32*
Athena Keene	*Afton Chemical Corporation*
Nadxiely Yescas	*Autlán*
Frederic Gaidou	*Eramet Comilog Manganese*
Cristina Cadarso	*Ferroglobe*
Rodrigo Junqueira Dos Santos	*Maringá Ferro-Liga S.A.*
Matej Siculia	*OFZ, a.s.*
Constanza Alzamora	*IMnI HSE Director*
Aloys d'Harambure	*IMnI IMnI Executive Director*

China Committee

Jian Zhou (Chairman)	*Guangxi Guikang New Materials Co., Ltd*
Deng «Dan» Guohong (Chairman of Technical Sub-Division)	*Inner Mongolia Chayouqianqi Mengfa Ferroalloy Co.*
Yang Bin (Chairman of HSE Sub-Division)	*Ningxia Shengyan Industry Group*
Wang Ning (Chairman of Stastic Sub-Division)	*Minmetals Development Co., Ltd*
Huang Junjie	*Baosteel Ressources (International) Co., Ltd*
Zhan Haiqing	*CITIC Dameng Mining Industries*
Yuan Zhilun	*Chongqing Bosai Mining Group*
Zhou Fenfa	*SPIC Jinyuan Suiyang Industrial Co., Ltd*
Guo Yimin	*Vietnam Hai Duong New Ressources Metallurgy Sharholdings*
Aloys d'Harambure	*IMnI Executive Director*
Eva Yang	*IMnI China Representative*

Electrolytic Products Division (EPD)

Li Weijian (Chairman)	*CITIC Dameng Mining Industries*
Madelein Todd (Vice-Chairman)	*Manganese Metal Company (MMC)*
Philipe Bertrand	*Prince - Erachem*
Li Tongqing	*CITIC Dameng Mining Industries*
Hiromu Otsuka	*Tosoh Corporation*
Aloys d'Harambure	*IMnI Executive Director*
Eva Yang	*IMnI China Representative*

IMnI OFFICERS

Executive Board Members

Chairman

- **Esteban Rivero**, Autlán

Members

- **Patrick Sacco**, Ore & Metal Company Ltd. (Vice-Chairman)
- **Branislav Klocok**, OFZ, a.s. (Vice-Chairman)
- **Ken Bagady**, Eramet Comilog Manganese (Treasurer)
- **Aloys d'Harambure**, IMnI

Supervisory Board Members

- **Esteban Rivero** *(Chairman)*, Autlán *(Corporate Vice-President)*
- **Patrick Sacco** *(Vice-Chairman)*, Ore & Metal Company Ltd. *(Managing Director)*
- **Branislav Klocok** *(Vice-Chairman)*, OFZ, a.s. *(Managing Director)*
- **Ken Bagady** *(Treasurer)*, Eramet Comilog Manganese *(VP Manganese Alloys Sales)*
- **Li Weijian**, CITIC Dameng Mining Industries *(Vice Chairman & CEO)*
- **Guillaume Verschaeve**, Eramet Comilog Manganese *(Managing Director of Manganese Ore & Alloys Business Unit)*
- **Marco Levi**, Ferroglobe *(CEO)*
- **Ruan van Schalkwyk**, Glencore International AG *(Trader)*
- **Wang Ning**, Minmetals Development Co., Ltd. *(General Manager, Carbon Steel Alloys Department)*
- **Mukund P. Chaudhari**, MOIL Limited *(Chairman-cum-Managing Director)*
- **Ngee Tong Low**, OM Holdings Ltd. *(Executive Chairman)*
- **James Jin Shik Choi**, Simpac Metalloy *(CEO & Chairman)*
- **Beata Plazura-Ingram**, South32 *(VP Marketing, Carbon Steel & Freight)*
- **Ezekiel Lotlhare**, Tshipi é Ntle Manganese Mining (Pty) Ltd. *(CEO)*
- J**ohn Joseph Scholtz**, United Manganese of Kalahari *(Marketing Manager)*
- **Aloys d'Harambure**, IMnI *(Executive Director)*

Committee Chairmen

- **Health, Safety & Environment Committee (HSE)**, Rocklin Reed, Ore & Metal Company Ltd.
- **Statistics Committee**, Guillermo Recio, Autlán
- **China Committee**, Jian Zhou, Guangxi Guikang New Materials Co., Ltd.
- **Electrolytic Products Division (EPD),** Li Weijian, CITIC Dameng Mining Industries

Treasurer

- **Ken Bagady** (Treasurer), Eramet Comilog Manganese *(VP Manganese Alloys Sales)*

Executive Director

- **Aloys d'Harambure**, IMnI


Esteban Rivero


Patrick Sacco


Branislav Klocok


Ken Bagady


Li Weijian


Guillaume Verschaeve


Marco Levi


Ruan van Schalkwyk


Wang Ning


Mukund P. Chaudhari


Ngee Tong Low


James Choi


Beata Plazura-Ingram


Ezekiel Lotlhare


John Joseph Scholtz


Aloys d'Harambure

IMnI MEMBERS

Ordinary Members

- Adelphi Mineral Cooporation Ltd
- Asia Minerals Ltd. - Hong Kong
- Autlán - Mexico
- Bosai Minerals Group Co., Ltd.
- Bryah Resources Ltd. - Australia
- Consolidated Minerals Ltd. - Australia
- Element 25 Limited - Australia
- Eramet Comilog Manganese - France
- Ferroglobe - Spain
- Glencore International AG - Switzerland
- Guangxi Guikang New Materials Co. Ltd. - China
- Hascor Group - USA
- Inner Mongolia Chayouqianqi Mengfa Ferroalloy Co., Ltd, China
- Inner Mongolia Chayouqianqi Tengfei Ferroalloy Co., Ltd
- Inner Mongolia Puyuan Ferroalloy Co., Ltd.
- Inner Mongolia Xinchuang Metallurgical Group Co., Ltd.
- Kalagadi Manganese Pty Lt. - South Africa
- Keras Resources Plc - United Kingdom
- Kudumane Manganese Resources (Pty) Ltd. - South Africa
- Linze Hongxin Mineral Industry Company
- Maringa Ferro-Liga S.A. - Brazil
- Minmetals Development Co. Ltd, China
- Mizushima Ferro-alloy Co. Ltd., Japan
- MOIL Limited - India
- NG Global Energy Solutions (Pty) Ltd.
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- OM Holdings Ltd. - Singapore
- Ore & Metal Co. Ltd. - South Africa
Shanxi Dongfang Resources Development Co., Ltd.
- Shaoxing Haili Goods and Materials Co. Ltd
- Simpac Metalloy Co., Ltd - South Korea
- South32 - Australia
- SPIC Guizhou Jinyuan Suiyang Industrial Co., Ltd. - China
- Sunite Right Banner Xinmeng New Materials Ltd.
- Tata Steel Ltd.
- Tianjin Hoperay Mineral Co., Ltd.
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- Tshipi é Ntle Manganese Mining (Pty) Limited - South Africa
- Ukrainian Ferroalloys Association (UkrFA) - Ukraine
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