

# 2007 Minerals Yearbook

# EUROPE AND CENTRAL EURASIA

# THE MINERAL INDUSTRIES OF EUROPE AND CENTRAL EURASIA

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The area of Europe and Central Eurasia treated in this volume encompasses territory that extends from the Atlantic coast of Europe to the Pacific coast of the Russian Federation and includes the British Isles and Iceland. Greenland, which is located in the northwestern Atlantic Ocean, and the Sakhalin and the Kurile Islands, which are located off the Sea of Japan in the Pacific Ocean and which are political extensions of Denmark and the Russian Federation, respectively, are also treated in this volume.

Economic integration in Western Europe evolved into the formation of the European Union (EU), which is a supranational entity that at yearend 2007 comprised Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom. The European Free Trade Association (EFTA), which comprised Iceland, Liechtenstein, Norway, and Switzerland, was an alternative entity to the EU in Western Europe.

The admission of new member countries continued to be one of the significant political programs of the EU. To gain membership, applying countries must fulfill political and economic requirements, such as achieve stability of institutions that guarantee to uphold democracy, the rule of law, human rights, and respect for and protection of minorities; have a functioning market economy and the capacity to cope with competitive pressure and market forces within the EU; and be able to take on the obligations of EU membership, including adherence to the aims of political, economic, and monetary union.

In 2007, Bulgaria and Romania were granted EU membership and Slovenia adopted the euro (€) as its unit of currency. Croatia and Turkey continued with EU accession negotiations (no date given for expected accession), Macedonia had been a candidate country since December 2005; negotiations also continued with other countries in the Balkans that were working toward candidate status and were in the preliminary stages of negotiation. The EU also promoted democratic stability and economic development in such Commonwealth of Independent States (CIS) countries as Ukraine through its European Neighborhood Policy (ENP) and in Russia through a strategic partnership (European Commission, 2007a; 2007c, p. 2-8).

The addition of Bulgaria and Romania to the EU in 2007 increased its population by more than 29 million to about 500 million. The population of the EU exceeded that of the United States by about 60% in 2007, and the combined total gross domestic product (GDP) of its member countries (based on purchasing power parity) was approximately equal to that of the United States (tables 1, 2).

In the former centrally planned economy areas, a number of countries of Central Europe (Albania, Bosnia and Herzegovina, Bulgaria, Croatia, the Czech Republic, Hungary, Macedonia, Montenegro, Poland, Romania, Serbia, Slovakia, and Slovenia) and the Baltic countries (Estonia, Latvia, and Lithuania)—had completed the transition to open political systems with market-based economies. The transition among the countries of the CIS (Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan) was less complete; some of these countries had taken significant steps towards the establishment of open political systems and market-based economies, but others had made little progress.

The CIS was founded in 1991 by several Republics of the former Soviet Union (FSU) and later was extended to include all the former Soviet Republics except the Baltic states of Estonia, Latvia, and Lithuania. The CIS was established to provide a common economic space for the countries in the region. The CIS does not have supranational powers and all member countries have equal standing under international law. Although the member countries are pledged to economic integration, few actual measures had been taken to make the CIS a functioning integrated economic bloc similar to the EU.

In September 1993, the Governments of the CIS states signed an agreement on the creation of an economic union that would form a common economic space based on the free movement of goods, services, labor, and capital. The economic union would work to coordinate monetary, tax, price, customs, and external economic policy, develop methods of regulating economic activity, and create favorable conditions for the development of direct production relations. Integration of the countries of the CIS into the economic union was executed through its coordinating institutions (charter bodies, executive bodies, and the bodies of branch cooperation of the CIS). In 1997, the Executive Committee of the CIS, with the participation of leading scientists and specialists, prepared a mining charter and an agreement on cooperation for the study, exploration, and use of mineral resources of the CIS states. The goal was to establish international cooperation in the use of the economic and technical resources of the CIS states and to reestablish ties among the mineral industries of the CIS states that had been broken with the dissolution of the Soviet Union. The agreement was signed on March 27, 1997, by Armenia, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, and Ukraine. On the basis of this agreement, an Inter-Governmental Council was formed to fulfill the mission of the agreement.

An important step taken by the Inter-Governmental Council was an agreement signed in Minsk, Belarus, on May 30, 2001, to settle disputes regarding mineral development in border areas, to implement environmental measures to protect the population of the neighboring states when developing mineral resources, and to specify conditions for cooperation between neighboring CIS states in mineral development. One of the basic documents regulating these matters was the Model Law Code regarding the Earth's resources and their use signed by the Inter-Parliamentary Assembly of the CIS countries in 2002; the Model Law Code deals with a wide range of issues regarding minerals and mineral development. By 2006, the Inter-Governmental Council was coordinating more than 10 joint programs and projects relating to scientific and technical cooperation, harmonizing laws about the use of resources, and engaging in information exchanges.

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• Belarus—Ministry of Statistics and Analysis of the Republic of Belarus;

• Croatia—Statistical Information and Documentation Division;

• Czech Republic—Czech Geological Survey, Ministry of Industry and Trade;

- Denmark—Danmark og Gronlands Geologisk Undersogelse;
- Estonia—Geological Survey of Estonia;
- Finland—Statistics Finland;

• France—Bureau de Recherches Géologiques et Minières (BRGM);

• Germany—Bundesanstalt für Geowissenschaften und Rohstoffe;

 Hungary—Magyar Köztársaság Gazdasági És Közlekedési Minisztérium Magyar Geológiai Szogálat (Hungarian Geological Survey);

- Iceland-Statistics Iceland;
- Ireland—Geological Survey of Ireland;
- Kazakhstan—Agency on Statistics;
- Kyrgyzstan—Ministry of Foreign Affairs;
- Lithuania—Statistics Lithuania;
- Luxembourg-Central Statistical Service;
- Poland—Central Statistical Office;
- Portugal—IGM-Division de Statistical Studies;
- Romania-National Institute of Statistics;
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- United Kingdom-British Geological Survey.

### **General Economic Conditions**

From 2003 though the first half of 2008, the world mineral industry experienced one of the most significant upsurges

in demand and prices in history. This prolonged period of growing demand and rising prices was largely the result of growing demand, primarily in China and also in other developing countries. Owing to the increasing tight supply of many minerals, production was generally taking place at or near capacity, which meant that the global market could become unsettled by even small supply shortages from major producing countries. The world economic downturn that began in the second half of 2008 changed the conditions of the mineral industry and was expected to lead to a period of reduced production in the short-to-medium term and could have a significant negative impact on the industries of Europe and Central Eurasia (Bundesanstalt für Geowissenschaften und Rohstoffe, 2008, p. 19; World Bank, The, 2008, p. 40, 55, 69).

Because of the very different paths of development taken by the countries of Western Europe (now the EU and the EFTA) compared with that of the countries of Central Eurasia and other centrally planned economy countries of the region after World War II, an economic asymmetry between the two areas emerged that was particularly apparent in the mineral sector. This asymmetry framed the initial commercial relationship in the minerals sphere between the two areas following the dissolution of the Soviet Union, and it still persisted, though to a lesser degree, in 2007. The EU continued to import raw materials from, sell equipment and technology to, and invest in mineral development projects in the as-yet unaffiliated countries of the Balkans and the CIS. This asymmetry was diminishing, particularly as Russian mineral enterprises were attempting to internationalize their holdings. Some of Russia's leading companies, including ALROSA Company Ltd., MMC Norilsk Nickel, and United Company RUSAL (UC RUSAL), were buying major foreign assets.

The countries of the EU and the CIS were substantial participants in the world mineral economy and occupied important roles as suppliers and consumers of all major mineral commodities. In 2007, the EU continued to be a major world processing and consuming region, and its predominant role in the world mineral industry continued to be one of processing and consuming rather than mining. For such industrial minerals as bentonite, gypsum, kaolin, perlite, strontium minerals, and rock salt and also for some metal refinery products, the EU produced more than 20% of global output. Production of some metal ores in the EU exceeded 5% of global production; for example, silver (Poland), chromite (Finland), and zinc (Ireland). The EU was practically self-sufficient in the production of construction materials and remained among the world's leading producers of potash. Significant petroleum and natural gas resources had been developed in the North Sea, and the EU also has significant coal reserves (Bundesanstalt für Geowissenschaften und Rohstoffe, 2008, p. 22).

The extraction of nonfuel minerals accounted for less than 1% of the GDP in the EU, and the highest proportion was in Poland where the share of nonfuel mineral resources still accounted for less than 1% of the country's GDP. More than 16,500 companies located mostly in France, Germany, and Spain were involved in the mining sector in the EU and provided 250,000 jobs in 2004 (the latest year for which data were available). The extractive sector, which included the extraction of energy resources, had

an annual turnover of about \$181 billion,<sup>1</sup> which did not include value-added production from these raw materials (Bundesanstalt für Geowissenschaften und Rohstoffe, 2008, p. 22).

The EU was mostly dependent on imported mineral raw materials for metals, industrial minerals, and fuel minerals. The import dependence for many metal ores was 100% [antimony, cobalt, ilmenite, molybdenum, niobium, platinum-group metals (PGM), rare-earth metals, rutile, tantalum, and vanadium] and the EU was between 70% and 90% import dependent for most other metallic ores. The EU's dependence on imports of metallic mineral raw materials (such as concentrates, ores, and scrap) and obtaining sources of energy for its metal refining and processing industries was a key concern for the EU's mineral industry. The dramatic rise in the prices of mineral commodities in 2007 was a cause of concern for the industrial sectors in the EU, which were not able to pass on increasing raw materials prices to their customers; the price increases also affected industrial planning, as European countries were experiencing increased competition in the procurement of raw materials from countries in the developing world (Bundesanstalt für Geowissenschaften und Rohstoffe, 2008, p. 19, 22; European Commission, 2008b).

As a major world mineral processing and consuming area, the EU remained a significant determinant of world demand for nearly all mineral commodities. Its mineral processing and manufacturing industries accounted for a significant share of the world production of semimanufactured and fabricated ferrous and nonferrous metals. Germany remained the EU's dominant smelter and refiner of most metals. With a high per capita income and standard of living, the EU was one of the world's major consumers of mineral fuels and of mineral products in consumer goods.

In 2007, the mineral industries in Western Europe generally maintained a stable or somewhat reduced level of output. A decrease in output in many mining and processing sectors was expected in the next decade as reserves are depleted and processing facilities and plants age and are neither renovated nor replaced. Despite the diminution of Western Europe's importance as a mining region, Western Europe was an important world financial center and the headquarters of such major global mining and mineral processing companies as United Kingdom-based companies Anglo American plc, BHP Billiton plc, and Rio Tinto plc.

In 2007, major mineral producing countries in Africa, Asia, Central Eurasia, and Latin America remained major mineral supply sources for the EU. Natural gas and petroleum imports from Russia were particularly important. In 2007, the EU signed new trade agreements with Russia and Ukraine that raised the quotas on EU imports of steel products. The quota on EU imports of steel products from Kazakhstan remained at the same level as in 2006. The EU and Russia also agreed to establish an early warning system for disruptions of oil and gas supplies from Russia to the EU. At the end of 2007, details of the early warning system had not been finalized (European Commission, 2006; 2007b, d; 2008a, p. 4, 16). Central Eurasia remained a major world supplier of mined and processed minerals. Its consumption of these commodities, although at a low level compared with that of the EU, was increasing. Increased domestic mineral consumption in Central Eurasia could result in the Central Eurasian countries reducing mineral exports to world markets. The unaffiliated countries of the Balkans played a much lesser role in both the supply and the consumption of most mineral commodities.

In the CIS, Kazakhstan, Russia, and Ukraine were the main mineral producing countries, although many other CIS countries also were important producers and processors of minerals. Russia, which occupied about 77% of the territory of the CIS, was by far the largest country in the CIS in terms of both population and territory and had the leading mineral producing sector. In 2007, Russia ranked among the leading world producers or was a significant producer of such mineral commodities as aluminum, arsenic, asbestos, bauxite, boron, cadmium, cement, coal, cobalt, copper, diamond, fluorspar, gold, iron ore, lime, lithium, magnesium compounds and metal, mica (scrap sheet and flake), natural gas, nickel, nitrogen, oil, oil shale, palladium, peat, phosphate rock, pig iron, platinum, potash, rhenium, silicon, sulfur, steel, tin, titanium sponge, tungsten, uranium, and vanadium.

Kazakhstan was a significant producer of such mineral products as arsenic, barite, beryllium metal, bismuth, cadmium, chromite, copper, ferroalloys, lead, oil, rhenium, titanium sponge, uranium, and zinc. Ukraine was a significant producer of such mineral products as ferroalloys, iron ore, manganese ore, pig iron, steel, and titanium raw materials and sponge. Other CIS countries were significant world or regional producers of one or more mineral commodities, including Armenia (molybdenum), Azerbaijan (oil), Belarus (potash), Kyrgyzstan (antimony metal, gold, and mercury ore and metal), Tajikistan (aluminum and antimony ore), Turkmenistan (natural gas), and Uzbekistan (gold and uranium), and all the CIS countries produced a range of other mineral commodities.

The three main mineral producing countries in the CIS (Kazakhstan, Russia, and Ukraine) experienced varying rates of economic growth in 2007. Aggregate growth in Russia was still strong in 2007 as growth received a boost from increases in fuel and nonfuel mineral prices. Analyses from OJSC Alfa-Bank, the International Monetary Fund (IMF), and The World Bank have estimated that in 2007, the oil and gas sector accounted for about 20% of Russia's GDP, 64% of export revenues, and 30% of all foreign direct investment (FDI) in the country. The metallurgical sector accounted for about 5% of the GDP, 18% of industrial production, and 15% of exports. In 2006, about 1 million workers comprising 1.5% of the labor force were engaged in mining. Russia, however, ranked among the lower 20% of mineral extracting countries in its per capita consumption of metals. Russia was extracting its fuel and nonfuel mineral reserves at a high rate, which was expected to lead to the depletion of the majority of these current reserves before the year 2020, if not much sooner (U.S. Energy Information Administration, 2008b).

<sup>&</sup>lt;sup>1</sup>Where necessary, values have been converted from European Union euros ( $\bigoplus$  to U.S. dollars (US\$) at the rate of  $\bigoplus$ .73=US\$1.00.

From 2000 to 2007, Ukraine's economic growth had averaged more than 7% per year. In 2007, Ukraine's GDP grew by 7.6%. Ukraine's dramatic growth since 2000 had been fueled in part by improved terms of trade created by rising metal prices. The steel industry was a major component of Ukraine's economy, accounting for between 5% and 6% of the GDP and 34% of export revenues. The steel industry employed about 420,000 people, which constituted about 10% of industrial employment and about 2% of total employment. Steel made up nearly 40% of the value of Ukraine's exports. Ukraine imported almost 80% of its oil and 77% of its natural gas. Russia was Ukraine's main supplier of oil and natural gas and Russian firms owned and (or) operated the majority of Ukraine's refining capacity.

In 2007, prices for long and flat-rolled steel products rose sharply, which caused a reorientation of steel exports from Ukraine as well as other countries, as countries in the Middle East (Jordan, Iran, Saudi Arabia, and Syria) and Pakistan significantly increased steel imports. Ukraine's natural gas imports came from Kazakhstan, Russia, Turkmenistan, and Uzbekistan and were brokered through the intermediary company RosUkrEnergo, which delivered the gas through a pipeline system owned and controlled by Russia's state-owned company OAO (Open Joint Stock Company) Gazprom. A large amount of natural gas and oil destined for the EU and southeastern Europe was transported through Ukraine. About 46% of the EU's gas imports and 23% of the EU's oil imports were transported through Ukraine.

Ukraine's trunk gas transport system was state owned and was the main transit route for Russian gas exports to Europe. Tensions between Ukraine and Russia, ostensibly concerning the price that Ukraine would pay for Russian gas, led to Russia's decision to cut off gas supplies for 3 days in January 2006. Ukraine's energy price dispute with Russia concerning natural gas became a major political dispute. This crisis created fears that Russian exports to Western Europe could be affected, as Ukraine was capable of diverting Russian gas destined for Europe [through Ukrainian pipelines] for its own needs.

On October 2, 2007, Russia's Gazprom announced that it could begin to reduce natural gas supplies to Ukraine within the month if Ukraine did not begin to take action to pay the debt of more than \$1.3 billion that it owed Gazprom for previous deliveries. On October 9, an agreement on repayment of the debt was reached. On November 6, a Gazprom press release stated that RosUkrEnergo had fully completed its responsibilities in regard to the agreement on the settlement of debt, which could be interpreted as meaning that the entire amount of debt to Gazprom that was the source of the conflict had been paid.

Kazakhstan is the largest country, in terms of land area, in Central Eurasia after Russia, and has considerable mineral resources. The mineral extraction industry produced about 57% of the value of Kazakhstan's industrial production. Economic recovery and growth, which started in 2000 and continued through 2007, was led mainly by the oil sector. Ferrous and nonferrous metals and grains were the only other significant exports. Oil production was expected to continue to be the major activity driving the economy of Kazakhstan.

### Exploration

Based on data provided by the Metals Economics Group (MEG), exploration budgets for Europe and Central Eurasia<sup>2</sup> increased in 2007 to about \$1.15 billion from the 2006 estimate of about \$784 million (Metals Economics Group, 2007). Exploration activity in this region increased by 47% from the MEG's 2006 estimates. This increase was the result of an increase in reported Russian exploration activity, as well as continued interest in exploration in Kazakhstan, Scandinavia (particularly Finland, Greenland, and Sweden), and Turkey.

Based on exploration site data collected by the USGS, exploration activity in the CIS focused on gold (65% of exploration sites in data collected), nickel (7%), copper (6%), PGM (6%), and silver (4%). European mineral exploration focused on base metals (37%), gold (33%), and uranium (8%). Because of strong metal prices, many former mining areas of Europe were being reevaluated with newer geophysical methods; areas rich in base-metal sulfides were often being reevaluated for their PGM potential.

### Legislation

The Government of Kazakhstan has a major role in overseeing foreign investment. Government officials at the highest levels have screened major foreign investment proposals, such as the production-sharing agreements (PSA) for Kashagan (Kazakhstan's massive offshore Caspian Sea oilfield) and the Karachaganak gasfield.

Amendments to Kazakhstan's Law "On Petroleum" dated June 28, 1995, (the Petroleum Law) and to the Law "On the Subsurface and Use of the Subsurface" dated January 27, 1996, (the Subsurface Law) were passed on January 12, 2007. The amendments changed the wording of Kazakhstan's preemptive purchase right for oil assets to stipulate that the Government had to pay "prices not exceeding world-market prices" instead of world market prices (Petroleum Law), and they prohibit the transfer of subsurface-use rights "for two years after the effective date of a Hydrocarbon Contract." This rule does not apply to rights "disposed of during a liquidation, reorganization, or the exercise of a security interest" or when the transferee is KazMunaiGaz (the state oil company).

Kazakhstan's Energy and Natural Resources Minister said that the law preventing foreign investors from selling stakes in Kazakhstan's assets to third parties for 2 years after purchase was in part a response to the \$1.9 billion sale of the Karazhanbas oilfield by Canada-based Nations Energy to China's China International Trust and Investment Corp. (CITIC). The Minister also stated that the 2005 sale of PetroKazakhstan Inc. (another Canada-based company with Kazakh oil assets) to China

<sup>&</sup>lt;sup>2</sup>Metals Economics Group (MEG) estimates reflect anticipated exploration budgets for projects in mainland Asia, the Commonwealth of Independent States, Europe, and the Middle East. The Europe and Central Eurasia designation used by the U.S. Geological Survey excludes countries located in the Middle East, and estimates for mainland Asia (primarily China and Mongolia) were subtracted from the total to determine the Europe and Central Eurasia estimate. There was insufficient data available in 2007 to allow for the separation of exploration budgets of countries in the Middle East or Asia (other than China) from the MEG data.

National Petroleum Corp. (CNPC) illustrated the need for the new law giving Kazakhstan first right of refusal to buy assets in any proposed transfer of oil assets between foreign companies. KazMunaiGas became a stakeholder in PetroKazakhstan in 2005, and following the passage of this amendment, KazMunaiGas executed an agreement with CITIC to purchase 50% of Karazhanbas.

On September 27, Kazakhstan's Senate also approved a bill further amending the Subsurface Law, which gives the Government a greater ability to revise or annul contracts concerning the exploitation of subsurface resources. The amendments include a statement that in actions by holders of subsurface deposits where a potential exists that could "lead to essential changes of the economic interests of Kazakhstan, creating a threat to national security," the Government has the right to demand changes in the terms of the contract. The bill also states that the Government can annul contracts "if within a period of up to two months after receiving notification the resource user does not provide its written consent to begin talks on changing the terms of a contract or refuses to hold talks; if within a period of up to four months from receipt of the resource user's consent to talks no agreement has been reached; and if in a period of up to six months from the attainment of agreement on restoring Kazakhstan's economic interests the parties do not sign the contract amendments." The President of Kazakhstan signed the amendments into law on October 24.

Amendments to Russia's law on the use of subsurface resources were ratified on January 31, 2007. These amendments set criteria for deposits containing strategic commodities and limit the rights of foreigners to invest in a controlling stake in strategic deposits that have not yet been developed with foreign participation. Strategic deposits would include oilfields with more than 70 million metric tons (Mt) of reserves, natural gasfields with more than 50 billion cubic meters of reserves, copper fields with more than 500,000 metric tons (t) of copper contained in the ore, and gold fields with more than 50 t of gold contained in the ore. All mineral deposits of diamond, pure quartz, and uranium would be considered strategic. These new amendments set criteria for strategic deposits that are much lower for oilfields and gasfields than criteria proposed earlier and would encompass therefore a much larger number of fields-about 30 oilfields and 40 gasfields. For copper, three deposits, including the Udokan deposit, would be listed as strategic, and for gold, the Sukhoy Log deposit would be listed as strategic. A newer version of the law on strategic resources unveiled in 2008 adds beryllium, cobalt, lithium, niobium, PGM, and the yttrium group of rare earths to the list of strategic deposits.

A major function of the EU has been to remove barriers to trade in an attempt to create a single market and to develop a common set of economic policies. New and prospective EU members must adhere to the EU's environmental and commercial standards. In 2007, no common policy was in place regarding the mineral extractive industries, although the European Commission (EC) was working on a paper for release in 2008 that would address the EU's nonenergy raw material needs.

### **Commodity Overview**

This report includes commodity outlook tables. Estimates for production of major mineral commodities for 2009 and beyond have been based upon such factors as announced plans for increased production and new capacity construction and bankable feasibility studies. The outlook tables in this summary chapter show historic and projected production trends; therefore, no indication is made about whether the data are estimated or reported and revisions are not identified. Data on individual mineral commodities in tables in the individual country chapters are labeled to indicate estimates and revisions. The outlook segments of the mineral commodity tables are based on projected trends that could affect current producing facilities and on planned new facilities that operating companies, consortia, or Governments have projected to come online within indicated timeframes. Forward-looking information, which includes estimates of future exploration, mine development and production, cost of capital projects, and timing of the start of operations, are subject to a variety of risks and uncertainties that could cause actual events or results to differ significantly from expected outcomes. Projects listed in the following section are presented as an indication of industry plans and are not a USGS prediction of what will occur.

Because the writing of this report was delayed until late 2009, production data for the first quarter of 2009 were available, as well as a number of official production estimates for that entire year. Therefore, the projections for 2009 represent the market downturn that began near the end of 2008 and had not ended by early 2010. Future economic and industry developments are uncertain, and mineral production in 2011 and beyond is dependent on a number of factors that are difficult to determine. Projections made during financial turmoil are further complicated by different production costs, which enable some enterprises to continue producing despite the economic downturn and even differences in individual countries' policies toward their mineral industries. Some countries have adopted policies to ensure the continuation of production, whereas other countries are either unable or unwilling to do so.

### Metals

**Bauxite and Alumina and Aluminum.**—Western Europe remained the leading producer of aluminum in Europe and Central Eurasia, although Russia was the leading individual producer, with nearly three times as much production as Germany (the second ranked producer). Russia and Kazakhstan accounted for the majority of bauxite production in the region, although production was significantly below that of the world's leading producers.

In March, OAO RUSAL (Russia's leading domestic aluminum producing company) and OAO SUAL (the county's second ranked domestic aluminum producer and leading domestic bauxite producer) merged and joined with the alumina assets of Switzerland-based Glencore International AG to form United Company RUSAL (UC RUSAL). The merged company controlled all bauxite, alumina, and aluminum production in Russia, had operations abroad, and employed 100,000 people worldwide. Primary aluminum production capacity was increasing in Russia. UC RUSAL planned to increase primary aluminum production to 4.4 Mt in 2008 and to 6.2 Mt in 2013, and most of the expanded output would go to China. (These plans were formulated before the economic crisis that emerged at the end of 2008 and altered production and production plans.) UC RUSAL's acting director for marketing and sales said Asia would account for 50% of UC RUSAL's aluminum sales by 2015, of which 70% totaling more than one-third of UC RUSAL's output would go to China. Also, the acting director predicted that Russia's consumption of aluminum could increase by an average of 11% per year until 2015, which would be a similar rate to the other BRIC countries (Brazil, Russia, and India) (United Company RUSAL, 2008).

UC RUSAL's 300,000-metric-ton-per-year (t/yr)-capacity Khakas aluminum smelter, which was the first aluminum smelter to be built in Russia in the past 20 years, was commissioned in December 2006. The Khakas smelter was projected to reach its installed capacity in October 2007. In 2006, RUSAL had begun work to construct a 750,000-t/yr-capacity greenfield aluminum smelter in Taishet, which was a small town near Irkutsk. Construction was expected to be completed in 2011. UC RUSAL also was carrying out large-scale modernization of the Irkutsk aluminum smelter. The commissioning of new potline no. 5 at Irkutsk would increase total capacity at the smelter by 50% to 450,000 t/yr. The first stage of potline no. 5 was to start production in 2007, and full capacity for potline no. 5 was to be achieved in 2008. Construction of potline no. 6 was planned to begin after the construction of potline no. 5 was completed. When the planned construction of potline no. 6 is completed (projected for 2009), the smelter's production capacity would be 500,000 t/yr.

Included in UC RUSAL's investment project portfolio was the Komi Aluminum project, which was initiated by SUAL. The project entailed the development, construction, and operation of a bauxite-alumina complex in the Komi Republic of Russia. Ore for the project would be supplied by the Middle Timan bauxite deposit that was under development. An alumina refinery to be constructed at Sosnogorsk would be supplied with bauxite from the Middle Timan deposit. The design capacity of the complex was 6.5-million-metric-tons-per-year (Mt/yr) of bauxite and 1.4 Mt/yr of alumina. Plans called for bauxite production at Komi to reach 6.5 Mt/yr by 2010. Construction of the alumina plant in Sosnogorsk had not begun, and the functioning of the alumina refinery would depend on its obtaining an uninterrupted supply of bauxite from the Middle Timan project. The completion of the Komi project would considerably reduce the Russian aluminum industry's dependence on foreign countries for bauxite and alumina.

In Kazakhstan, construction of the country's first aluminum smelter was commissioned in December; construction reportedly had proceeded ahead of schedule. The smelter's annual capacity was expected to be 125,000 t in 2008; the smelter was planned to reach its full annual capacity of 250,000 t/yr by 2011.

**Copper.**—In 2007, Central Eurasia was the region's main producer of copper ore, and the EU was the leading producer of refined copper. Kazakhstan and Russia accounted for the majority of copper ore production, and although Western Europe was only a minor mine producer of copper ore, it produced a significant share of the total world output of primary and secondary refined copper. Central Europe's contribution to copper ore production and refined copper came almost entirely from Poland. Russia remained the leading producer of refined copper in the region, accounting for about 24% of the region's total, followed by Germany (17%) and Poland (13%).

Kombinat Gorniczo Hutniczy Miedzi Polska Miedz S.A. (KGHM) was Poland's only producer of copper ore and primary refined copper. In 2007, KGHM accounted for about 3% of the world's production of copper ore and refined copper. Poland's copper reserves had been projected to be depleted by 2040, but proposed exploration activity and the development of the Glogow Gleboki-Przemyslowy Mine could extend the lifetime of domestic copper mining by an estimated 40 to 50 years. The company also was considering expanding its resource base through investments in foreign countries.

Russia's leading copper producing enterprise was Norilsk Nickel. At Norilsk Nickel's major mining operations on the Taymyr Peninsula in East Siberia, the company continued its trend of mining larger quantities of cuprous ores, which have a higher content of copper relative to nickel than in the nickel-rich ores that were being depleted. Norilsk Nickel also increased production of disseminated ores, which have lower grades of all metals. The nickel-rich ores that were being depleted, however, have the highest copper content of ore types at Norilsk Nickel.

Urals Mining and Metallurgical Company (UMMC), which was Russia's second ranked copper producer and which comprised 47 enterprises in 11 regions, had about a 40% share of the domestic copper cathode market. In 2007, UMMC's Uralelektromed copper refinery acquired exploration and mining licenses for the Stepnoye and the Talovskoye deposits in Altay Kray. (These deposits would also be mined by the Russian lead and zinc mining company Siberian Polymetals.) Mining at Stepnoye was scheduled to commence in 2010; for the first 10 years of operation, the mine would produce from 400,000 to 450,000 t/yr of ore. The Talovsky Mine (at the Talovskoye deposit) was scheduled to come onstream in 2011; the mine would have the capacity to produce 200,000 t/yr of ore. In 2007, UMMC had the capacity to produce 380,000 t/yr of copper cathodes. Plans called for reconstruction of an electrolysis unit that would enable UMMC to increase copper cathode production to 500,000 t/yr.

Russian Copper Company (RCC), which was the country's third ranked copper company, included 20 mining and metalmaking enterprises that operated in Russia in the Chelyabinsk, the Novgorod, the Orenburg, and the Sverdlovsk Oblasts, the Altay Kray, and the Republic of Dagestan, as well as in Kazakhstan. RCC produced about 20% of Russian copper metal output and about 1% of world copper output. RCC combined 11 upstream and downstream enterprises that mined and processed copper ores and produced copper products. Plans called for RCC to increase copper cathode production using its own raw materials to 185,000 t/yr. RCC planned to increase copper cathode output to 290,000 t in 2010. In 2007, RCC planned to add a third electrolytic plant at Kyshtym with a capacity of 100,000 t/yr; the first 50,000 t of capacity would

be added in the late spring and the remaining 50,000 t would be available in December.

At the Udokan copper deposit in Chitinskaya Oblast, which is one of the largest copper deposits in the area of the FSU, a reevaluation of reserves was to be completed at the end of 2009. Owing to the size of its reserves, Udokan was being classified as a strategic deposit, which means that foreign companies would not be able to have a controlling interest in the ownership of the deposit.

Kazakhstan's major copper producer was Kazakhmys PLC, which was engaged in mining, beneficiating, smelting, and refining copper products, including copper cathodes and rods. Kazakhmys' copper division was composed of 20 mining entities, including 14 underground mines and 6 open pit mines. The mineral reserves and resources of these mines reportedly were adequate to support projected production for at least 20 years. Kazzinc JSC was the country's leading producer of lead and zinc and the country's second ranked producer of copper. Kazzinc's plans called for construction of a copper smelter and modernization of its lead production facilities at the Ust-Kamenogorsk metallurgical plant.

**Gold.**—In 2007, Europe and Central Eurasia accounted for about 13% of world gold production, and about 93% of the gold was from Central Eurasia (table 4). Russia accounted for about 52% of the region's total gold production followed by Uzbekistan and Kazakhstan, which accounted for 28% and 7% of regional production, respectively.

In Russia, gold output fell for the fifth year in succession. Gold production increased in regions with predominately lode deposits, which included the Amur, the Irkutsk, the Kamchatka, and the Krasnoyarsk regions, but production fell in areas with predominately placer deposits, which included deposits in the Magadan Oblast (which in the past had been Russia's leading gold producing region) and Khabarovsk Kray. Although in the past, gold production from placer deposits was the leading source of Russian gold production, in 2007, it accounted for only about 40% of output. Reserves at placer deposits were being depleted and production capacity was being transferred to mine hard rock deposits. Depletion of reserves at placer mines also was attributable in part to a lack of resources by the small companies mining these deposits to conduct necessary exploration. Russia's gold production could begin to increase as new deposits, such as the Kupol field in Kamchatka, are commissioned.

Kyrgyzstan had two gold mining enterprises—the Kumtor Gold Co. (a wholly owned subsidiary of Centerra Gold Inc. of Canada) and the Makmal gold mining enterprise. Gold production at Kumtor was one of Kyrgyzstan's major economic activities. In 2007, Kumtor produced 300,862 troy ounces (9.36 t) of gold compared with 303,000 troy ounces (9.42 t) in 2006. Lower gold production was partially offset by higher gold prices. The average sale price in 2007 was \$696 per troy ounce compared with \$594 per troy ounce in 2006. Plans for 2008 at Kumtor called for mining to be focused primarily in the south section of the central pit, which would target high-grade mineralization. Production from the mine was expected to increase to between 580,000 troy ounces (18 t) and 620,000 troy ounces (19.2 t) of gold. The major increase in output was planned for the second half of 2008 when the high-grade SB Zone of the south section would be exposed and mined. At yearend 2007, Centerra Gold reported that proven reserves at the Kumtor deposit were 1,223,000 troy ounces (38 t) of gold in 9,888 t of ore grading 3.8 grams per metric ton (g/t) and probable reserves were 3,679,000 troy ounces (114.4 t) in 28,546 t of ore.

Uzbekistan's main reserves of gold and uranium occur in the Central Kyzylkum region between the Amu Darya and the Syr Darya Rivers. The ores were mined and processed by the Navoi mining and metallurgical complex. The Navoi complex had more that 20 gold deposits in western Uzbekistan, of which the largest by far was the Muruntau deposit (one of the world's largest gold deposits). Gold from this deposit was mined from an open pit. Navoi's gold production averaged between 57 and 60 t/yr in recent years. Navoi was also a partner in the Zarafshan-Newmont joint venture, which was initially formed by Navoi, Newmont Gold Corp. of the United States, and the Uzbekistan State Committee for Geology and Mineral Resources (Goskomgeologia). The Zarafshan-Newmont joint-venture recycled tailings generated from the Muruntau gold lode. On August 11, 2006, the Government of Uzbekistan launched a criminal investigation against the joint venture and its employees, however, and blocked the export of any gold. In September 2006, Newmont wrote off the value of its stake in the joint venture 2 months after authorities seized gold and other assets based on two tax claims for payments due between 2002 and 2005. In 2007, Newmont reached an agreement whereby it transferred its stake in the Zarafshan-Newmont venture to The Government of Uzbekistan with none of the parties admitting liability regarding any matters in the dispute.

Romania was considering legislation that would effectively ban the use of cyanide in mining. Such a ban would have an effect on the Rosia Montana gold project, which was under development in 2007 and could make Romania a significant regional producer of gold. Future exploration and development activity at this site also could be affected. Gabriel Resources Ltd. of Canada, which was the company that operated the project, estimated that Rosia Montana could produce an average of about 15,000 kilograms per year (kg/yr) of gold during the 16-year estimated mine life (Marinas, 2007; Gabriel Resources Ltd., 2009).

**Iron and Steel.**—Europe and Central Eurasia produced about 25% of the world's crude steel production and 18% of pig iron and direct-reduced iron production in 2007. The EU produced about 62% of crude steel in the region, but Russia was the leading individual producer with 21% of regional production followed by Germany (14%), Ukraine (13%), and Italy (10%).

In 2007, Russia was the fourth ranked steel producer and the leading steel exporter in the world. Eight steel mills produced almost 90% of the country's crude steel output. Russia exported about 27 Mt of steel products, which was 45% of its total production of steel products, and it imported 6 Mt. In 2007, Russia consumed 38.6 Mt of finished steel products, which was 17% more than in 2006. The increase in domestic consumption was mainly the result of increased demand for steel in the fuel and energy sectors, in the machine-manufacturing sector for the production of equipment for oil-extraction and oil-refining, and the automotive industry. The Ministry of Economy and Industry

projected that Russian steel consumption by 2010 would increase by 32% to 51 Mt/yr.

Russia was engaged in the modernization and expansion of its steel sector, which included constructing a number of minimills. The share of electric arc furnace (EAF) steel was projected to increase to about 35% in 2015 from 27% in 2007. Scrap collection in Russia averaged between 30 and 34 Mt/yr, and the country had a scrap reserve of about 1.8 billion metric tons (Gt). Scrap consumption had averaged between 24 and 25 Mt/yr. In 2007, Russia exported about 7.7 Mt of scrap.

In 2007 in Ukraine, production of crude steel decreased slightly compared with that of 2006 to about 42.8 Mt, and production of finished rolled steel increased by 9.5% to about 24.5 Mt. Projections for 2008 called for Ukraine's crude steel output to increase to 46 Mt; pig iron output was projected to increase to 38.3 Mt compared with 35.6 Mt in 2007. To meet these production targets, steelmakers in Ukraine would need an additional 6.1 Mt of iron ore by the end of 2007, and it was evident that supplies of coke and iron ore could become tight in the coming year. The steel industry planned to maintain a level of exports of at least the 2007 level and hoped that exports could increase by as much as 12% to 20%.

The steel industry in Ukraine was dominated by large producers. In 2006 (the latest year for which data were available), of the total volume of steel produced, 51.7% was produced by oxygen converter furnaces, 44.6% in open-hearth furnaces, and 3.7% in EAFs. Switching to EAFs for steel production was a difficult process, in part because the country's supply of steel scrap was quite limited. An increase in scrap availability could be possible if depreciation rates on capital stock were accelerated and if the amount of scrap available from automobiles increased with increased car ownership. Plans called for the introduction of more continuous casting of steel, which composed only 30% of the steel produced.

Ukraine's steel industry was undergoing a major transformation as major mills invested in modernizing production facilities to achieve improved operational and environmental performance. In 2008, the steel industry planned to increase its investment in modernization and construction by 28% compared with that of 2007. In 2007, such investment increased by 57.3% compared with that of 2006. In 2007, steel mills increased the value of output by 32.4% compared with that of 2006, but operating margins slipped slightly because of the higher cost of inputs; production costs were projected to continue to increase significantly and profit margins to continue to decrease. Only about one-half of the steel mills were envisioned to be able to operate profitably as production costs increase, which could result in the tax revenues paid to the Government by the industry decreasing.

**Iron Ore.**—Europe and Central Eurasia produced 13% of the world's iron ore in 2007. Central Eurasia was the dominant producer of iron ore in the region, accounting for 84% of the region's iron ore production. Russia, Ukraine, Sweden, and Kazakhstan were the region's leading producing countries, accounting for 44%, 31%, 12%, and 10% of production, respectively.

In 2007, Russia's iron ore mining industry was able to achieve a 2.9% growth in output compared with that of 2006 to 105 Mt.

The major iron ore producers were the enterprises in the Kursk Magnetic Anomaly and in the Northwest and Ural Mountains regions.

The iron content of Russian crude iron ores averages between 30% and 35% iron before beneficiation, which is of higher grade than ore from China and Ukraine but of lower grade than ore from Australia and Brazil where ores average more than 50% iron. More than 60% of iron ore mined in Russia is beneficiated. Only 12.5% of iron ore produced in Russia has an iron content of more than 60%.

The majority of Russia's iron ore output was consumed domestically, but the country exported iron ore to countries in Asia, Europe, and the Middle East. Although Russia exported iron ore, it also imported iron ore mainly from Kazakhstan for the Magnitogorsk Iron and Steel Works, which purchased about 10 to 11 Mt/yr of iron ore from the Sokolovsko-Sarbayskoe Production Association in Kazakhstan.

Russia's reported iron ore reserves are located in 172 deposits, 53 of which were being mined. The basic iron ore reserves are composed mainly of magnetite and hematite-magnetite ores; the average iron content in the magnetite ores ranges between 31% and 35%, and in the hematite ores, between 40% and 50%. The different ore types require specialized technologies to beneficiate in order to produce a marketable product. Russia's iron ore reserves are about 200 times current production levels.

In 2007, Ukraine's iron ore mines increased output of crude ore by about 4% to 77 Mt. A continuing issue for Ukraine remained the price at which iron ore enterprises were marketing their supplies to the country's metallurgical industry, which involved problems in relations between financial and industrial groups and quality-to-price issues. In response, the metallurgical enterprises were increasing imports and the iron ore enterprises were increasing exports, although this solution did not resolve the iron ore mining enterprises' marketing issues. At yearend, iron ore mining enterprises had a record 2.5 Mt of ore stockpiled in warehouses in Europe where their main consumers were located, and they were looking to China to further expand the export market.

A basic issue that faced Ukraine's iron ore mining sector was the high cost of production, including high energy consumption, coupled with low ore grades and difficult geologic conditions for mining at greater depths. Because of these circumstances, the industry was at a disadvantage in competing on the world markets. About 70% of the country's output was consumed by domestic steelmakers who were mainly oriented towards exporting their output.

Ukraine's iron ore mining sector was able to raise the quality of its products, which were still low by world market standards, and this enabled the sector to maintain its level of exports at about 30% of output despite increasing global competition. Nevertheless, unless further improvements in product quality are achieved, it was projected that Ukraine would be at an increasing disadvantage in marketing its output on world markets. The iron ore industry's attempt to maintain its growth in output by mining large quantities of relatively low-grade ore resulted in the industry causing major environmental problems because of the large volume of waste generated. Lead and Zinc.—The region of Europe and Central Eurasia made up only a small percentage of world production of mined lead (about 10%) but continued to be an important producer of primary and secondary refined lead. Secondary refined lead was the region's most important contribution to the world lead market in terms of quantity of production. In 2007, about 28% of world production of secondary refined lead and 19% of primary refined lead came from Europe and Central Eurasia, and most of the production took place in Western Europe. Poland was the region's leading producer of mined lead, but the country's output was expected to decrease as deposits continue to be depleted and the lead content in mined copper ores decreases (table 4).

Europe and Central Eurasia produced about 14% of the world's production of mine output of zinc and about 26% of the world's zinc metal output in 2007. Ireland and Kazakhstan were the leading producers of zinc ore output, and Spain and Kazakhstan were the first and second ranked producers of refined zinc, respectively.

Russia reportedly possesses 17% of the world's zinc reserves (about 45 Mt) and has two of the larger zinc deposits in the world (the Kholodninskoe and the Ozyornoe, which are located in the Republic of Buryatia). In the environment of high metals prices in 2007 and the growing global demand for metal, greater interest by investors in exploration of these deposits was expected, which could allow a doubling of zinc concentrate production in Russia within 5 to 7 years.

In Russia, more than 60% of zinc was used for the production of galvanized steel, mainly for the automobile and construction industries. According to forecasts of the commercial director of Russia's leading zinc metal producer, the Chelyabinsk Zinc Plant, based on trends evident in 2006, Russia's construction volumes could increase by more than 50% by 2010, and automobile production could double by 2015. Also, substantial potential existed for zinc consumption to increase in such areas as alloy production and usage in the chemical industry. Even with increasing zinc consumption within the country, Russia would remain a net zinc exporter in the near future as production exceeded consumption by 62,000 t in 2006 (the latest year for which data were available).

UMMC, which was Russia's second ranked copper producer and which had facilities centered in the Ural Mountains region, also produced about 50% of Russia's lead metal and 40% of its zinc metal. Plans called for UMMC to increase production to 110,000 t of zinc in 2009, and eventually to 250,000 t by 2012, which was a 184% increase compared with that of 2006. UMMC produced about 88,000 t of zinc in 2006. Plans also called for UMMC to construct a 140,000- to 150,000-t/yr-capacity zinc smelter in the Sverdlovsk region, which would be capable of processing all UMMC's raw materials. The new smelter was to be commissioned in the summer of 2008. UMMC processed most of its zinc at its zinc refinery in Vladikavkaz, which had a capacity to produce 90,000 t/yr.

Siberian Polymetals, an enterprise subordinate to UMMC, planned to commission the Zarechenskiy Mine in June, which would increase lead-zinc ore production by 100,000 t/yr in the first stage; the mine would reach a design capacity

of 300,000 t/yr of ore in 2009. In 2007, the new mine was projected to produce 30,000 t of ore.

Kazzinc JSC was Kazakhstan's leading producer of lead and zinc. The company planned to invest \$353 million in developing production in 2007 compared with the \$193 million it invested in 2006. Plans called for spending \$126 million of the planned investment on the New Metallurgy project, which included modernization of lead production facilities at the Ust-Kamenogorsk metallurgical plant.

ShalkiyaZinc N.V. was another lead and zinc mining company in Kazakhstan. The company's main operations were located in southern Kazakhstan and included the underground Shalkiya Mine in the Kyzylorda region, a processing plant near the town of Kentau 165 kilometers (km) southeast of the Shalkiya Mine, and the Talap greenfield deposit, which is located 30 km southwest of the Shalkiya Mine. One of the company's major assets was the Shalkiya deposit, which reportedly is the largest known zinc deposit in Kazakhstan and accounts for approximately 30% of the country's total zinc reserves. ShalkiyaZinc planned to increase its lead-zinc ore extraction at the Shalkiya deposit to 4 Mt/yr by 2010 from about 3 Mt/yr in 2007. According to the latest audit, ShalkiyaZinc's probable ore in situ reserves total 6.6 Mt of zinc metal and 1.7 Mt of lead metal. The new audit showed that the zinc content of ore that could be profitably mined was far lower than 3%, which was the previous assessment. ShalikyaZinc had a contract with Outokumpu Technology Oy of Finland to construct a new ore processing plant at the deposit.

In 2007, the Almalyk mining and metallurgical complex in Uzbekistan was producing zinc metal at its zinc smelter on a tolling basis. Almalyk, however, had started to develop a lead and zinc mining and beneficiation complex to develop the Uchkulach lead-zinc deposit where Almalyk had a mothballed mine. Almalyk was also planning to develop the Khandiza polymetallic ore deposit. The beneficiation plant at the Uchkulach Mine would be capable of processing 500,000 t/yr of ore and the beneficiation plant at the Khandiza Mine would be able to process 650,000 t/yr. Plans called for the complex to go onstream in 2009.

**Nickel.**—Production of the region's mine output of nickel was almost entirely the result of Russian mining activity whereas refined nickel production took place mainly in Russia and Western Europe. Russia accounted for about 89% of nickel mine output and 52% of nickel refinery production in the region in 2007.

In 2007, Russia was the world's leading producer of mined and refined nickel. Russia's Norilsk Nickel was the world's leading nickel producing company; it had nickel mining and processing operations on the Taymyr Peninsula in Siberia and on the Kola Peninsula in the northwestern part of the country, as well as in Botswana and Finland. Based on the results of an independent audit conducted in accordance with the standards of the Australasian Joint Ore Reserves Committee (JORC), proven and probable reserves of nickel on the Kola Peninsula and the Taymyr Peninsula exceeded 6 Mt. Norilsk Nickel had ore processing and metallurgical enterprises at both its Kola and Taymyr locations, but the refining of PGM concentrates from Norilsk Nickel was outsourced under a tolling agreement to the Krasnoyarsk nonferrous metals plant. Norilsk Nickel produced 234,454 t of nickel metal products at its Russian operations compared with 244,000 t in 2006, which was in keeping with the company's production targets. Norilsk Nickel's mining operations on the Taymyr Peninsula consisted of seven mines that extracted mixed sulfide ores with varying contents of cobalt, copper, gold, nickel, PGM, and other ore constituents.

On March 1, Norilsk Nickel Finland became part of Norilsk Nickel as a result of Norilsk Nickel acquiring OM Group Inc.'s nickel business, which included the Harjavalta refinery in Finland. OM Group was a United States-based producer of metal-based specialty chemicals. In November 2006, Norilsk Nickel had agreed to supply practically all its cobalt to OM Group. The Harjavalta plant processed nickel concentrates from Norilsk Nickel's operations and nickel semiproducts from third parties.

On June 28, Norilsk Nickel acquired 85% of the shares of Tati Nickel Co. Proprietary Ltd. of Botswana. The Government of Botswana owned the remaining 15% in Tati Nickel. Tati Nickel included the Phoenix open pit nickel mine and the Selkirk underground nickel mine. In 2007, Tati Nickel produced 15,129 t of nickel in concentrate.

Ore production on the Taymyr Peninsula was projected to increase to 18.5 Mt by 2015, with the production of nickelrich ore (grading 2.5% nickel, 2.25% copper, and 5 to 100 g/t PGM) and of cuprous ores (grading 0.2% to 2.5% nickel, 1% to 15% copper, and 5 to 50 g/t PGM) reaching levels of 7.5 Mt and 5.5 Mt, respectively, and of disseminated ores (grading 0.2% to 1.5% nickel, 0.3% to 2% copper, and 2 to 10 g/t PGM) of 5.5 Mt. The key projects that would enable Norilsk Nickel to achieve its production target of 7.5 Mt/yr of nickel-rich ore on the Taymyr Peninsula were the development of the Skalisty Mine, which would have a total capacity of 3 Mt/yr, and the mining of lower horizons of the Taymyrsky Mine, which would increase the total output at Taymyrsky to 4 Mt/yr by 2011.

The increase in cuprous ore output on the Taymyr Peninsula to 5.5 Mt was to be achieved by the expansion of mining curprous ores at the Oktyabrsky Mine to 3 Mt/yr, which would offset the depletion of nickel-rich ore. An expansion of cuprous ore mining by 2.5 Mt/yr was planned at the Komsomolsky Mine where total output was projected to be 4.3 Mt/yr. Achieving an optimal production of disseminated ore of 5.5 Mt/yr was to be achieved by stripping new mining areas at the Komsomolsky, the Oktyabrsky, and the Zapolyarny Mines.

Production on the Kola Peninsula was projected to remain at about 7.5 Mt/yr, which would be achieved by commissioning the Severny-Gluboky Mine at its design capacity of 6 Mt/yr by 2012. Production from Severny-Gluboky would offset the decommissioning of the Tsentralnaya open pit mine.

The implementation of Norilsk Nickel's mine development plan would enable Norilsk Nickel to maintain stable metal production levels. Increases in base and precious metals production on the Taymyr Peninsula was to be achieved by using newly developed technology to upgrade concentration operations and expand capacity and also by increasing the rate of processing of stored pyrrhotite tailings. On the Kola Peninsula, the modernization of metallurgical operations was primarily aimed at reducing sulfur dioxide emissions. RCC planned to invest \$160 million to build a nickel production complex in Chelyabinsk in the Ural Mountains region; the first stage was to go into operation in 2009. RCC had started constructing a mine and an ore enrichment plant at the Kulikovskaya group of nickel and cobalt deposits. The design capacity of the plant was expected to be 7,000 t/yr of nickel metal.

**Platinum-Group Metals.**—Within the region of Europe and Central Eurasia, almost all platinum-group metal (PGM) mining took place in Russia, but small amounts of PGM were also mined in Finland, Poland, and Serbia. Russia and the Republic of South African were the world's two leading PGM mine output producers—Russia was the world's leading producer of palladium and South Africa was the world's leading producer of platinum owing to the different ratios of these metals in the ores of each country. For refined PGMs, Germany accounted for almost 40% of the world's refined platinum production and Russia accounted for 45% of the world's refined palladium output and 8% of the world's refined platinum output.

PGMs have important applications in the industrial sector. Palladium and platinum and, to a lesser extent, rhodium are critical components of catalytic converters, which control automobile emissions, and platinum is the critical catalytic element in the Proton Exchange Membrane (PEM) fuel cell under development to power automobiles. PGMs are likely to be in much greater demand as the world's automobile fleet increases in size and is equipped with catalytic converters. As legislation calling for stricter automobile emissions controls is enacted, greater loadings of PGMs in catalytic converters will likely be required. Also, the need for alternative sources of energy to oil could result in the development of a hydrogenbased economy powered by fuel cells that use platinum as a catalyst.

In 2007, Norilsk Nickel's operations in Russia produced more than 95% of the country's PGMs. Norilsk Nickel did not project a near-term increase in PGM production at its Russian operations. Norilsk Nickel also produced PGMs at the Stillwater Mining Co. in Montana and at Tati Nickel in Botswana.

Based on the results of an independent audit conducted in accordance with the standards of the JORC, proven and probable reserves of palladium on the Taymyr Peninsula exceeded 63 million troy ounces (about 2,000 t), and those of platinum, 16 million troy ounces (about 500 t) at a combined grade of 7.54 g/t PGM.

Barrick Gold Corp. of Canada estimated that, at the end of 2006, its Fedorova Tundra deposit in the Murmansk region of Russia contained measured and indicated resources of 1.1 million troy ounces (about 34 t) of palladium and 300,000 troy ounces (about 9 t) of platinum and inferred resources of 1.3 million troy ounces of palladium (about 40 t) and 300,000 troy ounces (about 9 t) of platinum. Barrick later stated that continued exploration might double the size of the resources. Barrick planned to mine the deposit to produce concentrate, which would be processed at Norilsk Nickel's Severonikel plant on the Kola Peninsula. Production was scheduled to commence in 2010, and output was projected to be 150,000 t/yr of concentrate at a grade of 98 g/t PGM.

### **Industrial Minerals**

**Diamond.**—Russia was the world's leading diamond mining country and the only significant diamond mining country in Europe and Central Eurasia; almost all its output was mined by ALROSA of Russia, which had its main operation in the Sakha (Yakutiya) Republic in East Siberia. ALROSA was one of the world's leading companies in the field of diamond exploration, diamond mining, sales of rough diamond, and diamond processing, and it accounted for 97% of all Russia's diamond production. The company's share in global rough diamond production was 23%.

One of ALROSA's top priorities in 2007 was expanding the company's mineral resources. ALROSA continued to develop cooperation with Angola and, in 2007, signed an agreement with Empresa de Diamantes de Angola (Endiama) (which was Angola's state-owned diamond mining company) on joint prospecting in an area of 3,000 square kilometers in the Cacolo municipality. In expanding the company's activities outside Russia, ALROSA also signed an agreement on cooperation with the Government of Armenia for diamond and jewelry manufacturing, providing for exchanges of information, and coordinating to strengthen the competitive positions of Russian and Armenian diamond manufacturers in the world market.

Phosphate Rock.—Russia was the only significant producer of phosphate raw material in Europe and Central Eurasia and produced 8.5% of the world total. In Russia, the major source of phosphate ore is the apatite reserves in the Khibiny massif and the Kovdor deposit on the Kola Peninsula. The Khibiny apatite-nepheline ores contain about 90% of the country's apatite reserves and have a  $P_2O_5$  content of 12% to 16%. The OAO Apatit complex (a part of FosAGro Holding) that mines the Khibiny massif produced about 8.5 Mt/yr of apatite and nepheline concentrates and employed about 12,500 persons. Beneficiation facilities for apatite-nepheline ore from Khibiny produced two types of apatite concentrate: "standard", which contains not less than 39% P2O5, and "super", which contains 40% P<sub>2</sub>O<sub>5</sub> and less than 0.02% titanium dioxide. Reserves at Khibiny were reportedly sufficient to sustain 2007 production levels through 2050.

**Potash.**—Belarus, Germany, and Russia were three of the world's leading potash producers and together accounted for 44% of the world's potash output. Russia produced 19%, Belarus, 14%, and Germany, 10.5%, of the world total.

In Belarus, the Production Amalgamation (PA) Belaruskali was in charge of mining at the Starobin potash deposit, which is one of the largest in the world. The deposit was discovered in 1949 and mining had been taking place there since 1962. The deposit consists of four separately delineated potash beds. The first, second, and third potash beds had been mined but the majority of potash reserves occur in the third bed. Reserves in the second bed were practically depleted, and the remaining reserves in the first bed had been reclassified as uneconomic. Because reserves at mining directorates nos. 1 and 2 were almost depleted, new sectors in areas that surround the deposit would need to be developed to maintain and expand production. Development reportedly had begun at the Krasnoslobodskiy sector to the east of mine no. 2, which reportedly contained

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345 Mt of potash salts containing 51.4 Mt  $K_2O$ . Future development of other sectors adjacent to existing mines was also planned. The potash ore was primarily sylvinite.

Russia's two major potash producers—OAO Silvinit and OAO Uralkaliy—mined potash containing potassium-magnesium salts from the Verkhnekamsk deposit in the Ural Mountains region and Verkhnekamsk, which is reportedly the second largest potash deposit in the world, The two companies were linked through minority shareholding but operated independently of one another. Uralkaliy was one of the leading five potash producers in the world and produced about 13% of the world's potash fertilizer output. Its main product was potassium chloride. Potash mined at Uralkaliy was used in direct application as fertilizer and also in the production of compound fertilizers. Uralkaliy exported 90% of its output.

Uralkaliy together with Belaruskali (the major potash enterprise in Belarus) formed the Belarusian Potash Co. (BPC) in 2005; this company became the world's leading potash exporter and controlled 34% of the world's potassium fertilizer exports. In 2005, potash production at Uralkaliy increased to 5.417 Mt of potassium chloride, but in 2006, one of the company's three mines was closed because of flooding, which resulted in reduced output. To compensate for the loss of output, Belaruskali began a program to increase production at the remaining two mines and to modernize the beneficiation plant. Plans were underway to develop a third mine at the Ust'Yayvinsskiy sector at the Verkhnekamsk deposit, which was planned to go into operation by 2015. By 2011, Uralkaliy planned to raise output of potassium chloride to 7 Mt, which would necessitate raising ore output to 27 Mt/yr from the current 19 Mt/yr.

Silvinit was Russia's leading potash producing enterprise. The enterprise produced about 10% of the world's output of potassium fertilizers and, in terms of production capacity, was the world's fifth ranked company. In 2006, Silvinit successfully fulfilled its Plus Million program that it had adopted in 2004 to increase the volume of output to 5 Mt/yr of potassium chloride, and the company began a new Plus Million program to raise output to 6 Mt in 2009.

German potash production was dominated by K+S Aktiengesellschaft, which was the leading producer of potash in the EU and the fourth ranked producer of potash in the world. Production was expected to substantially decrease in 2009 but to recover rapidly in 2010. K+S was a minor supplier to China (the world's leading consumer of potash), and production was expected to recover in 2010 owing to a recovery in EU markets and other markets that K+S is more typically involved in.

### Mineral Fuels and Related Materials

**Coal.**—In 2007, Europe and Central Eurasia accounted for 7% of the world's anthracite production, 11% of the world's bituminous coal production, and 61% of the world's lignite production. In Central Eurasia, Russia, Kazakhstan, and Ukraine (in order of output) were the leading coal producers, and within the EU, Germany and Poland were the leading coal producers. A number of other countries throughout the region also mined coal (table 4).

Russia ranked fifth in the world in the total volume of coal mined following China, the United States, India, and Australia. Since 1999, the country had experienced growth in its coal output every year. Almost all growth in coal output was of higher quality coal, which was exported. Domestic coal consumption had remained at about the same level and consumption of coal for energy generation had decreased, in part because of warmer winters in Russia and larger volumes of water in rivers and reservoirs, which increased hydroelectric output. Coal was consumed domestically primarily at coal chemical plants and powerplants. Economic (balansovye) reserves in categories A, B, and C1 (classified according to the reserve classification system that was in use in the Soviet Union) were reportedly 200 Gt, of which brown coal comprised 53% of reserves; bituminous coal, about 44%; and anthracite, 3.5%. Reserves at operating mining enterprises were about 19 Gt, of which metallurgical coal comprised about 4 Gt. As of January 1, 2007, Russia had in operation 240 coal mining enterprises, of which 97 were underground coal mining enterprises and 143 were open pit mining enterprises. The Kuznetsk Basin (Kuzbas) was the country's main producing region and was expected to be so in the future. Reserves in the Kuzbas contained all grades of hard coal and were suitable for use in energy generation and coke production.

Revised projections by the Russian Government called for Russian coal production in a moderate case scenario to increase to 410 Mt by 2015 and 470 Mt by 2020. Earlier projections called for coal production in the moderate scenario to increase to 375 Mt by 2020. Growth in coal production would likely come from the eastern part of the country from the large Kansk Achinsk brown coal basin, the Pechora basin (which has significant reserves of metallurgical coal), and the South Yakutiya basin. Coal production in the current large producing areas in the European part of Russia and the Ural Mountains region was projected to stabilize, but under favorable circumstances, could increase by 30 Mt/yr.

Long-range plans called for Kazakhstan (the CIS's second ranked coal producer) to increase annual coal production to 145.6 Mt by 2020 according to the Coal Industry Department at the Kazakh Energy and Mineral Resources Ministry. Production of metallurgical coal was projected to increase to 24.3 Mt in 2020 from 12.9 Mt in 2006 and production of steam coal, to 121.3 Mt from 83.4 Mt. Achieving the targeted level for 2020 would require an investment of \$3.9 billion, of which \$2.1 billion would be targeted for metallurgical coal development and \$1.8 billion, for steam coal.

Ukraine was the CIS' third ranked coal producing country and was among the world's leading coal mining countries. Ukraine's energy strategy, which was approved by the Government in 2006, called for increasing coal output to 130.3 Mt by 2030.

Ukraine's economic (balansovye) reserves (calculated according to the reserve classification system used during the Soviet period and later by many of its successor states) were reportedly about 8.704 Gt as of January 1, 2005, of which 6.501 Gt was classified as industrial reserves. Metallurgical coal comprised 54% of the total industrial reserves and steam coal reserves composed 46%. With an average annual domestic coal demand of 100 Mt, industrial reserves were considered adequate for 65 years.

Production, however, was more than 20% below domestic consumption. Explored reserves in Ukraine were reportedly 117 Gt.

Ukraine's Coal Industry Ministry planned to attract investors to develop deposits in the Dnepr brown coal basin, according to an investment proposal that it posted on its Web site on August 15, 2006. The proposal called for developing two deposits—the Aleksandriiskoye deposit, which has brown coal reserves reported to be 485 Mt, of which 63 Mt was considered suitable for open pit development, and the Verkhnedniprovskoye deposit, which has reported reserves of 236 Mt, for which the explored sections were considered suitable for open pit development. The Ministry calculated that these deposits had the potential to produce 5 to 6 Mt/yr by open pit mining. Mines at the deposits were projected to come onstream in 2 years once development begins.

Germany and Poland produced 17% and 13%, respectively, of coal in Europe and Central Eurasia, but each was expected to decrease production in the future. Coal production in Germany was expected to decrease as the Government phased out the country's hard coal subsidy. Hard coal mining will cease to be economical without subsidies because the current resources lie at great depths underground. Lignite production was expected to remain a mainstay of the German mining industry and electrical power generation sector indefinitely. Coal production in Poland was expected to decrease as mines close because of depleted reserves and difficult mining conditions. Further development of reserves in Poland was not likely as future development projects would face difficult mining conditions, environmental concerns, and lower quality coal in the undeveloped reserves.

**Natural Gas.**—Russia was the world's leading natural gas producer and exporter and had the world's largest natural gas reserves. Its reserves totaled 47.6 trillion cubic meters, which was about 25% of the world's total natural gas reserves and about 1.6 times larger than the size of the reserves in the country with the second largest reserves, Iran. A large number of countries in the region of Europe and Central Eurasia produced natural gas, but generally not in large amounts. The Netherlands, Norway, and the United Kingdom were large regional producers of natural gas in Europe, and Turkmenistan and Uzbekistan were large regional natural gas producers in the CIS (BP p.l.c., 2008, p. 22).

Almost 90% of Russia's natural gas was produced in the Ndym-Pur-Taz (NPT) region in northern West Siberia (the area's name was derived from the names of three rivers that border it). The NPT region hosts three massive gasfields (the Medvezh'ye, the Urengoy, and the Yamburg), which had been the country's main producers, and had supplied about 70% of the country's gas production. These three fields were in decline, however, as reserves were being depleted. To keep up with the growth in the Russian economy and the country's long-term export commitments to Europe to increase gas output, Russia was expected to have to incur greater costs to develop fields further north and to the east in an even more difficult physical environment than in the NPT region. A main target for future development would be the Yamal Peninsula, where large reserves were discovered in several fields. The newly developed Zapolyarnove field on the Yamal Peninsula was a major contributor to replacing decreasing production from large older fields, where reserves were more than 50% depleted.

Gazprom, which was Russia's major gas producer, projected that between 2008 and 2030, Russia would increase natural gas output; most increases in natural gas output were projected to come from independent gas companies, such as Itera, Northgaz, and Novatek, which although blocked from the export market, had found a niche supplying the domestic market.

In 2005, construction began on the Nord Stream pipeline, which would substantially enhance the flexibility of Gazprom's supply routes to Europe. Gazprom was preparing to develop the Barents Sea Shtokman offshore field; 50% of the gas produced there would be exported as liquefied natural gas (LNG) to Canada and a portion was to serve as a resource base for Russian gas exports to Europe, which would be transported by way of the Nord Stream pipeline.

Russian statistics state that about 25% of associated gas is flared, although the percentage is not exact because of a lack of metering equipment to measure flaring. The Government planned to increase associated natural gas production by increasing the recovery of associated gas.

In 2007, natural gas production in Turkmenistan increased by 9% compared with that of 2006 to 72.3 billion cubic meters. Natural gas production had fallen from a high of about 80 billion cubic meters per year in the 1980s to only 12 billion cubic meters in 1998 owing to the lack of permission to transport its gas to markets through the Russian pipeline network, which was the country's only available route to export gas. The resolution of transport issues between Russia and Turkmenistan enabled Turkmenistan to restore the volume of its natural gas output.

In 2007, Turkmenistan was to export 50 billion cubic meters of gas to Russia. On May 12, 2007, Kazakhstan, Russia, and Turkmenistan signed an agreement to construct a pipeline from Turkmenistan's Caspian shore to Russia through Kazakhstan. It would initially entail the reconstruction of the existing western branch of the Soviet-era Central Asia-Centre (CAC) pipeline that extends along the shore of the Caspian Sea. Along with the reconstructed pipeline, a parallel new pipeline would be laid alongside it to boost overall capacity. A week before the trilateral agreement on the pipeline was signed, the head of Turkmengas (a state-owned company in Turkmenistan) said that the country was interested in diversifying its export routes and cited the possibility of constructing the Trans-Caspian Gas Pipeline (TCGP), which would be an extension of the South Caucasus Pipeline. At a press conference held after the trilateral summit, the President of Turkmenistan said that the TCGP was still on the agenda and that diversification of gas agenda and that diversification of gas distribution could still be examined.

The majority of Turkmenistan's natural gas was produced in the southeastern part of the country from the large Dauletabad-Donmez field. Production was about 40 billion cubic meters per year and resources were initially estimated to be 4.5 trillion cubic meters. Potential increases in natural gas production were expected to come from a group of fields associated with the Caspian Shelf on the right bank of the Amu Darya River and from the Yashlar-South-Iolotan group of fields, which includes the South-Iolotan deposit, which has reserves reported to be more than 400 billion cubic meters of natural gas and 17 Mt of oil, making it one of the largest deposits of natural gas in Central Asia. In May 2007, the chairman of Turkmengaz reported that the country's energy strategy was to almost double gas production to 120 billion cubic meters per year in 2010 and then to more than triple production to 240 billion cubic meters per year by 2030. To achieve these goals, Turkmenistan would not only have to have adequately appraised its reserves, but would also have to have the ability to attract foreign investment and to construct infrastructure to bring the gas to market.

In 2007, Azerbaijan produced about 10.8 billion cubic meters of natural gas, which was a 78% increase compared with that of 2006. The increase in gas production resulted from the commissioning of production at the Shah Deniz field, increased associated gas production, increased production by the State Oil Company of Azerbaijan (SOCAR), and increased production by the Azerbaijan International Operating Co. (AIOC) at other fields.

Government sources in Azerbaijan predicted that the country would produce as much as 31 billion cubic meters per year of gas by 2011. Almost all Azerbaijan's natural gas production came from offshore fields. Azerbaijan's major natural gas production increases were expected to come from the development of the Shah Deniz offshore natural gas and condensate field, which was estimated by industry analysts to be one of the world's largest natural gas field discoveries of the past 20 years. Shah Deniz, which is located approximately 95 km southeast of Baku, was being developed by the Shah Deniz consortium whose members were BP p.l.c. of the United Kingdom, OAO LUKOIL of Russia, National Iranian Oil Company (NICO), SOCAR, Statoil ASA of Norway, Total S.A. of France, and Turkiye Petrolleri Anonim Ortakligi (TPAO).

In 2006, SOCAR developed a program to increase gas production at Shah Deniz to 8 billion cubic meters in 2008 and to 22 billion cubic meters by 2015. If large-scale development of Shah Deniz were undertaken, production could increase to 35 billion cubic meters per year. With the development of Shah Deniz, Azerbaijan could eventually become a net natural gas exporter, although Azerbaijan remained a net importer during 2007.

Development of the eastern part of the Shah Deniz deposit started in December 2006. By June 2008, four wells were in operation with an average daily output of 19 million cubic meters of gas. The fifth development well was under construction. Gas purchases from Russia were officially suspended in early 2007 when Shah Deniz started producing.

Kazakhstan produced about as much natural gas as it consumed, but the country was poised to become a net exporter in 2008 based on production at the Karachaganak and the Tengiz fields. More than 70% of the country's natural gas was produced by international consortia at the Karachaganak and the Tengiz fields. In 2007, the Oil and Gas Journal revised upwards its estimate of proved natural gas reserves in Kazakhstan to about 2.8 trillion cubic meters, which was roughly equal to Turkmenistan's natural gas reserves. Most of Kazakhstan's natural gas reserves are located in the west of the country, and about 25% of its proven reserves are located in the Karachaganak field. This oil and gas condensate field reportedly has proven natural gas reserves of 1.36 trillion cubic meters. The consortium developing Karachaganak expected to produce about 25.5 billion cubic meters by 2012. Natural gas production in Kazakhstan was almost entirely associated gas (U.S. Energy Information Administration, 2008a).

In Norway, natural gas production commenced in late 2007 from the Ormen Lange field on the Norwegian continental shelf. Completion of this development would make Norway the world's second ranked exporter of natural gas after Russia. When Ormen Lange reaches plateau production in 2010, gas exports from Norway could increase to 120 billion cubic meters, which would be sufficient to meet 20% of the EU's gas requirements. Construction of the \$1.16 billion Scandinavian Skanled natural gas pipeline was scheduled to start in October 2009, and the pipeline was expected to begin transmitting gas from Norwegian gasfields in mid-2011. The gas would flow to Sweden and Denmark. Once the Baltic pipeline is completed, gas would be piped from the Denmark terminal to Poland. The Baltic pipeline was scheduled to be completed in 2009.

The Government of the Netherlands planned to spend up to €1.8 billion (\$2.3 billion) on new gas-network capacity over the next few years. Domestic natural gas production was declining, and expanding the transport network would enable the country's pipeline manager, Nederlandse Gasunie, to import more natural gas and export any surplus gas. It was expected that the proposed infrastructure would enable new suppliers to enter the market and create access to the LNG market. The LNG supply was expected to surge when Nederlandse Gasunie's Gate import terminal, which would be capable of converting between 8 billion and 12 billion cubic meters per year of LNG back into gas, starts operating in 2010.

**Petroleum.**—Oil production in the area of Central Eurasia was of major significance to the world's oil supply. In Europe, Denmark-Greenland, Norway, and the United Kingdom were significant regional oil producers. In 2007, Russia was the world's second ranked oil producer and the world's second ranked oil exporting nation. Azerbaijan was engaged in major oil development projects offshore in the Caspian Sea, and Kazakhstan was engaged in major projects both onshore and offshore.

Since 2004, however, the rate of growth in Russian oil production had leveled off to somewhat above 2% annually, which had called into question the long-term growth potential for Russia's oil. Russia's proven reserves of oil at the end of 2007 totaled 79.4 billion barrels. Some Russian officials believe that Russia has a large resource base that could serve to replenish oil reserves if adequate investment were devoted to exploration. Little exploration had taken place in East Siberia and only four or five fields had been discovered there despite the promise of large resources. For the coming decade, Russian oil production was projected to grow at an annual rate of about 1.5% to 2.5% annually owing in part to increased output from oil development on Sakhalin Island. This would be coupled with a slowdown in growth from the major mature oilfields in West Siberia, a number of which had passed peak production. New fields that that were under development would produce almost all Russia's increase in annual oil output in the next 5 years and would probably produce more than one-half of the country's oil in 2020.

In 2007, oil production in Azerbaijan increased by 36% compared with that of 2006 and was owing almost entirely to growth in output at the Azeri-Chirag-Gunashli (ACG) offshore

fields, which were being developed by AIOC. AIOC was made up of BP, Chevron Corp., Delta/Hess Corp., Devon Energy Corp., and Exxon Mobil Corp. of the United States, Inpex Corp. and Itochu Corp. of Japan, SOCAR, Statoil, and TPAO, and accounted for more than 70% of the country's total oil exports. In 2007, about 65% of the country's oil output was produced at the ACG fields, where production was projected to continue to increase.

According to industry journals, estimates of Azerbaijan's proven crude oil reserves range between 7 and 13 billion barrels (Gbbl) (about 950 Mt to 1.77 Gt). SOCAR estimated proven oil reserves to be 925 Mt of oil. Azerbaijan had signed more than 20 major agreements to develop oilfields with about 30 companies from 15 countries. From 2008 to 2015, plans called for engaging in 110,000 meters of exploratory drilling. Implementation of SOCAR's program for full-scale development of ACG deposits, along with the possibility of developing new oil and gas condensate deposits in the offshore part of the Azerbaijan sector of Caspian Sea, provided a basis for SOCAR to project oil production of between 66 and 67 Mt/yr in the 2010 to 2015 period.

Kazakhstan reportedly has the largest recoverable crude oil reserves in the Caspian Sea region and accounted for about one-half of the crude oil produced in the region. The country's oil reserves were estimated to be about 40 Gbbl (BP p.l.c., 2008, p. 6). Oil production growth was expected to increase in the next decade primarily from the Tengiz field, where production was expected to double, and from the Kashagan offshore field, which could produce an additional 1 million barrels per day (Mbbl/d) after 2011. The Tengiz field, which had been developed since 1993 by the Tengizchevroil joint venture, was the country's leading oil producer; the field had recoverable crude oil reserves estimated by Chevron to be between 6 and 9 Gbbl (800 Mt and 1.2 Gt). According to Chevron, Tengiz could potentially produce 700,000 barrels per day (bbl/d) by 2010 if its sour gas injection program was fully implemented.

The Kashagan field, which is located off the northern shore of the Caspian Sea near the city of Atyrau, is the largest oilfield outside the Middle East and the fifth largest in the world (in terms of reserves). The field's recoverable reserves were estimated to be 13 Gbbl (1.77 Gt) of oil equivalent, with total reserves-in-place of about 38 Gbbl (5.2 Gt). The field could produce about 300,000 bbl/d by late 2011 with full-scale commercial production expected to commence in 2013. Estimated peak production from Kashagan was estimated to be about 1.3 million barrels per day (Mbbl/d). The Kashagan field had presented particular challenges for its developers as it contains a high proportion of natural gas under very high pressure and also contains large quantities of sulfur. Offshore platforms must also withstand extreme weather fluctuations in the northern Caspian Sea. Additional oil production could originate from the Karachaganak oil and gas condensate field onshore in northern Kazakhstan near the border with Russia's Orenburg field. Karachaganak's oil reserves were estimated to be between 8 and 9 Gbbl (1.1 and 1.2 Gt) of oil and gas condensate.

In the United Kingdom, the Buzzard oilfield in the outer Moray Firth came onstream in January 2007 and immediately became the most prolific oilfield on the United Kingdom continental shelf (UKCS), producing more than twice as much as Elgin, which was the second ranked producing field. The United Kingdom's estimated crude oil reserves of about 4.0 Gbbl were the largest within the EU; the reserves were located mostly offshore on the UKCS. Most of the country's production had come from basins east of Scotland in the central North Sea. The northern North Sea east of the Shetland Islands also contains considerable reserves, and smaller deposits are located in the North Atlantic Ocean. Besides these offshore assets, the country had the Wytch Farm field, which was the largest onshore oilfield in Europe (BP p.l.c., 2008, p. 6).

Norway's petroleum production capacity was about 3 Mbbl/d. Norway was the world's third ranked petroleum exporter after Saudi Arabia and Russia and the seventh ranked natural gas exporter. The Norwegian Petroleum Directorate stated that Norway needed to open up new offshore areas and step up the search in existing areas if it is to remain a key oil exporter. Oil production was declining by about 4% per year since it had peaked in 2000. The Government was also pushing the search for new supplies north in Arctic waters. A total of 31 exploration wells had been spudded in 2007 compared with 26 exploration wells spudded in 2006. The explanation was that there was better access to exploration drilling rigs in 2007. The Norwegian Oil Directorate confirmed a StatoilHydro oil strike 65 km north of Honningsvaag in the Barents Sea. The new field, named Nucula, could contain as much as 300 to 350 million barrels of oil. StatoilHydro announced that it had begun a 2-year drilling program in Arctic waters to determine the potential of Norway's share of one of the world's few remaining unexplored petroleum prospects. StatoilHydro also hoped to cooperate with Russian companies to find petroleum and natural gas further into the Arctic.

Denmark heavily exploited its identified mineral resources, the most valuable of which were the natural gas and petroleum reserves in Denmark's sector of the North Sea. Denmark was a minor producer of natural gas and petroleum compared with Norway and the United Kingdom; however, the country was an important petroleum exporter for certain countries, in particular Sweden. In 2007, Sweden imported about 30% of its oil from Denmark, and Swedish energy security was closely connected to Danish petroleum production. At yearend 2007, Denmark had estimated proven petroleum reserves of 1.11 Gbbl and estimated proven natural gas reserves of 0.11 trillion cubic meters. Production of both natural gas and petroleum was declining as fields were being depleted.

**Uranium.**—In 2007, Central Eurasia accounted for 34% of the world's uranium production. Kazakhstan made up 17% of world production; Russia, 8%; and Uzbekistan 6%. Uranium mining also took place in several other countries in the region (the Czech Republic, Germany, and Ukraine), but in smaller quantities.

In 2007, Kazakhstan produced 7,827 t of uranium  $(U_{3}O_{8}$  content), which was almost 26% more than was produced in 2006. Kazakhstan reportedly hosts 16 Mt of uranium reserves, or about 19% of the world's uranium reserves. Plans called for increasing uranium production by 2009 to about 12,000 t, which would make Kazakhstan the world's leading uranium producer. The commissioning of new mines was proceeding on schedule.

Kazakhstan had established three joint ventures with Russia to mine uranium in Kazakhstan, enrich it in Russia, and design and build nuclear powerplants to be sold to other countries.

Russian uranium production had been controlled by Corporation TVEL. It included enterprises that mine and process uranium. TVEL held 17% of the world's nuclear fuel market. In 2006, under an initiative launched by the Russian President, a course was set for increasing nuclear power generation's share to 25% of the country's energy generation by 2030, which would involve building up to 40 new nuclear reactors in Russia.

Russia reportedly has 615,000 t of uranium reserves and prospective resources of 830,000 t. The main deposits are concentrated in the Elkonsky, the Streltsovsky, the Vitimsky, and the Zauralsky regions. Not only Russian deposits, but also deposits of other countries, including Kazakhstan, Ukraine, and Uzbekistan, would be used to meet Russia's demand for uranium.

The Priargunsky Industrial Mining and Chemicals Association, which was subordinate to TVEL, could increase uranium production by more than 50% by 2014-15 to 5,000 t/yr. Russia planned to increase uranium mining through expansion of existing mines and development of new uranium deposits in the Republic of Buryatia and the Chita region, as well as at new joint ventures abroad. The country's total demand for uranium, including uranium for export, was forecasted to increase to 36,000 t/yr by 2020.

Ukraine was reportedly mining only 30% of the uranium it needed for its nuclear power generation at the Vostochny mining complex (VostGOK) based in Zheltye Vody in the Dnipropetrovsk region, which was the country's only uranium mining enterprise. Plans called for increasing uranium oxide production to 900 t in 2008, 1,000 t in 2010, and 2,500 t in 2015. Ukraine was further planning to increase uranium oxide production to 5,900 t by 2025 and 6,400 t by 2030.

Planned production increases were linked with the development of the Novokonstantinovskoye field in the Kirovohrad region. Uranium production at the Novokonstantinovskoye deposit was scheduled to commence in 2008 with production of 100 t of uranium oxide; production was to increase to 500 t by the end of 2009, and full production capacity of 1,500 t would be achieved in 2013.

Russian firms would participate with Ukraine to secure the needs of Ukraine's nuclear power industry in uranium development, processing, and the construction of components for nuclear power. In an effort to attract foreign investment to further develop its uranium resources, Ukraine declassified data on nine uranium deposits.

In Uzbekistan, the Navoi mining and metallurgical complex was the country's only complex for mining and enriching uranium. Uzbekistan's State Geology and Mineral Resources Committee stated that uranium resources mainly are contained in 27 deposits and that total reserves were estimated to be 55,000 t of uranium. Navoi had plans to develop seven uranium deposits to increase uranium production by about 50% by 2012 and mainly had been conducting exploration, development, and uranium trade agreements with companies from Japan and the Republic of Korea.

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### EUROPE AND CENTRAL EURASIA: AREA AND POPULATION (2007)

|                             | Area <sup>1</sup>    | Estimated population <sup>2</sup> |
|-----------------------------|----------------------|-----------------------------------|
| Region and country          | (square kilometers)  | (thousands)                       |
| Western Europe:             |                      |                                   |
| Austria                     | 83,870               | 8,315                             |
| Belgium                     | 30,528               | 10,626                            |
| Cyprus                      | 9,250                | 787                               |
| Denmark                     | 43,094               | 5,460                             |
| Finland                     | 338,145              | 5,289                             |
| France                      | 547,030              | 61,707                            |
| Germany                     | 357,021              | 82,268                            |
| Greece                      | 131,940              | 11,193                            |
| Iceland                     | 103,000              | 311                               |
| Ireland                     | 70,280               | 4,366                             |
| Italy                       | 301,230              | 59,375                            |
| Luxembourg                  | 2,586                | 480                               |
| Malta                       | 316                  | 409                               |
| Netherlands                 | 41,526               | 16,381                            |
| Norway                      | 323,802              | 4,709                             |
| Portugal                    | 92,391               | 10,608                            |
| Spain                       | 504,782              | 44.879                            |
| Sweden                      | 449,964              | 9.148                             |
| Switzerland                 | 41,290               | 7,550                             |
| United Kingdom              | 244,820              | 61,034                            |
| Total                       | 3,716,865            | 404,895                           |
| Central Europe:             |                      |                                   |
| Albania                     | 28,748               | 3,181                             |
| Bosnia and Herzegovina      | 51,209               | 3.773                             |
| Bulgaria                    | 110.910              | 7.642                             |
| Croatia                     | 56,542               | 4.438                             |
| Czech Republic              | 78-866               | 10.334                            |
| Estonia                     | 45.226               | 1.342                             |
| Hungary                     | 93.030               | 10.056                            |
| Latvia                      | 64.589               | 2.276                             |
| Lithuania                   | 65,300               | 3,376                             |
| Macedonia                   | 25,333               | 2.037                             |
| Montenegro                  | 14.026               | 600                               |
| Poland                      | 312 679              | 38.061                            |
| Romania                     | 237 500              | 21 547                            |
| Serbia                      | 77 474               | 7 386                             |
| Slovakia                    | 48 845               | 5 396                             |
| Slovenia                    | 20 273               | 2 018                             |
| Total                       | 1 330 550            | 123.463                           |
| Central Eurasia:            | 1,550,550            | 123,+03                           |
| Armenia                     | 29 743               | 3.001                             |
| Azerbaijan                  | 27,743               | 5,001<br>8 571                    |
| Belarus                     | 207 600              | 0,571                             |
| Georgia                     | 69,700               | 1 396                             |
| Kazakhstan                  | 2 717 300            | 15 481                            |
| Kazakiistan                 | 2,717,500            | 5 242                             |
| Moldova                     | 23 842               | 3,243                             |
| Russia                      | 55,045<br>17 075 200 | 5,192<br>1/1 626                  |
| Tajikistan                  | 142 100              | 141,030                           |
| 1 ajikistan<br>Turkmoniston | 143,100              | 0,740                             |
|                             | 488,100              | 4,963                             |
|                             | 603,700              | 46,383                            |
| Uzbekistan                  | 447,400              | 26,868                            |
|                             | 22,100,786           | 276,776                           |
| Regional total              | 27,148,201           | 805,134                           |
| World total                 | 148,940,000          | 6,612,040                         |

<sup>1</sup>Source: U.S. Central Intelligence Agency, The World Factbook 2007

<sup>2</sup>Source: The World Bank 2007, World Development Indicators Database.

 TABLE 2

 EUROPE AND CENTRAL EURASIA: GROSS DOMESTIC PRODUCT

|                        | Gross domestic    | product based on |                             |
|------------------------|-------------------|------------------|-----------------------------|
|                        | purchasing        | power parity     | Real gross domestic product |
|                        | Gross value       | Per capita       | growth rate                 |
| Region and country     | (million dollars) | (dollars)        | (percentage)                |
| Western Europe:        |                   |                  |                             |
| Austria                | 316,006           | 38,181           | 3.1                         |
| Belgium                | 377,215           | 35,388           | 2.8                         |
| Cyprus                 | 21,400            | 27,171           | 4.4                         |
| Denmark                | 203,519           | 37,265           | 1.7                         |
| Finland                | 185,853           | 35,349           | 4.5                         |
| France                 | 2,067,710         | 33,509           | 2.2                         |
| Germany                | 2,812,000         | 34,212           | 2.5                         |
| Greece                 | 324,891           | 29,146           | 4.0                         |
| Iceland                | 12,274            | 39,168           | 4.9                         |
| Ireland                | 188,936           | 43,414           | 6.0                         |
| Italy                  | 1,787,000         | 30,365           | 1.5                         |
| Luxembourg             | 38,261            | 79,660           | 4.5                         |
| Malta                  | 9,445             | 23,026           | 3.7                         |
| Netherlands            | 647,966           | 38,995           | 3.5                         |
| Norway                 | 247,956           | 53,152           | 3.7                         |
| Portugal               | 230,834           | 21,779           | 1.9                         |
| Spain                  | 1,352             | 30,118           | 3.7                         |
| Sweden                 | 335,405           | 36,578           | 2.7                         |
| Switzerland            | 301,181           | 41,265           | 3.3                         |
| United Kingdom         | 2,167,840         | 35,634           | 3.0                         |
| Total                  | 12,277,044        | XX               | XX                          |
| Central Europe:        |                   |                  |                             |
| Albania                | 19,944            | 6,298            | 6.0                         |
| Bosnia and Herzegovina | 28,166            | 7,074            | 6.8                         |
| Bulgaria               | 86,381            | 11,311           | 6.2                         |
| Croatia                | 68,907            | 15,532           | 5.6                         |
| Czech Republic         | 250,057           | 24,229           | 6.6                         |
| Estonia                | 27,633            | 20,584           | 6.3                         |
| Hungary                | 191,453           | 19,020           | 1.3                         |
| Latvia                 | 39,896            | 17,488           | 10.3                        |
| Lithuania              | 59,885            | 17,733           | 8.9                         |
| Macedonia              | 17,396            | 8,491            | 5.0                         |
| Montenegro             | 6,265             | NA               | 9.7                         |
| Poland                 | 621,984           | 16,316           | 6.6                         |
| Romania                | 245,847           | 11,401           | 6.0                         |
| Serbia                 | 74,504            | 10,071           | 7.1                         |
| Slovakia               | 109,677           | 20,268           | 10.4                        |
| Slovenia               | 54,714            | 27,227           | 6.1                         |
| Total                  | 1,902,709         | XX               | XX                          |
| Central Eurasia:       |                   |                  |                             |
| Armenia                | 17,165            | 4,946            | 13.8                        |
| Azerbaijan             | 65,523            | 7,618            | 23.4                        |
| Belarus                | 105,292           | 10,949           | 8.2                         |
| Georgia                | 20,516            | 4,694            | 12.4                        |
| Kazakhstan             | 168,378           | 10,837           | 8.9                         |
| Kyrgyzstan             | 10,508            | 2,000            | 8.2                         |
| Moldova                | 9,811             | 2,897            | 4.0                         |
| Russia                 | 2,089,610         | 14,705           | 8.1                         |
| Tajikistan             | 11,829            | 1,843            | 7.8                         |
| Turkmenistan           | 26,822            | 5,172            | 11.6                        |
| Ukraine                | 321,874           | 6,968            | 7.6                         |
| Uzbekistan             | 64,201            | 2,390            | 9.5                         |
| Total                  | 2,911,529         | XX               | XX                          |
| Regional total         | 17,091,282        | XX               | XX                          |

See footnotes at end of table

# TABLE 2—Continued EUROPE AND CENTRAL EURASIA: GROSS DOMESTIC PRODUCT<sup>1</sup>

|                    | Gross domestic proc | duct based on |                             |
|--------------------|---------------------|---------------|-----------------------------|
|                    | purchasing pow      | ver parity    | Real gross domestic product |
|                    | Gross value         | Per capita    | growth rate                 |
| Region and country | (million dollars)   | (dollars)     | (percentage)                |
| World total        | 65,281,000          | XX            | XX                          |

NA Not available. XX Not applicable.

Source: International Monetary Fund, World Economic Outlook Database, October, 2008.

# TABLE 3 SELECTED EXPLORATION ACTIVITY IN EUROPE AND CENTRAL EURASIA IN 2007

| Country       | Site                 | Commodity <sup>1</sup> | Company                         | Phase <sup>2</sup> |
|---------------|----------------------|------------------------|---------------------------------|--------------------|
| Albania       | Devolli              | Ni                     | European Nickel plc.            | Exploration.       |
| Do.           | Korçe                | Ni                     | do.                             | Exploration.       |
| Armenia       | Hankavan             | Au                     | Global Gold Corp.               | Exploration.       |
| Do.           | Lichkvaz             | Au, Ag, Cu             | Tamava Resources Ltd.           | Exploration.       |
| Do.           | Tukhmanuk            | Au                     | Global Gold Corp.               | Producer.          |
| Azerbaijan    | Gedabek              | Au, Ag, Cu             | Anglo Asian Mining plc.         | Feasibility.       |
| Bulgaria      | Breznik              | Au. Ag                 | Balkans Gold Ltd.               | Exploration.       |
| Do            | Lehovo               | Au Ag                  | KEFI Minerals plc               | Exploration        |
| Do            | Ogosta               | Au Ag                  | Balkans Gold Ltd                | Exploration        |
| Do.           | Peroto               | Au                     | do.                             | Exploration.       |
| Do            | Bakitovo             | Au                     | Furomax Resources Ltd           | Exploration        |
| Do            | Trun                 | Au                     | do                              | Exploration        |
| Finland       | Arctic Platinum      | PGM An Ni Cu           | Gold Fields Ltd                 | Feasibility        |
| Do            | Hanhimaa             | Au                     | Dragon Mining NL                | Exploration        |
| <br>          | Hannukainen          | Iron ore Cu Au         | Northland Resources Inc         | Exploration        |
| Do            | Kaavi-Kuopio         | Diamond                | Suprise Diamonds plc            | Exploration.       |
| <br>          | Kettukuusikko        | Au                     | Taranis Resources Inc           | Exploration        |
| Do.           | Kiimala              | Au Cu                  | Belvedere Resources I td        | Exploration.       |
| <br>          | Kittila              | Δμ                     | Agnico-Fagle Mines I td         | Developing         |
| <br>          | Kopsa                | Au Cu                  | Relvedere Resources I td        | Exploration        |
| Do.           | Kuhmo                | Ni Cu Co PGM           | Vulcan Pasources I td           | Exploration.       |
| Do.           | Kuusilempi           | Ni, Zu, Cu, Co         | Talvivaara Mining Company Ltd   | Davaloning         |
| <br>          | Mustavaara           | Iron oro V             | A driana Dasauraas Inc.         | Developing.        |
| <br>          | Nerkova              |                        | Adriana Resources Inc.          | Fast producer.     |
| Do.           | Naikaus              | FOM                    | Dragon Mining NI                | Exploration.       |
| Do.           | Palotiova            | Au Cu Au               | Northland Basouraas Inc         | Froducei.          |
| Do.           | Faloueva             | Ni Cu Co               | Rolvadara Resources I td        | Broducer           |
| Do.           | Saitapara            | Diamond                | Kelerien Diemond Resources pla  | Exploration        |
| Do.           | Senapera             | Lean and               | Tertian Minerala nla            | Exploration.       |
| Do.           | Inori                |                        | EMED Mining Public Ltd          | Exploration.       |
| De            | Ipan                 | Au<br>Ac Au Ze Dh      | emed mining Public Ltd.         | Exploration.       |
| Do            | Kilusilo<br>Zankkita | Ag, Au, Zii, Pb        | do.                             | Exploration.       |
| D0.           | Zopkillo             | Au, So                 | uo.                             | Exploration.       |
| Greece        | Skouries             | Au, Cu                 | European Goldneids Ltd.         | Preasibility.      |
| D0.           | Asmaluttag           | PD, ZII, Ag            | uo.<br>Trus North Come Inc      | Froducer.          |
| D             | Aapparuttoq          | Ruby                   | An area and Base als            | Exploration.       |
|               | Black Angel          | Zn, Pb, Ag             | Angus and Ross pic.             | Exploration.       |
|               | Current Lalas        | Zil, Po                | Ifonbark Gold Ltd.              | Exploration.       |
|               | Garnet Lake          | Diamond                | Hudson Resources Inc.           | Exploration.       |
| D             | Isotoq               | 11, V                  | MDA Investment Pty. Ltd.        | Exploration.       |
|               | Maimbjerg            | NIO<br>A               | Crear Cald Carr                 | Exploration.       |
| <br>          | Naturiaq             | Au                     | de                              | Producer.          |
|               | Seqi                 | U                      | uo.                             | Froducer.          |
| Hungary       | European decement    | U                      | Wildnorse Energy Ltd.           | Exploration.       |
| D0.           | Fuzzeradvally        | Au                     | Carpannan Gold Inc.             | Exploration.       |
| Ireland<br>D- | Clontiblet           | Au<br>Zr. Dh. A.r.     | Londin Mining Com               | Exploration.       |
| D             | Gaimoy               | Zn, Pb, Ag             |                                 | Producer.          |
| Do            |                      | Au                     | Sipa Resources International NL | Exploration.       |
| Do.           | Pallas Green         | Zn                     | Xstrata pic.                    | Exploration.       |
| Kazaknstan    | Аккидик              | Cu, Au, Mo             | Celtic Resources Holdings plc.  | Exploration.       |
| D0.           | Altyntas             | Au, Ag                 | Central Asia Resources Ltd.     | Exploration.       |
| Do.           | Berezky              | Cu, Au                 | Celtic Resources Holdings plc.  | Exploration.       |
| D0.           | Dostyk               | Au, Ag, Cu, Mo         | Cigma Metals Corp.              | Exploration.       |
| D0.           | Gornostai            | N1, C0                 | Bekem Metals Inc.               | Feasibility.       |
| <u>Do.</u>    | Itmuryn              | Mo                     | Celtic Resources Holdings plc.  | Exploration.       |
| <u>Do.</u>    | Kengır               | Au                     | Central Asia Resources Ltd.     | Exploration.       |
| D0.           | Koskuduk             | Au, Ag                 | Frontier Mining Ltd.            | Exploration.       |
| <u>D0.</u>    | Suzdal               | Au                     | Cettic Resources Holdings plc.  | Producer.          |
| D0.           | Sekisovskoye         | Au                     | Hambledon Mining plc.           | Producer.          |

See footnotes at end of table.

# TABLE 3—Continued SELECTED EXPLORATION ACTIVITY IN EUROPE AND CENTRAL EURASIA IN 2007

| Country              | Site                  | Commodity <sup>1</sup> | Company                                | Phase <sup>2</sup>          |
|----------------------|-----------------------|------------------------|--|-----------------------------|
| Kazakhstan—Continued | Tserkovka             | Au                     | Hambleton Mining plc.                  | Exploration.                |
| Do.                  | Uzboy                 | Au                     | Alhambra Resources Ltd.                | Feasibility.                |
| Do.                  | Varvarinskoye         | Au, Cu                 | European Minerals Corp.                | Developing.                 |
| Do.                  | Zhilandy              | Cu. Ag                 | Celtic Resources Holdings plc.         | Exploration.                |
| Kvrgvzstan           | Akbal                 | Au                     | Kentor Gold Ltd.                       | Exploration.                |
| Do.                  | Balakashu             | Au                     | Centrasia Mining Corp.                 | Exploration.                |
| Do.                  | Gavasai               | Au                     | Monaro Mining NL                       | Exploration.                |
| <br>Do               | Kuru-Tegerek          | Au Cu                  | China Shen Zhou Mining & Resources Inc | Feasibility                 |
| <br>Do               | M4400_M5600_M6000     | Au                     | Chaarat Gold Holdings Ltd              | Exploration                 |
| <br>Do.              | Savovardy             | Au                     | Kentor Gold Ltd.                       | Exploration.                |
| <br>                 | Severny               | Cu Au                  | Centrasia Mining Corp                  | Exploration                 |
| Do                   | Sumsar                | Au                     | Monaro Mining NI                       | Exploration.                |
| <br>                 | Tolubay               | Au                     | Perseus Mining Ltd                     | Exploration                 |
| Macedonia            | Ilovitza              |                        | Furomax Resources Ltd                  | Exploration.                |
| Do                   | Kazandol              | Cu                     | do                                     | Exploration.                |
| Norway               | Razuldor              | Ni Cu                  | Blackstone Ventures Inc                | Exploration.                |
| Do                   | Espedalen             | Ni Cu                  | do                                     | Exploration.                |
| Do                   | South Norway/Ertelien | Ni Cu                  | do                                     | Exploration.                |
| Portugal             | Aliustrel             | Zn Cu Ag Ph            | EuroZine Mining Corp                   | Producer                    |
| Do                   | Alto Sobrido          | Au Ag Sh               | Global Minerals I td                   | Exploration                 |
| Do                   | Braganca              | Cu                     | Wega Mining ASA                        | Exploration.                |
| Do                   | Lagoa Salada          | Cu Zn Ph Ag Au         | Redcorn Ventures Ltd                   | Exploration.                |
| Do                   | Moura                 | Cu                     | Northern Lion Gold Corp                | Exploration.                |
| Do                   | Neves-Corvo           | Cu Zn Ph               | Lundin Mining Corp.                    | Producer                    |
| <br>                 | Penedono              | Au                     | Colt Resources Inc                     | Exploration                 |
| Do                   | Portel                | Cu                     | Wega Mining ASA                        | Exploration                 |
| Romania              | Certei                | Αμ Ασ                  | Furonean Goldfields Ltd                | Feasibility                 |
| Do                   | Colnic                | Au Cu                  | Carpathian Gold Inc                    | Exploration                 |
| Do                   | Oravita               | Cu Mo                  | do                                     | Exploration                 |
| Do                   | Rovina                | An Cu                  | do                                     | Exploration.                |
| Russia               | Anadiakan             | Au Cu                  | Amur Minerals Corp                     | Exploration.                |
| Do                   | Arvlakh               | Ag Au                  | Polymetal MNPO                         | Producer                    |
| Do                   | Belava Gova           | <u>An</u>              | Highland Gold Mining Ltd               | Exploration                 |
| Do.                  | Bugdainskove          | Mo Au                  | MMC Norilsk Nickel                     | Exploration.                |
| Do.                  | Dukat                 | Ag Au Ph Zn            | Polymetal MNPO                         | Producer                    |
| <br>                 | East Chuarvi          | PGM Au                 | Puma Minerals Corp                     | Exploration                 |
| Do.                  | Elvenei               | FOW, Au                | Zelete Resources Ltd                   | Exploration.                |
| Do.                  | Elvellel              | Au<br>Dt Dd            | Zoloto Resources Ltd.                  | Exploration.                |
| Do.                  | Galkinsky             | rt, ru                 | Ballick Gold Colp.<br>Bolymotal MNBO   | Exploration.                |
| <br>                 | Garingkova            | Iron oro               | Arizom pla                             | Exploration.                |
| <br>                 | Galtsovove            |                        | Oveca Gold plc                         | Exploration.<br>Eassibility |
| <br>                 | Ivinsky               | Bauvita                |  | Exploration                 |
| <br>                 | Inliatta              |                        | Vinross Gold Corm                      | Broducer                    |
| <br>                 | K&S                   | Iron ore               | Aricom plc                             | Feasibility                 |
| Do.                  | Komi                  |                        | LIC PUSAL                              | Feasibility                 |
| Do.                  | Kun Manie             | Ni Cu                  | Amur Minerals Corp                     | Exploration                 |
| Do                   | Lobash                | An Cu                  | Celtic Resources Holdings plc          | Exploration.                |
| Do                   | Mayskove              | Au                     | Highland Gold Mining Ltd               | Exploration.<br>Feasibility |
| Do                   | Monchetundra          | Pt Pd                  | Furasian Mining plc                    | Exploration                 |
| Do                   | Natalka               |                        | Polyus Gold OISC                       | Exploration.                |
| <br>Do.              | Nezhdaninskove        | Au. Ag                 | Polyus Gold OJSC                       | Exploration                 |
| Do                   | Novoshirokinskove     | Au                     | Highland Gold Mining Ltd               | Developing                  |
| <br>Do.              | Ozerno-Pvatirechensk  | Au                     | Peter Hambro Mining plc.               | Exploration                 |
| <br>Do.              | Prognoz               | Ag                     | High River Gold Mines Ltd              | Exploration                 |
| Do.                  | Pulongskava           | Diamond                | Everfor Diamond plc.                   | Exploration.                |
| Do.                  | Souker                | Ni. Cu                 | Kola Mining Corp.                      | Exploration.                |
| Do.                  | Sukhoi Log            | Au, Ag, PGM            | Government of Russia                   | Exploration.                |
| Do.                  | Svetlove              | Au                     | Fortress Minerals Corp.                | Exploration.                |
|                      |                       |                        |  | 1                           |

See footnotes at end of table.

# TABLE 3—Continued SELECTED EXPLORATION ACTIVITY IN EUROPE AND CENTRAL EURASIA IN 2007

| Country          | Site                     | Commodity <sup>1</sup> | Company                            | Phase <sup>2</sup> |
|------------------|--------------------------|------------------------|------------------------------------|--------------------|
| Russia—Continued | Taseevskoye              | Au, Ag                 | Highland Gold Mining Ltd.          | Exploration.       |
| Do.              | Titimukhta               | Au                     | Polyus Gold OJSC                   | Exploration.       |
| Do.              | Tokhtonysay              | Au, Cu                 | Aurum Mining plc.                  | Exploration.       |
| Do.              | Toupugol-Khanmeishorskiy | Au                     | Peter Hambro Mining plc.           | Exploration        |
| Do.              | Tummanoye                | Au                     | China Metallurgical Group          | Exploration.       |
| Do.              | Volchetundra             | PGM, Au                | Eurasia Mining plc.                | Exploration.       |
| Do.              | West Kytlim              | PGM, Au                | do.                                | Exploration.       |
| Do.              | Yurievskoe               | Au, Ag                 | Polymetal MNPO                     | Exploration.       |
| Serbia           | Ceovishte                | Au, Ag, Cu             | Euromax Resources Ltd.             | Exploration.       |
| Do.              | Plavkovo                 | Au, Cu                 | Eurasian Minerals Inc.             | Exploration.       |
| Do.              | Rudnitza                 | Cu, Au                 | Euromax Resources Ltd.             | Exploration.       |
| Do.              | Stara Planina            | Cu, Au                 | Eurasian Minerals Inc.             | Exploration.       |
| Slovakia         | Kremnica                 | Au, Ag                 | Tournigan Gold Corp.               | Exploration.       |
| Do.              | Kuriskova                | U                      | do.                                | Exploration.       |
| Spain            | Aquablanca               | Ni                     | Rio Narcea Gold Mines Ltd.         | Producer.          |
| Do.              | Barruecopardo            | W                      | Ormonde Mining plc.                | Exploration.       |
| Do.              | El Valle                 | Au, Cu                 | Kinbauri Gold Corp.                | Exploration.       |
| Do.              | Salamanca                | Au, W                  | Ormonde Mining plc.                | Exploration.       |
| Sweden           | Alum Shale               | U                      | Aura Energy Ltd.                   | Exploration.       |
| Do.              | Ballek                   | U                      | Agricola Resources plc.            | Exploration.       |
| Do.              | Faboliden                | Au, Ag                 | Lappland Goldminers AB             | Feasibility.       |
| Do.              | Grundtrask               | Au                     | Beowulf Mining plc.                | Exploration.       |
| Do.              | Guorbavare               | U                      | Continental Precious Minerals Inc. | Exploration.       |
| Do.              | Klappibacken             | U                      | Mawson Resources Ltd.              | Exploration.       |
| Do.              | Lainjaur                 | Ni, Cu                 | Blackstone Ventures Inc.           | Exploration.       |
| Do.              | Långvattnet              | U                      | Mawson Resources Ltd.              | Exploration.       |
| Do.              | Narke                    | Ni                     | Continental Precious Minerals Inc. | Exploration.       |
| Do.              | Skommer                  | Zn                     | Drake Resources Ltd.               | Exploration.       |
| Do.              | Vasterbotten             | Ni, Cu                 | Blackstone Ventures Inc.           | Exploration.       |
| Do.              | Viken                    | Ni, V, Mo              | Continental Precious Minerals Inc. | Exploration.       |
| Tajikistan       | Hukas                    | Ni, Cu                 | Kryso Resources plc.               | Exploration.       |
| Do.              | Pakrut                   | Au                     | do.                                | Exploration.       |
| Do.              | Zeravshan                | Au                     | Zijin Mining Group Co. Ltd.        | Producer.          |
| Ukraine          | Saulyak                  | Au                     | Eurogold Ltd.                      | Exploration.       |
| Do.              | Yeristovskoe             | Iron ore               | Ferrexpo plc.                      | Developing.        |
| United Kingdom   | Kearney                  | Au                     | Galantas Gold Corp.                | Exploration.       |
| Do.              | Omagh                    | Au                     | do.                                | Exploration.       |
| Do.              | Curraghinalt             | Au                     | Tournigan Gold Corp.               | Exploration.       |
| Do.              | Falkland Islands         | Au                     | Falkland Gold and Minerals Corp.   | Exploration.       |
| Do.              | Parys Mountain           | Zn, Cu, Pb, Ag, Au     | Angesey Mining plc.                | Exploration.       |
| Uzbekistan       | Amantaytau               | Au, Ag                 | Oxus Gold plc.                     | Producer.          |
| Do.              | Andash                   | Au, Cu                 | Aurum Mining plc.                  | Exploration.       |

Do., do. Ditto.

<sup>1</sup>Abbreviations used for commodities in this table include the following: Ag, silver; Al, aluminum; Au, gold; Co, cobalt; Cu, copper;

Mo, molybdenum; Ni, nickel; Pb, lead; Pd, palladium; PGM, platinum-group metals; Pt, platinum; Sb, antimony; Ti, titanium; U, uranium; V, vanadium; W, tungsten; and Zn, zinc.

<sup>2</sup>Phases of exploration activity have been separated into the following stages: Developing, includes construction and permitting; Exploration, exploration prior to full feasibility study; Feasibility study ongoing or completed; Past producer, exploration at an historical producer; Producer, exploration at producing site.

| TABLE 4 | EUROPE AND CENTRAL EURASIA: PRODUCTION OF SELECTED MINERAL COMMODITIES IN 2007 <sup>1,2</sup> |
|---------|---|
|---------|---|

|  |                    |                    |                      |                  | Metals        |              |                    |                      |                 |
|--|--------------------|--------------------|----------------------|------------------|---------------|--------------|--------------------|----------------------|-----------------|
|  |                    |                    |                      |                  | Antimony,     |              |                    |                      |                 |
|  |                    | Aluminu            | m                    |                  | mine output,  | Chromite,    |                    | Copper               |                 |
|  |                    |                    | Metal                |                  | metal content | mine output, | Mine, metal        | Metal, refi          | ned             |
| Region and (or) country                      | Alumina            | Bauxite            | Primary <sup>3</sup> | Secondary        | (metric tons) | gross weight | content            | Primary <sup>3</sup> | Secondary       |
| Central Eurasia and Europe:                  |                    |                    |                      |                  |               |              |                    |                      |                 |
| Central Eurasia: Commonwealth of Independent |                    |                    |                      |                  |               |              |                    |                      |                 |
| States (CIS).                                |                    |                    |                      |                  |               |              | 10 6               |                      |                 |
|  | 1                  | 1                  | 1 8                  | 1                | 1             | 1            | 10                 | :                    | 1               |
| Azerbaijan                                   | 185                | 1                  | 39                   | ł                | ł             | 1            | ł                  | 1                    | 1               |
| Belarus                                      | 1                  | ł                  | 1                    | 1                | 1             | 1            | 1                  | 1                    | 1               |
| Georgia <sup>e</sup>                         | 1                  | 1                  | 1                    | 1                | 1             | :            | 11 <sup>e</sup>    | :                    | 1               |
| Kazakhstan                                   | 1,556              | 4,800 <sup>e</sup> | 1                    | 1                | 1             | 3,687        | 405 <sup>e</sup>   | 406                  | 1               |
| Kyrgyzstan                                   | 1                  | 1                  | 1                    | 1                | 30 °          | 1            | :                  | :                    | 1               |
| Moldova                                      | ł                  | 1                  | ł                    | ł                | ł             | 1            | ł                  | 1                    | ł               |
| Russia                                       | 3,300              | 6,777              | 3,955                | 1                | 3,500 °       | LLL          | 820 <sup>e</sup>   | 650                  | 289             |
| Tajikistan                                   | 1                  | ł                  | 419                  | 1                | 2,000 °       | 1            | 1                  | :                    | 1               |
| Turkmenistan                                 | 1                  | I                  | I                    | I                | I             | 1            | 1                  | ;                    | 1               |
| Ukraine                                      | 1,700 °            | 1                  | 113                  | 130 °            | I             | 1            | ł                  | 1                    | ł               |
| Uzbekistan                                   | -                  | 1                  | 1                    | 3 e              | :             | 1            | 95 °               | 90                   | 1               |
| Total  | 6.740              | 11.600             | 4.530                | 133 °            | 5.530 °       | 4.460        | 1.350 <sup>e</sup> | 1.150                | 289             |
| Share of world total                         | 8.8%               | 5.8%               | 11.9%                | 1.6%             | 3.1%          | 21.3%        | 8.6%               | 7.4%                 | 11.2%           |
| Europe:                                      |                    |                    |                      |                  |               |              |                    |                      |                 |
| European Free Trade Association (EFTA):      |                    |                    |                      |                  |               |              |                    |                      |                 |
| Iceland                                      | 1                  | 1                  | 399                  | 1                | 1             | 1            | 1                  | 1                    | 1               |
| Norway                                       | 1                  | 1                  | 1,304                | 350 °            | 1             | 1            | 1                  | 34                   | 1               |
| Switzerland <sup>e</sup>                     | 1                  | 1                  | 40                   | 190              | 1             | 1            | 1                  | :                    | 1               |
| Total  | :                  | 1                  | 1,740                | 540 <sup>e</sup> | 1             | 1            | 1                  | 34                   | 1               |
| Share of world total                         |                    |                    | 4.6%                 | 6.6%             |               | -            |                    | 0.2%                 | -               |
| European Union (EU):                         |                    |                    |                      |                  |               |              |                    |                      |                 |
| Austria                                      | 100 <sup>e</sup>   | 1                  | 1                    | 152 <sup>e</sup> | 1             |              | 1                  | ;                    | 81 <sup>e</sup> |
| Belgium                                      | 1                  | 1                  | 1                    | (4) <sup>e</sup> | I             | 1            | 1                  | 380 °                | 1               |
| Bulgaria                                     | 1                  | ł                  | 1                    | 13 <sup>e</sup>  | 1             | 1            | 116 <sup>e</sup>   | 70                   | 1               |
| Cyprus                                       | 1                  | 1                  | 1                    | 1                | I             | 1            | 1                  | 1                    | 1               |
| Czech Republic                               | 1                  | ł                  | 1                    | 15 <sup>e</sup>  | I             | 1            | 1                  | :                    | ł               |
| Denmark-Greenland <sup>e</sup>               | ł                  | ł                  | ł                    | 30               | ł             | 1            | ł                  | 1                    | ł               |
| Estonia                                      | 1                  | 1                  | 1                    | 1                | 1             | 1            | 1                  | :                    | 1               |
| Finland                                      | 1                  | 1                  | 1                    | 44               | 1             | 556 °        | 14                 | 110                  | ł               |
| France <sup>e</sup>                          | 500                | 160                | 428                  | 222              | 500           | -            | :                  | :                    | 1               |
| Germany                                      | 1,000 <sup>e</sup> | 1                  | 551                  | 836              | 1             | 1            | 1                  | 302                  | 364             |
| Greece                                       | 780 <sup>e</sup>   | 2,163              | 166                  | 3 e              | I             | 1            | 1                  | ;                    | 1               |
| Hungary                                      | 270 <sup>e</sup>   | 546                | ;                    | 50 <sup>e</sup>  | -             |              | :                  | :                    | ;               |
| See footnotes at end of table.               |                    |                    |                      |                  |               |              |                    |                      |                 |

|                                       |                    |         |                      |                 | Metals—Continue |              |                 |                      |                 |
|---------------------------------------|--------------------|---------|----------------------|-----------------|-----------------|--------------|-----------------|----------------------|-----------------|
|                                       |                    |         |                      |                 | Antimony,       |              |                 |                      |                 |
|                                       |                    | Aluminu | ш                    |                 | mine output,    | Chromite,    |                 | Copper               |                 |
|                                       |                    |         | Metal                |                 | metal content   | mine output, | Mine, metal     | Metal, ref           | ined            |
| Region and (or) country               | Alumina            | Bauxite | Primary <sup>3</sup> | Secondary       | (metric tons)   | gross weight | content         | Primary <sup>3</sup> | Secondary       |
| Central Eurasia and Europe-Continued: |                    |         |                      |                 |                 |              |                 |                      |                 |
| Europe—Continued:                     |                    |         |                      |                 |                 |              |                 |                      |                 |
| European Union (EU)-Continued:        |                    |         |                      |                 |                 |              |                 |                      |                 |
| Ireland <sup>e</sup>                  | 1,800              | -       | 1                    | 1               | 1               | 1            | 1               | :                    | :               |
| Italy                                 | 1,100 <sup>e</sup> | 1       | 183                  | 666             | 1               | 1            | 1               | 29                   | 1               |
| Latvia                                | 1                  | 1       | ł                    | 1               | ł               | 1            | I               | ł                    | 1               |
| Lithuania                             | ł                  | 1       | 1                    | ł               | 1               | 1            | I               | 1                    | :               |
| Luxembourg                            | 1                  | 1       | 1                    | 1               | 1               | 1            | ł               | 1                    | :               |
| Malta                                 | 1                  | 1       | ł                    | 1               | ł               | 1            | I               | 1                    | 1               |
| Netherlands                           | ł                  | ł       | 301                  | e<br>           | ł               | ł            | ł               | 1                    | ł               |
| Poland                                | 1                  | ł       | 59                   | 20 °            | 1               | 1            | 506             | 533                  | 1               |
| Portugal                              | 1                  | 1       | 1                    | 18 <sup>e</sup> | 1               | 1            | 90              | :                    | 1               |
| Romania                               | 23                 | 1       | 286                  | 12              | 1               | 1            | 2               | 16                   | 3 e             |
| Slovakia                              | 160                | 1       | 190                  | 1               | 1               | 1            | 1               | 1                    | 1               |
| Slovenia                              | :                  | 1       | 111                  | 1               | 1               | 1            | 1               | 1                    | 1               |
| Spain <sup>e</sup>                    | 1,000              | 1       | 350                  | 243             | 1               | 1            | 7               | 255                  | 35              |
| Sweden                                | 1                  | ł       | 98                   | 32 <sup>e</sup> | 1               | 1            | 63              | 214                  | 25 <sup>e</sup> |
| United Kingdom                        | 1                  | -       | 365                  | 194             | 1               | 1            | 1               | :                    | :               |
| Total                                 | 6,730              | 2,870   | 3,090                | 2,550           | 500 °           | 556 °        | 798             | 1,910                | 508             |
| Share of world total                  | 8.8%               | 1.4%    | 8.1%                 | 31.3%           | 0.3%            | 2.6%         | 5.1%            | 12.3%                | 19.7%           |
| Other Europe:                         |                    |         |                      |                 |                 |              |                 |                      |                 |
| Albania                               | 1                  | 1       | 1                    | 1               | 1               | 324          | e<br>           | 1                    | 1               |
| Bosnia and Herzegovina                | 304                | 867     | 147                  | ł               | I               | ł            | ł               | I                    | ł               |
| Croatia                               | 1                  | ł       | ł                    | 3 e             | 1               | 1            | ł               | :                    | ł               |
| Macedonia                             | 1                  | 1       | 1                    | 1               | 1               | 1            | J e             | 1                    | 1               |
| Montenegro                            | 240                | 667     | 135                  | 1               | 1               | 1            | ł               | 1                    | 1               |
| Serbia                                | :                  | :       | 1                    | 2               | :               | 1            | 32 <sup>e</sup> | 31                   | 1 <sup>e</sup>  |
| Total                                 | 544                | 1,534   | 282                  | 4               | -               | 324          | 39 °            | 31                   | 1 e             |
| Share of world total                  | 0.7%               | 0.8%    | 0.7%                 | (5)             | 1               | 1.5%         | 0.3%            | 0.2%                 | (5)             |
| Total, Europe and Central Eurasia     | 14,000             | 16,000  | 9,640                | 3,230           | 6,030           | 5,340        | 2,190           | 3,120                | 798             |
| Share of world total                  | 18.3%              | 8.0%    | 25.3%                | 39.6%           | 3.4%            | 25.4%        | 13.9%           | 20.2%                | 31.0%           |
| United States                         | 3,890              | NA      | 2,550                | ł               | ł               | 1            | 1,170           | 1,270                | 42              |
| Share of world total                  | 5.1%               | NA      | 6.7%                 | :               | -               | :            | 7.4%            | 8.2%                 | 1.6%            |
| World total                           | 76,800             | 200,000 | 38,100               | 8,150           | 180,000         | 21,000       | 15,700          | 15,500               | 2,580           |
| See footnotes at end of table.        |                    |         |                      |                 |                 |              |                 |                      |                 |

TABLE 4—Continued

|  |                     |                     |                  |                  | Metals-Continued |                 |                 |                  |                  |
|--|---------------------|---------------------|------------------|------------------|------------------|-----------------|-----------------|------------------|------------------|
|  |                     |                     | Iron and steel   |                  |                  |                 |                 |                  | Mercury,         |
|  | Gold,               | Iron ore,           | Pig iron and     |                  |                  | Lead            |                 | Manganese ore,   | mine output,     |
|  | mine output         | mine output,        | direct-          |                  | Mine output,     | Metal, refin    | ed              | mine output,     | metal content    |
| Central Eurasia and Eurone.                  | (KIIOgrafiis)       | metal content       | reduced from     | Steel, crude     | metal content    | Primary         | secondary       | Ineral content   | (IIIeuric tous)  |
| Central Eurasia: Commonwealth of Independent |                     |                     |                  |                  |                  |                 |                 |                  |                  |
| States (CIS):                                |                     |                     |                  |                  |                  |                 |                 |                  |                  |
| Armenia                                      | 1,400 <sup>e</sup>  | ł                   | ł                | 1                | ł                | ł               | 1               | 1                | ł                |
| Azerbaijan                                   | 1                   | ° 6                 | ł                | 273              | ł                | ł               | 1               | 1                | ł                |
| Belarus                                      | 1                   | 1                   | I                | 2,387            | ł                | 1               | 1               | :                | I                |
| Georgia <sup>e</sup>                         | 2,000               | 1                   | 1                | 1                | (4)              | ł               | 1               | 102              | I                |
| Kazakhstan                                   | 22,000 <sup>e</sup> | 13,600 <sup>e</sup> | 3,240            | 4,784            | 40               | 118             | 1               | 600 <sup>e</sup> | I                |
| Kyrgyzstan                                   | 10,636              | 1                   | 1                | 1                | 1                | ł               | 1               | :                | 350 °            |
| Moldova                                      | 1                   | ł                   | ł                | 995              | ł                | ł               | 1               | 1                | ł                |
| Russia                                       | 156,912             | $60,800$ $^{\circ}$ | 55,523           | 72,389           | 50 <sup>e</sup>  | 94 <sup>e</sup> | 1               | 9 <sup>e</sup>   | 50 <sup>e</sup>  |
| Tajikistan <sup>e</sup>                      | 3,000               | ł                   | 1                | 1                | ł                | 1               | 1               | :                | 30               |
| Turkmenistan                                 | 1                   | 1                   | ł                | 1                | 1                | 1               | 1               | 1                | 1                |
| Ukraine                                      | 500 °               | 42,800              | 35,600           | 42,830           | 1                | I               | 62              | 580 °            | I                |
| Uzbekistan <sup>e</sup>                      | 85,000              | l                   | 1                | 740              | I                | I               | ł               | 1                | I                |
| Total  | 281,000             | 117,000 °           | 94,400           | 124,000          | ° 06             | 212             | 62              | 1,290 °          | 430 <sup>e</sup> |
| Share of world total                         | 11.9%               | 11.0%               | 8.6%             | 9.2%             | 2.4%             | 5.5%            | 1.5%            | 9.4%             | 33.1%            |
| Europe:                                      |                     |                     |                  |                  |                  |                 |                 |                  |                  |
| European Free Trade Association (EFTA):      |                     |                     |                  |                  |                  |                 |                 |                  |                  |
| Iceland                                      | 1                   | 1                   | I                | 1                | 1                | 1               | ł               | ;                | I                |
| Norway                                       | 1                   | 1,437               | 100 °            | 740 <sup>e</sup> | 1                | 1               | 1               | :                | 1                |
| Switzerland <sup>e</sup>                     | :                   | 1                   | 1                | $1,264^{6}$      | 1                | 1               | 6               | :                | 1                |
| Total  | 1                   | 1,440               | 100 <sup>e</sup> | 2,000            | :                | 1               | ° 6             | :                | 1                |
| Share of world total                         | 1                   | 0.1%                | (5)              | 0.1%             | ł                | 1               | 0.2%            | :                | I                |
| European Union (EU):                         |                     |                     |                  |                  |                  |                 |                 |                  |                  |
| Austria                                      | 1                   | 688 <sup>e</sup>    | 5,907            | 6,871            | 1                | 1               | 22 <sup>e</sup> | :                | I                |
| Belgium                                      | I                   | 1                   | 6,576            | 10,692           | 1                | I               | 97 °            | :                | I                |
| Bulgaria                                     | 3,964               | 1                   | 1,069            | $2,050^{\circ}$  | 24 °             | 87              | 1               | 8°               | 1                |
| Cyprus                                       | 1                   | 1                   | 1                | 1                | 1                | 1               | 1               | :                | 1                |
| Czech Republic                               |                     | 1                   | 5,287            | 7,059            | ł                | :               | 26 <sup>°</sup> | :                | I                |
| Denmark-Greenland <sup>e</sup>               | $1,639^{6}$         | 1                   | 1                | 1                | 1                | 1               | 1               | :                | 1                |
| Estonia                                      | :                   | 1                   | 1                | 1                | :                | :               | 10              | 1                | 1                |
| Finland                                      | 4,261               | 1                   | 2,915            | 4,431            | ł                | :               | 1               | 1                | 45               |
| France <sup>e</sup>                          | 1,500               | 1                   | $12,425^{6}$     | $19,252^{6}$     | :                | 4               | 88              | ;                | 1                |
| Germany                                      | :                   | <del>а</del><br>44  | 31,149           | 48,550           | 1                | 111             | 244             | :                | 1                |
| Greece                                       | 1                   | 575                 | 1                | 2,550            | 15 <sup>e</sup>  | 1               | 4 <sup>e</sup>  | (4) <sup>e</sup> | 1                |
| Hungary                                      |                     | -                   | 1,394            | 2,317            | -                | -               | :               | 5 <sup>e</sup>   | -                |
| See footnotes at end of table.               |                     |                     |                  |                  |                  |                 |                 |                  |                  |

|                                       |                  |                  |                    |                  | Metals-Continued |                      |                 |                |               |
|---------------------------------------|------------------|------------------|--------------------|------------------|------------------|----------------------|-----------------|----------------|---------------|
|                                       |                  |                  | Iron and steel     |                  |                  |                      |                 |                | Mercury,      |
|                                       | Gold,            | Iron ore,        | Pig iron and       |                  |                  | Lead                 |                 | Manganese ore, | mine output,  |
|                                       | mine output      | mine output,     | direct-            |                  | Mine output,     | Metal, refine        | pa              | mine output,   | metal content |
| Region and (or) country               | (kilograms)      | metal content    | reduced iron       | Steel, crude     | metal content    | Primary <sup>3</sup> | Secondary       | metal content  | (metric tons) |
| Central Eurasia and Europe-Continued: |                  |                  |                    |                  |                  |                      |                 |                |               |
| Europe—Continued:                     |                  |                  |                    |                  |                  |                      |                 |                |               |
| European Union (EU)—Continued:        |                  |                  |                    |                  |                  |                      |                 |                |               |
| Ireland <sup>e</sup>                  | :                | 1                | 1                  | 1                | 54               | 1                    | 23              | :              | :             |
| Italy                                 | :                | 1                | $11,100^{\circ}$   | 31,990           | 1 <sup>e</sup>   | 48                   | 164             | 1 <sup>e</sup> | :             |
| Latvia                                | :                | 1                | 1                  | M                | 1                | 1                    | 1               | :              | :             |
| Lithuania                             | 1                | 1                | 1                  | 1                | 1                | 1                    | 1               | :              | 1             |
| Luxembourg                            | 1                | 1                | 1                  | 2,858            | 1                | 1                    | 1               | ;              | :             |
| Malta                                 | :                | 1                | 1                  | 1                | 1                | ł                    | 1               | :              | :             |
| Netherlands                           | :                | 1                | 6,400 <sup>°</sup> | 7,368            | 1                | ł                    | 16 <sup>e</sup> | :              | :             |
| Poland                                | 883              | 1                | 5,804              | 10,621           | 96               | 23                   | 81              | :              | 1             |
| Portugal                              | :                | 10 <sup>e</sup>  | 100 <sup>e</sup>   | $1,400^{\circ}$  | 1                | 1                    | 3 °             | ;              | 1             |
| Romania                               | 400 °            | 11               | 3,923              | 6,261            | 1                | 34                   | 5 <sup>e</sup>  | 11             | 1             |
| Slovakia                              | 100 °            | 200 <sup>°</sup> | 4,012              | 4,800            | 1                | 1                    | 1               | :              | :             |
| Slovenia                              | :                | 1                | 1                  | 638              | 1                | ł                    | 15              | :              | :             |
| Spain <sup>e</sup>                    | 3,100            | 1                | 4,200              | 19,000           | 1                | 1                    | 110             | ;              | :             |
| Sweden                                | 5,159            | $16,100^{\circ}$ | 3,815              | 5,700            | 63               | 38 <sup>e</sup>      | 40 °            | :              | :             |
| United Kingdom                        |                  | (4) <sup>e</sup> | 899 <sup>e</sup>   | 14,300           | (4)              | 164                  | 144             | :              | :             |
| Total                                 | 21,000           | 18,700           | 107,000            | 209,000          | 254              | 508                  | 1,090           | 24             | 45            |
| Share of world total                  | 0.9%             | 1.8%             | 9.7%               | 15.5%            | 6.8%             | 13.1%                | 26.5%           | 0.2%           | 3.5%          |
| Other Europe:                         |                  |                  |                    |                  |                  |                      |                 |                |               |
| Albania                               | :                | 1                | 1                  | 100 <sup>e</sup> | 1                | 1                    | ł               | :              | 1             |
| Bosnia and Herzegovina                | :                | $1,240^{\circ}$  | 60 <sup>e</sup>    | 514              | 1                | (4)                  | ł               | 1 <sup>e</sup> | ł             |
| Croatia                               | :                | 1                | 1                  | 75               | 1                | 1                    | ł               | :              | 1             |
| Macedonia                             | 450 <sup>e</sup> | ł                | ł                  | 372              | 32 <sup>e</sup>  | ł                    | ł               | 1              | ł             |
| Montenegro                            | :                | 1                | 1                  | 174              | 1                | 1                    | ł               | :              | ł             |
| Serbia                                | 500              | 1                | 1,377              | 1,478            | 1 <sup>e</sup>   | 1 <sup>e</sup>       | 1               | :              | :             |
| Total                                 | 950              | $1,240^{\circ}$  | 1,437              | 2,713            | 33 °             | 1 <sup>e</sup>       | ł               | 1 °            | 1             |
| Share of world total                  | (2)              | 0.1%             | 0.1%               | 0.2%             | 0.9%             | (5)                  | ł               | (5)            | 1             |
| Total, Europe and Central Eurasia     | 303,000          | 139,000          | 203,000            | 338,000          | 378              | 721                  | 1,160           | 1,320          | 475           |
| Share of world total                  | 12.9%            | 13.1%            | 18.4%              | 25.1%            | 10.1%            | 18.6%                | 28.2%           | 9.5%           | 36.5%         |
| United States                         | 238,000          | 33,100           | 36,600             | 98,100           | 434              | 123                  | 1,180           | :              | NA            |
| Share of world total                  | 10.1%            | 3.1%             | 3.3%               | 7.3%             | 11.6%            | 3.2%                 | 28.6%           | -              | NA            |
| World total                           | 2,360,000        | 1,060,000        | 1,100,000          | 1,350,000        | 3,750            | 3,880                | 4,130           | 13,800         | 1,300         |
| See footnotes at end of table.        |                  |                  |                    |                  |                  |                      |                 |                |               |

|  |                  |                  |                              |                        | Metals-Continue    | pa            |                      |                      |               |
|--|------------------|------------------|------------------------------|------------------------|--------------------|---------------|----------------------|----------------------|---------------|
|  | Nici             | رما              | Platinum-gro<br>refined priv | up metals,<br>narv and | Silver mine        | Tin           |                      | Titan                | mii           |
|  |                  | Refinerv         | second                       | larv                   | output, metal      | Mine output.  | Metal.               | Ilmenite.            | Metal sponge. |
|  | Mine output,     | products,        | Palladium                    | Platinum               | content            | metal content | primary <sup>3</sup> | $TiO_2$ content      | metal content |
| Region and (or) country                      | metal content    | metal content    | (kilograms)                  | (kilograms)            | (metric tons)      | (metric tons) | (metric tons)        | (metric tons)        | (metric tons) |
| Central Eurasia and Europe:                  |                  |                  |                              |                        |                    |               |                      |                      |               |
| Central Eurasia: Commonwealth of Independent |                  |                  |                              |                        |                    |               |                      |                      |               |
| States (CIS):                                |                  |                  |                              |                        |                    |               |                      |                      |               |
| Armenia                                      | I                | I                | I                            | I                      | 4 °                | 1             | I                    | I                    | ł             |
| Azerbaijan                                   | I                | 1                | 1                            | 1                      | 1                  | 1             | 1                    | ;                    | 1             |
| Belarus                                      | 1                | 1                | 1                            | 1                      | 1                  |               | 1                    | :                    | 1             |
| Georgia <sup>e</sup>                         | 1                | 1                | 1                            | ł                      | 1                  | 1             | 1                    | 1                    | 1             |
| Kazakhstan                                   | 1                | (4) <sup>e</sup> | ł                            | ł                      | $800^{\circ}$      | NA            | 1                    | 15,000               | 25,400        |
| Kyrgyzstan                                   | 1                | 1                | 1                            | 1                      | NA                 | -             | 1                    | ;                    | 1             |
| Moldova                                      | 1                | 1                | 1                            | 1                      | 1                  | 1             | 1                    | :                    | 1             |
| Russia <sup>e</sup>                          | 331              | 270              | 96,800                       | 27,000                 | 1,200              | 2,500         | 3,800                | 1                    | 34,200        |
| Tajikistan <sup>e</sup>                      | 1                | :                | 1                            | 1                      | 5                  |               | 1                    | 1                    | 1             |
| Turkmenistan                                 | 1                | 1                | 1                            | 1                      | 1                  | 1             | 1                    | :                    | 1             |
| Ukraine                                      | 12 <sup>e</sup>  | 18 <sup>e</sup>  | 1                            | 1                      | 1                  | 1             | 1                    | $305,000$ $^{\circ}$ | 9,745         |
| Uzbekistan <sup>e</sup>                      | 1                | ;                | 1                            | 1                      | 83                 | -             | 1                    | 1                    | 1             |
| Total  | 343 °            | 288 <sup>e</sup> | $96,800~^\circ$              | 27,000 °               | 2,090 <sup>e</sup> | 2,500 °       | $3,800^{\circ}$      | 320,000              | 69,300        |
| Share of world total                         | 15.2%            | 20.5%            | 45.4%                        | 7.9%                   | 9.9%               | 0.8%          | 1.2%                 | 5.1%                 | 62.3%         |
| Europe:                                      |                  |                  |                              |                        |                    |               |                      |                      |               |
| European Free Trade Association (EFTA):      |                  |                  |                              |                        |                    |               |                      |                      |               |
| Iceland                                      | 1                | 1                | 1                            | 1                      | 1                  | 1             | 1                    | 1                    | 1             |
| Norway                                       | (4) <sup>e</sup> | 88 <sup>°</sup>  | 1                            | 1                      | 1                  | 1             | ł                    | 1,396,000            | 1             |
| Switzerland <sup>e</sup>                     | 1                | 1                | 1                            | 1                      | 1                  |               | 1                    | 1                    | 1             |
| Total  | (4) <sup>e</sup> | 88 <sup>e</sup>  | -                            |                        | 1                  |               | -                    | 1,400,000            | 1             |
| Share of world total                         | (2)              | 6.2%             | -                            |                        | :                  |               | :                    | 22.1%                | :             |
| European Union (EU):                         |                  |                  |                              |                        |                    |               |                      |                      |               |
| Austria                                      | ł                | ł                | 1                            | 1                      | 1                  | 1             | ł                    | 1                    | 1             |
| Belgium                                      | ł                | ł                | 1                            | 1                      | 1                  | 1             | ł                    | 1                    | 1             |
| Bulgaria                                     | ł                | ł                | ł                            | ł                      | 55 <sup>e</sup>    | 1             | 10 <sup>e</sup>      | ł                    | ł             |
| Cyprus                                       | 1                | I                | I                            | I                      | I                  | 1             | I                    | I                    | I             |
| Czech Republic                               | I                | I                | 1                            | ł                      | I                  | 1             | 1                    | 1                    | 1             |
| Denmark-Greenland <sup>e</sup>               | I                | ł                | 1                            | 1                      | 1                  | 1             | ł                    | 1                    | 1             |
| Estonia                                      | 1                | 1                | 1                            | 1                      | 1                  |               | 1                    | ;                    | 1             |
| Finland                                      | 3                | 55               | 1                            | 461 <sup>e</sup>       | 33                 |               | 1                    | 1                    | 1             |
| France <sup>e</sup>                          | 1                | 16               | 1                            | 1                      | 1                  |               | 1                    | 1                    | 1             |
| Germany                                      | 1                | 1                | 1                            | 137,645                | 1                  |               | 1                    | :                    | 1             |
| Greece                                       | 21 <sup>e</sup>  | 18 <sup>e</sup>  | 1                            | ł                      | 38 <sup>e</sup>    | 1             | ł                    | 1                    | 1             |
| Hungary                                      | -                | -                | -                            | -                      |                    | -             | :                    | :                    |               |
| See footnotes at end of table.               |                  |                  |                              |                        |                    |               |                      |                      |               |

|                                       |               |                  |                 |                | Metals-Continue  | þ             |                      |                          |               |
|---------------------------------------|---------------|------------------|-----------------|----------------|------------------|---------------|----------------------|--------------------------|---------------|
|                                       |               |                  | Platinum-gro    | oup metals,    |                  |               |                      |                          |               |
|                                       | Nic           | kel              | refined, pri    | mary and       | Silver, mine     | Tin           |                      | Titan                    | ium           |
|                                       |               | Refinery         | secon           | dary           | output, metal    | Mine output,  | Metal,               | Ilmenite,                | Metal sponge, |
|                                       | Mine output,  | products,        | Palladium       | Platinum       | content          | metal content | primary <sup>3</sup> | TiO <sub>2</sub> content | metal content |
| Region and (or) country               | metal content | metal content    | (kilograms)     | (kilograms)    | (metric tons)    | (metric tons) | (metric tons)        | (metric tons)            | (metric tons) |
| Central Eurasia and Europe-Continued: |               |                  |                 |                |                  |               |                      |                          |               |
| Europe—Continued:                     |               |                  |                 |                |                  |               |                      |                          |               |
| European Union (EU)—Continued:        |               |                  |                 |                |                  |               |                      |                          |               |
| Ireland <sup>e</sup>                  | :             | 1                | 1               | 1              | 4                | 1             | ł                    | :                        | 1             |
| Italy                                 | :             | -                | 1               | 1              | (4) <sup>e</sup> | 1             | I                    | ;                        | 1             |
| Latvia                                | :             | 1                | 1               | 1              | 1                |               | 1                    | :                        | 1             |
| Lithuania                             | :             | 1                | 1               | 1              | 1                |               | I                    | ;                        | 1             |
| Luxembourg                            | :             | 1                | 1               | 1              | 1                |               | I                    | ;                        | 1             |
| Malta                                 | :             | 1                | 1               | 1              | 1                | 1             | I                    | :                        | ł             |
| Netherlands                           | :             | 1                | 1               | 1              | I                | 1             | I                    | ;                        | 1             |
| Poland <sup>e</sup>                   | :             | 1                | 10              | 20             | 1,250            | 1             | 1                    | ;                        | 1             |
| Portugal                              | :             | 1                | 1               | 1              | 24               | 41            | 1                    | :                        | ł             |
| Romania                               | :             | 1                | 1               | 1              | 18 <sup>e</sup>  |               | 1                    | :                        | 1             |
| Slovakia                              | :             | ł                | ł               | 1              | 1                | 1             | ł                    | :                        | 1             |
| Slovenia                              | 1             | I                | ł               | ł              | I                | 1             | ł                    | ;                        | I             |
| Spain <sup>e</sup>                    | 9             | I                | ł               | I              | 4                | 1             | I                    | :                        | 1             |
| Sweden                                | :             | (4) <sup>e</sup> | ł               | ł              | 323              | 1             | 1                    | 1                        | I             |
| United Kingdom                        | -             | 37               | -               | -              | -                | -             | -                    | :                        | -             |
| Total                                 | 31            | 126              | $10^{\text{e}}$ | 138,000        | 1,750            | 41            | 10                   |                          | 1             |
| Share of world total                  | 1.4%          | 9.0%             | (5)             | 40.3%          | 8.3%             | (5)           | 0.0%                 |                          |               |
| Other Europe:                         |               |                  |                 |                |                  |               |                      |                          |               |
| Albania                               | 1             | I                | ł               | ł              | I                | 1             | ł                    | 1                        | I             |
| Bosnia and Herzegovina                | :             | I                | I               | I              | I                | I             | ł                    | 1                        | I             |
| Croatia                               | :             | I                | ł               | ł              | 1                | 1             | 1                    | 1                        | 1             |
| Macedonia                             | 1             | 15               | I               | I              | I                | ł             | ł                    | I                        | :             |
| Montenegro                            | 1             | ł                | ł               | I              | I                | 1             | ł                    | I                        | 1             |
| Serbia <sup>e</sup>                   | :             | 1                | 15              | 2              | 4 6              | 1             | I                    | :                        | 1             |
| Total                                 | 1             | 15               | 15 <sup>e</sup> | 2 <sup>e</sup> | 4                | 1             | 1                    | 1                        | 1             |
| Share of world total                  | -             | 1.1%             | (5)             | (5)            | (5)              | -             | -                    |                          | -             |
| Total, Europe and Central Eurasia     | 374           | 517              | 96,800          | 165,000        | 3,850            | 2,540         | 3,810                | 1,720,000                | 69,300        |
| Share of world total                  | 16.5%         | 36.8%            | 45.4%           | 48.1%          | 18.1%            | 0.8%          | 1.2%                 | 27.2%                    | 62.3%         |
| United States                         | 1             | I                | 12,800          | 3,860          | 1,260            | 1             | I                    | 219,000                  | ł             |
| Share of world total                  | -             |                  | 6.0%            | 1.1%           | 5.9%             | -             | -                    | 3.5%                     | -             |
| World total                           | 2,260         | 1,400            | 213,000         | 343,000        | 21,200           | 301,000       | 327,000              | 6,320,000                | 111,000       |
| See footnotes at end of table.        |               |                  |                 |                |                  |               |                      |                          |               |

|  | A                  | etals-Continued  |               |                    |                     | Industrial        | minerals             |                             |                |
|--|--------------------|------------------|---------------|--------------------|---------------------|-------------------|----------------------|-----------------------------|----------------|
|  |                    | Zin              | 2             |                    |                     | Diamond,          |                      |                             |                |
|  | Tungsten,          |                  | Metal,        |                    |                     | natural,          |                      |                             |                |
|  | mine output,       | Mine output,     | primary and   |                    |                     | gemstones         | Phosphate            |                             |                |
|  | metal content      | metal content    | secondary     | Ammonia,           | Cement,             | and industrial    | rock,                | Potash,                     |                |
| Region and (or) country                              | (metric tons)      | (metric tons)    | (metric tons) | N content          | hydraulic           | (thousand carats) | $P_2O_5$ content     | K <sub>2</sub> O equivalent | Salt           |
| Central Eurasia and Europe:                          |                    |                  |               |                    |                     |                   |                      |                             |                |
| Central Eurasia: Commonwealth of Independent         |                    |                  |               |                    |                     |                   |                      |                             |                |
| States (CIS):  |                    |                  |               |                    |                     |                   |                      |                             |                |
| Armenia  | 1                  | 4,924            | 1             | ł                  | 722                 | 1                 | I                    | :                           | 35             |
| Azerbaijan   | 1                  | 1                | 1             | 1                  | 1,693               | 1                 | 1                    | :                           | 7              |
| Belarus  | 1                  | 1                | 1             | 830 °              | 3,820               | 1                 | 1                    | 4,972                       | 1,665          |
| Georgia <sup>e</sup>                                 | 1                  | 400              | 1             | 150                | 450                 | 1                 | 1                    | :                           | 30             |
| Kazakhstan   | 1                  | 386,000          | 358,226       | ł                  | 5,699               | 1                 | °09                  | :                           | 228            |
| Kyrgyzstan   | 1                  | 1                | 1             | 1                  | 1,300 <sup>e</sup>  | :                 | 1                    | :                           | 1 <sup>e</sup> |
| Moldova  | 1                  | 1                | 1             | ł                  | 1,060               | 1                 | 1                    | :                           | 1              |
| Russia <sup>e</sup>                                  | 4,400              | 185,000          | 260,000       | 10,500             | $59,900^{6}$        | 38,300            | 4,240                | 6,600                       | $2,200^{6}$    |
| Tajikistan <sup>e</sup>                              | 1                  | 1                | 1             | 25                 | 300                 | 1                 | 1                    | ;                           | 52             |
| Turkmenistan <sup>e</sup>                            | ł                  | ł                | ł             | 270                | 1,500               | 1                 | 1                    | 1                           | S              |
| Ukraine  | 1                  | ł                | ł             | 4,200 <sup>e</sup> | 15,000              | ł                 | ł                    | 12 <sup>e</sup>             | 5,548          |
| Uzbekistan <sup>e</sup>                              | 1                  | 1                | 71,800 6      | 1,000              | 5,000               | 1                 | 140                  | :                           | ł              |
| Total  | 4,400 <sup>e</sup> | 576,000          | 690,000       | 17,000             | 96,400              | 38,300            | e 4,440 <sup>e</sup> | 11,600                      | 9,770          |
| Share of world total                                 | 8.4%               | 5.3%             | 6.1%          | 12.9%              | 3.5%                | 22.9%             | 8.9%                 | 33.6%                       | 3.9%           |
| Europe:  |                    |                  |               |                    |                     |                   |                      |                             |                |
| European Free Trade Association (EFTA). <sup>e</sup> |                    |                  |               |                    |                     |                   |                      |                             |                |
| Iceland  | 1                  | 1                | 1             | 1                  | 140                 | 1                 | 1                    | :                           | 5              |
| Norway   | 1                  | 1                | 157,000       | 350                | 1,800               | 1                 | 1                    | :                           | 1              |
| Switzerland  | 1                  | 1                | 1             | 30                 | 4,000               | 1                 | 1                    | :                           | 560            |
| Total  | 1                  | 1                | 157,000       | 380                | 5,940               | 1                 | 1                    | :                           | 565            |
| Share of world total                                 | 1                  | 1                | 1.4%          | 0.3%               | 0.2%                | 1                 | 1                    | :                           | 0.2%           |
| European Union (EU):                                 |                    |                  |               |                    |                     |                   |                      |                             |                |
| Austria  | 435                | 1                | 1             | (4) <sup>e</sup>   | 4,600 <sup>e</sup>  | 1                 | 1                    | :                           | 1,025          |
| Belgium  | 1                  | 1                | 281,300       | 830 °              | 9,571               | ł                 | 1                    | :                           | 1              |
| Bulgaria   | 1                  | $16,000^{\circ}$ | 99,992        | $310^{\circ}$      | $4,100^{e}$         | 1                 | 1                    | ;                           | 2,000          |
| Cyprus   | 1                  | 1                | 1             | ł                  | 1,873               | 1                 | 1                    | :                           | 1              |
| Czech Republic                                       | 1                  | 1                | 1             | 225 <sup>e</sup>   | 4,899               | ł                 | 1                    | :                           | 1              |
| Denmark-Greenland <sup>e</sup>                       | 1                  | 1                | 1             | 2                  | 2,100               | I                 | 1                    | :                           | 600            |
| Estonia  | 1                  | 1                | 1             | 67                 | 937                 | 1                 | 1                    | ;                           | 1              |
| Finland  | 1                  | 72,118           | 305,543       | 101                | 1,743               | 1                 | 325 <sup>e</sup>     | :                           | 1              |
| France <sup>e</sup>                                  | 1                  | I                | 115 6         | 800                | 22,300              | 1                 | I                    | 1                           | 6,140          |
| Germany  | 1                  | 1                | 334,891       | 2,746              | 33,382 <sup>p</sup> | I                 | 1                    | 3,637                       | 15,677         |
| Greece <sup>e</sup>                                  | 1                  | 18,000           | 1             | 130                | 15,000              | 1                 | 1                    | :                           | 195            |
| Hungary  | 1                  | 1                | 1             | 300 °              | 3,552               | 1                 | 1                    | :                           | 1              |
| See footnotes at end of table.                       |                    |                  |               |                    |                     |                   |                      |                             |                |

|                                       | M             | etals-Continued   |                      |                  |                    | Industrial minera | als-Continued                         |                             |                  |
|---------------------------------------|---------------|-------------------|----------------------|------------------|--------------------|-------------------|---------------------------------------|-----------------------------|------------------|
|                                       |               | Zine              | 0                    |                  |                    | Diamond,          |                                       |                             |                  |
|                                       | Tungsten,     |                   | Metal,               |                  |                    | natural,          |                                       |                             |                  |
|                                       | mine output,  | Mine output,      | primary and          |                  |                    | gemstones         | Phosphate                             |                             |                  |
|                                       | metal content | metal content     | secondary            | Ammonia,         | Cement,            | and industrial    | rock,                                 | Potash,                     |                  |
| Region and (or) country               | (metric tons) | (metric tons)     | (metric tons)        | N content        | hydraulic          | (thousand carats) | P <sub>2</sub> O <sub>5</sub> content | K <sub>2</sub> O equivalent | Salt             |
| Central Eurasia and Europe—Continued: |               |                   |                      |                  |                    |                   |                                       |                             |                  |
| Europe—Continued:                     |               |                   |                      |                  |                    |                   |                                       |                             |                  |
| European Union (EU)-Continued:        |               |                   |                      |                  |                    |                   |                                       |                             |                  |
| Ireland <sup>e</sup>                  | :             | $400,898^{6}$     | :                    | :                | 4,700              | 1                 | 1                                     | :                           | 1                |
| Italy                                 | :             | 1                 | $100,000$ $^{\circ}$ | 460 <sup>e</sup> | 47,541             | 1                 | 1                                     | :                           | 2,214            |
| Latvia                                | 1             | 1                 | 1                    | 1                | M                  | I                 | 1                                     | 1                           | 1                |
| Lithuania                             | :             | 1                 | :                    | 936              | 1,105              | 1                 | 1                                     | :                           | 1                |
| Luxembourg                            | :             | 1                 | ł                    | 1                | 700 <sup>e</sup>   | I                 | 1                                     | :                           | ł                |
| Malta                                 | :             | 1                 | :                    | 1                | 1                  | 1                 | 1                                     | :                           | 6 <sup>e</sup>   |
| Netherlands <sup>e</sup>              | :             | 1                 | 231,652 <sup>6</sup> | 1,800            | 2,400              | 1                 | 1                                     | 1                           | 6,000            |
| Poland                                | •             | $139,000^{\circ}$ | 142,000              | 1,995            | 16,963             | 1                 | 1                                     | :                           | 4,391            |
| Portugal                              | 1,067         | 24,380            | 1                    | 244 <sup>e</sup> | 12,631             | 1                 | 1                                     | :                           | 591              |
| Romania                               | :             | 849               | 58,342               | $1,300^{\circ}$  | 10,061             | 1                 | 1                                     | :                           | 2,475            |
| Slovakia                              | 1             | 1                 | 1                    | 525              | 3,718              | I                 | 1                                     | :                           | 150 <sup>e</sup> |
| Slovenia                              | :             | 1                 | :                    | :                | $1,500^{\circ}$    | 1                 | 1                                     | :                           | 2 <sup>e</sup>   |
| Spain <sup>e</sup>                    | 1             | 1                 | 503,000              | 400              | 54,000             | 1                 | 1                                     | 435                         | $4,350^{6}$      |
| Sweden                                | 1             | 214,576           | 1                    | 1                | 2,500 <sup>e</sup> | 1                 | 1                                     | :                           | 1                |
| United Kingdom <sup>e</sup>           | :             | I                 | 1                    | 1,100            | $11,890^{6}$       | I                 | I                                     | 427                         | 5,800            |
| Total                                 | 1,500         | 886,000           | 2,060,000            | 14,300           | 274,000            | 1                 | 325 "                                 | 4,500                       | 51,600           |
| Share of world total                  | 2.9%          | 8.2%              | 18.3%                | 10.8%            | 9.8%               | -                 | 0.7%                                  | 13.0%                       | 20.6%            |
| Other Europe:                         |               |                   |                      |                  |                    |                   |                                       |                             |                  |
| Albania                               | 1             | ł                 | I                    | ł                | 525 <sup>e</sup>   | 1                 | ł                                     | :                           | 25 <sup>e</sup>  |
| Bosnia and Herzegovina                | :             | 2,000             | 1                    | 1 <sup>e</sup>   | 1,283              | ł                 | 1                                     | :                           | 502              |
| Croatia                               | 1             | 1                 | 1                    | 400 <sup>e</sup> | 3,524              | 1                 | 1                                     | :                           | 33               |
| Macedonia                             | :             | 20,000            | ł                    | 1                | 902                | I                 | 1                                     | :                           | ł                |
| Montenegro                            | 1             | ł                 | ł                    | ł                | ł                  | 1                 | 1                                     | ł                           | 20               |
| Serbia                                |               | 1,000             | -                    | 85               | 2,677              | -                 | -                                     | -                           | 30               |
| Total                                 | 1             | 23,000            | ł                    | 486              | 8,910              | 1                 | 1                                     | 1                           | 610              |
| Share of world total                  | :             | 0.2%              | :                    | 0.4%             | 0.3%               | -                 | 1                                     | :                           | 0.2%             |
| Total, Europe and Central Eurasia     | 5,900         | 1,490,000         | 2,900,000            | 32,100           | 385,000            | 38,300            | 4,770                                 | 16,100                      | 62,600           |
| Share of world total                  | 11.3%         | 13.8%             | 25.8%                | 24.3%            | 13.8%              | 22.9%             | 9.5%                                  | 46.6%                       | 25.0%            |
| United States                         | 1             | 803,000           | 278,000              | 8,840            | 96,900             | 1                 | 8,480                                 | 1,100                       | 44,500           |
| Share of world total                  | -             | 7.5%              | 2.5%                 | 6.7%             | 3.5%               |                   | 17.0%                                 | 3.2%                        | 17.8%            |
| World total                           | 52,200        | 10,800,000        | 11,300,000           | 132,000          | 2,790,000          | 168,000           | 50,000                                | 34,500                      | 251,000          |
| See footnotes at end of table.        |               |                   |                      |                  |                    |                   |                                       |                             |                  |

|  |                  |            | Mineral fuels a | nd related material  | s                     |   |
|--|------------------|------------|-----------------|----------------------|-----------------------|---|
|  |                  |            |                 |                      | Petroleum,            |   |
|  |                  |            |                 | Natural              | crude                 |   |
|  |                  | Coal       |                 | gas, dry<br>(million | (thousand<br>42vallon | Uranium,<br>U <sub>5</sub> O <sub>5</sub> content |
| Region and (or) country                      | Anthracite       | Bituminous | Lignite         | cubic meters)        | barrels)              | (metric tons)                                     |
| Central Eurasia and Europe:                  |                  |            |                 |                      |                       |   |
| Central Eurasia: Commonwealth of Independent |                  |            |                 |                      |                       |   |
| States (CIS):                                |                  |            |                 |                      |                       |   |
| Armenia                                      | 1                | 1          | 1               | 2,285                | :                     | 1   |
| Azerbaijan                                   | 1                | 1          | 1               | 10,832               | 312,120               | 1   |
| Belarus                                      | 1                | 1          | 1               | 201                  | 12,918                | 1   |
| Georgia <sup>e</sup>                         | 1                | 8          | 1               | 21                   | 466                   | 1   |
| Kazakhstan                                   | 1                | 88,974     | 4,638           | 15,699               | 496,000 °             | 7,827   |
| Kyrgyzstan <sup>e</sup>                      | ł                | 46         | 268             | 19                   | 518 <sup>6</sup>      | 1   |
| Moldova                                      | ł                | 1          | 1               | NA                   | ł                     | ł   |
| Russia                                       | 18,332           | 218,971    | 77,200          | 651,000              | $3,600,000^{\circ}$   | 3,762   |
| Tajikistan                                   | ł                | 82         | 1               | 19                   | 165 °                 | ł   |
| Turkmenistan                                 | ł                | 1          | 1               | 72,300               | 71,565                | ł   |
| Ukraine                                      | $13,000^{\circ}$ | 62,255     | 182             | 21                   | 32,800                | 846   |
| Uzbekistan                                   | 1                | 87         | 3,215           | 65,300               | 36,172                | 2,736   |
| Total  | 31,300           | 370,000    | 85,500          | 818,000              | 4,560,000             | 15,200  |
| Share of world total                         | 4.9%             | 7.9%       | 8.6%            | 29.7%                | 16.7%                 | 33.2%   |
| Europe:                                      |                  |            |                 |                      |                       |   |
| European Free Trade Association (EFTA):      |                  |            |                 |                      |                       |   |
| Iceland                                      | 1                | 1          | 1               | 1                    | :                     | 1   |
| Norway                                       | 1                | 322        | 1               | 130,800              | 965,000 °             | 1   |
| Switzerland                                  | 1                | 1          | ;               | 1                    | 1                     | 1   |
| Total  | 1                | 322        | 1               | 131,000              | 965,000 °             | :   |
| Share of world total                         | -                | (5)        |                 | 4.7%                 | 3.5%                  | -   |
| European Union (EU):                         |                  |            |                 |                      |                       |   |
| Austria <sup>e</sup>                         | 1                | 1          | S               | 1,400                | 7,082 <sup>6</sup>    | 1   |
| Belgium                                      | 1                | ł          | :               | :                    | I                     | 1   |
| Bulgaria                                     | 1                | 18         | 28,159          | 295                  | 176                   | NA  |
| Cyprus                                       | 1                | 1          | ;               | 1                    | 1                     | :   |
| Czech Republic                               | 1                | 12,462     | 49,571          | 148                  | 1,627                 | 380   |
| Denmark-Greenland <sup>e</sup>               | 1                | 1          | ;               | 9,500                | $113,515^{6}$         | 1   |
| Estonia                                      | 1                | ł          | 16,647          | 1                    | I                     | 1   |
| Finland                                      | 1                | 1          | ;               | ;                    | 1                     | 1   |
| France <sup>e</sup>                          | 1                | 1          | ;               | 1,200                | 7,020                 | 1   |
| Germany                                      | 2,003            | 19,304     | 180,409         | 16,884               | 25,000                | 48  |
| Greece <sup>e</sup>                          | 1                | 1          | 74,000          | 16                   | 760                   | 1   |
| See footnotes at end of table.               |                  |            |                 |                      |                       |   |

|                                       |            |                    | Mineral fuels a | nd related material       | s                     |  |
|---------------------------------------|------------|--------------------|-----------------|---------------------------|-----------------------|--|
|                                       |            |                    |                 | ,                         | Petroleum,            |  |
|                                       |            |                    |                 | Natural                   | crude                 |  |
|                                       |            | -                  |                 | gas, dry                  | (thousand             | Uranium,   |
| Recion and (or) country               | Anthracite | Coal<br>Bituminous | I ionite        | (million<br>cubic meters) | 42-gallon<br>harrels) | U <sub>3</sub> O <sub>8</sub> content<br>(metric tons) |
| Central Eurasia and Eurone—Continued: |            |                    | 2000            |                           | ( 010 TMO             |  |
| Europe—Continued:                     |            |                    |                 |                           |                       |  |
| European Union (EU)—Continued:        |            |                    |                 |                           |                       |  |
| Hungary                               | 1          | ł                  | 9,682           | 2,653                     | 5,613                 | ł  |
| Ireland                               | •          | I                  | 1               | 566                       | I                     | 1  |
| Italy                                 | :          | 1                  | 1               | $^{\circ}$ 006.8          | 30,012                | :  |
| Latvia                                | :          | 1                  | 1               | ;                         | 1                     | :  |
| Lithuania                             | :          | 1                  | 1               | 1                         | 1,134                 | :  |
| Luxembourg                            | :          | 1                  | 1               | 1                         | 1                     | :  |
| Malta                                 | 1          | :                  | 1               | 1                         | :                     | :  |
| Netherlands <sup>e</sup>              | :          | I                  | 1               | 68,166                    | 11,250                | :  |
| Poland                                | :          | 88,313             | 57,538          | 5,652                     | 5,292                 | :  |
| Portugal                              | :          | I                  | 1               | 1                         | 1                     | :  |
| Romania                               | :          | 1                  | 35,418          | 11,981                    | $36,000$ $\degree$    | :  |
| Slovakia                              | :          | 1                  | 2,111           | 142 <sup>p</sup>          | 170 <sup>e</sup>      | :  |
| Slovenia                              | ;          | 1                  | 4,562           | 33                        | 2,041                 | :  |
| Spain                                 | 7,869      | 3,131              | 6,180           | 330 <sup>°</sup>          | 335                   | :  |
| Sweden                                | :          | 1                  | 1               | :                         | 1                     | :  |
| United Kingdom                        | 1,385      | 15,645             | 1               | 72,000                    | 602,192               | :  |
| Total                                 | 11,300     | 139,000            | 464,000         | 200,000                   | 849,000               | 428  |
| Share of world total                  | 1.8%       | 3.0%               | 46.5%           | 7.2%                      | 3.1%                  | 0.9%   |
| Other Europe:                         |            |                    |                 |                           |                       |  |
| Albania <sup>e</sup>                  | :          | I                  | 13              | 11 6                      | 3,523                 | :  |
| Bosnia and Herzegovina                | :          | I                  | 9,765           | ;                         | 1                     | :  |
| Croatia <sup>e</sup>                  | :          | 1                  | 1               | 2,900                     | 6,606                 | :  |
| Macedonia                             | :          | I                  | 6,569           | 1                         | I                     | :  |
| Montenegro                            | :          | I                  | 1,203           | I                         | I                     | :  |
| Serbia                                | :          | 66                 | 37,007          | 274                       | 4,690                 | :  |
| Total                                 | :          | 99                 | 54,557          | 3,185                     | 14,819                | :  |
| Share of world total                  | :          | (5)                | 5.5%            | 0.1%                      | 0.1%                  | :  |
| Total, Europe and Central Eurasia     | 42,600     | 510,000            | 604,000         | 1,150,000                 | 6,390,000             | 15,600   |
| Share of world total                  | 6.7%       | 10.9%              | 60.5%           | 41.8%                     | 23.4%                 | 34.1%  |
| United States                         | 1,410      | 967,000            | 71,200          | 367,000                   | 1,848,000             | 1,950  |
| Share of world total                  | 0.2%       | 20.6%              | 7.1%            | 13.3%                     | 6.8%                  | 4.3%   |
| World total                           | 640,000    | 4,690,000          | 999,000         | 2,760,000                 | 27,300,000            | 45,700   |
| See footnotes at end of table.        |            |                    |                 |                           |                       |  |

EUROPE AND CENTRAL EURASIA: PRODUCTION OF SELECTED MINERAL COMMODITIES IN  $2007^{1.2}$ 

TABLE 4-Continued

Estimated; estimated data, U.S. data, and world totals are rounded to no more than three significant digits; may not add to totals shown. <sup>p</sup>Preliminary NA Not available. -- Zero or zero percent. W Withheld to avoid disclosing proprietary data.

<sup>1</sup>some of the individual entries in this table may differ from those that appear in individual country production tables elsewhere in this

volume owing to the inclusion in this table of data received at a later date.

<sup>2</sup>Totals may not add due to independent rounding. Table includes data available as of June 4, 2009.

<sup>3</sup>Primary production also includes undifferentiated (primary and secondary) production for some countries listed.

<sup>4</sup>Less than ½ unit.

<sup>5</sup>Less than 0.5 percent. <sup>6</sup>Reported figure.

### EUROPE AND CENTRAL EURASIA: HISTORIC AND PROJECTED BAUXITE MINE PRODUCTION, 1995-2015 $^{\rm l}$

| Region and country      | 1995   | 2000   | 2005   | 2007   | 2009 <sup>e</sup> | 2011 <sup>e</sup> | 2013 <sup>e</sup> | 2015 <sup>e</sup> |
|-------------------------|--------|--------|--------|--------|-------------------|-------------------|-------------------|-------------------|
| Europe:                 |        |        |        |        |                   |                   |                   |                   |
| Western Europe:         |        |        |        |        |                   |                   |                   |                   |
| France                  | 75     | 185    | 168    | 160    | 150               | 160               | 170               | 170               |
| Greece                  | 2,200  | 1,966  | 2,441  | 2,163  | 2,100             | 2,200             | 2,200             | 2,100             |
| Italy                   | 11     | 300    | 300    |        |                   |                   |                   |                   |
| Total                   | 2,290  | 2,450  | 2,910  | 2,320  | 2,300             | 2,400             | 2,400             | 2,300             |
| Central Europe:         |        |        |        |        |                   |                   |                   |                   |
| Albania                 |        | 5      |        |        |                   |                   |                   |                   |
| Bosnia and Herzegovina  | 75     | 255    | 1,032  | 867    | 800               | 850               | 850               | 850               |
| Croatia                 | 2      |        |        |        |                   |                   |                   |                   |
| Hungary                 | 1,015  | 1,046  | 535    | 546    | 540               | 540               | 540               | 540               |
| Montenegro <sup>2</sup> | 60     | 630    | 672    | 667    | 500               | 550               | 600               | 600               |
| Romania                 | 175    |        |        |        |                   |                   |                   |                   |
| Total                   | 1,330  | 1,940  | 2,240  | 2,080  | 1,800             | 1,900             | 2,000             | 2,000             |
| Central Eurasia:        |        |        |        |        |                   |                   |                   |                   |
| Kazakhstan              | 3,071  | 3,729  | 4,800  | 4,800  | 4,600             | 4,800             | 4,900             | 5,000             |
| Russia                  | 3,800  | 5,274  | 6,400  | 6,777  | 6,000             | 7,000             | 8,000             | 9,000             |
| Total                   | 6,870  | 9,000  | 11,200 | 11,600 | 11,000            | 12,000            | 13,000            | 14,000            |
| Regional total          | 10,500 | 13,400 | 16,300 | 16,000 | 15,000            | 16,000            | 17,000            | 18,000            |

(Thousand metric tons)

<sup>e</sup>Estimated. -- Negligible or no production.

<sup>1</sup>Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

### EUROPE AND CENTRAL EURASIA: HISTORIC AND PROJECTED PRIMARY AND SECONDARY ALUMINUM PRODUCTION, 1995-2015<sup>1</sup>

### (Thousand metric tons)

| Region and country      | 1995  | 2000   | 2005   | 2007   | 2009 <sup>e</sup> | 2011 <sup>e</sup> | 2013 <sup>e</sup> | 2015 <sup>e</sup> |
|-------------------------|-------|--------|--------|--------|-------------------|-------------------|-------------------|-------------------|
| Europe:                 |       |        |        |        |                   |                   |                   |                   |
| Western Europe:         |       |        |        |        |                   |                   |                   |                   |
| Austria                 | 94    | 158    | 151    | 152    | 110               | 150               | 150               | 150               |
| Belgium                 | 4     | 1      |        | (2)    |                   |                   |                   |                   |
| Denmark-Greenland       | 14    | 16     | 20     | 25     | 25                | 25                | 25                | 25                |
| Finland                 | 35    | 45     | 34     | 44     | 45                | 45                | 45                | 40                |
| France                  | 603   | 701    | 664    | 650    | 600               | 600               | 600               | 600               |
| Germany                 | 994   | 1,216  | 1,366  | 1,387  | 1,100             | 1,300             | 1,400             | 1,400             |
| Greece                  | 133   | 171    | 163    | 166    | 160               | 150               | 150               | 150               |
| Iceland                 | 100   | 224    | 273    | 396    | 500               | 600               | 600               | 600               |
| Italy                   | 610   | 848    | 847    | 848    | 850               | 850               | 850               | 850               |
| Netherlands             | 407   | 421    | 391    | 301    | 300               | 350               | 350               | 350               |
| Norway                  | 902   | 1,280  | 1,376  | 1,654  | 1,600             | 1,600             | 1,600             | 1,600             |
| Portugal                | NA    | 18     | 18     | 18     | 18                | 18                | 18                | 18                |
| Spain                   | 468   | 606    | 637    | 593    | 550               | 650               | 650               | 650               |
| Sweden                  | 118   | 127    | 133    | 130    | 130               | 130               | 130               | 130               |
| Switzerland             | 31    | 224    | 238    | 230    | 200               | 200               | 200               | 200               |
| United Kingdom          | 520   | 590    | 574    | 558    | 500               | 550               | 550               | 550               |
| Total                   | 5,030 | 6,650  | 6,890  | 7,150  | 6,700             | 7,200             | 7,300             | 7,300             |
| Central Europe:         |       |        |        |        |                   |                   |                   |                   |
| Bosnia and Herzegovina  | 15    | 95     | 131    | 147    | 100               | 100               | 110               | 120               |
| Bulgaria                | 5     | 8      | 5      | 13     | 10                | 10                | 10                | 10                |
| Croatia                 | 31    | 15     | 6      | 3      | 2                 | 2                 | 2                 | 2                 |
| Czech Republic          | 48    | 40     | 15     | 15     | 15                | 15                | 15                | 15                |
| Hungary                 | 29    | 89     | 81     | 50     | 50                | 50                | 50                | 50                |
| Macedonia               | 4     | 5      | 4      | NA     | 1                 | 1                 | 1                 | 1                 |
| Montenegro <sup>3</sup> | 17    | 88     | 117    | 135    | 80                | 100               | 110               | 110               |
| Poland                  | 56    | 52     | 66     | 79     | 75                | 75                | 75                | 75                |
| Romania                 | 144   | 181    | 251    | 298    | 215               | 235               | 250               | 270               |
| Serbia                  | NA    | NA     | (2)    | 2      | 1                 | 1                 | 1                 | 2                 |
| Slovakia                | 38    | 137    | 158    | 190    | 180               | 190               | 190               | 190               |
| Slovenia                | 58    | 84     | 139    | 111    | 110               | 110               | 110               | 110               |
| Total                   | 444   | 794    | 973    | 1,040  | 840               | 890               | 920               | 960               |
| Central Eurasia:        |       |        |        |        |                   |                   |                   |                   |
| Azerbaijan              | 4     |        | 32     | 39     | 30                | 35                | 40                | 60                |
| Kazakhstan              |       |        |        |        | 120               | 200               | 225               | 225               |
| Russia                  | 2,724 | 3,245  | 3,647  | 3,955  | 3,400             | 3,600             | 3,800             | 4,000             |
| Tajikistan              | 232   | 269    | 380    | 419    | 320               | 330               | 350               | 370               |
| Ukraine                 | 98    | 233    | 244    | 243    | 200               | 200               | 210               | 220               |
| Uzbekistan              | 3     | 2      | 3      | 3      | 3                 | 3                 | 3                 | 3                 |
| Total                   | 3,060 | 3,750  | 4,310  | 4,660  | 4,100             | 4,400             | 4,600             | 4,900             |
| Regional total          | 8,540 | 11,200 | 12,200 | 12,900 | 12,000            | 12,000            | 13,000            | 13,000            |

<sup>e</sup>Estimated. NA Not available. -- Negligible or no production.

<sup>1</sup>Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Less than 1/2 unit.

### EUROPE AND CENTRAL EURASIA: HISTORIC AND PROJECTED COPPER MINE PRODUCTION, 1995-2015<sup>1</sup>

### (Cu content in thousand metric tons)

| Region and country  | 1995  | 2000  | 2005  | 2007  | 2009 <sup>e</sup> | 2011 <sup>e</sup> | 2013 <sup>e</sup> | 2015 <sup>e</sup> |
|---------------------|-------|-------|-------|-------|-------------------|-------------------|-------------------|-------------------|
| Europe:             |       |       |       |       |                   |                   |                   |                   |
| Western Europe:     |       |       |       |       |                   |                   |                   |                   |
| Finland             | 10    | 14    | 16    | 14    | 12                | 12                | 11                | 11                |
| France              | (2)   | (2)   |       |       |                   |                   |                   |                   |
| Norway              | 7     |       |       |       |                   |                   |                   |                   |
| Portugal            | 134   | 76    | 90    | 90    | 85                | 85                | 85                | 85                |
| Spain               | 25    | 23    | 8     | 7     | 9                 | 9                 | 9                 | 9                 |
| Sweden              | 84    | 78    | 98    | 63    | 50                | 45                | 40                | 40                |
| Total               | 259   | 192   | 211   | 174   | 160               | 150               | 150               | 150               |
| Central Europe:     |       |       |       |       |                   |                   |                   |                   |
| Albania             | 4     |       | 2     | (2)   | (2)               | (2)               | 1                 | 2                 |
| Bulgaria            | 76    | 92    | 112   | 116   | 110               | 110               | 110               | 110               |
| Macedonia           | 6     | 6     | 22    | 7     | 6                 | 6                 | 6                 | 6                 |
| Poland              | 384   | 509   | 575   | 506   | 500               | 500               | 500               | 520               |
| Romania             | 25    | 16    | 15    | 2     | 2                 | 4                 | 4                 | 5                 |
| Serbia <sup>3</sup> | 75    | 56    | 27    | 32    | 30                | 30                | 30                | 30                |
| Slovakia            |       | (2)   | (2)   |       |                   |                   |                   |                   |
| Total               | 569   | 679   | 752   | 663   | 650               | 650               | 650               | 670               |
| Central Eurasia:    |       |       |       |       |                   |                   |                   |                   |
| Armenia             | 8     | 12    | 16    | 18    | 16                | 20                | 25                | 30                |
| Georgia             | 5     | 8     | 10    | 11    | 10                | 12                | 14                | 40                |
| Kazakhstan          | 200   | 430   | 402   | 405   | 380               | 410               | 420               | 430               |
| Russia              | 525   | 570   | 640   | 740   | 700               | 750               | 750               | 900               |
| Uzbekistan          | 40    | 70    | 104   | 95    | 90                | 95                | 105               | 105               |
| Total               | 778   | 1,090 | 1,170 | 1,270 | 1,200             | 1,300             | 1,300             | 1,500             |
| Regional total      | 1,610 | 1,960 | 2,140 | 2,110 | 2,000             | 2,100             | 2,100             | 2,300             |

<sup>e</sup>Estimated. -- Negligible or no production.

<sup>1</sup>Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Less than 1/2 unit.

### EUROPE AND CENTRAL EURASIA: HISTORIC AND PROJECTED PRIMARY AND SECONDARY REFINED COPPER PRODUCTION, 1995-2015<sup>1</sup>

### (Thousand metric tons)

| Region and country                    | 1995  | 2000  | 2005  | 2007  | 2009 <sup>e</sup> | 2011 <sup>e</sup> | 2013 <sup>e</sup> | 2015 <sup>e</sup> |
|---------------------------------------|-------|-------|-------|-------|-------------------|-------------------|-------------------|-------------------|
| Europe:                               |       |       |       |       |                   |                   |                   |                   |
| Western Europe:                       |       |       |       |       |                   |                   |                   |                   |
| Austria                               | 54    | 79    | 72    | 81    | 100               | 110               | 110               | 110               |
| Belgium                               | 376   | 423   | 383   | 380   | 400               | 400               | 400               | 350               |
| Cyprus                                |       | 5     |       | 1     | 1                 | 1                 | 1                 | 1                 |
| Finland                               | 74    | 114   | 125   | 136   | 140               | 140               | 140               | 140               |
| France                                | 42    | 2     |       |       |                   |                   |                   |                   |
| Germany                               | 616   | 710   | 638   | 666   | 670               | 680               | 690               | 690               |
| Italy                                 | 98    | 73    | 32    | 29    | 35                | 35                | 35                | 35                |
| Norway                                | 34    | 27    | 39    | 34    | 35                | 35                | 35                | 35                |
| Spain                                 | 164   | 316   | 302   | 290   | 300               | 320               | 320               | 320               |
| Sweden                                | 105   | 130   | 222   | 239   | 240               | 240               | 240               | 240               |
| United Kingdom                        | 55    | 3     |       |       |                   |                   |                   |                   |
| Total                                 | 1,620 | 1,880 | 1,810 | 1,860 | 1,900             | 2,000             | 2,000             | 1,900             |
| Central Europe:                       |       |       |       |       |                   |                   |                   |                   |
| Albania                               | 3     |       |       |       |                   |                   |                   |                   |
| Bulgaria                              | 29    | 32    | 61    | 70    | 170               | 180               | 180               | 180               |
| Czech Republic                        | 20    | 20    | 14    | NA    | 10                | 10                | 10                | 10                |
| Hungary                               | 11    | 12    | 10    | NA    |                   |                   |                   |                   |
| Poland                                | 407   | 486   | 560   | 533   | 512               | 515               | 515               | 515               |
| Romania                               | 27    | 19    | 21    | 19    | 10                | 12                | 16                | 18                |
| Serbia <sup>2</sup>                   | 79    | 46    | 27    | 31    | 30                | 30                | 30                | 30                |
| Slovakia                              | 29    |       |       |       |                   |                   |                   |                   |
| Total                                 | 604   | 615   | 693   | 653   | 730               | 750               | 750               | 750               |
| Central Eurasia:                      |       |       |       |       |                   |                   |                   |                   |
| Kazakhstan                            | 256   | 395   | 388   | 406   | 300               | 350               | 375               | 400               |
| Russia                                | 560   | 840   | 933   | 939   | 850               | 900               | 950               | 1,100             |
| Uzbekistan                            | 95    | 85    | 104   | 92    | 85                | 85                | 90                | 95                |
| Total                                 | 911   | 1,320 | 1,430 | 1,440 | 1,200             | 1,300             | 1,400             | 1,600             |
| Regional total                        | 3,130 | 3,820 | 3,930 | 3,950 | 3,900             | 4,000             | 4,100             | 4,300             |
| · · · · · · · · · · · · · · · · · · · |       |       |       |       |                   |                   |                   |                   |

<sup>e</sup>Estimated. NA Not available. -- Negligible or no production.

<sup>1</sup>Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

### EUROPE AND CENTRAL EURASIA: HISTORIC AND PROJECTED GOLD MINE PRODUCTION, 1995-2015<sup>1</sup>

### (Kilograms)

| Region and country  | 1995    | 2000    | 2005    | 2007    | 2009 <sup>e</sup> | 2011 <sup>e</sup> | 2013 <sup>e</sup> | 2015 <sup>e</sup> |
|---------------------|---------|---------|---------|---------|-------------------|-------------------|-------------------|-------------------|
| Europe:             |         |         |         |         |                   |                   |                   |                   |
| Western Europe:     | _       |         |         |         |                   |                   |                   |                   |
| Finland             | 2,061   | 4,951   | 3,747   | 4,261   | 3,500             | 4,000             | 4,000             | 4,000             |
| France              | 4,615   | 2,632   | 1,500   | 1,500   | 1,500             | 1,500             | 1,500             | 1,500             |
| Italy               |         | 791     |         |         |                   |                   |                   |                   |
| Spain               | 4,131   | 4,310   | 5,300   | 3,100   | 3,500             | 5,500             | 5,500             | 5,500             |
| Sweden              | 6,528   | 3,570   | 6,600   | 5,159   | 5,200             | 5,200             | 5,200             | 5,000             |
| Total               | 17,300  | 16,300  | 17,100  | 14,000  | 14,000            | 16,000            | 16,000            | 16,000            |
| Central Europe:     |         |         |         |         |                   |                   |                   |                   |
| Bulgaria            | 3,100   | 2,347   | 3,868   | 3,964   | 4,000             | 4,000             | 4,000             | 4,000             |
| Macedonia           | 760     | 750     | 450     | 450     | 400               | 400               | 400               | 400               |
| Poland              | 510     | 367     | 713     | 883     | 850               | 850               | 850               | 850               |
| Romania             | 4,000   | 500     | 400     | 400     | 400               | 2,000             | 5,000             | 5,000             |
| Serbia <sup>2</sup> | 3,040   | 1,121   | 335     | 500     | 450               | 450               | 450               | 450               |
| Slovakia            | 518     | 306     | 109     | 100     | 100               | 100               | 100               | 100               |
| Total               | 11,900  | 5,390   | 5,880   | 6,300   | 6,200             | 7,800             | 11,000            | 11,000            |
| Central Eurasia:    |         |         |         |         |                   |                   |                   |                   |
| Armenia             | 514     | 600     | 1,400   | 1,400   | 2,000             | 2,500             | 3,000             | 3,500             |
| Georgia             | 500     | 2,924   | 2,000   | 2,000   | 2,500             | 3,000             | 3,500             | 4,000             |
| Kazakhstan          | 18,200  | 28,171  | 18,062  | 22,000  | 22,000            | 22,000            | 25,000            | 25,000            |
| Kyrgyzstan          | 1,500   | 22,000  | 16,700  | 10,636  | 15,000            | 18,000            | 20,000            | 20,000            |
| Russia              | 131,900 | 142,738 | 163,186 | 156,912 | 170,000           | 170,000           | 180,000           | 190,000           |
| Tajikistan          | 1,500   | 2,700   | 3,000   | 3,000   | 3,500             | 4,000             | 5,500             | 6,000             |
| Ukraine             |         |         |         | 500     | 500               | 500               | 500               | 500               |
| Uzbekistan          | 65,000  | 85,000  | 84,210  | 85,000  | 85,000            | 90,000            | 90,000            | 95,000            |
| Total               | 219,000 | 284,000 | 289,000 | 281,000 | 300,000           | 310,000           | 330,000           | 340,000           |
| Regional total      | 248.000 | 306.000 | 312.000 | 302.000 | 320.000           | 330.000           | 350.000           | 370,000           |

<sup>e</sup>Estimated. -- Negligible or no production.

<sup>1</sup>Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

### EUROPE AND CENTRAL EURASIA: HISTORIC AND PROJECTED IRON ORE MINE PRODUCTION, 1995-2015<sup>1</sup>

### (Fe content in thousand metric tons)

|                        | Average iron |         |         |         |         |                   |                   |                   |                   |
|------------------------|--------------|---------|---------|---------|---------|-------------------|-------------------|-------------------|-------------------|
| Region and country     | content      | 1995    | 2000    | 2005    | 2007    | 2009 <sup>e</sup> | 2011 <sup>e</sup> | 2013 <sup>e</sup> | 2015 <sup>e</sup> |
| Europe:                |              |         |         |         |         |                   |                   |                   |                   |
| Western Europe:        |              |         |         |         |         |                   |                   |                   |                   |
| Austria                | 33%          | 709     | 586     | 655     | 688     | 600               | 650               | 650               | 650               |
| France                 | 28%          | 432     |         |         |         |                   |                   |                   |                   |
| Germany <sup>2</sup>   | 14%          | 10      | 65      | 38      | 44      | 40                | 40                | 40                | 40                |
| Greece                 | 38%          | 800     | 575     | 575     | 575     | 575               | 500               | 500               | 500               |
| Norway                 | 62%          | 1,348   | 369     | 420     | 1,437   | 1,200             | 1,200             | 1,200             | 1,000             |
| Portugal               | 36%          | 5       | 12      | 10      | 10      | 10                | 10                | 10                | 10                |
| Spain                  | 38%          | 960     |         |         |         |                   |                   |                   |                   |
| Sweden                 | 65%          | 13,880  | 13,556  | 15,300  | 16,100  | 17,000            | 17,000            | 17,000            | 17,000            |
| United Kingdom         | 54%          | 1       | 1       | (3)     | (3)     | (3)               | (3)               | (3)               | (3)               |
| Total                  | XX           | 18,100  | 15,200  | 17,000  | 18,900  | 19,000            | 19,000            | 19,000            | 19,000            |
| Central Europe:        |              |         |         |         |         |                   |                   |                   |                   |
| Bosnia and Herzegovina | 53%          | 52      | 182     | 1,500   | 1,236   | 1,000             | 1,200             | 1,200             | 1,400             |
| Bulgaria               | 50%          | 265     | 178     |         |         |                   |                   |                   |                   |
| Czech Republic         | 29%          | 10      | 6       |         |         |                   |                   |                   |                   |
| Macedonia              | 40%          | 1       | 9       |         |         |                   |                   |                   |                   |
| Romania                | 52%          | 147     | 55      | 69      | 11      | 10                | 10                | 10                | 10                |
| Serbia and Montenegro  | 45%          | 61      | 1       |         |         |                   |                   |                   |                   |
| Slovakia               | 34%          | 225     | 255     | 259     | 200     | 200               | 200               | 200               | 200               |
| Total                  | XX           | 761     | 686     | 1,830   | 1,450   | 1,200             | 1,400             | 1,400             | 1,600             |
| Central Eurasia:       |              |         |         |         |         |                   |                   |                   |                   |
| Azerbaijan             | 57%          | 1       |         | 4       | 9       | 8                 | 10                | 13                | 15                |
| Kazakhstan             | 57%          | 8,500   | 9,200   | 9,300   | 13,600  | 12,000            | 13,000            | 14,000            | 14,000            |
| Russia                 | 58%          | 46,000  | 50,000  | 56,100  | 60,800  | 58,000            | 60,000            | 61,000            | 62,000            |
| Ukraine                | 55%          | 29,000  | 30,600  | 37,700  | 42,800  | 38,000            | 40,000            | 42,000            | 43,000            |
| Total                  | XX           | 83,500  | 89,800  | 103,000 | 117,000 | 110,000           | 110,000           | 120,000           | 120,000           |
| Regional total         | XX           | 102,000 | 106,000 | 122,000 | 138,000 | 130,000           | 130,000           | 140,000           | 140,000           |

<sup>e</sup>Estimated. XX Not Applicable. -- Negligible or no production.

<sup>1</sup>Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Iron ore is used domestically as an additive in cement and other construction materials but is of too low a grade to use in the steel industry.

<sup>3</sup>Less than 1/2 unit.

### EUROPE AND CENTRAL EURASIA: HISTORIC AND PROJECTED CRUDE STEEL PRODUCTION, 1995-2015<sup>1</sup>

### (Thousand metric tons)

| Region and country     | 1995     | 2000    | 2005    | 2007       | 2009 <sup>e</sup> | 2011 <sup>e</sup> | 2013 <sup>e</sup> | 2015 <sup>e</sup> |
|------------------------|----------|---------|---------|------------|-------------------|-------------------|-------------------|-------------------|
| Europe:                |          |         |         |            | ,                 |                   |                   |                   |
| Western Europe:        |          |         |         |            |                   |                   |                   |                   |
| Austria                | 4,537    | 5,725   | 7,031   | 6,871      | 5,000             | 6,500             | 7,000             | 7,000             |
| Belgium                | 11,606   | 11,635  | 10,420  | 10,692     | 5,000             | 7,000             | 9,000             | 10,000            |
| Denmark-Greenland      | 654      | 803     |         |            |                   |                   |                   |                   |
| Finland                | 3,176    | 4,096   | 4,738   | 4,431      | 3,000             | 4,000             | 5,000             | 5,000             |
| France                 | 18,096   | 21,002  | 19,481  | 19,252     | 11,500            | 15,000            | 19,000            | 19,000            |
| Germany                | 42,051   | 46,376  | 44,524  | 48,550     | 35,000            | 45,000            | 46,000            | 47,000            |
| Greece                 | 939      | 1,088   | 2,266   | 2,550      | 2,500             | 2,500             | 2,500             | 2,500             |
| Ireland                | 309      | 342     |         |            |                   |                   |                   |                   |
| Italy                  | 27,766   | 26,544  | 29,061  | 31,990     | 19,500            | 25,500            | 30,000            | 30,000            |
| Luxembourg             | 2,613    | 2,571   | 2,194   | 2,858      | 2,000             | 2,800             | 2,800             | 2,800             |
| Netherlands            | 6,409    | 5,667   | 6,919   | 7,368      | 4,000             | 5,000             | 7,000             | 7,000             |
| Norway                 | 503      | 620     | 701     | 740        | 700               | 700               | 700               | 700               |
| Portugal               | 829      | 1.097   | 725     | 1.400      | 1.400             | 1.400             | 1.400             | 1.400             |
| Spain                  | 13.975   | 15.844  | 17.800  | 19,000     | 15,000            | 17.000            | 19.000            | 19.000            |
| Sweden                 | 4.953    | 5.227   | 5.692   | 5.700      | 3.000             | 4.000             | 5.500             | 5.500             |
| Switzerland            | 1.000    | 1.020   | 1.158   | 1.264      | 1,000             | 1.200             | 1.200             | 1.200             |
| United Kingdom         | 17.604   | 15.306  | 13.210  | 14.300     | 10.000            | 13.000            | 14.000            | 14.000            |
| Total                  | 157.000  | 165.000 | 166.000 | 177.000    | 120.000           | 150.000           | 170.000           | 170.000           |
| Central Europe:        |          |         |         |            |                   |                   |                   |                   |
| Albania                | 22       | 65      | 87      | 100        | 300               | 300               | 300               | 300               |
| Bosnia and Herzegovina |          | 134     | 283     | 514        | 350               | 400               | 450               | 500               |
| Bulgaria               | 2,724    | 2.023   | 1.969   | 2.050      | 1.200             | 1.600             | 2.000             | 2.000             |
| Croatia                | 45       | 2,020   | 74      | 2,000      | 70                | 75                | 2,000             | 2,000             |
| Czech Republic         | 7.189    | 6.216   | 6 189   | 7.059      | 5,000             | 6.000             | 6.000             | 7.000             |
| Hungary                | 1.865    | 1,969   | 2,005   | 2.317      | 1,800             | 1,800             | 2,000             | 2,000             |
| Macedonia              | 33       | 161     | 326     | 372        | 360               | 360               | 360               | 360               |
| Montenegro             | NA       | NA      | 104     | 174        | 150               | 170               | 170               | 170               |
| Poland                 | 11 890   | 10 508  | 8 3 3 6 | 10.621     | 9 500             | 10,000            | 10,000            | 10 500            |
| Bomania                | 6 557    | 4 672   | 6,280   | 6 261      | 6,000             | 6 200             | 6 200             | 6 200             |
| Serbia <sup>2</sup>    | 180      | 682     | 1 286   | 1 478      | 1 100             | 1 200             | 1 300             | 1 400             |
| Slovakia               | 3 958    | 3 733   | 4 242   | 4 800      | 4 000             | 4 500             | 4 500             | 4 500             |
| Slovenia               | 407      | 519     | 583     | 638        | 630               | 630               | 630               | 630               |
| Total                  | 34 900   | 30,800  | 31 800  | 36 500     | 30,000            | 33,000            | 34 000            | 36,000            |
| Central Eurasia:       | 5 1,9 00 | 20,000  | 51,000  | 20,200     | 20,000            | 22,000            | 51,000            | 20,000            |
| Azerbaijan             | 12       |         | 286     | 274        | 250               | 275               | 300               | 300               |
| Belarus                | 744      | 1 623   | 2 076   | 2 387      | 1 800             | 1 900             | 2 100             | 2 300             |
| Georgia                | 84       | (3)     | 2,070   | 2,307      |                   | 100               | 2,100             | 2,500             |
| Kazakhstan             | 3 030    | 4 770   | 4 452   | 4 784      | 4 200             | 4 300             | 4 500             | 4 700             |
| L atvia                | 279      | 500     | 550     | 4,704<br>W | 500               | 550               | 550               | 550               |
| Moldova                | 663      | 909     | 1 000   | 995        | 800               | 850               | 900               | 1 000             |
| Bussia                 | 51 600   | 59 097  | 66 186  | 72 389     | 68 000            | 70.000            | 72 000            | 75,000            |
| Ilkraine               | 23 300   | 31 780  | 38 636  | 42,305     | 38,000            | 40,000            | 42,000            | 45 000            |
| Uzbekistan             | 25,509   | 420     | 607     | 740        | 750               | +0,000<br>800     | +2,000<br>800     | +5,000<br>800     |
| Total                  | 80 100   | 99 100  | 114 000 | 124 000    | 110,000           | 120,000           | 120.000           | 130.000           |
| Regional total         | 272.000  | 295.000 | 311,000 | 338.000    | 260.000           | 300,000           | 330,000           | 3/0.000           |
| Regional total         | 212,000  | 275,000 | 511,000 | 550,000    | 200,000           | 500,000           | 550,000           | 540,000           |

<sup>e</sup>Estimated. NA Not available. W Withheld to avoid disclosing proprietary data. -- Negligible or no production.

<sup>1</sup>Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Prior to 2005, figures are for a combined Serbia and Montenegro.

<sup>3</sup>Less than 1/2 unit.

### EUROPE AND CENTRAL EURASIA: HISTORIC AND PROJECTED LEAD MINE PRODUCTION, 1995-2015<sup>1</sup>

### (Pb content in thousand metric tons)

| Region and country     | 1995 | 2000 | 2005 | 2007 | 2009 <sup>e</sup> | 2011 <sup>e</sup> | 2013 <sup>e</sup> | 2015 <sup>e</sup> |
|------------------------|------|------|------|------|-------------------|-------------------|-------------------|-------------------|
| Europe:                |      |      |      |      |                   |                   |                   |                   |
| Western Europe:        |      |      |      |      |                   |                   |                   |                   |
| Greece                 | 14   | 18   | 3    | 15   | 16                | 18                | 18                | 18                |
| Ireland                | 46   | 58   | 64   | 54   | 60                | 60                | 60                | 60                |
| Italy                  | 15   | 2    | 1    | 1    | 1                 | 1                 | 1                 | 1                 |
| Spain                  | 30   | 40   |      |      |                   |                   |                   |                   |
| Sweden                 | 137  | 106  | 60   | 63   | 60                | 60                | 50                | 40                |
| United Kingdom         | 2    | 1    | 1    | (2)  | (2)               | (2)               | (2)               | (2)               |
| Total                  | 244  | 225  | 129  | 133  | 140               | 140               | 130               | 120               |
| Central Europe:        |      |      |      |      |                   |                   |                   |                   |
| Bosnia and Herzegovina | (2)  | (2)  | 1    | (2)  | (2)               | (2)               | (2)               | (2)               |
| Bulgaria               | 33   | 11   | 32   | 24   | 20                | 20                | 20                | 20                |
| Macedonia              | 17   | 24   |      | 32   | 15                | 15                | 15                | 15                |
| Poland                 | 99   | 114  | 100  | 96   | 85                | 85                | 80                | 70                |
| Romania                | 23   | 19   | 12   | 1    | 1                 | 1                 | 1                 | 1                 |
| Serbia <sup>3</sup>    | 3    | 11   | 1    | 1    | 1                 | 1                 | 1                 | 1                 |
| Total                  | 175  | 179  | 146  | 154  | 120               | 120               | 120               | 110               |
| Central Eurasia:       |      |      |      |      |                   |                   |                   |                   |
| Georgia                | NA   | (2)  | (2)  | (2)  | (2)               | (2)               | (2)               | (2)               |
| Kazakhstan             | 40   | 40   | 31   | 40   | 41                | 45                | 50                | 55                |
| Russia                 | 23   | 13   | 36   | 50   | 40                | 41                | 42                | 45                |
| Tajikistan             | 1    | 1    |      | (4)  |                   |                   |                   |                   |
| Total                  | 64   | 54   | 67   | 90   | 81                | 86                | 92                | 100               |
| Regional total         | 483  | 458  | 342  | 377  | 340               | 350               | 340               | 330               |

<sup>e</sup>Estimated. NA Not available. -- Negligible or no production.

<sup>1</sup>Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Less than 1/2 unit.

### EUROPE AND CENTRAL EURASIA: HISTORIC AND PROJECTED PRIMARY AND SECONDARY REFINED LEAD PRODUCTION, 1995-2015<sup>1</sup>

### (Thousand metric tons)

| Region and country     | 1995  | 2000  | 2005  | 2007  | 2009 <sup>e</sup> | 2011 <sup>e</sup> | 2013 <sup>e</sup> | 2015 <sup>e</sup> |
|------------------------|-------|-------|-------|-------|-------------------|-------------------|-------------------|-------------------|
| Europe:                |       |       |       |       |                   |                   |                   |                   |
| Western Europe:        |       |       |       |       |                   |                   |                   |                   |
| Austria                | 22    | 24    | 22    | 22    | 20                | 22                | 22                | 22                |
| Belgium                | 122   | 119   | 103   | 97    | 100               | 100               | 100               | 100               |
| France                 | 297   | 268   | 105   | 92    | 90                | 90                | 90                | 90                |
| Germany                | 314   | 374   | 342   | 355   | 340               | 350               | 350               | 350               |
| Greece                 | 5     | 5     | 4     | 4     | 5                 | 5                 | 5                 | 5                 |
| Ireland                | 11    | 9     | 20    | 23    | 22                | 22                | 22                | 22                |
| Italy                  | 180   | 235   | 211   | 212   | 200               | 200               | 200               | 200               |
| Netherlands            | 20    | 22    | 17    | 16    | 16                | 16                | 16                | 16                |
| Portugal               | 8     | 5     | 3     | 3     | 3                 | 3                 | 3                 | 3                 |
| Spain                  | 80    | 120   | 110   | 110   | 110               | 110               | 110               | 110               |
| Sweden                 | 91    | 78    | 79    | 78    | 75                | 70                | 70                | 70                |
| Switzerland            | 6     | 10    | 8     | 9     | 9                 | 9                 | 9                 | 9                 |
| United Kingdom         | 321   | 337   | 304   | 308   | 300               | 300               | 300               | 300               |
| Total                  | 1,480 | 1,610 | 1,330 | 1,330 | 1,300             | 1,300             | 1,300             | 1,300             |
| Central Europe:        |       |       |       |       |                   |                   |                   |                   |
| Bosnia and Herzegovina | (2)   | (2)   | (2)   | (2)   |                   |                   |                   |                   |
| Bulgaria               | 72    | 84    | 94    | 87    | 84                | 84                | 84                | 84                |
| Czech Republic         | 20    | 25    | 26    | 26    | 26                | 26                | 26                | 26                |
| Estonia                |       | 1     | 7     | 10    | 10                | 11                | 12                | 13                |
| Macedonia              | 23    | 23    |       |       |                   | 5                 | 5                 | 5                 |
| Poland                 | 66    | 56    | 81    | 104   | 100               | 100               | 100               | 100               |
| Romania                | 26    | 28    | 38    | 39    | 10                | 15                | 20                | 25                |
| Serbia <sup>3</sup>    | 24    | 1     | 1     | 1     | 1                 | 1                 | 1                 | 1                 |
| Slovenia               | 7     | 15    | 15    | 15    | 15                | 15                | 15                | 15                |
| Total                  | 238   | 233   | 262   | 282   | 250               | 260               | 260               | 270               |
| Central Eurasia:       |       |       |       |       |                   |                   |                   |                   |
| Kazakhstan             | 89    | 186   | 135   | 118   | 110               | 120               | 130               | 140               |
| Russia                 | 23    | 59    | 66    | 94    | 75                | 80                | 90                | 95                |
| Ukraine                | 10    | 15    | 61    | 62    | 55                | 60                | 60                | 65                |
| Total                  | 122   | 260   | 262   | 274   | 240               | 260               | 280               | 300               |
| Regional total         | 1,840 | 2,100 | 1,850 | 1,890 | 1,800             | 1,800             | 1,800             | 1,900             |

<sup>e</sup>Estimated. -- Negligible or no production.

<sup>1</sup>Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Less than 1/2 unit.

### EUROPE AND CENTRAL EURASIA: HISTORIC AND PROJECTED NICKEL MINE PRODUCTION, 1995-2015<sup>1</sup>

### (Ni content in metric tons)

| Region and country        | 1995    | 2000    | 2005    | 2007    | 2009 <sup>e</sup> | 2011 <sup>e</sup> | 2013 <sup>e</sup> | 2015 <sup>e</sup> |
|---------------------------|---------|---------|---------|---------|-------------------|-------------------|-------------------|-------------------|
| Europe:                   |         |         |         |         |                   |                   |                   |                   |
| Western Europe:           |         |         |         |         |                   |                   |                   |                   |
| Finland                   | 3,439   | 3,347   | 3,386   | 3,465   | 3,500             | 4,000             | 4,000             | 4,000             |
| Greece                    | 19,900  | 19,535  | 23,210  | 21,200  | 22,000            | 22,000            | 22,000            | 22,000            |
| Norway                    | 3,386   | 2,538   | 130     | 300     | 200               | 200               | 100               | 100               |
| Spain                     |         |         | 5,380   | 6,400   | 8,000             | 10,000            | 10,000            | 10,000            |
| Total                     | 26,700  | 25,400  | 32,100  | 31,400  | 34,000            | 36,000            | 36,000            | 36,000            |
| Central Europe, Macedonia | 3,500   |         | 5,000   | 8,000   | 8,000             | 8,000             | 8,000             | 8,000             |
| Central Eurasia:          |         |         |         |         |                   |                   |                   |                   |
| Russia                    | 251,000 | 315,000 | 315,000 | 331,000 | 320,000           | 320,000           | 330,000           | 340,000           |
| Ukraine                   | 1,400   |         | 2,000   | 12,000  | 12,000            | 12,000            | 12,000            | 12,000            |
| Total                     | 252,000 | 315,000 | 317,000 | 343,000 | 330,000           | 330,000           | 340,000           | 350,000           |
| Regional total            | 283,000 | 340,000 | 354,000 | 382,000 | 370,000           | 380,000           | 390,000           | 400,000           |

<sup>e</sup>Estimated. -- Negligible or no production.

<sup>1</sup>Estimated data, and totals are rounded to no more than three significant digits; may not add to totals shown.

### TABLE 15

### EUROPE AND CENTRAL EURASIA: HISTORIC AND PROJECTED PLATINUM MINE PRODUCTION, 1995-2015<sup>1</sup>

### (Kilograms)

| Region and country      | 1995   | 2000   | 2005   | 2007   | 2009 <sup>e</sup> | 2011 <sup>e</sup> | 2013 <sup>e</sup> | 2015 <sup>e</sup> |
|-------------------------|--------|--------|--------|--------|-------------------|-------------------|-------------------|-------------------|
| Europe:                 |        |        |        |        |                   |                   |                   |                   |
| Western Europe:         |        |        |        |        |                   |                   |                   |                   |
| Finland                 | 37     | 441    | 678    | 461    | 500               | 500               | 500               | 500               |
| Norway <sup>2</sup>     | 1,500  | 1,000  |        |        |                   |                   |                   |                   |
| Total                   | 1,540  | 1,440  | 678    | 461    | 500               | 500               | 500               | 500               |
| Central Europe:         |        |        |        |        |                   |                   |                   |                   |
| Poland                  | 21     | 21     | 20     | 20     | 18                | 20                | 20                | 20                |
| Serbia <sup>3</sup>     | 6      | 3      | 3      | 2      | 1                 | 1                 | 1                 | 1                 |
| Total                   | 27     | 24     | 23     | 22     | 19                | 21                | 21                | 21                |
| Central Eurasia, Russia | 31,000 | 27,000 | 29,000 | 27,000 | 25,000            | 26,000            | 27,000            | 28,000            |
| Regional total          | 32,600 | 28,500 | 29,700 | 27,500 | 26,000            | 27,000            | 28,000            | 29,000            |

<sup>e</sup>Estimated. -- Negligible or no production.

<sup>1</sup>Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Data prior to 2005 represent exports.

### EUROPE AND CENTRAL EURASIA: HISTORIC AND PROJECTED PALLADIUM MINE PRODUCTION, 1995-2015<sup>1</sup>

### (Kilograms)

| Region and country <sup>2</sup> | 1995   | 2000   | 2005   | 2007   | 2009 <sup>e</sup> | 2011 <sup>e</sup> | 2013 <sup>e</sup> | 2015 <sup>e</sup> |
|---------------------------------|--------|--------|--------|--------|-------------------|-------------------|-------------------|-------------------|
| Central Europe:                 |        |        |        |        |                   |                   |                   |                   |
| Poland                          | 12     | 12     | 10     | 10     | 9                 | 10                | 10                | 10                |
| Serbia <sup>3</sup>             | 46     | 21     | 19     | 15     | 10                | 10                | 10                | 10                |
| Total                           | 58     | 33     | 29     | 25     | 19                | 20                | 20                | 20                |
| Central Eurasia, Russia         | 65,000 | 95,000 | 97,400 | 96,800 | 95,000            | 96,000            | 98,000            | 100,000           |
| Regional total                  | 65,100 | 95,000 | 97,400 | 96,800 | 95,000            | 96,000            | 98,000            | 100,000           |

<sup>&</sup>lt;sup>e</sup>Estimated.

<sup>1</sup>Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Palladium production for Finland and Norway has not been estimated.

<sup>3</sup>Prior to 2005, figures are for a combined Serbia and Montenegro.

### TABLE 17

### EUROPE AND CENTRAL EURASIA: HISTORIC AND PROJECTED TIN MINE PRODUCTION, 1995-2015<sup>1</sup>

### (Sn content in metric tons)

| Region and country | 1995  | 2000  | 2005  | 2007  | 2009 <sup>e</sup> | 2011 <sup>e</sup> | 2013 <sup>e</sup> | 2015 <sup>e</sup> |
|--------------------|-------|-------|-------|-------|-------------------|-------------------|-------------------|-------------------|
| Europe:            |       |       |       |       |                   |                   |                   |                   |
| Western Europe:    |       |       |       |       |                   |                   |                   |                   |
| Portugal           | 200   | 218   | 243   | 41    | 50                | 50                | 50                | 50                |
| Spain              | 250   | 233   |       |       |                   |                   |                   |                   |
| Total              | 450   | 451   | 243   | 41    | 50                | 50                | 50                | 50                |
| Central Eurasia:   |       |       |       |       |                   |                   |                   |                   |
| Kazakhstan         | 15    |       |       |       |                   |                   |                   |                   |
| Kyrgyzstan         |       | 300   |       |       |                   |                   |                   |                   |
| Russia             | 2,000 | 2,500 | 3,000 | 2,500 | 1,500             | 1,800             | 2,000             | 2,400             |
| Total              | 2,020 | 2,800 | 3,000 | 2,500 | 1,500             | 1,800             | 2,000             | 2,400             |
| Regional total     | 2,500 | 3,300 | 3,200 | 2,500 | 1,600             | 1,800             | 2,000             | 2,400             |

<sup>e</sup>Estimated. -- Negligible or no production.

<sup>1</sup>Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

### TABLE 18

### EUROPE AND CENTRAL EURASIA: HISTORIC AND PROJECTED PRIMARY AND SECONDARY REFINED TIN PRODUCTION, 1995-2015<sup>1</sup>

### (Metric tons)

| Region and country      | 1995  | 2000  | 2005  | 2007  | 2009 <sup>e</sup> | 2011 <sup>e</sup> | 2013 <sup>e</sup> | 2015 <sup>e</sup> |
|-------------------------|-------|-------|-------|-------|-------------------|-------------------|-------------------|-------------------|
| Europe:                 |       |       |       |       |                   |                   |                   |                   |
| Western Europe, France  | 1,500 | 1,500 | 1,500 | 1,500 | 1,500             | 1,500             | 1,500             | 1,500             |
| Central Eurasia, Russia | 4,500 | 5,300 | 5,500 | 4,200 | 2,200             | 2,600             | 3,000             | 3,800             |
| Regional total          | 6,000 | 6,800 | 7,000 | 5,700 | 3,700             | 4,100             | 4,500             | 5,300             |

<sup>e</sup>Estimated.

<sup>1</sup>Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

### EUROPE AND CENTRAL EURASIA: HISTORIC AND PROJECTED ZINC MINE PRODUCTION, 1995-2015 $^{\rm l}$

### (Zn content in thousand metric tons)

| Region and country     | 1995  | 2000  | 2005  | 2007  | 2009 <sup>e</sup> | 2011 <sup>e</sup> | 2013 <sup>e</sup> | 2015 <sup>e</sup> |
|------------------------|-------|-------|-------|-------|-------------------|-------------------|-------------------|-------------------|
| Europe:                |       |       |       |       |                   |                   |                   |                   |
| Western Europe:        |       |       |       |       |                   |                   |                   |                   |
| Finland                | 16    | 30    | 72    | 72    | 70                | 70                | 65                | 65                |
| Greece                 | 15    | 20    | 1     | 18    | 22                | 22                | 20                | 20                |
| Ireland                | 184   | 263   | 429   | 401   | 425               | 425               | 400               | 400               |
| Italy                  | 23    |       |       |       |                   |                   |                   |                   |
| Norway                 | 10    |       |       |       |                   |                   |                   |                   |
| Portugal               |       |       |       | 24    | 100               | 120               | 135               | 135               |
| Spain                  | 172   | 200   |       |       |                   |                   |                   |                   |
| Sweden                 | 167   | 177   | 216   | 215   | 215               | 200               | 200               | 200               |
| Total                  | 587   | 690   | 718   | 730   | 830               | 840               | 820               | 820               |
| Central Europe:        |       |       |       |       |                   |                   |                   |                   |
| Bosnia and Herzegovina | (2)   | (2)   | 3     | 2     | 2                 | 2                 | 2                 | 2                 |
| Bulgaria               | 26    | 9     | 22    | 16    | 15                | 15                | 15                | 15                |
| Macedonia              | 8     | 25    |       | 20    | 20                | 30                | 30                | 30                |
| Poland                 | 155   | 157   | 156   | 142   | 140               | 140               | 140               | 140               |
| Romania                | 35    | 27    | 14    | (2)   | (2)               | (2)               | (2)               | (2)               |
| Serbia <sup>3</sup>    | 3     | 3     | (2)   | 1     | 1                 | 1                 | 1                 | 1                 |
| Total                  | 227   | 221   | 195   | 181   | 180               | 190               | 190               | 190               |
| Central Eurasia:       |       |       |       |       |                   |                   |                   |                   |
| Armenia                | (2)   | (2)   | 3     | 5     | 4                 | 5                 | 5                 | 5                 |
| Georgia                |       | (2)   | (2)   | (2)   | (2)               | (2)               | (2)               | (2)               |
| Kazakhstan             | 225   | 325   | 400   | 386   | 400               | 400               | 425               | 450               |
| Russia                 | 131   | 136   | 180   | 185   | 150               | 175               | 200               | 250               |
| Total                  | 356   | 461   | 583   | 576   | 550               | 580               | 630               | 710               |
| Regional total         | 1,170 | 1,370 | 1,500 | 1,490 | 1,600             | 1,600             | 1,600             | 1,700             |

<sup>e</sup>Estimated. -- Negligible or no production.

<sup>1</sup>Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Less than 1/2 unit.

### EUROPE AND CENTRAL EURASIA: HISTORIC AND PROJECTED PRIMARY AND SECONDARY REFINED ZINC PRODUCTION, 1995-2015<sup>1</sup>

### (Thousand metric tons)

| Region and country  | 1995  | 2000  | 2005  | 2007  | 2009 <sup>e</sup> | 2011 <sup>e</sup> | 2013 <sup>e</sup> | 2015 <sup>e</sup> |
|---------------------|-------|-------|-------|-------|-------------------|-------------------|-------------------|-------------------|
| Europe:             |       |       |       |       |                   |                   |                   |                   |
| Western Europe:     |       |       |       |       |                   |                   |                   |                   |
| Belgium             | 240   | 252   | 262   | 281   | 275               | 275               | 250               | 250               |
| Finland             | 177   | 223   | 282   | 306   | 300               | 290               | 280               | 280               |
| France              | 314   | 348   | 210   | 115   | 115               | 120               | 120               | 120               |
| Germany             | 322   | 357   | 335   | 335   | 180               | 200               | 200               | 200               |
| Italy               | 260   | 170   | 121   | 100   | 110               | 110               | 110               | 110               |
| Netherlands         | 208   | 217   | 214   | 232   | 230               | 230               | 230               | 230               |
| Norway              | 123   | 126   | 151   | 157   | 160               | 160               | 160               | 150               |
| Spain               | 364   | 387   | 501   | 503   | 500               | 500               | 500               | 500               |
| United Kingdom      | 106   | 100   |       |       |                   |                   |                   |                   |
| Total               | 2,110 | 2,180 | 2,080 | 2,030 | 1,900             | 1,900             | 1,900             | 1,800             |
| Central Europe:     |       |       |       |       |                   |                   |                   |                   |
| Bulgaria            | 80    | 84    | 95    | 100   | 100               | 100               | 100               | 100               |
| Czech Republic      | 1     | (2)   | (2)   | (2)   | (2)               | (2)               | (2)               | (2)               |
| Macedonia           | 21    | 63    |       |       |                   | 5                 | 10                | 10                |
| Poland              | 166   | 173   | 137   | 142   | 140               | 140               | 140               | 140               |
| Romania             | 28    | 52    | 57    | 58    | 30                | 40                | 40                | 40                |
| Serbia <sup>3</sup> | 6     | 8     | 18    |       |                   |                   |                   |                   |
| Total               | 302   | 380   | 307   | 300   | 270               | 290               | 290               | 290               |
| Central Eurasia:    |       |       |       |       |                   |                   |                   |                   |
| Kazakhstan          | 239   | 262   | 357   | 358   | 320               | 330               | 340               | 360               |
| Russia              | 166   | 230   | 220   | 260   | 230               | 280               | 300               | 310               |
| Uzbekistan          | 70    | 18    | 35    | 72    | 40                | 50                | 60                | 70                |
| Total               | 475   | 510   | 612   | 690   | 590               | 660               | 700               | 740               |
| Regional total      | 2,890 | 3,070 | 3,000 | 3,020 | 2,700             | 2,800             | 2,800             | 2,900             |

<sup>e</sup>Estimated. -- Negligible or no production.

<sup>1</sup>Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Less than 1/2 unit.

### EUROPE AND CENTRAL EURASIA: HISTORIC AND PROJECTED NATURAL DIAMOND PRODUCTION, 1995-2015<sup>1, 2</sup>

### (Thousand carats)

| Region and country       | 1995   | 2000   | 2005   | 2007   | 2009 <sup>e</sup> | 2011 <sup>e</sup> | 2013 <sup>e</sup> | 2015 <sup>e</sup> |
|--------------------------|--------|--------|--------|--------|-------------------|-------------------|-------------------|-------------------|
| Central Eurasia, Russia: |        |        |        |        |                   |                   |                   |                   |
| Gem grade                | 17,000 | 17,500 | 23,000 | 23,300 | 22,000            | 22,000            | 22,500            | 23,000            |
| Industrial grade         | 11,000 | 11,700 | 15,000 | 15,000 | 15,000            | 15,000            | 15,000            | 15,000            |
| Regional total           | 28,000 | 29,200 | 38,000 | 38,300 | 37,000            | 37,000            | 38,000            | 38,000            |

<sup>e</sup>Estimated.

<sup>1</sup>Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>The large increase in Russian diamond production reported in 2005 reflects mainly newly released Russian diamond production data.

### TABLE 22

### EUROPE AND CENTRAL EURASIA: HISTORIC AND PROJECTED PHOSPHATE ROCK PRODUCTION, 1995-2015<sup>1</sup>

### $(P_2O_5 \text{ content in thousand metric tons})$

| Region and country      | 1995  | 2000  | 2005  | 2007  | 2009 <sup>e</sup> | 2011 <sup>e</sup> | 2013 <sup>e</sup> | 2015 <sup>e</sup> |
|-------------------------|-------|-------|-------|-------|-------------------|-------------------|-------------------|-------------------|
| Europe:                 |       |       |       |       |                   |                   |                   |                   |
| Western Europe, Finland | 244   | 277   | 301   | 325   | 300               | 300               | 300               | 300               |
| Central Eurasia:        |       |       |       |       |                   |                   |                   |                   |
| Kazakhstan              | 2     | 10    | 55    | 60    | 120               | 150               | 150               | 200               |
| Russia                  | 3,400 | 4,450 | 4,220 | 4,240 | 4,400             | 4,400             | 4,500             | 4,600             |
| Uzbekistan              |       | 36    | 102   | 140   | 150               | 170               | 180               | 200               |
| Total                   | 3,400 | 4,500 | 4,380 | 4,440 | 4,700             | 4,700             | 4,800             | 5,000             |
| Regional total          | 3,650 | 4,770 | 4,680 | 4,770 | 5,000             | 5,000             | 5,100             | 5,300             |

<sup>e</sup>Estimated. -- Negligible or no production.

<sup>1</sup>Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

### TABLE 23

### EUROPE AND CENTRAL EURASIA: HISTORIC AND PROJECTED POTASH PRODUCTION, 1995-2015<sup>1</sup>

### (K<sub>2</sub>O equivalent in thousand metric tons)

| Region and country | 1995   | 2000   | 2005   | 2007   | 2009 <sup>e</sup> | 2011 <sup>e</sup> | 2013 <sup>e</sup> | 2015 <sup>e</sup> |
|--------------------|--------|--------|--------|--------|-------------------|-------------------|-------------------|-------------------|
| Europe:            | 1775   | 2000   | 2005   | 2007   | 2009              | 2011              | 2013              | 2013              |
| Western Europe:    |        |        |        |        |                   |                   |                   |                   |
| Germany            | 3,278  | 3,407  | 3,664  | 3,637  | 2,300             | 3,500             | 3,500             | 3,500             |
| Spain              | 700    | 712    | 575    | 435    | 450               | 450               | 450               | 450               |
| United Kingdom     | 560    | 500    | 732    | 716    | 710               | 710               | 710               | 710               |
| Total              | 4,540  | 4,620  | 4,970  | 4,790  | 3,500             | 4,700             | 4,700             | 4,700             |
| Central Eurasia:   |        |        |        |        |                   |                   |                   |                   |
| Belarus            | 2,795  | 3,372  | 4,605  | 4,972  | 5,000             | 5,000             | 5,100             | 5,200             |
| Russia             | 2,800  | 4,450  | 7,131  | 6,600  | 7,500             | 8,000             | 9,000             | 10,000            |
| Ukraine            | 56     | 20     | 13     | 12     | 12                | 12                | 12                | 12                |
| Total              | 5,650  | 7,840  | 11,700 | 11,600 | 13,000            | 13,000            | 14,000            | 15,000            |
| Regional total     | 10,200 | 12,500 | 16,700 | 16,400 | 16,000            | 18,000            | 19,000            | 20,000            |

<sup>e</sup>Estimated.

<sup>1</sup>Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

### EUROPE AND CENTRAL EURASIA: HISTORIC AND PROJECTED SALABLE COAL PRODUCTION, 1995-2015<sup>1, 2</sup>

### (Thousand metric tons)

| Region and country     | 1995      | 2000      | 2005      | 2007      | 2009 <sup>e</sup> | 2011 <sup>e</sup> | 2013 <sup>e</sup> | 2015 <sup>e</sup> |
|------------------------|-----------|-----------|-----------|-----------|-------------------|-------------------|-------------------|-------------------|
| Europe:                | _         |           |           |           |                   |                   |                   |                   |
| Western Europe:        | _         |           |           |           |                   |                   |                   |                   |
| Austria                | 1,282     | 1,255     | 6         | 5         |                   |                   |                   |                   |
| France                 | 8,416     | 4,102     |           |           |                   |                   |                   |                   |
| Germany                | 246,322   | 201,975   | 202,815   | 201,716   | 200,000           | 190,000           | 190,000           | 180,000           |
| Greece                 | 56,533    | 64,026    | 73,585    | 74,000    | 75,000            | 75,000            | 75,000            | 75,000            |
| Italy                  | 352       | 19        |           |           |                   |                   |                   |                   |
| Norway                 | 343       | 330       | 300       | 322       | 320               | 300               | 300               | 200               |
| Spain                  | 28,476    | 23,470    | 19,354    | 17,180    | 20,000            | 20,000            | 20,000            | 20,000            |
| United Kingdom         | 53,600    | 31,972    | 20,498    | 17,030    | 20,000            | 20,000            | 20,000            | 20,000            |
| Total                  | 395,000   | 327,000   | 317,000   | 310,000   | 320,000           | 310,000           | 310,000           | 300,000           |
| Central Europe:        |           |           |           |           |                   |                   |                   |                   |
| Albania                | 81        | 21        | 13        | 13        | 13                | 13                | 13                | 13                |
| Bosnia and Herzegovina | 1,808     | 7,441     | 9,144     | 9,765     | 9,700             | 9,700             | 9,700             | 9,700             |
| Bulgaria               | 30,830    | 27,094    | 24,909    | 28,177    | 22,000            | 22,000            | 22,000            | 22,000            |
| Croatia                | 75        |           |           |           |                   |                   |                   |                   |
| Czech Republic         | 80,082    | 68,091    | 61,903    | 61,033    | 60,000            | 60,000            | 60,000            | 60,000            |
| Hungary                | 14,453    | 14,276    | 9,580     | 9,682     | 9,600             | 9,600             | 9,600             | 9,600             |
| Macedonia              | 7,991     | 7,516     | 6,880     | 6,569     | 8,000             | 8,000             | 8,000             | 8,000             |
| Montenegro             | NA        | NA        | 1,297     | 1,202     | 1,000             | 1,000             | 1,000             | 1,000             |
| Poland                 | 200,713   | 162,815   | 159,039   | 145,851   | 140,000           | 135,000           | 135,000           | 135,000           |
| Romania                | 41,128    | 29,294    | 31,122    | 35,418    | 35,000            | 25,000            | 25,000            | 25,000            |
| Serbia <sup>3</sup>    | 40,556    | 32,275    | 34,993    | 37,073    | 35,000            | 35,000            | 35,000            | 35,000            |
| Slovakia               | 4,140     | 3,589     | 2,511     | 2,111     | 2,000             | 2,000             | 2,000             | 2,000             |
| Slovenia               | 4,884     | 4,480     | 4,539     | 4,562     | 4,500             | 4,500             | 4,500             | 4,500             |
| Total                  | 427,000   | 357,000   | 346,000   | 341,000   | 330,000           | 310,000           | 310,000           | 310,000           |
| Central Eurasia:       |           |           |           |           |                   |                   |                   |                   |
| Georgia                | 40        | 7         | 5         | 8         | 10                | 10                | 10                | 11                |
| Kazakhstan             | 113,000   | 74,872    | 86,385    | 93,612    | 80,000            | 85,000            | 90,000            | 95,000            |
| Kyrgyzstan             | 463       | 425       | 340       | 353       | 400               | 450               | 500               | 550               |
| Russia                 | 263,000   | 273,578   | 298,300   | 314,500   | 270,000           | 290,000           | 300,000           | 320,000           |
| Tajikistan             | 100       | 21        | 99        | 82        | 70                | 80                | 90                | 100               |
| Ukraine                | 83,800    | 81,907    | 74,559    | 75,437    | 70,000            | 75,000            | 80,000            | 85,000            |
| Uzbekistan             | 3,200     | 2,556     | 3,000     | 3,020     | 3,000             | 3,500             | 4,000             | 4,500             |
| Total                  | 464,000   | 433,000   | 463,000   | 487,000   | 420,000           | 450,000           | 470,000           | 510,000           |
| Regional total         | 1,290,000 | 1,120,000 | 1,130,000 | 1,140,000 | 1,100,000         | 1,100,000         | 1,100,000         | 1,100,000         |

<sup>e</sup>Estimated. NA Not available. -- Negligible or no production.

<sup>1</sup>Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Includes anthracite, bituminous, and run-of-mine lignite.

### EUROPE AND CENTRAL EURASIA: HISTORIC AND PROJECTED URANIUM PRODUCTION, 1995-2015 $^{\rm l}$

| Region and country | 1995   | 2000   | 2005   | 2007   | 2009 <sup>e</sup> | 2011 <sup>e</sup> | 2013 <sup>e</sup> | 2015 <sup>e</sup> |
|--------------------|--------|--------|--------|--------|-------------------|-------------------|-------------------|-------------------|
| Europe:            |        |        |        |        |                   |                   |                   |                   |
| Western Europe:    |        |        |        |        |                   |                   |                   |                   |
| France             | 840    | 375    |        |        |                   |                   |                   |                   |
| Germany            | 41     | 33     | 111    | 48     | 40                | 20                |                   |                   |
| Portugal           | 22     | 16     |        |        |                   |                   |                   |                   |
| Spain              | 420    | 347    |        |        |                   |                   |                   |                   |
| Total              | 1,320  | 771    | 111    | 48     | 40                | 20                |                   |                   |
| Central Europe:    |        |        |        |        |                   |                   |                   |                   |
| Bulgaria           | 700    | 700    | 600    | NA     |                   |                   |                   |                   |
| Czech Republic     | 721    | 587    | 482    | 380    | 400               | 400               | 400               | 400               |
| Hungary            | 277    |        |        |        |                   |                   |                   |                   |
| Total              | 1,700  | 1,290  | 1,080  | 380    | 400               | 400               | 400               | 400               |
| Central Eurasia:   |        |        |        |        |                   |                   |                   |                   |
| Kazakhstan         | 1,920  | 2,052  | 5,138  | 7,827  | 12,000            | 13,000            | 15,000            | 16,000            |
| Russia             | 2,650  | 2,948  | 4,045  | 3,762  | 4,000             | 4,300             | 4,600             | 5,000             |
| Ukraine            | 590    | 708    | 800    | 846    | 1,200             | 1,300             | 1,400             | 1,400             |
| Uzbekistan         | 2,100  | 2,771  | 2,712  | 2,736  | 2,800             | 3,500             | 4,000             | 4,200             |
| Total              | 7,260  | 8,480  | 12,700 | 15,200 | 20,000            | 22,000            | 25,000            | 27,000            |
| Regional total     | 10,300 | 10,500 | 13,900 | 15,600 | 20,000            | 23,000            | 25,000            | 27,000            |

### $(U_3O_8 \text{ content in metric tons})$

<sup>e</sup>Estimated. NA Not available. -- Negligible or no production.

<sup>1</sup>Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.