



FerroGlobe

FerroGlobe PLC
Annual Report and Accounts 2021

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ITEM 3. KEY INFORMATION

D. Risk factors.

An investment in our ordinary shares carries a significant degree of risk. You should carefully consider the following risks and all other information in this annual report, including our Consolidated Financial Statements elsewhere in the 20-F. Additional risks and uncertainties we are not presently aware of, or that we currently deem immaterial, could also affect our business operations and financial condition. If any of these risks are realized, our business, results of operations and financial condition could be adversely affected to a material degree. As a result, the trading price of our ordinary shares could decline and you could lose part or all of your investment.

Risks Related to Our Business and Industry

Our operations depend on industries including the aluminum, steel, polysilicon, silicone and photovoltaic/solar industries, which, in turn, rely on several end-markets. A downturn or change in these industries or end-markets could adversely affect our business, results of operations and financial condition.

Because we primarily sell silicon metal, silicon based alloys, manganese based alloys and other specialty alloys we produce to manufacturers of aluminum, steel, polysilicon, silicones, and photovoltaic products, our results are significantly affected by the economic trends in the steel, aluminum, polysilicon, silicone and photovoltaic industries. Primary end users that drive demand for steel and aluminum include construction companies, shipbuilders, electric appliance and car manufacturers, and companies operating in the rail and maritime industries. Primary end users that drive demand for polysilicon and silicones include the automotive, chemical, photovoltaic, pharmaceutical, construction and consumer products industries. Demand for steel, aluminum, polysilicon and silicones from such companies is strongly correlated with changes in gross domestic product and is affected by global economic conditions. Fluctuations in steel and aluminum prices may occur due to sustained price shifts reflecting underlying global economic and geopolitical factors, changes in industry supply-demand balances, the substitution of one product for another in times of scarcity, and changes in national tariffs. Lower demand for steel and aluminum can quickly cause a substantial build-up of steel and aluminum stocks, resulting in a decline in demand for silicon metal, silicon-based alloys, manganese-based alloys, and other specialty alloys. Polysilicon and silicone producers are subject to fluctuations in crude oil, platinum, methanol and natural gas prices, which could adversely affect their businesses. Changes in power regulations in different countries, fluctuations in the relative costs of different sources of energy, and supply-demand balances in the different parts of the value chain, among other factors, may significantly affect the growth prospects of the photovoltaic industry. A significant and prolonged downturn in the end markets for steel, aluminum, polysilicon, silicone and photovoltaic products, could adversely affect these industries and, in turn, our business, results of operations and financial condition.

COVID-19 has had a material detrimental impact on our business and financial results, and such impact could continue and may worsen for an unknown period of time.

COVID-19 has been and continues to be a complex and evolving situation, with governments, public institutions and other organizations imposing or recommending, and businesses and individuals implementing, at various times and to varying degrees, restrictions on various activities or other actions to combat its spread, such as restrictions and bans on travel or transportation; limitations on the size of in-person gatherings, restrictions on freight transportations, closures of, or occupancy or other operating limitations on work facilities, and quarantines and lock-downs. COVID-19 and its consequences have significantly impacted and continue to impact our business, operations, and financial results. The extent to which COVID-19 impacts our business, operations, and financial results going forward will depend on the factors described above and numerous other evolving factors that we may not be able to accurately predict or assess, including the duration and scope of the COVID-19 pandemic; the effectiveness of vaccines or treatments; COVID-19's impact on global and regional economies and economic activity, including the duration and magnitude of its impact on unemployment rates; its short and longer-term impact on the demand for our products, group business, and levels of customer confidence; the ability of our owners to successfully navigate the impacts of COVID-19; and how quickly economies, and demand recovers after the pandemic subsides.

COVID-19 has negatively impacted, and in the future may negatively impact to an extent we are unable to predict, our revenues. In addition, COVID-19 and its impact on global and regional economies, and the specialty chemical industry in particular, has made it difficult to obtain financing and has increased the probability that we will be unable or unwilling to service, repay or refinance existing indebtedness. If a significant number of our sales volumes are terminated as a result of bankruptcies, sales or foreclosures, our results of operations could be materially adversely affected. Also, testing our intangible assets or goodwill for impairments could result in additional charges, which could be material. For the reasons set forth above, COVID-19 has had and may in the future will have a material adverse effect on our business, operations, and financial condition.

The metals industry is cyclical and has been subject in the past to swings in market price and demand which could lead to volatility in our revenues.

Our business has historically been subject to fluctuations in the price of our products and market demand for them, caused by general and regional economic cycles, raw material and energy price fluctuations, competition and other factors. The timing, magnitude and duration of these cycles and the resulting price fluctuations are difficult to predict. For example, we experienced a weakened economic environment in national and international metals markets, including a sharp decrease in silicon metal prices in all major markets, from late 2014 to late 2017. During the second half of 2018 and throughout 2019, we experienced the most dramatic decline in prevailing prices of our products, which adversely affected our results. In 2020, the business experienced a reduction in sales volumes as a result of lower customer demand and a decrease in prices variance.

Historically, Ferroglobe's indirect subsidiary Globe Metallurgical Inc., has been affected by recessionary conditions in the end markets for its products, such as the automotive and construction industries. In April 2003, Globe Metallurgical Inc. sought protection under Chapter 11 of the U.S. Bankruptcy Code following its inability to restructure or refinance its indebtedness amidst a confluence of several negative economic and other factors, including an influx of low priced, dumped imports, which caused it to default on then outstanding indebtedness. A recurrence of such economic factors could have a material adverse effect on our business, results of operations and financial condition.

Additionally, as a result of unfavorable conditions in the end markets for its products, Globe Metales S.R.L. ("Globe Metales") went through reorganization proceedings ("concurso preventivo") in 1999, which ended in February 2019. While such reorganization proceedings were ongoing (until February 2019), Globe Metales could not dispose of or encumber its registered assets (including its real estate) or perform any action outside its ordinary course of business without prior court approval.

In addition to the deterioration of market conditions for several of our products in the second half of 2018 and the whole of 2019, we also saw a contraction in sales volumes during 2020 which was primarily driven by the COVID-19 pandemic. Throughout 2021, COVID -19 and its consequences continue to impact our business, operations, and financial results. Such conditions, and any future decline in the global silicon metal, manganese-based alloys and silicon-based alloys industries could have a material adverse effect on our business, results of operations and financial condition. Moreover, our business is directly related to the production levels of our customers, whose businesses are dependent on highly cyclical markets, such as the automotive, residential and non-residential construction, consumer durables, polysilicon, steel, and chemical industries. In response to unfavorable market conditions, customers may request delays in contract shipment dates or other contract modifications. If we grant modifications, these could adversely affect our anticipated revenues and results of operations. Also, many of our products are traded internationally at prices that are significantly affected by worldwide supply and demand. Consequently, our financial performance will fluctuate with the general economic cycle, which could have a material adverse effect on our business, results of operations and financial condition.

Our business is particularly sensitive to increases in energy costs, which could materially increase our cost of production.

Electricity is one of our largest production components. The price of electricity is determined in the applicable domestic jurisdiction and is influenced both by supply and demand dynamics and by domestic regulations. Changes in local energy policy, increased costs due to scarcity of energy supply, climate conditions, the termination or non-renewal of any of our power purchase contracts and other factors may affect the price of electricity supplied to our plants and adversely affect our results of operations and financial conditions.

Because electricity is indispensable to our operations and accounts for a high percentage of our production costs, we are particularly vulnerable to supply limitations and cost fluctuations in energy markets. For example, at certain of our plants, production must be modulated to reduce consumption of energy in peak hours or in seasons with higher energy prices, in order for us to maintain profitability. Generation of electricity in France by our own hydroelectric power operations partially mitigates our exposure to price increases in that market. However, in the past we have pursued possibilities of disposing of those operations, and may do so in the future. Such a divestiture, if completed, may result in a greater exposure to increases in electricity prices. Similarly, the disposal in 2019 of our hydroelectric assets in Spain has resulted, and may result in the future, in a greater exposure to price fluctuations, for our Spanish ferroalloys business and therefore home impacted margins. In 2021 the cost of electricity in Spain has experienced extremely high volatility due to the fluctuations of natural gas in the European markets. Natural gas has experienced a progressive increase in price since April 2021, due to the low level of stocks in gas storages in Europe, and the reduction of supply from Russia, following the growing demand for Natural Gas from China. The risk of natural gas shortages due to a possible cold winter in Europe, caused in December 2021 an unprecedented increase in the price of gas reaching record prices in the market, which led to record prices in the Spanish electricity market of up to 400 €/Mwh. Spanish plants have tried to mitigate price rises by reducing furnace capacity during peak hours and increasing production at more competitive furnaces.

Electrical power to our U.S. and Canadian facilities is supplied mostly by American Electric Power Co., Alabama Power Co., Brookfield Renewable Partners L.P. and Hydro-Québec, and the Tennessee Valley Authority through dedicated lines. Our Alloy, West Virginia facility obtains approximately 45% of its power needs under a fixed price power purchase agreement with a nearby hydroelectric facility owned by a Brookfield affiliate. This facility is over 70 years old and any breakdown could result in the Alloy facility having to purchase more grid power at higher rates. The hydropower contract with Brookfield for the Alloy plant was renewed in 2021 for a period of four years. The energy supply for our Mendoza, Argentina facility is supplied by the national network administrator Cammesa under a power agreement expiring in December 2024 with a special rate specifically approved for ultra electro intensive industries.

Energy supply to our facilities in South Africa is provided by Eskom (State-owned power utility) through rates that are approved annually by the national power regulator (NERSA). These rates have had an upward trend in the past years, due to the instability of available supply and are likely to continue increasing. Also, NERSA applies certain revisions to rates based on cost variances for Eskom that are not within our control.

In Spain, power is purchased in a competitive wholesale market. Our facilities have to pay access tariffs to the national grid and get a small compensation for having been recognized as electro-intensive consumers. The volatile nature of the wholesale market in Spain results in price uncertainty that can be only partially offset by long term power purchase agreements. Also, the payment we receive for the services provided to the grid are a major component of our power supply arrangements in Spain, and regulation for such services has been altered several times during the past years and the economic benefits of such services vary significantly from one year to the next, affecting our production cost and results from our operations.

In addition, France, South Africa and the U.S., our energy purchase arrangements depend to a certain extent on rebates or revenues that we get for providing different services to the grid (interruptibility, load shaving, off-peak consumption, etc.). These rebates may be significant, but such arrangements with relevant grid operators and/or regulators may vary over time, which may affect our production costs and results from our operations.

Losses caused by disruptions in the supply of power would reduce our profitability.

Large amounts of electricity are used to produce silicon metal, manganese and silicon-based alloys and other specialty alloys, and our operations are heavily dependent upon a reliable supply of electrical power. We may incur losses due to a temporary or prolonged interruption of the supply of electrical power to our facilities, which can be caused by unusually high demand, blackouts, equipment failure, natural disasters or other catastrophic events, including failure of the hydroelectric facilities that currently provide power under contract to our West Virginia, Québec and Argentina facilities. Additionally, on occasion, we have been instructed to suspend operations for several hours by the sole energy supplier in South Africa due to a general power shortage in the country. It is possible that this supplier may instruct us to suspend our operations for a similar or longer period in the future. Such interruptions or reductions in the supply of electrical power adversely affect production levels and may result in reduced profitability. Our insurance coverage does not cover all interruption events and may not be sufficient to cover losses incurred as a result.

In addition, investments in Argentina's electricity generation and transmission systems have been lower than the increase in demand in recent years. If this trend is not reversed, there could be electricity supply shortages as the result of inadequate generation and transmission capacity. Given the heavy dependence on electricity of our manufacturing operations, any electricity shortages could adversely affect our financial results.

Government regulations of electricity in Argentina give priority of use of hydroelectric power to residential users and subject violators of these restrictions to significant penalties. This preference is particularly acute during Argentina's winter months due to a lack of natural gas. We have previously successfully petitioned the government to exempt us from these restrictions given the demands of our business for continuous supply of electric power. If we are unsuccessful in our petitions or in any action we take to ensure a stable supply of electricity, our production levels may be adversely affected and our profitability reduced.

Any decrease in the availability, or increase in the cost, of raw materials or transportation could materially increase our costs.

Principal components in the production of silicon metal, silicon based alloys and manganese based alloys include coal, charcoal, graphite and carbon electrodes, manganese ore, quartzite, wood chips, steel scrap, and other metals. While we own certain sources of raw materials, we also buy raw materials on a spot or contracted basis. The availability of these raw materials and the prices at which we purchase them from third party suppliers depend on market supply and demand and may be volatile such as due to the COVID-19 pandemic or the Ukraine-Russia conflicts. Our ability to obtain these materials in a cost efficient and timely manner is dependent on certain suppliers, their labor union relationships, mining and lumbering regulations and output, pandemic, geopolitical and general local economic conditions.

Over the previous years, certain raw materials (particularly graphite electrodes, coal, manganese ore, and other electrode components) have experienced significant price increases and quick price moves in relatively short periods of time, and the recent conflict in Ukraine and resulting sanctions on Russia have led to supply limitations and interruptions. In some cases, this has been combined with certain shortage in the availability of such raw materials. While we try to anticipate potential shortages in the supply of critical raw materials with longer term contracts and other purchasing strategies, these price swings and supply shortages may affect our cost of production or even cause interruptions in our operations, which may have a material adverse effect on our business, results of operations and financial condition.

We make extensive use of shipping by sea, rail and truck to obtain the raw materials used in our production and deliver our products to customers, depending on the geographic region and product or input. Raw materials and products often must be transported over long distances between mines and other production sites and the plants where raw materials are consumed, and between those sites and our customers. Any severe delay, interruption or other disruption in such transportation, any material damage to raw materials utilized by us or to our products while being transported, or a sharp rise in transportation prices, either relating to COVID-19, the Ukraine-Russia conflict or otherwise, could have a material adverse effect on our business, results of operations and financial condition. In addition, because we may not be able to obtain adequate supplies of raw materials from alternative sources on terms as favorable as our current arrangements, or at all, any disruption or shortfall in the production and delivery of raw materials could result in higher raw materials costs and likewise materially adversely affect our business, results of operations and financial condition.

Cost increases in raw material inputs may not be passed on to our customers, which could negatively impact our profitability.

The prices of our raw material inputs are determined by supply and demand, which may be influenced by, inter alia, economic growth and recession, changes in world politics, unstable governments in exporting nations, and inflation. The market prices of raw material inputs will thus fluctuate over time, and we may not be able to pass significant price increases on to our customers. If we do try to pass them on, we may lose sales and thereby revenue, in addition to having the higher costs. Additionally, decreases in the market prices of our products will not necessarily enable us to obtain lower prices from our suppliers.

Metallurgical manufacturing and mining are inherently dangerous activities and any accident resulting in injury or death of personnel or prolonged production shutdowns could adversely affect our business and operations.

Metallurgical manufacturing generally, and smelting in particular, is inherently dangerous and subject to risks of fire, explosion and sudden major equipment failure. Quartz and coal mining are also inherently dangerous and subject to numerous hazards, including collisions, equipment failure, accidents arising from the operation of large mining and rock transportation equipment, dust inhalation, flooding, collapse, blasting operations and operating in extreme climatic conditions. These hazards have led to accidents resulting in the serious injury and death of production personnel and prolonged production shutdowns in the past. We may experience fatal accidents or equipment malfunctions in the future, which could have a material adverse effect on our business and operations.

We are heavily dependent on our mining operations, which are subject to certain risks that are beyond our control and which could result in materially increased expenses and decreased production levels.

We mine quartz and quartzite at open pit mining operations and coal at underground and surface mining operations. We are heavily dependent on these mining operations for our quartz and coal supplies. Certain risks beyond our control could disrupt our mining operations, adversely affect production and shipments, and increase our operating costs, such as: the closure of operations as a result of the COVID-19 pandemic; a major incident at a mining site that causes all or part of the operations of the mine to cease for some period of time; mining, processing and plant equipment failures and unexpected maintenance problems; disruptions in the supply of fuel, power and/or water at the mine site; adverse changes in reclamation costs; the inability to renew mining concessions upon their expiration; the expropriation of territory subject to a valid concession without sufficient compensation; and adverse weather and natural disasters, such as heavy rains or snow, flooding and other natural events affecting operations, transportation or customers.

Regulatory agencies have the authority under certain circumstances following significant health and safety violations or incidents to order a mine to be temporarily or even permanently closed. If this occurs, we may be required to incur significant legal and capital expenditures to re-open the affected mine. In addition, environmental regulations and enforcement could impose unexpected costs on our mining operations, and future regulations could increase those costs or limit our ability to produce quartz and sell coal. A failure to obtain and renew permits necessary for our mining operations could limit our production and negatively affect our business. It is also possible that we have extracted or may in the future extract quartz from territory beyond the boundary of our mining concession or mining right, which could result in penalties or other regulatory action or liabilities.

We are subject to environmental, health and safety regulations, including laws that impose substantial costs and the risk of material liabilities.

Our operations are subject to extensive foreign, federal, national, state, provincial and local environmental, health and safety laws and regulations governing, among other things, the generation, discharge, emission, storage, handling, transportation, use, treatment and disposal of hazardous substances; land use, reclamation and remediation; waste management and pollution prevention measures; greenhouse gas emissions; and the health and safety of our employees. We are also required to obtain permits from governmental authorities for certain operations, and to comply with related laws and regulations. We may not have been and may not be at all times in full compliance with such permits and related laws and regulations. If we violate or fail to comply with these permits and related laws and regulations, we could be subject to penalties, restrictions on operations or other sanctions, obligations to install or upgrade pollution control equipment and legal claims, including for alleged personal injury or property or environmental damages. Such liability could adversely affect our reputation, business, results of operations and financial condition. In addition, in the context of an investigation, the government may impose obligations to make technology upgrades to our facilities that could result in our incurring material capital expenses. For example, in addition to notices received with respect to other plants, we have received two Notices and Findings of Violation (“NOV/FOV”) from the U.S. federal government, alleging numerous violations of the Clean Air Act relating to the Company’s Beverly, Ohio facility. Should the Company and the federal government be unable to reach a negotiated resolution of the NOV/FOVs, the U.S. government could file a formal lawsuit in U.S. federal court for injunctive relief, potentially requiring the Company to implement emission reduction measures, and for civil penalties. The statutory maximum penalty is \$93,750 per day per violation, from April, 2013 to December 2021, and \$109,024 per day thereafter. See “Item 8.A.—Financial Information—Consolidated Financial Statements and Other Financial Information—Legal proceedings” for additional information. The Beverly facility also is located in an area currently designated as Non-Attainment for the one hour SO₂ National Ambient Air Quality Standards (“NAAQS”). The Company has worked with the Ohio Environmental Protection Agency to develop a plan that ensures the facility is not causing exceedances of the one-hour NAAQS standard for SO₂. The plan has received the necessary approval from the United States Environmental Protection Agency (“EPA”).

The metals and mining industry is generally subject to risks and hazards, including fire, explosion, toxic gas leaks, releases of other hazardous materials, rockfalls, and incidents involving mobile equipment, vehicles or machinery. These could occur by accident or by breach of operating and maintenance standards, and could result in personal injury, illness or death of employees or contractors, or in environmental damage, delays in production, monetary losses and possible legal liability.

Under certain environmental laws, we could be required to remediate or be held responsible for the costs relating to contamination at our or our antecessors' past or present facilities and at third party waste disposal sites. We could also be held liable under these environmental laws for sending or arranging for hazardous substances to be sent to third party disposal or treatment facilities if such facilities are found to be contaminated. Under these laws we could be held liable even if we did not know of, or did not cause, such contamination, or even if we never owned or operated the contaminated disposal or treatment facility.

There are a variety of laws and regulations in place or being considered at the international, federal, regional, state and local levels of government that restrict or propose to restrict and impose costs on emissions of carbon dioxide and other greenhouse gases. These legislative and regulatory developments may cause us to incur material costs if we are required to reduce or offset greenhouse gas emissions, or to purchase emission credits or allowances, and may result in a material increase in our energy costs due to additional regulation of power generators. Environmental laws are complex, change frequently and are likely to become more stringent in the future. Because environmental laws and regulations are becoming more stringent and new environmental laws and regulations are continuously being enacted or proposed, such as those relating to greenhouse gas emissions and climate change, the level of expenditures required for environmental matters could increase in the future. Future legislative action and regulatory initiatives could result in changes to operating permits, additional remedial actions, material changes in operations, increased capital expenditures and operating costs, increased costs of the goods we sell, and decreased demand for our products that cannot be assessed with certainty at this time.

Therefore, our costs of complying with current and future environmental laws, and our liabilities arising from past or future releases of, or exposure to, hazardous substances may adversely affect our business, results of operations and financial condition.

Compliance with existing and proposed climate change laws and regulations could adversely affect our performance.

Under current European Union legislation, all industrial sites are subject to cap and trade programs, by which every facility with carbon emissions is required to purchase in the market emission rights for volumes of emission that exceed a certain allocated level. Until 2021, the allocated level of emissions had been practically sufficient for our business so the emissions rights purchases had a limited impact on our business. From 2022, new regulations reducing the allocation of free allowances require us to make significant purchases of emissions rights in the market. Also, certain Canadian provinces have implemented cap and trade programs. As a result, our facilities in Canada may be required to purchase emission credits in the future. The requirement to purchase emissions rights in the market could result in material costs to the Company, in addition to increased compliance costs, additional operating restrictions for our business, and an increase in the cost of the products we produce, which could have a material adverse effect on our financial position, results of operations, and liquidity.

In the United States, it is likely that the current administration will place a greater emphasis on regulating greenhouse gas emissions, although no proposed regulations have been outlined to date. However, carbon taxes, clean energy standards, carbon offsets, and/or the requirement to participate in a cap-and-trade program are being explored by the administration and US Congress. Although it is impossible to predict what form such action will take, any action may result in material increased compliance costs additional operating restrictions for our business, and an increase in the cost of the products we produce, which could have a material adverse effect on our financial position, results of operations and liquidity.

In 2022 Ferroglobe is going to assess the Climate Change Risks & Opportunities and its related financial impact across our operations. The evaluation will follow the Recommendations of the Task Force on Climate-related Financial Disclosures (TCFD).

We make a significant portion of our sales to a limited number of customers, and the loss of a portion of the sales to these customers could have a material adverse effect on our revenues and profits.

In the year ended December 31, 2021, our ten largest customers accounted for approximately 48.1% of Ferroglobe's consolidated revenue. We expect that we will continue to derive a significant portion of our business from sales to these customers.

Some contracts with our customers do not entail commitments from the customer to purchase specified or minimum volumes of products over time. Accordingly, we face a risk of unexpected reduced demand for our products from such customers as a result of, for instance, downturns in the industries in which they operate or any other factor affecting their business, which could have a material adverse effect on our revenues and profits.

If we were to experience a significant reduction in the amount of sales we make to some or all of such customers and could not replace these sales with sales to other customers, this could have a material adverse effect on our revenues and profits.

Our business benefits from antidumping and countervailing duty orders and laws that protect our products by imposing special duties on unfairly traded imports from certain countries. If these duties or laws change, certain foreign competitors might be able to compete more effectively.

Antidumping and countervailing duty orders are designed to provide relief from imports sold at unfairly low or subsidized prices by imposing special duties on such imports. Such orders normally benefit domestic suppliers and foreign suppliers not covered by the orders. In the United States, final antidumping or countervailing duties are in effect covering silicon metal imports from China, Russia, Bosnia and Herzegovina, Iceland, and Kazakhstan. In July 2021 the International Trade Commission (ITC) voted to confirm that silicon metal imports from Malaysia had materially injured the U.S. industry. In response the U.S. Department of Commerce issued a final antidumping duty order covering all imports from Malaysia for five years. In the European Union, antidumping duties are in place covering silicon metal imports from China, ferrosilicon imports from China and Russia and calcium silicon imports from China. In Canada, antidumping and countervailing duties are in place covering silicon metal imports from China.

The current antidumping and countervailing duty orders may not remain in effect and continue to be enforced from year to year, the products and countries now covered by orders may no longer be covered, and duties may not continue to be assessed at the same rates. In the United States, rates of duty can change as a result of “administrative reviews” of antidumping and countervailing duty orders. These orders can also be revoked as a result of periodic “sunset reviews,” which determine whether the orders will continue to apply to imports from particular countries. Antidumping and countervailing duties in the European Union and Canada are also subject to periodic reviews. In the European Union and in Canada, such reviews can include interim reviews, expiry reviews and other types of proceedings that may result in changes in rates of duty or termination of the duties.

Similarly, export duties imposed by foreign governments that are currently in place may change. For example, duties on Chinese exports of types of ferroalloys produced by Ferroglobe could be reduced.

Changes in any of these factors could adversely affect our business and profitability. Finally, at times, in filing trade actions, we arguably act against the interests of our customers. Certain of our customers may not continue to do business with us as a result.

Products we manufacture may be subject to unfair import competition that may affect our profitability.

A number of the products we manufacture, including silicon metal and ferrosilicon, are globally-traded commodities that are sold primarily on the basis of price. As a result, our sales volumes and prices may be adversely affected by influxes of imports of these products that are dumped or are subsidized by foreign governments. Our silicon metal and ferrosilicon operations have been injured by such unfair import competition in the past. Applicable antidumping and countervailing duty laws and regulations may provide a remedy for unfairly traded imports in the form of special duties imposed to offset the unfairly low pricing or subsidization. However, the process for obtaining such relief is complex and uncertain. As a result, while we have sought and obtained such relief in the past, in some cases we have not been successful. Thus, there is no assurance that such relief will be obtained, and if it is not, unfair import competition could have a material adverse effect on our business, results of operations and financial condition.

Competitive pressure from Chinese steel, aluminum, polysilicon and silicone producers may adversely affect the business of our customers, reducing demand for our products. Our customers may relocate to China, where they may not continue purchasing from us.

China’s aluminum, polysilicon and steel producing capacity exceeds local demand and has made China an increasingly large net exporter of aluminum and steel, and the Chinese silicone manufacturing industry is growing. Chinese aluminum, polysilicon, steel and silicone producers — who are unlikely to purchase silicon metal, manganese and silicon based alloys and other specialty metals from our subsidiaries outside of China due to the ample availability of domestic Chinese production — may gain global market share at the expense of our customers. An increase in Chinese aluminum, steel, polysilicon and silicone industry market share could adversely affect the production volumes, revenue and profits of our customers, resulting in reduced purchases of our products.

Moreover, our customers might seek to relocate or refocus their operations to China or other countries with lower labor costs and higher growth rates. Any that do so might thereafter choose to purchase from other suppliers of silicon metal, manganese- and silicon-based alloys and other specialty metals which in turn could have a material adverse effect on our business, results of operations and financial condition.

We are subject to the risk of union disputes and work stoppages at our facilities, which could have a material adverse effect on our business.

A majority of our employees are members of labor unions. We experience protracted negotiations with labor unions, strikes, work stoppages or other industrial actions from time to time. Strikes called by employees or unions have in the past and could in the future materially disrupt our operations, including production schedules and delivery times. We have experienced strikes by our employees at several of our facilities from time to time and a certain number of these strikes have been protracted and have resulted in protracted amounts of business. Any such work stoppage could have a material adverse effect on our business, results of operations and financial condition.

New labor contracts have to be negotiated to replace expiring contracts from time to time. It is possible that future collective bargaining agreements will contain terms less favorable than the current agreements. Any failure to negotiate renewals of labor contracts on terms acceptable to us, with or without work stoppages, could have a material adverse effect on our business, results of operations and financial condition.

Many of our key customers or suppliers are similarly subject to union disputes and work stoppages, which may reduce their demand for our products or interrupt the supply of critical raw materials and impede their ability to fulfill their commitments under existing contracts, which could have a material adverse effect on our business, results of operations and financial condition.

We are dependent on key personnel.

Our success depends in part upon the retention of key employees. Competition for qualified personnel can be intense. Current and prospective employees may experience uncertainty about our business or industry, which may impair our ability to attract, retain and motivate key management, sales, technical and other personnel.

If key employees depart our overall business may be harmed. We also may have to incur significant costs in identifying, hiring and retaining replacements for departing employees, may lose significant expertise and talent relating to our business and our ability to further realize the anticipated benefits of the Business Combination may be adversely affected. In addition, the departure of key employees could cause disruption or distractions for management and other personnel. Furthermore, we cannot be certain that we will be able to attract and retain replacements of a similar caliber as departing key employees.

The long term success of our operations depends to a significant degree on the continued employment of our core senior management team. In particular, we are dependent on the skills, knowledge and experience of Javier López Madrid, our Executive Chairman, Marco Levi, our Chief Executive Officer, and Beatriz García-Cos, our Chief Financial Officer. If these employees are unable to continue in their respective roles, or if we are unable to attract and retain other skilled employees, our business, results of operations and financial condition could be adversely affected. We currently have employment agreements with Mr. López Madrid, Dr. Levi and Ms. García-Cos. These agreements contain certain non-compete provisions, which may not be fully enforceable by us. Additionally, we are substantially dependent upon key personnel among our legal, financial and information technology staff, who enable us to meet our regulatory, contractual and financial reporting obligations, including reporting requirements under our credit facilities.

Shortages of skilled labor could adversely affect our operations.

We depend on skilled labor for the operation of our submerged arc furnaces and other facilities. Some of our facilities are located in areas where demand for skilled personnel often exceeds supply. Shortages of skilled furnace technicians and other skilled workers, including as a result of deaths, work stoppages or quarantines resulting from the COVID-19 pandemic, could restrict our ability to maintain or increase production rates, lead to production inefficiencies and increase our labor costs.

In certain circumstances, the members of our Board may have interests that may conflict with yours as a holder of ordinary shares.

Our directors have no duty to us with respect to any information such directors may obtain (i) otherwise than as our directors and (ii) in respect of which directors owe a duty of confidentiality to another person, provided that where a director's relationship with such other person gives rise to a conflict, such conflict has been authorized by our Board in accordance with our articles of association ("Articles"). Our Articles provide that a director shall not be in breach of the general duties directors owe to us pursuant to the UK Companies Act 2006 because such director:

- fails to disclose any such information to our Board, directors or officers; or
- fails to use or apply any such information in performing such director's duties as a director.

In such circumstances, certain interests of the members of our Board may not be aligned with your interests as a holder of ordinary shares and the members of our Board may engage in certain business and other transactions without any accountability or obligation to us.

We may not realize the cost savings and other benefits that we expect to achieve from the strategic plan.

We are constantly looking for opportunities to improve our operations through changes in processes, technology, information systems, and management of best practices. These initiatives are complex and require skilled management and the support of our workforce to implement them.

In our efforts to improve our business fully and successfully, we may encounter material unanticipated problems, expenses, liabilities, competitive responses, loss of client relationships, and a resulting diversion of management's attention. The challenges include, among others:

- managing change throughout the company;
- coordinating geographically separate organizations;
- potential diversion of management focus and resources from ordinary operational matters and future strategic opportunities;
- retaining existing customers and attracting new customers;
- maintaining employee morale and retaining key management and other employees;
- integrating two unique business cultures that are not necessarily compatible;
- issues in achieving anticipated operating efficiencies, business opportunities and growth prospects;
- consolidating corporate and administrative infrastructures and eliminating duplicative operations;
- issues in integrating information technology, communications and other systems;
- changes in applicable laws and regulations;

- changes in tax laws (including under applicable tax treaties) and regulations or to the interpretation of such tax laws or regulations by the governmental authorities; and
- managing tax costs or inefficiencies associated with integrating our operations.

Many of these factors are outside of our control and any one of them could result in increased costs, decreased revenues and diversion of management's time and energy, which could materially impact our business, results of operations and financial condition.

Any failure to integrate recently acquired businesses successfully or to complete future acquisitions successfully could be disruptive of our business and limit our future growth.

From time to time, we expect to pursue acquisitions in support of our strategic goals. In connection with any such acquisition, we could face significant challenges in managing and integrating our expanded or combined operations, including acquired assets, operations and personnel. For example, we have faced challenges in integrating Globe and Ferroatlantica following the merger in 2015, and more recently with the acquisitions of the Mo i Rana and Dunkirk plants, and have struggled to efficiently integrate the businesses and fully realize anticipated synergies. There can be no assurance that acquisition opportunities will be available on acceptable terms or at all or that we will be able to obtain necessary financing or regulatory approvals to complete potential acquisitions. Our ability to succeed in implementing our strategy will depend to some degree upon the ability of our management to identify, complete and successfully integrate commercially viable acquisitions. Acquisition transactions may disrupt our ongoing business and distract management from other responsibilities.

Grupo VM, our principal shareholder, has significant voting power with respect to corporate matters considered by our shareholders.

Our principal shareholder, Grupo VM, owns shares representing approximately 48.6% of the aggregate voting power of our capital stock. By virtue of Grupo VM's voting power, as well as Grupo VM's representation on the Board, Grupo VM will have significant influence over the outcome of any corporate transaction or other matters submitted to our shareholders for approval. Grupo VM will be able to block any such matter, including ordinary resolutions, which, under English law, require approval by a majority of outstanding shares cast in the vote. Grupo VM will also be able to block special resolutions, which, under English law, require approval by the holders of at least 75% of the outstanding shares entitled to vote and voting on the resolution, such as an amendment of the Articles or the exclusion of preemptive rights. Our principal shareholder has, and will continue to have, directly or indirectly, the power, among other things, to affect our legal and capital structure and our day-to-day operations, as well as the ability to elect and change our management and to approve other changes to our operations.

Grupo VM has pledged most of its shares in our company to secure a loan from Tyrus Capital.

Grupo VM has guaranteed its obligations pursuant to a credit agreement (the "GVM Credit Agreement") with respect to a loan granted to GVM by Tyrus Capital ("GVM Loan"). In addition, Grupo VM has entered into a security and pledge agreement (the "GVM Pledge Agreement"), with Tyrus pursuant to which Grupo VM agreed to pledge most of its shares to Tyrus to secure the outstanding GVM Loan.

In the event Grupo VM defaults under the GVM Credit Agreement, Tyrus may foreclose on the shares subject to the pledge. The Reinstated Notes and the Super Senior Notes contain change of control definitions with significant exceptions compared with that contained in the indenture for the Old Notes. Under the revised change of control definitions, no change of control shall occur or be deemed to occur by reason of, among other matters, any enforcement or exercise of remedies under the GVM Pledge Agreement or any disposal by Grupo VM of the Grupo VM shares for the purpose of repaying Grupo VM's debt to Tyrus, provided that certain other conditions, as described below, are met.

A change of control will occur upon the acquisition of 35% or more of the total voting power of our shares by persons other than certain permitted holders including Grupo VM and such permitted holders “beneficially own” directly or indirectly in the aggregate the same or a lesser percentage of the total voting power of our shares than such other “person” or “group” of related persons. However, the Reinstated Notes Indenture states that no change of control shall occur or be deemed to occur by reason of:

- any enforcement of rights or exercise of remedies under the GVM Share Pledge, including any sale, transfer or other disposal or disposition of the shares in Ferroglobe in connection therewith;
- any disposal by Grupo VM of its shares in Ferroglobe where the purpose of that transaction is to facilitate the repayment or discharge (in full or in part) of the GVM Loan and the proceeds of sale are promptly applied towards such repayment or discharge; or
- any mandatory offer (or analogous offer) required under the City Code on Takeovers and Mergers or any analogous regulation applied in any jurisdiction as a consequence of a transaction under limbs (1) or (2) above.

Provided that, if any transaction under paragraphs (1) to (3) above occurs which, but for such paragraph(s), would be a “Change of Control” as a consequence of any person or persons (other than Tyrus) (x) acquiring any voting stock of Ferroglobe PLC (or any other successor company) or (y) being or becoming the “beneficial owner” of the voting power of any voting stock of Ferroglobe PLC (or any other successor company) (such person(s), the “Controlling Shareholder”):

- the Controlling Shareholder has within 60 days of that transaction and at its election:
 - o paid to the Holders, on a pro rata basis, a fee in an aggregate amount equal to the product of (i) the aggregate principal amount outstanding of the Notes, (ii) 0.02 and (iii) the number of years (or part thereof, with any part of a year calculated on the basis of the number of days divided by 360) from the payment date of such fee to June 30, 2025; or
 - o made an offer to all Holders to purchase one-third of the Notes on a pro rata basis at a price equal to (A) in the first fifteen months after the Issue Date, 100% of the principal amount of such Notes plus accrued and unpaid interest or (B) at any time after the first fifteen months following the Issue Date, 101% of the principal amount of such Notes plus accrued and unpaid interest; or
- either or both of the Issuers within 60 days of that transaction has made an offer to all Holders to repurchase or purchase (as applicable), or has otherwise redeemed, one-third of the Notes on a pro rata basis at a price equal to (A) in the first fifteen months after the Issue Date, 100% of the principal amount of such Notes plus accrued and unpaid interest or (B) at anytime after the fifteen months following the Issue Date, 101% of the principal amount of such Notes plus accrued and unpaid interest, resulting in such repurchased, purchased or redeemed Notes being cancelled, and provided further that the Controlling Shareholder is not a Restricted Person.

Where:

“GVM Loan” means any financing provided by Tyrus to Grupo VM or owing by Grupo VM to Tyrus, from time to time.

“GVM Share Pledge” means any share pledge or charge or other similar security over the shares in Ferroglobe PLC held by Grupo VM granted by Grupo VM in support of or as collateral for its obligations under any Grupo VM Loan from time to time.

“Restricted Person” means any person that: (a) is listed on the United States Specifically Designated Nationals and Blocked Persons List; the European Union Consolidated List of Persons, Groups and Entities subject to EU Financial Sanctions; or the United Kingdom Consolidated List of Financial Sanctions Targets (each a “Sanctions List”); (b) is owned or controlled by a person identified on a Sanctions List, to the extent that such ownership or control results in such person being subject to the same restrictions as if such person were themselves identified on the corresponding Sanctions List; (c) is located in or incorporated under the laws of a country or territory that is the target of comprehensive sanctions imposed by the United States, which for the purposes of this Agreement, as at the date of signature of this Agreement by the last of its signatories are Iran, Syria, Cuba, the Crimea Region, and North Korea; (d) has, within the last five years, been prosecuted by a relevant authority in the United States, the United Kingdom or any member state of the European Union, in relation to a breach of securities laws (in so far as such prosecution relates to insider dealing, unlawful disclosure, market manipulation or prospectus liability) or criminal laws relating to fraud or anti-corruption, save for instances where the prosecution has concluded and did not result in any criminal or civil settlement or penalty being imposed in relation to such breaches; or (e) is a Subsidiary of a person described in (d) above.

If upon a change of control, we do not have sufficient funds available to repurchase the notes with our available cash, third party financing would be needed, yet may be impermissible under our other debt agreements. In addition, certain other contracts we are party to from time to time may contain change of control provisions. Upon a change in control, such provisions may be triggered, which could cause our contracts to be terminated or give rise to other obligations, each of which could have a material adverse effect on our business, results of operations and financial condition.

We engage in related party transactions with affiliates of Grupo VM, our principal shareholder.

Conflicts of interest may arise between our principal shareholder and your interests as a shareholder. Our principal shareholder has, and will continue to have, directly or indirectly, the power, among other things, to affect our day-to-day operations, including the pursuit of related party transactions. We have entered, and may in the future enter, into agreements with companies who are affiliates of Grupo VM, our principal shareholder. Such agreements have been approved by, or would be subject to the approval of, the Board or the Audit Committee, as its delegate. The terms of such agreements may present material risks to our business and results of operations. For example, we have entered into a number of agreements with affiliates of Grupo VM with respect to, among other things, the provision of information technology and data processing services and energy-related services. See “Item 7.B.—Major Shareholders and Related Party Transactions—Related Party Transactions.”

We are exposed to significant risks in relation to compliance with anti-bribery and corruption laws, anti-money laundering laws and regulations, and economic sanctions programs.

Doing business on a worldwide basis requires us to comply with the laws and regulations of various jurisdictions. In particular, our international operations are subject to anti-corruption laws, most notably the U.S. Foreign Corrupt Practices Act of 1977 (“FCPA”) and the UK Bribery Act of 2010 (the “Bribery Act”), international trade sanctions programs, most notably those administered by the U.N., U.S. and European Union, anti-money laundering laws and regulations, and laws against human trafficking and slavery, most notably the UK Modern Slavery Act 2015 (“Modern Slavery Act”).

The FCPA and Bribery Act prohibit offering or providing anything of value to foreign officials for the purposes of obtaining or retaining business or securing any improper business advantage. We may deal from time to time with both governments and state-owned business enterprises, the employees of which are considered foreign officials for purposes of these laws. International trade sanctions programs restrict our business dealings with or relating to certain sanctioned countries and certain sanctioned entities and persons no matter where located.

As a result of doing business internationally, we are exposed to a risk of violating applicable anti-bribery and corruption (“ABC”) laws, international trade sanctions, and anti-money laundering (“AML”) laws and regulations. Some of our operations are located in developing countries that lack well-functioning legal systems and have high levels of corruption. Our worldwide operations and any expansion, including in developing countries, our development of joint venture relationships worldwide, and the engagement of local agents in the countries in which we operate tend to increase the risk of violations of such laws and regulations. Violations of ABC laws, AML laws and regulations, and trade sanctions are punishable by civil penalties, including fines, denial of export privileges, injunctions, asset seizures, debarment from government contracts (and termination of existing contracts) and revocations or restrictions of licenses, as well as criminal penalties including possible imprisonment. Moreover, any major violations could have a significant impact on our reputation and consequently on our ability to win future business.

For its part, the Modern Slavery Act requires any commercial organization that carries on a business or part of a business in the United Kingdom which (i) supplies goods or services and (ii) has an annual global turnover of £36 million to prepare a slavery and human trafficking statement for each financial year ending on or after March 31, 2016. In this statement, the commercial organization must set out the steps it has taken to ensure there is no modern slavery in its own business and its supply chain, or provide an appropriate negative statement. The UK Secretary of State may enforce this duty by means of civil proceedings. The nature of our operations and the regions in which we operate may make it difficult or impossible for us to detect all incidents of modern slavery in certain of our supply chains. Any failure in this regard would not violate the Modern Slavery Act *per se*, but could have a significant impact on our reputation and consequently on our ability to win future business.

We seek to build and continuously improve our systems of internal controls and to remedy any weaknesses identified. As part of our efforts to comply with all applicable law and regulation, we have introduced a global ethics and compliance program. We believe we are devoting appropriate time and resources to its implementation, related training, and to monitoring compliance. Despite these efforts, we cannot be certain that our policies and procedures will be followed at all times or that we will prevent or timely detect violations of applicable laws, regulations or policies by our personnel, partners or suppliers. Any actual or alleged failure to comply with applicable laws or regulations could lead to material liabilities not covered by insurance or other significant losses, which in turn could have a material adverse effect on our business, results of operations, and financial condition.

We operate in a highly competitive industry.

The silicon metal market and the silicon-based and manganese-based alloys markets are global, capital intensive and highly competitive. Our competitors may have greater financial resources, as well as other strategic advantages, to maintain, improve and possibly expand their facilities, and, as a result, they may be better positioned than we are to adapt to changes in the industry or the global economy. Advantages that our competitors have over us from time to time, new entrants that increase competition in our industry, and increases in the use of substitutes for certain of our products could have a material adverse effect on our business, results of operations and financial condition.

Though we are not currently operating at full capacity, we have historically operated at near the maximum capacity of our operating facilities. Because the cost of increasing capacity may be prohibitively expensive, we may have difficulty increasing our production and profits.

Our facilities are able to manufacture, collectively, approximately 296,000 tons of silicon metal (including Dow's portion of the capacity of our Alloy, West Virginia and Bécancour, Québec plants and excluding currently idled plants), 343,000 tons of silicon-based alloys and 562,000 tons of manganese-based alloys on an annual basis. Our ability to increase production and revenues will depend on expanding existing facilities, acquiring facilities or building new ones. Increasing capacity is difficult because:

- adding 30,000 tons of new production capacity to an existing silicon manufacturing plant would cost approximately \$120 million and take at least 12 to 18 months to complete once permits are obtained;
- a greenfield development project would take at least three to five years to complete and would require significant capital expenditure and, regulatory compliance costs; and
- obtaining sufficient and dependable electric power at competitive rates in areas near the required natural resources is extremely difficult.

We may not have sufficient funds to expand existing facilities, acquire new facilities, or open new ones and may be required to incur significant debt to do so, which could have a material adverse effect on our business and financial condition.

We are subject to restrictive covenants under our credit facilities and other financing agreements. These covenants could significantly affect the way in which we conduct our business. Our failure to comply with these covenants could lead to an acceleration of our debt.

We have in the past breached certain financial covenants under our credit facilities, including financial maintenance covenants for the three months ended September 30 and December 31, 2016 under our then existing revolving credit facility. Our ability to comply with applicable debt covenants may be affected by events beyond our control, potentially leading to future breaches. The breach of any of the covenants contained in our credit facilities, unless waived, would constitute an event of default, in turn permitting the lenders to terminate their commitments to extend credit under, and accelerate the maturity of, the credit facilities in question. If in such circumstances we were unable to repay lenders and holders, or obtain waivers from them on acceptable terms or at all, the lenders and holders could foreclose upon the collateral securing the credit facilities and exercise other rights. Such events, should they occur, could have a material adverse effect on our business, results of operations and financial condition. See “—Risks Related to Our Capital Structure—We are subject to restrictive covenants under our financing agreements, which could impair our ability to run our business” below.

Our insurance costs may increase materially, and insurance coverages may not be adequate to protect us against all risks and potential losses to which we may be subject.

We maintain various forms of insurance covering a number of specified and consequential risks and losses arising from insured events under the policies, including securities claims, certain business interruptions and claims for damage and loss caused by certain natural disasters, such as earthquakes, floods and windstorms. Our existing property and liability insurance coverage contains various exclusions and limitations on coverage. In some previous insurance policy renewals, we have acceded to larger premiums, self-insured retentions and deductibles. For example, as a result of the explosion at our facility in Chateau Feuillet, France, the applicable property insurance premium increased. We may also be subject to additional exclusions and limitations on coverage in future insurance policy renewals. There can be no assurance that the insurance policies we have in place are or will be sufficient to cover all potential losses we may incur. In addition, due to changes in our circumstances and in the global insurance market, insurance coverage may not continue to be available to us on terms we consider commercially reasonable or be sufficient to cover multiple large claims.

We have operations and assets in the United States, Spain, France, Canada, China, South Africa, Norway, Venezuela, Argentina and may have operations and assets in other countries in the future. Our international operations and assets may be subject to various economic, social and governmental risks.

Our international operations and sales may expose us to risks that are more significant in developing markets than in developed markets and which could negatively impact future revenue and profitability. Operations in developing countries may not operate or develop in the same way or at the same rate as might be expected in a country with an economy, government and legal system similar to western countries. The additional risks that we may be exposed to in such cases include, but are not limited to:

- tariffs and trade barriers;
- sanctions and other restrictions in our ability to conduct business with certain countries, companies or individuals;
- recessionary trends, inflation or instability of financial markets;
- regulations related to customs and import/export matters;
- tax issues, such as tax law changes, changes in tax treaties and variations in tax laws;
- absence of a reliable legal or court system;
- changes in regulations that affect our business, such as new or more stringent environmental requirements or sudden and unexpected raises in power rates;
- limited access to qualified staff;
- inadequate infrastructure;
- cultural and language differences;
- inadequate banking systems;
- restrictions on the repatriation of profits or payment of dividends;
- crime, strikes, riots, civil disturbances, terrorist attacks or wars;
- nationalization or expropriation of property;
- less access to urgent medical care for employees and key personnel in the case of severe illness;
- law enforcement authorities and courts that are weak or inexperienced in commercial matters; and

- deterioration of political relations among countries.

In addition to the foregoing, exchange controls and restrictions on transfers abroad and capital inflow restrictions have limited, and can be expected to continue to limit, the availability of international credit.

The critical social, political and economic conditions in Venezuela have adversely affected, and may continue to adversely affect, our results of operations.

Among other policies in recent years, the Venezuelan government has continuously devalued the Bolívar. The resulting inflation has devastated the country, which is experiencing all manner of shortages of basic materials and other goods and difficulties in importing raw materials. In 2016, we idled our Venezuelan operations and sought to determine the recoverable value of the long lived assets there. We concluded that the costs to dispose of the facility exceeded the fair value of the assets, primarily due to political and financial instability in Venezuela. Accordingly, we wrote down the full value of our Venezuelan facilities. However, our inability to generate cash in that market may cause us to default on some of our obligations there in the future, which may result in administrative intervention or other consequences. In addition, in the recent past the Venezuelan government has threatened to nationalize certain businesses and industries, which could result in a loss of our Venezuelan facilities for no consideration. If the social, political and economic conditions in Venezuela continue as they are, or worsen, our business, results of operations and financial condition could be adversely affected. Venezuela net assets value as of December 31, 2021 \$708 thousand (\$1,443 thousand as of December 31, 2020). Revenues during 2021 \$11 thousand (\$38 thousand during 2020).

We are exposed to foreign currency exchange risk and our business and results of operations may be negatively affected by the fluctuation of different currencies.

We transact business in numerous countries around the world and a significant portion of our business entails cross border purchasing and sales. Our sales made in a particular currency do not exactly match the amount of our purchases in such currency. We prepare our consolidated financial statements in U.S. Dollars, while the financial statements of each of our subsidiaries are prepared in the entities functional currency. Accordingly, our revenues and earnings are continuously affected by fluctuations in foreign currency exchange rates. For example, our sales made in U.S. Dollars exceed the amount of our purchases made in U.S. Dollars, such that the appreciation of certain currencies (like the Euro or the South African Rand) against the U.S. Dollar would tend to have an adverse effect on our costs. Such adverse movements in relevant exchange rates could have a material adverse effect on our business, results of operations and financial condition.

We depend on a limited number of suppliers for certain key raw materials. The loss of one of these suppliers or the failure of one of any of them to meet contractual obligations to us could have a material adverse effect on our business.

Colombia and the United States are among the preferred sources for the coal consumed in the production of silicon metal and silicon-based alloys, and the vast majority of producers source coal from these two countries. In the year ended December 31, 2021, 62% of our coal came from a single mine in Colombia while the remaining 38% came from the United States, other Colombian mines, as well as from Kazakhstan and South Africa. Additionally, nearly all of the manganese ore we purchase comes from suppliers located in South Africa and Gabon. We do not control these third party suppliers and must rely on them to perform in accordance with the terms of their contracts. If these suppliers fail to provide us with the required raw materials in a timely manner, or at all, or if the quantity or quality of the materials they provide is lower than that contractually agreed, we may not be able to procure adequate supplies of raw materials from alternative sources on comparable terms, or at all, which could have a material adverse effect on our business, results of operations and financial condition. In addition, since many suppliers of these raw materials are located in the same region, if a natural disaster or event affected one of these regions it is likely alternative sources would also be similarly affected.

We are impacted by the ongoing military conflict between Russia and Ukraine. Our business may be materially adversely affected by any negative impact on the global economy and capital markets resulting from the conflict in Ukraine or any other geopolitical tensions.

Global markets are experiencing volatility and disruption following the escalation of geopolitical tensions and the start of the military conflict between Russia and Ukraine. On February 24, 2022, a full-scale military invasion of Ukraine by Russian troops was reported. Although the length and impact of the ongoing military conflict is highly unpredictable, the conflict in Ukraine could lead to market disruptions, including significant volatility in commodity prices, credit and capital markets, as well as supply chain interruptions.

Russia and Ukraine are meaningful producers of silicon metal, ferroalloys and manganese based alloys, and are also significant suppliers of raw materials for our business and industry. The inability of Russian and Ukrainian producers to meet their customer obligations could potentially create tightness in the market. Likewise, we rely on a number of inputs from Russia and the CIS region, including metallurgical coke, anthracite and carbon and graphite electrodes. Our inability to procure these material can adversely impact our operations.

Additionally, Russia's prior annexation of Crimea, recent recognition of two separatist republics in the Donetsk and Luhansk regions of Ukraine and subsequent military interventions in Ukraine have led to sanctions and other penalties being levied by the United States, European Union and other countries against Russia, Belarus, the Crimea Region of Ukraine, the so-called Donetsk People's Republic, and the so-called Luhansk People's Republic, including agreement to remove certain Russian financial institutions from the Society for Worldwide Interbank Financial Telecommunication ("SWIFT") payment system, expansive ban on imports and exports of products to and from Russia and ban on exportation of U.S. denominated banknotes to Russia or persons located there. Additional potential sanctions and penalties have also been proposed and/or threatened. Russian military actions and the resulting sanctions could adversely affect the global economy and financial markets and lead to instability and lack of liquidity in capital markets, potentially making it more difficult for us to obtain additional funds. The extent and duration of the military action, sanctions and resulting market disruptions are impossible to predict, but could be substantial.

Management continually tracks developments in the nascent conflict in Ukraine and is committed to actively managing our response to potential distributions to the business, but can provide no assurance that the conflict in Ukraine or other ongoing headwinds will not have a material adverse effect on our business, operations and financial results.

Planned investments in the expansion and improvement of existing facilities and in the construction of new facilities may not be successful.

We may engage in significant capital improvements to our existing facilities to upgrade and add capacity to those facilities. We also may engage in the development and construction of new facilities. Should any such efforts not be completed in a timely manner and within budget, or be unsuccessful otherwise, we may incur additional costs or impairments which could have a material adverse effect on our business, results of operations and financial condition.

Any delay or failure to procure, renew or maintain necessary governmental permits, including environmental permits and concessions to operate our hydropower plants would adversely affect our results of operations.

The operation of our hydropower plants is highly regulated, requires various governmental permits, including environmental permits and concessions, and may be subject to the imposition of conditions by government authorities. We cannot predict whether the conditions prescribed in such permits and concessions will be achievable. The denial of a permit essential to a hydropower plant or the imposition of impractical conditions would impair our ability to operate the plant. If we fail to satisfy the conditions or comply with the restrictions imposed by governmental permits or concessions, or restrictions imposed by other applicable statutory or regulatory requirements, we may face enforcement action and be subject to fines, penalties or additional costs or revocation of such permits or concessions. Any failure to procure, renew or abide by necessary permits and concessions would adversely affect the operation of our hydropower plants.

Equipment failures may lead to production curtailments or shutdowns and repairing any failure could require us to incur capital expenditures and other costs.

Many of our business activities are characterized by substantial investments in complex production facilities and manufacturing equipment. Because of the complex nature of our production facilities, any interruption in manufacturing resulting from fire, explosion, industrial accidents, natural disaster, equipment failures or otherwise could cause significant losses in operational capacity and could materially and adversely affect our business, results of operations and financial condition.

Our hydropower generation assets and other equipment may not continue to perform as they have in the past or as they are expected. A major equipment failure due to wear and tear, latent defect, design error or operator error, early obsolescence, natural disaster or other force majeure event could cause significant losses in operational capacity. Repairs following such failures could require us to incur capital expenditures and other costs. Such major failures also could result in damage to the environment or damages and harm to third parties or the public, which could expose us to significant liability. Such costs and liabilities could adversely affect our business, results of operations and financial condition.

We depend on proprietary manufacturing processes and software. These processes may not yield the cost savings that we anticipate and our proprietary technology may be challenged.

We rely on proprietary technologies and technical capabilities in order to compete effectively and produce high quality silicon metal and silicon-based alloys, including:

- computerized technology that monitors and controls production furnaces;
- electrode technology and operational know-how;
- metallurgical processes for the production of solar-grade silicon metal;
- production software that monitors the introduction of additives to alloys, allowing the precise formulation of the chemical composition of products; and
- flowcaster equipment, which maintains certain characteristics of silicon-based alloys as they are cast.

We are subject to a risk that:

- we may not have sufficient funds to develop new technology and to implement effectively our technologies as competitors improve their processes;
- if implemented, our technologies may not work as planned; and
- our proprietary technologies may be challenged and we may not be able to protect our rights to these technologies.

Patent or other intellectual property infringement claims may be asserted against us by a competitor or others. Our intellectual property rights may not be enforceable and may not enable us to prevent others from developing and marketing competitive products or methods. An infringement action against us may require the diversion of substantial funds from our operations and may require management to expend efforts that might otherwise be devoted to operations. A successful challenge to the validity of any of our patents may subject us to a significant award of damages, and may oblige us to secure licenses of others' intellectual property, which could have a material adverse effect on our business, results of operations and financial condition.

We also rely on trade secrets, know-how and continuing technological advancement to maintain our competitive position. We may not be able to effectively protect our rights to unpatented trade secrets and know-how.

Ferroglobe PLC is a holding company whose principal source of revenue is the income received from its subsidiaries.

Ferroglobe PLC is dependent on the income generated by its subsidiaries in order to earn distributable profits and pay dividends to shareholders. The amounts of distributions and dividends, if any, to be paid to us by any operating subsidiary will depend on many factors, including such subsidiary's results of operations and financial condition, limits on dividends under applicable law, its constitutional documents, documents governing any indebtedness, applicability of tax treaties and other factors which may be outside our control. If our operating subsidiaries do not generate sufficient cash flow, we may be unable to earn distributable profits and pay dividends on our shares.

Our business operations may be impacted by various types of claims, lawsuits, and other contingent obligations.

We are involved in various legal and regulatory proceedings including those that arise in the ordinary course of our business. We estimate such potential claims and contingent liabilities and, where appropriate, record provisions to address these contingent liabilities. The ultimate outcome of the legal matters currently pending against our Company is uncertain, and although such claims, lawsuits and other legal matters are not expected individually to have a material adverse effect, such matters in the aggregate could have a material adverse effect on our business, results of operations and financial condition. Furthermore, we could, in the future, be subject to judgments or enter into settlements of lawsuits and claims that could have a material adverse effect on our results of operations in any particular period. While we maintain insurance coverage in respect of certain risks and liabilities, we may not be able to obtain such insurance on acceptable terms in the future, if at all, and any such insurance may not provide adequate coverage against such claims. See “Item 8.A.—Financial Information—Consolidated Statements and Other Financial Information—Legal proceedings” for additional information regarding legal proceedings to which we are party.

We are exposed to changes in economic and political conditions where we operate and globally that are beyond our control.

Our industry is affected by changing economic conditions, including changes in national, regional and local unemployment levels, changes in national, regional and local economic development plans and budgets, shifts in business investment and consumer spending patterns, credit availability, and business and consumer confidence. Disruptions in national economies and volatility in the financial markets may and often will reduce consumer confidence, negatively affecting business investment and consumer spending. The outlook for the global economy in the near to medium term is negative due to several factors, including the COVID-19 pandemic, geopolitical risks and concerns about global growth and stability.

Following the United Kingdom’s exit from the European Union, we may face risks associated with the current uncertainty and the consequences that may result from such exit, in particular with respect to tax, customs and duty laws and regulations, volatility in exchange rates and interest rates and our ability to sell and transport products from manufacturing facilities on the continent to our customers in the United Kingdom.

We are not able to predict the timing or duration of periods economic growth in the countries where we operate or sell products, nor are we able to predict the timing or duration of any economic downturn or recession that may occur in the future.

Cybersecurity breaches and threats could disrupt our business operations and result in the loss of critical and confidential information.

We rely on the effective functioning and availability of our information technology and communication systems and the security of such systems for the secure processing, storage and transmission of confidential information. The sophistication and magnitude of cybersecurity incidents are increasing and include, among other things, unauthorized access, computer viruses, deceptive communications and malware. We have experienced minor incidents in the past, and information technology security processes may not effectively detect or prevent cybersecurity breaches or threats and the measures we have taken to protect against such incidents may not be sufficient to anticipate or prevent rapidly evolving types of cyber-attacks. Breaches of the security of our information technology and communication systems could result in destruction or corruption of data, the misappropriation, corruption or loss of critical or confidential information, business disruption, reputational damage, litigation and remediation costs.

Possible new tariffs and duties that might be imposed by certain governments, including the United States, the European Union and others, could have a material adverse effect on our results of operations.

In March, 2018, the United States imposed import tariffs of 25 percent on steel and 10 percent on aluminum. Exemptions from these tariffs were allowed for steel from Argentina, Australia, Brazil, Canada, Mexico, and South Korea, and aluminum from Argentina, Australia, Canada, and Mexico. These tariffs were expanded to apply to steel and aluminum derivatives from most countries. China, the EU, and other countries imposed retaliatory duties on products from the United States.

In January, 2022, the tariffs on steel and aluminum from the EU were replaced by “tariff-rate quotas”, which allow a certain volume of imports to enter without the additional tariffs, but impose a 25% tariff on steel imports and a 10% tariff on aluminum imports exceeding the quota amount. Similar arrangements to replace the steel and aluminum tariffs are being negotiated with Japan and the UK.

Beginning in July 2018, the United States also imposed 25 percent tariffs on a wide array of Chinese products, including products produced and consumed by Ferroglobe, and 7.5 percent on a smaller range of products. In January 2020, the United States and China entered an initial “Phase 1” agreement to resolve the trade dispute between the two countries. The agreement resulted in the suspension of Chinese retaliatory duties on certain U.S. products and the commitment by China to purchase products from the United States. It is unclear whether and, if so, when the two countries will reach a Phase 2 agreement that would resolve the dispute more broadly.

There are indications that China has not fully complied with its Phase 1 commitments. If China were found to be in noncompliance, the United States could reimpose tariffs on Chinese products that are currently suspended or increase the existing tariffs.

Any “trade war” resulting from the imposition of tariffs could have a significant adverse effect on world trade and the world economy. To date, tariffs have not affected our business to a material degree.

Our suppliers, customers, agents or business partners may be subject to or affected by export controls or trade sanctions imposed by government authorities from time to time, which may restrict our ability to conduct business with them and potentially disrupt our production or our sales.

The United States, European Union, United Nations and other authorities have variously imposed export controls and trade sanctions on certain countries, companies, individuals and products, restricting our ability to trade normally with or in them. At present, compliance with such trade regulation is not affecting our business to a material degree. However, new trade regulations may be imposed at any time that target or otherwise affect our customers, suppliers, agents or business partners or their products. In particular, trade sanctions could be imposed that restrict our ability to do business with one or more critical suppliers and require special licenses to do so. Such events could potentially disrupt our production or sales and have a material adverse effect on our business, results of operations and financial condition.

We make significant investments in the development of new technologies and new products. The success of such technologies or products is inherently uncertain and the investments made may fail to render the desired increased in profitability.

In order to improve our processes and increase the margins in our products we have constantly invested significant amounts in the development of new technologies and in the development of new value added products. However, these developments are inherently uncertain, since they may fail to render the desired results when implemented at an industrial scale.

Specifically, we have invested in the construction of a factory to produce solar-grade silicon metal through a technology developed by the Company. We believe the technology presents several advantages when compared to current solar-grade silicon production processes since the technology has proven to render the desired technological and cost results at a laboratory scale. However, the implementation of the technology at an industrial scale is challenging especially in light of current market conditions. The current market for solar-grade silicon (or polysilicon) is very volatile and has suffered from declining prices in the past few years. Further investment in this project has been temporarily suspended and the future profitability of this project is uncertain.

Risks Related to Our Capital Structure

Our leverage may make it difficult for us to service our debt and operate our business.

We have significant outstanding indebtedness and debt service requirements. Our leverage has and in the future could have important consequences, including:

- making it more difficult for us to satisfy our obligations to all creditors;
- requiring us to dedicate a substantial portion of our cash flow from operations to payments on our indebtedness, thus reducing the availability of our cash flow to fund internal growth through working capital and capital expenditures and for other general corporate purposes;

- increasing our vulnerability to a downturn in our business or economic or industry conditions;
- placing us at a competitive disadvantage compared to our competitors that have less indebtedness in relation to cash flow;
- limiting our flexibility in planning for or reacting to changes in our business and our industry;
- restricting us from investing in growing our business, pursuing strategic acquisitions and exploiting certain business opportunities; and
- limiting, among other things, our and our subsidiaries' ability to incur additional indebtedness, including refinancing, or raise equity capital in the future and increasing the costs of such additional financings.

Our ability to service our indebtedness will depend on our future performance, including an improvement on recent financial performance, and liquidity, which will be affected by prevailing economic conditions and financial, business, regulatory and other factors, including the COVID-19 pandemic and the military conflict between Russia and Ukraine. Many of these factors are beyond our control. We may not be able to generate enough cash flow from operations or obtain enough capital to service our indebtedness or fund our planned capital expenditures. If we cannot service our indebtedness and meet our other obligations and commitments, we might be required to refinance our indebtedness, obtain additional financing, delay planned capital expenditures or to dispose of assets to obtain funds for such purpose. We cannot assure you that any refinancing or asset dispositions could be effected on a timely basis or on satisfactory terms, if at all, or would be permitted by the terms of our outstanding debt instruments.

We have in the past experienced losses and cannot assure you that we will be profitable.

Our business has historically been subject to fluctuations in the prices of our products and the market demand for them, caused by general and regional economic cycles, raw material and energy price fluctuations, competition and other factors. Throughout 2019 and 2020 we experienced a significant decline in prevailing prices of our products, which adversely affected our results. In early 2020, the outbreak of coronavirus disease ("COVID-19") has been and continues to be a complex and evolving situation, with governments, public institutions and other organizations imposing or recommending, and businesses and individuals implementing, at various times and to varying degrees, restrictions on various activities or other actions to combat its spread, such as restrictions and bans on travel or transportation; limitations on the size of in-person gatherings, restrictions on freight transportations, closures of, or occupancy or other operating limitations on work facilities, and quarantines and lock-downs.

As a result of this pandemic and the strict confinement and other public health measures taken around the world, the demand for our products in the second and third quarters of 2020 was reduced significantly compared with the first and fourth quarters of the year. During the fourth quarter of 2020, demand level for our products increased to levels similar to those prior to the outbreak. During 2021, demand for our products has increased even further than in the fourth quarter of 2020. However, COVID-19 has negatively impacted, and will in the future negatively impact to an extent we are unable to predict, our revenues.

As a result, in part due to this pandemic and the strict confinement and other public health measures taken around the world, our sales decreased \$470.8 million, or 29.1%, from \$1,615.2 million for the year ended December 31, 2019 to \$1,144.4 million for the year ended December 31 2020, resulting in a loss of \$249.8 million for the year ended December 31, 2020. During 2021, our sales increased \$634.5 million, or 55.4%, from \$1,144.4 million for the year ended December 31, 2020 to \$1,778.9 million for the year ended December 31 2021, resulting in a loss of \$106.4 million for the year ended December 31, 2021.

We are subject to restrictive covenants under our financing agreements, which could impair our ability to run our business.

Restrictive covenants under our financing agreements, including relating to our outstanding notes and the agreements for our SEPI financing, may restrict our ability to operate our business. Our failure to comply with these covenants, including as a result of events beyond our control, could result in an event of default that could materially and adversely affect our business, results of operations and financial condition.

The restrictions contained in our financing agreements could affect our ability to operate our business and may limit our ability to react to market conditions or take advantage of potential business opportunities as they arise. For example, such restrictions could adversely affect our ability to finance our operations, make strategic acquisitions, investments or alliances, restructure our organization or finance our capital needs. Additionally, our ability to comply with these covenants and restrictions may be affected by events beyond our control. These include prevailing economic, financial and industry conditions. If we breach any of these covenants or restrictions, we could be in default under our financing agreements.

If there were an event of default under any of our debt instruments that is not cured or waived, the holders of the defaulted debt could terminate their commitments thereunder and declare all amounts outstanding with respect to such indebtedness due and payable immediately, which, in turn, could result in cross-defaults under our other outstanding debt instruments. Any such actions could force us into bankruptcy or liquidation.

To service our indebtedness, we require a significant amount of cash, and our ability to generate cash will depend on many factors beyond our control.

Our ability to make payments on and to refinance our indebtedness, and to fund capital expenditures, depends in part on our ability to generate cash in the future, and increased cash flow than we have generated in recent periods. Debt service requirements due to increased debt and increased interest rates will increase our cash flow requirements. This depends on the success of our business strategy and on general economic, financial, competitive, legislative, regulatory and other factors, many of which are beyond our control.

The Restructuring has increased our leverage and so we will need to significantly improve our profitability and/or cash flow in order to be able to service our indebtedness. There can be no assurance that we will generate sufficient cash flow from operations, that we will realize operating improvements on schedule or that future borrowings will be available to us in an amount sufficient to enable us to service and repay our indebtedness or to fund our other liquidity needs. Furthermore, applicable law and future contractual arrangements may impose restrictions on certain of our subsidiaries' ability to make payments to Ferroglobe and other entities within the Group, which could impact our ability to service and pay our obligations as they mature or to fund our liquidity needs.

The Super Senior Notes mature in June 2025, the Reinstated Notes mature in December 2025 and the remaining Old Notes that were not exchanged mature in March 2022. Other debt instruments mature at various other dates. There can be no assurance that we will have the available liquidity or the ability to raise financing in order to repay these instruments at or ahead of their maturity.

If we are unable to satisfy our debt obligations, we may have to undertake alternative financing plans, such as refinancing or further restructuring our indebtedness, selling assets, reducing or delaying capital investments or seeking to raise additional capital. There can be no assurance that any refinancing or debt restructuring would be possible, or if possible, that it would be on similar terms to those of our debt instruments existing at that time, that any assets could be sold or that, if sold, the timing of the sales and the amount of proceeds realized from those sales would be favorable to us or that additional financing could be obtained on acceptable terms. As the Super Senior Notes and the Reinstated Notes will be secured by a significant portion of our assets that can be granted as collateral, our ability to refinance our existing debt or raise new debt may be limited to unsecured or lesser-secured debt. Disruptions in the capital and credit markets, as have been seen in recent years, could adversely affect our ability to meet our liquidity needs or to refinance our indebtedness.

We may not be able to repurchase the Notes upon a Change of Control.

The Reinstated Notes and the Super Senior Notes require us to offer to repurchase all or any part of each holder's notes upon the occurrence of a change of control, as defined in the respective indentures, at a purchase price equal to 101% of the principal amount, plus accrued and unpaid interest thereon, to the date of purchase. If such an event were to occur, we may not have sufficient financial resources available to satisfy all of those obligations.

Risks Related to Our Ordinary Shares

The market price of our ordinary shares may be volatile and may decline.

Our ordinary shares are admitted for trading on the Nasdaq Capital Market under the symbol “GSM”. The market price of our ordinary shares is subject to wide fluctuations in response to numerous factors, some of which are beyond our control. These factors include, among other things, actual or anticipated variations in our costs of doing business, operating results and cash flow, the nature and content of our earnings releases and our competitors’ earnings releases, changes in financial estimates by securities analysts, business conditions in our markets and the general state of the securities markets and the market for other financial stocks, changes in capital markets that affect the perceived availability of capital to companies in our industry, and governmental legislation or regulation, as well as general economic and market conditions, such as downturns in our economy and recessions.

In recent years, the stock market in general has experienced extreme price fluctuations that have often times been unrelated to the operating performance of the affected companies. Similarly, the market price of our ordinary shares may fluctuate significantly based upon factors unrelated or disproportionate to our operating performance.

These market fluctuations, as well as general economic, political and market conditions, such as recessions, interest rates or international currency fluctuations may adversely affect the market price of our ordinary shares.

Significant sales of our ordinary shares, or the perception that significant sales thereof may occur in the future, could adversely affect the market price for our ordinary shares.

The sale of substantial amounts of our ordinary shares could adversely affect the price of these securities. Sales of substantial amounts of our ordinary shares in the public market, and the availability of shares for future sale could adversely affect the prevailing market price of our ordinary shares and could cause the market price of our ordinary shares to remain low for a substantial amount of time.

We do not anticipate paying cash dividends in the foreseeable future.

We currently intend to retain future earnings, if any, for use in our business and, therefore, do not anticipate paying any cash dividends in the foreseeable future. The payment of future dividends, if any, will depend, among other things, on our results of operations and financial condition and on such other factors as our Board of Directors may, in their discretion, consider relevant.

If securities or industry analysts do not publish or cease publishing research reports about us, if they adversely change their recommendations regarding our ordinary shares, or if our operating results do not meet their expectations, the price of our ordinary shares could decline.

The trading market for our ordinary shares will be influenced by the research and reports that industry or securities analysts may publish about us, our business, our market or our competitors. If there is limited or no securities or industry analyst coverage of us, the market price and trading volume of our ordinary shares would likely be negatively impacted. Moreover, if any of the analysts who may cover us downgrade our ordinary shares or provide relatively more favorable recommendations concerning our competitors, or as we experienced in 2019 and 2020, if our operating results or prospects do not meet their expectations, the market price of our ordinary shares could decline. If any of the analysts who may cover us were to cease coverage or fail regularly to publish reports about our Company, we could lose visibility in the financial markets, which, in turn, could cause our share price or trading volume to decline.

As a foreign private issuer within the meaning of the rules of NASDAQ, we are subject to different U.S. securities laws and NASDAQ governance standards than domestic U.S. issuers of securities. These may afford relatively less protection to holders of our ordinary shares, who may not receive all corporate and company information and disclosures they are accustomed to receiving or in a manner to which they are accustomed.

As a foreign private issuer, the rules governing the information that we are required to disclose differ from those governing U.S. corporations pursuant to the U.S. Exchange Act. Although we intend to report periodic financial results and certain material events, we are not required to file quarterly reports on Form 10-Q or provide current reports on Form 8-K disclosing significant events within four days of their occurrence. In addition, we are exempt from the SEC’s proxy rules, and proxy statements that we distribute will not be subject to review by the SEC. Our exemption from Section 16 rules requiring the reporting of beneficial ownership and sales of shares by insiders means that you will have less data in this regard than shareholders of U.S. companies that are subject to this part of the U.S. Exchange Act and that our insiders are not subject to short-swing profit rules. As a result, in deciding whether to purchase our shares, you may not have all the data that you are accustomed to having when making investment decisions with respect to domestic U.S. public companies.

Furthermore, NASDAQ Rule 5615(a)(3) provides that a foreign private issuer, such as our Company, may rely on home country corporate governance practices in lieu of certain of the rules in the NASDAQ Rule 5600 Series and Rule 5250(d), provided that we nevertheless comply with NASDAQ's Notification of Noncompliance requirement (Rule 5625), the Voting Rights requirement (Rule 5640) and that we have an audit committee that satisfies Rule 5605(c)(3), consisting of committee members that meet the independence requirements of Rule 5605(c)(2)(A)(ii). We are permitted to follow certain corporate governance rules that conform to U.K. requirements in lieu of many of the NASDAQ corporate governance rules, and we intend to comply with the NASDAQ corporate governance rules applicable to foreign private issuers. Accordingly, our shareholders will not have the same protections afforded to stockholders of U.S. companies that are subject to all of the corporate governance requirements of NASDAQ.

We may lose our foreign private issuer status in the future, which could result in significant additional costs and expenses.

We could cease to be a foreign private issuer if a majority of our outstanding voting securities are directly or indirectly held of record by U.S. residents and we fail to meet additional requirements necessary to avoid loss of foreign private issuer status. In that event, the regulatory and compliance costs we would incur as a domestic registrant may be significantly higher than we incur as a foreign private issuer, which could have a material adverse effect on our business, operating results and financial condition.

As an English public limited company, certain capital structure decisions require shareholder approval, which may limit our flexibility to manage our capital structure.

English law provides that a board of directors may only allot shares (or rights or convertible into shares) with the prior authorization of shareholders, such authorization being up to the aggregate nominal amount of shares and for a maximum period of five years, each as specified in the articles of association or relevant shareholder resolution. The Articles authorize the allotment of additional shares for a period of five years from October 26, 2017 (being the date of the adoption of the Articles), which authorization will need to be renewed upon expiration (*i.e.*, at least every five years) but may be sought more frequently for additional five-year terms (or any shorter period).

English law also generally provides shareholders with preemptive rights when new shares are issued for cash. However, it is possible for the articles of association, or for shareholders acting in a general meeting, to exclude preemptive rights. Such an exclusion of preemptive rights may be for a maximum period of up to five years from the date of adoption of the articles of association, if the exclusion is contained in the articles of association, or from the date of the shareholder resolution, if the exclusion is by shareholder resolution. In either case, this exclusion would need to be renewed by our shareholders upon its expiration (*i.e.*, at least every five years). The Articles exclude preemptive rights for a period of five years from October 26, 2017, which exclusion will need to be renewed upon expiration (*i.e.*, at least every five years) to remain effective, but may be sought more frequently for additional five-year terms (or any shorter period).

English law also generally prohibits a public company from repurchasing its own shares without the prior approval of shareholders by ordinary resolution, such being a resolution passed by a simple majority of votes cast, and other formalities. As an English company listed on NASDAQ, we may not make on-market purchases of our shares and may make off-market purchases only for the purposes of or pursuant to an employees' share scheme where our shareholders have approved our doing so by ordinary resolution (and with a maximum duration of such approval of five years) or with the prior consent of our shareholders by ordinary resolution to the proposed contract for the purchase of our shares.

English law requires that we meet certain financial requirements before we declare dividends or repurchases.

Under English law, we may only declare dividends, make distributions or repurchase shares out of distributable reserves of the Company or distributable profits. “Distributable profits” are a company’s accumulated, realized profits, so far as not previously utilized by distribution or capitalization, less its accumulated, realized losses, so far as not previously written off in a reduction or reorganization of capital duly made, as reported to the Companies House. In addition, as a public company, we may only make a distribution if the amount of our net assets is not less than the aggregate amount of our called-up share capital and undistributable reserves and if, and to the extent that, the distribution does not reduce the amount of those assets to less than that aggregate amount. The Articles permit declaration of dividends by ordinary resolution of the shareholders, provided that the directors have made a recommendation as to its amount. The dividend shall not exceed the amount recommended by the directors. The directors may also decide to pay interim dividends if it appears to them that the profits available for distribution justify the payment. When recommending or declaring the payment of a dividend, the directors will be required under English law to comply with their duties, including considering our future financial requirements.

The enforcement of shareholder judgments against us or certain of our directors may be more difficult.

Because we are a public limited company incorporated under English law, and because most of our directors and executive officers are non-residents of the United States and substantially all of the assets of such directors and executive officers are located outside of the United States, our shareholders could experience more difficulty enforcing judgments obtained against our Company or our directors in U.S. courts than would currently be the case for U.S. judgments obtained against a U.S. public company or U.S. resident directors. In addition, it may be more difficult (or impossible) to assert some types of claims against our Company or its directors in courts in England, or against certain of our directors in courts in Spain, than it would be to bring similar claims against a U.S. company or its directors in a U.S. court.

The United States is not currently bound by a treaty with Spain or the United Kingdom providing for reciprocal recognition and enforcement of judgments rendered in civil and commercial matters with Spain or the United Kingdom, other than arbitral awards. There is, therefore, doubt as to the enforceability of civil liabilities based upon U.S. federal securities laws in an action to enforce a U.S. judgment in Spain or the United Kingdom. In addition, the enforcement in Spain or the United Kingdom of any judgment obtained in a U.S. court based on civil liabilities, whether or not predicated solely upon U.S. federal securities laws, will be subject to certain conditions. There is also doubt that a court in Spain or the United Kingdom would have the requisite power or authority to grant remedies in an original action brought in Spain or the United Kingdom on the basis of U.S. federal securities laws violations.

Risks Related to Tax Matters

The application of Section 7874 of the Code, including under recent IRS guidance, and changes in law could affect our status as a foreign corporation for U.S. federal income tax purposes.

We believe that, under current law, we should be treated as a foreign corporation for U.S. federal income tax purposes. However, the U.S. Internal Revenue Service (the “IRS”) may assert that we should be treated as a U.S. corporation for U.S. federal income tax purposes pursuant to Section 7874 of the Internal Revenue Code of 1986, as amended (the “Code”). Under Section 7874 of the Code, we would be treated as a U.S. corporation for U.S. federal income tax purposes if, after the Business Combination, (i) at least 80% of our ordinary shares (by vote or value) were considered to be held by former holders of common stock of Globe by reason of holding such common stock, as calculated for Section 7874 purposes, and (ii) our expanded affiliated group did not have substantial business activities in the United Kingdom (the “80% Test”). The percentage (by vote and value) of our ordinary shares considered to be held by former holders of common stock of Globe immediately after the Business Combination by reason of their holding common stock of Globe is referred to in this disclosure as the “Section 7874 Percentage.”

Determining the Section 7874 Percentage is complex and, with respect to the Business Combination, subject to legal uncertainties. In that regard, the IRS and U.S. Department of the Treasury (“U.S. Treasury”) issued temporary Regulations in April 2016 and finalized Regulations in July 2018 (collectively, the “Section 7874 Regulations”), which include a rule that applies to certain transactions in which the Section 7874 Percentage is at least 60% and the parent company is organized in a jurisdiction different from that of the foreign target corporation (the “Third Country Rule”). This rule applies to transactions occurring on or after November 19, 2015, which date is prior to the closing of the Business Combination. If the Third Country Rule were to apply to the Business Combination, the 80% Test would be deemed met and we would be treated as a U.S. corporation for U.S. federal income tax purposes. While we believe the Section 7874 Percentage is less than 60% such that the Third Country Rule does not apply to us, we cannot assure you that the IRS will agree with this position and would not successfully challenge our status as a foreign corporation. If the IRS successfully challenged our status as a foreign corporation, significant adverse tax consequences would result for us and could apply to our shareholders.

In addition, changes to Section 7874 of the Code, the U.S. Treasury Regulations promulgated thereunder, or to other relevant tax laws (including under applicable tax treaties) could adversely affect our status or treatment as a foreign corporation, and the tax consequences to our affiliates, for U.S. federal income tax purposes, and any such changes could have prospective or retroactive application. Recent legislative proposals have aimed to expand the scope of U.S. corporate tax residence, including by potentially causing us to be treated as a U.S. corporation if the management and control of us and our affiliates were determined to be located primarily in the United States, or by reducing the Section 7874 Percentage at or above which we would be treated as a U.S. corporation such that it would be lower than the threshold imposed under the 80% Test.

IRS guidance and changes in law could affect our ability to engage in certain acquisition strategies and certain internal restructurings.

Even if we are treated as a foreign corporation for U.S. federal income tax purposes, the Section 7874 Regulations materially changed the manner in which the Section 7874 Percentage will be calculated in certain future acquisitions of U.S. businesses in exchange for our equity, which may affect the tax efficiencies that otherwise might be achieved in transactions with third parties. For example, the Section 7874 Regulations would impact certain acquisitions of U.S. companies for our Ordinary Shares (or other stock) in the 36-month period beginning December 23, 2015, by excluding from the Section 7874 Percentage the portion of Ordinary Shares that are allocable to former holders of common stock of Globe. This rule would generally have the effect of increasing the otherwise applicable Section 7874 Percentage with respect to our future acquisition of a U.S. business. The Section 7874 Regulations also may more generally limit the ability to restructure the non-U.S. members of our Company to achieve tax efficiencies, unless an exception applies. However, no such acquisition of a U.S. business was made during the 36 months period.

IRS proposed regulations and changes in laws or treaties could affect the expected financial synergies of the Business Combination.

The IRS and the U.S. Treasury also issued rules that provide that certain intercompany debt instruments issued on or after April 5, 2016, will be treated as equity for U.S. federal income tax purposes, therefore limiting U.S. tax benefits and resulting in possible U.S. withholding taxes. As a result of these rules, we may not be able to realize a portion of the financial synergies that were anticipated in connection with the Business Combination, and such rules may materially affect our future effective tax rate. While these new rules are not retroactive, they could impact our ability to engage in future restructurings if such transactions cause an existing debt instrument to be treated as reissued. Furthermore, under certain circumstances, recent treaty proposals by the U.S. Treasury, if ultimately adopted by the United States and relevant foreign jurisdictions, could reduce the potential tax benefits for us and our affiliates by imposing U.S. withholding taxes on certain payments from our U.S. affiliates to related and unrelated foreign persons.

We are subject to tax laws of numerous jurisdictions and our interpretation of those laws is subject to challenge by the relevant governmental authorities.

We and our subsidiaries are subject to tax laws and regulations in the United Kingdom, the United States, France, Spain, South Africa and the other jurisdictions in which we operate. These laws and regulations are inherently complex, and we and our subsidiaries are (and have been) obligated to make judgments and interpretations about the application of these laws and regulations to us and our subsidiaries and their operations and businesses. The interpretation and application of these laws and regulations could be challenged by the relevant governmental authority, which could result in administrative or judicial procedures, actions or sanctions, which could be material an effect our effective tax rate.

We intend to operate so as to be treated exclusively as a resident of the United Kingdom for tax purposes, but the relevant tax authorities may treat us as also being a resident of another jurisdiction for tax purposes.

We are a company incorporated in the United Kingdom. Current U.K. tax law provides that we will be regarded as being a U.K. resident for tax purposes from incorporation and shall remain so unless (i) we were concurrently resident of another jurisdiction (applying the tax residence rules of that jurisdiction) that has a double tax treaty with the United Kingdom and (ii) there is a tiebreaker provision in that tax treaty which allocates exclusive residence to that other jurisdiction.

Based upon our management and organizational structure, we believe that we should be regarded solely as resident in the United Kingdom from our incorporation for tax purposes. However, because this analysis is highly factual and may depend on changes in our management and organizational structure, there can be no assurance regarding the final determination of our tax residence. Should we be treated as resident in a country or jurisdiction other than the United Kingdom, we could be subject to taxation in that country or jurisdiction on our worldwide income and may be required to comply with a number of material and formal tax obligations, including withholding tax and reporting obligations provided under the relevant tax law, which could result in additional costs and expenses and an increase of our effective tax rate.

We may not qualify for benefits under the tax treaties entered into between the United Kingdom and other countries.

We intend to operate in a manner such that, when relevant, we are eligible for benefits under the tax treaties entered into between the United Kingdom and other countries. However, our ability to qualify and continue to qualify for such benefits will depend upon the requirements contained within each treaty and the applicable domestic laws, as the case may be, on the facts and circumstances surrounding our operations and management, and on the relevant interpretation of the tax authorities and courts.

Our or our subsidiaries' failure to qualify for benefits under the tax treaties could result in adverse tax consequences to us and our subsidiaries and could result in certain tax consequences of owning or disposing of our ordinary shares differing from those discussed below.

Future changes to domestic or international tax laws or to the interpretation of these laws by the governmental authorities could adversely affect us and our subsidiaries.

The U.S. Congress, the U.K. Government, the European Union and the Organization for Economic Co-operation and Development and other government agencies in jurisdictions where we and our affiliates do business have had an extended focus on issues related to the taxation of multinational corporations. One example is in the area of "base erosion and profit shifting" (or "BEPS"), in which payments are made between affiliates from a jurisdiction with high tax rates to a jurisdiction with lower tax rates. Thus, the tax laws in the United States, the United Kingdom, the European Union or other countries in which we and our affiliates do business are changing and any such changes could adversely affect us, mostly those related to interest limitation rules. Furthermore, the interpretation and application of domestic or international tax laws made by us and our subsidiaries could differ from that of the relevant governmental authority, which could result in administrative or judicial procedures, actions or sanctions, which could be material. On July 1, 2018, OECD's so-called "Multi-Lateral Instrument" entered into force covering 87 jurisdictions and impacting over 1,200 double tax treaties. The adoption and transposition into domestic legislations of the Anti-Tax Avoidance Directives (known as "ATAD 1 and 2") by the European Union is another key development that is impacting us, mostly when it comes to interest deduction limitation. On December 2021, the European Commission published a proposal for a Directive "laying down rules to prevent the misuse of shell entities for improper tax purposes and amending Directive 2011/16/EU." This Directive is also referred to as the ATAD 3 Directive. The implementation of this directive could affect us.

Further developments are to be seen in areas such as the "making tax digital - initiatives" allowing authorities to monitor multinationals' tax position on a more real time basis and the contemplated introduction of new taxes, such as revenue-based digital services taxes aimed at technology companies, but which may impact traditional businesses as well in the sense of allocating a portion of the profitability of the given company to jurisdictions where it has significant sales even though it is not physically present. The latest development by the OECD in this field are the so-called Pillar One and Pillar Two. Under Pillar One, the OECD intends to set up the foundations for allocating to the market jurisdiction (i) non-routine profit; (ii) a fixed remuneration based on the Arm's length Principle for baseline distribution and marketing functions; and (iii) an additional profit where in-country functions exceed the base-line activity already compensated. In principle, our business is not in scope of this measure as it refers to raw materials and commodities and this kind of business is excluded under the current drafting of the paper. Then, Pillar Two, also called GloBE (Global Anti-Base Erosion Proposal) consist of setting the ground for a minimum taxation, giving the countries the right to "tax back" profit that is currently taxed below the minimum 15% rate. This goal is reached through several avenues, that is, (i) the inclusion of foreign income when taxed below the minimum rate; (ii) an undertaxed payment rule to related parties to deny deduction or impose taxation when payment was not subject to tax; (iii) switch over rule in the double tax treaties to allow the residence jurisdiction to switch from exemption to credit method when profit of permanent establishment is taxed below the minimum rate; and (iv) a subject to tax rule to allow withholding tax or other taxation or adjust eligibility to treaty benefits on payments not subject to the minimum rate. GloBE could affect our effective tax rate when implemented. In December 2021 the OECD released a report containing further details about the implementation of Pillar I. Likewise, also in December 2021 the European Union released a proposed Directive on minimum taxation in line with the OECD report. In both cases, it is proposed a minimum taxation of 15% that, when implemented, could impact our organization although not significantly since we are already based in high tax jurisdictions without significant tax exemptions or credits to reduce our effective tax rate.

We may become subject to income or other taxes in jurisdictions which would adversely affect our financial results.

We and our subsidiaries are subject to the income tax laws of the United Kingdom, the United States, France, Spain, South Africa and the other jurisdictions in which we operate. Our effective tax rate in any period is impacted by the source and the amount of earnings among our different tax jurisdictions. A change in the division of our earnings among our tax jurisdictions could have a material impact on our effective tax rate and our financial results. In addition, we or our subsidiaries may be subject to additional income or other taxes in these and other jurisdictions by reason of the management and control of our subsidiaries, our activities and operations, where our production facilities are located or changes in tax laws, regulations or accounting principles like those referred to as Pillar One and Pillar Two once fully developed and implemented. The OECD aims for a multilateral convention on Pillar One to be signed in 2022 and implemented in 2023. The aim for Pillar Two is for domestic legislation to be introduced during the course of 2022 and become effective in 2023 and for treaty changes to be implemented by a multilateral instrument in 2024. Changes in tax treaties, the introduction of new legislation, updates to existing legislation, or changes to regulatory interpretations of existing legislation as a result of these or similar proposals could impose additional taxes on businesses and increase the complexity, burden and cost of tax compliance in countries where we operate.

Although we have adopted guidelines and operating procedures to ensure our subsidiaries are appropriately managed and controlled, we may be subject to such taxes in the future and such taxes may be substantial. The imposition of such taxes could have a material adverse effect on our financial results.

We may incur current tax liabilities in our primary operating jurisdictions in the future.

We expect to make current tax payments in some of the jurisdictions where we do business in the normal course of our operations. Our ability to defer the payment of some level of income taxes to future periods is dependent upon the continued benefit of accelerated tax depreciation on our plant and equipment in some jurisdictions, the continued deductibility of external and intercompany financing arrangements, the application of tax losses prior to their expiration in certain tax jurisdictions and the application of tax credits including R&D credits, among other factors. The level of current tax payments we make in any of our primary operating jurisdictions could adversely affect our cash flows and have a material adverse effect on our financial results.

Changes in tax laws may result in additional taxes for us.

We cannot assure you that tax laws in the jurisdictions in which we reside or in which we conduct activities or operations will not be changed in the future. Such changes in tax law could result in additional taxes for us. As mentioned above, changes in tax treaties, the introduction of new legislation, updates to existing legislation, or changes to regulatory interpretations of existing legislation as a result of future tax law changes could impose additional taxes on businesses and increase the complexity, burden and cost of tax compliance in countries where we operate.

U.S. federal income tax reform could adversely affect us.

Legislation commonly known as the Tax Cuts and Jobs Act (the "TCJA") was enacted on December 22, 2017 in the United States. The TCJA made significant changes to the U.S. federal tax code, including a reduction in the U.S. federal corporate statutory tax rate from 35% to 21% as well as the introduction of a base erosion minimum tax (BEAT). The TCJA also made changes to the U.S. federal taxation of foreign earnings and to the timing of recognition of certain revenue and expenses and the deductibility of certain business expenses. We examined the impact the TCJA may have on our business in detail since enactment. Although further guidance continues to be released by the IRS, so far we have concluded that tax reform should not have a material adverse impact on the taxation of our U.S. business, as of December 31, 2021. This annual report does not discuss in detail the TCJA or the manner in which it might affect us or our stockholders. We urge you to consult with your own legal and tax advisors with respect to the Tax Reform Act and the potential tax consequences of investing in our shares.

Our transfer pricing policies are open to challenge from taxation authorities internationally.

Tax authorities have become increasingly focused on transfer pricing in recent years. Due to our international operations and an increasing number of inter-company cross-border transactions, we are open to challenge from tax authorities with regards to the pricing of such transactions. A successful challenge by tax authorities may lead to a reallocation of taxable income to a different tax jurisdiction and may potentially lead to an increase of our effective tax rate.

ITEM 4. INFORMATION ON THE COMPANY

A. History and Development of the Company

Ferroglobe PLC

Ferroglobe PLC, initially named VeloNewco Limited, was incorporated under the U.K. Companies Act 2006 as a private limited liability company in the United Kingdom on February 5, 2015, as a wholly-owned subsidiary of Grupo VM. On October 16, 2015 VeloNewco Limited re-registered as a public limited company. As a result of the Business Combination, which was completed on December 23, 2015, FerroAtlántica and Globe merged through corporate transactions to create Ferroglobe PLC, one of the largest producers worldwide of silicon metal and silicon and manganese-based alloys. To effect the Business Combination, Ferroglobe acquired from Grupo VM all of the issued and outstanding ordinary shares, par value €1,000 per share, of Grupo FerroAtlántica, SAU in exchange for 98,078,161 newly issued Class A Ordinary Shares, nominal value \$7.50 per share, of Ferroglobe, after which FerroAtlántica became a wholly-owned subsidiary of Ferroglobe. Immediately thereafter, Gordon Merger Sub, Inc., a wholly-owned subsidiary of Ferroglobe, merged with and into Globe Specialty Metals, Inc., and each outstanding share of common stock, par value \$0.0001 per share, was converted into the right to receive one newly-issued ordinary share, nominal value \$7.50 per share, of Ferroglobe. After these steps, Ferroglobe issued, in total, 171,838,153 shares, out of which 98,078,161 shares were issued to Grupo VM and 73,759,992 were issued to the former Globe shareholders. Our ordinary shares are currently traded on the NASDAQ under the symbol “GSM.”

On June 22, 2016, we completed a reduction of our share capital, as a result of which the nominal value of each share was reduced from \$7.50 to \$0.01, with the amount of the capital reduction being credited to distributable reserves.

On August 21, 2018, we announced a share repurchase program, which provided authorization to purchase up to \$20 million of our ordinary shares in the period ending December 31, 2018. On November 7, 2018, we completed the repurchase program, resulting in the acquisition of a total of 2,894,049 ordinary shares for total consideration of \$20,100 thousand, including applicable stamp duty. The average price paid per share was \$6.89. The share repurchase program resulted in 1,152,958 ordinary shares purchased and cancelled and 1,741,091 ordinary shares purchased into treasury, all of which remained held in treasury at December 31, 2018. See “Item 16.E.— Purchases of Equity Securities by the Issuer and Affiliated Purchasers.”

On July 29, 2021, upon the closing of the Refinancing, the company issued 8,918,618 new ordinary shares to Rubric Capital Management LP on behalf of certain managed or sub-managed funds and accounts and Grupo Villar Mir, S.A.U for a total issued share capital of \$40 million, 1,900,000 shares as a work fee and 7,013,872 shares to bondholder’s related to the financing transactions.

On October 6, 2021, the Company entered into an equity distribution agreement (the “Equity Distribution Agreement”) with B. Riley Securities, Inc. and Cantor Fitzgerald & Co. relating to the ordinary shares of Ferroglobe PLC. The Company may offer and sell ordinary shares having an aggregate offering price of up to \$100,000,000 from time to time through B. Riley Securities, Inc. and Cantor Fitzgerald & Co. as our sales agents. In 2021 The Company sold 186,053 ordinary shares under the Equity Distribution Agreement, for net proceeds of \$1.4 million.

During the year under review, a small number of the ordinary shares held in treasury have been used to satisfy share awards made by the Company to its management team under the Ferroglobe PLC Equity Incentive Plan 2016. The number of ordinary shares held in Treasury as at December 31, 2021 was 1,568,854. See Note 13.

Significant milestones in our history are as follows:

- **1996:** acquisition of the Spanish company Hidro Nitro Española, S.A. (“Hidro Nitro Española”), operating in the ferroalloys and hydroelectric power businesses, and start of the quartz mining operations through the acquisition of Cuarzos Industriales S.A. from Portuguese cement manufacturer Cimpor;
- **1998:** expansion of our manganese- and silicon-based alloy operations through the acquisition of 80% of the share capital of FerroAtlántica de Venezuela (currently FerroVen, S.A.) from the Government of Venezuela in a public auction;
- **2000:** acquisition of 67% of the share capital of quartz mining company Rocas, Arcillas y Minerales, S.A. from Elkem, a Norwegian silicon metal and manganese- and silicon-based alloy producer;
- **2005:** acquisition of Pechiney Electrometallurgie, S.A., now renamed FerroPem, S.A.S., a silicon metal and silicon-based alloys producer with operations in France, along with its affiliate Silicon Smelters (Pty) Ltd. in South Africa;
- **2005:** acquisition of the metallurgical manufacturing plant in Alloy, West Virginia, and Alabama Sand and Gravel, Inc. in Billingsly, Alabama, both in the U.S.;
- **2006:** acquisition of Globe Metallurgical Inc., the largest merchant manufacturer of silicon metal in North America and largest specialty ferroalloy manufacturer in the United States;
- **2006:** acquisition of Stein Ferroaleaciones S.A., an Argentine producer of silicon-based specialty alloys, and its Polish affiliate, Ultracore Polska;
- **2007:** creation of Grupo FerroAtlántica, S.A.U., the holding company of our FerroAtlántica Group;
- **2007:** acquisition of Camargo Correa Metais S.A., a major Brazilian silicon metal manufacturer;
- **2008:** acquisition of Rand Carbide PLC, a ferrosilicon plant in South Africa, from South African mining and steel company Evraz Highveld Steel and Vanadium Limited, and creation of Silicio FerroSolar, S.L., which conducts research and development activities in the solar grade silicon sector;
- **2008:** acquisition of 81% of Solsil, Inc., a producer of high-purity silicon for use in photovoltaic solar cells;
- **2008:** acquisition of a majority stake in Ningxia Yonvey Coal Industry Co., Ltd., a producer of carbon electrodes (the remaining stake subsequently purchased in 2012);
- **2009:** creation of French company Photosil Industries, S.A.S., which conducts research and development activities in the solar grade silicon sector;
- **2009:** sale of interest in Camargo Correa Metais S.A. in Brazil to Dow Corning Corporation and formation of a joint venture with Dow Corning at the Alloy, West Virginia facility;
- **2010:** acquisition of Core Metals Group LLC, one of North America’s largest and most efficient producers and marketers of high-purity ferrosilicon and other specialty metals;
- **2010:** acquisition of Chinese silicon metal producer Mangshi Sinice Silicon Industry Company Limited;
- **2011:** acquisition of Alden Resources LLC, North America’s leading miner, processor and supplier of specialty metallurgical coal to the silicon and silicon-based alloy industries;
- **2012:** acquisition of SamQuarz (Pty) Ltd, a South African producer of silica, with quartz mining operations;

- **2012:** acquisition of a majority stake (51%) in Bécancour Silicon, Inc., a silicon metal producer in Canada, operated as a joint venture with Dow Corning as the holder of the minority stake of 49%;
- **2014:** acquisition of Silicon Technology (Pty) Ltd. (“Siltech”), a ferrosilicon producer in South Africa;
- **2018:** acquisition from a subsidiary of Glencore PLC of a 100% interest in manganese alloys plants in Mo i Rana, Norway and Dunkirk, France, through newly-formed subsidiaries Ferroglobe Mangan Norge AS and Ferroglobe Manganèse France, SAS;
- **2018:** sale of the majority interest in Hidro Nitro Española to an entity sponsored by a Spanish renewable energies fund;
- **2019:** sale of 100% interest in FerroAtlántica, S.A.U. (“FAU”), to investment vehicles affiliated with TPG Sixth Street Partners;
- **2019:** sale of 100% interest in Ultra Core Polska, z.o.o, to Cedic, S.A;
- **2021:** Sale of Niagara Falls silicon metal facility.

Corporate and Other Information

Our registered office is located at 5 Fleet Place, London EC4M 7RD, our Board of Directors is based at our London Office at 13 Chesterfield Street, London W1J 5JN, United Kingdom and our management is based in London and also at Torre Emperador Castellana, Paseo de la Castellana, 259-D, P49, 28046 Madrid, Spain. The telephone number of our Spanish Office is +34 915 903 219. Our Internet address is <http://www.ferroglobe.com>. The information on our website is not a part of this document. The SEC maintains an Internet site that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC at <http://www.sec.gov>.

B. Business Overview

Through its operating subsidiaries, Ferroglobe is one of the world’s largest producers of silicon metal, silicon-based alloys and manganese-based alloys. Additionally, Ferroglobe currently has quartz mining activities in Spain, the United States, Canada, and South Africa, low-ash metallurgical quality coal mining activities in the United States, and interests in hydroelectric power in France. Ferroglobe controls a meaningful portion of most of its raw materials and captures, recycles and sells most of the by-products generated in its production processes.

We sell our products to a diverse base of customers worldwide, in a varied range of industries. These industries include aluminum, silicone compounds used in the chemical industry, ductile iron, automotive parts, renewable energy, photovoltaic (solar) cells, electronic semiconductors and steel, all of which are key elements in the manufacturing of a wide range of industrial and consumer products.

We are able to supply our customers with the broadest range of specialty metals and alloys in the industry from our production centers in North America, Europe, South America, Africa and Asia. Our broad manufacturing platform and flexible capabilities allow us to optimize production and focus on products most likely to enhance profitability, including the production of customized solutions and high purity metals to meet specific customer requirements. We also benefit from low operating costs, resulting from our ownership of sources of critical raw materials and the flexibility derived from our ability to alternate production at certain of our furnaces between silicon metal and silicon-based alloy products.

Industry and Market Data

The statements and other information contained below regarding Ferroglobe’s competitive position and market share are based on the reports periodically published by leading metals industry consultants and leading metals industry publications and information centers, as well as on the estimates of Ferroglobe’s management.

Competitive Strengths and Strategy of Ferroglobe

Competitive Strengths

Leading market positions in silicon metal, silicon-based alloys and manganese-based alloys

We are a leading global producer in our core products based on merchant production capacity and hold the leading market share in certain of our products. Specifically, in the case of silicon metal, with maximum global production capacity of approximately 296 thousand metric tons (which includes 51% of our attributable joint venture capacity, and excludes the 51 thousand metric tons of currently idled capacity at the Polokwane facility in South Africa), we have approximately 75% of the active merchant production capacity market share in North America and approximately 23% of the global market share (all of the world excluding China), according to management estimates for our industry. In the case of manganese-based alloys, following the acquisition of the Dunkirk, France and Mo i Rana, Norway plants in 2018, our market share is approximately 15% in Europe, and we are among the three largest global producers of manganese alloys excluding China.

Our scale and global presence across five continents allows us to offer a wide range of products to serve a variety of end-markets, including those which we consider to be dynamic, such as the solar, automotive, consumer electronic products, semiconductors, construction and energy industries. As a result of our market leadership and breadth of products, we possess critical insight into market demand allowing for more efficient use of our resources and operating capacity. Our ability to supply critical sources of high-quality raw materials from within our Company group promotes operational and financial stability and reduces the need for us to compete with our competitors for supply. We believe this also provides a competitive advantage, allowing us to deliver an enhanced product offering with consistent quality on a cost-efficient basis to our customers.

Global production footprint and reach

Our diversified production base consists of production facilities across North America, Europe, South America, South Africa and Asia. We have the capability to produce our core products at multiple facilities, providing a competitive advantage when reacting to changing global demand trends and customer requirements. Furthermore, this broad base ensures reliability to our customers that value timely delivery and consistent product quality. Our diverse production base also enables us to optimize our production plans and shift production to the lowest cost facilities. Most of our production facilities are located close to sources of principal raw materials, key customers or major transport hubs to facilitate delivery of raw materials and distribution of finished products. This enables us to service our customers globally, while optimizing our working capital, as well as enabling our customers to optimize their inventory levels.

Diverse base of high-quality customers across growing industries

We sell our products to customers in over 30 countries, with our largest customer concentration in North America and in Europe. Our products are used in end products spanning a broad range of industries, including solar, personal care and healthcare products, automobile parts, carbon and stainless steel, water pipe, solar, semiconductor, oil and gas, infrastructure and construction. Although some of these end-markets have growth drivers similar to our own, others are less correlated and offer the benefits of diversification. This wide range of products, customers and end-markets provides significant diversity and stability to our business.

Many of our customers, we believe, are leaders in their end-markets and fields. We have built long-lasting relationships with customers based on the breadth and quality of our product offerings and our ability to produce products that meet specific customer requirements. For the year ended December 31, 2021 and December 31, 2020, Ferroglobe's ten largest customers accounted for approximately 48.1% and 50.7%, respectively, of Ferroglobe's consolidated revenue. Our customer relationships provide us with stability and visibility into our future volumes and earnings, though we are not reliant on any individual customer or end-market. Our customer relationships, together with our diversified product portfolio, provide us with opportunities to cross sell new products; for example, by offering silicon-based or manganese-based alloys to existing steelmaking customers.

Flexible and low-cost structure

We believe we have an efficient cost structure, enhanced over time by vertical integration through strategic acquisitions. The largest components of our cost base are raw materials and power. Our relatively low operating costs are primarily a result of our ownership of, and proximity to, sources of raw materials, our access to attractively priced power supplies and skilled labor and our efficient production processes.

We believe our vertically integrated business model and ownership of sources of raw materials provides us with a cost advantage over our competitors. Moreover, such ownership and the fact that we are not reliant on any single supplier for the remainder of our raw materials needs generally ensures stable, long term supply of raw materials for our production processes, thereby enhancing operational and financial stability. Transportation costs can be significant in our business; our proximity to sources of raw materials and customers improves logistics and represents another cost advantage. The proximity of our facilities to our customers also allows us to provide just in time delivery of finished goods and reduces the need to store excess inventory, resulting in more efficient use of working capital.

We capture, recycle and sell most of the by-products generated in our production processes, which further reduces our costs.

We operate with a largely variable cost of production and our diversified production base allows us to shift our production and distribution between facilities and products in response to changes in market conditions over time. Additionally, the diversity of our currency and commodity exposures provides, to a degree, a natural hedge against foreign exchange and raw materials pricing volatility. Our production costs are mostly dependent on local factors while our product prices are influenced more by global factors. Depreciation of local, functional currencies relative to the U.S. Dollar, when it occurs, reduces the costs of our operations, offering an increased competitive edge in the international market.

We believe our scale and global presence enables us to sustain our operations throughout periods of economic downturn, volatile commodity prices and demand fluctuations.

Stable supply of critical, high quality raw materials

In order to ensure reliable supplies of high-quality raw materials for the production of our metallurgical products, we have invested in strategic acquisitions of sources that supply a meaningful portion of the inputs our manufacturing operations consume. Specifically, we own and operate specialty, low ash, metallurgical quality coal mines in the United States, high purity quartz quarries in the United States, Spain and South Africa, charcoal production units in South Africa, and our Yonvey production facility for carbon electrodes in Ningxia, China. For raw materials needs our subsidiaries cannot meet, we have qualified multiple suppliers in each operating region for each raw material, helping to ensure reliable access to high quality raw materials.

Efficient and environmentally friendly by-product usage

We utilize or sell most of the by-products of our manufacturing process, which reduces cost and the environmental impact of our operations. We have developed markets for the by-products generated by our production processes and have transformed our manufacturing operations so that little solid waste disposal is required. By-products not recycled in the manufacturing process are generally sold to companies, which process them for use in a variety of other applications. These materials include: silica fume (also known as microsilica), used as a concrete additive, refractory material and oil well conditioner; fines - the fine material resulting from crushing lumps; and dross, which results from the purification process during smelting.

Pioneer in innovation with focus on technological advances and development of next generation products

Our talented workforce has historically developed proprietary technological capabilities and next generation products in-house, which we believe give us a competitive advantage. In addition to a dedicated R&D division, we have cooperation agreements in place with various universities and research institutes in Spain, France and other countries around the world. Our R&D achievements include:

- ELSA electrode — Ferroglobe has internally developed a patented technology for electrodes used in silicon metal furnaces, which it has been able to sell to several major silicon producers globally. This technology, known as the ELSA electrode, improves the energy efficiency in the production process of silicon metal and eliminates contamination from iron. Ferroglobe has granted these producers the right to use the ELSA electrode against payment to Ferroglobe of royalties. Continuous improvements are made to keep this invention state of the art.

- **Solar Grade Silicon** — Ferroglobe has sought to produce solar grade silicon metal with a purity above 99.9999% through a new, potentially cost effective, electrometallurgical process. The traditional chemical process tends to be costly and involves high energy consumption and potentially environmentally hazardous processes. The new technology entirely developed by Ferroglobe at an earlier stage at its research and development facilities aims to reduce the costs and energy consumption associated with the production of solar grade silicon. In connection with this project, FerroAtlántica obtained a loan, with a principal amount of approximately €45 million, from the Spanish Ministry of Industry and Energy for the purpose of building the UMG silicon plant. Due to the market environment for solar grade silicon (or polysilicon) worldwide, at the end of 2018 the Company suspended the investment in the project while preserving the technology and know-how in order to be able to finalize the construction of the factory when market circumstances change.
- **High Purity Silicon Powders** — Ferroglobe has launched the High Purity Silicon Powders project, which aims at producing silicon-based, tailor made products for high end applications. An important part of the technology developed for the Solar grade silicon project is used in this new project allowing Ferroglobe to have advantages in obtaining customized solutions for this emerging business and to put products in the market with a very low carbon footprint. At the same time, new know-how linked to specific milling technologies has been developed in the last years placing Ferroglobe in an excellent position in this new market. Among the various targeted applications, a specific project has been launched for Li-ion batteries.
- **Li-ion batteries** — The energy capacity of the anode in Li-ion batteries can be enhanced by adding silicon. This is a particularly attractive market because silicon not only can increase capacity of the Li-ion batteries but can contribute to reduce costs, to reduce carbon footprint and to ease fast charging. All these benefits will help to develop new mobility solutions. In this specific field, Ferroglobe has established several technical partnerships and collaborations in order to rapidly advance the research and development work that a market like this needs.

New R&D works are being carried out by the Ferroglobe Innovation team to develop new products that could fit in the requirements of next generations of batteries.

Experienced management team in the metals and mining industry

We have a seasoned and experienced management team with extensive knowledge of the global metals and mining industry, operational and financial expertise and a track record of developing and managing large-scale operations. Our management team is committed to responding quickly and effectively to macroeconomic and industry developments, to identifying and delivering growth opportunities and to improving our performance by way of a continuous focus on operational cost control and a disciplined, value-based approach to capital allocation. Our management team is complemented by a skilled operating team with solid technical knowledge of production processes and strong relationships with key customers.

Environmental, Social and Governance (ESG) Strategy

Sustainability has been identified by management as a top priority. First and foremost, we recognize the criticality of company's to take an active role in leading and driving change for the betterment of society. Furthermore, given the growing focus on sustainability amongst our stakeholders we need to create more transparency around our performance and the action plan to drive the changes required to meet our goals. In 2022 we have issued the first ESG report for 2021 financial year as the commencement of our new approach to sustainability disclosure.

In 2021 we defined Ferroglobe's ESG Strategy 2022-2026, a roadmap that will enable us to benchmark and assess ourselves on ESG matters, in alignment with the demands of our stakeholders and our industry trends. The current ESG Strategy will be implemented in phases commencing 2022 through 2026. This ESG Strategy has been defined based on four Strategic lines, critical for the development of Ferroglobe as a more sustainable Company:

- (i) Strengthening our governance framework
- (ii) Promoting a solid & honest engagement with our people and local communities where we operate
- (iii) Reinforcing the role of sustainability through our value chain
- (iv) Improving our environmental footprint to enable materials which are vital for sustainable development.

The progress on ESG performance and implementation of the ESG Strategy lines and accompanying measures will be included in the ESG reports to be issued on a yearly basis.

Business Strategy

In 2020 we conducted a deep and broad evaluation of our Company with the goal of designing a strategic plan focused on bolstering the long term competitiveness of the business and returning the Company to profitability by fundamentally changing the way we operate, both operationally and financially. The multi-year turnaround plan we developed essentially impacts all the functional areas of our Company as we seek to drive changes that ensure competitiveness throughout the cycle. Between 2021 and 2024, the Company set a target of achieving \$180 million in cost savings, along with \$70 million of cash release in working capital. 2021 was the first year of the execution phase of this turnaround plan. We surpassed our 2021 targets releasing \$70 million of cash through the working capital workstream. The key value drivers of our strategic plan are the following:

- **Footprint optimization:** One of the Company's core advantages is our large and diverse production platform. While our asset footprint provides flexibility, at times we are restricted in our ability to quickly adapt to changing market conditions due to inherent constraints in curtailing capacity, particularly for shorter durations. Going forward, our goal is to ensure that the operating platform is more flexible and modular so shifts in production, based on needs and relative costs, are incorporated swiftly. Through this value creation driver we aim to shift our capacity footprint by optimizing production to the most competitive assets.
- **Continuous plant efficiency:** We will continue to build on the success of our existing key technical metrics (KTM) program, which consists of specific initiatives aimed at enhancing our process, minimizing waste, and improving the overall efficiency to drive down costs. The Company maintains a pipeline of initiatives developed through the sharing of best practices amongst our numerous sites and through new improvements identified by our research and development team. Under the strategic plan we have formalized the manner in which we execute such initiatives by creating operational and technical teams with the expertise critical for implementation. Furthermore, we are developing tools to track our key performance indicators in an ongoing effort to improve furnace level performance.
- **Commercial excellence:** we are focused on the design and delivery of commercial best practices that maximize profitable revenue, including programs aimed at consistently improve pricing, salesforce effectiveness, product mix, customer selection and focus. By organizing and analyzing client profitability we seek to optimize commercial opportunities. Our focus will be on portfolio and account management, ensuring we have the proper customer relationship management tools and clearly defined objectives for each of our customers. Front line management will require us to re-design our commercial coverage and operating model in-line with our product and customer priorities. On the pricing side, we seek to enhance communication and transparency amongst our internal teams to realize target margins on each sale.
- **Centralized purchasing:** we are reshaping the organization so that purchasing of many consumables can be done centrally and to support a procurement culture centered on buying better and spending better. This will enable us to improve its tracking of needs, enhance our ability to schedule purchases and enable us to benefit from bulk purchases. Buying better is a supply-led effort that focuses on price and volume allocation, negotiating prices and terms, managing price risks, pooling volumes and contracts, shifting volumes to best-price suppliers and leveraging procurement networks. Spending better is an operation-led effort to control demand, enforce compliance, reduce complexity, and perform value engineering to foster efficient spending. Through the principles of buying better and spending better, we aim to attain more than just cost reduction. Through the new organization, we seek to reduce supply chain risk, supporting continuous quality and service improvement, fostering better decision-making about suppliers and optimizing resource allocation.
- **Selling, general and administration & corporate overhead reduction:** during our corporate review, we identified significant opportunity for further cost improvement through permanent cost cutting at the our plants, as well as the corporate levels. By tracking these costs vigorously and increasing accountability, we aim to bolster the overall cost structure at various levels. Through this value creation driver, we aim to create a culture focused on cost control and disciplines for deploying best practices to drive sound spending decisions without compromising our overall performance.

- Working capital improvement: Improving net working capital performance requires cross-functional cooperation and alignment. By increasing the collaboration amongst the global team, and having oversight and controls at the corporate level, we aim to make a significant improvement in our overall cash conversion cycle on sustainable basis. This value creation area touches on inventory management of our raw materials and finished goods, as well as monitoring and improving terms with both our suppliers and customers, commensurate with market levels.

With our strategic plan we aim to:

Maintain and leverage industry leading position in core businesses and pursue long-term growth

We intend to maintain and leverage our position as a leading global producer of silicon metal and one of the leading global producers of ferroalloys based on production capacity. We believe we will achieve our goals through the execution of our current strategic plan, which focuses on right-sizing our asset footprint, making continuous improvements to increase productivity and reducing our cost structure. We plan to achieve organic growth by continually enhancing our production capabilities as well as by developing new products to further diversify our portfolio of products and expand our customer base. We intend to focus our production and sales efforts on high-margin products and end-markets that we consider to have the highest potential for profitability and growth. We will continue to capitalize on our global reach and the diversity of our production base to adapt to changes in market demands, shifting our production and distribution across facilities and between different products as necessary in order to remain competitive and maximize profitability. We aim to obtain further direct control of key raw materials to secure our long-term access to scarce reserves, which we believe will allow us to continue delivering enhanced products while maintaining our low-cost position. Additionally, we will continue regularly to review our customer contracts in an effort to improve their terms and to optimize the balance between selling under long-term agreements and retaining some exposure to spot markets. We intend to maintain pricing that appropriately reflects the value of our products and our level of customer service and, in light of commodity prices and demand fluctuations, may decide to change the weighting of our mix of contracts that are set at fixed prices versus index-based prices, to capitalize on market opportunities and to ensure a profit throughout the cycles.

Maintain low cost position while controlling inputs

We believe we have an efficient cost structure and, going forward, we will seek to further reduce costs and improve operational efficiency through a number of initiatives. We plan to focus on controlling the cost of our raw materials through our captive sources and long-term supply contracts and on lowering our fixed costs in order to reduce the unit costs of our silicon metal and ferroalloy production. We aim to improve our internal processes and further integrate our global footprint, such as benefits from value chain optimization, including enhancements in raw materials procurement and materials management; adoption of best practices and technical and operational know how across our platform; reduced freight costs from improved logistics as well as savings through the standardization of monitoring and reporting procedures, technology, systems and controls. We intend to enhance our production process through R&D and targeted capital expenditure and leverage our geographic footprint to shift production to the most cost effective and appropriate facilities and regions for such products. We will continue to regularly review our power supply contracts with a view to improving their terms and more competitive tariff structures. In addition, we will seek to maximize the value derived from the utilization and sale of by-products generated in our production processes and continue to focus on innovation to develop next generation products.

We believe we differentiate ourselves from our competitors on the basis of our technical expertise and innovation, which allow us to deliver new high-quality products to meet our customers' needs. We intend to keep using these capabilities in the future to retain existing customers and cultivate new business. We plan to leverage the expertise of our dedicated team of specialists to advance and to develop next generation products and technologies that fuel organic growth. In particular, we intend develop high value powders for high end applications, including silicon-based anodic materials for Li-ion batteries. We also aim to further develop our specialized foundry products, such as value-added inoculants and customized nodularizers, which are used in the production of iron to improve its tensile strength, ductility and impact properties, and to refine the homogeneity of the cast iron structure.

Maintain financial discipline to facilitate ongoing operations and support growth

We believe maintaining financial discipline will provide us with the ability to manage the volatility in our business resulting from changes in commodity prices and demand fluctuations. We intend to preserve a strong and conservative balance sheet, with sufficient liquidity and financial flexibility to facilitate all of our ongoing operations, to support organic and strategic growth and to finance prudent capital expenditure programs aimed at placing us in a better position to generate increased revenues and cash flows by delivering a more comprehensive product mix and optimized production in response to market circumstances. We plan to become even more efficient in our working capital management through various initiatives aimed at optimizing inventory levels and accounts receivable. We will also seek to repay indebtedness from free cash flow and retain low leverage for maximum free cash flow generation.

Pursue strategic opportunities

We have a proven track record of disciplined acquisitions of complementary businesses and successfully integrating them into existing operations while retaining a targeted approach through appropriate asset divestitures. Our past acquisitions have increased the vertical integration of our activities, allowing us to deliver an enhanced product offering on a cost-efficient basis. We regularly consider and evaluate strategic opportunities for our business and will continue to do so in the future with the objective of expanding our capabilities and leveraging our products and operations. In particular, we intend to pursue complementary acquisitions and other investments at appropriate valuations for the purpose of increasing our capacity, increasing our access to raw materials and other inputs, further refining existing products, broadening our product portfolio and entering new markets. We will consider such strategic opportunities in a disciplined fashion while maintaining a conservative leverage position and strong balance sheet.

We will also seek to evaluate our core business strategy on an ongoing basis and may divest certain non-core and lower margin businesses to improve our financial and operational results.

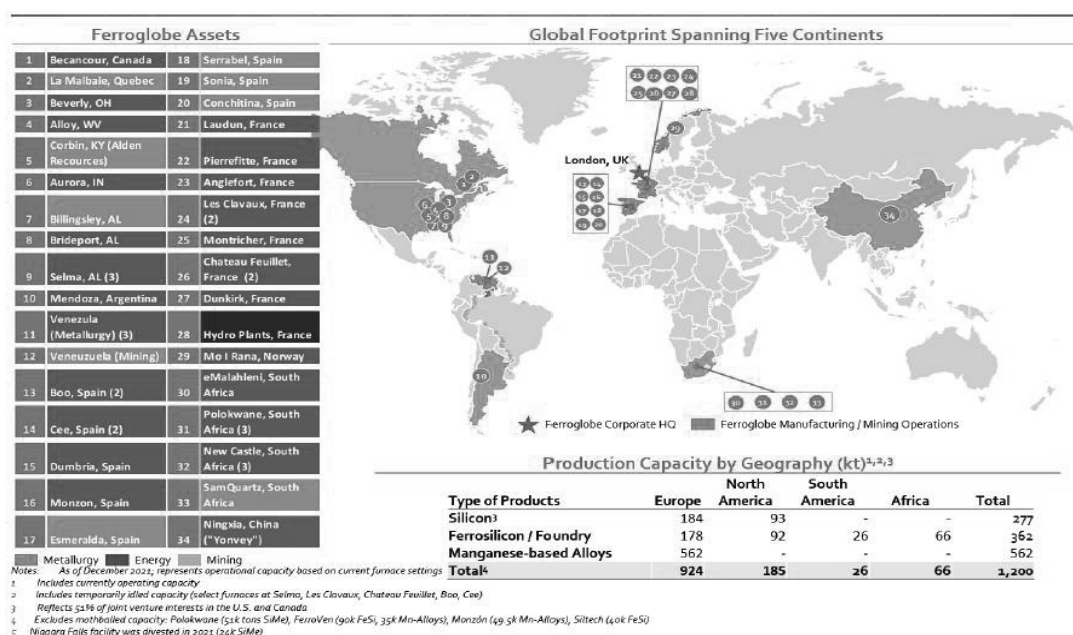
Facilities and Production Capacity

The following chart shows, as of December 31, 2021, the location of our assets and our production capacity, including 51% of the capacity of our joint ventures (of which we own 51%), by geography, of silicon, silicon-based alloys and manganese-based alloys. It is important to note that certain facilities may and do switch from time to time among different families of products (for instance, from silicon metal to silicon-based alloys and vice-versa) or among different products within the same family (for instance from ferromanganese to silicomanganese). Such switches change the production capacity at each plant.

Our production facilities are strategically located throughout the world. We operate quartz mines located in Spain, South Africa, Canada, and the United States, and charcoal production in South Africa. Additionally, we operate low-ash, metallurgical grade coal mines in the United States.

From time to time, in response to market conditions and to manage operating expenses, facilities are fully or partially idled. As of December 31, 2021, certain production facilities in the United States, Spain, Venezuela and South Africa are partially or fully idled, as a result of current market conditions. As part of our strategic plan, we have decided to shutter the capacity at Niagara Falls facility in the United States and at Château-Feuillet facility in France permanently. Ferroglobe has no installed power capacity in Spain as of December 31, 2021. Ferroglobe subsidiaries own a total of 18.9 megawatts of hydro production capacity in France.

Products



For the years ended December 31, 2021, 2020 and 2019, Ferroglobe's consolidated sales by product were as follows:

(\$ thousands)	Year ended December 31,		
	2021	2020	2019
Total Sales	1,778,908	1,144,434	1,615,222
Shipments in metric tons:			
Silicon metal	253,991	207,332	239,692
Manganese-based alloys	314,439	261,605	392,456
Ferrosilicon	166,268	134,849	203,761
Other silicon-based alloys	76,498	65,362	91,668
Average Selling price (\$/MT):			
Silicon metal	2.511	2.234	2,252
Manganese-based alloys	1.492	1.022	1,140
Ferrosilicon	2.032	1.308	1,351
Other silicon-based alloys	2.114	1.940	1,983

Silicon metal

Ferroglobe is a leading global silicon metal producer with a total production capacity of approximately 296,160 tons (including 51% of the joint venture capacity attributable to us) per annum in several facilities in the United States, France, South Africa, Canada and Spain. For the years ended December 31, 2021, 2020 and 2019, Ferroglobe's revenues generated by silicon metal sales accounted for 35.8%, 40.5% and 33.4% respectively, of Ferroglobe's total consolidated revenues.

Silicon metal is used by primary and secondary aluminum producers, who require silicon metal with certain requirements to produce aluminum alloys. For the year ended December 31, 2021, sales to aluminum producers represented approximately 45% of silicon metal revenues. The addition of silicon metal reduces shrinkage and the hot cracking tendencies of cast aluminum and improves the castability, hardness, corrosion resistance, tensile strength, wear resistance and weldability of the aluminum end products. Aluminum is used to manufacture a variety of automotive components, including engine pistons, housings, and cast aluminum wheels and trim, as well as high tension electrical wire, aircraft parts, beverage containers and other products which require aluminum properties.

Silicon metal is also used by several major silicone chemical producers. For the year ended December 31, 2021 sales to chemical producers represented approximately 43% of silicon metal revenues. Silicone chemicals are used in a broad range of applications, including personal care items, construction-related products, health care products and electronics. In construction and equipment applications, silicone chemicals promote adhesion, act as a sealer and have insulating properties. In personal care and health care products, silicone chemicals add a smooth texture, protect against ultraviolet rays and provide moisturizing and cleansing properties. Silicon metal is an essential component of the manufacture of silicone chemicals, accounting for approximately 20% of the cost of production.

In addition, silicon metal is the core material needed for the production of polysilicon, which is most widely used to manufacture solar cells and semiconductors. For the year ended December 31, 2021 sales to polysilicon producers represented approximately 10% of silicon metal revenues. Producers of polysilicon employ processes to further purify the silicon metal and grow ingots from which wafers are cut. These wafers are the base material to produce solar cells, to convert sunlight to electricity. Individual solar cells are soldered together to make solar modules.

Manganese-based alloys

Ferroglobe is among the leading global manganese-based alloys producers based on production capacity. As of December 31, 2021, Ferroglobe maintained approximately 289,500 tons of annual silicomanganese production capacity and approximately 272,000 tons of annual ferromanganese production capacity in our factories in Spain, Norway and France. During the year ended December 31, 2021, Ferroglobe sold 314,439 tons of manganese-based alloys. For the years ended December 31, 2021, 2020 and 2019, Ferroglobe's revenues generated by manganese-based alloys sales accounted for 26.3%, 23.4% and 27.7%, respectively, of Ferroglobe's total consolidated revenues over 90% of the global manganese based alloys produced are used in steel production, and all steelmakers use manganese and manganese alloys in their production processes.

Silicomanganese is used as deoxidizing agent in the steel manufacturing process. Silicomanganese is also produced in the form of refined silicomanganese, or silicomanganese AF, and super-refined silicomanganese, or silicomanganese LC.

Ferromanganese is used as a deoxidizing, desulphurizing and degassing agent in steel to remove nitrogen and other harmful elements that are present in steel in the initial smelting process, and to improve the mechanical properties, hardenability and resistance to abrasion of steel. The three types of ferromanganese that Ferroglobe produces are:

- high-carbon ferromanganese used to improve the hardenability of steel;
- medium-carbon ferromanganese, used to manufacture flat and other steel products; and
- low-carbon ferromanganese used in the production of stainless steel, steel with very low carbon levels, rolled steel plates and pipes for the oil industry.

Silicon-based alloys

Ferrosilicon

Ferroglobe is among the leading global ferrosilicon producers based on production output in recent years. During the year ended December 31, 2021, Ferroglobe sold 166,268 tons of ferrosilicon. For the years ended December 31, 2021, 2020 and 2019, Ferroglobe's revenues generated by ferrosilicon sales accounted for 19.0%, 15.4% and 17.0%, respectively, of Ferroglobe's total consolidated revenues.

Ferrosilicon is an alloy of iron and silicon (normally approximately 75% silicon). Ferrosilicon products are used to produce stainless steel, carbon steel, and various other steel alloys and to manufacture electrodes and, to a lesser extent, in the production of aluminum. Approximately 88% of ferrosilicon produced is used in steel production.

Ferrosilicon is generally used to remove oxygen from the steel and as alloying element to improve the quality and strength of iron and steel products. Silicon increases steel's strength and wear resistance, elasticity and scale resistance, and lowers the electrical conductivity and magnetostriction of steel.

Other silicon-based alloys

In addition to ferrosilicon, Ferroglobe produces various different silicon-based alloys, including calcium silicon and foundry products, which comprise inoculants and nodularizers. Ferroglobe produces more than 20 specialized varieties of foundry products, several of which are custom made for its customers. Demand for these specialty metals is increasing and, as such, they are becoming more important components of Ferroglobe's product offering.

During the year ended December 31, 2021, Ferroglobe sold 76,498 tons of silicon-based alloys (excluding ferrosilicon). For the years ended December 31, 2021, 2020 and 2019, Ferroglobe's revenues generated by silicon-based alloys (excluding ferrosilicon) accounted for 9.1%, 11.1% and 11.3% respectively, of Ferroglobe's total consolidated revenues.

The primary use for calcium silicon is the deoxidation and desulfurization of liquid steel. In addition, calcium silicon is used to control the shape, size and distribution of oxide and sulfide inclusions, improving fluidity, ductility, and the transverse mechanical and impact properties of the final product. Calcium silicon is also used in the production of coatings for cast iron pipes, in the welding process of powder metal and in pyrotechnics.

The foundry products that Ferroglobe manufactures include nodularizers and inoculants, which are used in the production of iron to improve its tensile strength, ductility and impact properties, and to refine the homogeneity of the cast iron structure.

Silica fume

For the years ended December 31, 2021, 2020 and 2019, Ferroglobe's revenues generated by silica fume sales accounted for 1.8%, 2.3% and 2.1% respectively, of Ferroglobe's total consolidated sales.

Silica fume is a by-product of the electrometallurgical process of silicon metal and ferrosilicon. This dust-like material, collected through Ferroglobe factories' air filtration systems, is mainly used in the production of high-performance concrete and mortar. The controlled addition of silica fume to these products results in increased durability, improving their impermeability from external agents, such as water. These types of concrete and mortar are used in large-scale projects such as bridges, viaducts, ports, skyscrapers and offshore platforms.

Services

Energy

The Company sold its Spanish hydroelectric business in 2019. For the year ended December 31, 2019, Ferroglobe recognized a loss as a result of the Spanish hydroelectric operations, in the amount of \$450 thousand.

Raw Materials, Logistics and Power Supply

The primary raw materials Ferroglobe uses to produce its electrometallurgy products are carbon reductants (primarily coal, but also charcoal, metallurgical and petroleum coke, anthracite and wood) and minerals (manganese ore and quartz). Other raw materials used to produce Ferroglobe's electrometallurgy products include electrodes (consisting of graphite and carbon electrodes and electrode paste), slags and limestone, as well as certain specialty additive metals. Ferroglobe procures coal, manganese ore, quartz, petroleum and metallurgical coke, electrodes and most additive metals centrally under the responsibility of the corporate purchasing department. Some locally sourced raw materials are purchased at a decentralized level (country specific purchasers) under close cooperation with the corporate purchasing department.

Manganese ore

The global supply of manganese ore comprises standard- to high-grade manganese ore, with 35% to 56% manganese content, and low-grade manganese ore, with lower manganese content. Manganese ore sea-borne trade comes mainly from a limited number of countries including South Africa, Australia, Gabon, Brazil and Ghana. However, the production of high-grade manganese ore is mainly concentrated in Australia, Gabon and South Africa.

The vast majority of the manganese ore Ferroglobe purchased in 2021 came from suppliers located in South Africa (48% of total purchases) and Gabon (43% of total purchases). Global manganese ore prices are mainly driven by manganese demand from China and to a lower extent from India. Potential disruption of supply from South Africa, Australia, Brazil or Gabon due to logistical, labor or other reasons may have an impact on the availability and the pricing of manganese ore.

Coal

Coal is the major carbon reductant in silicon and silicon alloys production. Only washed and screened coal with ash content below 10% and with specific physical properties are used for production of silicon alloys. Colombia and the United States are the best source for the required type of coal and the vast majority of the silicon alloys industry, including Ferroglobe, is dependent on supply from these two countries.

Approximately 62% of the coal Ferroglobe purchased externally in 2021 for its facilities was sourced from one source in Colombia while the remaining 38% came from the United States, other Colombian mines, as well as from Kazakhstan and South Africa. Ferroglobe has a long standing relationship with the coal washing plants which price coal using spot, quarterly, semi annual or annual contracts, based on market outlook. European coal prices, which are denominated in U.S. Dollars, are mainly based on API 2, the benchmark price reference for coal imported into northwest Europe.

Ferroglobe also owns Alden Resources LLC ("Alden") in the United States. Alden provides a stable and long term supply of low ash metallurgical grade coal by fulfilling a substantial portion of our requirements to our North American operations.

See "—Mining Operations" below for further information.

Quartz

Quartz, also known as quartzite, is a key raw material in the manufacture silicon metal and silicon-based alloys.

Ferroglobe has secured access to quartz from its quartz mines in Spain, South Africa, the United States and Canada (see "—Mining Operations"). For the year ended December 31, 2021 approximately 67,8% of Ferroglobe's total consumption of quartz was self-supplied. Ferroglobe purchases quartz from third-party suppliers on the basis of annual contractual arrangements. Ferroglobe's quartz suppliers typically have operations in the same countries where Ferroglobe factories are located, or in close proximity, which minimizes logistical costs.

Ferroglobe controls quartzite mining operations located in Alabama and a concession to mine quartzite in Saint-Urbain, Québec (operated by a third-party miner). These mines supply our North American operations with a substantial portion of their requirements for quartz.

Other raw materials

Wood is needed for the production of silicon metal and silicon-based alloys. It is used directly in furnaces as woodchips or cut to produce charcoal, which is the major source of carbon reductant for Ferroglobe's plants in South Africa. In South Africa, charcoal is a less expensive substitute for imported coal and provides desirable qualities to the silicon-based alloys it is used to produce. In the other countries where Ferroglobe operates, Ferroglobe purchases wood chips locally or logs for on site wood chipping operations from a variety of suppliers.

In 2021, the sourcing of the metallurgical coke was predominantly from Colombia, Russia and Spain, although some quantities were sourced in Poland, Colombia and United States of America.

Petroleum coke, electrode related products, slag, limestone and additive metals are other relevant raw materials Ferroglobe utilizes to manufacture its electrometallurgy products. Procurement of these raw materials is either managed centrally or with each country's raw materials procurement manager or plant manager and the materials purchased at spot prices or under contracts of a year or less.

In 2021, Graphite electrodes volumes increased as a result of higher production level. The sourcing of graphite electrodes is diversified with supply from European Countries, India, Russia, Ukraine and China with a combination of spot and long-term agreements. Carbon electrodes supplies come from Russia, Poland and China, including from Ferroglobe's own carbon electrode factory in Ningxia Province in China.

Cost of raw materials

The main raw materials sourced by Ferroglobe are quartz, manganese ore, coal, metallurgical coke, wood and charcoal. Manganese ore is the largest component of the cost base for manganese-based alloys. In 2021, more than 27% of Ferroglobe's total \$133.5 million expense with respect to manganese ore was supplied under an annual commitment, whilst the remaining was purchased on spot basis. Special coal is used as a major carbon reductant in silicon-based alloy production. In 2021, coal represented a \$137.4 million expense for Ferroglobe. Metallurgical coke, which is used for Mn alloys production, represented a total expense of \$47.5 million in 2021.

Wood is both an important element for the production of silicon alloys and used to produce charcoal, which is used as a carbon reductant at Ferroglobe's South African subsidiary Silicon Smelters (Pty.), Ltd. Ferroglobe's wood expense amounted to \$36.8 million in 2021.

The FerroAtlántica subsidiaries of Ferroglobe source approximately 62% of their quartz needs from FerroAtlántica's mines in Spain and South Africa, and Globe subsidiaries source approximately 75% of their quartz needs from Globe's mines in the United States and Canada. Total quartz consumption in 2021 represented an expense of \$87.8 million.

Logistics

Logistical operations are managed centrally. Sea freight operations are centralized at the corporate level, while rail logistics is centralized at country level. Road transportation is managed at plant level with centralized coordination in multi site countries. Contractual commitments in respect of transportation and logistics match, to the extent possible, Ferroglobe's contracts for raw materials and customer contracts.

Power

In Spain, our plants have always purchased energy in the pool, as there was no clear competitive advantage with long-term contracts, and in addition, energy producers require very high guarantees.

In 2021 we have therefore been 100% to the market, which has experienced extremely high volatility due to the fluctuations of natural gas in the European markets. The energy market within the European Union is marginalist, so the most expensive technology that is sold each hour in the pool is the one that sets the final price. Natural gas has experienced a progressive increase in price since April 2021, due to the low level of stocks in gas storages in Europe, and the reduction of supply from Russia, following the growing demand for Natural Gas from China. The risk of natural gas shortages due to a possible cold winter in Europe, caused in December 2021 an unprecedented increase in the price of gas reaching record prices in the market, which led to record prices in the Spanish electricity market of up to 400 €/Mwh. Spanish plants have tried to mitigate the rise in prices with a great modulation, even paralyzing their activity during peak hours.

From November 2021, the Spanish government will provide up to 80% of the guarantees required by power generators for the signing of long-term contracts. The growing renewable generation in the coming years in Spain, causes Spain to have one of the most competitive energy futures prices in Europe in the medium and long term, so Ferroglobe is negotiating with several suppliers to sign a PPA contract, to ensure a competitive price of energy in Spain for the coming years.

In 2021, the energy market price in France followed the increasing trend as in the rest of European countries, reaching an all-time high in December 2021. The difference with other European markets is that the French government has maintained the Arhen tariff in France, which allows energy consumers to have a fixed energy price linked to the nuclear tariff for 60% of their consumption. In the case of Ferroglobe, the rest of the energy was closed in 2021 with hedges at a price well below the pool price, which allowed us to have a very competitive final energy price in France and unlinked to the pool price.

In 2021, a high percentage of the energy consumption of our plant in Norway, is made through a long-term contract at a very competitive price, the rest of the consumption is made in the Nord pool, but the high renewable generation in Norway and especially in the area where our plant is located, makes the pool price the most competitive in Europe, and has not been affected by the rise in the price of gas.

In the United States, we attempt to enter into long term electric supply contracts that value our ability to interrupt load to achieve reasonable rates. Our power supply contracts have, in the past, resulted in stable price structures. In West Virginia, we have a contract with Brookfield Renewable Partners, LP to provide, on average, 45% of our power needs, from a dedicated hydro-electric facility, through December 2025 at a fixed rate. Our needs for non-hydroelectric power in West Virginia and Alabama are primarily sourced through special contracts that provide competitive rates. In Ohio, electricity is sourced at market-based rates.

In South Africa, energy prices are regulated by the NERSA and price increases are publicly announced in advance and applicable as from April each year. Silicon Smelters participate in demand reductions during peak hours that are compensated against the monthly power account. Production during winter periods is significantly reduced during peak hours in order to maintain control over production costs for the full year.

The level of power consumption of our submerged electric arc furnaces is highly dependent on which products are being produced and typically fall in the following ranges: (i) manganese based alloys require between 1.5 and 5.5 megawatt hours to produce one ton of product, (ii) silicon based alloys require between 7 and 8 megawatt hours to produce one ton of product and (iii) silicon metal requires approximately 12 megawatt hours to produce one ton of product. Accordingly, consistent access to low cost, reliable sources of electricity is essential to our business.

Mining Operations

Reserves

The Securities and Exchange Commission (“SEC”) amendments to its disclosure rules modernizing the mineral property disclosure requirements for mining registrants became effective on January 1, 2021. The amendments include the adoption of S-K 1300, which governs disclosure for mining registrants (the “SEC Mining Modernization Rules”). The SEC Mining Modernization Rules replaced the historical property disclosure requirements for mining registrants that were included in the SEC’s Industry Guide 7 and better align disclosure with international industry and regulatory practices.

A Mineral reserve is defined by S-K 1300 as an estimate of tonnage and grade or quality of indicated and measured mineral resources that, in the opinion of the qualified person, can be the basis of an economically viable project. More specifically, it is the economically mineable part of a measured or indicated mineral resource, which includes diluting materials and allowances for losses that may occur when the material is mined or extracted. A proven mineral reserve is the economically mineable part of a measured mineral resource and can only result from conversion of a measured mineral resource. A probable mineral reserve is the economically mineable part of an indicated and, in some cases, a measured mineral resource. Reserve estimates were made by independent third party consultants (qualified person), based primarily on dimensions revealed in outcrops, trenches, detailed sampling and drilling studies performed. For a probable mineral reserve, the qualified person's confidence in the results obtained from the application of the modifying factors and in the estimates of tonnage and grade or quality is lower than what is sufficient for a classification as a proven mineral reserve, but is still sufficient to demonstrate that, at the time of reporting, extraction of the mineral reserve is economically viable under reasonable investment and market assumptions. For a proven mineral reserve, the qualified person has a high degree of confidence in the results obtained from the application of the modifying factors and in the estimates of tonnage and grade or quality. These estimates are reviewed and reassessed from time to time. Reserve estimates are based on various assumptions, and any material changes in these assumptions could have a material impact on the accuracy of Ferroglobe's reserve estimates.

The following table sets forth summary information on Ferroglobe's mines as of December 31, 2021.

Mine	Location	Mineral	Annual capacity kt	Production in 2021 kt	Production in 2020 kt	Production in 2019 kt	Mining Recovery
Sonia	Spain (Mañón)	Quartz	150	125	89	108	0,4
Esmeralda	Spain (Val do Dubra)	Quartz	50	25	19	27	0,4
Serrabal.	Spain (Vedra & Boqueixón)	Quartz	330	300	184	219	0,2
SamQuarz	South Africa (Delmas)	Quartzite	1,000	601	586	787	0,7
Mahale	South Africa (Limpopo)	Quartz	80	24	25	88	0,5
Roodepoort	South Africa (Limpopo)	Quartz	50	—	—	7	0,5
Fort Klipdam	South Africa (Limpopo)	Quartz	50	30	34	362	0,6
AS&G Meadows Pit	United States (Alabama)	Quartzite	300	242	257	257	0,4
			2,010	1,346	1,194	1,855	
Mosely Gap	United States (Kentucky)	Coal (active)	400	—	—	—	0,7
Davis Creek	United States (Kentucky)	Coal (active)	240	3	3	—	0,7
Log Cabin No. 5	United States (Kentucky)	Coal (active)	168	156	156	—	0,6
Brick Plant	United States (Kentucky)	Coal (inactive)	200	—	—	—	0,7
Kimberly	United States (Kentucky)	Coal (inactive)	100	—	—	—	0,6
Bennett's Branch	United States (Kentucky)	Coal (inactive)	100	—	—	—	0,7
Bain Branch No. 3	United States (Kentucky)	Coal (inactive)	60	—	—	—	0,5
Harpes Creek 4A	United States (Kentucky)	Coal (inactive)	100	—	—	—	0,6
			1,368	159	159	—	

Mine	Proven reserves Mt(1)	Probable reserves Mt(1)	Mining Method	Reserve grade	Btus per lb.	Life(2)	Expiry date(3)
Sonia	1.71	0.8	Open-pit	Metallurgical	N/A	18	2069
Esmeralda	0.05	0.13	Open-pit	Metallurgical	N/A	7	2029
Serrabal.	3.37	1.6	Open-pit	Metallurgical	N/A	18	2038
SamQuarz	7.03	19.5	Open-pit	Metallurgical & Glass	N/A	37	2039
Mahale	—	3.0	Open-pit	Metallurgical	N/A	30	2035
Roodepoort	—	0.02	Open-pit	Metallurgical	N/A	1	2028
Fort Klipdam	—	1.0	Open-pit	Metallurgical	N/A	2	2021 (4)
AS&G Meadows Pit	3.20	—	Surface	Metallurgical	N/A	10	2027
	15.36	26.05					
Mosely Gap	1.5	—	Surface	Metallurgical	14,000	4	2025
Davis Creek	0.5	—	Surface	Metallurgical	14,000	3	2023
Log Cabin No. 5	0.6	—	Underground	Metallurgical	14,000	3	2023
Brick Plant	0.4	—	Surface	Metallurgical	14,000	2	2023
Kimberly	0.5	—	Surface	Metallurgical	14,000	5	2026
Bennett's Branch	1.7	—	Underground	Metallurgical	14,000	15	2036
Bain Branch No. 3	3.6	2.9	Underground	Metallurgical	14,000	25	2042
Harpes Creek 4A	1.2	1.3	Underground	Metallurgical	14,000	12	2029
	10.00	4.20					

(1) The estimated recoverable proven and probable reserves represent the tons of product that can be used internally or sold to metallurgical or glass grade customers. The mining recovery is based on historical yields at each particular site. We estimate our permitted mining life based on the number of years we can sustain average production rates under current circumstances.

(2) Current estimated mine life in years.

(3) Expiry date of Ferroglobe's mining concession.

(4) The expiry date relates to last approved mining permit relating to an area within Fort Klipdam farm. The application for a new Mining Right has not yet been approved and the last mining permit has been submitted for a 1-year renewal period until end 2022.

Ferroglobe considers its Conchitina and Conchitina Segunda mines as a single mining project legally supported by the formation of Coto Minero, formally approved by the Mining Authority in March 2018. In addition, Ferroglobe currently holds all necessary permits to start production at its Conchitina mines. Although Ferroglobe has not received formal approval from the Spanish Mining Authority over its 2022 Annual Mining Plan, we are not legally prevented from commencing mining operations in the area based on the fully-authorized 2021 Annual Mining Plan.

Reserves for the Conchitina mine are, accordingly, considered to be probable reserves, and the following table sets forth summary information on the Conchitina and Conchitina Segunda mines:

Mine	Location	Mineralization	Mining Recovery	Recoverable Reserves		Reserve Grade	Mining Method
				Proven MT ⁽¹⁾	Probable MT ⁽¹⁾		
Conchitina and Conchitina Segunda	Spain (O Vicedo)	Quartz	0.35	—	0.97	Metallurgical	Open-pit

(1) Estimates of recoverable probable reserves represent the tons of product that can be used internally or which are of metallurgical grade and can be delivered to Ferroglobe's customers.

Ferroglobe has additional mining rights in Spain (Cristina and Merlán), but none of these mines are currently producing or undergoing mine development activities as the Spanish Mining Authority started cancelling mining rights for Merlán and Cristina in September 2015 and December 2017, respectively. The Spanish Mining Authority finished the cancellation process for our mining rights for Trasmonte. Ferroglobe does not consider certain Venezuelan mines to be mining assets (La Candelaria, El Manteco and El Merey) as the minerals are fully-depleted and because it will be difficult to obtain new mining rights at these locations given the current economic and political environment in Venezuela.

Spanish mining concessions

Conchitina

The Conchitina mining concession previously belonged to Cuarzos Industriales S.A.U., which acquired the mining concession in 1979. Ferroglobe acquired this company, along with Conchitina mining concession, in 1996 from the Portuguese cement manufacturer Cimpor. The Conchitina Segunda mining concession was granted to Cuarzos Industriales S.A.U. in 1997 for a 30-year term after proper mining research had been conducted and the mining potential of the area had been demonstrated. The Conchitina concession expired in 2009 and Cuarzos Industriales S.A.U. applied for its renewal, also requesting the competent authority to consolidate the concession with that of Conchitina Segunda. The legal support for the consolidation request was that both mining rights apply over a unique quartz deposit. Approval was formally granted by the authority in March 2018. Cuarzos Industriales S.A.U. is the owner of the properties currently mined at Conchitina. The surface area covered by Conchitina concessions is 497 hectares.

Sonia

The Sonia mining concession previously belonged to Cuarzos Industriales S.A.U., which acquired the mining concession in 1979. Ferroglobe acquired Cuarzos Industriales S.A.U., which is the owner of the properties currently mined at Sonia, along with the Sonia mining concession, in 1996 from the Portuguese cement manufacturer Cimpor. The surface area covered by the Sonia mining concession is 387 hectares. The concession is due to expire in 2069.

Esmeralda

The original Esmeralda mining concession was granted in 1999 to Cuarzos Industriales, S.A.U., the owner of the properties currently mined at Esmeralda, after proper mining research had been conducted and the mining potential of the area had been demonstrated to the relevant public authority. The surface area covered by the Esmeralda mining concession is 84 hectares. The concession is due to expire in 2029.

Serrabal

The Serrabal mining concession was originally granted in 1978 to Rocas, Arcillas y Minerales S.A. Ferroglobe acquired control of this company, which is the owner of the properties currently mined at Serrabal, along with the Serrabal mining concession, in 2000. Rocas, Arcillas y Minerales, S.A. has applied for the renewal of the concession. Pursuant to an interim measure approved by the applicable mining authority, Rocas Arcillas y Minerales S.A. is permitted to continue mining operations in Serrabal indefinitely until a final decision on the renewal of the concession has been made. If the renewal is granted, the concession will expire in 2038. The surface area covered by Serrabal mining concession is 861 hectares.

Cabanetas

The mining right granting process and tax regulations applicable to the Cabanetas limestone quarry slightly differ from those applicable to other Ferroglobe mines in Spain because Cabanetas is classified as a quarry, rather than a mine. Ferroglobe is currently operating the Cabanetas quarry pursuant to a permit resolution, which authorized the extension of the original mining concession, issued in 2013 by the competent mining authority. The extension is for a period of 30 years and, consequently, the concession will expire in 2043. Limestone extracted from the Cabanetas quarry was intended to be used by the FerroAtlántica del Cinca S.L. Monzón electrometallurgy plant. However, because new metallurgical techniques require low consumption of this product, most of the Cabanetas limestone is generally sold to the civil engineering and construction industries. The production level of the Cabanetas quarry has fallen considerably in recent years, mainly due to difficulties in the local construction industry.

The land on which the mining property is located is owned by Mancomunidad de Propietarios de Fincas Las Sierras and the plot containing the mining property is leased to FerroAtlántica del Cinca S.L. pursuant to a lease agreement entered into in 1950, which was subsequently restated in 2000 and due to expire in 2020. The lease agreement has been extended to 2050. To retain the lease, FerroAtlántica del Cinca S.L. pays the landlord an annual fee currently equal to €0.15 per ton of limestone quarried out of the mine. The quarry covers a surface area of approximately 180 hectares. The area affected by the planned exploitation during the current extension of the concession area is 6.9 hectares.

For further information regarding Spanish regulations applicable to mining concessions, as well as environmental and other regulations, see “—Laws and regulations applicable to Ferroglobe’s mining operations —Spain.

South African mining rights

Thaba Chueu Mining Delmas Operation

The SamQuarz mining rights were transferred from the original owners, Glass South Africa Holdings (Pty) Ltd and Samancor Limited, to SamQuarz (Pty) Ltd. (“SamQuarz”) in 1997. In 2009, the Minister of Mineral Resources converted the then existing SamQuarz mining rights into new order mining rights due to expire after 30 years in 2039. In 2012, FerroAtlántica acquired control of SamQuarz along with the mining rights. At the end of 2014, SamQuarz mining rights were transferred from SamQuarz to its sole shareholder, Thaba Chueu Mining (Pty) Ltd (“TCM”). During 2017, ownership of the properties currently mined in Delmas were transferred from SamQuarz to TCM. The total surface area covered by SamQuarz mine is 118.1 hectares. The mine supplies some rock to Ferroglobe South African smelters, but mainly Flint Sand to the total South African Glass Manufacturing Industry and other Metallurgical operations locally.

Mahale

Mahale is state-owned land, lawfully occupied by the Mahale community. Thaba Chueue Mining currently leases the land pursuant to an agreement with the Majeje Traditional Authority and runs mining operations on the area with mining rights owned by Thaba Chueue Mining and licensed to it. The latest mining right license was granted by the Department of Mineral Resources in December 2014 and registered at the mining titles deeds office in early 2016. The license is for a 20-year period and will expire in 2035. The total surface area covered by Mahale mine is 329.7 hectares. The lease agreement between Thaba Chueue Mining and the Majeje Traditional Authority will be in force for the entire duration of the mining right or as long as it is economically viable for the lessee to mine. Under the lease agreement, a monthly rent of ZAR 10 per Ton is paid to the lessor in the form of a Royalty. Mining volumes has reduced significantly at the Mahale mine through the stoppage of the Polokwane smelter in July 2019, but activities are continuing at minimum viable production volumes to supply the eMalahleni smelter with low alkaline quartz.

Roodepoort

The Roodepoort mining right is held by Ferroglobe's subsidiary, Silicon Smelters (Pty.), Ltd. ("Silicon Smelters"), and will expire in 2028. In 2009, Silicon Smelters applied for a conversion of the mining right into a new mining right under the South African Mineral and Petroleum Resources Development Act (the "MPRDA"), which came into force in 2004. The new mining right has been granted and is valid for the continuation of our mining activities at the Roodepoort mine until. Silicon Smelters is currently in the process of transferring this mining right to its mining subsidiary, Thaba Chueue Mining, in order that all licenses and permits in South Africa are held under this entity.

The total surface area covered by Roodepoort mine is 17.6 hectares. The mining area covers the cobble and block areas. The land in which Roodepoort mine is located is owned by Alpha Sand, which also conducts all mining operations as a contractor for Silicon Smelters. An agreement is in place whereby Alpha Sand operates the mine and Silicon Smelters purchases the quartz mined from Alpha Sand based on the quartz requirements of Silicon Smelters and at prices that are reviewed annually on the basis of increases in production costs and diesel fuel. The agreement with Alpha Sand will terminate at the expiry of the mining right or when it is no longer economically viable to mine quartz in the area. Mining activities were suspended in July 2019 when a decision was taken to stop production at the Polokwane smelter and agreement was reached with the authorities to suspend activities legally until such time when the silicon metal market recovers significantly in order to allow the restart of the Polokwane smelter. In the event that the smelter is not restarted in the near future, full rehabilitation operations must be engaged and approved by the DMRE.

Fort Klipdam

The land on which Fort Klipdam is located is owned by Silicon Smelters. The mining rights application filed by Silicon Smelters was rejected. Mining operations have been limited to mining permits that were approved for quartz mining, which includes block mine areas. As substantial block reserves have been established, a new application was launched in 2021 for a mining right and the current mining permit was extended to December 2022.

For further information regarding South African regulations applicable to mining concessions, as well as environmental and other regulations, see "—Laws and regulations applicable to Ferroglobe's mining operations—South Africa."

French mining rights

Soleyron

FerroPem, SAS, a subsidiary of Ferroglobe, owns 7.5 hectares of the overall Soleyron mine area. The Saint-Hippolyte de Montaigu Municipality owns the remaining 12.9 hectares. In February 2015, FerroPem, SA, entered into a lease and royalty agreement with the municipality, which is valid for five years. The effective date of the agreement and the relevant term coincide with the effective date and term of the prefectural authorization renewal, which was granted to FerroPem, SAS in March 2015. With the end of the reachable reserves, operation at the mine was terminated on December 2016 and no extension of the permit was requested. The lease and royalty agreement with the municipality was terminated on December 2016. Rehabilitation of the site is expected to be performed in 2022.

United States and Canadian mining rights

Coal

As of December 31, 2021, we had three active coal mines (two surface mines and one underground mine) located in Knox, Whitley and Bell County, Kentucky. We also had five inactive permitted coal mines available for extraction located in Kentucky and Alabama. All of our coal mines are leased and the remaining term of the leases range from 2 to 40 years. The majority of the coal production is consumed by the Company's facilities in the production of silicon metal and silicon-based alloys. As of December 31, 2021, we estimate our proven and probable reserves to be approximately 14,200,000 tons with an average permitted life of approximately 35 years at present operating levels. Present operating levels are determined based on a three-year annual average production rate. Reserve estimates were made by our geologists, engineers and third parties based primarily on drilling studies performed. These estimates are reviewed and reassessed from time to time. Reserve estimates are based on various assumptions, and any material changes in these assumptions could have a material impact on the accuracy of our reserve estimates.

We currently have two coal processing facilities in Kentucky, one of which is inactive. The active facility processes approximately 500,000 tons of coal annually, with a capacity of 2,500,000 tons. The average coal processing recovery rate is approximately 65%.

Quartzite

We have an open-pit quartz mining operation in Lowndesboro, Alabama. It has wash-plant facilities. We also have a concession to mine quartzite in Saint-Urbain, Québec (operated by a third party miner). These mines supply our North American operations with a substantial portion of their requirements for quartzite.

Laws and regulations applicable to Ferroglobe's mining operations

Spain

In Spain, mining concessions have an average term of 30 years and are extendable for additional 30-year terms, up to a maximum of 90 years. In order to extend the concession term, the concessionaire must file an application with the competent public authority. The application, which must be filed three years prior to the expiration of the concession term, must be accompanied by a detailed report demonstrating the continuity of mineral deposits and the technical ability to extract such deposits, as well as reserve estimates, an overall mining plan for the term of the concession and a detailed description of extraction and treatment techniques. The renewal process is straightforward for a mining company that has been mining the concession regularly. The main impediments to renewal are a lack of mining activity and legal conflicts. Every year in January, in order to maintain the validity of the mining concession, an annual mining plan must be submitted to the competent public authority. This document must detail the work to be developed during the year.

Regarding the environmental requirements applicable to Ferroglobe's mining operations in Spain, each of Serrabal, Esmeralda, Conchitina and Conchitina Segunda is subject to an "environmental impact statement" (or "EIS"), issued by the relevant environmental authority and specifically tailored to the environmental features of the relevant mine. The EIS requires compliance with high environmental standards and is based on the environmental impact study performed by the mining concession applicant in connection with each mining project. It is the result of a consultation process involving several public administrations, including cultural, archaeology, landscape, urbanistic, health, agriculture, water and industrial administrations. The EIS sets forth all conditions to be fulfilled by the applicant, including in connection with the protection of air, water, soil, flora and fauna, landscape, cultural heritage, restoration and the interaction of such elements. The EIS covers mining activities, auxiliary facilities and heaps carried out in a determined perimeter of each mine and includes a program of surveillance and environmental monitoring. The relevant authority regularly verifies compliance with it.

Sonia is subject to a "restoration plan" which provides for less stringent environmental requirements than an EIS and is mainly aimed at ensuring that the new areas generated as a result of the mining activity are properly restored in an environmentally friendly manner. The restoration plan is submitted by the mining concession applicant for the approval of the relevant authority together with the mining project for the area. Information about the exploitation project, including area of operation, annual production, method and operating system, and designed top and bottom level of the pit is included in the restoration plan.

All mines, with the exception of Cabanetas, also need to obtain from the relevant public administration an authorization for the discharge of the water used at the mine. This authorization is subject to certain conditions, including analyzing the water before any such discharge is made. In addition, when presenting to the competent mining authorities its annual mining plans, Ferroglobe must include an environmental report describing all environmental actions carried out during the year. Authorities are able to oversee such actions upon their annual inspections. Because Cabanetas is classified as a quarry and not as a mine, environmental requirements are generally less stringent and an environmental report is not required. The environmental license for Cabanetas is included in the mining permit and is formalized in the annual work plan and the annual restoration plan approved by the mining authority.

The main recurring payment obligation in connection with Ferroglobe's mines in Spain relates to a tax payable annually, calculated on the basis of the budget included in the relevant annual mining plan provided to the authority. In addition, with the exception of Cabanetas, a small surface tax is paid annually to the administration on the basis of the mine property extension. A levy also applies to water consumption at each mine property, which is paid at irregular intervals whenever the relevant public administration requires it.

South Africa

In South Africa, mining rights are valid for a maximum of 30 years and may be renewed for further periods of up to 30 years per renewal. Prior to granting and renewing a mining right, the competent authority must be satisfied with the technical and financial capacity of the intended mining operator and the mining work program according to which the operator intends to mine. In addition, a species rescue, relocation and re-introduction plan must be developed and implemented by a qualified person prior to the commencement of excavation, a detailed vegetation and habitat and rehabilitation plan must be developed by a qualified person and a permit must be obtained from the South African Heritage Resource Agency prior to the commencement of excavations. The mining right holder must also compile a labor and social plan for its mining operations and comply with certain additional regulatory requirements relating to, among other things, human resource development, employment equity, housing and living conditions and health and safety of employees, and the usage of water, which must be licensed.

It is a condition of the mining right that the holder disposes of all minerals and products derived from exploitation of the mineral at competitive market prices, which means, in all cases, non-discriminatory prices or non-export parity prices. If the minerals are sold to any entity which is an affiliate or non-affiliate agent or subsidiary of the mining right holder, or is directly or indirectly controlled by the holder, such purchaser must unconditionally undertake in writing to dispose of the minerals and any products from the minerals and any products produced from the minerals, at competitive market prices. The mining right, a shareholding, an equity, an interest or participation in the right or joint venture, or a controlling interest in a company, close corporation or joint venture, may not be encumbered, ceded, transferred, mortgaged, let, sublet, assigned, alienated or otherwise disposed of without the written consent of the Minister of Mineral Resources, except in the case of a change of controlling interest in listed companies.

Environmental requirements applicable to mining operations in South Africa are mostly set out in the MPRDA. Pursuant to the MPRDA, in order to obtain reconnaissance permissions as well as actual mining rights, applicants must have in place an approved environmental management plan, pursuant to which, among other things, all boreholes, excavations and openings sunk or made during the duration of the mining right must be sealed, closed, fenced and made safe by the mining operator. Further environmental requirements apply in connection with health and safety matters, waste management and water usage. The MPRDA further requires mining right applicants to conduct an environmental impact assessment on the area of interest and submit an environmental management program setting forth, among other things, baseline information concerning the affected environment to determine protection, remedial measures and environmental management objectives, and describing the manner in which the applicant intends to modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation, contain or remedy the cause of pollution or degradation and migration of pollutants and comply with any prescribed waste standard or management standards or practices. In addition, applicants must provide sufficient insurance, bank guarantees, trust funds or cash to ensure the availability of sufficient funds to undertake the agreed work programs and for the rehabilitation, management and remediation of any negative environmental impact on the interested areas. Holders of a mining right must conduct continuous monitoring of the environmental management plan, conduct performance assessments of the plan and compile and submit a performance assessment report to the competent authority, the frequency of which must be as approved in the environmental management program, or every two years or as otherwise agreed by the authority in writing. Mine closure costs are evaluated and reported on an annual basis, but are typically only incurred at mine closure.

The mining right holder must also be in compliance with an important governmental regulation called Black Economic Empowerment (“BEE”), a program launched by the South African government to redress certain racial inequalities. In order for a mining right to be granted, a mining company must agree on certain BEE-related conditions with the Department of Mineral and Petroleum Resources. Such conditions relate to, among other things, the company’s ownership and employment equity and require the submission of a social and labor plan. Failure to comply with any of these BEE conditions may have an impact on, among other things, the ability of the mining company to retain the mining right or obtain its renewal upon expiry. In addition, companies subject to BEE must conduct, on an annual basis, a BEE rating audit on several aspects of the business, including black ownership, management control, employment equity, skills development, preferential procurement, enterprise development and socio-economic development. Poor performance on the BEE rating audit may have a negative impact on the company’s ability to do business with other companies, to the extent that a company’s low rating is likely to reduce the rating of its business partners.

Mining rights are subject to payments of royalties to the tax authority, the South African Revenue Services. Such payments are generally made by June 30 and December 31 each year and upon the approval of the concessionaire’s annual financial statements.

France

In France, mining rights are subject to a prefectural authorization. The authorization provides details of all requirements, including environmental requirements, which the mining operator and its subcontractors must comply with to operate the mine. Such requirements mainly concern archaeology, water protection, air pollution, control of noise, visual impact and safety matters. The authorization also contains the requirements relating to the remediation of the land after the end of the mining operations, including the provision of adequate financial guarantees by the mining operator. Mines are regularly inspected by the administration and local environmental commissions, comprising representatives of the relevant municipality, administration, several associations and the mining operator, which must meet at least once a year.

United States

The Coal Mine Health and Safety Act of 1969 and the Federal Mine Safety and Health Act of 1977 impose stringent safety and health standards on all aspects of mining operations. Also, the state of Kentucky, in which we operate underground and surface coal mines, has state mine safety and health regulations. The Mine Safety and Health Administration (the “MSHA”) inspects mine sites and enforces safety regulations and the Company must comply with ongoing regulatory reporting to the MSHA. Numerous governmental permits, licenses or approvals are required for mining operations. In order to obtain mining permits and approvals from state regulatory authorities, we must submit a reclamation plan for restoring, upon the completion of mining operations, the mined property to its prior or better condition, productive use or other permitted condition. We are also required to establish performance bonds, consistent with state requirements, to secure our financial obligations for reclamation, including removal of mining structures and ponds, backfilling and regrading and revegetation.

Customers and Markets

The following table details the breakdown of Ferroglobe's revenues by geographic end market for the years ended December 31, 2021, 2020 and 2019.

(\$ thousands)	Year ended December 31,		
	2021	2020	2019
United States of America	515,095	404,633	533,764
Europe			
Spain	251,528	133,370	183,969
Germany	292,774	191,107	249,911
France	130,811	79,491	109,513
Italy	76,721	42,067	99,796
Other EU Countries	176,046	88,443	220,475
Total revenues in Europe	927,880	534,478	863,664
Rest of the World	335,933	205,323	217,794
Total	1,778,908	1,144,434	1,615,222

Customer base

We have a diversified customer base across our key product categories. We have built long-lasting relationships with our customers based on the breadth and quality of our product offerings and our ability to frequently offer lower-cost and more reliable supply options than our competitors who do not have production facilities located near the customers' facilities or production capabilities to meet specific customer requirements. We sell our products to customers in over 30 countries across six continents, though our largest customer concentration is in the United States and Europe. The average length of our relationships with our top 30 customers exceeds ten years and, in some cases, such relationships go back as far as 30 years.

For the year ended December 31, 2021, Ferroglobe's ten largest customers accounted for approximately 48.1% of Ferroglobe's consolidated sales. During 2021, sales corresponding to Dow Silicones Corporation represented 12.2% of the Company's sales. During the year ended December 31, 2020, Ferroglobe's ten largest customers accounted for approximately 50.7% of Ferroglobe's consolidated sales. During 2020, sales corresponding to Dow Silicones Corporation represented 13.2% of the Company's sales.

For the year ended December 31, 2021, approximately 59% of our metallurgical segment sales were to customers in Europe, approximately 28% were to customers in the United States and approximately 13% were to the rest of the world.

Customer contracts

Our contracting strategy seeks to lock in significant revenue while remaining flexible to benefit from any price increases. Our silicon metal, manganese-based ferroalloys and silicon-based ferroalloys are typically sold under annual and quarterly contracts. Historically, we have targeted to contract approximately 50-65% of our silicon metal, manganese-based ferroalloys production and silicon-based ferroalloy production in the fourth quarter for the following calendar year. Typically, approximately 40% of contracted production have fixed prices whereas the other 60% are indexed to benchmarks.

The remaining balance of our silicon metal, manganese-based ferroalloys and our silicon based ferroalloy production are sold under quarterly contracts or on a spot basis. By selling on a spot basis, we are able to take advantage of premiums for prompt delivery. We believe that our diversified contract portfolio allows us to lock in a significant amount of revenues while also allowing us to remain flexible and benefit from unexpected price and demand upticks. Given current spot price and current market dynamics, we are looking to enter into contracts for 2022 with shorter terms in order to benefit from expected price increases.

Sales and Marketing Activities

Ferroglobe generally sells the majority of its silicon products under annual or longer term contracts for silicone producers, and mainly between one month to six months for aluminum producing customers. All contracts generally include a volume framework and price formula based on the spot market price and other elements, including production costs and premiums. Ferroglobe also makes spot sales to customers with whom it does not have a contract as well as through quarterly agreements at prices that generally reflect market spot prices. In addition, Ferroglobe sells certain high quality products at prices that are not directly correlated with the market prices for the metals or alloys from which they are composed.

With the exception of the manganese-based business, the vast majority of Ferroglobe's products are sold directly by its own sales force located in Spain, France, the United States and Germany, as well as in all of the countries in which Ferroglobe operates. For the manganese-based business, Glencore and Ferroglobe operates under exclusive agency agreements for the marketing of Ferroglobe's manganese alloys products worldwide, and for the procurement of manganese ores to supply Ferroglobe's plants.

Competition

The most significant competitive factor in the silicon metal, manganese and silicon based alloys and specialty metals markets is price. Other factors include consistency of the chemical and physical specifications over time and reliability of supply.

The silicon metal, manganese- and silicon-based alloys and specialty metals markets are highly competitive, global markets, in which suppliers are able to reach customers across different geographies, and in which local presence is generally a minor advantage. In the silicon metal market, Ferroglobe's primary competitors include Chinese producers, which have production capacity that exceeds total global demand. Aside from Chinese producers, Ferroglobe's competitors include Elkem, a Norwegian manufacturer of silicon metal, ferrosilicon, foundry products, silica fumes, carbon products and energy, Dow Chemical, an American company specializing, inter alia, in silicone and silicon-based technology, Rusal, a Russian company that is a leading global aluminum and silicon metal producer, Rima, a Brazilian silicon metal and ferrosilicon producer, Liasa and Minas Ligas, Brazilian producers of silicon, Wacker, a German chemical business which manufactures silicon, Simcoa Operations, an Australian company specializing in the production of silicon as well as several other smaller companies in Bosnia Herzegovina, Iceland, Germany, Malaysia, and Thailand.

In the manganese and silicon alloys market, Ferroglobe's competitors include Privat Group, a Ukrainian company with operations in Australia, Ghana and Ukraine, Eramet, a French mining and metallurgical group, CHEMK Industrial Group, a Russian conglomerate which is one of the largest silicon-based alloy producers in the world, South 32 (formerly BHP Billiton), a global mining company with operations in Australia and South Africa and Vale, a mining and metals group based in Brazil, Asia Minerals and OM Holdings in Malaysia and Elkem in Norway.

In the silica fumes market, Ferroglobe's main competitor is Elkem.

Ferroglobe strives to be a highly efficient, low cost producer, offering competitive pricing and engaging in manufacturing processes that capture most of its production by-products for reuse or resale. Additionally, through the vertical integration of its quartz mines in Spain, the United States, Canada and South Africa and its metallurgical coal mines in the United States, Ferroglobe has ensured access to some of the high quality raw materials that are essential in silicon metal, manganese- and silicon-based alloys and specialty metals production processes and has been able to gain a competitive advantage over some of its competitors because it has reduced the contribution of these raw materials to its cost base

Research and Development (R&D)

Ferroglobe focuses on continually developing its technology in an effort to improve its products and production processes. Ferroglobe also has cooperation agreements in place with various universities and research institutes in Spain, France and other countries around the world. Set forth below is a description of Ferroglobe's significant ongoing research and development projects.

ELSA electrode

Ferroglobe has internally developed a patented technology for electrodes used in silicon metal furnaces, which it has been able to sell to several major silicon producers globally. This technology, known as the ELSA electrode, improves the energy efficiency in the production process of silicon metal and eliminates contamination with iron. Ferroglobe has granted these producers the right to use the ELSA electrode against payment to Ferroglobe of royalties. Continuous improvements are made in an effort to keep this invention state of the art.

Solar grade silicon

Ferroglobe has sought to produce solar grade silicon metal with a purity above 99.9999% through a new, potentially cost-effective, electrometallurgical process. The traditional chemical process tends to be costly and involves high energy consumption and potentially environmentally hazardous processes. The new technology, entirely developed by Ferroglobe at an earlier stage at its research and development facilities aims to reduce the costs and energy consumption associated with the production of solar grade silicon.

In 2016, FerroAtlántica entered into a project with Aurinka Photovoltaic Group, S.L. (“Aurinka”) for a feasibility study and basic engineering for an upgraded metallurgical grade (“UMG”) solar silicon manufacturing plant. On December 20, 2016, Grupo FerroAtlántica, S.A.U., along with certain of its subsidiaries, entered into a joint venture agreement (the “Solar JV Agreement”) with Blue Power Corporation, S.L. (“Blue Power”) and Aurinka providing for the formation and operation of a joint venture with the purpose of producing UMG solar silicon. In furtherance of this project, FerroAtlántica obtained a loan, with a principal amount of approximately €45 million, from the Spanish Ministry of Industry and Energy for the purpose of building the UMG silicon plant. Due to the market environment for solar grade silicon (or polysilicon) worldwide, at the end of 2018 the Company suspended the investment in the project while preserving the technology and know-how in order to be able to finalize the construction of the factory when market circumstances change. In July 2019, the Solar JV Agreement was terminated. See “Item 7.B – Related Party Transactions – Aurinka and the Solar JV, below.

High value powders – Li-ion batteries

Ferroglobe has launched the High Value Powder project, which aims at producing silicon-based, tailor made products for high end applications. Among the various targeted applications, is a particularly attractive market in anodes for Li-ion batteries. In this specific field, Ferroglobe has developed several partnerships and technical collaborations to develop successful research and development solutions to enhance the energy capacity of the anode in Li-ion batteries by adding silicon.

An important part of the technology developed for the Solar grade silicon project is used in this new project allowing Ferroglobe to have advantages in obtaining tailor made solutions in this emerging business and to put in the market products with a very low carbon footprint. At the same time, new knowledge linked to specific milling technologies has been developed in the last years placing Ferroglobe in an excellent position in this new market.

Anyway, new R&D works are carrying out by the Ferroglobe innovation team to develop new products that could fit in the requirements of new generations of batteries.

Proprietary Rights and Licensing

The majority of Ferroglobe’s intellectual property consists of proprietary know-how and trade secrets. Ferroglobe’s intellectual property strategy is focused on developing and protecting proprietary know-how and trade secrets, which are maintained through employee and third-party confidentiality agreements and physical security measures. Although Ferroglobe owns some patented technology, we believe that the Company’s businesses and profitability do not rely fundamentally upon patented technology and that the publication implicit in the patenting process may in certain instances be detrimental to Ferroglobe’s ability to protect its proprietary information.

Regulatory Matters

Environmental and health and safety

Ferroglobe operates facilities worldwide, which are subject to foreign, national, regional, provincial and local environmental, health and safety laws and regulations, including, among others, those requirements governing the discharge of materials into the environment, the generation, use, storage and disposal of hazardous substances, the extraction and use of water, land use, reclamation and remediation and the health and safety of Ferroglobe’s employees. These laws and regulations require Ferroglobe to obtain from governmental authorities permits to conduct its regulated activities, which permits may be subject to modification or revocation by such authorities.

Ferroglobe may not be at all times in full compliance with such laws, regulations and permits, although Ferroglobe is not aware of any material past or current noncompliance. Failure to comply with these laws, regulations and permits may result in the assessment of administrative, civil and criminal penalties or other sanctions by regulators, the imposition of obligations to conduct remediation or upgrade or install pollution or dust control equipment, the issuance of injunctions limiting or preventing Ferroglobe's activities, legal claims for personal injury or property damages, and other liabilities.

Under these laws, regulations and permits, Ferroglobe could also be held liable for any consequences arising out of an industrial incident, human exposure to hazardous substances or environmental damage that relates to Ferroglobe's current or former operations or properties. Environmental, health and safety laws are likely to become more stringent in the future. Ferroglobe purchases insurance to cover these potential liabilities, but the costs of complying with current and future environmental, health and safety laws, and its liabilities arising from past or future releases of, or exposure to, hazardous substances, may exceed insured, budgeted or reserved amounts and adversely affect Ferroglobe's business, results of operations and financial condition.

Some environmental laws assess liability on current or previous owners or operators of real property for the cost of removal or remediation of hazardous substances. In addition to cleanup, cost recovery or compensatory actions brought by foreign, national, provincial and local agencies, neighbors, employees or other third parties could make personal injury, property damage or other private claims relating to the presence or release of hazardous substances. Environmental laws often impose liability even if the owner or operator did not know of, or did not cause, the release of hazardous substances. Persons who arrange for the disposal or treatment of hazardous substances also may be responsible for the cost of removal or remediation of these substances. Such persons can be responsible for removal and remediation costs even if they never owned or operated the disposal or treatment facility. In addition, such owners or operators of real property and persons who arrange for the disposal or treatment of hazardous substances can be held responsible for damages to natural resources.

There are a variety of laws and regulations in place or being considered at the international, national, regional, provincial and local levels of government that restrict or are reasonably likely to result in limitations on, or additional costs related to, emissions of carbon dioxide and other greenhouse gases. These legislative and regulatory developments may cause Ferroglobe to incur material costs to reduce the greenhouse gas emissions from its operations (through additional environmental control equipment or retiring and replacing existing equipment) or to obtain emission allowance or credits, or result in the incurrence of material taxes, fees or other governmental impositions on account of such emissions. In addition, such developments may have indirect impacts on Ferroglobe's operations, which could be material. For example, they may impose significant additional costs or limitations on electricity generators, which could result in a material increase in energy costs.

For a summary of regulatory matters applicable to Ferroglobe's mining operations, see "—Laws and regulations applicable to Ferroglobe's mining operations."

Energy and electricity generation

Ferroglobe operates hydro-electric plants in France, which are subject to energy, environmental, health and safety laws and regulations, including those governing the generation of electricity and the use of water and river basins. These laws and regulations require Ferroglobe to obtain permits from governmental authorities, which may be subject to modification or revocation by these authorities.

Trade

Ferroglobe benefits from antidumping and countervailing duty orders and laws that protect its products by imposing special duties on unfairly traded imports from certain countries. These orders may be subject to revision, revocation or rescission as a result of periodic and five-year reviews.

In the United States, final antidumping or countervailing duties are in effect covering silicon metal imports from China, Russia, Bosnia and Herzegovina, Iceland, and Kazakhstan, and preliminary duties are in effect on imports from Malaysia.

In June 2020, Globe Specialty Metals, Inc. (“GSM”) petitioned the U.S. Department of Commerce (“Commerce”) and the U.S. International Trade Commission (“ITC”) to stop silicon metal producers in Bosnia and Herzegovina, Iceland, Malaysia and Kazakhstan from selling dumped and unfairly subsidized silicon metal imports into the United States. These cases were successful, and in April 2021, Commerce issued formal antidumping orders on all imports from Bosnia and Herzegovina and Iceland, and a formal countervailing duty order on all imports from Kazakhstan. A formal antidumping duty order was issued with respect to all imports from Malaysia in August 2021. These orders will remain in place for at least five years. Appeals of the Kazakhstan and Bosnia and Herzegovina determinations currently are pending before the United States Court of International Trade. Additionally, in June 2020, the Russia antidumping duty order was renewed for another five years after Commerce and the ITC determined that revocation of the order would lead to continued or recurrent dumping and injury to the U.S. industry. Similarly, in June 2018, the China antidumping duty order was renewed for an additional five years after the ITC and Commerce determined that revocation of the order on Chinese silicon metal imports would lead to continued or recurrent dumping and injury to the U.S. industry, respectively.

In Canada, antidumping and countervailing duties covering silicon metal imports from China are in effect. An expiry review of the Canadian antidumping/countervailing duty order covering silicon metal imports from China concluded on August 22, 2019. As a result of that proceeding, the order was continued for a further five-year period with the result that antidumping and countervailing duties continue to apply to imports of silicon metal from China into Canada.

In the European Union, antidumping duties are in place covering silicon metal imports from China and ferrosilicon imports from China and Russia. In April 2019, the European Commission initiated a review to determine whether to maintain the antidumping measures in place for ferrosilicon. In June 2020, and as a result of this proceeding, the European Commission renewed the orders on ferrosilicon from China and Russia for another five years. In 2021, the European Commission initiated a review to determine whether to maintain the antidumping measures in place for silicon metal. The final decision is expected by the end of June 2022. Also, in October 2021, the European Commission created a new provisional antidumping duty for calcium silicon imports from China for 6 months. On March 23, 2022, the European Commission imposed definitive antidumping duties on calcium silicon imports from China for a 5-year period.

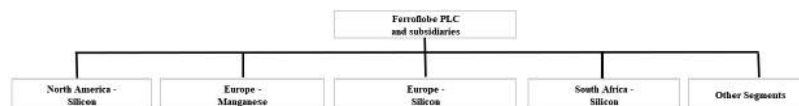
Seasonality

Electrometallurgy

Due to the cyclicity of energy prices and the energy-intensive nature of the production processes for silicon metal, manganese- and silicon-based alloys and specialty metals, Ferroglobe does not operate its electrometallurgy plants during certain periods or times of day when energy prices are at their peak. Demand for Ferroglobe’s manganese- and silicon-based alloy and specialty metals products is lower during these periods as its customers also suspend their energy-intensive production processes involving Ferroglobe’s products. As a result, sales within particular geographic regions are subject to seasonality.

C. Organizational structure.

The organizational structure remains as follows as of December 31, 2021:



For a list of subsidiaries and ownership structure see *Note 2* in the Consolidated Financial Statements.

D. Property, Plant and Equipment.

See “Item 4.B.—Information on the Company—Business Overview.”

ITEM 4A. UNRESOLVED STAFF COMMENTS

Not applicable.

ITEM 5. OPERATING AND FINANCIAL REVIEW AND PROSPECTS

A. Operating Results

Introduction

The following “management’s discussion and analysis” should be read in conjunction with the Consolidated Financial Statements of Ferrolobe as of December 31, 2021 and 2020 and for the years ended December 31, 2021, 2020 and 2019, which are included in this annual report. This discussion includes forward-looking statements, which, although based on assumptions that Ferrolobe considers reasonable, are subject to risks and uncertainties which could cause actual events or conditions to differ materially from those expressed or implied by the forward-looking statements. See “Cautionary Statements Regarding Forward-Looking Statements.” For a discussion of risks and uncertainties facing Ferrolobe, see “Item 3.D.—Key Information—Risk Factors.”

In accordance with IAS 21 — The Effects of Changes in Foreign Exchange Rates, Ferrolobe’s consolidated income statements and consolidated statement of financial position have been translated from the functional currency of each subsidiary, which is determined by the primary economic environment in which each subsidiary operates, into the reporting currency of the Company that is U.S. Dollars.

Principal Factors Affecting Our Results of Operations

Sale prices

Ferrolobe’s operating performance is highly correlated to the demand for our products, market prices and cost to serve, in a global competitive environment. Ferrolobe follows a pricing policy aimed at maintaining balance between exposures to termed contracts, based on formula pricing, and exposure to the spot market. This approach allows Ferrolobe to remain flexible in adjusting its production and sales footprint depending on changing market conditions, which traditionally have been volatile. However, going into 2021 the Company had a higher weighting towards fixed priced contracts, particularly in silicon metal, given the demand uncertainty created by COVID-19. This capped our ability to realize the increase in market prices during in 2021. These contracts expired at the end of 2021, resulting in a resetting of pricing at current market levels, per the underlying indices, at the beginning of 2022.

During 2021, demand across our segments was positively impacted due to the re-filling of value chains to pre-COVID levels and a recovery in the market demand across our core need markets. Furthermore, disruptions along the global chain, coupled with supply curtailments in China impacted global supply for our products. Collectively these factors resulted in steady market price increases for our products throughout 2021.

Silicon metal pricing appreciated steady throughout 2021, with a pronounced uptick in the second half, due to premiums placed on supply security into key sectors, like chemicals, along with increased demand in the aluminum and other commodity sectors.

Historically, manganese-based alloy prices have shown a significant correlation with the price of manganese ore, but from 2018 up to middle 2020, the correlation was disrupted, causing a margin squeeze for Ferroglobe as a non-integrated producer. Since 2020, alloy pricing spreads over ore have recovered. In 2021, further improvements in the spread of ore continue to increase due to the recovery in steel demand. We anticipate these improved dynamics to hold in 2022, driven by stable demand in the European steel sector and the supply availability of manganese ore.

Our ferrosilicon business pricing improved throughout 2021 from the historical lows of 2020. We expect these dynamics to sustain in 2022, supported by demand for steel industry, stimulated by the construction and auto sectors.

Cost of raw materials

The main raw materials sourced by Ferroglobe are quartz, manganese ore, coal, metallurgical coke, wood and charcoal. Manganese ore is the largest component of the cost base for manganese-based alloys. In 2021, more than 27% of Ferroglobe's total \$133.48 million expense with respect to manganese ore fell under an annual commitment, whilst the remaining was purchased on spot basis. Special coal is used as a major carbon reductant in silicon-based alloy production. In 2021, coal represented a \$137.4 million expense for Ferroglobe. Metallurgical coke, which is used for Mn Alloys production, represented a total purchase volume of \$47.5 million in 2021. Wood is both an important element for the production of silicon alloys and used to produce charcoal, which is used as a carbon reductant at Ferroglobe's South African subsidiary Silicon Smelters (Pty.), Ltd. Ferroglobe's wood expense amounted to \$36.8 million in 2021. The Grupo FerroAtlántica subsidiaries of Ferroglobe source approximately 62% of their quartz needs from FerroAtlántica's mines in Spain and South Africa, and Globe subsidiaries source approximately 75% of their quartz needs from Globe's mines in the United States and Canada. Total quartz consumption in 2021 represented an expense of \$ 87.8 million.

Power

Power constitutes one of the single largest expenses for most of Ferroglobe's products. Ferroglobe focuses on minimizing energy prices and unit consumption throughout its operations by concentrating its silicon and manganese-based alloy production during periods when energy prices are lower. In 2021, Ferroglobe's total power consumption was 7,358 gigawatt-hours, with power contracts that vary across its operations.

In Spain and France, FerroAtlántica receives a rebate on a portion of its energy costs in exchange for an agreement to interrupt production, and thus power usage, upon request. FerroAtlántica is negotiating to obtain power contracts to partly hedge risks related to energy price volatility in Spain.

In Spain, the compensations for production interruption were eliminated in 2021. The plants continue to receive compensation for indirect CO₂ costs, as in the rest of Europe. We are in active discussions with potential Spanish energy partners to enter into power purchase agreements to cover a portion of our needs during the coming years.

In France, FerroPem S.A.S. has traditionally had access to relatively low power prices, as it benefited from Electricité de France's green tariff ("Tarif Vert"), and a discount thereon. The green tariffs expired at the end of 2015 and Ferroglobe has negotiated supply contracts based on ARENH (historical nuclear energy at fixed price) and market prices with two suppliers for years 2016 to 2019 and is currently negotiating long-term supply contracts with suppliers in the market place. A new contract based on ARENH and market covers 2020 to 2022. See also "Item 7.—Major Shareholders and Related Party Transactions—Related Party Transactions". Regulation enacted in 2015 enables FerroPem S.A.S. to benefit from reduced tariffs resulting from its agreeing to interrupt production and respond to surges in demand, as well as receiving compensation for indirect CO₂ costs under the EU Emission Trading System (ETS) regulation. These arrangements allow FerroPem S.A.S. to operate competitively on a 12-month basis, but also concentrate production during periods when energy prices are lower if needed.

In the United States, we attempt to enter into long-term electric supply contracts that value our ability to interrupt load to achieve reasonable rates. Our power supply contracts have, in the past, resulted in stable price structures. In West Virginia, we have a contract with Brookfield Renewable Power to provide, on average, 45% of our power needs, from a dedicated hydro-electric facility, through December 2025 at a fixed rate. Our power needs for the non-hydroelectric component of West Virginia, Ohio, and Alabama are primarily sourced through special contracts that provide competitive rates whereas a portion of the power is also priced at market rates.

In South Africa, we have an “evergreen” supply agreement with Eskom, the parastatal electricity supplier, for our Polokwane, eMalahleni, Newcastle (Siltech) and Thaba Chueu mining plants. Eskom’s energy prices are regulated by the National Energy Regulator (NERSA) and price increases are publicly announced in advance. Operational smelters in South Africa were operating on normal tariffs for the year 2020, with eMalahleni participating in a curtailment program. The Polokwane and Newcastle smelters remained in care & maintenance for the full year. In eMalahleni, focus remained on ferrosilicon production. Profitability was good with positive EBITDA figures for this plant, despite the impact of the COVID-19 pandemic. The eMalahleni plant continued to participate in an interruptibility program where curtailments for power to Eskom is compensated on an hourly basis. This effectively has a positive contribution to the overall price paid for electricity. In addition, emphasis is placed to produce maximum products during summer months when power is cheaper and to reduce production over winter periods (June, July and August), to a minimum. Production during winter evening Peak Hours is also limited if there is no curtailment programmed.

Independent power production from private power producers increased during 2021 and assisted with the supply of the power demand within the country, this is expected to continue growing over the next years in order to counter Load Shedding Events due to insufficient supply from the governmental producer, Eskom. Discussions are continuing between Mining & Industry and Government for the implementation of an industrial tariff that must be beneficial for local beneficiation.

Foreign currency fluctuation

Ferroglobe has a diversified production base consisting of production facilities across the United States, Europe, South America, South Africa and Asia. Ferroglobe production costs are mostly dependent on local factors, with the exception of the cost of manganese ore and coal, which are dependent on global commodity prices. The relative strength of the functional currencies of Ferroglobe’s subsidiaries influences its competitiveness in the international market, most notably in the case of Ferroglobe’s South African operations, which have historically exported a majority of their production to the U.S. and the European Union. For additional information see “Item 11.—Quantitative and Qualitative Disclosures About Market Risk—Foreign Exchange Rate Risk.”

Regulatory changes

See “Item 4.B.—Business Overview—Regulatory Matters.”

Results of Operations — Year Ended December 31, 2021 Compared to Year Ended December 31, 2020

(\$ thousands)	Year ended December 31,	
	2021	2020
Sales	1,778,908	1,144,434
Raw materials and energy consumption for production	(1,184,896)	(835,486)
Other operating income	110,085	33,627
Staff costs	(280,917)	(214,782)
Other operating expense	(296,809)	(132,059)
Depreciation and amortization charges, operating allowances and write-downs	(97,328)	(108,189)
Impairment (loss) gain	137	(73,344)
Net gain due to changes in the value of assets	758	158
Gain on disposal of non-current assets	1,386	1,292
Other (loss) gain	62	(1)
Operating profit (loss)	31,386	(184,350)
Finance income	253	177
Finance costs	(149,189)	(66,968)
Financial derivative gain	—	3,168
Exchange differences	(2,386)	25,553
(Loss) before tax	(119,936)	(222,420)
Income tax (expense) benefit	4,562	(21,939)
(Loss) for the year from continuing operations	(115,374)	(244,359)
(Loss) for the year from discontinued operations	—	(5,399)
(Loss) for the year	(115,374)	(249,758)
Loss attributable to non-controlling interests	(4,750)	(3,419)
(Loss) attributable to the Parent	(110,624)	(246,339)

Sales

Sales increased \$634,474 thousand, or 55.4%, from \$1,144,434 thousand for the year ended December 31, 2020 to \$1,778,908 thousand for the year ended December 31, 2021. The increase in sales is attributed to the increase in volumes and average realized price across all our products portfolio.

Sales volume increased across all major products. Silicon metal sales volume increased 22.5% and average selling prices of silicon metal increased by 12.4% to \$2,511/MT in 2021, as compared to \$2,234/MT in 2020. Total shipments of silicon metal increased primarily as a result of continued strength in chemicals and to a lesser extent, the aluminum market in Europe which continues to lag due to continued supply chain issues. Overall tightness in the market, attributable to strong end market demand and ongoing reforms in China, propelled U.S. and European index prices to unprecedented levels mainly during the fourth quarter.

Silicon-Based Alloys sales volume increased 21.3% and average selling prices increased by 35.8% to \$2,058/MT in 2021, as compared to \$1,899/MT in 2020. Total shipments increased due to the continued recovery in global steel production. Strong demand for ferrosilicon, coupled with low levels of inventory, sent the index higher in the US and Europe, contributing significantly to the increase in average realized prices across silicon-based alloy.

Manganese-Based Alloys sales volume increased 20.2% and average selling prices increased by 46% to \$1,492/MT in 2021, as compared to \$1,022/MT in 2020. Total shipments increased due to continued recovery in global steel production, and some seasonal spillover of orders.

Raw Materials and energy consumption for production

Raw Materials and energy consumption for production increased \$349,410 thousand, or 41.8%, from \$835,486 thousand for the year ended December 31, 2020 to \$1,184,896 thousand for the year ended December 31, 2021, primarily due to an increase in sales volumes across all three product categories. For the full year 2021, raw materials and energy consumption for production as a percentage of sales was 66.6%, compared to 73.0% during full year 2020. In addition to the increase in sales, the improvement in the Raw Materials and energy consumption for production was primarily driven by improved utilization of our asset base, reallocation of orders to optimize economics, stronger operational performance at the furnace level, and continued cost cutting.

Other operating income

Other operating income increased \$76,458 thousand, or 227.4%, from \$33,627 thousand for the year ended December 31, 2020 to \$110,085 thousand for the year ended December 31, 2021, mainly due to CO₂ emissions allowances (“rights held emit greenhouse gasses”). The Company has recognized emission rights (allowances) received at market value. Market value of the allowances has increased 130.5% from \$39.3/allowance for the year ended December 31, 2020 to \$90.6/allowance as of December 31, 2021.

Staff costs

Staff costs increased \$66,135 thousand, or 30.8%, from \$214,782 thousand for the year ended December 31, 2020 to \$280,917 thousand for the year ended December 31, 2021. This increase is mainly due to the recording of the restructuring provision in Spain and France amounting \$27,367 thousand and higher variable consideration driven by the improved results in 2021 compared to 2020.

Other operating expense

Other operating expense increased \$164,750 thousand, or 124.7%, from \$132,059 thousand for the year ended December 31, 2020 to \$296,809 thousand for the year ended December 31, 2021, mainly due to CO₂ emissions. As the Company emits CO₂, it recognizes a provision for its obligation to deliver the CO₂ allowances at the end of the compliance period. The provision is remeasured at the end of each reporting period at market value. Market value of the allowances increased 130.4% from \$39.3/allowance for the year ended December 31, 2020 to \$90.6/allowance as of December 31, 2021.

Depreciation and amortization charges, operating allowances and write-downs

Depreciation and amortization charges, operating allowances and write-downs decreased \$10,861 thousand or 10.0%, from \$108,189 thousand for the year ended December 31, 2020 to \$97,328 thousand for the year ended December 31, 2021. The decrease in depreciation is driven by a relevant number of the assets becoming fully depreciated.

Impairment (loss) gain

Impairment losses decreased \$73,481 thousand, or 100.2%, from a loss of \$73,344 thousand for the year ended December 31, 2020 to a gain of \$137 thousand for the year ended December 31, 2021. In 2020, the Company recognized an impairment of \$73,344 thousand in relation to; our idled capacity at the Niagara facilities in the United States \$35,685 thousand, at the Polokwane facility in South Africa \$8,677 thousand, at Château Feuillet facility in Europe \$17,941 thousand and an impairment of \$11,041 thousand in relation to our solar-grade silicon metal project in Puertollano, Spain. In 2021, the Company has recorded a reversal of the impairment recorded at Polokwane facilities, amounting \$2,681 thousand, an additional impairment at Château Feuillet facility, amounting \$441 thousand, an impairment in relation to our quartz mine in Mauritania amounting \$1,726 thousand.

Net loss (gain) due to changes in the value of assets

In 2021, the Company had a net gain of \$758 thousand in the value of assets attributable to a higher valuation of shares in Pampa Energy in Argentina. This compares to a net loss of \$158 thousand in 2020.

Loss (gain) on disposal of non-current assets

The gain on disposal of non-current assets of \$1,386 thousand for the year ended December 31, 2021 relates to the sale of the Niagara plant (fully impairment as of December 31, 2020) and certain assets in France.

Finance income

Finance income increased \$76 thousand, or 42.9%, from \$177 thousand for the year ended December 31, 2020 to \$253 thousand for the year ended December 31, 2021. The increase is driven by the higher earnings in our collateral account balance held by the South African subsidiary.

Finance costs

Finance costs increased \$82,221 thousand, or 122.7%, from \$66,968 thousand for the year ended December 31, 2020 to \$149,189 thousand for the year ended December 31, 2021. The increase is due to the accounting charge relating to the Senior Notes refinancing, amounting \$90.8 million.

For accounting purposes the refinancing of the Senior Notes have been considered a debt extinguishment. As a consequence:

- (i) The accounting rules do not allow to capitalize the fees incurred in the exchange of the notes, amounting to \$31.7 million
- (ii) Similarly to the transaction fees, the shares issued to the bondholders and the work fee were recognized as a one-off expense, amounting \$51.6 million at market value.
- (iii) In the case of an extinguishment, any outstanding upfront fees that had been capitalized at the issuance of the original notes needs to be recycled through profit and loss, this amounted \$1 million. Additionally, as a result of the refinancing, the gross carrying amount of the amortized cost of the Reinstated Notes has been adjusted to reflect actual and revised estimated contractual cash flows. The gross carrying amount of the Reinstated Notes has been recalculated as the present value of the estimated future contractual cash flows that are discounted at the effective interest rate of 9.096%. The adjustment amounts to \$6,462 and it was recognized as an expense in the income statement. After the exchange the Senior notes were accounted under the amortized cost method.

The transaction fees incurred in the issuance of the Super Senior Notes have been capitalized as required by the accounting rules (IFRS).

Financial derivative gain

Gains on financial derivatives declined from \$3,168 thousand in 2020 to \$0 in 2021. The currency swap hedging the senior unsecured bonds was cancelled in 2020.

Exchange differences

Exchange differences decreased \$27,937 thousand, from income of \$25,553 thousand for the year ended December 31, 2020 to a loss of \$2,386 thousand for the year ended December 31, 2021, primarily due to the exchange rate between the Euro and the U.S. Dollar.

Income tax (expense) benefit

Income tax expense variation amounting by \$26,501 thousand, or 120.8%, from an income tax expense of \$21,939 thousand for the year ended December 31, 2020 to an income tax benefit of \$4,562 thousand for the year ended December 31, 2021. The variance is mainly due to the tax assets recorded in 2021 relating to a carryback credit of \$ 6,408 thousand in our French subsidiary. In France, when a company incurs a loss during a given fiscal year, they may carry it back to reduce the tax liability of the immediately previous fiscal year. This generates a deferred tax asset that can be offset against the corporate income tax for the following five fiscal years or claimed to the French Treasury at the end of that period.

Profit (loss) for the year from discontinued operations

The result from discontinued operations decreased from \$5,399 thousand in 2020 to \$0 in 2021, due to the adjustment of the sales price of assets in Spain registered in 2020.

Segment operations

In 2021, the company revised its operating segments to reflect the way its chief operating decision maker (“CODM”) is currently managing and viewing the business.

Operating segments are based upon the Company’s management reporting structure. As such, we report our results in accordance with the following segments since 2021:

- North America – Silicon
- Europe – Manganese
- Europe – Silicon
- South Africa – Silicon
- Other segments

North America - Silicon

(\$ thousands)	Year ended December 31,	
	2021	2020
Sales	524,808	425,277
Raw materials and energy consumption for production	(323,316)	(280,858)
Other operating income	5,385	2,916
Staff costs	(82,463)	(73,988)
Other operating expense	(43,070)	(34,315)
Depreciation and amortization charges, operating allowances and write-downs	(55,770)	(61,664)
Impairment (loss) gain	—	(35,685)
(Loss) gain on disposal of non-current assets	394	(869)
Operating profit (loss)	25,968	(59,186)

Sales

Sales increased \$99,531 thousand, or 23.4%, from \$425,277 thousand for the year ended December 31, 2020 to \$524,808 thousand for the year ended December 31, 2021. The increase in sales is attributed to an increase in the average realized price, resulting from a combination of higher market prices, and a different product and customer mix. Additionally, there was an increase in volumes resulting from strong customer demand.

Raw Materials and energy consumption for production

Raw Materials and energy consumption increased \$42,458 thousand, or 15.1%, from \$280,858 thousand for the year ended December 31, 2020 to \$323,316 thousand for the year ended December 31, 2021. The increase is consequence of the increase in sale volumes.

Other operating income

Other operating income increased \$2,469 thousand, or 84.6%, from \$2,916 thousand for the year ended December 31, 2020 to \$5,385 thousand for the year ended December 31, 2021, mainly due to the gain on the CO2 emission rights regulatory period settlement for Canada, and the increase in scrap sales.

Staff costs

Staff costs increased \$8,475 thousand, or 11.5%, from \$73,988 thousand for the year ended December 31, 2020 to \$82,463 thousand for the year ended December 31, 2021. The increase is primarily due to a higher number of employees on payroll in 2021, needed for the increase in production, adjustments to the Pension Plan as part of the buyout in 2021, and higher employee health insurance claims.

Other operating expense

Other operating expense increased \$8,755 thousand, or 25.5%, from \$34,315 thousand for the year ended December 31, 2020 to \$43,070 thousand for the year ended December 31, 2021. This increase is attributable mainly to higher freight cost due to the higher sales volume; an increase in the property and liability insurance premium; and an increase in the royalty rate for the Right Fork surface mine royalty agreement.

Depreciation and amortization charges, operating allowances and write-downs

Depreciation and amortization charges, operating allowances and write-downs decreased \$5,894 thousand, or 9.6%, from \$61,664 thousand for the year ended December 31, 2020 to \$55,770 thousand for the year ended December 31, 2021, mainly due to the impairment of the Niagara plant write-off in 2020.

Impairment (loss) gain

There were no impairment losses for the year ended December 31, 2021. During the year ended December 2020, the Company recognised an impairment charge of \$35,685 thousand related to the permanent shutdown of the Niagara plant.

Gain on disposal of non-current assets

The gain on disposal of non-current assets relates mainly to the disposal of fixed assets at Niagara.

Europe - Manganese

(\$ thousands)	Year ended December 31,	
	2021	2020
Sales	476,287	240,142
Raw materials and energy consumption for production	(326,257)	(204,063)
Other operating income	34,142	9,199
Staff costs	(33,696)	(28,337)
Other operating expense	(105,290)	(33,884)
Depreciation and amortization charges, operating allowances and write-downs	(18,634)	(19,086)
Impairment (loss) gain	(376)	305
Gain on disposal of non-current assets	—	1,154
Other gain	—	4
Operating profit (loss)	26,176	(34,566)

Sales

Sales increased \$236,145 thousand or 98.3%, from \$240,142 thousand for the year ended December 31, 2020 to \$476,287 thousand for the year ended December 31, 2021, mainly due to the increase of 20.2% in both domestic sales and exports. In addition, the increase of 46% in the average price has contributed to this increase in sales for the year.

Raw Materials and energy consumption for production

Raw Materials and energy consumption increased \$122,194 thousand, or 59.9%, from \$204,063 thousand for the year ended December 31, 2020 to \$326,257 thousand for the year ended December 31, 2021. Raw Materials and energy consumption for production increased with the increase in overall volumes, as well as consequence of higher raw material costs and higher energy prices.

Other operating income

Other operating income increased \$24,943 thousand, or 271.1%, from \$9,199 thousand for the year ended December 31, 2020 to \$34,142 thousand for the year ended December 31, 2021, primarily attributable to the freely granted CO2 emission rights. These rights are remeasured at the end of each reporting period at market value until there is a confirmation on the rights being granted by each government, in that moment the accounting value of the rights are fixed and are not remeasured anymore. Market value of the allowances has increased 130.4% from \$39.3/allowance for the year ended December 31, 2020 to \$90.6/allowance as of December 31, 2021.

Staff costs

Staff costs increased \$5,359 thousand or 18.9%, from \$28,337 thousand for the year ended December 31, 2020 to \$33,696 thousand for the year ended December 31, 2021. This increase is mainly due to the recognition of the restructuring costs in Spain and a higher variable consideration driven by the improved results in 2021 compared to 2020.

Other operating expense

Other operating expense increased \$71,406 thousand, or 210.7%, from \$33,884 thousand for the year ended December 31, 2020 to \$105,290 thousand for the year ended December 31, 2021, primarily attributable to the freely granted CO2 emission rights. As commented in the Other operating income section the market value of the allowances has increased significantly in 2021.

Depreciation and amortization charges, operating allowances and write downs

Depreciation and amortization charges, operating provisions and write-downs decreased \$452 thousand, or 2.4%, from \$19,086 thousand for the year ended 31 December 2020 to \$18,634 thousand for the year ended 31 December 2021, due to the increase in the number of assets fully depreciated.

Impairment (loss) gain

Impairment gain decreased by \$681 thousand, or 223.3%, from a gain of \$305 thousand for the year ended 31 December 2020 to a loss of \$376 thousand for the year ended 31 December 2021.

Gain (loss) on disposal of non-current assets

The amount reflected during the year ended 31 December 2020 driven by the sale of excess CO₂ rights.

Europe – Silicon

(\$ thousands)	Year ended December 31,	
	2021	2020
Sales	665,337	467,728
Raw materials and energy consumption for production	(473,884)	(369,130)
Other operating income	65,752	25,049
Staff costs	(120,287)	(84,300)
Other operating expense	(128,755)	(51,812)
Depreciation and amortization charges, operating allowances and write-downs	(16,852)	(19,252)
Impairment (loss) gain	(441)	(17,941)
Gain on disposal of non-current assets	1,029	1,002
Other (loss)	(1)	—
Operating (loss)	(8,102)	(48,656)

Sales

Sales increased \$197,629 thousand or 42.3%, from \$467,728 thousand for the year ended December 31, 2020 to \$665,337 thousand for the year ended December 31, 2021, mainly due to the increase of 22.5% in both domestic sales and exports. In addition, the increase of 12.4% in the average price has contributed to this increase in sales for the year.

Raw Materials and energy consumption for production

Raw Materials and energy consumption increased \$104,754 thousand, or 28.4%, from \$369,130 thousand for the year ended December 31, 2020 to \$473,884 thousand for the year ended December 31, 2021. Raw Materials and energy consumption for production increased with the increase in overall volumes, as well as consequence of higher raw material costs.

Other operating income

Other operating income increased \$40,703 thousand, or 162.5%, from \$25,049 thousand for the year ended December 31, 2020 to \$65,752 thousand for the year ended December 31, 2021, primarily attributable to the freely granted CO2 emission rights. These rights are remeasured at the end of each reporting period at market value until there is a confirmation on the rights being granted by each government, in that moment the accounting value of the rights are fixed and are not remeasured anymore. Market value of the allowances has increased 130.4% from \$39.3/allowance for the year ended December 31, 2020 to \$90.6/allowance as of December 31, 2021.

Staff costs

Staff costs increased \$35,987 thousand or 42.7%, from \$84,300 thousand for the year ended December 31, 2020 to \$120,287 thousand for the year ended December 31, 2021. This increase is mainly due to the recognition of the restructuring provision in France amounting \$23,798 thousand and a higher variable consideration driven by the improved results in 2021 compared to 2020.

Other operating expense

Other operating expense increased \$76,943 thousand, or 148.5%, from \$51,812 thousand for the year ended December 31, 2020 to \$128,755 thousand for the year ended December 31, 2021, primarily attributable to the freely granted CO2 emission rights. As commented in the Other operating income section the market value of the allowances has increased significantly in 2021.

Depreciation and amortization charges, operating allowances and write downs

Depreciation and amortization charges, operating provisions and write-downs decreased \$2,400 thousand, or 12.5%, from \$19,252 thousand for the year ended 31 December 2020 to \$16,852 thousand for the year ended 31 December 2021, due to the increase in the number of assets fully depreciated.

Impairment (loss) gain

Impairment loss decreased by \$17,500 thousand, or 97.5%, from a loss of \$17,941 thousand for the year ended 31 December 2020 to a loss of \$441 thousand for the year ended 31 December 2021. During the year ended 31 December 2020, the Company recognized an impairment of \$17,941 thousand at Château Feuillet facility in France.

Gain (loss) on disposal of non-current assets

Gain (loss) on disposal of non-current assets increased \$27 thousand, or 2.7%, from a gain of \$1,002 thousand for the year ended December 31, 2020 to \$1,029 thousand for the year ended 31 December 2021, driven by the disposal of buildings at our Château Feuillet facility in France.

South Africa – Silicon

(\$ thousands)	Year ended December 31,	
	2021	2020
Sales	117,195	80,572
Raw materials and energy consumption for production	(76,617)	(56,062)
Other operating income	763	131
Staff costs	(13,268)	(11,013)
Other operating expense	(13,256)	(14,098)
Depreciation and amortization charges, operating allowances and write-downs	(5,081)	(7,141)
Impairment (loss)	2,684	(8,677)
Operating profit (loss)	12,420	(16,288)

Sales

Sales increased \$36,623 thousand, or 45.5%, from \$80,572 thousand for the year ended December 31, 2020 to \$117,195 thousand for the year ended December 31, 2021. Our sales in South Africa were positively impacted by improved demand and market conditions, increasing both average price and sales volumes. Also, this increase translates into the recovery of sales after having gone through the impact of Covid-19 in 2020.

Raw Materials and energy consumption for production

Raw Materials and energy consumption for increased \$20,555 thousand, or 36.7%, from \$56,062 thousand for the year ended December 31, 2020 to \$76,617 thousand for the year ended December 31, 2021. Such variation is attributed to the increase in the electricity price as well as the improvement in sales tonnage.

Other operating income

Other operating income increased \$632 thousand, or 482.4%, from \$131 thousand for the year ended December 31, 2020 to \$763 thousand for the year ended December 31, 2021, mainly, due to all sundry sales from the idle Polokwane plant reported in other income.

Staff costs

Staff costs increased \$2,255 thousand, or 20.5%, from \$11,013 thousand for the year ended December 31, 2020 to \$13,268 thousand for the year ended December 31, 2021. The increase in staff cost is primarily due to an inflationary adjustment made in 2021, and the incentive bonus accrued as of December 31, 2021.

Other operating expense

Other operating expense decreased \$842 thousand, or 6.0%, from \$14,098 thousand for the year ended December 31, 2020 to \$13,256 thousand for the year ended December 31, 2021, primarily due to the recovery of operating, selling and administrative expenses assumed in the 2020 financial year following the closure of the Polokwane facility in August 2019.

Depreciation and amortization charges, operating allowances and write-downs

Depreciation and amortization charges, operating allowances and write-downs decreased \$2,060 thousand, or 28.8%, from \$7,141 thousand for the year ended December 31, 2020 to \$5,081 thousand for the year ended December 31, 2021. The impairment of the Polokwane plant at the end of 2020 resulted in a lower depreciation charge at the end of 2021.

Impairment (loss) gain

Impairment losses decreased \$11,361 thousand, or 130.9%, from a loss of \$8,677 thousand for the year ended December 31, 2020 to a gain of \$2,684 thousand for the year ended December 31, 2021. This effect is due to the partial reversal of the 2020 impairment in the year ended December 2021.

Other segments

(\$ thousands)	Year ended December 31,	
	2021	2020
Sales	43,568	25,334
Raw materials and energy consumption for production	(33,445)	(19,518)
Other operating income	49,901	24,587
Staff costs	(31,203)	(17,144)
Other operating expense	(51,960)	(26,679)
Depreciation and amortization charges, operating allowances and write-downs	(991)	(1,046)
Impairment (loss)	(1,730)	(11,346)
Net gain due to changes in the value of assets	758	158
(Loss) gain on disposal of non-current assets	(37)	5
Other gain (loss)	63	(5)
Operating (loss)	(25,076)	(25,654)

Sales

Sales increased \$18,234 thousand, or 72.0%, from \$25,334 thousand for the year ended December 31, 2020 to \$43,568 for the year ended December 31, 2021, mainly due to an increase in demand and prices for all our products due to supply constraints from Europe and Asia. Also, sales are increased by the restart of the second furnace in our plant in Argentina.

Raw Materials and energy consumption for production

Raw Materials and energy consumption for production increased \$13,927 thousand, or 71.4%, from \$19,518 thousand for the year ended December 31, 2020 to \$33,445 thousand for the year ended December 31, 2021, mainly due to increases in sales volumes. This increase is also due to an increase in the power tariff, and price increases in both local and imported raw materials.

Other operating income

Other operating income increased \$25,314 thousand, or 103.1%, from \$24,587 thousand for the year ended December 31, 2020 to \$49,901 thousand for the year ended December 31, 2021, primarily due to intercompany charges and a provision reversal.

Staff costs

Staff costs increased \$14,059 thousand, or 82%, from \$17,144 thousand for the year ended December 31, 2020 to \$31,203 thousand for the year ended December 31, 2021, primarily due to higher personnel needed on the restart of the second furnace in Argentina. The increase was also attributable to wage adjustments in 2021, and a higher variable consideration driven by the improved results in 2021 compared to 2020.

Other operating expense

Other operating expense increased \$25,281 thousand, or 94.8%, from \$26,679 thousand for the year ended December 31, 2020 to \$51,960 for the year ended December 31, 2021, primarily due to intercompany charges.

Depreciation and amortization charges, operating allowances and write-downs

Depreciation and amortization charges, operating allowances and write-downs decreased \$55 thousand, or 5.3%, from \$1,046 thousand for the year ended December 31, 2020 to \$991 thousand for the year ended December 31, 2021.

Impairment (loss) gain

Impairment losses decreases \$9,616 or 84.8%, from \$11,346 thousand for the year ended 31 December 2020 to \$1,730 thousand for the year ended 31 December 2021, mainly due to impaired intercompany loans. These items are eliminated in the consolidation adjustments column. During 2021 the Company registered an impairment related to quartz mine in Mauritania amounting \$1,726 thousand.

Net (loss) gain due to changes in the value of assets

The gain due to changes in the value of assets in 2021 is mainly due to the increase in the valuation of Pampa Energy shares in Argentina.

(Loss) gain on disposal of non-current assets

Disposal of non-current assets decreased by \$42 thousand, or 825.7%, from a gain of \$5 thousand for the year ended 31 December 2020 to a loss of \$37 thousand for the year ended 31 December 2021, mainly due to the loss on the sale of fixed assets of the Puertollano plant.

Other gains and losses

Other gains and losses increased \$63 thousand, or 100%. This increase is due to obtaining a subsidy from the Mendoza provincial government to finance working capital at Globe Metales, S.A.

Results of Operations — Year Ended December 31, 2020 Compared to Year Ended December 31, 2019

(\$ thousands)	Year ended December 31,	
	2020	2019
Sales	1,144,434	1,615,222
Raw materials and energy consumption for production	(835,486)	(1,214,397)
Other operating income	33,627	54,213
Staff costs	(214,782)	(285,029)
Other operating expense	(132,059)	(225,705)
Depreciation and amortization charges, operating allowances and write-downs	(108,189)	(120,194)
Impairment loss	(73,344)	(175,899)
Net (loss) gain due to changes in the value of assets	158	(1,574)
(Loss) gain on disposal of non-current assets	1,292	(2,223)
Other losses	(1)	—
Operating profit (loss)	(184,350)	(355,586)
Finance income	177	1,380
Finance costs	(66,968)	(63,225)
Financial derivative gain	3,168	2,729
Exchange differences	25,553	2,884
(Loss) before tax	(222,420)	(411,818)
Income tax (expense) benefit	(21,939)	41,541
(Loss) for the year from continuing operations	(244,359)	(370,277)
(Loss) profit for the year from discontinued operations	(5,399)	84,637
(Loss) for the year	(249,758)	(285,640)
Loss attributable to non-controlling interests	(3,419)	(5,039)
(Loss) attributable to the Parent	(246,339)	(280,601)

Sales

Sales decreased \$470,788 thousand, or 29.1%, from \$1,615,222 thousand for the year ended December 31, 2019 to \$1,144,434 thousand for the year ended December 31, 2020. The decrease in sales is primarily attributable to the unexpected, adverse impact of COVID-19 on volumes and average realized pricing across all of our products.

Sales volume decreased across all major products. Silicon metal sales volume decreased 13.5%, silicon-based alloys sales volume decreased 32%, while manganese-based alloys sales volume decreased 33%, primarily due to significant drop in demand across the chemical, aluminum and steel end markets as a result of the pandemic.

Average selling prices of silicon metal, silicon-based alloys and manganese-based alloys decreased year over year. The average selling price for silicon metal decreased by 0.8% to \$2,234/MT in 2020, as compared to \$2,252/MT in 2019; the average selling price for silicon-based alloys decreased by 4.2% to \$1,899/MT in 2020, as compared to \$1,983/MT in 2019 and the average selling price for manganese-based alloys decreased by 10.4% to \$1,022/MT in 2020, as compared to \$1,140/MT in 2019. The pressure on pricing throughout the year is primarily attributable to the deterioration in demand which outpaced the supply curtailments, resulting in the decline in the index pricing across these products.

Raw Materials and energy consumption for production

Raw Materials and energy consumption for production decreased \$378,911 thousand, or 35%, from \$1,214,397 thousand for the year ended December 31, 2019 to \$835,486 thousand for the year ended December 31, 2020, primarily due to a decrease in sales volumes, in silicon metal and manganese alloys, as well as lower unit costs for many of our key inputs.

Costs of sales for plants in North America, which produce silicon-metal and silicon-based alloys, were from 66.5% in 2019 to 62% in 2020, as a percentage of sales. Continued increases in energy costs and an increase in the purchase price of manganese ore impacted costs for manganese-based alloys in Europe.

Other operating income

Other operating income decreased \$20,586 thousand, or 38.0%, from \$54,213 thousand for the year ended December 31, 2019 to \$33,627 thousand for the year ended December 31, 2020. The main difference for this decrease is the consolidation of FAU as of December, 2019 with CO2 allowances granted of \$12 million.

Staff costs

Staff costs decreased \$70,247 thousand, or 24.6%, from \$285,029 thousand for the year ended December 31, 2019 to \$214,782 thousand for the year ended December 31, 2020. During the year we continued our headcount reduction plan at both the corporate offices, as well as at the plant level. Furthermore, the temporary shut-down of plants during the first half of 2020 also had a positive impact on our staff costs. Additionally, a reduction in our bonus accrual for the year also contributed to the decrease in staff costs year-over-year.

Other operating expense

Other operating expense decreased \$93,646 thousand, or 41.5%, from \$225,705 thousand for the year ended December 31, 2019 to \$132,059 thousand for the year ended December 31, 2020, primarily due to a decrease in distribution and logistics costs as well a decrease in corporate overhead expense in variable costs associated with sales. As a result, there is a decrease in commercial expenses. Additionally, other operating expenses decreased due to moving our London office. Considerable travel expenses and information technology fees had been reduced as a result of reduced staffing and fees related to advertising, public relations and financial consulting, audit and legal fees.

Depreciation and amortization charges, operating allowances and write-downs

Depreciation and amortization charges, operating allowances and write-downs decreased \$12,005 thousand or 10.0%, from \$120,194 thousand for the year ended December 31, 2019 to \$108,189 thousand for the year ended December 31, 2020. This is primarily attributable to lower capital expenditure supported by a smaller operating footprint.

Impairment (loss) gain

Impairment losses decreased \$102,555 thousand, or 63%, from a loss of \$175,899 thousand for the year ended December 31, 2019 to a loss of \$73,344 thousand for the year ended December 31, 2020. In 2019, the Company took a full write-down of goodwill relating to our facility in Canada, as well as write-down in the United States.

During year ended December 31, 2020 the Company recognized an impairment of \$73,344 thousand in relation to; our idled capacity at the Niagara facilities in the United States \$35,685 thousand, at the Polokwane facility in South Africa \$8,677 thousand, at Château Feuillet facility in Europe \$17,941 thousand and an impairment of \$11,041 thousand in relation to our solar-grade silicon metal project in Puertollano, Spain.

Net (loss) gain due to changes in the value of assets

In 2020, the Company had a net gain of \$158 thousand in the value of assets attributable to a higher valuation of shares in Pampa Energy in Argentina. This compares to a net loss of \$1,044 thousand in 2019.

(Loss) gain on disposal of non-current assets

The gain on disposal of non-current assets for the year ended December 31, 2020 relates primarily to a \$1,292 thousand gain resulting from the sale of CO₂ rights in Europe.

Finance income

Finance income decreased \$1,203 thousand, or 87.2%, from \$1,380 thousand for the year ended December 31, 2019 to \$177 thousand for the year ended December 31, 2020. This is primarily due to the a lower volume of accounts receivables assets sold to securitization program in 2020 compared 2019. With the decline in overall volumes in 2020, the eligible accounts receivables sold into the securitization program also decreased.

Finance costs

Finance costs increased \$3,743 thousand, or 5.9%, from \$63,225 thousand for the year ended December 31, 2019 to \$66,968 thousand for the year ended December 31, 2020. This relates to the financial fees and expense obligations resulting from the prior Accounts Receivable securitization facility.

Financial derivative gain (loss)

Financial derivative gains of \$2,729 thousand in 2019 and financial derivative gain of \$3,168 thousand in 2020. The gains are related to the prior cross-currency swap underlying the senior unsecured notes due 2022.

Exchange differences

Exchange differences increased \$22,669 thousand, from income of \$2,884 thousand for the year ended December 31, 2019 to a gain of \$25,553 thousand for the year ended December 31, 2020, primarily due to the weakening of the U.S. Dollar relative to the Euro.

Income tax (expense) benefit

Income tax expense \$63,480 thousand, or 152.8%, from an income tax benefit of \$41,541 thousand for the year ended December 31, 2019. The decrease in 2020 is attributable to derecognition of deferred tax in Spain, France and Argentina.

Profit (loss) for the year from discontinued operations

Profit from discontinued operations decreased \$90,036 thousand, or 106.4%, from an income of \$84,637 thousand for the year ended December 31, 2019 to a loss of \$5,399 thousand for the year ended December 31, 2020, mainly due the adjustment registered on the Spain sale price in 2019.

Segment operations

Our operating segments has been revised in 2021 to reflect the way its chief operating decision maker ("CODM") is currently managing and viewing the business. Accordingly, the results of 2020 and 2019 have been restated to report results according to the operating segments revised in 2021.

As such, we report our results in accordance with the following segments:

- North America – Silicon
- Europe – Manganese
- Europe – Silicon
- South Africa – Silicon
- Other segments

North America - Silicon

(\$ thousands)	Year ended December 31,	
	2020	2019
Sales	425,277	551,500
Raw materials and energy consumption for production	(280,858)	(366,711)
Other operating income	2,916	10,418
Staff costs	(73,988)	(87,954)
Other operating expense	(34,315)	(60,105)
Depreciation and amortization charges, operating allowances and write-downs	(61,664)	(72,251)
Impairment (loss)	(35,685)	(174,013)
Loss on disposal of non-current assets	(869)	(1,601)
Operating (loss)	(59,186)	(200,717)

Sales

Sales decreased \$126,223 thousand, or 22.9%, from \$551,500 thousand for the year ended December 31, 2019 to \$425,277 thousand for the year ended December 31, 2020, primarily due to a 15% decrease in the average selling price of silicon metal and a 72% decrease in sales volumes of silicon metal.

For the silicon-based alloys (calcium silicon, magnesium ferrosilicon, and different grades of ferrosilicon) portion of the business in North America, there was a 8% decrease in the average selling price, mainly due to decreased sales of ferrosilicon (FeSi 75%) in 2020, as well as a 31% decrease in sales volume across other siliconbased alloys. During 2020, we also reduced the sales of manganese based alloys into North America due to a weakening steel market and reduction in profitability.

Raw Materials and energy consumption for production

Raw Materials and energy consumption for production decreased \$85,853 thousand, or 23.4%, from \$366,711 thousand for the year ended December 31, 2019 to \$280,858 thousand for the year ended December 31, 2020. The reduction in our Raw Materials and energy consumption for production is due to a decline in overall sales volumes for both silicon metal and silicon-based alloys, as well slightly lower raw material costs.

Staff costs

Staff costs decreased \$13,966 thousand, or 15.9%, from \$87,954 thousand for the year ended December 31, 2019 to \$73,988 thousand for the year ended December 31, 2020. This is due to permanent and temporary headcount reduction as well as a decrease in bonus accruals for 2020.

Other operating expense

Other operating expense decreased \$25,790 thousand, or 42.9%, from \$60,105 thousand for the year ended December 31, 2019 to \$34,315 thousand for the year ended December 31, 2020, as the business realized lower shipping, freight, and storage costs due to decrease in sales volume.

Depreciation and amortization charges, operating allowances and write-downs

Depreciation and amortization charges, operating allowances and write-downs decreased \$10,587 thousand, or 14.7%, from \$72,251 thousand for the year ended December 31, 2019 to \$61,664 thousand for the year ended December 31, 2020, primarily due to assets were fully depreciated at the beginning of the year.

Impairment losses

Impairment losses decreased \$138,328 thousand, or 79.5%, from \$174,013 thousand for the year ended December 31, 2019 to \$35,685 thousand for the year ended December 31, 2020. During the year ended December 31, 2020, the Company recognized an impairment charge of \$35,685 relating to the permanent shutdown of Niagara facility.

Loss on disposal of non-current assets

The loss of \$869 thousand for the year ended December 31, 2020 relates primarily to the disposal of certain property plant, and equipment in the United States.

Europe – Manganese

(\$ thousands)	Year ended December 31,	
	2020	2019
Sales	240,142	564,060
Raw materials and energy consumption for production	(204,063)	(502,919)
Other operating income	9,199	12,828
Staff costs	(28,337)	(32,133)
Other operating expense	(33,884)	(64,851)
Depreciation and amortization charges, operating allowances and write-downs	(19,086)	(19,904)
Impairment (loss)	305	12
Gain on disposal of non-current assets	1,154	—
Other gain	4	—
Operating (loss)	(34,566)	(42,907)

Sales

Sales decreased \$323,918 thousand or 57.4%, from \$564,060 thousand for the year ended December 31, 2019 to \$240,142 thousand for the year ended December 31, 2020, primarily due decreases in both volume and average realized price.

Raw Materials and energy consumption for production

Raw Materials and energy consumption for production decreased \$298,856 thousand, or 59.4%, from \$502,919 thousand for the year ended December 31, 2019 to \$204,063 thousand for the year ended December 31, 2020. Raw Materials and energy consumption for production decreased with the decline in overall volumes, as well as lower input costs.

Other operating income

Other operating income decreased \$3,629 thousand, or 28.3%, from \$12,828 thousand for the year ended December 31, 2019 to \$9,199 thousand for the year ended December 31, 2020, primarily due to a reduction in the use of CO₂ free allowances in the production process.

Staff costs

Staff costs decreased \$3,796 thousand or 11.8%, from \$32,133 thousand for the year ended December 31, 2019 to \$28,337 thousand for the year ended December 31, 2020. The improvement in the staff costs during the year is driven by a decrease due to lower overtime costs following the temporary idling of furnaces in a number of facilities, the reduction of the head count and the bonus provisions.

Other operating expense

Other operating expense decreased \$30,967 thousand, or 47.8%, from \$64,851 thousand for the year ended December 31, 2019 to \$33,884 thousand for the year ended December 31, 2020. The decrease is, primarily due to lower shipping, freight, and storage costs as a result of the slowdown in sales volumes.

Depreciation and amortization charges, operating allowances and write-downs

Depreciation and amortization charges, operating allowances and write downs decreased \$818 thousand, or 4.1%, from \$19,904 thousand for the year ended December 31, 2019 to \$19,086 thousand for the year ended December 31, 2020.

Impairment (loss) gain

Impairment losses increased \$293 thousand, or 2441.7%, from \$12 thousand for the year ended December 31, 2019 to \$305 thousand for the year ended December 31, 2020.

Gain (loss) on disposal of non-current assets

The amount reflected during the year ended December 31, 2020 driven by the the sale of excess CO₂ rights.

Europe – Silicon

(\$ thousands)	Year ended December 31,	
	2020	2019
Sales	467,728	593,907
Raw materials and energy consumption for production	(369,130)	(474,993)
Other operating income	25,049	39,001
Staff costs	(84,300)	(106,681)
Other operating expense	(51,812)	(83,917)
Depreciation and amortization charges, operating allowances and write-downs	(19,252)	(19,667)
Impairment (loss)	(17,941)	(1)
Gain on disposal of non-current assets	1,002	181
Operating (loss)	(48,656)	(52,170)

Sales

Sales decreased \$126,178 thousand or 21.2%, from \$593,907 thousand for the year ended December 31, 2019 to \$467,728 thousand for the year ended December 31, 2020, primarily due decreases in both volume and average realized price.

Raw Materials and energy consumption for production

Raw Materials and energy consumption for production decreased \$105,863 thousand, or 22.3%, from \$474,993 thousand for the year ended December 31, 2019 to \$369,130 thousand for the year ended December 31, 2020. Raw Materials and energy consumption for production decreased with the decline in overall volumes, as well as lower input costs.

Other operating income

Other operating income decreased \$13,952 thousand, or 35.8%, from \$39,001 thousand for the year ended December 31, 2019 to \$25,049 thousand for the year ended December 31, 2020, primarily due to a reduction in the use of CO₂ free allowances in the production process.

Staff costs

Staff costs decreased \$22,381 thousand or 21%, from \$106,681 thousand for the year ended December 31, 2019 to \$84,300 thousand for the year ended December 31, 2020. The improvement in the staff costs during the year is driven by a decrease due to lower overtime costs following the temporary idling of furnaces in a number of facilities, the reduction of the head count and the bonus provisions.

Other operating expense

Other operating expense decreased \$32,105 thousand, or 38.3%, from \$83,917 thousand for the year ended December 31, 2019 to \$51,812 thousand for the year ended December 31, 2020. The decrease is, primarily due to lower shipping, freight, and storage costs as a result of the slowdown in sales volumes.

Depreciation and amortization charges, operating allowances and write-downs

Depreciation and amortization charges, operating allowances and write downs decreased \$415 thousand, or 2.1%, from \$19,667 thousand for the year ended December 31, 2019 to \$19,252 thousand for the year ended December 31, 2020.

Impairment (loss) gain

Impairment losses increased \$17,940 thousand, or 100%, from \$1 thousand for the year ended December 31, 2019 to \$17,941 thousand for the year ended December 31, 2020. During the year ended December 31, 2020, the Company recognized this impairment charge relating to the Château Feuillet facility.

Gain (loss) on disposal of non-current assets

The amount reflected during the year ended December 31, 2020 driven by the disposal of two buildings at our Anglefort facility in France and the sale of excess CO₂ rights.

South Africa - Silicon

(\$ thousands)	Year ended December 31,	
	2020	2019
Sales	80,572	136,292
Raw materials and energy consumption for production	(56,062)	(108,823)
Other operating income	131	1,323
Staff costs	(11,013)	(20,333)
Other operating expense	(14,098)	(19,457)
Depreciation and amortization charges, operating allowances and write-downs	(7,141)	(6,459)
Impairment (loss)	(8,677)	—
Net (loss) due to changes in the value of assets	—	(530)
Operating (loss)	(16,288)	(17,987)

Sales

Sales decreased \$55,720 thousand, or 40.9%, from \$136,292 thousand for the year ended December 31, 2019 to \$80,572 thousand for the year ended December 31, 2020. Our sales in South Africa were adversely impacted by the temporary shutdown of the Polokwane facility during the lockdown period due to COVID-19. Additionally, the average realized price for our sales volume in South Africa also declined during the year due to weak market conditions.

Raw Materials and energy consumption for production

Raw Materials and energy consumption for production decreased \$52,761 thousand, or 48.5%, from \$108,823 thousand for the year ended December 31, 2019 to \$56,062 thousand for the year ended December 31, 2020, in-line with the decrease in sales volumes. A favorable movement in foreign exchange lowered our Raw Materials and energy consumption for production by \$7,682 thousand.

Other operating income

Other operating income decreased \$1,192 thousand, or 90.1%, from \$1,323 thousand for the year ended December 31, 2019 to \$131 thousand for the year ended December 31, 2020, primarily due to a decrease in sales of products.

Staff costs

Staff costs decreased \$9,320 thousand, or 45.8%, from \$20,333 thousand for the year ended December 31, 2019 to \$11,013 thousand for the year ended December 31, 2020, due to the staffing adjustments and employee separation costs in connection with the shutdown of Polokwane plant during 2020. Furthermore, foreign exchange differences favorably impacted staff costs, decreasing by \$1,509 thousand.

Other operating expense

Other operating expense decreased \$5,359 thousand, or 27.5%, from \$19,457 thousand for the year ended December 31, 2019 to \$14,098 thousand for the year ended December 31, 2020, primarily due to operating, selling and administrative costs following the facility closure at Polokwane. Foreign exchange rate movements further decreased other operating expense by \$1,765 thousand.

Depreciation and amortization charges, operating allowances and write-downs

Depreciation and amortization charges, operating allowances and write-downs increased \$682 thousand, or 10.6%, from \$6,459 thousand for the year ended December 31, 2019 to \$7,141 thousand for the year ended December 31, 2020.

Impairment losses

Impairment losses for the year ended December 31, 2020 totalled \$8,677 thousand, higher than the nil thousand for the prior year. The increase is related to the impairment registered in Polokwane facility.

Net (loss) gain due to changes in the value of assets

Net (loss) recorded for the full year ended December 31, 2020, due to the change in the value of assets in 2019 in the amount of \$530 thousand, primarily relating to the remeasured fair value of the Company's timber farms in South Africa as of December 31, 2019.

Other segments

(\$ thousands)	Year ended December 31,	
	2020	2019
Sales	25,334	43,147
Raw materials and energy consumption for production	(19,518)	(35,939)
Other operating income	24,587	27,144
Staff costs	(17,144)	(37,928)
Other operating expense	(26,679)	(32,572)
Depreciation and amortization charges, operating allowances and write-downs	(1,046)	(1,913)
Impairment (loss)	(11,346)	(1,897)
Net (loss) gain due to changes in the value of assets	158	(1,044)
(Loss) gain on disposal of non-current assets	5	(803)
Other losses	(5)	—
Operating (loss)	(25,654)	(41,805)

Sales

Sales decreased \$17,813 thousand, or 41.3%, from \$43,147 thousand for the year ended December 31, 2019 to \$25,334 for the year ended December 31, 2020, primarily due to a \$7,556 thousand decrease of sales of energy related to the sale of subsidiary UltraCore Polska Sp. Z o.o. Sales of silicon-based alloys at the Company's Argentinian facility, Globe Metales S.A., decreased \$9,031 thousand.

Raw Materials and energy consumption for production

Raw Materials and energy consumption for production decreased \$16,421 thousand, or 45.7%, from \$35,939 thousand for the year ended December 31, 2019 to \$19,518 thousand for the year ended December 31, 2020, primarily due to a decrease in sales volumes of silicon-based alloys at the Company's Argentinian facility, Globe Metales S.A.

Other operating income

Other operating income decreased \$2,557 thousand, or 9.4%, from \$27,144 thousand for the year ended December 31, 2019 to \$24,587 thousand for the year ended December 31, 2020, primarily due to a chargeback of services by Ferroglobe to its subsidiaries.

Staff costs

Staff costs decreased \$20,784 thousand, or 54.8%, from \$37,928 thousand for the year ended December 31, 2019 to \$17,144 thousand for the year ended December 31, 2020, primarily due to redundancy payments linked with the headcount reduction plan at London corporate office and the departure costs of the prior Chief Financial Officer and Chief Executive Officer in the third and last quarters of 2019, respectively. Additionally we further reduced headcount in 2020.

Other operating expense

Other operating expense decreased \$5,893 thousand, or 18.1%, from \$32,572 thousand for the year ended December 31, 2019 to \$26,679 thousand for the year ended December 31, 2020, primarily due to the reduction of activity at London corporate office. Considerable travel expenses and information technology related fees had been reduced as a result of reduced staffing and fees related to advertising, public relations and financial consulting, audit and legal fees.

Depreciation and amortization charges, operating allowances and write-downs

Depreciation and amortization charges, operating allowances and write-downs decreased \$867 thousand, or 45.3%, from \$1,913 thousand for the year ended December 31, 2019 to \$1,046 thousand for the year ended December 31, 2020. The decrease is due to impairment of the London office lease, which is not longer being depreciated.

Impairment (loss) gain

Impairment losses increased \$9,449 thousand, or 498.1%, from \$1,897 thousand for the year ended December 31, 2019 to \$11,346 thousand for the year ended December 31, 2020, primarily due to the value adjustment for the Puertollano plant in Spain.

Net (loss) gain due to changes in the value of assets

Net (loss) gain due to the changes in the value of assets in 2020 primarily due to the \$158 thousand gain of the valuation of shares in Pampa Energy in Argentina.

(Loss) gain on disposal of non-current assets

The gain on disposal of non-current assets for the year ended December 31, 2020 relates primarily to the sale of a Globe Specialty Metals, Inc. property in Mississippi, United States, \$5 thousand. In 2019, the loss on disposal of non-current assets for the year ended December 31, 2019 relates primarily to the sale of Ultra Core Polska, Z.o.o., a subsidiary of the Company, for a net loss of \$821 thousand.

Effect of Inflation

Management believes that the impact of inflation was not material to Ferroglobe's results of operations in the years ended December 31, 2021, 2020 and 2019.

Cyclical Nature of the Industry and Movement in Market Prices, Raw Materials and Input Costs

Our business has historically been subject to fluctuations in the price of our products and market demand for them, caused by general and regional economic cycles, raw material and energy price fluctuations, competition and other factors. The timing, magnitude and duration of these cycles and the resulting price fluctuations are difficult to predict. For example, we experienced a weakened economic environment in national and international metals markets, including a sharp decrease in silicon metal prices in all major markets from late 2014 to late 2017. Throughout 2019 and 2020, we experienced the most dramatic decline in prevailing prices of our products, which adversely affected our results. During the fourth quarter of 2020, demand for our products increased to levels similar to those prior to the pandemic. During 2021, demand for our products has further increased; however, COVID-19 and the Ukraine-Russia conflict have negatively impacted, and will in the future negatively impact our business. The COVID pandemic and the Ukraine-Russia conflict have also impacted international logistics costs and have significantly impacted raw materials and commodities prices, external and unforeseeable factors have also contributed to extremely volatile and high spot electricity prices, in particular in Europe.

B. Liquidity and Capital Resources

Sources of Liquidity

Ferroglobe's primary sources of long-term liquidity are its senior secured notes with a \$345,058 thousand aggregate principal at an interest rate of 9.375%, due on June 30, 2025, ("the Reinstated Senior Notes"), its super senior secured notes with a \$60,000 thousand aggregate principal at an interest rate of 9% due on June 2025 ("the Super Senior Notes") and its primary source of short-term liquidity is its factoring agreement with a Leasing and Factoring Agent, for anticipating the collection of receivables of the Company's European entities, which in 2021 provided upfront cash consideration of approximately \$659,083.

On March 27, 2021, Ferroglobe and Globe and certain other members of our group entered into the Lock-Up Agreement with the Ad Hoc Group Noteholders, Grupo VM and affiliates of Tyrus Capital that set forth a plan to implement the restructuring. On July 30, 2021 the company announced the occurrence of the "Transaction Effective Date" under the lock-up agreement dated March 27, 2021 (the "Lock-Up Agreement") between the Company and the financial stakeholders. The Issuers completed the exchange of 98.588% of the 9% Senior Notes due 2022 (the "Old Notes") issued by the Company and Globe for a total consideration per \$1,000 principal amount of Old Notes comprising (i) \$1,000 aggregate principal amount of new 9% senior secured notes due 2025 issued by the Issuers (the "New Notes") plus (ii) a cash fee amounting to \$51,611 thousand, which the Parent, at the direction of the qualifying noteholders, applied as cash consideration for a subscription of new ordinary shares of the Company. In addition the Company issued new ordinary shares for total gross proceeds of \$40 million.

On October 11, 2019, Ferroglobe subsidiaries Globe Specialty Metals, Inc., and QSIP Canada ULC, as borrowers, entered into a Credit and Security Agreement for a \$100,000 thousand North-American asset-based loan, (the "ABL Revolver"), with PNC Bank, as lender. On March 16, 2021, the Company repaid in its entirety the remaining balance at the date for an amount equal to \$39,476 thousand, cancelling its obligations derived from the contract, as a condition of the lock-Up Agreement. See *Note 16*. On February 6, 2020, the Company entered an amended and restated accounts receivables securitization program. The senior lender's commitments under the amended and restated securitization program were \$150,000 thousand.

On October 2, 2020, the Company ended the receivables funding agreement and cancelled the securitization program, signing a new factoring agreement with a Leasing and Factoring Agent, for anticipating the collection of receivables of the Company's European entities (Grupo FerroAtlántica, S.A.U. and FerroPem, S.A.S). As a result of the agreement, the Leasing and Factoring Agent provided a cash consideration of circa \$48.8 million, repurchased the receivables portfolio sold to the SPE on September 28, and consequently assumed the loan tranche of the senior borrower to the SPE. Also, the Senior loan and intermediate subordinate loan tranches were paid with internal sources of funds. See *Note 16*.

The main characteristics of the agreement are the following:

- the maximum cash consideration advanced for the financing facility is up to €60,000 thousand;
- over collateralization of 10% of accounts receivable as guarantee provided to the Agent until payment has been satisfied;
- Annual fee of 0.15% applied to the annual revenues ceded to the Agent;
- Financing commission of 1% charged annually;

Other conditions are set in relation to credit insurance policy which has been structured in an excess of loss policy where the first €5,000 thousand of bad debt losses are not covered by the insurance provider. The Company has assumed the cash collateralization for the entire excess of loss, as agreed in contractual terms.

On September 8, 2016, FerroAtlántica, S.A.U., as borrower, and the Spanish Ministry of Industry, Tourism and Commerce (the "Ministry"), as lender, entered into a loan agreements under which the Ministry made available to the borrower a loan in aggregate principal amount of €44.9 million, in connection with the industrial development projects relating to our solar grade silicon project. FAU transferred the loan to OPCO before its sale. See "Item 4.B.—Information on the Company—Business Overview—Research and Development (R&D)—Solar grade silicon." The loan of €44.9 million is to be repaid in seven installments starting on 2023 and completed by 2030. On January 25, 2022, the Ministry opened a hearing to decide on reimbursement of the loan. The company presented its allegations on February 15, 2022. Based on those allegations, the reimbursement procedure has been suspended and a new final report is expected to be made by the Ministry by the end of 2022 ending the administrative procedure and establishing the definitive amount of the partial reimbursement to be made. Interest on outstanding amounts under each loan accrues at an annual rate of 3.55%. See *Note 19*.

On July 23, 2020, Ferroglobe subsidiary, Ferropem, S.A.S., as borrower, entered into a loan with BNP Paribas, as lender, amounting to €4,300 thousand, to finance Company's activities in France. The loan is guaranteed by French government following special measurements taken on COVID-19 impact on businesses. Repayment of principal and payment of interest and accessories shall be made with the possibility for the Borrower to request the amortization of the amounts due at maturity for an additional period of 1 to 5 years. Interest rate is zero percent and the borrower shall be liable to pay a fee equal to 0.50% equal to an amount of €22 thousand calculated on the total borrowed capital.

On June 2, 2020, Ferroglobe subsidiary, Silicium Québec, as borrower, agreed a \$7,000 thousand loan with Investissement Québec, a regional government loan & investment agency, as lender, to finance its capital expenditures activities in Canada. The loan is to be repaid in 84 installments over a 10-year period with the first three years as a grace period. Interest rate on outstanding amounts is zero percent.

Ferroglobe's primary short-term liquidity needs are to fund its capital expenditure commitments, fund specific initiatives underlying the strategic plan, service its existing debt and working capital. Ferroglobe's long-term liquidity needs primarily relate to debt repayment. Ferroglobe's core objective with respect to capital management is to maintain a balanced and sustainable capital structure through the economic cycles of the industries in which it participates, while keeping the cost of capital at competitive levels.

For the year ended December 31, 2021, operating activities generated a cash flow of (\$1,341) thousand, compared to \$154,268 thousand in 2020 and (\$31,194) thousand in 2019, mainly due to the increase in inventories and trade and other receivables. Investing activities resulted in a total outflow of \$23,848 thousand of cash in 2021, compared to an outflow of (\$31,940) thousand in 2020 and an inflow of \$165,910 thousand in 2019. Financing activities resulted in a total inflow of \$10,452 thousand in cash in 2021, compared to an outflow of \$113,333 thousand in 2020 and an outflow of \$224,005 thousand in 2019. See "Cash Flow Analysis" below for additional information.

As of December 31, 2021 and 2020, Ferroglobe had cash, restricted cash and cash equivalents of \$116,663 (of which \$2,272 thousand is restricted cash) and \$131,557 (of which \$28,843 thousand is restricted cash), respectively. Cash and cash equivalents are primarily held in U.S. Dollars and Euros.

As of December 31, 2021, Ferroglobe's total gross financial debt was \$618,552 thousand as compared to \$551,547 thousand as of December 31, 2020. As of December 31, 2021, gross financial debt comprised debt instruments of \$440,297 thousand (\$357,508 in 2020), bank borrowings of \$98,967 thousand (\$107,606 in 2020), \$18,358 thousand of leases (\$22,536 thousand in 2020), and other financial liabilities of \$60,930 thousand (\$63,896 thousand in 2020).

We believe our working capital is sufficient for our present requirements, and we anticipate generating sufficient cash to satisfy our short and long-term liquidity needs.

Availability of funds

At December 31, 2021, we had cash and cash equivalents, restricted cash and other restricted funds amounted to \$116,663 million. This amount includes non-current restricted cash in relation to the guarantees taken over escrow amounting \$2,272 thousand. The escrow was constituted in August 30, 2019, in consideration of previous FerroAtlántica. The Company also has certain restrictions for the disposal of the cash in Norway due to local requirements and in the joint ventures with Dow Corning amounting as of December 31, 2021 amounting to \$53,453 thousand.

Ferroglobe PLC is the parent company of Ferroglobe Group and receives funding from its subsidiaries in the form of intercompany loans. Consequently, certain restrictions on the ability of the Group's subsidiaries to transfer funds to Ferroglobe PLC would negatively affect our liquidity and thus our business.

Working Capital Position

As of December 31, 2021, Ferroglobe's working capital position (defined as inventories and trade and other receivables less trade and other payables) was \$464,870 thousand as compared to \$339,610 thousand as of December 31, 2020, mainly due to an increase in inventories by \$60,296 thousand and receivables by \$161,434 thousand partially offset for an increase in payables by \$64,382 thousand.

Capital Expenditures

Ferroglobe incurs capital expenditures in connection with expansion and productivity improvements, production plants maintenance and research and development projects. Capital expenditures are funded through cash generated from operations and financing activities. Ferroglobe's capital expenditures for the years ended December 31, 2021, 2020 and 2019 were \$27,597 thousand, \$30,257 thousand and \$32,445 thousand, respectively.

Contractual Obligations

The following table sets forth Ferroglobe's contractual obligations and commercial commitments with definitive payment terms that will require significant cash outlays in the future, as of December 31, 2021.

(\$ thousands)	Total	Payments Due by Period			
		Less than 1 year	1 - 3 years	3 - 5 years	More than 5 years
Long and short term debt obligations	757,632	217,567	532,900	5,244	1,921
Capital expenditures	3,834	3,834	—	—	—
Leases	18,529	8,092	7,653	1,495	1,289
Power purchase commitments ⁽¹⁾	294,557	183,936	43,464	40,294	26,863
Purchase obligations ⁽²⁾	38,722	38,722	—	—	—
Other Long-Term Liabilities Reflected on the Company's Balance Sheet ⁽³⁾	59,837	15,612	15,215	10,632	18,379
Total	1,173,111	467,763	599,232	57,665	48,452

(1) Represents minimum charges that are enforceable and legally binding, and do not represent total anticipated purchases. Minimum charges requirements expire after providing one year notice of contract cancellation.

(2) The Company has outstanding purchase obligations with suppliers for raw materials in the normal course of business. The disclosed purchase obligation amount represents commitments to suppliers that are enforceable and legally binding and do not represent total anticipated purchases of raw materials in the future.

(3) Included tolling agreement with Cee-Dumbria facility and contingent consideration with Glencore.

The table above also excludes certain other obligations reflected in our consolidated balance sheet, including estimated funding for pension obligations, for which the timing of payments may vary based on changes in the fair value of pension plan assets and actuarial assumptions. We expect to contribute approximately \$861 thousand to our pension plans for the year ended December 31, 2021.

Further information regarding Ferroglobe's contractual obligations and commercial commitments as of December 31, 2021, is set forth in note 28 to the consolidated financial statements.

Cash Flow Analysis — Year Ended December 31, 2021 Compared to Year Ended December 31, 2020

The following table summarizes Ferroglobe's primary sources (uses) of cash for the years ended December 31, 2021 and 2020:

(\$ thousands)	Year ended December 31,	
	2021	2020
Cash and cash equivalents at beginning of period	131,557	123,175
Cash flows from operating activities	(1,341)	154,268
Cash flows from investing activities	(23,848)	(31,940)
Cash flows from financing activities	10,452	(113,333)
Exchange differences on cash and cash equivalents in foreign currencies	(157)	(613)
Cash, restricted cash and cash equivalents at end of period	116,663	131,557
Cash, restricted cash and cash equivalents at end of period from statement of financial position	116,663	131,557

Ferroglobe PLC paid nil dividends during the year ended December 31, 2021 and the year ended December 31, 2020.

Cash flows from operating activities

Cash flows from operating activities decreased \$155,609 thousand, from a positive cash generated of \$154,268 thousand for the year ended December 31, 2020, to a negative \$1,341 thousand for the year ended December 31, 2021. The decrease is mainly driven by the investment in working capital, increasing from \$340 million at December 31, 2020 to \$470 million at December 31, 2021.

Cash flows from investing activities

Cash flows from investing activities increased \$8,092 thousand from an outflow of \$31,940 thousand for the year ended December 31, 2020 to an outflow of \$23,848 thousand for the year ended December 31, 2021. Capital expenditures decreased during the year ended December 31, 2021 to \$27,597 thousand from \$30,257 thousand during the year ended December 31, 2020. Additionally during the year ended December 31, 2021, cash inflows were the proceeds from the disposal of certain assets, including \$1,370 thousand from the sale of Niagara assets.

Cash flows from financing activities

Cash flows from financing activities increased \$123,785 thousand, from a net outflow of \$113,333 thousand for the year ended December 31, 2020 to a net inflow of \$10,452 thousand for the year ended December 31, 2021. The increase is mainly due to the refinancing process, the issuance of the Super Senior notes amounting \$60 million and \$40 millions of new equity.

Cash Flow Analysis — Year Ended December 31, 2020 Compared to Year Ended December 31, 2019

The following table summarizes Ferroglobe’s primary sources (uses) of cash for the years ended December 31, 2020 and 2019:

(\$ thousands)	Year ended December 31,	
	2020	2019
Cash and cash equivalents at beginning of period	123,175	216,647
Cash flows from operating activities	154,268	(31,194)
Cash flows from investing activities	(31,940)	165,910
Cash flows from financing activities	(113,333)	(224,005)
Exchange differences on cash and cash equivalents in foreign currencies	(613)	(4,183)
Cash, restricted cash and cash equivalents at end of period	131,557	123,175
Cash, restricted cash and cash equivalents at end of period from statement of financial position	131,557	123,175

Ferroglobe paid nil dividends during the year ended December 31, 2020 and the year ended December 31, 2019.

Cash flows from operating activities

Cash flows from operating activities increased \$185,462 thousand, from a negative cash generated of \$31,194 thousand for the year ended December 31, 2019, to \$154,268 thousand for the year ended December 31, 2020. Operating profits increased significantly, driven by an improve in operating profit and a reduction in working capital. Additionally, CO₂ emission rights have been sold during 2020 with a positive impact in operating cash flow \$34,209 thousand.

Income taxes paid had a positive balance mainly due to the refunds received from USA Tax Authorities. Interest decrease \$5,121 thousand driven by cancellation of AR securitization program on October 2, 2020.

Cash flows from investing activities

Cash flows from investing activities 197,850 thousand from an outflow of \$165,910 thousand for the year ended December 31, 2019 to an inflow of \$31,940 thousand for the year ended December 31, 2020. Capital expenditures decreased during the year ended December 31, 2020 to \$30,257 thousand from \$32,445 thousand during the year ended December 31, 2019. During the year ended December 31, 2019, the effect of consolidating the accounts receivable securitization entity meant that an amount equal to \$9,088 was included in cash flows from investing activities. Additional cash inflows were the proceeds from the disposal of certain non-core assets, including \$177,627 thousand from the sale of subsidiary FerroAtlántica, S.A.U. and \$8,668 thousand from the sale of timber farm plantations in South Africa and \$3,018 thousand from other asset sales.

Cash flows from financing activities

Cash flows from financing activities increased \$110,672 thousand, from an outflow of \$224,005 thousand for the year ended December 31, 2019 to an outflow of \$113,333 thousand for the year ended December 31, 2020. During the year ended 31 December 2020 there has been a decrease in bank borrowings. On October 11, 2019, the Revolving Credit Facility was repaid \$134,570 and replaced with the ABL Revolver. The ABL Revolver had a balance of \$62,835 thousand at December 31, 2019. The Company had no factoring without recourse arrangements for other receivables as of December, 31 2019. On August 30, 2019, the hydro-lease was repaid.

Capital resources

Ferroglobe's core objective is to maintain a balanced and sustainable capital structure through the economic cycles of the industries in which it operates, while keeping the cost of capital at competitive levels. In addition to cash flows from continuing operations, the Company's main sources of capital resources are its Reinstated Senior Notes with an aggregate principal value of \$345,058 thousand, the Super Senior Notes with an aggregate principal value of \$60,000 thousand and the factoring agreement with a maximum cash consideration advanced up to €60,000 thousand. As of December 31, 2021, the Company exceeded the limit, the lender agreed a temporary increase of the limit.

Capital Raising and Extension of the Maturity of the Senior Notes

Details and description of Ferroglobe's debt instrument and factoring agreement are described in Notes 16 and 18 of the Consolidated Financial Statements.

For additional information see also "Item 10.C.— Material Contracts".

C. Research and Development, Patents and Licenses, etc.

For additional information see "Item 4.B.—Information on the Company—Business Overview—Research and Development (R&D)."

D. Trend Information

We discuss in Item 5.A. above and elsewhere in this annual report, trends, uncertainties, demands, commitments or events for the year ended December 31, 2021 that we believe are reasonably likely to have a material adverse effect on our revenues, income, profitability, liquidity or capital resources or to cause the disclosed financial information not to be necessarily indicative of future operating results or financial conditions.

E. Critical Accounting Estimates

The discussion and analysis of Ferroglobe's financial condition and results of operations is based upon its Consolidated Financial Statements, which have been prepared in accordance with IFRS. The preparation of those financial statements requires Ferroglobe to make estimates and judgments that affect the reported amounts of assets and liabilities, revenues and expenses, the disclosure of contingent assets and liabilities and related disclosure at the date of its financial statements. The estimates and related assumptions are based on available information at the date of preparation of the financial statements, on historical experience and on other relevant factors. Actual results may differ from these estimates under different assumptions and conditions. Critical accounting policies are those that reflect significant judgments of uncertainties and potentially result in materially different results under different assumptions and conditions. The principal items affected by estimates are business combinations, impairment of long-lived assets, inventories and income taxes. The following are Ferroglobe's most critical accounting policies, because they generally involve a comparatively higher degree of judgment in their application. For a description of all of Ferroglobe's principal accounting policies, see *Note 4* to the Consolidated Financial Statements of Ferroglobe included elsewhere in this annual report.

Business combinations

Ferroglobe subsidiaries have completed a number of significant business acquisitions over the past several years. Our business strategy contemplates that we may pursue additional acquisitions in the future. When we acquire a business, the purchase price is allocated based on the fair value of tangible assets and identifiable intangible assets acquired and liabilities assumed. Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants. Goodwill as of the acquisition date is measured as the residual of the excess of the consideration transferred, plus the fair value of any non-controlling interest in the acquiree at the acquisition date, over the fair value of the identifiable net assets acquired. If, after reassessment, the net of the acquisition date amounts of the identifiable assets acquired and liabilities assumed exceeds the sum of the consideration transferred, the excess is recognized immediately in profit or loss as a bargain purchase gain. We generally engage independent third-party appraisal firms to assist in determining the fair value of assets acquired and liabilities assumed. Such a valuation requires management to make significant estimates, especially with respect to intangible assets. These estimates are based on historical experience and information obtained from the management of the acquired companies. These estimates are inherently uncertain and may impact reported depreciation and amortization in future periods, as well as any related impairment of goodwill or other long lived assets.

When the consideration transferred by the Company in a business combination includes an asset or liability resulting from a contingent consideration arrangement, the contingent consideration is measured at its acquisition-date fair value and included as part of the consideration transferred in a business combination. Contingent consideration that is classified as equity is not remeasured at subsequent reporting dates and its subsequent settlement is accounted for within equity. Contingent consideration that is classified as an asset or a liability is remeasured at subsequent reporting dates at fair value with the corresponding gain or loss being recognized in profit or loss. Changes in fair value of the contingent consideration that qualify as measurement period adjustments are adjusted retrospectively, with corresponding adjustments against goodwill. Measurement period adjustments are adjustments that arise from additional information obtained during the 'measurement period' (which cannot exceed one year from the acquisition date) about facts and circumstances that existed at the acquisition date.

See *Note 5* to the accompanying audited Consolidated Financial Statements for detailed disclosures related to our acquisitions.

Goodwill

Goodwill represents the excess purchase price of acquired businesses over fair values attributed to underlying net tangible assets and identifiable intangible assets. For the purpose of impairment testing, goodwill is allocated to each of the Company's cash-generating units (or groups of cash generating units) that is expected to benefit from the synergies of the combination. A cash-generating unit to which goodwill has been allocated is tested for impairment annually, or more frequently when there is an indication that the cash-generating unit may be impaired. If the recoverable amount of the cash-generating unit is less than its carrying amount, the impairment loss is allocated first to reduce the carrying amount of any goodwill allocated to the unit and then to the other assets of the unit pro rata based on the carrying amount of each asset in the unit. Any impairment loss for goodwill is recognized directly in profit or loss. On disposal of the relevant cash-generating unit, the attributable amount of goodwill is included in the determination of the profit or loss on disposal.

The valuation of the Company's cash generating units requires significant judgment in evaluation of, among other things, recent indicators of market activity and estimated future cash flows, discount rates and other factors. The estimates of cash flows, future earnings, and discount rate are subject to change due to the economic environment and business trends, including such factors as raw material and product pricing, interest rates, expected market returns and volatility of markets served, as well as our future manufacturing capabilities, government regulation, technological change and operational improvements and cost efficiencies driven by the implementation of the new strategy.

We believe that the estimates of future cash flows, future earnings, and fair value are reasonable; however, changes in estimates such as volumes, pricing, costs, discount rate, circumstances or conditions could have a significant impact on our fair valuation estimation, which could then result in an impairment charge in the future.

During the years ended December 31, 2021 and December 31, 2020, the Company has concluded that there are no impairment of goodwill.

Ferroglobe operates in a cyclical market, and silicon and silicon-based alloy index pricing and foreign import pressure into the U.S. and Canadian markets impact the future projected cash flows used in our impairment analysis.

Long-lived assets (excluding goodwill)

In order to ascertain whether its assets have become impaired, Ferroglobe compares their carrying amount with their recoverable amount if there are indications that the assets might have become impaired. Where the asset itself does not generate cash flows that are independent from other assets, Ferroglobe estimates the recoverable amount of the cash-generating unit to which the asset belongs. Recoverable amount is the higher of fair value and value in use, which is the present value of the future cash flows that are expected to be derived from continuing use of the asset and from its ultimate disposal at the end of its useful life, discounted at a rate which reflects the time value of money and the risks specific to the business to which the asset belongs.

If the recoverable amount of an asset or cash-generating unit is less than its carrying amount, the carrying amount of the asset is reduced to its recoverable amount, and an impairment loss is recognized as an expense under "net impairment losses" in the consolidated income statement. Where an impairment loss subsequently reverses, the carrying amount of the asset is increased to the revised estimate of its recoverable amount, but so that the increased carrying amount does not exceed the carrying amount that would have been determined had no impairment loss been recognized for the asset in prior years. A reversal of an impairment is recognized as "impairment gain (losses)" in the consolidated income statement. The basis for depreciation or amortization is the carrying amount of the assets, deemed to be the acquisition cost less any accumulated impairment losses.

During year ended December 31, 2021 the Company recognized an impairment reversal of \$137 thousand in relation to; our idled capacity at the Polokwane facility in South Africa impairment reversal of \$2,681 thousand, at Château Feuillet facility in Europe impairment of \$441 thousand and in our quartz mine in Mauritania amounting \$1,726 thousand. During 2020, the Company recognized an impairment loss of \$73,344 thousand in relation to our idled capacity at the Niagara facilities in the United States by \$35,685 thousand, at the Polokwane facility in South Africa by \$8,677 thousand, at Château Feuillet facility in Europe by \$17,941 thousand and an impairment of \$11,041 thousand in relation to our solar-grade silicon metal project in Puertollano, Spain.

Inventories

Cost of inventories is determined by the average cost method. Inventories are valued at the lower of cost or Net Realizable Value. Circumstances may arise (e.g., reductions in market pricing, obsolete, slow moving or defective inventory) that require the carrying amount of our inventory to be written down to net realizable value. We estimate market and net realizable value based on current and future expected selling prices, as well as expected costs to complete, including utilization of parts and supplies in our manufacturing process. We believe that these estimates are reasonable; however, future market price decreases caused by changing economic conditions, customer demand, or other factors could result in future inventory write-downs that could be material.

Determination of income taxes provision

The current income tax expense incurred by Ferroglobe subsidiaries on an individual basis is determined by applying the applicable tax rate to the taxable profit for the year, calculated on the basis of accounting profit before tax, increased or decreased, as appropriate, by the permanent differences arising from the application of tax legislation and by the elimination of any tax consolidation adjustments, taking into account tax relief and tax credits. The consolidated income tax expense is calculated by adding together the expense recognized by each of the consolidated subsidiaries, increased or decreased, as appropriate, as a result of the tax effect of consolidation adjustments for accounting purposes.

Ferroglobe's deferred tax assets and liabilities include temporary differences measured at the amounts expected to be payable or recoverable on differences between the carrying amounts of assets and liabilities and their tax bases, and tax loss and tax credit carryforwards. These amounts are measured at the tax rates that are expected to apply in the period when the asset is realized or the liability is settled. Deferred tax liabilities are recognized for all taxable temporary differences, except for those arising from the initial recognition of goodwill. Deferred tax assets are recognized to the extent that it is considered probable that Ferroglobe will have taxable profits in the future against which the deferred tax assets can be utilized. The deferred tax assets and liabilities recognized are reassessed at each reporting date in order to ascertain whether they still exist, and the appropriate adjustments are made on the basis of the findings of the analyses performed.

Significant judgment is required in determining income tax provisions and tax positions. Ferroglobe may be challenged upon review by the applicable taxing authorities, and positions taken may not be sustained. The accounting for uncertain income tax positions requires consideration of timing and judgments about tax issues and potential outcomes and is a subjective estimate. In certain circumstances, the ultimate outcome of exposures and risks involves significant uncertainties. If actual outcomes differ materially from these estimates, they could have a material impact on Ferroglobe's results of operations and financial condition. Interest and penalties related to uncertain tax positions are recognized in income tax expense.

Fair value measurement of financial instruments

Certain of the Company's financial instruments are classified as Level 3 as they include unobservable inputs. The fair value measurement is based on the presumption that the transaction to sell the asset or transfer the liability takes place either: in the principal market for the asset or liability; or in the absence of a principal market, in the most advantageous market for the asset or liability.

The fair value of an asset or a liability is measured using the assumptions that market participants would use when pricing the asset or liability, assuming that market participants act in their economic best interest.

G. Safe Harbor

This annual report contains forward-looking statements within the meaning of Section 27A of the U.S. Securities Act and Section 21E of the U.S. Exchange Act and as defined in the Private Securities Litigation Reform Act of 1995. See "Cautionary Statements Regarding Forward-Looking Statements."

ITEM 7. MAJOR SHAREHOLDERS AND RELATED PARTY TRANSACTIONS

A. Major Shareholders

The following table sets forth certain information regarding beneficial ownership of shares by each stockholder known by us to be the beneficial owner of more than 5% of our shares.

Beneficial ownership is determined in accordance with the rules of the SEC and includes voting or investment power with respect to the securities. Percentage of ownership is based on 187,313,460 shares outstanding (excluding those held in Treasury).

	Number of Shares Beneficially Owned	Percentage of Outstanding Shares
Grupo Villar Mir, S.A.U.	91,125,519	48.6%
Rubric Capital Management LP	13,648,711	7.3%
The Goldman Sachs Group, Inc.	9,806,757	5.2%

The Company's shareholders do not have different voting rights.

As of April 29, 2022, Ferroglobe had four record holders in the United States, holding all of our outstanding shares. One of these shareholders is Cede & Co. The shares held by Cede & Co as record holder are held for underlying beneficial holders holding in 'street name'.

B. Related Party Transactions

The following includes a summary of material transactions with any: (i) enterprises that directly or indirectly through one or more intermediaries, control or are controlled by, or are under common control with us, (ii) associates, (iii) individuals owning, directly or indirectly, an interest in the voting power of the Company, that gives them significant influence over us, and close members of any such individual's family, (iv) key management personnel, including directors and senior management of such companies and close members of such individuals' families or (v) enterprises in which a substantial interest in the voting power is owned, directly or indirectly, by any person described in (iii) or (iv) or over which such person is able to exercise significant influence.

Grupo VM shareholder agreement

On November 21, 2017, we entered into an amended and restated shareholder agreement with Grupo VM (the "Grupo VM Shareholder Agreement"), as amended on January 13, 2021, and July 29, 2021 that contains various rights and obligations with respect to Grupo VM's Ordinary Shares, including in relation to the appointment of directors and dealings in the Company's shares. It sets out a maximum number of directors (the "Maximum Number") designated by Grupo VM (each, a "Grupo VM Director") dependent on the percentage of share capital in the Company held by Grupo VM. The Maximum Number is three, if Grupo VM's percentage of the Company's shares is greater than 25%; two if the percentage is greater than 15% but less than 25%; and one if the percentage is greater than 10% but less than 15%. As at the date of the Grupo VM Shareholder Agreement, the Board of Directors of the Company has three Grupo VM Directors.

Under the Grupo VM Shareholder Agreement, Grupo VM has the right to submit the names of one or more director candidates (a "Grupo VM Nominee") to the Nominations Committee for consideration to be nominated or appointed as a director as long as it holds 10% or more of Company's shares. If the Nominations Committee does not recommend a Grupo VM Nominee for nomination or appointment or if the requisite approval of the Board of Directors is not obtained in accordance with the Articles, Grupo VM shall, in good faith, and as promptly as possible but in all cases within thirty days, submit the names of one or more additional (but not the same) Grupo VM Nominees for approval. Grupo VM shall continue to submit the names of additional (but not the same) Grupo VM Nominees until such time as the favorable recommendation of the Nominations Committee and requisite approval of the Board of Directors are obtained. On December 23, 2015, Grupo VM designated Javier López Madrid to serve as the Executive Vice-Chairman of the Board in connection with the closing of the Business Combination. Upon the resignation of Alan Kestenbaum as Executive Chairman of the Board, Mr. López Madrid was appointed as Executive Chairman of the Board effective December 31, 2016. Mr. López Madrid is also the Chairman of the Nominations Committee.

The Board of Directors are prohibited from filling a vacancy created by the death, resignation, removal or failure to win re-election (a "Casual Vacancy") of a Grupo VM Director other than with a Grupo VM Nominee. Grupo VM shall have the right to submit a Grupo VM Nominee for appointment to fill a Casual Vacancy only if the Casual Vacancy was created by the death, resignation, removal or failure to win re-election of a Grupo VM Director. Grupo VM does not have the right to submit a Grupo VM Nominee for appointment to fill a Casual Vacancy if the number of Grupo VM Directors equals or exceeds the Maximum Number. In connection with any meeting of shareholders to elect directors, the number of Grupo VM Nominees in the slate of nominees recommended by the Board of Directors must not exceed the Maximum Number.

Subject to certain exceptions, Grupo VM has preemptive rights to subscribe for up to its proportionate share of any shares issued in connection with any primary offerings. The Grupo VM Shareholder Agreement (i) also restricts the ability of Grupo VM and its affiliates to acquire additional shares and (ii) contains a standstill provision that limits certain proposals and other actions that can be taken by Grupo VM or its affiliates with respect to the Company, in each case, subject to certain exceptions, including prior Board approval. The Grupo VM Shareholder Agreement also restricts the manner by which, and persons to whom, Grupo VM or its affiliates may transfer shares. On February 3, 2016, during an in person meeting of our Board, the Board approved the purchase of up to 1% of the shares by Javier López Madrid in the open market pursuant to Section 5.01(b)(vi) of the Grupo VM Shareholder Agreement.

The Grupo VM Shareholder Agreement will terminate on the first date on which Grupo VM and its affiliates hold less than 10% of the outstanding Shares.

Agreements with executive officers and key employees

We have entered into agreements with our executive officers and key employees. See “Item 6.A.—Directors, Senior Management and Employees—Directors, Senior Management and Employees.”

VM Energía and Energía VM

Under contracts entered into with FerroAtlántica S.A.U., (“FAU”) on June 22, 2010 and December 29, 2010 (assigned to FerroAtlántica de Boo, S.L.U. (“FAU Boo”) and to FerroAtlántica de Sabon, S.L.U. (“FAU Sabon”) in August 2019 in anticipation of the FAU Disposal), and with Hidro Nitro Española on December 27, 2012 (assigned to FerroAtlántica del Cinca when Hidro Nitro Española was sold in December 2018), VM Energía supplies the energy needs of the Boo, Sabón and Monzón electrometallurgy facilities, as a broker for FAU (FAU Boo or FAU Sabon, as appropriate) and Hidro Nitro Española (now FerroAtlántica del Cinca) in the wholesale power market. The contracts allow FAU (FAU Boo or FAU Sabon, as appropriate) and Hidro Nitro Española (now FerroAtlántica del Cinca) to buy energy from the grid at market conditions without incurring costs normally associated with operating in the complex wholesale power market, as well as to apply for fixed price arrangements in advance from VM Energía, based on the energy markets for the power, period and profile applied for. The contracts have a term of one year, which can be extended by the mutual consent of the parties to the contract. The contracts were renewed in January 2019 and will renew annually for up to three years unless terminated. The contracts were again renewed in January 2020. In January 2021, the contracts were renewed for two years with the possibility to extend it for additional one-year periods unless terminated with thirty days’ notice. On September 30, 2021 Grupo FerroAtlántica, S.A.U absorbed its subsidiaries FAU Boo and FAU Sabón assuming all the rights and obligations derived from those contracts. The relevant contracting party within the Ferroglobe group pays VM Energía a service charge in addition to paying for the cost of energy purchase from the market. For the fiscal year ended December 31, 2021, Grupo Ferroatlantica S.A.U and Ferroatlantica del Cinca’s obligations to make payments to VM Energía under their respective agreements for the purchase of energy plus the service charge amounted to \$102,065 thousand and \$30,501 thousand, respectively. For the fiscal year ended December 31, 2020, FAU Boo, FAU Sabon and Ferroatlantica del Cinca’s obligations to make payments to VM Energía under their respective agreements for the purchase of energy plus the service charge amounted to \$16,924 thousand, \$14,334 thousand and \$8,643 thousand, respectively. These contracts are similar to contracts FerroAtlántica signs with other third-party brokers.

Under contracts entered into with Rocas, Arcillas y Minerales SA (“RAMSA”) on December 3, 2010 and with Cuarzos Industriales SA (“CISA”) on April 27, 2012, VM Energía supplied the energy needs of the mining facilities operated by those companies, as a broker for RAMSA and CISA in the wholesale power market. RAMSA and CISA are both subsidiaries of the Company operating in the mining sector. These agreements superseded in 2019 by agreements entered into as of 15 March 2019 between VM Energía and each of RAMSA and CISA pursuant to which VM Energía provides equivalent intermediary services for term of one year, renewing annually. For the fiscal year ended December 31, 2021, RAMSA and CISA’s obligations to make payments to VM Energía under their respective agreements amounted to \$1,012 thousand and \$353 thousand respectively. For the fiscal year ended December 31, 2020, RAMSA was obliged to make payments to VM Energía of \$427 thousand under its agreements then in force with VM Energía and CISA was obliged to make payments to VM Energía of \$220 thousand under its agreements then in force with VM Energía.

Additionally, for the fiscal year ended December 31, 2021, 2020 and 2019, Energía VM invoiced other subsidiaries of FerroAtlántica for a total amount of \$120 thousand, \$79 thousand and \$89 thousand, respectively.

On June 2020, FerroAtlántica del Cinca and VM Energía entered into a collaboration agreement by virtue of which VM Energía is allowed to use Monzon’s grid connection point and high voltage electrical assets for a PV installation project, electricity from which will be supplied to FerroAtlántica del Cinca.

On February 24, 2021, FerroAtlántica de Sabón and VM Energía entered into a collaboration agreement by virtue of which VM Energía is allowed to use Sabón’s grid connection point and high voltage electrical assets for a PV installation project, electricity from which will be supplied to FerroAtlántica de Sabón.

On November 10, 2021 Grupo FerroAtlántica entered into an agreement with VM Energía and Parque Eólico A Picota, S.L.U. (a VM Energía subsidiary) for a free assignment of 10% of the Guarantees of Origin of the total energy consumed by Grupo FerroAtlántica for five (5) years when the wind farms start to produce (in 2023 according to the estimation).

On December 14, 2021, Grupo FerroAtlántica entered into an agreement with VM Energía to assist in the identification of counterparties and intermediation for the closing of long-term power purchase agreements.

Espacio Information Technology, S.A.

Espacio Information Technology, S.A. ("Espacio I.T."), a Spanish company wholly-owned by Grupo VM, provides information technology and data processing services to Ferroglobe PLC and certain of its direct and indirect subsidiaries: FAU (until shortly prior to the FAU Disposal when such services were assigned to Grupo FerroAtlántica de Servicios, S.L.U. ("Servicios")), FerroAtlántica de Mexico, Silicon Smelters (Pty), Ltd. and FerroPem, SAS pursuant to several contracts.

Under a contract entered into on January 1, 2004, Espacio I.T. provided FAU with information processing, data management, data security, communications, systems control and customer support services. The contract was assigned to Servicios shortly prior to the FAU Disposal; it has a one-year term, subject to automatic yearly renewal, unless terminated with notice provided three months prior to the scheduled renewal. The base yearly amount due under the contract for these services is \$641 thousand, exclusive of VAT and subject to inflation adjustment. For the period from January 1, 2019 to August 13, 2019 when the contract was assigned to Servicios, FerroAtlántica's obligations to make payments to Espacio I.T. under this agreement amounted to \$1,101 thousand. For the period from August 14, 2019 to December 31, 2019, Servicios's obligations to make payments to Espacio IT under this agreement amounted to \$552 thousand. For the years ended December 31, 2020 and 2021, Servicios's obligations to make payments to Espacio IT under this agreement amounted to \$1,406 thousand and \$1,427 thousand respectively.

Under a contract entered into on January 1, 2006, Espacio I.T. provides FerroPem, SAS with information processing, data management, data security, communications, systems control and customer support services. The contract has a one-year term, subject to automatic yearly renewal, unless terminated with notice provided three months prior to the scheduled renewal. The base yearly amount due under the contract for these services is \$826 thousand, exclusive of VAT and subject to inflation adjustment. For the fiscal years ended December 31, 2021, 2020, and 2019, FerroPem, SAS's obligations to make payments to Espacio I.T. under this agreement amounted to \$860 thousand, \$823 thousand and \$866 thousand, respectively.

Under a contract entered into on January 1, 2009, Espacio I.T. provides Silicon Smelters (Pty), Ltd. with services including the maintenance and monitoring of the company's network, servers, applications, and user workstations, as well as standard software licenses. The contract has a one-year term, subject to automatic yearly renewal, unless terminated with notice three months prior to the scheduled renewal. The base yearly amount due under the contract is \$266 thousand, subject to inflation adjustment. For the fiscal years ended December 31, 2021, 2020 and 2019 Silicon Smelters (Pty), Ltd.'s obligations to make payments to Espacio I.T. under this agreement amounted to \$274 thousand, \$264 thousand, and \$254 thousand, respectively.

Under a contract entered into on May 2, 2016, Espacio I.T. provides Quebec Silicon with services including the maintenance and monitoring of its network, servers, applications, and user workstations, as well as standard software licenses at Quebec Silicon. The contract has a one-year term, subject to automatic yearly renewal, unless terminated with notice three months prior to the scheduled renewal. The base yearly amount due under the contract is \$148 thousand, subject to inflation adjustment. For the fiscal years ended December 31, 2021, 2020 and 2019 payments made under this contract to Espacio I.T. were \$147 thousand, \$141 thousand and \$138 thousand, respectively.

Espacio I.T. also provides development services to FerroAtlántica under a contract dated July 21, 2017 for enhancements to Gesindus, FerroAtlántica's ERP system, and hosting services in connection with the company's document management system under a contract dated February 22, 2017, both on an ongoing basis. FerroAtlántica had transactions with Espacio I.T. under the former contract for the Gesindus development services for the fiscal year ended December 31, 2019 of \$9 thousand, and under the latter contract for the hosting services for the fiscal years ended December 31, 2021, 2020 and 2019 of \$97 thousand, \$101 thousand and \$197 thousand, respectively.

Espacio I.T. also provides Grupo FerroAtlántica with IT outsourcing services in connection with the Mangshi facility in China and provided Hidro Nitro Española with IT services, for neither of which is there a formal contract in place. For the year ended December 31, 2020, Grupo FerroAtlántica's obligations to make payments to Espacio IT in connection with the Mangshi facility in China amounted to \$41 thousand. For the year ended December 31, 2020, FerroAtlántica del Cinca obligations to make payments to Espacio IT in connection with these services amounted to \$232 thousand. For the year ended December 31, 2021, Grupo FerroAtlántica's obligations to make payments to Espacio IT in connection with the Mangshi facility in China amounted to \$30 thousand. For the year ended December 31, 2021, FerroAtlántica del Cinca obligations to make payments to Espacio IT in connection with these services amounted to \$240 thousand.

For the fiscal years ended December 31, 2021, 2020 and 2019, Espacio I.T. and other subsidiaries of Grupo VM involved in the provision of IT services invoiced FAU and other subsidiaries of Grupo FerroAtlántica and Ferroglobe PLC in a total amount of \$190 thousand, \$161 thousand, and \$144 thousand, respectively.

On March 24, 2021, Servicios entered into an agreement with Espacio I.T., effective as from January 1, 2021, for the maintenance of the network electronics equipment (switches) that allow interconnection between all the user devices (computers and printers) on each of Ferroglobe floors (49th and 45th floors). The services include monitoring in order to detect eventual incidents in the network, 24x7 support, maintenance service, and spares to replace devices in the event of a breakdown.

Other agreements with other related parties

Under the terms of a loan agreement entered into on 24 July 2015 between FerroAtlántica and Inmobiliaria Espacio, S.A. (“IESA”), the ultimate parent of Grupo VM, FerroAtlántica extended to IESA a credit line for treasury purposes of up to \$20 million, of which \$3.1 million (the “Loan”) remains outstanding. The credit line runs year on year for a maximum period of 10 years and amounts outstanding under it (including the Loan) bear interest annually at the rate equal to the EURIBOR three month rate plus 2.75 percentage points. The availability of the credit line may be cancelled at the end of any year or at any time by IESA. On April 20, 2020 this agreement was amended so the credit line amount was reduced to approximately \$2.5 million.

Calatrava RE, a Luxembourg affiliate of Grupo VM, is a reinsurer of the Company’s global marine and property insurance programs. The property and marine cargo insurances are placed with Mapfre Global Risks S.A. with whom the Company contracts for the provision of this insurance. There are no contracts directly in place between the Company and Calatrava RE.

Torre Espacio Gestión SLU, a wholly owned subsidiary of Grupo VM, manages the premises which are the subject of the leases on behalf of Torre Espacio, including collecting rents and other payments under the terms of the leases from FerroAtlántica on behalf of Torre Espacio. On September 30, 2020 the contract between Torre Espacio Gestión, SLU and the owner of the premises was terminated so this transaction does not involve a Grupo VM subsidiary and should therefore not be considered a related-parties transaction anymore. For the period from January 1, 2020 to September 30, 2020, Servicios’ obligations to make payments under those agreements amounted to \$1,235 thousand.

Aurinka and the Solar JV

Javier López Madrid, the Company’s Executive Chairman and a member of the Board, currently owns approximately 100% of the outstanding share capital of Financiera Siacapital which, in turn, holds a 31.33% interest in Aurinka International, S.L. (“Aurinka Int”) and a 31.33% interest in Blue Power. Blue Power is a party to the Solar JV entered into by FerroAtlántica group with Aurinka Photovoltaic Group, S.L. (“Aurinka PV”). Aurinka PV is almost 100% owned by Aurinka Value, S.L., a company which also owns a 31.66% interest in Aurinka Int. Blue Power owns certain intellectual property contributed to the joint venture and provided certain technology consulting services to it, as summarized below.

The remaining equity interests in Blue Power and Aurinka Value, S.L. are owned by third party outside investors. In July 2019 certain changes were made to the terms of the Solar JV to effect its unwinding, as a result of which FerroAtlántica group acquired 100% of the share capital of the operating company set up as part of the joint venture to build and operate the pilot plant for the Solar JV (“OpCo”) and FerroAtlántica group’s wholly owned subsidiary, Silicio Ferrosolar, S.L.U. (now renamed as Ferroglobe Innovation, S.L.) (“SFS”) disposed of 1% of its interest in the research and development company (“R&DCo”) formed to license or develop and own certain intellectual property used in connection with the Solar JV. These changes are described further below.

In 2016, FAU entered into a project with Aurinka PV for a feasibility study and basic engineering for a UMG solar silicon manufacturing plant. Purchases under this project were approximately \$3.4 million for 2016.

On December 20, 2016, FerroAtlántica and its wholly owned subsidiaries, FAU and SFS entered into the Solar JV Agreement with Blue Power and Aurinka PV providing for the formation and operation of a joint venture with the purpose of producing UMG solar silicon. The entry into the joint venture pursuant to the Solar JV Agreement was subject to certain conditions precedent, including the satisfactory completion of an ex-ante verification procedure in relation to the ability of the technology to be contributed to the joint venture by Blue Power to meet certain technical and cost parameters and the authorization of the joint venture by Ferrgloble PLC, Blue Power and Aurinka PV's management bodies. All these conditions precedent were met during 2017 and the Solar JV Agreement became fully binding.

Under the Solar JV Agreement, FerroAtlántica indirectly owned 75% of OpCo, which owns certain assets comprising, among others, constructions at Sabón and a UMG solar silicon plant at Puertollano, Spain. SFS owned 51% of R&DCo, the company formed as part of the joint venture to hold certain intellectual property rights and know-how contributed by Blue Power and SFS. R&DCo licensed such intellectual property rights and know-how to OpCo. Pursuant to the Solar JV Agreement, FerroAtlántica and other subsidiaries committed to incur capital expenditure, subject to the approval of the joint venture board, in connection with the joint venture of up to a maximum of \$133,000 thousand over an initial phase of up to 2 years. During the fiscal years ended December 31, 2018 and 2017, FerroAtlántica and other subsidiaries paid Aurinka PV \$4,252 thousand and \$3,611 thousand, respectively, in connection with the project. Further investment in the joint venture was to be determined as the joint venture progressed. In connection with the Solar JV Agreement, FAU obtained a loan of approximately \$50,000 thousand ("the REINDUS Loan") from the Spanish Ministry of Industry and Energy ("the Ministry") for the purpose of building and operating the UMG solar silicon plant. In November 2018, FAU agreed to transfer to OpCo certain assets which had been acquired with the proceeds of the REINDUS Loan and used exclusively by OpCo in connection with the joint venture in consideration of OpCo assuming liability for the REINDUS Loan. The request for this novation was formally submitted to the Ministry in November 2018. On September 25, 2017, OpCo entered into an agreement with Caiz Salceda SLU ("Salceda"), a company ultimately owned by members of the Villar Mir family (who are related to Javier Lopez Madrid by marriage), under which Salceda agrees to construct on its land and lease to the OpCo and to operate and maintain for a term of 25 years a pilot plant for power generation from photovoltaic panels produced with UMG solar silicon, in return for ownership of all power generated at the plant. On June 13, 2016, SFS entered into a loan agreement with Blue Power under which SFS advanced a principal sum of over \$9,000 thousand to Blue Power in connection with the project. As at December 31, 2016 the amount outstanding under the loan agreement was \$9,845 thousand. On February 24, 2017, the loan was novated to OpCo as part of a capital injection by Blue Power to OpCo and on August 1, 2019 the loan was novated to FerroAtlántica.

In July 2019, the Solar JV was unwound on the following terms:

- FerroAtlántica acquired the whole of the share capital of OpCo for €1;
- Aurinka PV acquired 1% of SFS's interest in the share capital of R&DCo for €1, such that, following such disposal, R&DCo is owned as to 50% by SFS and, following the disposal of its 49% shareholding by Blue Power to Aurinka PV, 50% by Aurinka PV;
- SFS agreed to sell certain patents to R&DCo for €1;
- arrangements were made between;
 - o Aurinka PV and OpCo pursuant to which Aurinka PV will continue to maintain the Puertollano plant for a monthly fee of \$33.6 thousand and for a maximum term expiring on December 31, 2020. Amounts paid pursuant to these arrangements in the fiscal year ended December 31, 2019 totalled \$404;
 - o Aurinka PV and FerroAtlántica, FAU and OpCo for the payment by the latter of the sum of \$2,800 thousand and the grant by OpCo to Aurinka of an option to purchase certain equipment with a book value of approximately \$6,721 thousand for the sum of \$1,120 thousand, in satisfaction of any claim Aurinka PV might otherwise have in relation to the termination of the Solar JV;
 - o Aurinka PV and FerroAtlántica, SFS and OpCo for the marketing and promotion of the sale of the OpCo and SFS's rights in R&DCo, including a right of first refusal to Aurinka PV to purchase the 50% shares in R&DCo owned by SFS and a right of first refusal to Aurinka PV to acquire assets owned by OpCo. This agreement was extended until June 30, 2021 and the purchase option was exercised on February 24, 2021. On March 10, 2021 the Parties partially executed the purchase option \$111 Thousand.

- save as set out above, all arrangements in place with Blue Power or Aurinka PV in relation to OpCo or R&DCo and any rights or claims which Aurinka PV or Blue Power might have in relation thereto were brought to an end.

Corporate Vision Strategists Ltd.

On September 20, 2020 Ferroglobe entered into a lease agreement with Corporate Vision Strategists Ltd for the provision of corporate and head office services for 13 Chesterfield Street, Mayfair, London, W1J 5JN. Nicolas de Santis, a Ferroglobe Director, became a director of the Company on May 13, 2021 and exercises significant influence over Corporate Vision Strategists Ltd as the company is wholly owned by him. For the year ended December 31, 2021, Ferroglobe's obligations to make payments to Corporate Vision Strategists Ltd under this agreement amounted to \$68 thousand.

C. Interests of Experts and Counsel

Not applicable.

ITEM 11. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK.

Ferroglobe operates in an international and cyclical industry which exposes it to a variety of financial risks such as currency risk, liquidity risk, interest rate risk, credit risk and risks relating to the price of finished goods, raw materials and power.

The Company's management model aims to minimize the potential adverse impact of such risks upon the Company's financial performance. Risk is managed by the Company's executive management, supported by the Risk Management, Treasury and Finance functions. The risk management process includes identifying and evaluating financial risks in conjunction with the Company's operations and quantifying them by project, region and subsidiary. Management provides written policies for global risk management, as well as for specific areas such as foreign currency risk, credit risk, interest rate risk, liquidity risk, the use of hedging instruments and derivatives, and investment of surplus liquidity.

Market risk

Market risk is the risk that the Company's future cash flows or the fair value of its financial instruments will fluctuate because of changes in market prices. The primary market risks to which the Company is exposed comprise foreign currency risk, interest rate risk and risks related to prices of finished goods, raw materials (principally coal and manganese ore) and power.

Foreign exchange rate risk

Ferroglobe generates sales revenue and incurs operating costs in various currencies. The prices of finished goods are to a large extent determined in international markets, primarily in US dollars and Euros. Foreign currency risk is partly mitigated by the generation of sales revenue, the purchase of raw materials and other operating costs being denominated in the same currencies. Although it has done so on occasions in the past, and may decide to do so in the future, the Company does not generally enter into foreign currency derivatives in relation to its operating cash flows.

Notes and cross currency swap

The Parent Company has been historically exposed to exchange rate fluctuations as it had a Euro functional currency and future commitments to pay interest and principal in US dollars in respect of its outstanding debt instruments of \$150,000 thousand (see Note 18). To manage this foreign currency risk, the Parent Company entered in 2017 into a cross currency swap and designated a portion of this as an effective cash flow hedge of the future interest and principal amounts due on its debt instruments. In March, 2020, the Company closed out the cross currency swap (see Note 19).

In 2021, due to an occurrence of events and conditions that reduce the number of transactions in euros, management conducted a review of the functional currency of the Parent Company and they concluded that there has been a change in its functional currency from Euro to US Dollars, effective since October 1, 2021 (see Note 3.3).

Interest rate risk

Ferroglobe is exposed to interest rate risk in respect of its financial liabilities that bear interest at floating rates. These primarily comprise credit facilities and leases commitments for lease agreements following IFRS 16 implementation.

At December 31, the Company's interest-bearing financial liabilities were as follows:

	2021		
	Fixed rate US\$'000	Floating rate US\$'000	Total US\$'000
Bank borrowings	—	98,967	98,967
Obligations under finance leases	—	18,358	18,358
Debt instruments	440,297	—	440,297
Other financial liabilities (*)	67,014	—	67,014
	507,311	117,325	624,636

(*) Other financial liabilities comprise loans from government agencies and exclude derivative financial instruments (see Note 19 of the Consolidated Financial Statements).

	2020		
	Fixed rate US\$'000	Floating rate US\$'000	Total US\$'000
Bank borrowings	—	107,607	107,607
Obligations under finance leases	—	22,537	22,537
Debt instruments	357,508	—	357,508
Other financial liabilities (*)	63,896	—	63,896
	421,404	130,144	551,548

(*) Other financial liabilities comprise loans from government agencies and exclude derivative financial instruments (see Note 19 of the Consolidated Financial Statements).

Credit risk

Credit risk refers to the risk that a customer or counterparty will default on its contractual obligations resulting in financial loss. The Company's main credit risk exposure related to financial assets is trade and other receivables.

Trade receivables consist of a large number of customers, spread across diverse industries and geographical areas. The Company has established policies, procedures and controls relating to customer credit risk management. Ongoing credit evaluation is performed on the financial condition of accounts receivable and, where appropriate, the Company insures its trade receivables with reputable credit insurance companies.

Since October 2020, the Company entered into a factoring program where the receivables of some of the Company's French and Spanish entities are advanced pursuant to a factoring arrangement.

Since December 2019, the Company entered into a forfaiting program where some of the Company's French and Spanish entities may assign their rights to receive payments under the Contracts with the customer "ArcelorMittal Sourcing s.c.a." in accordance with a forfaiting scheme.

Liquidity risk

The purpose of the Company's liquidity and financing policy is to ensure that the Company keeps sufficient funds available to meet its financial obligations as they fall due. The Company's main sources of financing are as follows:

- \$345,058 thousand aggregate principal amount of 9.375% senior secured notes due March 1, 2025 (the "Reinstated Senior Notes"). The proceeds from the Reinstated Notes, issued by Ferroglobe and Globe (together, the "Issuers") on July 30, 2021, were primarily used to repay certain existing indebtedness of the Parent Company and its subsidiaries. Interest is payable semi-annually on January 31 and July 31 of each year.

- \$60,000 thousand aggregate principal amount of 9.300% super senior secured notes due March 1, 2025 (the “Super Senior Notes”). The proceeds from the Notes, issued by Ferroglobe on May 17, 2021, were primarily used to repay certain existing indebtedness of the Parent Company and its subsidiaries. Interest is payable semi-annually on January 31 and July 31 of each year.
- On September 8, 2016, FerroAtlántica, S.A.U, as borrower, and the Spanish Ministry of Industry, Tourism and Commerce (the “Ministry”), as lender, entered into two loan agreements under which the Ministry made available to the borrower loans in aggregate principal amount of €44,999 thousand and €26,909 thousand, respectively, in connection with industrial development projects relating to the Company’s solar grade silicon project. The loan is contractually due to be repaid in 7 instalments over a 10-year period with the first three years as a grace period. The loan of €26,909 thousand was repaid in April 2018. Interest on outstanding amounts under each loan accrues at an annual rate of 3.55%. As of December 31, 2021, the amortized cost of the loan was €54,578 thousand (equivalent to \$61,815 thousand) (2020: €44,824 thousand and \$55,004 thousand), see Note 19.
- On February 1, 2018 the Company acquired 100% of the outstanding ordinary shares of Kintuck (France) SAS and Kintuck AS from a wholly-owned subsidiary of Glencore International AG (“Glencore”) and obtained control of both entities. Consideration included both cash and contingent consideration. The contingent consideration arrangement requires the Company to pay the former owners of Kintuck (France) SAS and Kintuck AS a sliding scale commission based on the silicomanganese and ferromanganese sales spreads of Ferroglobe Mangan Norge and Ferroglobe Manganèse France, up to a maximum amount of \$60,000 thousand (undiscounted). The contingent consideration applies to sales made up to eight and a half years from the date of acquisition and if it applies, the payment is on annual basis. The potential undiscounted amount of all future payments that the Company could be required to make under the contingent consideration arrangement is between \$nil thousand and \$60,000 thousand.
- On October 2, 2020, the Company ended the receivables funding agreement and cancelled the securitization program, signing a new factoring agreement with a Factor, for anticipating the collection of receivables of the Company’s European entities (Grupo FerroAtlántica, S.A. and FerroPem S.A.S). As a result of the agreement, the Leasing and Factoring Agent provided a cash consideration of circa \$48.8 million, repurchased the receivables portfolio sold to the SPE on September 28, 2020, and consequently assumed the loan tranche of the senior borrower to the SPE. Also, the Senior loan and intermediate subordinate loan tranches were paid with internal sources of funds, at closing, there was cash release of \$18 million from restricted cash relating to a special purpose vehicle under prior securitization program (see Note 10).
- On July 23, 2020, Ferroglobe subsidiary, Ferropem, S.A.S., as borrower, contracted a loan with BNP Paribas, as lender, amounting to €4,456 thousand, to finance Company’s activities in France. The loan is guaranteed by the French government as part of the COVID-19 relief measures. Repayment of principal and payment of interest and accessories offer the possibility for the Borrower to extend the amortization of the amounts due at maturity for an additional period of 1 to 5 years. Interest rate is zero percent and the borrower is liable to pay a 0.50% fee calculated on the capital borrowed equivalent to an amount of €22 thousand.
- On June 2, 2020, Ferroglobe subsidiary, Silicium Québec, as borrower, contracted a \$7,000 thousand loan with Investissement Québec, a regional government loan & investment agency, as lender, to finance its capital expenditures activities in Canada. The loan is to be repaid in 84 instalments over a 10 year period with the first three years as a grace period. Interest rate on outstanding amounts is zero percent.
- On March 3, 2022, Grupo FerroAtlántica and Grupo FerroAtlántica de Servicios (together the “Beneficiaries”) and the Sociedad Estatal de Participaciones Industriales (“SEPI”), a Spanish state-owned industrial holding company affiliated with the Ministry of Finance and Administration, entered into a loan agreement of €34.5 million. This loan is part of the SEPI fund intended to provide assistance to non-financial companies operating in strategically important sectors within Spain in the wake of the COVID-19 pandemic.

