



2010 Minerals Yearbook

GOLD

GOLD

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In 2010, domestic mine production of gold increased to 231,000 kilograms (kg), 4% more than that in 2009 (tables 1–2). This marks the first increase in 10 years, although production was 37% lower than the historical high of 366,000 kg in 1998. In 2010, the value of domestic production increased to \$9.13 billion, up 30% compared with that in 2009 because of the increase in the price of gold and the increase in domestic production. It was the ninth straight year that the value had increased. Gold recovery from the major mines in Nevada decreased because mining lower grade ore was more profitable with high gold price. Decreased production from mines processing lower grade ore were offset by production from Barrick Gold Corp.'s (Toronto, Ontario, Canada) new pit at the Cortez Mine. In 2010, production began at the Kensington Mine in Alaska, the Jerritt Canyon Mine restarted production, and the Deep Post Mine in Nevada reached its end of life. Price increases have spurred domestic exploration and development of new gold projects. Mines in Nevada and Alaska accounted for almost 72% and 12%, respectively, of domestic gold production in 2010. The remaining production came from mines in Utah, Colorado, Washington, California, South Dakota, Arizona, and Idaho, in descending order of production. Gold was produced at lode mines in Alaska, California, Colorado, Nevada, South Dakota, Utah, and Washington, at two large placer mines in Alaska, and numerous small placer mines, mostly in Alaska and the Western States. In addition, domestic gold was produced as a byproduct of processing base metals, primarily copper. In the United States, the 30 leading operations yielded 99% of the gold produced (table 3).

In 2010, the domestic nonfuel mineral exploration budget increased to \$850 million, a 63% increase compared with that in 2009. Much of the increase was a result of increased exploration for copper and gold targets in Alaska and gold targets in Nevada. Major reasons for increased exploration were the improved economy and higher commodity prices. In 2010, gold was the primary mineral exploration target and represented more than 50% of the worldwide nonferrous exploration budget. In 2010, the gold exploration budget was \$5.4 billion, which was 59% more than that in 2009. Gold exploration in Canada, Australia, and the United States, in descending order, represented more than 40% of the global gold exploration budget. In 2010, the worldwide nonferrous exploration budget rose to \$10.7 billion, a 44% increase compared with that of 2009 (Lowrey, 2010; Wilburn, 2011, p. 58–60).

U.S. jewelry manufacturing was heavily concentrated in the New York, NY, and Providence, RI, areas, with other manufacturers in California, Florida, and Texas. Commercial-grade refined gold was produced by about two dozen domestic companies. Of several thousand companies and artisans, a few dozen companies dominated the fabrication of gold into commercial products. In 2010, the estimated percentages for

end use of gold were jewelry and arts, 54%; dental and medical, 10%; electrical and electronics, 7%; and other, 29%.

Refined bullion comprised 33% of U.S. gold imports and 77% of exports; the United States was a net exporter of 95,700 kg of bullion in 2010 (tables 4, 6). The imports and exports of gold bullion increased by 57% and 5%, respectively, from those in 2009. The increases in imports mainly were from Canada and Mexico, which provided almost 51% and 25%, respectively, of the refined bullion imported. Imports of ores and concentrates increased by 450% because of a substantial increase in imports from Mexico for processing within the United States (table 4). The United Kingdom (58%) and India and Switzerland (10% each) were the principal destinations for refined bullion exports (table 4).

Engelhard's daily price of gold was volatile and rose above the \$1,400-per-troy-ounce level for the first time ever in November. The price began the year at \$1,124.06 per troy ounce and fell to the year's lowest level of \$1,060.45 per troy ounce on February 5. The price rose for 4 months before dropping in July. It recovered and continued to increase until peaking at \$1,424.07 per troy ounce on November 9 before dropping to \$1,414.25 per troy ounce by yearend. The annual average price of \$1,227.51 per troy ounce, 26% above the annual average gold price in 2009, was the highest annual average price ever, and the ninth consecutive year of a price increase.

Gold investment continued to be very high in 2010 because of financial and economic uncertainties; such times are traditionally when investment in gold, which is considered to be a safe investment, increases. It was estimated that global investors purchased 1,680 metric tons (t) of gold in 2010. Gold held in 23 gold exchange-traded funds (ETFs) and 2 physically backed Canadian funds increased by 351 t to 2,190 t. Domestic gold holdings in ETFs increased by 19%, or 229 t, to 1,450 t, with the SPDR Gold Trust, which traded on the New York Stock Exchange, accounting for 88% of domestic gold ETF holdings. Because gold ETFs are essentially paper gold products, each share representing a physical allotment of gold that is held in trust, they provide an easily accessible investment. Gold ETFs follow market gold prices, with a fee structure to cover administrative and storage costs (Klapwijk and others, 2011, p. 20–26).

The top 15 gold mining companies produced about 47% of 2010 world gold production. The top five producers were, in descending order, Barrick, Newmont Mining Corp. (Denver, CO), AngloGold Ashanti Ltd. (Johannesburg, South Africa), Gold Fields Ltd. (Johannesburg), and Goldcorp Inc. (Vancouver, British Columbia, Canada), which accounted for almost one-third of world gold production (Klapwijk and others, 2011, p. 48).

In 2010, gold mining companies strove to increase their reserves by merging or acquiring other companies. Newcrest Mining Ltd. (Melbourne, Victoria, Australia) purchased Lihir Gold Ltd. (Port Moresby, Papua New Guinea), which owned the Lihir Island Mine

in Papua New Guinea. Kinross Gold Corp. (Toronto) completed a merger with Red Back Mining Inc. (Vancouver), which owned the Chirano Gold Mine in Ghana and the Tasiast Gold Mine in Mauritania. In August, Goldcorp sold its San Dimas silver-gold mine in Mexico to Mala Noche Resources Corp. (Toronto), which was renamed Primero Mining Corp. (Toronto). Goldcorp also sold its 21% interest in the Morelos project in Mexico to Gleichen Resources Ltd. (Toronto), now named Torex Gold Resources Inc. (Toronto). Goldcorp acquired Andean Resources (Fremantle, Western Australia, Australia), which owned the Cerro Negro gold-silver project in Argentina. Thompson Creek Metals Co. Inc. (Vancouver) purchased Terrane Metals Corp. (Vancouver) after Goldcorp divested its controlling interest in the company. Terrane owned the Mt. Milligan copper-gold project in British Columbia, Canada. Anatolia Minerals Development Ltd. (Englewood, CO) and Avoca Resources Ltd. (Perth, Western Australia, Australia) announced plans to merge. The new company, Alacer Gold Corp. (Englewood, CO), would have mines in Australia and Turkey. Other announcements in 2010 were that EBX Group (Rio de Janeiro, Brazil) was going to take over Ventana Gold Corp. (Vancouver), which had the La Bodega project in Columbia, and Franco Nevada Corp.'s (Toronto) business combination with Gold Wheaton Gold Corp. (Vancouver) (Klapwijk and others, 2011, p. 48). In March, Barrick created African Barrick Gold plc (London, United Kingdom) to hold Barrick's African gold mines, projects, and exploration properties. As of April 2010, Barrick owned approximately 73.9% of African Barrick Gold (Barrick Gold Corp., 2011a, p. 36).

Total world mine production of gold in 2010 was 4% higher than that of 2009. Mine production in China increased, and China continued to be the world's leading gold producer. Annual output in South Africa decreased for the 10th year in a row because of higher costs, lower grade ore, and labor issues. The leading producers among more than 95 gold-mining nations were, in descending order, China, Australia, the United States, Russia, and South Africa (table 8).

An estimated 166,600 t of gold was mined historically through 2010, with 29,000 t held by central banks as official stocks, 31,100 t held privately as investment, 84,200 t held privately as jewelry, 18,700 t in other fabricated products, and the remaining 3,600 t was unaccounted for (Klapwijk and others, 2011, p. 58).

Production

Domestic lode mine production data for gold were compiled by the U.S. Geological Survey from two separate voluntary surveys of U.S. mining operations—one for monthly production of copper, gold, lead, silver, and zinc from lode mines and the other for lode mine production data surveyed annually. Individual company production and performance data listed in table 3 and cited elsewhere in this report were obtained from published sources, such as company annual reports.

Alaska.—Gold production was 28,100 kg which was valued at \$1,110 million in 2010. According to the State's Division of Geology and Geophysical Surveys, 2009 gold production was reported as 24,300 kg (781,000 troy ounces) valued at \$759 million. In 2010, placer gold mining accounted for 2,160 kg (69,300 troy ounces) of gold, up 15% from 1,870 kg (60,300 troy ounces) in 2009. An estimated 227 placers mines operated in

2010, 3% fewer than the 234 that operated in 2009. There were two placer operations that were classified as large placer operations, production of more than 78 kg (2,500 troy ounces) of gold, and 35 placer operations were classified as medium, production of more than 20 kg (650 troy ounces) but less than 78 kg (2,500 troy ounces) of gold, in 2010 (Szumigala and others, 2011, p. 13, 46).

The Pogo Mine, 145 kilometers (km) southeast of Fairbanks was a joint venture between Sumitomo Metal Mining Co. Ltd. (Tokyo, Japan) (85%) and Sumitomo Co. (Tokyo) (15%). The mine produced 11,900 kg of gold during 2010, which was a slight decrease as compared with that of 2009, because of lower ore grade. As of December 2010, the mine's reserves were 122 t of contained gold (Sumitomo Metal Mining Co. Ltd., 2011, p. 19; Szumigala and others, 2011, p. 52).

Kinross's underground Fort Knox Mine, near Fairbanks, produced 10,900 kg of gold in 2010, 33% more than production in 2009. Increased production resulted from the first full year of production from the Walter Creek heap-leach facility, which was completed in November 2009. Gold reserves at Fort Knox were estimated to be about 180 t at yearend 2010 (Kinross Gold Corp., 2011, p. 31, 48; Szumigala and others, 2011, p. 51).

Hecla Mining Co. (Coeur d'Alene, ID) owned one of the leading silver mines in the country, the polymetallic Greens Creek Mine on Admiralty Island near Juneau. The ore from the underground mine was milled at the mine site, and the smelter produced gold and silver dore, lead, zinc, and bulk concentrates. In 2010, gold production was 2,140 kg, slightly more than 2009 gold production (Hecla Mining Co., 2011, p. 3, 10).

On June 24, Coeur d'Alene Mines Corp.'s (Coeur d'Alene, ID) Kensington project began processing ore, and on July 3, the mine began commercial production and produced 1,340 kg of gold in 2010. The underground gold mine, 72 km north-northwest of Juneau, had proven and probable reserves of 43,900 kg of gold (Coeur d'Alene Mines Corp., 2011, p. 2, 26).

Fire River Gold Corp. (Vancouver) continued evaluating the Nixon Fork Mine, 56 km northeast of McGrath. The company planned to bring the mine back into production by the summer of 2011. The mine originally started production in 2007; however, production was suspended in October 2008, and the mine was placed on care-and-maintenance status because of dramatically lower grade ore than expected and sold to Fire River Gold in 2009 (Fire River Gold Corp., 2011, p. 3–8).

Alaskan exploration expenditures climbed to \$264 million in 2010, up 47% from 2009 expenditures of \$180 million. This marked the sixth straight year with exploration expenditures more than \$100 million. In 2010, 34 projects had expenditures of more than \$1 million, and an additional 47 projects spent \$100,000 or more on exploration. Porphyry copper deposits accounted for 38% of the exploration expenditures and other intrusion-related deposits accounted for 36% (Szumigala and others, 2011, p. 9, 12).

Anglo American plc (London) and Northern Dynasty Minerals Ltd. (Vancouver) were 50-50 partners in the Pebble copper-gold-molybdenum project in southwestern Alaska, which included the high-grade underground Pebble East resources and the open pit Pebble West resources. Based on its \$73 million budget, the project remained the leading exploration project in Alaska. A preliminary assessment report based on concept, prefeasibility, and feasibility-level study programs was completed with three

potential mining scenarios—[25, 45, and 78 years of open pit mining, with a nominal processing rate of 200,000 metric tons per day (t/d) of ore]. The company was expected to use the 25-year case study to decide whether to initiate mine permitting, construction, and operation. The 45-year reference case was the base case and would produce 14 million metric tons (Mt) of copper, 635,000 t of molybdenum, 4,350 t of silver, 1,200 t of rhenium, 933 t of gold, and 28 t of palladium while mining only 32% of the mineral resources at an average cost of \$0.11 per pound of copper. The resource case, which was based on the 78-year mine life, assessed the long-term value of the project. A new prefeasibility study was expected to be completed in 2012, with production by the end of 2016 (Northern Dynasty Minerals Ltd., 2011, p. 5–7).

In 2010, a feasibility study was revised by Barrick and NovaGold Resources Inc. (Vancouver) on the Donlin Creek joint venture in the historic Kuskokwim Gold Belt in southwestern Alaska with the addition of an evaluation of a natural gas pipeline for the project. The project had a measured and indicated gold resource of 1,200 t, and the companies were scheduled to file permit applications by the end of 2011 (Barrick Gold Corp., 2011a, p. 11, 168).

NovaGold was developing three other projects in Alaska—Big Hurrah, Nome Gold, and Rock Creek—all near Nome on the Seward Peninsula. The most advanced was the Rock Creek Mine, which was designed to produce about 3,000 kilograms per year (kg/yr) of gold. The mine and mill began production in 2008 but operated only a short time before the mine was placed on care-and-maintenance status. NovaGold decided to sell all three operations and focus on its joint ventures, Donlin Creek in Alaska and Galore Creek in British Columbia, Canada (NovaGold Resources Inc., 2011, p. 40). NovaGold completed its purchase of the Ambler property from Kennecott Exploration Co. (Vancouver) for \$29 million. The property includes the copper-zinc-gold-silver Arctic volcanogenic massive sulfide (Szumigala and others, 2011, p. 15).

International Tower Hill Mines Ltd. (Vancouver) continued to explore its Livengood project in 2010. The indicated resource was 409 t at a grade of 0.83 grams per metric ton (g/t) gold equivalent to 339 t of contained gold, and the inferred resource was 94 t at a grade of 0.79 g/t gold equivalent to 75 t of contained gold, both at a cutoff grade of 0.5 g/t gold. The project, 110 km north of Fairbanks, was undergoing prefeasibility study in 2010 (International Tower Hill Mines Ltd., 2010).

Arizona.—In 2010, all gold mined in Arizona was recovered as a byproduct from copper mining and processing. American Bonanza Gold Corp. (Vancouver) completed a feasibility study and purchased a mill for its Copperstone underground gold project in La Paz County. In October, the U.S. Department of the Interior, Bureau of Land Management (BLM) issued the Federal permits for mining, and the outstanding State of Arizona permits were expected to be completed in the first quarter of 2011 (American Bonanza Gold Corp., 2011, p. 3–4).

California.—In 2010, gold was produced at Atna Resources Ltd.'s (Golden, CO) Briggs Mine and New Gold Inc.'s (Vancouver) Mesquite Mine. Other operations produced gold as a secondary product, mainly from placer sand and gravel mines and from several small underground mines that produced primarily specimen gold products.

In 2010, the Mesquite Mine open pit in Imperial County, CA, 70 km northwest of Yuma, AZ, produced 5,260 kg of gold, 13% more than that produced in 2009. Production increases resulted from increases in gold grade and leach pad recoveries. The proven and probable reserves for Mesquite were estimated to be 169 Mt at a grade of 0.57 g/t, with 97,000 kg of contained gold (New Gold Inc., 2011a, p. 10; b).

In May 2009, Atna poured its first bar of gold from the Briggs Mine, and in 2010, the mine produced 784 kg of gold. An updated technical report on the Briggs Mine estimated the proven and probable reserves to be 6,250 kg of gold (Atna Resources Ltd., 2011, p. 2–4).

Sutter Gold Mining Inc. (Lakewood, CO) received regulatory approval to construct the Sutter Gold underground mine, which included the historic Lincoln gold mine along California's Mother Lode belt. The company expected to complete preliminary economic assessment and technical reports by the first quarter of 2011 (Sutter Gold Mining Inc., 2011, p. 2–3).

Emgold Mining Corp. (Vancouver) continued the permitting process to reopen the historic Idaho-Maryland Gold Mine. The company expected to have the final environmental impact report in 2011. The estimated measured and indicated resources were 14,700 kg of gold (Emgold Mining Corp., 2011).

Colorado.—In 2010, Colorado remained the fourth ranked gold-producing State in the country. The Nation's ninth ranked gold mine, the Cresson Mine, owned by Cripple Creek & Victor Gold Mining Co. (CC&V) (a fully owned subsidiary of AngloGold) reported that its open pit operation produced 7,250 kg of gold in 2010, a 7% increase from that in 2009 owing to a revised pad-stacking strategy, which saw higher grade ore placed closer to the pad lining to improve production. In 2010, CC&V continued construction of a mine-life extension project that would add 4 years to the mine life (AngloGold Ashanti Ltd., 2011, p. 45, 54, 110–111).

Global Minerals, Ltd. (Vancouver) sold its shares of the Front Range gold property, which included the Cash and Rex Mines, to Aurora Gold Corp. (Zug, Switzerland) in August. Aurora intended to reopen the Cash Mine, which had been inactive since 2008 (Aurora Gold Corp., 2010).

LKA International Inc.'s (Gig Harbor, WA) Golden Wonder Mine in the San Juan Mountains stopped commercial gold production in the second quarter of 2006. The company continued to explore and produced a limited amount of gold in 2010 as a result of exploration activities (LKA International, Inc., 2010).

Idaho.—Idaho had limited gold production in 2010, mostly from small-scale mines and byproduct production from silver mines. Several companies had projects with associated gold that were in early development stages in 2010.

Montana.—There was no gold production in the State in 2010 because Elkhorn Goldfields LLC's (Denver) open pit polymetallic Montana Tunnels Mine near Jefferson City had not operated since April 2009 when the mine was placed on care-and-maintenance status. In early February, Elkhorn completed the acquisition of the remaining 50% interest in the project from Apollo Gold Corp. (Greenwood Village, CO) (Elkhorn Goldfields LLC, 2011). Also, Barrick's Golden Sunlight Mine did not produce gold in 2010 because the mine had entered an extended redevelopment phase in 2009 and was

not expected to produce gold again until 2011 (Barrick Gold Corp., 2011a, p. 64).

Nevada.—Gold production increased 3% to 166,000 kg in 2010, and Nevada kept its long-standing position as the Nation's leading gold-producing State. Gold remained the most valuable mine product in Nevada, representing almost 89% of gross proceeds of mines. The Nevada Division of Minerals reported 20 major gold-silver operations (Dobra, 2011, p. 4).

In 2010, Barrick produced 89,200 kg of gold from its fully owned Bald Mountain, Cortez, Goldstrike, Ruby Hill, and Storm Mines; its 75% share of the Turquoise Ridge Mine (a joint venture with Newmont, 25%); 50% of Smoky Valley Common Operation (50% owned and operated by Kinross); and 33.33% of the Marigold Mine (67.67% owned and operated by Goldcorp). This was 14% more than the company's gold mine production from Nevada in 2009 because of the startup of production at Cortez Hill open pit operations, which was part of the Cortez operations, in the first quarter of 2010. The Cortez operations produced 35,500 kg of gold in 2010, 120% higher than production in 2009. Production at all other Barrick operations decreased in 2010 compared with that of 2009. Open pit and underground production from Goldstrike (including the Storm Mine) was 38,600 kg of gold, a 13% decrease compared with that in 2009. The decrease was attributed to the partial shutdown of the autoclaves in the second half of 2009 and as well as mining lower grade areas in the first half of 2010. Production from Bald Mountain was 1,800 kg, 23% less than production in 2009 owing to the approval of the mining expansion plan that called for more waste material mining in 2010. Production was expected to increase once the expansion was completed in late 2011. In 2010, the Ruby Hill Mine produced 2,530 kg of gold or 21% less than that in 2009, because of higher waste stripping. Production of gold in 2010 from partially owned mines was 10,800 kg, 11% less than that of 2009. In 2010, Barrick's share of gold production from the Marigold Mine was 1,420 kg (a 7% decrease compared with 2009 gold production), 5,540 kg from the Smoky Valley Common Operation (a decrease of 15% from 2009 production), and 3,860 kg from Turquoise Ridge (a decrease of 7% from 2009 production) (Barrick Gold Corp., 2011a, p. 24, 63–64; 2011b).

Newmont's Nevada operations produced 55,000 kg or 33% of Nevada's gold production from eight open pits and six underground mines. The operations were the Eastern Nevada Operations (Carlin East, Gold Quarry, Leeville, North Lantern, and Pete Mines) and the Lone Tree, Midas, Mule Canyon, Phoenix, Trenton Canyon, Twin Creeks, and the joint-venture Turquoise Ridge (25% share) Mines. In 2010, gold production from Newmont's Nevada operations decreased by 13% because of less ore mined from Gold Quarry, less ore placed on leach pads at Twin Creeks and Carlin, and completion of mining at Deep Post. The losses were partially offset by increased mining at Leeville Mine. As of December 31, the company reported 970,000 kg of gold reserves of which 81% was in open pit mines and the remainder was in underground mines (Newmont Mining Corp., 2011, p. 23–24, 59).

In 2010, Great Basin Gold Ltd. (Vancouver) extracted 98,800 t of ore, yielding 3,270 kg of gold and 8,990 kg of silver

from trial mining activities at the underground Hollister Mine. A preliminary draft environmental impact statement (EIS) was scheduled for completion in November 2011, and the decision on whether to proceed with the project was scheduled in early 2012 (Great Basin Gold Ltd., 2011, p. 11–14).

In 2010, Yukon-Nevada Gold Corp. (Vancouver) produced 2,030 kg of gold from purchased ore and stockpiles, at its Jerritt Canyon complex. The operations consisted of a milling facility and two underground mines, Smith and SSX. Jerritt Canyon was closed in 2009 because of environmental permitting problems but was restarted in 2010 (Yukon-Nevada Gold Corp., 2011, p. 1).

In 2010, the Robinson copper mine near Nye [owned by Quadra Mining Ltd. (Vancouver)] produced 49,400 t of copper and 2,270 kg of gold. Production was lower than that in 2009 because of anticipated lower head grades (Quadra Mining Ltd., 2011, p. 8).

The Rochester Mine, owned by Coeur d'Alene Mines, produced 62,200 kg of silver and 300 kg of gold. In August 2007, the company completed mining existing reserves; however, gold and silver production was expected to continue from stockpiled ore and existing leach pads until 2014. The company completed a feasibility study regarding restart of mining operations from expanded and new reserves. The mine was expected to increase production to 74,600 kilograms per year (kg/yr) of silver and 1,080 kg/yr of gold. In October, the company received a permitting decision from the BLM supporting the resumption of mining. Mining was planned to resume in the first quarter of 2011 (Coeur d'Alene Mines Corp., 2011, p. 2–3).

Rio Tinto plc (London) sold the Denton-Rawhide Mine to Rawhide Acquisition Holdings on June 25. Rio Tinto's share of production was 280 kg in 2010. Mine production stopped in 2003, but residual production from leach pads continued (Rio Tinto plc, 2011a, p. 12–14).

Exploration expenditures in Nevada increased to \$214 million in 2010 from \$110 million in 2009, the highest expenditures reported since the State began the survey in the mid-1990s. Because of higher gold and silver prices, material once classified as waste has been reclassified as ore, and reported proven and probable reserves have increased. According to the State of Nevada, the proven and probable gold reserves increased to 2,500 kg (80 million troy ounces) in 2010, up 7% from 2,300 kg (75 million troy ounces) in 2009 (Dobra, 2011, p. 5).

New Mexico.—Gold production in New Mexico has been a byproduct of copper production in Grant County at Freeport-McMoRan Copper & Gold Inc.'s Chino Mine. In late 2008, mining activities were suspended, and in 2010, there was no significant gold production. Mining and milling were expected to resume in 2011 (Freeport-McMoRan Copper & Gold Inc., 2011, p. 37).

In 2010, one silver and gold project began development, and several polymetallic deposits were explored. In March, Santa Fe Gold Corp. (Albuquerque) began limited production at the Summit silver and gold mine and anticipated that full production would be reached by yearend 2011. Full production was estimated to be 120,000 metric tons per year of ore at a grade of 4.45 g/t gold and 335 g/t silver (Santa Fe Gold Corp., 2010).

South Carolina.—Romarco Minerals Inc. (Vancouver) released the results of a feasibility study for its Haile Gold Mine Project in Lancaster County. The estimated proven and probable reserves were 30.5 Mt of ore at an average grade of 2.06 g/t gold, containing 62,800 kg of gold. The mine life was estimated to be 13 years, and during the first 5 years, annual production was estimated to be 5,350 kg of gold at a cost of \$347 per troy ounce (Romarco Minerals Inc., 2011, p. 14, 21).

South Dakota.—In 2010, Wharf Resources (USA) Inc. (Lead) operated the Goldcorp-owned Wharf open pit gold mine near Lead, which produced about 2,280 kg of gold, 8% more than 2009 gold production. The increase was attributed to an increase in ore processed and higher recovery rates, which offset the drop in head grade (Goldcorp Inc., 2011, p. 58).

Utah.—Rio Tinto's Bingham Canyon Mine near Salt Lake City, which was operated by Kennecott Utah Copper Corp. (Magna), produced 14,500 kg of gold as a byproduct from copper mining. Bingham Canyon was the fourth-ranked gold producer and the leading gold-producing mine outside Nevada in 2010. Gold production decreased by 20% compared with that in 2009 because of lower ore grades, as the company shifted from a high copper-gold area to high-molybdenum areas of the ore body. Kennecott Utah was also commencing studies associated with the potential development of an underground copper skarn deposit to operate in parallel with the open pit. In 2010, Kennecott Utah also operated the nearby Barney's Canyon Mine, which closed in the first quarter of 2002 but continued gold production from heap-leaching pads that produced 62 kg of gold (Rio Tinto plc, 2011a, p. 12; b, p. 18).

Washington.—In 2010, Kinross's underground Kettle River-Buckhorn Mine in the north-central part of the State produced 6,180 kg of gold, 15% more than production in 2009 because of increased ore processing. Ore was shipped to the Kettle River Mill adjacent to the closed Kettle River Mine, which was about 76 km from the Kettle River-Buckhorn Mine (Kinross Gold Corp., 2011, p. 50–51).

World Industry Structure

World gold mine production in 2010 was 4% higher than that in 2009, and it was the second year in a row that world production increased (table 8). Some of the larger increases in gold production were 37,000 kg in Australia; 25,000 kg in China; 21,200 kg in Mexico; 13,400 kg in Argentina; 11,500 kg in Burkina Faso; 8,000 kg in Ethiopia; 7,920 kg in the United States; 7,400 kg in Kazakhstan; 5,770 kg in Colombia; 4,030 kg in Zimbabwe; and 3,800 kg in the Philippines. In 2010, gold production in 21 countries increased by more than 1 t from production in 2009.

These increases were partially offset by gold production decreases in several countries. Some of the larger decreases in gold production in 2010 were 18,300 kg in Peru; 10,000 kg in Indonesia; 8,930 kg in South Africa; 6,340 kg in Canada; 5,360 kg in Mali; and 3,770 kg in Mongolia. In 2010, production of gold decreased by more than 1 t in 9 countries.

The 12 leading gold producing-countries—China, Australia, the United States, Russia, South Africa, Peru, Indonesia, Canada, Uzbekistan, Ghana, Mexico, and Papua New Guinea (in descending order) accounted for 74% of global production. The

next 10 leading gold-producing countries accounted for 16%, while the remaining 77 countries made up 10% of global gold production in 2010.

According to its annual review of world gold supply and demand, Gold Fields Mineral Services Ltd. (GFMS) calculated that the total global supply of gold in 2010 was 4,330 t compared with the revised 2009 total supply of 4,320 t. GFMS reported increased mine production (4%), no net official sector sales, no net producer hedging, and no implied net disinvestment for sales of bars and coins by private investors. Old scrap production decreased slightly in 2010 compared with 2009 old scrap production because consumers expecting higher gold prices deferred selling scrap during the year (Klapwijk and others, 2011, p. 7).

GFMS reported that total fabrication in 2010, including the use of scrap, was 2,780 t, 11% higher than that of 2009. In 2010, gold jewelry fabrication was 2,020 t, 11% higher than that of 2009. The top six gold jewelry manufacturing countries—India (685 t), China (432 t), Italy (116 t), Turkey (73 t), the United States (66 t), and Saudi Arabia (47 t)—represented 70% of the world's jewelry production. In 2010, jewelry production in India increased by 181 t, 36% more than 2009 production, because of a surge in demand for gold jewelry. Chinese jewelry production increased by 68.7 t, 19% more than 2009 production. In the Middle East, Southeast Asia (excluding China), and Italy, jewelry production in 2010 decreased owing to increased gold prices. Jewelry consumption in India and China increased, by 40% and 20%, respectively. These increases were offset by consumption decreases in Italy, the United States, and Saudi Arabia, which decreased by 16%, 14%, and 13%, respectively. Coin fabrication was 207 t, a decrease of 9% compared with that of 2009, because of lower sales in North America and Europe. The demand for safe-haven investments kept gold coin sales high, but sales of new silver coins supplanted some gold coin sales. In 2010, the U.S. Mint sales of the American Eagle gold coins were 38,000 kg, which was 14% lower than the unusually high sales in 2009, and sales of the American Buffalo coins were 6,500 kg, an increase of 5% compared with those in 2009. In 2010, Canada decreased gold coin minting to 29,900 kg, a decrease of 22% compared with minting in 2009, and Austria minted 21,700 kg, an increase of 35%. The amount of gold used in electronics increased by 19% to 327 t, which reflected the global economic recovery. Gold used in dentistry declined by 8% to 49 t in 2010 owing to an increase in nonmetallic substitutions. Gold used in other industrial and decorative applications increased by 11% because of an increase of consumption in China. Gold used in medals and for imitation coins (nonmonetary coins) increased by 50% because of increased consumption in India (Klapwijk and others, 2011, p. 35–37, 83–109).

World Review

Argentina.—In 2010, gold production was 60,000 kg or 29% more than that in 2009, primarily because production from Barrick's Veladero Mine increased by 83% to 34,900 kg because of higher ore grades and increased throughput as a result of expanded crushing capacity (Barrick Gold Corp., 2011a, p. 14; b).

In 2010, production from AngloGold's Cerro Vanguardia Mine was 6,490 kg of gold, a slight increase compared with production

in 2009 (AngloGold Ashanti Ltd., 2011, p. 112–113). Overall production increases were partially offset by production losses at Yamana Gold Inc.'s (Toronto) Gualcamayo Mine, which produced 4,200 kg of gold during the year, 6% lower than that in 2009. In 2010, gold production from Bajo de la Alumbrera Mine [owned by Xstrata plc (Zug, Switzerland) (50%), Goldcorp (37.5%), Yacimientos Mineros Agua de Dionisio (Catamarca) (20%), and Yamana (12.5%)] was 12,600 kg, 4% lower than production in 2009 (Yamana Gold Inc., 2011, p. 52–56).

Australia.—Australian gold production in 2010 increased by 17% compared with that in 2009. Production increases were from new projects coming online during the year, established operations, and increases from mines that began operation in 2009. In 2010, 10 mines started or restarted production—A1 Minerals Ltd.'s (Osborne Park, Western Australia) Brightstar Mine, which started production in the first quarter; Catalpa Resources Ltd.'s (Perth) Edna May Mine, which started production in the second quarter; Exco Resources Ltd.'s (Perth) and Poymetals Mining Ltd.'s (Samford, Queensland) White Dam Mine, which poured its first gold in April; GBM Gold Ltd.'s (Bendigo, Victoria) Inglewood Mine, which started production in the second quarter; Intergra Mining Ltd.'s (Perth) Aldiss-Randalls Mine, which started up in September; La Mancha Resources Inc.'s (Montreal, Quebec, Canada) White Foil Mine, which began production in the second quarter; Navigator Resources Ltd.'s (Perth) Bronzewing Mine, which began production in April; Range River Gold Ltd.'s (Melbourne) Mt. Morgans Mine, which started production in the first quarter; Regis Resources Ltd.'s (Perth) Duketon project, which began production in September; and Saracen Minerals Holdings Ltd.'s (Melbourne) South Laverton Region Mine, which began production in the first quarter (CPM Group, 2011, p. 86–88).

In 2010, Barrick had six mines in Australia, from which Barrick's share of production was 44,200 kg of gold, slightly more than that in 2009. All mines except the Kalgoorlie Mine, were fully owned by Barrick. In 2010, Cowal production was 28% higher than production in 2009 because of higher ore grade. Production from Kalgoorlie, a joint venture with Newmont, increased by 14% in 2010 compared with production in 2009 owing to an increase in overall ore grade and increased mill throughput. Production increases were partially offset by production decrease at several mines because of lower ore grade and lower mill throughput. The Barrick mines that produced less gold in 2010 compared with 2009 production were—Osborne, 37% less; Kanowna, 12% less; and Plutonic, 6% less; and Yilgran South 3% less. Osborne ceased mining in July 2010 (Barrick Gold Corp., 2011a, p. 66; b).

Newmont's Boddington Mine began into commercial production in November 2009 and ramped up production to 22,600 kg of gold and 26,300 t of copper in 2010. As of December 2010, the company reported reserves of 631,000 kg of gold and 1,070,000 t of copper. Newmont also owned the Jundee and Tanami operations as well as the Kalgoorlie joint-venture project with Barrick. The Jundee operation sold 10,400 kg of gold in 2010, 18% more than that in 2009. Tanami sold 7,780 kg of gold, 13% less than that in 2009. Newmont also owned a 16.22% interest in Regis, which owned the Duketon gold project. Duketon began production in the third quarter of 2010 and produced 156 kg of attributable gold. As of

December 31, Newmont reported 9,330 kg of gold reserves in properties in Australia (Newmont Mining Corp., 2011, p. 26, 61–62).

In 2010, Newcrest operated five mines in Australia. The Cadia Hill and Ridgeway Mines produced 13,600 kg of gold, an 18% increase compared with 2009 production because of higher ore grade and increased throughput. The Telfer Mine produced 21,200 kg of gold in 2010, slightly more than production in 2009. The 70%-owned Cracow and the 100%-owned Mt. Rawdon Mines produced 3% and slightly less gold, respectively, compared with production in 2009 (Newcrest Mining Ltd., 2011).

Gold Fields produced gold from two mines in Australia—Agnew and St. Ives. In 2010, Agnew produced 4,730 kg of gold, 19% less than that produced in 2009 owing to restricted underground access to higher grade areas. St. Ives produced 14,600 kg of gold in 2009, 13% more than 2009 production, because of increased mining and higher ore grade. Production in 2011 was expected to increase as new pits came online (Gold Fields Ltd., 2011, p. 55, 92–95).

In 2010, AngloGold's Sunrise Dam Mine produced 12,300 kg of gold, a slight decrease compared with 2009 gold production. The mine consisted of an open pit and an underground mine (AngloGold Ashanti Ltd., 2011, p. 105–107).

OZ Minerals Ltd. (Melbourne) produced concentrates from its Prominent Hill copper mine, and during 2010, the mine produced 112,000 t of copper and 6,110 kg of gold. The company produced 160% more gold than in 2009 because the mine had its first full year of production in 2010 (OZ Minerals Ltd., 2011, p. 12).

Azerbaijan.—All gold production came from Anglo Asian Mining plc's (London) Gedabek Mine, which started production in the second quarter of 2009, and produced 1,900 kg of gold in 2010 (Anglo Asian Mining plc, 2011).

Botswana.—Production in 2010 increased by 20% because of production increases at the country's only primary gold mine. In 2010, IAMGOLD Corp.'s (Toronto) Mupane Mine produced 1,770 kg of gold, 12% greater than 2009 production because of higher throughput and improved performance from the ball mill (IAMGOLD Corp., 2011, p. 42, 44).

Brazil.—In 2010, Brazilian gold production increased by 3% compared with that in 2009 owing to increased production from the Kinross's Paracatu Mine in the State of Minas Gerais. The 36% increase in production to 15,000 kg was largely owing to increases in ore grade, higher recovery factors, and increased ore processing (Kinross Gold Corp., 2011, p. 54–55).

Production from AngloGold's Mineração Mine was 10,500 kg of gold or 3% more than that in 2009. Ore was produced from the Cuiaba and Lamego underground mines, leached at the Córrego do Sitio heap-leach operations, and then processed at the Cuiaba and Queiroz plants. The increased production was attributed to additional ore supplies resulting from the startup of the Lamego project. The Serra Grande (a joint venture equally owned by AngloGold and Kinross) produced 4,820 kg of gold, a slight increase compared with that in 2009. The operation, in central Brazil, consists of three underground mines (Mina III, Mina Nova, and Palmeiras) and an open pit mine (Mina III) (AngloGold Ashanti Ltd., 2011, p. 55, 116, 118–119).

Yamana operated three mines that produced gold in 2010. The Chapada Mine produced 4,220 kg of gold, a 13% decrease compared with 2009 production because of lower ore grades despite increased ore mining and processing. The Jacobina complex of underground mines in the State of Bahia produced 3,800 kg of gold, an 11% increase compared with production in 2009. The increase resulted from increased recovery rates. The Fazenda Brasileiro Mine, an underground mine in northeastern Brazil, produced 2,180 kg of gold, 8% lower than that in 2009. Two other mines owned by Yamana in Brazil—São Vicente and São Francisco—were part of an agreement to be sold to Aura Minerals Inc. (Vancouver) that was finalized on April 30 (Yamana Gold Inc., 2011, p. 49–56).

Jaguar Mining Inc. (Concord, NH) operated three mines in 2010 and produced 4,290 kg of gold, 8% less than 2009 production. The Turmalina Mine produced 1,850 kg of gold and the Paciencia Mine produced 1,840 kg of gold in 2010. Production decreased because of technical problems at Turmalina and decreased ore grade at both mines. These decreases were partially offset by new production from the Caeté Mine, which began gold production in the third quarter of 2010 (Jaguar Mining Inc., 2011, p. 9–12).

Bulgaria.—Gold production in 2010 was estimated to be 3,500 kg, 22% less than in 2009. Losses at the Dundee Precious Metals Inc.'s (Toronto) Chelopech Mine were the main reason for the drop in production. In 2010, the mine produced 2,040 kg of gold, 26% less than 2009 production because of lower gold grades (Dundee Precious Metals Inc., 2011, p. 34).

Burkina Faso.—In 2010, gold production was 25,000 kg, an 85% increase compared with 2009. The increase was partially attributed to the start up of IAMGOLD's 90%-owned Essakane Mine. The mine, which started production in July, produced 3,790 kg of gold in 2010 (IAMGOLD Corp., 2011, p. 15).

The increase was also partially attributed to a 17% increase in gold production from SEMAFO Inc.'s (Saint-Laurent, Quebec, Canada) Mana Mine that produced 5,590 kg of gold in 2010. Production increased because of a plant expansion program, which increased the mine's processing capacity from 4,000 to 6,000 t/d (SEMAFO Inc., 2011, p. 12).

Canada.—Canada ranked eighth in world gold production, and its output decreased by 7% to 91,000 kg. Goldcorp operated three mines in Ontario—the Musselwhite, Porcupine, and Red Lake Mines. In 2010, the Red Lake Mine produced 21,900 kg of gold, a 13% increase compared with 2009 production because of a significant increase in tonnage mined. The Porcupine Mine produced 8,270 kg, which was 16% less than in 2009, because of lower ore grade, and the Musselwhite Mine produced 8,050 kg of gold or 11% more than production in 2009 because of higher ore throughput (Goldcorp Inc., 2011, p. 45–47).

Agnico-Eagle Mines Ltd. (Toronto) operated the Goldex, Lapa, and LaRonde Mines in Quebec. In March, the company opened the Meadowbank Mine in Nunavut Territory, which produced 8,260 kg of gold during the year. In 2010, the LaRonde Mine produced 4,220 t of copper, 5,060 kg of gold, 111,000 kg of silver, and 62,500 t of zinc. Gold production from LaRonde Mine was 25% less in 2010 compared with 2009 because processing lower grade ore became economical with higher gold and zinc prices. In 2010, the Goldex Mine produced

5,740 kg of gold, 19% more than 2009 production because of ongoing mill upgrades. Agnico-Eagle's gold production was 45% higher in 2010 than that in 2009 owing to the startup of the Meadowbank Mine and the first full year of production from the Lapa Mine of 3,650 kg of gold (Agnico-Eagle Mines Ltd., 2011, p. 5–6, 8–11, 13).

Barrick owned and operated the Hemlo Mine and produced 7,530 kg of gold in 2010 compared with 8,550 kg in 2009. The drop in production was attributed to the processing of lower grade ore (Barrick Gold Corp., 2011a, p. 64; b).

Mine production in 2010 was lower at NorthGate Minerals Corp.'s (Vancouver) Kemess South Mine in British Columbia and Vale S.A.'s (Rio de Janeiro, Brazil) Sudbury nickel operations in Ontario. Gold production from the Kemess South Mine was 3,130 kg, 72% less than production in 2009 because the mine was nearing the end of its mine life (Northgate Minerals Corp., 2011). Vale's Sudbury operations produced 1,310 kg of gold, which was 17% less than 2009 production because of a labor strike which started in July 2009 (Vale S.A., 2011, p. 35, 44). IAMGOLD's Doyon Division produced 1,030 kg of gold in 2010, down by 69% compared with 2009 production because of the closure of the Doyon Mine in December 2009 and reduced production from Mouska Mine as it neared its end of life (IAMGOLD Corp., 2011, p. 42, 44). In 2010, Aurizon Mines Ltd. (Vancouver) produced 4,290 kg of gold, 13% less than 2009 gold production from its Casa Berardi Mine in Quebec (Aurizon Mines Ltd., 2011, p. 25). Westdome Gold Mines Ltd. (Toronto) owned the Eagle River Mine in Ontario and the Kiena Mine Complex in Quebec. In 2010, the Eagle River Mine produced 1,140 kg of gold, 65% lower than in 2009. The Kiena Mine Complex produced 1,000 kg of gold in 2010, 10% lower than 2009 production (Westdome Gold Mines Ltd., 2011, p. 6).

St Andrew Goldfields Ltd.'s (Toronto) Hislop Mine began production in June 2010 and produced 342 kg of gold during the year. The company's Holloway Mine, in Ontario, produced 1,790 kg of gold, 67% more than 2009 production because it was the first full year of production (St Andrew Goldfields Ltd., 2011, p. 7–11). Brigus Gold Corp. (Halifax, Nova Scotia), formerly Apollo Gold Corp., produced 2,170 kg of gold at its Black Fox Mine in Ontario, which was 34% greater than 2009 production (Brigus Gold Corp., 2011, p. 6).

Chile.—In 2010, gold production was 38,400 kg, 6% less than that in 2009. The production losses were attributed to reduced production from Kinross's Maricinga Mine because of longer leach times. In 2010, the mine produced 4,960 kg of gold, 32% less than in 2009. Kinross's other mine in Chile, La Coipa, produced 6,110 kg of gold in 2010, 15% less compared with 2009 because lower grade ore was processed (Kinross Gold Corp., 2011, p. 55–59).

The country's leading gold-producing mine was Yamana Gold's El Penon Mine, which produced 7,980 kg of gold, 19% more than in 2009 because of increased tonnage processed, higher recovery rates, and increased gold grade. Yamana also produced 2,940 kg of gold from Minera Florida, 15% more than that in 2009 because an expansion was completed (Yamana Gold Inc., 2011, p. 51, 54).

China.—China's gold production increased by 8% to 345,000 kg, compared with 2009 gold production. The increase in gold production resulted from consolidation of smaller inefficient gold mines into larger more efficient gold mines and increases in mining because of higher gold prices, the low cost of labor, and support from the central government.

In 2010, Zijin Mining Group Co., Ltd. (Zijin, Guangdong Province) was the leading gold producer with more than 69,100 kg of gold production, including 29,200 kg of its own mine-produced gold and 39,900 kg of gold refined from third party ores. Production was 8% lower in 2010 than in 2009 because of heavy rains, flooding, and a tailings dam collapse (Zijin Mining Group Co., Ltd., 2011, p. 8).

In 2010, Eldorado Gold Corp. (Vancouver) fully integrated the three gold mines, two gold projects, and several exploration projects in China that the company acquired from its merger with Sino Gold Mining in 2009. The Jinfeng, Tanjianshan, and White Mountain Mines produced 11,100 kg of gold in 2010, which was 13% more than production in 2009. In 2010, Jinfeng was the second leading gold mine in China and produced 5,630 kg of gold. Tanjianshan and White Mountain Mines produced 3,540 kg and 1,930 kg of gold, respectively (Eldorado Gold Corp., 2011, p. 8, 10–12).

Colombia.—In 2010, gold production increased by 12% compared with that in 2009. A substantial portion of the increase came from small-scale mines. Mineros SA (El Bagre), the leading producer of gold, increased output by 10% because of commissioning of the Ye Mine and increased production from dredging operations. These increases were partly offset by the suspension of mining at Gran Colombia Gold Corp.'s (Toronto) Frontino Mine (Klapwijk and others, 2011, p. 44).

Côte d'Ivoire.—In 2010, production of gold was 5,800 kg, 13% less than in 2009, because of production declines at Newcrest's Bonikro Mine. In 2010, the mine produced 2,920 kg of gold, 37% less than 2009 production (Newcrest Mining Ltd., 2011). In 2010, Cluff Gold plc (London) produced 629 kg of gold from its 90%-owned Angovia Mine. The mine produced 7% less gold in 2010 than that in 2009 because of the deteriorating political environment as well as operational challenges in the second half of 2010 (Cluff Gold plc, 2011, p. 20).

Randgold Resources Ltd. (London) started production from its Tongon Mine in the fourth quarter of 2010. The mine produced 875 kg of gold during the year and was projected to produce 8,000 kg in 2011 (Randgold Resources Ltd., 2011, p. 26–29).

Dominican Republic.—GlobeStar Mining Corp. (Toronto), a fully owned subsidiary of Perilya Ltd. (Leederville, Western Australia, Australia), produced 494 kg of gold in 2010 at its Cerro de Maimon copper-silver-gold mine, 32% more than production in 2009 (Perilya Ltd., 2011, p. 4). Construction of the Barrick (60%) and Goldcorp (40%) jointly owned Pueblo Viejo project continued in 2010, and the mine was scheduled to start producing in the first quarter of 2012. The project could produce an average of 29,000 kg/yr of gold during the first 5 years of operation (Barrick Gold Corp., 2011a, p. 20, 41).

Egypt.—In 2010, gold production was 2,590 kg, up from 60 kg in 2009. All of the production came from Centamin Egypt Ltd.'s (Mt. Pleasant, Western Australia, Australia) Sukari Gold Mine, in the eastern desert of Egypt (Centamin Egypt Ltd., 2011).

Ethiopia.—Sharp increases in gold prices led to additional small-scale and artisanal mining operations in Ethiopia. In 2010, production was estimated to have reached 12,000 kg, up 200% from 2009 production. Almost all of the mine production came from artisanal, placer, and small scale-mining. Ethiopia currently has only one large-scale gold mine, MIDROC Gold Mine plc's (Addis Ababa) Lega Dembi Mine; gold production at the open pit and underground mine was estimated to be 3,750 kg, in 2010 (Klapwijk and others, 2011, p. 44).

Finland.—In 2010, Agnico-Eagle had its first full year of production from the Kittlia Mine in northern Finland. The mine produced 3,930 kg of gold in 2010, which was 41% more than 2009 production of 2,300 kg of gold (Agnico-Eagle Mines Ltd., 2011, p. 7–8).

Ghana.—Production of gold in 2010 was 82,000 kg, which was 3% higher than that of 2009. Gold Fields purchased 18.9% of the Damang and Tarkwa Mines from IAMGOLD to bring its ownership to 90% of both mines with the remaining 10% held by the Government of Ghana. The Tarkwa Mine produced 22,900 kg of gold, 10% more than production in 2009 owing to increased throughput. The Damang Mine produced 7,090 kg of gold, 13% more than 2009 production because of commissioning of the secondary crusher (Gold Fields Ltd., 2011, p. 106–109).

Production from Newmont's Ahafo Mine was 17,000 kg, up slightly compared with 2009 gold production owing to an increase in ore grade. In 2010, AngloGold's Iduapriem and Obuasi Mines produced 15,600 kg of gold, 12% less than 2009 production. The drop in production was caused by a work stoppage at Iduapriem from February 11 to April 20 to increase capacity to the tailings storage facilities and less ore mined at Obuasi (AngloGold Ashanti Ltd., 2011, p. 84–88; Newmont Mining Corp., 2011, p. 62).

Production of gold at Golden Star Resources Ltd.'s (Littleton, CO) Wassa Mine was 22% lower than 2009 production because of unscheduled mill maintenance. Golden Star's Bogoso Mine produced 5,320 kg of gold in 2009, 9% less than that in 2009 because of wet weather (Golden Star Resources Ltd., 2011, p. 3, 13).

Guinea.—Gold production in 2010 fell by 16% compared with that of 2009. AngloGold's Siguiri Mine produced 9,980 kg of gold in 2010, 14% less than 2009 production because of lower ore grade (AngloGold Ashanti Ltd., 2011, p. 89–88). In 2010, SEMAFO's Kiniero Mine produced 936 kg of gold, 6% less than 2009 production (SEMAFO Inc., 2011, p. 11).

Indonesia.—In 2010, gold production fell to 120,000 kg, an 8% decrease compared with 2009 gold production. Some of the leading gold producers were copper mines that produced byproduct gold. Freeport McMoRan's Grasberg Mine and Newmont-operated Batu Hijau Mine represented 51% (60,700 kg) and 19% (22,900 kg), respectively, of Indonesian gold production in 2010. Production at Grasberg was 34% lower than production in 2009 because of mining in the lower grade zone of the pit. Production from Grasberg was expected to decrease again in 2011 as mining continued in the lower grade zone of the pit. In 2010, Batu Hijau's production was 32% more than 2009 production owing to higher grade ore (Freeport-McMoRan Copper & Gold Inc., 2011, p. 43; Newmont Mining Corp., 2011, p. 61).

Production was up at Newcrest's Gosowong Mine, which produced 14,900 kg of gold, 29% more than in 2009 (Newcrest Mining Ltd., 2011).

Kazakhstan.—In 2010, gold production was 29,900 kg, 33% greater than 2009 production. The main reason for the increase was the start up of Kazzinc JCS's (Ust-Kamenogorsk) Vasilkovskoje Mine in the second quarter of 2010. The mine was expected to reach full production capacity of 12,000 kg/yr of gold by the second quarter of 2011 (Klapwijk and others, 2011, p. 44).

Polyus Gold Mining Co. (Moscow, Russia) owned 65% of KazakhGold Group Ltd.'s (London) four mines in Kazakhstan. In 2010, the mines produced 6,890 kg of gold, which was 22% greater than 2009 because of continued modernization of the production facilities and the startup of the Akzhal Mine (Polyus Gold Mining Co., 2011, p. 4, 11, 19).

Kyrgyzstan.—Gold production for 2010 was 18,300 kg, an increase of 8% compared with that in 2009. Despite a 10-day shutdown, Centerra Gold Inc.'s (Toronto) Kumtor Mine produced 17,700 kg of gold in 2010, an 8% increase compared with 2009 production because of higher mill grades and increased recovery rates (Centerra Gold Inc., 2011, p. 15).

Mali.—AngloGold had interests in three gold mines in Mali—Morila (AngloGold and Randgold, 40% each, and the Government of Mali, 20%), Sadiola (AngloGold and IAMGOLD, 41% each; and the Government of Mali, 18%), and Yatela (AngloGold and IAMGOLD, 40% each, and the Government of Mali, 20%). In 2010, these mines produced 21,000 kg of gold, 26% less than gold production in 2009 (AngloGold Ashanti Ltd., 2011, p. 92–97).

The Morila Mine was operated by Randgold and produced 7,400 kg of gold in 2010. The 30% decrease in production compared with that of 2009 was because mining the open pit was completed in 2009, and the company was treating low-grade stockpiles. In 2011, production was projected to be about 4,000 kg of gold because only treatment of the low-grade stockpiles was scheduled to continue until 2013 (AngloGold Ashanti Ltd., 2011, p. 92–93).

The Sadiola operation consisted of five open pits that are approximately 77 km south of Kayes. In 2010, the operation produced 8,930 kg of gold, which was 19% less than production in 2009. The decrease was caused by lower ore grades owing to the depletion of the Sadiola main pit reserves. In 2011, production was projected to increase because of the addition of a gravity separation circuit (AngloGold Ashanti Ltd., 2011, p. 94–95).

In 2010, the Yatela Mine, 25 km north of Kayes, produced 4,670 kg of gold, a 32% decrease compared with 2009 production. The mine was originally scheduled to close in 2010, although the life has been extended. Production dropped in 2010 because of a decrease in ore grade processed (AngloGold Ashanti Ltd., 2011, p. 97–98).

Randgold owned 80% of the Loulo Gold Mine; the other 20% was owned by the Government of Mali. In 2010, the mine produced 9,850 kg of gold, which was 11% less than 2009 production because of lower throughput, which was a result of power outages and technical problems at the processing plant during the first 6 months of the year. The mine consists of three open pits, Gara, Loulo 3, and Yalea and two underground operations, Gara and Yalea (Randgold Resources Ltd., 2011, p. 16–18).

Mexico.—In 2010, Mexican gold production reached an alltime high of 72,600 kg, a 41% increase from 2009 production; production from newly opened mines was the principal factor in increased production. Goldcorp operated three mines in Mexico—El Sauzal, Los Filos, and Penasquito. On August 6, the company sold the San Dimas Mine to Primero Mining Corp. (Toronto). The Penasquito Mine started commercial production on September 1 and produced 5,230 kg of gold in 2010. In 2010, El Sauzal produced 4,730 kg gold, a 25% decrease compared with gold production in 2009 owing to the age of the mine and lower ore grades. The Los Filos Mine produced 9,520 kg of gold in 2010, 28% more than production in 2009 because of higher tonnage mined and the higher ore grade (Goldcorp Inc., 2011, p. 30–31, 51–52).

Fresnillo plc (London) operated three gold mines and one silver mine with byproduct gold production. In 2010, Fresnillo's gold production was 11,500 kg, 25% more than 2009 gold production. Fresnillo began production from the Soledad-Dipolos Mine in the first quarter of 2010. Combined with new production, Fresnillo also had increased production from the Cienega and Herradura Mines (Fresnillo plc, 2011, p. 34, 48–49).

Other mines that had increased production in 2010 were New Gold's Cerro San Pedro Mine which produced 3,690 kg of gold, 24% more than that in 2009 because higher ore grades and recovery rates more than offset the drop in tonnage mined (New Gold Inc., 2011a, p. 10–12). In 2010, Agnico-Eagle had its first full year of production from its open pit Pinos Altos Mine in Chihuahua State, producing 4,100 kg of gold (Agnico-Eagle Mines Ltd., 2011, p. 9–10). In 2009, Coeur d'Alene began gold production from its Palmarejo Mine, and in 2010, the mine produced 184,000 kg of silver and 3,190 kg of gold (Coeur d'Alene Mines Corp., 2011, p. 2).

On July 1, Gold Resources Corp. (Colorado Springs, CO), began commercial production from its El Aguila project and produced 326 kg of gold during the year. The company expected production to reach 2,000 kg by 2011 (Gold Resources Corp., 2011, p. 4). NWM Mining Corp. (Toronto) began dore production in December at its Lluvia-Jojoba Project in northern Sonora (NWM Mining Corp., 2010). SilverCrest Mines Inc. (Vancouver) began production from its Santa Elena Mine in September 2010 and produced 1,710 kg of silver and 67 kg of gold by yearend (SilverCrest Mines Inc., 2011).

Production at some mines decreased in 2010. Alamos Gold Inc.'s (Toronto) Mulatos Mine produced 4,850 kg of gold, a decrease of 14% because of adverse weather conditions that hampered mine operations (Alamos Gold Inc., 2011, p. 3–4). In 2010, Minefinders Corp. (Vancouver) produced 1,750 kg of gold from the Dolores Mine, 38% less than 2009 production (Minefinders Corp., 2011). The San Dimas Mine, acquired by Primero in 2010, produced 2,660 kg of gold and 141,000 kg of silver, 32% and 12% lower, respectively, than gold and silver production in 2009. However, production in 2011 was projected to be 15% more than 2010 production (Primero Mining Corp., 2011, p. 1, 9). Gammon Gold Inc. (Toronto) operated two mines, El Cuba and Ocampo. In 2010, the Ocampo Mine produced 3,130 kg of gold, 5% less than 2009 production. The El Cuba Mine produced 347 kg of gold in 2010, a 59% drop in production as compared with 2009 because of labor problems in 2010 (Gammon Gold Inc., 2011).

Mongolia.—Gold production in 2010 was 6,040 kg, 38% less than 2009 production partially owing to decreases at Centerra Gold's Boroo gold mine. Gold production from the mine was 3,460 kg in 2009, which was 26% lower owing to lower mill grades and a lower contribution from the heap-leaching operation, which was idle, awaiting a final operating permit. Mining activities ceased at the end of November, but the mill was expected to continue to operate for at least 2 years by processing stockpiled ores (Centerra Gold Inc., 2011, p. 19).

Namibia.—AngloGold's Navachab Mine produced 2,670 kg of gold in 2010, which was 32% higher than gold production in 2009. The increase was a result of greater volume mined from the bottom of the pit and the treatment of high-grade concentrates from the dense media separation plant, which was commissioned during 2010 (AngloGold Ashanti Ltd., 2011, p. 99–100).

New Zealand.—In 2010, gold production was 13,000 kg, a 3% decrease compared with production in 2009. Newmont's Waihi Mine produced 3,360 kg, 4% less than 2009 production because of a lower mill grade (Newmont Mining Corp., 2011, p. 61–62). In 2010, OceanaGold Corp. (Melbourne) produced 5,680 kg of gold from the Macraes Goldfield Mine, which was 17% less than 2009 production owing to lower grades from the open pit and the Frasers underground operations. OceanaGold's other operation, the Reefion Goldfield Mine, produced 2,670 kg of gold in 2010, which was slightly less than production in 2009 (OceanaGold Corp., 2011, p. 13).

Panama.—With production for the recently opened Petaquilla Minerals Ltd.'s (Vancouver) Molejon gold mine in November 2009, gold production in Panama jumped from 800 kg in 2009 to 1,300 kg in 2010. The company was planned to develop a heap-leaching operation in 2011 and expected to produce 1,560 kg of gold in 2012 (Redwood, 2011).

Papua New Guinea.—Production from Papua New Guinea mines remained the same as that in 2009. Barrick owned 95% of the Porgera Mine, and the Papua New Guinea Government held the remaining 5%. Barrick's share of production was 16,100 kg of gold in 2010, which was 6% lower than 2009 production because of low rainfall and water shortages, which led to lower mill throughput, and pit wall stability issues (Barrick Gold Corp., 2011a, p. 66; b).

In 2010, Newcrest produced 25,100 kg of gold, 5% more than that of 2009 from its Lihir Island operations. Newcrest also owned 50% of the Hidden Valley Mine, which started production in late 2009, and produced 5,260 kg of gold in 2010 (Newcrest Mining Ltd., 2011). Production at Ok Tedi Mining Ltd.'s (Tabubil) Ok Tedi Mine was 15,100 kg in 2010, 6% lower than 2009 production (Ok Tedi Mining Ltd., 2011).

Philippines.—Gold production from mines in the Philippines increased by 10%, to 40,800 kg of gold in 2010. Much of the increase was attributed to the ramp up of CGA Mining Ltd.'s (Perth) Masbate Mine, which started production in 2009. In 2010, the mine produced 5,680 kg of gold, up from 2009 gold production of 2,060 kg (CGA Mining Ltd., 2011). Production also increased at Medusa Mining Ltd.'s (Como, Western Australia, Australia) Co-O Mine, which produced 3,160 kg of gold in 2010, up 51% compared with 2009 production (Medusa Mining Ltd., 2011, p. 4).

Peru.—In 2010, gold production decreased by 10% to 164,000 kg compared with production in 2009. Newmont and Compañía de Minas Buenaventura S.A.A. (Lima) jointly owned the Yanacocha Mine in the Cajamarca District, which produced 45,500 kg of gold in 2010, 29% less than in 2009. The production decline was attributed to mine sequencing resulting in increased waste mining and lower grade ore (Newmont Mining Corp., 2011, p. 60).

Buenaventura owned or partly owned 11 other mines that produced gold in 2010. In 2010, excluding production from the Yanacocha Mine, Buenaventura produced 13,500 kg, slightly more than production in 2009 (Compañía de Minas Buenaventura S.A.A., 2011, p. 3).

Barrick's Lagunas Norte Mine produced 25,100 kg of gold in 2010, 20% less than production in 2009, because of the planned mining of lower grade ore in the second half of 2010. Barrick's other operation in Peru, Pierina Mine, neared the end of its economic mine life, and produced 5,940 kg of gold, 30% less than production in 2009 (Barrick Gold Corp., 2011a, p. 65; b).

In 2010, Gold Fields produced 4,730 kg of gold from the Cerro Corona copper and gold mine, 22% more than gold production in 2009. The increase was a result of processing higher grades, increased throughput, and enhanced recoveries (Gold Fields Ltd., 2011, p. 102–104).

Russia.—In 2010, Russian gold production was 192,000 kg, slightly less than 2009 production. The leading gold producer in Russia was Polyus Gold Mining Co. (Moscow) with 43,100 kg of production from five mines and several alluvial deposits, a 10% increase compared with 2009 production. Some of the increase was attributed to startup of the Blagodatnoye Mine in the Krasnoyarsk Region and startup of the largest capacity gold mill in Russia (Polyus Gold Mining Co., 2011, p. 4–9).

In 2010, the Kupol Mine (75% owned by Kinross) produced 23,000 kg of gold, 20% lower than production in 2009. Production was lower because of a 21% drop in ore grade resulting from planned mining sequencing and the processing of lower grade ore stockpiles (Kinross Gold Corp., 2011, p. 52–53).

In 2010, Petropavlovsk plc (London) produced 15,800 kg of gold, an increase of 4% compared with production in 2009. Petropavlovsk produced gold from three open pit mines (Malomir, Pioneer, and Pokrovskiy), alluvial operations, and joint ventures. Much of the increase was attributed to the startup of the Malomir Mine in August (Petropavlovsk plc, 2011, p. 3–7, 42).

In 2010, production from JSC Polymetal's (St. Petersburg) 14 gold-producing mines increased to 13,800 kg, a 30% increase from production in 2009. The increase was a result of an increase in the amount of ore processed in 2010 (JSC Polymetal, 2011).

Highland Gold Mining Ltd. (St. Helier, United Kingdom) (HGM) produced 6,220 kg of gold in 2010. This was 18% more than production in 2009 because the Belaya Gora Mine opened, and production from the Novoshirokinskoye and Mnogovershinnoye Mines increased (Highland Gold Mining Ltd., 2011, p. 4, 12–14).

South Africa.—In 2010, South Africa's gold production of 189,000 kg was a 5% decrease from that in 2009 owing to decreased ore grades and closure of under-producing shafts,

which eventually was expected to decrease mining costs and increase mine production. Increased labor costs, higher costs associated with deep-level shafts, new royalties on mining revenue, power supply issues, and temporary closure of shafts owing to mine accidents continued to affect the industry and caused mine production to decline during the past 8 years to the lowest level since 1906 (CPM Group, 2011, p. 77–83).

In 2010, three companies operated mines that accounted for almost 80% of South African gold production. They were, in descending order of production, Gold Fields, AngloGold, and Harmony Gold Mining Co., Ltd. (Randfontein).

In 2010, Gold Fields's South African operations produced 58,000 kg of gold, 11% less than 2009 production from the Beatrix and South Deep Mines and the Kloof-Driefontein Complex (KDC). Only the South Deep Mine increased production in 2010 because of an increase in the amount of ore processed as the mine continued to ramp up to full production. In 2010, gold production at Beatrix was 6% lower and production from KDC was 17% lower as compared with 2009 production. Safety-related work stoppages and the replacement of a water pump column were responsible for the decrease in production (Gold Fields Ltd., 2011, p. 96–100).

AngloGold had six deep-level mines and one surface operation in the West Wits and Vaal River regions that, combined, produced 53,500 kg of gold in 2010, 3% more than that in 2009. In 2010, the West Wits operations included the Mponeng, Savuka, and Tau Tona Mines and produced 25,300 kg of gold, 6% more than production in 2009. The Vaal River operations included the Great Noligwa, Kopanang, and Moab Khotsong Mines. Production for the Vaal River operations was 28,200 kg, slightly more than 2009 production. The production increase was attributed to the ramping up of the Moab Khotsong Mine, which produced 9,080 kg or 18% more in 2010 compared with that in 2009 and to an increase in ore grade at Tau Tona. This increase was partially offset by production declines at Great Noligwa, Kopanang, and Savuka following safety-related work stoppages and lower ore grades. Anglo Gold sold the Tau Lekoa Mine to Simmer and Jack Mines Ltd. (Johannesburg) on August 1 (AngloGold Ashanti Ltd., 2011, p. 58–81).

Harmony operated 11 underground mines, 2 surface operations, and several other gold-producing operations in South Africa. In 2010, production from Harmony's operations was 39,000 kg of gold, 12% less than that in 2009. Underground operations produced 15% less gold in 2010 than that of 2009. Much of the decrease came from Virginia (3,560 kg less) and Evander (2,780 kg less). In 2010, Harmony closed shafts at the Virginia and Evander operations, which led to a 51% and 55% decrease, respectively, as compared with 2009 production. In 2010, production from surface operations increased by 23% from 2009 production, which resulted from processing a greater quantity of waste rock dumps (Harmony Gold Mining Co., Ltd., 2011, p. 6–11).

Simmer and Jack Mines operated the Buffelsfontein and the Transvall gold mines. In 2010, these mines produced 3,730 kg of gold, 7% less than in 2009 owing to the closure of underground mining at Transvall and closure of two shaft complexes at Buffelsfontein as well as safety-related work stoppages (Simmer and Jack Mines Ltd., 2011, p. 16–21).

In 2010, Gold One International Ltd. (Sydney) produced 2,070 kg of gold from its Modder East Mine in its first full year of production; the mine began production in the second quarter of 2009 (Gold One International Ltd., 2011, p. 7). First Uranium Corp. (Toronto) produced gold from its Ezulwini underground operations and from its Mines Waste Solutions (MWS). In 2010, Ezulwini sold 1,860 kg of gold and MWS sold 2,580 kg of gold, more than 2009 production (First Uranium Corp., 2011).

Sudan.—Gold production in 2010 was estimated to be 4,000 kg, more than double 2009 production. The country's only large-scale gold mine was the Hassai Mine, which was operated and 40%-owned by La Mancha, produced 2,130 kg of gold, 11% more than 2009 gold production (La Mancha Resources Inc., 2011). The remaining production from small-scale and artisanal mines increased substantially because of the sharp increase in gold price in 2010 (Klapwijk and others, 2011, p. 42).

Suriname.—IAMGOLD's Rosbel Mine was the leading gold-producing mine in the country with 12,300 kg of gold produced, slightly more than in 2009. The increase was attributed to higher mill throughput (IAMGOLD Corp., 2011, p. 16).

Tajikistan.—In 2010, gold production increased by 51% to 2,050 kg, compared with production in 2009. The country had 3 gold producers and 31 gold deposits with estimated reserves of 675 t of gold. The Zerfshan joint venture, 75% owned by Zijin Mining, produced 1,220 kg of gold in 2010 (Interfax Russia & CIS Metals and Mining Weekly, 2011).

Tanzania.—In 2010, gold production increased by 7% to 42,000 kg, compared with 2009 production. In March, Barrick created African Barrick Gold plc (London) to hold Barrick's African gold mines, gold projects, and gold exploration properties. Barrick's share of gold production from Tanzania operations was 17,500 kg, a 21% decrease from that in 2009. In 2010, Barrick's share of Buzwagi Mine production was 4,700 kg of gold, 20% less than production in 2009. Barrick's gold production shares of the Balyanhulu and North Mara Mines, were 16% and 19% less, respectively, in 2010 compared with 2009 production. Production from the Tulawaka gold mine [70% owned by Barrick and 30% owned by MDN Inc. (Montreal)] was 1,060 kg of gold in 2010, a decrease of 48% compared with production in 2009 because of lower ore grade (Barrick Gold Corp., 2011a, p. 66–67; b).

AngloGold's Geita Mine produced 11,100 kg of gold in 2010, 31% more than production in 2009. Improvements in ore grades were the main reason for the increase; however, some of this increase was offset by a planned mill shutdown in the third quarter (AngloGold Ashanti Ltd., 2011, p. 101–102).

Turkey.—With 700 t of gold reserves and five active gold mines in 2010, gold production was 17,000 kg, an increase of 17% compared with that of 2009. The Eldorado Gold Kisladag Mine, the leading gold mine in Turkey, produced 8,540 kg of gold, 14% more than in 2009. The proven and probable reserves for the mine were estimated to be 318,000 kg of contained gold (Eldorado Gold Corp., 2011, p. 6, 8; Sener, 2011).

Outlook

Worldwide and domestic gold production was expected to increase in 2011 because of new mines starting production and older mines expanding production. Gold consumption was

expected to continue to increase because jewelry consumption in China and India were expected to continue to increase. The increases in China and India are likely to outpace the declines in jewelry consumption in rest of the world and from decreases in consumption in other end uses because of higher gold prices. Investment in gold in various forms was expected to continue to increase as investors purchase gold as a safe haven, a hedge against economic failures, a portfolio diversifier, and as a store of wealth.

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TABLE 1
SALIENT GOLD STATISTICS¹

		2006	2007	2008	2009	2010
United States:						
Production:						
Mine:						
Quantity	kilograms	252,000	238,000	233,000	223,000	231,000
Value	thousands	\$4,910,000	\$5,350,000	\$6,550,000	\$7,000,000	\$9,130,000
Gold recovered by cyanidation:						
Extracted in vats, tanks, closed containers ²	kilograms	W	W	W	W	W
Leached in open heaps or dumps ³	do.	217,000	207,000	194,000	188,000	192,000
Refinery:						
Concentrates and dore	do.	181,000	176,000	168,000	170,000	175,000
Recycled materials (new and old scrap)	do.	89,100	135,000	181,000	189,000	198,000
Exports, refined	do.	228,000	392,000	459,000	281,000	295,000
Imports for consumption, refined	do.	136,000	113,000	118,000	127,000	199,000
Net deliveries from foreign stocks in Federal Reserve Bank of New York	do.	--	189,000	220,000	--	--
Stocks, December 31:						
Industry ⁴	do.	2,000	1,140	W	9,200	6,810
Gold exchange traded funds holdings, United States only	do.	498,000	683,000	847,000	1,220,000	1,450,000
COMEX	do.	234,000	229,000	265,000	305,000	361,000
U.S. Department of the Treasury	metric tons	8,140	8,140	8,140	8,140	8,140
U.S. Gold Futures Trading ⁵	do.	49,500	77,900	11,900	110,000	139,000
Consumption:						
American Buffalo Bullion gold coin ⁶	kilograms	10,500	4,250	5,890	6,220	6,500
American Eagle gold coin ⁶	do.	9,770	12,800	35,600	44,300	38,000
In industry and the arts	do.	185,000	180,000	176,000	150,000	180,000
Price, average ⁷	dollars per troy ounce	605.83	698.95	873.50	974.68	1,227.51
Employment, mine and mill only ⁸		8,350	9,130	9,560	9,650	10,200
World:						
Production, mine	kilograms	2,370,000	2,350,000 ^r	2,280,000 ^r	2,460,000 ^r	2,560,000 ^c
Official bullion reserves ⁹	metric tons	30,400	29,900	28,700	30,700	31,100

⁶Estimated. ^rRevised. do. Ditto. W Withheld to avoid disclosing company proprietary data. -- Zero.

¹Data are rounded to no more than three significant digits, except prices.

²May include small quantities recovered by gravity methods.

³May include tailings, waste-ore dumps, and previously mined ore at some inactive mines.

⁴Unfabricated refined gold held by refiners, fabricators, dealers, and the U.S. Department of Defense.

⁵COMEX only.

⁶Data from U.S. Mint.

⁷Engelhard quotation.

⁸Data from the Mine Safety and Health Administration.

⁹Held by central banks, governments, and international monetary organizations. Data from the International Monetary Fund.

TABLE 2
MINE PRODUCTION OF GOLD IN THE UNITED STATES, BY STATE¹

(Kilograms)

State	2009	2010
Alaska	W	28,100
Nevada	161,000	166,000
Other States ²	62,500	36,900
Total	223,000	231,000

W Withheld to avoid disclosing company proprietary data; included in "Other States."

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Includes Arizona, California, Colorado, Idaho, Montana (2009), New Mexico, South Dakota, Utah, and Washington.

TABLE 3
LEADING GOLD-PRODUCING MINES IN THE UNITED STATES IN 2010, IN ORDER OF OUTPUT¹

Rank	Mine	County and State	Majority owner	Quantity (kilograms)
1	Goldstrike ²	Elko and Eureka, NV	Barrick Gold Corp.	36,300
2	Cortez ³	Lander, NV	do.	35,500
3	Eastern Nevada Operations ⁴	Eureka, NV	Newmont Mining Corp.	29,100
4	Bingham Canyon ⁵	Salt Lake, UT	Kennecott Utah Copper Corp. ⁶	14,500
5	Twin Creeks	Humboldt, NV	Newmont Mining Corp.	14,100
6	Pogo	Southeast Fairbanks, AK	Sumitomo Metal Mining Co.	11,900
7	Smoky Valley Common Operation	Nye, NV	Kinross Gold Corp.	11,200
8	Fort Knox	Fairbanks North Star, AK	do.	10,900
9	Cresson	Teller, CO	AngloGold Ashanti Ltd.	7,250
10	Phoenix	Lander, NV	Newmont Mining Corp.	6,660
11	Kettle River-Buckhorn	Okanogan, WA	Kinross Gold Corp.	6,180
12	Mesquite	Imperial, CA	New Gold Inc.	5,260
13	Turquoise Ridge	Humboldt, NV	Barrick Gold Corp.	5,140
14	Marigold	do.	Goldcorp Inc.	4,250
15	Midas	Elko, NV	Newmont Mining Corp.	3,960
16	Hollister	do.	Great Basin Gold Ltd.	3,270
17	Hycroft	Humboldt and Pershing, NV	Allied Nevada Gold Corp.	3,190
18	Ruby Hill	Eureka, NV	Barrick Gold Corp.	2,530
19	Storm	Elko, NV	do.	2,320
20	Wharf	Lawrence, SD	Wharf Resources (USA) Inc. ⁷	2,280
21	Robinson	White Pine, NV	Quadra Mining Ltd.	2,270
22	Greens Creek	Juneau, AK	Hecla Mining Co.	2,140
23	Jerritt Canyon	Elko, NV	Yukon-Nevada Gold Corp.	2,030
24	Bald Mountain	White Pine, NV	Barrick Gold Corp.	1,800
25	Florida Canyon	Pershing, NV	Jipangu Inc.	1,710
26	Kensington	Juneau, AK	Coeur d'Alene Mines Corp.	1,340
27	Briggs	Inyo, CA	Atna Resources Ltd.	784
28	Denton-Rawhide	Mineral, NV	Rawhide Acquisition Holdings ⁸	627
29	Rochester	Pershing, NV	Coeur d'Alene Mines Corp.	300
(9)	Mission Complex	Pima, AZ	ASARCO LLC ¹⁰	NA

do. Ditto. NA Not available.

¹Data are rounded to no more than three significant digits; the mines on this list accounted for more than 99% of U.S. mine production in 2010.

²Formerly listed as Betze-Post Mine.

³Includes Cortez Hills and Cortez Pipeline Mines.

⁴Includes Carlin East, Deep Post, Gold Quarry, and Pete Mines.

⁵Quantity refers to total quantity of gold produced in concentrates.

⁶Wholly owned subsidiary of Rio Tinto plc.

⁷Wholly owned subsidiary of Goldcorp Inc.

⁸Rawhide Acquisition Holdings purchased 100% interest from Rio Tinto plc. on June 25, 2010.

⁹Mine is ranked in the top 30 in the United States in 2010; however, public data were not available. The rank order is not shown to avoid disclosing company proprietary data.

¹⁰Wholly owned subsidiary of Grupo Mexico, S.A.B. de C.V.

Sources: Company annual reports, company 10-K reports submitted to the U.S. Securities and Exchange Commission, company news releases, and Nevada Bureau of Mines and Geology.

TABLE 4
U.S. EXPORTS OF GOLD, BY COUNTRY^{1,2}

Year and country	Ores and concentrates ³		Dore and precipitates		Refined bullion ⁴		Total	
	Quantity (kilograms)	Value (thousands)	Quantity (kilograms)	Value (thousands)	Quantity (kilograms)	Value (thousands)	Quantity (kilograms)	Value (thousands)
2009	2,160	\$48,600	97,400	\$3,000,000	281,000	\$8,760,000	381,000	\$11,800,000
2010:								
Australia	129	5,310	--	--	14,100	573,000	14,200	578,000
Austria	--	--	378	12,700	187	6,370	565	19,100
Belgium	--	--	--	--	14	497	14	497
Brazil	--	--	--	--	50	2,240	50	2,240
Canada	--	--	131	4,630	8,620	338,000	8,750	343,000
China	536	19,900	--	--	23	901	558	20,800
Costa Rica	798	13,400	--	--	--	--	798	13,400
Czech Republic	--	--	--	--	6	250	6	250
Dominican Republic	19	138	--	--	28	882	47	1,020
France	--	--	--	--	186	7,130	186	7,130
Germany	963	35,200	4	79	427	12,700	1,390	47,900
Guatemala	--	--	--	--	36	1,050	36	1,050
Hong Kong	161	6,320	--	--	18,200	747,000	18,400	753,000
India	--	--	--	--	30,900	1,180,000	30,900	1,180,000
Indonesia	--	--	--	--	243	9,150	243	9,150
Ireland	147	1,990	--	--	4	104	151	2,090
Japan	2	14	--	--	10	214	12	228
Korea, Republic of	220	9,070	--	--	10	398	231	9,470
Laos	--	--	--	--	14	415	14	415
Latvia	12	246	--	--	--	--	12	246
Lebanon	--	--	--	--	15	528	15	528
Malaysia	--	--	--	--	253	9,810	253	9,810
Mexico	452	10,400	12	160	1,800	61,800	2,270	72,300
Oman	--	--	--	--	256	10,100	256	10,100
Pakistan	--	--	4	130	53	2,080	57	2,210
Peru	--	--	9	326	45	1,740	54	2,070
Singapore	(5)	3	--	--	126	4,720	126	4,720
South Africa	--	--	--	--	9,510	374,000	9,510	374,000
Switzerland	5	116	83,600	3,130,000	29,300	1,130,000	113,000	4,270,000
Thailand	1	11	--	--	5,000	192,000	5,000	192,000
Turkey	--	--	--	--	1,050	39,800	1,050	39,800
Ukraine	--	--	--	--	861	30,700	861	30,700
United Arab Emirates	--	--	--	--	3,080	117,000	3,080	117,000
United Kingdom	13	237	126	2,130	170,000	6,580,000	170,000	6,580,000
Uruguay	--	--	79	2,460	--	--	79	2,460
Vietnam	--	--	--	--	39	836	39	836
Other	6	62	2	69	5	165	13	296
Total	3,460	102,000	84,400	3,160,000	295,000	11,400,000	383,000	14,700,000

-- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Ash and residues data were zero for listed years.

³Includes base-metal ores, concentrates, and matte destined for refining.

⁴Bullion also moves in both directions between U.S. markets and foreign stocks on deposit in the Federal Reserve Bank. Monetary gold is excluded.

⁵Less than ½ unit.

Source: U.S. Census Bureau.

TABLE 5
U.S. EXPORTS OF GOLD, BY COUNTRY¹

Year and country	Waste and scrap		Metal powder		Gold compounds	
	Quantity (kilograms)	Value (thousands)	Quantity (kilograms)	Value (thousands)	Quantity (kilograms)	Value (thousands)
2009	728,000	\$1,750,000	329	\$8,460	2,680,000	\$64,600
2010:						
Antigua and Barbuda	--	--	--	--	311	6
Aruba	--	--	--	--	1,020	18
Australia	24	3	1	21	992	18
Bahamas, The	--	--	--	--	236	4
Belgium	2,820	3,550	--	--	--	--
Belize	--	--	--	--	544	4
Bolivia	--	--	11	11	2,490	45
Canada	72,200	1,530,000	73	1,040	640,000	11,500
Cayman Islands	--	--	--	--	1,900	34
China	--	--	24	394	597,000	18,800
Costa Rica	--	--	5	95	6,710	121
Denmark	46	1,800	--	--	--	--
Dominican Republic	--	--	2	21	73,900	1,330
Ecuador	--	--	--	--	900	28
France	--	--	22	382	3,400	64
Germany	349,000	81,200	10	323	21,800	389
Hong Kong	860	5,010	20	363	33,100	334
India	3	37	53	1,750	9,030	163
Ireland	--	--	--	--	18,900	340
Israel	--	--	(2)	9	2,800	50
Italy	2	20	--	--	2,290	25
Jamaica	--	--	--	--	2,570	46
Japan	2,820	20,000	41	835	1,430	26
Korea, Republic of	1,110	228	3	44	10,400	187
Lebanon	--	--	--	--	4,400	79
Liechtenstein	15	276	--	--	--	--
Malaysia	--	--	--	--	203,000	3,860
Mexico	--	--	3	82	569,000	10,300
Netherlands	--	--	10	138	66,500	1,200
Netherlands Antilles	--	--	--	--	506	9
Norway	--	--	--	--	488	9
Romania	--	--	--	--	693	12
Saudi Arabia	--	--	--	--	785	14
Singapore	--	--	8	38	1,710,000	53,000
South Africa	--	--	1	13	645	12
Sri Lanka	--	--	28	395	--	--
Sweden	--	--	--	--	633	11
Switzerland	10,400	396,000	1,710	60,500	583	11
Taiwan	--	--	11	222	256,000	4,560
Thailand	1	45	--	--	5,700	102
Turkey	--	--	23	832	--	--
United Arab Emirates	1,210	27,400	36	618	--	--
United Kingdom	219,000	118,000	246	6,610	13,600	211
Vietnam	--	--	--	--	1,850	33
Other	29	19	--	3	368	7
Total	660,000	2,180,000	2,340	74,700	4,270,000	107,000

-- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Less than ½ unit.

Source: U.S. Census Bureau.

TABLE 6
U.S. IMPORTS FOR CONSUMPTION OF GOLD, BY COUNTRY¹

Year and country	Ores and concentrates ²		Dore and precipitates		Refined bullion ³		Total	
	Quantity (kilograms)	Value (thousands)	Quantity (kilograms)	Value (thousands)	Quantity (kilograms)	Value (thousands)	Quantity (kilograms)	Value (thousands)
2009	46,600	\$33,100	146,000	\$4,260,000	127,000	\$3,580,000	320,000	\$7,870,000
2010:								
Argentina	--	--	86	5,010	924	38,800	1,010	43,800
Australia	10	161	8	133	736	23,100	754	23,400
Bahamas, The	--	--	50	1,180	--	--	50	1,180
Bolivia	--	--	114	3,930	108	3,370	223	7,300
Brazil	--	--	121	4,890	3,830	149,000	3,950	154,000
Burkina Faso	--	--	2	82	63	1,470	65	1,550
Canada	83	971	662	25,300	102,000	4,200,000	103,000	4,230,000
Chile	--	--	1,520	64,100	3,940	151,000	5,460	215,000
China	--	--	--	--	11	432	11	432
Colombia	--	--	24,700	801,000	19,000	629,000	43,800	1,430,000
Costa Rica	--	--	588	11,100	19	377	608	11,500
Dominican Republic	--	--	373	7,680	45	903	418	8,580
Ecuador	--	--	161	5,130	108	2,680	268	7,810
El Salvador	--	--	--	--	35	516	35	516
France	--	--	--	--	834	17,400	834	17,400
Germany	--	--	7	152	632	20,100	639	20,200
Ghana	--	--	104	2,660	227	8,270	331	10,900
Guatemala	--	--	5,370	198,000	11	130	5,380	198,000
Guinea	--	--	--	--	25	275	25	275
Guyana	--	--	4,120	154,000	1,260	49,700	5,380	204,000
Honduras	--	--	363	11,700	5,100	70,800	5,460	82,500
Hong Kong	--	--	--	--	413	16,400	413	16,400
Israel	--	--	--	--	23	975	23	975
Jamaica	--	--	137	3,480	136	1,690	273	5,170
Mali	--	--	20	628	32	1,120	53	1,750
Mexico	257,000	56,900	91,000	2,640,000	49,300	1,320,000	397,000	4,010,000
Netherlands Antilles	--	--	845	30,600	95	3,810	940	34,400
Nicaragua	--	--	1,470	50,700	84	1,310	1,560	52,000
Panama	--	--	373	8,760	449	14,000	822	22,700
Peru	--	--	14,100	469,000	361	9,050	14,400	478,000
South Africa	--	--	3	102	1,990	73,900	1,990	74,000
Sweden	--	--	--	--	28	831	28	831
Switzerland	--	--	149	5,380	3,540	142,000	3,690	148,000
United Arab Emirates	--	--	--	--	6	224	6	224
United Kingdom	--	--	1,520	15,300	3,770	65,000	5,290	80,200
Other	--	--	6	203	28	821	33	1,030
Total	257,000	58,000	148,000	4,520,000	199,000	7,020,000	604,000	11,600,000

-- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Includes base metal ores, concentrates, and matte destined for refining.

³Bullion also moves in both directions between U.S. markets and foreign stocks on deposit in the Federal Reserve Bank. Monetary gold is excluded.

Source: U.S. Census Bureau.

TABLE 7
U.S. IMPORTS FOR CONSUMPTION OF GOLD, BY COUNTRY¹

Year and country	Waste and scrap		Metal powder		Gold compounds	
	Quantity (kilograms)	Value (thousands)	Quantity (kilograms)	Value (thousands)	Quantity (kilograms)	Value (thousands)
2009	43,400	\$600,000	476	\$8,760	64,300	\$1,430
2010:						
Antigua and Barbuda	9	154	--	--	--	--
Aruba	97	1,450	1	20	--	--
Australia	--	--	14	111	--	--
Bahamas, The	526	4,860	--	--	--	--
Belize	30	479	--	--	--	--
Bolivia	88	2,260	--	--	--	--
Canada	8,900	134,000	16	38	--	--
Cayman Islands	11	199	--	--	--	--
China	11	191	--	--	--	--
Colombia	23	723	--	--	--	--
Congo (Kinshasa)	--	--	25	600	--	--
Costa Rica	2,360	26,800	--	--	--	--
Dominican Republic	10,500	204,000	17	181	--	--
Ecuador	26	621	--	--	--	--
El Salvador	4,730	83,000	--	--	--	--
Germany	13	74	16	243	9,180	267
Ghana	--	--	364	7,280	--	--
Guatemala	2,050	20,200	--	--	--	--
Honduras	4,260	75,800	--	--	--	--
Israel	1	32	9	218	--	--
Italy	208	2,040	3	59	--	--
Jamaica	702	9,380	--	--	--	--
Japan	2	41	1	13	24,200	844
Korea, Republic of	5	92	(2)	11	--	--
Malaysia	61	1,190	--	--	--	--
Mali	--	--	50	607	--	--
Mexico	6,500	71,600	41	436	--	--
Netherlands	8	67	--	--	9,510	317
Netherlands Antilles	452	9,970	--	--	--	--
Nicaragua	1,790	31,600	1	34	--	--
Panama	1,490	29,700	--	--	--	--
Sierra Leone	1	28	76	1,260	--	--
Singapore	34	307	3	23	--	--
St. Lucia	61	869	--	--	--	--
Switzerland	(2)	2	9	312	--	--
Taiwan	11	414	--	--	--	--
Trinidad and Tobago	19	333	--	--	--	--
United Kingdom	992	7,600	5	77	601	34
Venezuela	9	165	--	--	--	--
Other	89	1,280	1	30	2	14
Total	46,100	722,000	652	11,500	43,500	1,480

-- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Less than ½ unit.

Source: U.S. Census Bureau.

TABLE 8
GOLD: WORLD MINE PRODUCTION, BY COUNTRY^{1, 2}

(Kilograms)

Country	2006	2007	2008	2009	2010 ^e
Algeria	377	236	656	1,010	740
Argentina	44,131	42,021	42,046	46,588 ^r	60,000
Armenia	1,300 ^e	1,300 ^e	1,359	944	2,000 ³
Australia	247,000	247,000 ^e	215,000	224,000 ^r	261,000
Azerbaijan	--	--	--	353	1,900 ³
Belize ^e	5 ³	5	5	5	--
Benin ^e	24	19	20	20	20
Bolivia	9,628	8,818	8,406 ^r	7,217 ^r	6,394 ^{p, 3}
Botswana ^e	2,800	2,800	3,300	2,000	2,400
Brazil ⁴	43,082	49,613 ^r	54,666 ^r	56,062 ^r	58,000 ^p
Bulgaria	3,818	3,964	4,160	4,482 ^r	3,500
Burkina Faso	1,571	2,250	7,633	13,500	25,000
Burma ^e	100	100	100	100	100
Burundi ^e	750	750	750	750	750
Cameroon ^e	1,500	1,500	1,500	1,600	1,600
Canada	103,513	102,211	95,004	97,367	91,024 ³
Central African Republic ^e	10	10	43 ^r	61 ^r	60
Chad ^e	150	150	100	100	100
Chile	42,100	41,527	39,162	40,834	38,417 ³
China ^e	245,000	275,000	285,000	320,000	345,000
Colombia	15,683	15,482	34,321	47,837	53,605 ³
Congo (Brazzaville) ^e	100	100	100	100	100
Congo (Kinshasa) ^e	10,300	5,100	3,300	3,500 ^r	3,500
Costa Rica	1,210	2,065	154 ^r	209 ^r	200
Côte d'Ivoire	1,324	1,243	2,836	6,647 ^r	5,800 ³
Denmark ⁵	1,129	1,861	1,665	1,117 ³	1,200 ³
Dominican Republic	--	--	47	375	500
Ecuador ⁶	5,168	3,186	800	2,092	2,000 ³
Egypt	--	--	--	60	2,586 ³
Equatorial Guinea ^e	200	200	200	200	200
Eritrea ^e	30	30	30	30	30
Ethiopia ⁷	4,028	4,368	3,159 ^r	4,005 ^r	12,000
Fiji	1,961 ^r	837 ^r	871 ^r	1,040 ^r	1,856 ³
Finland ^e	5,000	5,000	5,000	7,000	7,000
France ^e	1,500	1,500	1,500	1,500	1,500
French Guiana ^e	2,000	2,000	2,000	2,000	2,000
Gabon ^{e, 8}	300	300	300	300	300
Georgia ^e	2,000	2,000	2,000	2,000	2,000
Ghana	69,817	72,209 ^r	72,980 ^r	79,883 ^r	82,000
Greece	--	--	400	500	500
Guatemala	5,036	7,497 ^r	7,837 ^r	8,897 ^r	9,000 ³
Guinea	16,922	15,628	19,945	18,091 ^r	15,217 ³
Guyana	5,668	7,412	8,131	9,326 ^r	9,593 ³
Honduras	4,100	3,275	2,561	2,127	2,200 ³
India ⁹	2,400	3,000 ^e	2,700	2,800	2,700
Indonesia ¹⁰	93,176	117,851	64,390	130,000	120,000
Iran ^e	200	252 ³	400	400	400
Italy ^e	200 ³	450	450	450	450

See footnotes at end of table.

TABLE 8—Continued
GOLD: WORLD MINE PRODUCTION, BY COUNTRY^{1,2}

(Kilograms)

Country	2006	2007	2008	2009	2010 ^e
Japan	8,904	8,869	6,868	7,708 ^r	7,500 ³
Kazakhstan	21,824 ^r	22,564 ^r	20,825 ^r	22,525 ^r	29,941 ³
Kenya	432	3,023	340	1,055 ^r	1,200
Korea, North ^c	2,000	2,000	2,000	2,000	2,000
Korea, Republic of	277	162	175	274 ^r	300
Kyrgyzstan	10,721	10,559	18,132	16,950	18,300
Laos	6,068 ^r	5,137 ^r	4,333 ^r	5,033 ^r	5,061
Liberia	9	311 ^e	624	524 ^r	800
Madagascar ^c	30	50	72 ³	70	70
Malaysia	3,497	2,913	2,489	2,794	2,900 ³
Mali	51,957	48,850	41,160	42,364 ^r	37,000
Mauritania	322	2,251	6,254	8,000	10,000
Mexico	38,961	39,355	50,365	51,393	72,596 ³
Mongolia	22,561	17,473	15,184	9,803	6,037 ³
Morocco ^e	1,200	1,200	1,200	1,200	1,200
Mozambique	85	97	298	511	520 ³
Namibia	2,790	2,496	2,126	2,022	2,675 ³
New Zealand	10,618	10,638	13,402	13,442	13,000 ³
Nicaragua ^c	3,595 ³	3,300 ^r	2,960 ^r	2,590 ^r	2,600
Niger	2,615	3,427	2,314	1,852 ^r	1,700
Nigeria ^c	40	180	200	600 ^r	600
Oman	186	124	46	28	-- ³
Panama	--	--	--	800	1,300
Papua New Guinea	58,349	57,549 ^r	67,463 ^r	67,800 ^r	67,800
Peru ¹¹	202,826	170,236	179,870 ^r	182,403 ^r	164,060 ³
Philippines	36,141	38,792	35,726	37,047	40,847 ³
Poland	500 ^r	450 ^r	430 ^r	440 ^r	425
Romania ^c	400	400	400	400	400
Russia ¹²	159,340	156,975	172,031	192,832 ^r	192,034 ³
Rwanda ^c	15	17 ³	20	20	20
Saudi Arabia	5,200 ^e	4,440	4,527	5,500	4,500 ³
Senegal ^c	600	600	600	4,535 ^{r,3}	4,880
Serbia ^c	450	500	500	450 ^r	722
Sierra Leone	71	212 ^e	196	157 ^r	150
Slovakia	84	198 ^r	92 ^r	346 ^r	340
Solomon Islands ^c	10	--	--	--	--
South Africa	272,128	252,598	212,744	197,628 ^r	188,701 ³
Spain	3,421	3,500 ^e	3,400	3,450	3,500
Sudan	3,158	2,703	2,276	1,922	4,000
Suriname	9,362	9,360	9,798	12,193	12,286 ³
Sweden ^c	5,100	5,000	5,000	5,000	5,000
Tajikistan	1,920	2,000	1,672	1,361	2,049 ³
Tanzania	47,000	40,193	36,434	39,112 ^r	42,000
Thailand	4,300	3,401	2,721	5,400 ^r	5,000
Turkey	8,040	9,920	11,016 ^r	14,469 ^r	17,000
Uganda ^c	1,600	1,600	1,500	1,600	1,600
United Kingdom	--	--	164	185	171
United States	252,000	238,000	233,000	223,000	231,000 ³

See footnotes at end of table.

TABLE 8—Continued
 GOLD: WORLD MINE PRODUCTION, BY COUNTRY^{1,2}

(Kilograms)

Country	2006	2007	2008	2009	2010 ^e
Uruguay	3,000	2,820	2,182	2,180	2,000
Uzbekistan ^e	85,000	85,000	85,000	90,000	90,000
Venezuela	11,600 ^e	10,100	10,100 ^e	11,880 ^r	12,000
Vietnam ^e	2,500	3,000	3,000	3,000	3,500
Zambia	956	1,270	1,930	3,100 ^r	3,400
Zimbabwe	11,354	7,018 ^r	3,579 ^r	4,966 ^r	9,000
Total	2,370,000	2,350,000 ^r	2,280,000 ^r	2,460,000 ^r	2,560,000

^eEstimated. ^pPreliminary. ^rRevised. -- Zero.

¹World totals, U.S. data, and estimated data are rounded to no more than three significant digits; may not add to totals shown.

²Table includes data available through August 19, 2011.

³Reported figure.

⁴Officially reported figures are as follows, in kilograms: Major companies: 2006—37,907; 2007—44,790; 2008—48,373; 2009—48,000; and 2010—50,000 (estimated). Garimpieros: 2006—5,175; 2007—5,210; 2008—5,627; 2009—6,000 (revised); and 2010—6,100 (estimated).

⁵All production from Greenland.

⁶Includes undocumented artisanal production.

⁷Year ending July 7 of that stated.

⁸Undocumented artisanal production.

⁹Refinery output.

¹⁰Excludes production from so-called people's mines, which may be as much as 20,000 kilograms per year, but includes gold recovered as byproduct of copper mining.

¹¹Includes documented production from placer artisanal production.

¹²Mine output including gold recovered as a byproduct, but excludes secondary gold production, which for Russia, in kilograms, was 2006—4,981; 2007—5,867; 2008—8,140; 2009—14,534 (revised); and 2010—16,815.