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The Mineral Industry of Austria

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During 2010, the Erzberg open pit iron ore mine at Eisenerz in the State of Styria and the underground tungsten mine at Mittersill in the State of Salzburg were the only metal mines still in operation in Austria. This was not the case with the industrial minerals sector, however, which still produced dolomite, gypsum, kaolin, lime, limestone, magnesite, salt, silica (quartz) sand, talc, and other industrial mineral products. Excluding production (if any) in the United States[1] in 2010, Austria was estimated to have been the fourth ranked producer of tungsten in the world and the fifth ranked producer of magnesite and to have accounted for 1.6% and 4%, respectively, of the world's production. The country was also estimated to have accounted for about 1% of the world's production of natural gypsum in 2010 (including production by the United States) (table 1; Crangle, 2011; Kramer, 2011; Shedd, 2011).

Minerals in the National Economy

In 2010, the value of production by the mining and quarrying sector (not including production of crude petroleum and natural gas) in Austria accounted for about 0.4% (or slightly greater than $1.5 billion[2]) of the country's gross domestic product (GDP) compared with 0.36% (or slightly less than $1.4 billion) in 2009. In 2010, the real value of output in the sector (at 2009 prices) increased by 4.6% compared with a decrease of 3.5% in 2009 (at 2008 prices). Planned investment in the ferrous metals sector decreased to $411 million in 2010 from $763 million in 2009; that in the stones and ceramics sector decreased to $207 million from a revised planned investment of about $226 million in 2009; that in the nonferrous metals sector increased to about $100 million from a revised planned estimate of $53 million in 2009; and that in the mining and quarrying sector increased to $73 million from $47 million in 2009 (International Monetary Fund, 2011; Wirtschaftskammer Österreich, 2011b, p. 26–27, 53; 2011c, p. 42).

In 2010, there were about 5,800 employees in the mineral extraction sector (including production of crude petroleum and natural gas) compared with a revised figure of about 5,600 employees in 2009, and employees in the mineral extraction sector accounted for slightly greater than 0.17% of all employees in Austria compared with slightly less than 0.17% in 2009. Information on the average salary of the employees in the mineral industry, the minerals extraction sector, or just the mining and quarrying sector in 2010 was not available. According to a survey in March 2010, however, employees in the natural gas and petroleum sector earned about $6,800 per month, on average; those in the mining and steel producing sector earned about $5,100 per month; and those in the building materials and ceramics sector earned about $4,600 per month (Wirtschaftskammer Österreich, 2010; 2011b, p. 35, 42; 2011d; International Monetary Fund, 2011).

An exact mineral trade balance or the detailed data to calculate one accurately were not available. More-aggregated data, however, indicated that the value of Austria's exports of raw materials (including nonfuel minerals) increased to $4.9 billion in 2010 from $4.1 billion in 2009, and that of the country's imports of raw materials increased to $7.7 billion from a revised figure of $5.5 billion. Also, the value of exports of fuels and energy (including mineral fuels) increased to $4.7 billion in 2010 from a revised figure of about $4.2 billion in 2009, and that of imports of fuels and energy increased to $16.3 billion from a revised figure of $13.7 billion. Thus, Austria's trade balance for energy, fuels, and raw materials (including most of the mineral trade balance as a subset) was –$14.4 billion in 2010 compared with a slightly revised balance of –$10.9 billion in 2009. It is not clear whether petroleum refinery products are included in the above trade balance, but other mineral-based manufactured products (such as pig iron and steel) are not (International Monetary Fund, 2011; Wirtschaftskammer Österreich, 2011c, p. 60–61).

Because processed metals and industrial mineral products probably accounted for a greater proportional share of the total value of output of the country's mineral industry than did mineral raw materials, it is useful to look at the trade data that is available for nonfuel mineral-based manufactured products. The value of Austria's exports of manufactured ferrous metals (including iron and steel, and possibly including ferroalloys) increased to about $8.1 billion in 2010 from $6.9 billion in 2009, and the value of imports of ferrous metals increased to about $4.5 billion from about $3.8 billion; the value of exports of nonferrous metals (including such products as aluminum and tungsten carbide, metal, and oxide powders) increased to $4.4 billion in 2010 from about $3.1 billion in 2009, and that of imports of nonferrous metals increased to about $4.3 billion from $2.9 billion; and the value of exports of nonmetallic mineral products (estimated to include such intermediate products as cement and such other industrial mineral products as ceramics and glass) increased to $2.6 billion in 2010 from $2.4 billion in 2009, and that of imports of industrial mineral products increased to $2.1 billion from $2 billion. Thus, Austria's trade balance for mineral-based manufactured products increased to $4.2 billion in 2010 compared with about $3.8 billion in 2009 (Bundesministerium für Wirtschaft, Familie und Jugend, 2010b, p. 7–9; 2011, p. 7–8; International Monetary Fund, 2011; Wirtschaftskammer Österreich, 2011c, p. 60–61).

[1]U.S. data were withheld to avoid disclosing company proprietary data.

[2]Where necessary, values have been converted from European Union euros (€) to U.S. dollars (US$) at an annual average exchange rate of €0.718=US$1.00 for 2009 and about €0.7536=US$1.00 for 2010. All values are nominal, at current prices, unless otherwise stated.

Government Policies and Programs

The basis of Austria's mining law is the Mineralrohstoffgesetz (MinroG) (Federal Law BGBl. I. no. 38/1999), or "Mineral Resources Law," which came into effect on January 1, 1999, in replacement of the country's previous mining law (BGBl. 259/1975) that had been in effect since April 11, 1975. Through 2010, the MinroG had been amended by Federal Laws BGBl. I no. 21/2002, BGBl. I no. 112/2003, BGBl. I no. 85/2005, BGBl. I no. 84/2006, BGBl. I no. 113/2006, BGBl. I no. 115/2009, BGBl. I no. 65/2010, and BGBl. I no. 111/2010; and by the publication BGBl. I no. 83/2003. The MinroG applies to the exploration for, production of, and processing of minerals in the country; the use of workings of unused mines; and the exploration for, locating of, and evaluation of the suitability of such geologic structures as caverns for holding or storing substances, such as liquid and gaseous mineral fuels. The two regulations that were approved in 2010 and amended the MinroG were BGBl. I no. 65/2010, which included some changes to emissions regulations for boilers and mining operations, and BGBl. I no. 111/2010, which mandated some changes in the assessment of royalties on production by mining and hydrocarbon operations (starting in 2011). Three environmental laws that were directly applicable to mining and other mineral production and processing operations in the country were the Remediation Act of 1989 (BGBl. no. 299/1989), as last amended in 2008 by BGBl. I no. 40/2008; the Environmental Information Act of 1993 (BGBl. no. 495/1993), as last amended in 2005 by BGBl. I no. 6/2005; and the Environmental Impact Assessment Act of 2000 (BGBl. no. 697/1993), as last amended in 2006 by BGBl. I no. 149/2006 (Bundeskanzleramt Österreich, 2010a; 2010b, p. 118–119; Bundesministerium für Wirtschaft, Familie und Jugend, 2011, p. 23–30; undated; Rohöl-Aufsuchungs Aktiengesellschaft, undated).

As a member of the European Union (EU), Austria participated in developing minerals security and energy strategies for the EU, and the country's own policies in this realm were affected by the policies and measures adopted by the EU. In 2010, the Austrian Government participated in the European Commission (EC)'s working groups to better define the critical minerals for the EU and to exchange information on best practices for land use planning, permitting, and geologic knowledge sharing between EU members, and the EC cited the Austrian mineral resources plan (development of which was begun in 2001) as an example of best practices in the area of land use planning. With respect to critical minerals, the Austrian Government had considered defining mineral protection zones for (potentially) economic deposits of antimony, graphite, and magnesite in the country within the context of its mineral resources plan (Bundesministerium für Wirtschaft, Familie und Jugend, 2011, p. 1–6).

In April 2009, the ministers of two Austrian Federal Government ministries convened a working group to develop measures as part of a new Austrian energy strategy that would enable the country to develop a sustainable energy system. These measures could make energy services available for private consumption as well as for businesses in the future while still implementing EU rules. The core objectives of the new Austrian energy strategy were as follows:

- Energy efficiency—An improvement in energy efficiency at all stages of the provision and use of energy
- Renewable energy—A focus on hydropower (including pump storage), wind power, and biomass and photovoltaic sources of power
- Security of supply—To be increased and aimed at the highest possible degree of cost effectiveness.

The working group also suggested that Austria's targets for 2020 should be that 34% of Austrian energy consumption comes from renewable resources, and that greenhouse gas emissions are reduced by 16% below 1990 levels in sectors that do not participate in the EU's Emissions Trading System. In order for the demand for energy services in Austria to be met in a way that is compatible with the EU climate and energy targets for 2020, the Austrian working group recommended that the new Austrian energy strategy set the target for total energy consumption in Austria in 2020 to be no more than 1,100 petajoules (Bundesministerium für Wirtschaft, Familie und Jugend, 2010a).

Production

Data on Austria's mineral production are in table 1. In 2009, production of many minerals and mineral materials decreased substantially in response to decreased demand during the economic downturn, and this resulted in unused production capacity in the mineral industry that could be brought quickly into production in 2010 in cases where demand increased. In 2010, production of secondary aluminum was estimated to have decreased compared with that of 2009 (although not back to the level of production in 2008) owing to a decrease in secondary aluminum smelter feed following the termination (on December 31, 2009) of the scrapping bonus paid by the Government for automobiles over 13 years old. (On April 1, 2009, the Government started this program as an economic stimulus measure to help counteract the economic downturn in the country.) According to preliminary data from the International Copper Study Group, Austria's production of secondary refined copper increased by 18% compared with that of 2009. Production of most other metals also increased substantially in response to a recovery in demand both domestically and in Austria's main export markets for metals (mostly in member countries of the EU) following the economic downturn in Europe that began about mid-2008 and lasted until about mid-2009 (table 1; Austrian Times, 2009; Schneeweiss, 2010; Bundesministerium für Wirtschaft, Familie und Jugend, 2011, p. 6–14, 68–69; International Copper Study Group, 2011, p. 13, 15; World Steel Association, 2011, p. 3, 63–65, 88, 100).

In 2010, the value of total sales in the construction sector of Austria was about the same as in 2009 (decreased by 0.05%), but 2009 sales in this sector were already 11% lower than in 2008; the value of total output in the construction sector decreased by about 4.7% in 2010 after decreasing by 7.5% in 2009. Thus, domestic demand for minerals used in this sector appeared to have remained relatively low (if not to have decreased further) in 2010, and there were again decreases in

the country's production of cement, clays, gypsum, sand (other than silica sand) and gravel, and crushed and worked stone (including granite, limestone, marl, and quartzite) in 2010 compared with that of 2009. In 2010, there appeared to be some delays and restructuring of expected public investment in infrastructure and other major construction projects, but the value of active nonresidential construction projects in Austria was expected to increase in 2011 (although not necessarily that of active civil engineering projects). In 2010, the total revenue of Austrian companies in the civil engineering sector decreased by 8.4% compared with that of 2009. The value of exports of worked stone decreased by 33%; cement, 28%; gypsum and wallboard, about 18%; sand and gravel, 6.4%; and ceramic or stone tiles, 3.6%. One reason given for the continuing decreases in the value of Austrian exports of these stone and ceramic minerals and materials was weak demand in Eastern Europe, which appeared to have the greatest effect on the country's exports of worked stone in 2010 (table 1; Bundesministerium für Wirtschaft, Familie und Jugend, 2011, p. 7–14, 68–69; Fachverband der Stein- und Keramischen Industrie Österreich, 2011, p. 7–9, 11–13, 19; HOCHTIEF AG, 2011, p. 43–44; Wirtschaftskammer Österreich, 2011a).

Austria's production of industrial minerals that were used to a greater extent outside of the construction sector, such as industrial abrasives (fused aluminum oxide) and industrial refractories (magnesite), or in the production of technical ceramics for industrial applications (such as ceramics used in electronics) increased for the most part. There appeared to be increases in domestic demand for these minerals and materials, including for refractories in the steel sector, and increases in export demand, mostly from other countries in the EU and especially from Germany. In 2010, production of talc and leucophyllite increased compared with that of 2009 mostly in response to an increase in demand for these minerals in the manufacturing of paper (the main use of Austrian talc) and to lesser increases in demand in the coatings, paints and lacquers, and plastics sectors, but production was still significantly below the levels in 2007 and 2008. Production of some other industrial minerals used primarily in industry (instead of primarily in construction) decreased substantially, including notable decreases in the production of diabase and silica sand. Information concerning the main cause of the decrease in production of either of these last two minerals or in which sector demand may have decreased (for example, whether relative demand for silica sand decreased more in the glass manufacturing sector, in the foundry sector, or in some other sector), however, was not available. The total value of foundry production actually increased by about 26% compared with that of 2009, but this was after it decreased by 32% in 2009 compared with that of 2008. Preliminary data indicate that the value of total sales in the paper and glass sectors increased by about 15% and 5%, respectively, in 2010 compared with that of 2009, and the value of total sales in each of these sectors decreased by about 16% and about 13%, respectively, in 2009 compared with that of 2008 (table 1; Statistik Austria, 2010; 2011a, b; Wilson, 2010; Bundesministerium für Wirtschaft, Familie und Jugend, 2011, p. 7–14, 35–42, 72; Fachverband der Gießereiindustrie, 2011, p. 13; Fachverband der Stein- und Keramischen Industrie Österreich, 2011, p. 8–9, 11–14, 19; Feytis, 2011).

Through 2010, production of graphite in Austria exhibited a high amount of volatility since Graphitbergbau Mühldorf Mörth GmbH resumed mining in 2008 after reportedly using only stockpiled material to supply its customers during the past few years. The company continued to invest in expanding output to consistently produce at listed capacity and was planning to continue to invest in this ramping up and possible capacity expansion through at least 2012. Similarly, the large percentage changes in the production of kaolin, mica (estimated), oil shale, and rock salt could be overstating the importance of these changes in terms of tonnage or volume (owing to relatively small bases of production in Austria) and did not involve even regionally significant changes in the tonnages of production for these minerals. Production of kaolin was reported to be negatively affected by decreasing profit margins for producers in Austria owing to the price of kaolin not keeping pace with increases in the costs of production (led by increases in the prices of diesel, other fuels, and freight or transportation). At the same time, kaolin prices may not have increased as much as costs because less costly substitutes could have been more readily available for use in the areas of consumption growth. Austria's production of all types of salt increased owing to increased demand for salt-based deicing compounds during the greater snowfall during January, February, November, and December 2010, compared with that of 2009. Rock salt is more useful for conventional highway deicing applications than brines, which could be a reason for the much greater increase (90%) in rock salt production relative to that of salt from brines. Information was not available concerning the main reason for the 10% increase in production of natural gas in the country, for the even greater percent changes in Austria's production of some petroleum refinery products, or for its production of sulfur as a byproduct of oil and natural gas production and processing (table 1; Roberts, 2010, 2011; Bundesministerium für Wirtschaft, Familie und Jugend, 2011, p. 9–10, 14, 34–36, 43–44, 71–72; Feytis, 2011).

Structure of the Mineral Industry

Table 2 is a list of major mineral industry facilities. Many mineral producers and processors (including most of the producers of industrial minerals in Austria) are not listed in table 2 owing to the lack of availabile information concerning the production capacities of the many small- and medium-scale ("Mittelstand") family-owned companies that produce minerals in the country. In 2010, there were reportedly 1,184 mining and quarrying operations and 3 operations that produced natural gas and (or) crude petroleum. Of the mining operations, 1,181 produced industrial minerals, including 1,165 open pit mines or quarries, 11 underground (nonsalt) industrial mineral mines, and 5 underground salt mines; 2 mines produced iron ore and micaceous iron oxide; and 1 mine produced nonferrous metals (tungsten). Almost all the mineral companies operating in Austria were privately owned, but the Government owned 100% of the currently nonproducing coal company Graz-Koflacher Eisenbahn und Bergbaugesellschaft and 31.5% of the oil and

gas company OMV Austria Exploration & Production GmbH (table 2; Bundesministerium für Wirtschaft, Familie und Jugend, 2011, p. 13).

Some mid-tier and even larger multinational companies that produced minerals and mineral materials had operations in Austria, including CEMEX S.A.B. de C.V. of Mexico, Holcim Ltd. of Switzerland, Imerys S.A. and Lafarge S.A. of France, Norsk Hydro ASA of Norway, RHI AG of Austria, and Rio Tinto plc of the United Kingdom. Imerys reported that it was the leading producer of at least a few industrial minerals in the world, including of corundum (fused alumina and bauxite) after acquiring all of the shares of Treibacher Schleifmittel AG of Austria in 2002 (table 2; Imerys S.A., 2011, p. 5–6).

On June 18, 2010, One Equity Partners (an investment division of JPMorgan Chase & Co. of the United States) acquired 91% of the direct ownership shares of Constantia Packaging AG from Constantia Packaging B.V. of the Netherlands. Constantia Packaging AG held a 90% interest in Austria Metall GmbH (AMAG). By August 3, Salzburger Sand- & Kieswerke GmbH had acquired Moldan Baustoffe GmbH & Co. KG from CONNEXIO alternative investment holding AG of Austria. Voestalpine Stahl GmbH was the leading producer of lime in Austria and is now included in table 2 as a lime producer. Zementwerk LEUBE GmbH reported 130,000 metric tons (t) of lime production in 2009 and 126,000 t in 2010, but information concerning the lime production capacities for this company or any other company besides voestalpine Stahl in Austria was not available (table 2; One Equity Partners, 2010; pressetext Nachrichtenagentur GmbH, 2010; voestalpine Stahl GmbH, 2011, p. 8; Zementwerk LEUBE GmbH, 2011).

Commodity Review

Metals

Aluminum.—AMAG was the leading producer of semifinished and cast aluminum products in Austria. In addition to the company's production of secondary aluminum in the country, the company sourced primary aluminum for its manufacturing operations in Austria through its 20% interest in Aluminerie Alouette Inc. of Canada. Many of the secondary aluminum producers in Austria had close ties with automobile manufacturers (including some in Germany), and it was estimated that a significant share of secondary aluminum production in the country relied on the automobile sector for scrap aluminum feedstock and sales of aluminum. Austrian aluminum producers also supplied aluminum metal, alloys, and other products to a diverse set of customers, including in the aviation, construction, electrical, machine tools, other transportation, and packaging sectors, as well as aluminum for the manufacture of end-use goods, such as sporting equipment (table 2; Constantia Packaging AG, 2010, p. 33–37; Pawlek, 2010; AMAG Holding GmbH, 2011, p. 7, 36–37, 53; Norsk Hydro ASA, 2011, p. 4, 41–43).

Iron and Steel.—Voestalpine AG was by far the leading producer of crude steel in Austria. The company was considering increasing the percentage of domestically produced iron ore in the volume of raw material it used to manufacture crude steel in the country from about 25% to about 30% because the cost of purchasing the iron ore from external sources had reportedly become significantly higher than the cost of increasing the domestic production of VA Erzberg GmbH (subsidiary of voestalpine AG). In 2010, Austria's production of iron ore increased by about 3% compared with that of 2009, the country's imports of iron ore and concentrates increased by about 53% [by 3.2 million metric tons (Mt)], and its exports of iron ore and concentrates were a negligible percentage of production (amounting to only 22 t in 2009 and 9 t in 2010). Austria's production of crude steel increased by about 27% during this same timeframe, so it does not appear that the proportion of domestically produced iron ore in the total amount of iron ore used in the country could have increased in 2010 compared with that of 2009. During 2010, voestalpine was considering construction of a pellets plant to increase the output of marketable iron ore at the company's Erzberg Mine, but it was decided in November that the project was not feasible primarily owing to the expected high costs of the emissions permits that would be necessary to operate the new plant. Sales to the automotive sector accounted for the leading share (about 28%) of total revenues for voestalpine, including about 31% of the revenues of the company's steel division, and it experienced growth in sales to every sector except to the construction sector in 2010 compared with sales in 2009 (table 1; Schneeweiss, 2010; Bundesministerium für Wirtschaft, Familie und Jugend, 2011, p. 31–32, 68; voestalpine AG, 2011, p. 3, 24–27, 39, 52–58).

Industrial Minerals

Abrasives.—Worldwide, Treibacher Schleifmittel reportedly had a brown fused alumina production capacity of between 200,000 metric tons per year (t/yr) and 250,000 t/yr and a white fused alumina capacity of about 100,000 t/yr. Both brown and white fused alumina can be used in either abrasives or refractories, and information was not available concerning for which application the company's Austrian production of fused alumina was predominantly used. The company also had a research facility in Villach to develop and improve mineral products to be used in abrasives, refractories, and technical ceramics (table 1; Imerys S.A., 2011, p. 16–17, 20–24; Roberts, 2011).

Clay and Shale.—Wienerberger AG was the leading producer of bricks (and clay blocks) in the world, and the leading producer of clay roofing tiles in Europe. The company experienced a 25% decrease in earnings in 2009 compared with that of 2008, but only a 4% decrease in 2010 compared with that of 2009 owing to company restructuring. The percentage decrease in Wienerberger's revenue in 2009 is very similar to the percentage decrease in Austria's (tonnage) production of unspecified clays during the same timeframe, although sales in Austria accounted for only about 5% of company revenue in 2010. Its decreasing revenue was mostly owing to decreases in new residential construction in most (if not all) of the regional markets for Wienerberger. The Eastern European market accounted for the leading share (25%) of company revenues in 2010. Because the Wienerberger revenue stream was highly dependent on new residential construction and because the fiscal

stimulus plans were expected to focus on infrastructure projects, the company was not expected to benefit much from planned government stimulus programs in the company's major markets (table 1; Hammond, 2010; Bundesministerium für Wirtschaft, Familie und Jugend, 2011, p. 35–40; Wienerberger AG, 2011, p. 1, 34, 45–46, 60–61, 72).

Magnesium Compounds.—In 2010, RHI benefited from the increase in steel production (in Austria and elsewhere) compared with that of 2009. The steel manufacturing sector annually accounted for about 60% or more (64% in 2010) of the company's revenues (from the sale of refractory products), and RHI fully or partially participated in the refractories management of other companies' steel manufacturing facilities through full-line service contracts. The company planned to increase its production of magnesium compounds to account for 80% of the raw materials it uses to produce refractory products compared with 30% in 2010, but the company's only magnesite mine and plant expansion that was started in 2010 was a designed 80,000-t/yr expansion of magnesite production capacity at its Eskisehir site in Turkey. Further RHI magnesite mine and plant expansion projects, possibly including at the company's magnesite production sites in Austria, were still being evaluated through the end of 2010 (table 1; O'Driscoll, 2010; Wilson, 2010; Bundesministerium für Wirtschaft, Familie und Jugend, 2011, p. 36–37; RHI AG, 2011, p. 3–13, 26–27, 30–36).

Sand and Gravel.—In Austria, diabase was used primarily in construction and was especially useful in road and railway construction. The basaltic mineral material also had some industrial uses, however, including in filtering materials (useful owing to its lack of chemical reactivity) and in the production of antifreezing materials. In 2010, ASAMER Holding AG announced that it was producing basaltic fibers at a company plant in Ebensee (Austria) for various industrial uses, including use in place of glass fibers in such industrial applications as the manufacturing of blades for wind turbines. Almost all the silica sand produced in Austria was used domestically, and the two leading silica-demand sectors in the country appeared to be the foundry and glass manufacturing sectors. Because foundry production in the country increased in 2010, the decrease in production of silica sand could have been primarily owing to a decrease in demand from the glass manufacturing sector; however, specific information concerning trends in potential nonfoundry silica-demand sectors in Austria was not available (table 1; ASAMER Holding AG, 2011, p. 34–35; Bundesministerium für Wirtschaft, Familie und Jugend, 2011, p. 9–10, 35–36, 40–41, 68–72; Fachverband der Gießereiindustrie, 2011, p. 13; Fachverband der Stein- und Keramischen Industrie Österreich, 2011, p. 9–14, 20–23; Diabaswerk Saalfelden GmbH, undated).

Outlook

In 2010, VA Erzberg planned to increase production of iron ore (gross weight) to 2.15 Mt in 2011. Based upon data through October 2011, Austria was expected to increase production of crude steel to about 7.8 Mt in 2011. If Austria's production of specialty steels increases as well, then the country's production of ferroalloys (including the nickel content of ferroalloys) could increase in 2011 compared with that of 2010. Although Wolfram Bergbau- und Hütten- GmbH Nfg. KG reportedly invested in exploration in 2010, this exploration was expected to result in an extension of the life of the Mittersill Mine but not in an increase of annual production of tungsten there, so the mine's production of tungsten was expected to remain about the same in 2011 (Schneeweiss, 2010; Bundesministerium für Wirtschaft, Familie und Jugend, 2011, p. 32–33; voestalpine AG, 2011, p. 52–53; World Steel Association, undated).

In 2011, global demand for fused alumina for use in both refractories and abrasives was expected to reach a level similar to that of 2008 after being significantly lower in 2009 and 2010. Excess capacity was estimated to be available to increase production of fused alumina at Treibacher Schleifmittel's facilities in Austria in response to increases in demand, but the primary issue would be obtaining a sufficient feedstock of abrasive-grade calcined bauxite (for production of brown fused alumina) to be able to increase production readily. The availability of calcined alumina (for production of white fused alumina) was much greater in Europe (including in Austria), which is why Europe accounted for a majority of the world's production of white fused alumina. (China reportedly accounted for about 70% of the world's production of brown fused alumina.) So, if the apparent excess capacity at Treibacher Schleifmittel's facilities in Austria could be used to increase production of white fused alumina, then Austria's total production of fused alumina could be expected to increase significantly in 2011. Although information concerning the proportion of Austria's fused alumina production capacity that is capable of being used to produce white fused alumina was not available, it is expected that Austria could produce about 15,000 t in 2011, which is equivalent to the country's estimated level of production in 2008 (table 1; Imerys S.A., 2011, p. 20–24, 60–65; Roberts, 2011).

Although a new public investment program in road and railroad construction projects from 2011 through 2016 was announced by Austria's Ministry of Transportation in November 2010, construction activity in the civil engineering sector did not improve much if at all during the first half of 2011. Commercial (industrial) construction and other structural engineering construction projects could increase moderately in 2011, and the Government planned to subsidize thermal refurbishment of (commercial) buildings through 2014. Residential construction in Austria was expected to continue to decrease (by about 4%) in 2011, however, because building permits for construction of both single family homes and multistory accommodation units were expected to decrease compared with the number of permits granted in 2010. The net effect of these demand trends and Government programs on Austria's production of industrial minerals used in construction was not certain, but the country's production of most construction minerals could decrease again in 2011. In 2012 (and beyond), however, Government programs were expected to have a more noticeable effect in improving demand for industrial minerals used in construction, and on Austria's production of these minerals and mineral products, possibly including cement, clays (such as brick clay and clays used in manufacturing ceramics for buildings and households), diabase, gypsum, construction sand and gravel, and stone

(Bundesministerium für Wirtschaft, Familie und Jugend, 2011, p. 34–36; Fachverband der Stein- und Keramischen Industrie Österreich, 2011, p. 7–12, 19).

Investment in increasing and stabilizing Austria's production of mined graphite was expected to continue in 2011 and 2012, possibly including production by Grafitbergbau Kaisersberg GmbH at the company's Kaisersberg Mine, but accurate information concerning the expected quantitative effects of this investment on the country's production of graphite or expected timelines for any resulting increases in production was not available. Only slight increases in the price of kaolin were expected for 2011, and the cost of kaolin mining in Austria was expected to increase more than the price of kaolin output. As a result, the country's production of kaolin in 2011 was not expected to increase significantly compared with that of 2010. In 2011, the value of industrial production in Austria was expected to increase by 7% compared with that of 2010, so production of industrial minerals used predominantly in the industrial sector could increase significantly in cases where there is excess capacity in the country to produce those minerals (Bundesministerium für Wirtschaft, Familie und Jugend, 2011, p. 34–36; Fachverband der Stein- und Keramischen Industrie Österreich, 2011, p. 7–12, 19).

Occasional market shortages of magnesite are expected in 2011 and beyond, reportedly owing at least partially to export taxes, quotas, and a licensing system being implemented in China to limit exports. (China was estimated to have accounted for about 57% of world production of magnesite in 2010.) RHI and other magnesite producers were expected to increase production in 2011 by activating unused production capacities, but a significant expansion of RHI's magnesite production capacity was not expected until sometime in 2012 (and even then, it would still probably not be in Austria). Magnesite producers in the country were estimated to have some excess magnesite production capacity that could be more fully utilized as the market demands. So, producers of magnesite and magnesia in Austria were expected to increase production to about 800,000 t of crude magnesite in 2011, and actual production could be even closer to their combined 2008 level of production of crude magnesite of about 840,000 t of crude magnesite (table 1; O'Driscoll, 2010; Wilson, 2010; Bundesministerium für Wirtschaft, Familie und Jugend, 2011, p. 36–37; Kramer, 2011; RHI AG, 2011, p. 37–38).

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TABLE 1
AUSTRIA: PRODUCTION OF MINERAL COMMODITIES[1]

(Thousand metric tons unless otherwise specified)

Commodity		2006	2007	2008	2009	2010
METALS						
Aluminum, metal, secondary[e]	metric tons	150,000	150,000	158,958 [r, 2]	282,944 [r, 2]	250,000
Copper, metal, secondary:						
Smelter	do.	65,900	80,200	94,200	90,800	92,200 [p]
Refined	do.	72,600	81,400	106,700	96,200	113,700 [p]
Iron and steel:						
Iron ore, including micaceous iron oxide:						
Gross weight		2,092 [r]	2,153	2,033	2,002 [r]	2,069
Fe content		669	689	650	641 [r]	662 [e]
Metal:						
Pig iron		5,547	5,908 [r]	5,795 [r]	4,353 [r]	5,621
Ferroalloys, electric arc furnace, gross weight[e, 3]	metric tons	14,000	14,000	14,000	12,700 [r]	14,500
Crude steel		7,129	7,578	7,594	5,662	7,206
Semimanufactures, hot-rolled products		6,495	6,816	6,850	5,394 [r]	6,621
Lead, refined, secondary	metric tons	28,120	28,564	26,902	22,197 [r]	25,499
Manganese, Mn content of domestic iron ore[e]	do.	16,000	15,000	15,000	15,000 [r]	15,000
Nickel, including Ni content of ferroalloys[e]	do.	900	900	800	700	600
Tungsten ore and concentrate:						
Ore:						
Gross weight	do.	400,182	435,006	434,296	344,851 [r]	429,748
W content[e]	do.	1,310	1,270	1,250	1,040 [r]	1,300
Concentrate:						
Gross weight	do.	3,949	4,343	4,627	3,436	3,812
W content	do.	1,153	1,117	1,122	887 [r]	1,140 [e]
INDUSTRIAL MINERALS						
Aluminum oxide, fused[e]	metric tons	15,000	15,000	15,000	10,000	11,500
Cement:						
Clinker		3,654	3,992	3,996 [r]	3,428 [r]	3,097
Hydraulic		4,886 [r]	5,203	5,309	4,646 [r]	4,254
Clays:						
Kaolin, crude	metric tons	51,900	56,690	49,527	83,980 [r]	58,956
Unspecified, possibly including bentonite, brick clay and illite		2,868	2,465 [r]	2,473 [r]	1,866 [r]	1,860
Diabase (of basaltic rocks)		1,885	2,372 [r]	2,410 [r]	2,098 [r]	1,762
Feldspar, byproduct of silica processing[e]	metric tons	27,000	27,000	27,000	27,000	27,000
Graphite, crude	do.	--	--	250	750 [r]	420
Gypsum and anhydrite, crude		1,071	1,064 [r]	1,087	911 [r]	872
Lime, including quicklime		473	497	909	725 [r]	740 [e]
Of which, marketed		465	491	612	507 [r]	517 [e]
Magnesite:						
Crude		769	812	837	545 [r]	757
Sintered or dead burned		270	288	290	230 [r]	264
Caustic calcined		98	51	50	21 [r]	52
Mica, possibly including iron oxide (pigment)[e, 4]	metric tons	3,160	3,510	3,420	2,840	3,420
Nitrogen, N content of ammonia[e]		400	380 [r]	400	370 [r]	400
Salt (NaCl):						
Brines, gross	thousand cubic meters	3,451	2,468 [r]	2,912 [r]	3,460 [r]	3,608
Evaporated, mechanical heating process		764	726	867	1,035 [r]	1,072
Rock	metric tons	1,446	1,172	503	50 [r]	95
Mine output, NaCl content		807	742	874 [r]	1,038 [r]	1,083
Sand and gravel:						
Dolomite, loose rocks and gravel		--	3,212	3,151	2,790	2,620
Quartz (silica) sand		2,008	1,915 [r]	2,175 [r]	1,200 [r]	939
Sand and gravel, unspecified		18,995	26,825 [r]	27,718 [r]	25,722 [r]	24,128

See footnotes at end of table.

TABLE 1—Continued
AUSTRIA: PRODUCTION OF MINERAL COMMODITIES[1]

(Thousand metric tons unless otherwise specified)

Commodity		2006	2007	2008	2009	2010
INDUSTRIAL MINERALS—Continued						
Sodium compounds, manufactured, n.e.s.:[e, 5]						
Soda ash		100	100	100	100	100
Sulfate		100	100	100	100	100
Stone:						
Amphibolite		667	1,693 r	1,808 r	1,780 r	1,670
Basalt, not included in diabase		1,947	1,905 r	1,797 r	1,744 r	1,473
Dolomite		3,411	4,452 r	4,409 r	3,967 r	3,915
Gneiss		513	1,526 r	1,668 r	1,431 r	1,505
Granite and granulite		2,503	2,577 r	3,315 r	3,078 r	2,340
Limestone, including marble		21,535 r	22,820 r	23,758 r	22,074 r	21,190
Marl		2,062	2,115	1,826	1,508 r	1,149
Quartz, quartzite, and pegmatite		290	311 r	327 r	377 r	294
Serpentinite		1,658	1,869	1,690	1,751	2,013
Other, including conglomerate and sandstone		14	48 r	61 r	22 r	38
Sulfur, byproduct of petroleum and natural gas	metric tons	10,166	10,786	8,016	12,007 r	9,873
Talc and leucophyllite (white mica), crude	do.	159,447	153,409	154,577	111,388 r	138,367
MINERAL FUELS AND RELATED MATERIALS						
Coal, brown and lignite		8	--	--	--	--
Coke		1,283	1,422	1,410	1,281 r	1,388
Natural gas:						
Marketable (net)	million cubic meters	1,765	1,835	1,544	1,559 r	1,713
Natural gas liquids[6]	thousand 42-gallon barrels	919	868	836	972 r	927
Oil shale	metric tons	287	4	114	144 r	176 r
Petroleum:						
Crude[7]	thousand 42-gallon barrels	6,028	6,009	6,066	6,371	6,167
Refinery products:[6]						
Liquefied petroleum gas	do.	578 r	813	1,134	1,068 r	1,011
Gasoline	do.	13,800 r	14,500 r	14,400	14,100 r	12,300
Kerosene and jet fuel	do.	4,180 r	4,800 r	3,750 r	2,480 r	3,780
Distillate fuel oil	do.	6,830 r	5,760 r	5,280	5,870 r	6,970
Residual fuel oil	do.	6,690 r	4,050 r	6,600	5,540 r	5,070
Unspecified	do.	36,500 r	39,600 r	39,600 r	35,600 r	31,700
Refinery fuel and losses	do.	243	173	154	824 r	316
Total	do.	68,821 r	69,696 r	70,918 r	65,482 r	61,147

[e]Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. [p]Preliminary. [r]Revised. do. Ditto. -- Zero.

[1]Table includes data available through December 2, 2011.

[2]Reported figure.

[3]May include ferromolybdenum, ferronickel, ferronickelmolybdenum, and (or) ferrovanadium.

[4]Production not reported separately from that of iron ore, so estimated from reported exports minus imports of mica.

[5]Not elsewhere specified.

[6]Figure converted to barrels from metric tons according to a converson factor and reflects the significant digits of the conversion factor.

Source: U.S. Energy Information Administration, 2008, International Energy Annual—Table C.1, General Conversion Factors: Washington, DC, U.S. Energy Information Administration. June-December. (Accessed March 7, 2010, at http://www.eia.doe.gov/emeu/iea/tablec1.html.)

[7]All figures were converted to barrels from metric tons according to a converson factor of 7.040 barrels of crude oil per metric ton. Source: U.S. Energy Information Administration, [undated], International Energy Statistics—Austria: Washington, DC, U.S. Energy Information Administration. (Accessed March 7, 2010, at http://tonto.eia.doe.gov/cfapps/ipdbproject/IEDIndex3.cfm?tid=94&pid=57&aid=32.)

TABLE 2
AUSTRIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2010

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Alumina, fused	Treibacher Schleifmittel GmbH (Imerys S.A., 100%)	Plant at Villach, State of Carinthia	60.
Aluminum	Hammerer Aluminium Industries GmbH	Secondary plant at Ranshofen, State of Upper Austria	80.
Do.	Hydro Aluminium Nenzing GmbH (Norsk Hydro ASA, 100%)	Secondary plant at Nenzing, State of Vorarlberg	59.
Do.	Austria Metall GmbH (Constantia Packaging AG, 90%, and AMAG Arbeitnehmer Privatstiftung, 10%)	Secondary ingot plant at Ranshofen, State of Upper Austria	50.
Do.	Speedline Aluminium Giesserei GmbH (Swiss Alu Trading AG, 100%)	Secondary plant at Schlins, State of Vorarlberg	49.
Do.	Aluminum Lend GmbH (Salzburger Aluminium AG, 100%)	Secondary ingot plant at Lend, State of Salzburg	40.
Do.	NEUMAN Aluminium Austria GmbH (CAG Holding GmbH, 100%)	Secondary plant at Marktl, State of Styria	16.
Do.	Bavaria Industriekapital AG	Secondary plant at Gleisdorf, State of Styria	NA.
Do.	Georg Fischer Automotive AG	Secondary plant at Altenmarkt, State of Salzburg; Secondary plant at Herzogenburg, State of Lower Austria	NA.
Do.	Nemak Linz GmbH (Tenedora Nemak S.A. de C.V., 100%)	Secondary plant at Linz, State of Upper Austria	NA.
Do.	Almaxal Brüder Tschirk GmbH	Secondary plant at Neudörfl, State of Burgenland	NA.
Do.	Almeta Metallumschmelzwerk GmbH	Secondary plant at Vienna; secondary plant at Sollenau, State of Lower Austria	NA.
Cement	Lafarge Perlmooser AG (Lafarge S.A., 100%)	Plant at Mannersdorf, State of Lower Austria; plant at Retznei, State of Styria; grinding plant at Kirchbichl, State of Tirole	2,200.
Do.	Wietersdorfer & Peggauer Zementwerke GmbH	Plant at Peggau, State of Styria; Plant at Wietersdorf, State of Carinthia	900.
Do.	Gmundner Zement Produktions- und Handels GmbH	Plant at Gmundnen, State of Upper Austria	800.
Do.	Kirchdorfer Zementwerk Hofmann GmbH	Plant at Kirchdorf, State of Upper Austria	800.
Do.	Zementwerk LEUBE GmbH	Plant at Gartenau, State of Salzburg	770.
Do.	Wopfinger Baustoffindustrie GmbH	Plant at Wopfing, State of Lower Austria	300.
Do.	Holcim (Wien) GmbH (Holcim Ltd., 100%)	Plant at Vienna	300.
Do.	Holcim (Vorarlberg) GmbH (Holcim Ltd., 100%)	Lorüns grinding plant and cement plant at Bludenz, State of Vorarlberg	200.
Clays, including brick clay	Wienerberger AG	Clay mines at Göllersdorf, State of Lower Austria; at Rotenturm and Stoob, State of Burgenland; and at Apfelberg and Weißkirchen, State of Styria	NA.
Clays, kaolin, and silica sand	Österreichische Kaolin- und Montanindustrie AG	Mines at Weinzierl and Kriechbaum; processing plant at Aisthofen, State of Upper Austria	170.
Coal	Graz-Koflacher Eisenbahn und Bergbaugesellschaft GmbH (Government, 100%)	Oberdorf Mine, Bärnbach, State of Styria (closed)	1,200.
Copper, refined, secondary	Montanwerke Brixlegg AG (A-Tec Industries AG, 100%)	Plant at Brixlegg, State of Tirole	110
Diabase, basalt	Diabaswerk Saalfelden GmbH (STRABAG SE, 100%)	Mine and plant at Saalfelden, State of Salzburg	NA.
Do.	Klöcher Basaltwerke GmbH & Co KG (ASAMER Holding AG, 100%)	Mines and plants at Klöch and Oberhaag, State of Styria	NA.
Feldspar	Quarzwerke Österreich GmbH (Quarzwerke GmbH, 100%)	Mine and plant at St. Georgen an der Gusen, State of Upper Austria	NA.
Ferroalloys, FeV, FeMo, FeNi	Treibacher Industrie AG	Plant at Althofen, State of Styria	10.
Graphite, natural	Graphitbergbau Mühldorf Mörth GmbH	Trandorf Mine at Weinberg and extended to Weinbergwald, State of Lower Austria; mine at Eichenwald, State of Styria	15.
Do.	Grafitbergbau Kaisersberg GmbH	Kaisersberg Mine, State of Tirole	3.

See footnotes at end of table.

TABLE 2—Continued
AUSTRIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2010

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Gypsum and anhydrite, natural	Moldan Baustoffe GmbH & Co. KG (Salzburger Sand- & Kieswerke GmbH, 100%)	Abtenau and Moosegg Mines, near Kuchl bei Hallein, State of Salzburg	300.
Do.	Saint-Gobain Rigips Austria GmbH (Compagnie de Saint-Gobain, 100%)	Mine at Grundlsee and main plant at Bad Aussee, State of Styria; Mine and plant at Puchberg, State of Lower Austria	250.
Do.	Knauf GmbH	Hinterstein Mine, Spital am Pyhrn, State of Upper Austria; Mines at Dörfelstein and Tragöß-Oberort, and plant at Weißenbach bei Liezen, State of Styria	160.
Do.	Gipswerk Schretter & Cie. GmbH	Mine at Weißenbach am Lech and plant at Vils, State of Tirole	NA.
Iron ore	VA Erzberg GmbH (voestalpine AG, 100%)	Erzberg Mine at Eisenerz, State of Styria	3,000.
Iron oxide, micaceous	Kärntner Montanindustrie GmbH	Mine near Waldenstein, State of Carinthia	NA.
Lead	Bleiberg Bergwerks-Union AG (Metall Gesellschaft, 74%)	Smelter at Brixlegg, State of Tirole	55.
Lime	voestalpine Stahl AG (voestalpine AG, 100%)	Limestone mine near Kremsmauer mountain, and plant at Steyrling, State of Upper Austria	360.
Do.	Zementwerk LEUBE GmbH	Plant at Gartenau, State of Salzburg	150.[e]
Magnesite, crude	Veitsch-Radex GmbH & Co. (RHI AG, 100%)	Mine and plant at Breitenau, State of Styria; Mine at Eichberg, State of Lower Austria; Am Bürgl Mine, area near Weissenstein, State of Tirole; mine and processing plant at Millstätter Alpe, State of Carinthia	800.
Do.	Styromagnesit Steirische Magnesitindustrie GmbH	Angerer, Kaintaleck and Wieser Mines, and plant near Oberdorf an der Laming, State of Styria; Wald Mine in the Schoberpass, State of Styria	75.
Do.	CEMEX Austria AG (CEMEX S.A.B. de C.V., 100%)	Mine and plant at Veitsch, State of Styria	NA.
Do.	PRONAT Steinbruch Preg GmbH (Schotter- und Betonwerk Karl Schwarzl Betriebsgesellschaft m.b.H., 100%)	Magnesite and dunite (olivine rock) mine at Gulsen, and plant at Preg, State of Styria	NA.
Natural gas million cubic meters	OMV Austria Exploration & Production GmbH [OMV Aktiengesellschaft (Free floating shares, 48.5%; Government, 31.5%; International Petroleum Investment Co. 20%), 100%]	Main fields in the Vienna Basin, State of Lower Austria, and some fields in the State of Upper Austria	1,500.
Do. do.	Rohöl-Aufsuchungs Aktiengesellschaft (EVN AG, 50.025%; E.ON Ruhrgas E&P GmbH, 29.975%; Steirische Gas-Wärme GmbH, 10%; Salzburg AG, 10%)	Main fields in the State of Upper Austria, and some fields in the State of Lower Austria and the State of Salzburg	550.[e]
Nitrogen, N content of ammonia	Agrolinz AG	Plant at Linz, State of Upper Austria	498.
Oil shale	Tiroler Steinölwerke Albrecht GmbH & Co. KG	Mine in the Bächental, near Pertisau am Achensee, State of Tirole	NA.
Petroleum, crude thousand 42-gallon barrels	OMV Austria Exploration & Production GmbH [OMV Aktiengesellschaft (Free floating shares, 48.5%; Government, 31.5%; International Petroleum Investment Co., 20%), 100%]	Main fields in the Vienna Basin, State of Lower Austria, and some fields in the State of Upper Austria	5,500.[e]
Do. do.	Rohöl-Aufsuchungs Aktiengesellschaft (EVN AG, 50.025%; E.ON Ruhrgas E&P GmbH, 29.975%; Steirische Gas-Wärme GmbH, 10%; Salzburg AG, 10%)	Main fields in the State of Upper Austria, and some fields in the State of Lower Austria and the State of Salzburg	750.[e]
Salt, NaCl content	Salinen Austria AG	Mines at Bad Ischl and Hallstatt, and evaporite saltworks at the Ebensee, State of Upper Austria; mine at Hallein-Dürrnberg, State of Salzburg; mine at Hall in Tirol, State of Tirole; mine at Altaussee, State of Styria	1,100.

See footnotes at end of table.

TABLE 2—Continued
AUSTRIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2010

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Silica sand	Krempelbauer-Quarzsandwerk St. Georgen Hentschläger & Co. KG.	Burger and Knoll-Wizany Mines at Luftenberg, Krempelbauer and Poscher Mines at St. Georgen, and Treffling Mine at Aigen-Engerwitzdorf, State of Upper Austria	NA.
Do.	Quarzwerke Österreich GmbH (Quarzwerke GmbH, 100%)	Mine and plant at Melk, State of Lower Austria; mine and plant at St. Georgen an der Gusen, State of Upper Austria	NA.
Do.	Quarzsande GmbH (Zementwerk LEUBE GmbH, 100%)	Mine and plant at Eferding, mine at Bruck-Waasen, and mine at Wolfsegg, State of Upper Austria	NA.
Steel, crude	voestalpine Stahl GmbH (voestalpine AG, 100%)	Plant at Linz, State of Upper Austria	6,000.
Do.	voestalpine Stahl Donawitz GmbH Co & KG (voestalpine AG, 100%)	Plant at Donawitz, State of Styria	1,500.
Do.	Breitenfeld Edelstahl AG	Plant at Mitterdorf im Mürztal, State of Styria	300.
Do.	Böhler Edelstahl GmbH & Co KG (voestalpine AG, 100%)	Plant at Kapfenberg, State of Styria	150.[e]
Talc and leucophyllite (white mica)	Naintsch Mineralwerke GmbH (Rio Tinto plc, 100%)	Talc mines at Lassing and Rabenwald, and plant at Oberfeistritz, State of Styria; talc and mica mine at Kleinfeistritz, and a plant at Weisskirchen, State of Styria	200.[e]
Do.	Aspanger Bergbau und Mineralwerke GmbH & Co. KG (Wietersdorfer & Peggauer Zementwerke GmbH, 100%)	Leucophyllite mine and mica processing plant at Aspangberg-Zöbern, State of Lower Austria	NA.
Tungsten:			
Ore (scheelite), gross weight	Wolfram Bergbau- und Hütten- GmbH Nfg. KG (Sandvik AB, 100%)	Mine at Mittersill and processing plant in the Felbertauerntal, State of Salzburg	475.[e]
Carbide, metal, and oxide powders	do.	Primary and secondary chemical treatment and sintering plant at St. Martin, in the Sulmtal, State of Styria	NA.

[e]Estimated; estimated data are rounded to no more than three significant digits. Do., do. Ditto. NA Not available.