



# 2009 Minerals Yearbook

GOLD

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In 2009, domestic mine production of gold decreased to 223,000 kilograms (kg), 4% less than that in 2008 (tables 1, 2). This marks the ninth year in a row that production has dropped, and production was 39% lower than the historical high of 366,000 kg in 1998. In 2009, the value of domestic production increased to \$7 billion, up by 7% compared with that in 2008 because of the increase in the price of gold. It was the eighth straight year that the value had increased. Production from the major mines in Nevada was lower as a result of mining lower grade ore, the closure of two mines, and companies concentrating on mine development instead of gold production. Many mine projects and expansions planned within the past 5 years have been slow to develop; however, some of these projects were expected to begin production in 2010. Three mines began or restarted production in 2009—Briggs Mine in California and Jerritt Canyon and North Lantern Mines in Nevada. However, three mines stopped production in 2009—Deep Post and Jerritt Canyon Mines in Nevada and Golden Sunlight Mine in Montana. Price increases have spurred exploration and development of new gold projects. However, since new mines can take more than 10 years to open, there was a lag in the replacement of older mines with the opening of new mines. There was less investment in new projects during the economic slowdown that started in 2008. Mines in Nevada accounted for almost 72% of domestic production in 2009. The remaining production came from mines in Alaska, Utah, Colorado, Washington, California, South Dakota, Montana, Arizona, Idaho, and New Mexico, in descending order of production. Gold was produced at lode mines, a few 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, 30 operations yielded 99% of the gold produced (table 3).

The 2009 domestic exploration budget decreased to \$510 million, a 42% decrease compared with that in 2008. Much of the decrease was a result of reduced exploration in copper and gold targets in Alaska and gold targets in Nevada. The reasons for reduced exploration were the economic downturn and the lack of available credit to finance projects. The worldwide gold exploration budget fell by 28% compared with that in 2008 to \$3.5 billion and represented 48% of the worldwide exploration budget for all minerals (Lowrey, 2009; Wilburn, 2010).

Commercial-grade refined gold was produced by about two dozen domestic companies. Of the several thousand companies and artisans, a few dozen companies dominated the fabrication of gold into commercial products. U.S. jewelry manufacturing was heavily concentrated in the New York, NY, and Providence, RI, areas, with other manufacturers in California, Florida, and Texas. In 2009, the estimated percentages for end use of gold

were jewelry and arts, 69%; dental and medical, 9%; electrical and electronics, 9%; and other, 13%.

Trade in refined bullion comprised 40% of U.S. gold imports and 74% of exports; the United States was a net exporter of 154,000 kg of bullion in 2009 (table 4). The decrease in exports was caused by unusually high exports in 2008 caused by an increase in price and an increase in investments outside the United States. Canada and Mexico provided almost 52% and 21%, respectively, of the refined bullion imported, and the United Kingdom and Australia were the destinations for 78% and 9%, respectively, of the refined bullion exported (table 6).

Engelhard's daily price of gold was volatile and rose above the \$1,200-per-troy-ounce level for the first time ever in December. The price began the year at \$876.64 per troy ounce and fell to the year's lowest level of \$812.03 per troy ounce on January 15. The price rose for the rest of the year and peaked at \$1,215.21 per troy ounce on December 2 before dropping to \$1,127.56 per troy ounce by yearend. The annual average price of \$974.68 per troy ounce, 12% above the annual average gold price in 2008, was the highest annual average price ever.

Gold investment continued to be very high in 2009 because of the financial and economic crisis; such times are traditionally when investment in gold, which is considered to be a safe investment, increases. It was estimated that investors purchased 1,900 metric tons (t) of gold in 2009 and resulted in regional supply shortages for small bars and coins. In 2009, gold held in 17 gold exchange-traded funds (ETFs) and 2 physically backed Canadian funds increased by 617 t to 1,839 t. With physical shortage of small bars and coins, many investors bought gold through ETFs. Most of the increase was in the first 3 months of the year. Domestic gold holdings in ETFs increased by 43%, or 366 t, to 1,213 t, with the SPDR Gold Trust, which was traded on the New York [NY] Stock Exchange, accounting for 93% 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, 2010, p. 26).

The top 15 mining companies produced about one-half of 2009 world gold production. The top five producers, in descending order, were Barrick Gold Corp. (Toronto, Ontario, Canada), Newmont Mining Co. (Denver, CO), AngloGold Ashanti Ltd. (Johannesburg, South Africa), Gold Fields Ltd. (Johannesburg), and Freeport-McMoRan Copper & Gold Inc. (Phoenix, AZ), which accounted for almost one-third of world gold production (Klapwijk and others, 2010, p. 48).

In 2009, the gold mining industry reversed the recent trend of large number of mergers and acquisitions. AngloGold Ashanti and Randgold Resources Ltd. (London, United Kingdom)

purchased a 90% interest in Moto Goldmines Ltd.'s (Subiaco, Western Australia, Australia) Moto project in Congo (Kinshasa). IAMGOLD Corp. (Toronto) bought Orezone Resources Inc. (Ottawa, Ontario, Canada) for the Essakane project in Burkina Faso. Newmont purchased the remaining 33.33% of Boddington Mine in Australia from AngloGold Ashanti. Teck Resources Ltd. (Vancouver, British Columbia, Canada) sold off several noncore gold assets to relieve some of its financial problems. The company sold 60% of the interest in the Agi Dagi and Kirazli gold project in Turkey to Alamos Gold Inc. (Toronto); 79% of the interest in the Morelos gold project in Mexico to Gleichen Resources Ltd. (Toronto); 40% of the interest in the Pogo Mine in Alaska to Sumitomo Metal Mining Co. Ltd. (Tokyo, Japan) and Sumitomo Co. (Tokyo); 50% of the interest in the Hemlo Mines to Barrick; and 60% of the interest in the Lobo-Marte gold project in Chile to Kinross Gold Corp. (Toronto). Eldorado Gold Corp. (Vancouver) acquired Sino Gold Mining Ltd. (Sydney, New South Wales, Australia), which had one mine and several projects in China (Klapwijk and others, 2010, p. 48).

Total world mine production of gold in 2009 was 7% higher than that of 2008. Mine production in China increased, and China continued to be the world's leading gold producer. Annual output in South Africa decreased for the ninth year in a row because of higher costs, lower grade ore, and labor issues. The leading producers among the more than 95 gold-mining nations, in descending order, were China, the United States, Australia, South Africa, and Russia (table 8).

An estimated 165,600 t of gold was mined historically through 2009, with 28,900 t held by central banks as official stocks, 29,600 t held privately as investment, 83,700 t held privately as jewelry, 19,800 t in other fabricated products, and the remaining 3,600 t was unaccounted for (Klapwijk and others, 2010, 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.**—The State's Division of Geology and Geophysical Surveys reported that gold output increased to 24,100 kg valued at \$754 million in 2009 from 24,900 kg valued at \$698 million in 2008, or a decrease in production of 3% and an increase in value of 8% (Szumigala and others, 2010, p. 11).

The Pogo Mine, 145 kilometers (km) southeast of Fairbanks, was completed in 2006. The mine was a joint venture between Sumitomo Metal Mining (51%), Teck (40%), and Sumitomo (9%) and was operated by Teck. On July 7, Teck sold its 40% share to the other partners for \$245 million. Sumitomo Metal Mining Pogo LLC operated the mine and owned 85% of it, and Sumitomo owned the remaining 15%. The mine produced a total of 12,100 kg of gold in 2009, which was more than the projected production of 11,100 kg of gold. Pogo was one of three operations that provided gold for the medals used for the

2010 Winter Olympics in Vancouver; the other two operations were Hemlo Mine and Trail Smelter in Canada (Szumigala and others, 2010, p. 13).

Kinross' underground Fort Knox Mine, near Fairbanks, produced 8,190 kg of gold equivalent (which includes silver) in 2009, 20% less than production in 2008 because lower grade ore was mined. Construction of the Walter Creek heap-leach facility, which had begun in October 2007, was completed in November when the first gold was poured from the facility (Kinross Gold Corp., 2010, p. 4, 11, 39).

Hecla 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 2009, production was 2,090 kg, the same as in 2008 (Hecla Mining Co., 2010, p. 3, 11).

The Nixon Fork Mine, owned by Pacific North West Capital Corp. (Vancouver), started production in 2007; however, production was suspended in October 2008. The mine was placed on care-and-maintenance status because of dramatically lower grade ore than expected. In July 2009, Pacific North West entered into an option to sell the mine to Fire River Gold Corp. (Vancouver). Fire River Gold expected to have a new resource estimate for the project by fall 2010 and a decision on the mine's future by yearend 2010 (Szumigala and others, 2010, p. 8).

The number of Alaskan placer operations that produced gold decreased to 141 in 2009 from 195 in 2008. Estimated placer production in 2009, which was included in the data reported by the State, decreased slightly to 1,710 kg from 1,770 kg of gold in 2008. In 2009, recreational mining activities increased owing to higher gold prices; however, gold production was 9 kg compared with 13 kg in 2008 (Szumigala and others, 2010, p. 14).

On June 22, the U.S. Supreme Court reversed the decision of the U.S. Court of Appeals for the Ninth Circuit decision that had invalidated the permits for the tailings facilities for Coeur d'Alene Mines Corp.'s (Coeur d'Alene, ID) Kensington project. On August 14, the U.S. Army Corps of Engineers reactivated the permit that cleared the way to construct the tailings facilities. The company planned to commence production during the third quarter of 2010. The underground gold project, 72 km north-northwest of Juneau, had reported reserves of 46,000 kg of gold (Coeur d'Alene Mines Corp., 2010, p. 40–41).

NovaGold Resources Inc. (Vancouver) was developing three projects—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 operations at the mine were suspended and the mine entered a period of care-and-maintenance status. This was because of unanticipated mechanical problems, failure to meet environmental requirements, and the global financial downturn (NovaGold Resources Inc., 2010, p. 7).

In 2009, 23 exploration projects had a budget of \$1 million or more, and 28 additional projects had exploration budgets of \$100,000 or more. Exploration expenditures were \$169 million in 2009, 51% lower than in 2008. Many of the companies

in Alaska were looking for gold or copper-gold deposits (Szumigala and others, 2010, p. 1–2).

Northern Dynasty Minerals Ltd. (Vancouver) and Anglo American were 50–50 partners in the Pebble copper-gold-molybdenum project in southwestern Alaska, which included the high-grade underground Pebble East Mine and the open pit Pebble West Mine. Based on its \$70 million budget, the project remained the leading exploration project in Alaska. As of December 2008, the measured and indicated resources were 1,770 t of gold, 22 million metric tons (Mt) of copper, and 1.3 Mt of molybdenum (Northern Dynasty Minerals Ltd., 2009).

In 2009, a feasibility study was completed on Barrick and NovaGold's Donlin Creek joint venture in the historic Kuskokwim Gold Belt in southwestern Alaska. The project had a measured and indicated gold resource of 1,050 t, and the companies were scheduled to file permit applications by the end of 2011 (NovaGold Resources Inc., 2010, p. 6).

International Tower Hill Mines Ltd. (Vancouver) continued to explore its Livengood project in 2009. The indicated resource was 297 t at a grade of 0.85 gram per metric ton (g/t) gold for 252 t of gold. The inferred resource was 164 t at a grade of 0.84 g/t gold for 138 t of gold. The project, 110 km north of Fairbanks, was undergoing heap-leach and metallurgical studies, which had been planned to be completed by the end of 2010 (Preston, 2009).

**Arizona.**—In 2009, all gold mined in Arizona was recovered as a byproduct from copper mining and processing. American Bonanza Gold Corp. (Vancouver) completed a mining plan and started the National Environmental Policy Act process for its Copperstone underground gold project in La Paz County (American Bonanza Gold Corp., 2009).

**California.**—In 2009, gold production was from New Gold Inc.'s (Vancouver) Mesquite Mine and Atna Resources Ltd.'s (Golden, CO) Briggs Mine. Other operations produced gold as a secondary product in 2009, mainly from placer sand and gravel mines and from several small underground mines that produced primarily specimen gold products.

On June 1, Western Goldfields Inc. (Toronto) entered into an agreement to merge with New Gold. In 2009, the Mesquite Mine open pit in Imperial County, CA, 70 km northwest of Yuma, AZ, produced 4,670 kg of gold, 38% more than that produced in 2008. Production increases were caused by transition to the second year of production, increases in recovery rates on leach pads, and the placement of more ore on the leach pads. Production in 2010 was forecast to be between 4,510 and 4,820 kg of gold (reported as between 145,000 and 155,000 troy ounces), and the deposit reportedly had proven and probable reserves of 97,600 kg of gold (New Gold Inc., 2010).

In the fourth quarter of 2008, Atna restarted operations at the Briggs Mine, and in May 2009, the company poured its first bar of gold. In 2009, the mine produced 348 kg of gold. An updated technical report on the Briggs Mine estimated the proven and probable reserves to be 7,240 kg of gold (Atna Resources Ltd., 2010, p. 6–7).

Sutter Gold Mining Inc. (Lakewood, CO) announced on November 19 that it was on track to obtain the remaining permits and approvals during the next 18 to 24 months as it completes the designs, secures financing, and completes

construction of the Sutter Gold underground mine, which included the historic Lincoln gold mine along California's Mother Lode belt. The indicated mineral resources were 6,940 kg of gold (Sutter Gold Mining Inc., 2009).

Emgold Mining Corp. (Vancouver) continued the permitting process to reopen the historic Idaho-Maryland Gold Mine. The estimated measured and indicated resources were 14,700 kg of gold (Emgold Mining Corp., 2009).

**Colorado.**—In 2009, Colorado remained the fourth ranked gold-producing State in the country. The Nation's 10th 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 6,780 kg of gold in 2009, a 16% decrease from that in 2008 owing to the vertical height of the leach pads and the greater distance over which the leaching solution would have to flow. In 2009, CC&V started construction of a mine-life extension project that would add 4 years to the mine production (AngloGold Ashanti Ltd., 2010, p. 96–99).

The Front Range gold property, which included the Cash and Rex Mines, was a joint venture among Global Minerals, Ltd. (Vancouver) (50%) and several private owners (50%). The property merged a collection of former producing high-grade gold mines into one contiguous group. The property produced a small amount of concentrate that was transported by truck to a third party's smelter (Global Minerals, Ltd., 2010, p. 5–6).

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 23 kg of gold in 2009 as a result of exploration activities (LKA International, Inc., 2010).

**Idaho.**—Idaho had limited gold production in 2009 from New Jersey Mining Co.'s (Kellogg, ID) Golden Chest Mine near Murray. New Jersey Mining also continued to develop and explore in Idaho. In addition to New Jersey Mining, other companies with projects with associated gold were in early development stages in 2009.

**Montana.**—The open pit polymetallic Montana Tunnels Mine near Jefferson City [a 50–50 joint venture between Elkhorn Goldfields LLC (Denver) and Apollo Gold Corp. (Greenwood Village, CO)] ceased mining operations in December 2008 because of low base-metal prices. The company had stockpiled ore and operated the mill until the end of April 2009 when the mine was placed on care-and-maintenance status. Apollo was seeking to sell the property to focus on its Black Fox Mine in Ontario, Canada, and Elkhorn was investigating opening a new pit to resume operations (Elkhorn Goldfields LLC, 2010).

Barrick's Golden Sunlight Mine produced 871 kg of gold in 2009. This was 83% less than that in 2008 because the mine entered an extended development phase and was not expected to produce gold again until 2011 (Barrick Gold Corp., 2010a, p. 56; 2010b).

**Nevada.**—Gold production decreased by 10% to 161,000 kg in 2009. However, Nevada kept its long-standing position as the Nation's leading gold-producing State. Because of this decrease, Nevada's rank in world gold production fell from fifth to sixth. In 2009, gold remained the most valuable mine product in Nevada, representing almost 88% of gross proceeds of mines.

The Nevada Division of Minerals reported 20 major gold-silver operations (Dobra, 2010).

In 2009, Barrick produced 78,000 kg of gold from its fully owned Bald Mountain, Cortez, Goldstrike, Ruby Hill, and Storm Mines; a 75% share of the Turquoise Ridge Mines (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 9% less than the company's gold mine production from Nevada in 2008. Open pit and underground production from Goldstrike was 42,100 kg of gold, a 21% decrease compared with that in 2008. The decrease was attributed to the partial shutdown of the autoclaves in the second half of 2009. Production from Bald Mountain was 2,330 kg, 40% less than production in 2008 owing to unplanned permitting delays for the expansion plans. These permitting issues have been resolved, and higher production levels were expected within 3 years. These decreases were partially offset by increases at the Cortez and Storm Mines owing to increasing ownership shares compared with those in 2008. In the first quarter of 2008, Barrick had purchased the remaining 40% of the Cortez Mine, and in 2009, Barrick's share of gold production increased by 21% compared with its 2008 share of gold production. Similarly, Barrick purchased the remaining 40% of the Storm Mine in the third quarter of 2008, and in 2009, Barrick's share of gold production increased by 195% compared with its 2008 share of gold production. Another mine with increased production in 2009 was the Ruby Hill Mine, which produced 3,220 kg of gold or 6% more than that in 2008. Production of gold in 2009 from partially owned mines was 12,200 kg, 4% less than that of 2008. In 2009, Barrick's share of gold production from the Marigold Mine was 1,520 kg (a slight decrease compared with 2008 gold production), 6,500 kg from the Smoky Valley Common Operation (a decrease of 11%), and 4,140 kg from Turquoise Ridge (an increase of 7%). Barrick completed construction on the Cortez Hills Mine in Lander County. In December, the U.S. Court of Appeals for the Ninth Circuit in an opinion about the Bureau of Land Management's approval of the project ruled that the order of the U.S. District Court for the District of Nevada denying the injunctive relief and permitting construction of the project was affirmed in part and reversed in part. The appeals court agreed that certain claims against the project were unlikely to succeed; however, the court found that more environmental analysis was needed on three matters—mine dewatering mitigation plans, particulate emissions, and transportation and treatment of refractory ore (Barrick Gold Corp., 2010a, p. 17, 56; 2010b).

Newmont produced 62,400 kg or 39% of Nevada's gold production from eight open pits and six underground mines. The operations were in Eastern Nevada Operations (Carlin East, Deep Post, Gold Quarry, Leeville, North Lantern, and Pete Mines), the Lone Tree, Midas, Mule Canyon, Phoenix, Trenton Canyon, Twin Creeks, and the joint-venture Turquoise Ridge (25% share) Mines. In 2009, gold production from Newmont's Nevada operations decreased by 10% because of mining lower grade ore, lower leach placement, and completion of mining at Deep Post. The losses were partially offset by the startup of the North Lantern Mine. Newmont expected to sell less gold

from its Nevada operations in 2010 primarily because of mining lower grade ore (Newmont Mining Corp., 2010, p. 22–23, 58, 61).

In 2009, Yukon-Nevada Gold Corp. (Vancouver) produced 304 kg of gold, 73% lower than in 2008, from its Jerritt Canyon Mine, which consisted of a milling facility and two underground mines, Smith and SSX. In the first quarter of 2009, the company submitted a new plan for mercury emission control in order to restart operations. On March 25, the company received permission to restart the milling operation, and gold production started on April 16. The company closed the roaster operations on May 30 owing to a delay in fabrication of key components of the emission control systems, and a stop order was once again issued by the Nevada Division of Environmental Protection (NDEP). Operations were restarted on October 20 after the company resolved all of the compliance concerns with the NDEP (Yukon-Nevada Gold Corp., 2010, p. 4–5).

Rio Tinto plc (London) owned the Denton-Rawhide Mine, which produced 602 kg of gold in 2009. Mine production had been stopped in 2003, but residual production from leach pads continued (Rio Tinto plc, 2010, p. 65).

In 2009, the Robinson copper mine near Nye [owned by Quadra Mining Ltd. (Vancouver)] produced 55,600 t of copper and 3,080 kg of gold. Production was lower than that in 2008 because of changes to the mine plan and a drop in ore grade (Quadra Mining Ltd., 2010, p. 7).

The Rochester Mine, owned by Coeur d'Alene Mines, produced 68,400 kg of silver and 395 kg of gold. In August 2007, the company had completed mining the existing reserves; however, gold and silver production were expected to continue from stockpiled ore and existing leach pads until 2014. The company planned to continue to explore in and around the Rochester Mine (Coeur d'Alene Mines Corp., 2010, p. 33–34).

In 2009, Great Basin Gold Ltd. (Vancouver) extracted 71,000 t of ore, resulting in 2,520 kg of gold equivalent, from trial mining activities at the underground Hollister Mine. In December 2008, the company had purchased the Esmeralda mill and completed refurbishment of the mill in August 2009 (Great Basin Gold Ltd., 2010, p. 32–47).

The trend in exploration in Nevada decreased to \$110 million in 2009 from \$158 million in 2008. In spite of the reduction in exploration expenditures, reported proven and probable gold reserves in 2009 in Nevada increased to 2,330 t from 2,180 t in 2008 (Dobra, 2010).

Several projects were in the feasibility stage in 2009. These included Atna's Reward project, International Minerals Corp.'s (Scottsdale, AZ) Goldfield project, Newmont's Emigrant project, Pacific Gold Corp.'s (Reno) Black Rock Canyon project, and Scorpio Gold Corp.'s (Vancouver) Mineral Ridge project.

**New Mexico.**—Gold production in New Mexico was a byproduct of copper production in Grant County at Freeport-McMoRan's Ivanhoe concentrator. In 2009, gold production was 14 kg (New Mexico Energy, Minerals and Natural Resources Department, 2010).

In 2009, one silver and gold project began development, and several polymetallic deposits were explored. Santa Fe Gold Corp. (Albuquerque) was nearing production at the Summit silver and gold mine and anticipated that production at the mine

would start in the first quarter of 2010 (Santa Fe Gold Corp., 2009).

**South Carolina.**—Romarco Minerals Inc. (Vancouver) announced a new measured and indicated resource for its Haile Gold Mine Project in Lancaster County, 44.6 Mt of ore at an average grade of 1.51 g/t gold, containing 67,500 kg of gold. In December, the company decided to launch a new feasibility study (Romarco Minerals Inc., 2010, p. 2–4).

**South Dakota.**—In 2009, Wharf Resources Inc. (Lead) operated the Goldcorp-owned Wharf open pit gold mine near Lead, which produced about 2,110 kg of gold, 12% more than 2008 gold production. The increase was attributed to the improved leach pad management and plant improvements, which more than offset the drop in grade and lower ore processing (Goldcorp Inc., 2010, p. 31).

**Utah.**—Rio Tinto's Bingham Canyon Mine near Salt Lake City, which was operated by Kennecott Utah Copper Corp. (Magna) produced 18,100 kg of gold as a byproduct from its copper mining operation. Bingham Canyon remained the third-ranked gold producer and the leading gold-producing mine outside Nevada in 2009. Gold production increased by 37% compared with that in 2008 because of greater throughput of ore. The company has identified a new copper, molybdenum, and gold porphyry system beneath the open pit that is being mined. In 2009, Kennecott Utah also operated the nearby Barney's Canyon Mine, which had closed in the first quarter of 2002 but continued gold production from heap-leaching pads that produced 62 kg of gold. Several other small mines produced minor amounts of gold (Bon and Krahulec, 2010, p. 5; Rio Tinto plc, 2010, p. 40, 65).

Exploration for gold and silver decreased because of the economic downturn, which limited capital investment. Exploration was largely focused in the eastern Basin and Range Province of the western part of the State (Bon and Krahulec, 2009, p. 10).

**Washington.**—Kinross's underground Kettle River-Buckhorn Mine in the north-central part of the State marked its first full year of production. In 2009, the mine produced 5,400 kg of gold. The new mine fed the Kettle River Mill adjacent to the closed Kettle River Mine, which was about 76 km from the Kettle River-Buckhorn Mine. The project reportedly had an estimated 24,900 kg of gold reserves (Kinross Gold Corp., 2010, p. 5, 10, 41).

## World Industry Structure

World gold mine production in 2009 was 7% higher than that in 2008, the first increase since 2005 (table 8). In 2009, gold production in 23 countries increased by more than 1 t from their production in 2008. Some of the larger increases in gold production were 65,600 kg in Indonesia; 35,000 kg in China; 18,700 kg in Russia; 13,500 kg in Colombia; 7,000 kg in Australia; 6,000 kg in Brazil; 5,870 kg in Burkina Faso; 5,500 kg in Ghana; 5,000 kg in Senegal; 5,000 kg in Uzbekistan; 4,950 kg in Argentina; 3,740 kg in Côte d'Ivoire; and 3,570 kg in Tanzania. These increases were partially offset by gold production decreases in several countries. In 2009, production of gold decreased by more than 1 t in nine countries. Some of the larger decreases in gold production in 2009 were 15,000

kg in South Africa; 10,000 kg in the United States; 5,380 kg in Mongolia; 2,000 kg in Papua New Guinea; and 1,860 kg in Guinea. In 2009, the 12 leading gold producing-countries—China, the United States, Australia, South Africa, Russia, Peru, Indonesia, Canada, Uzbekistan, Ghana, Papua New Guinea, and Brazil (in descending order) accounted for 76% of global production. The next 10 leading gold-producing countries accounted for another 15%, while the remaining 79 countries made up 9% of global gold production in 2009.

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 2009 was 4,287 t compared with the revised 2008 total supply of 3,957 t. GFMS also reported decreases in official sector sales (82%), increases in mine production (7%), no net producer hedging, and no implied net disinvestment for sales of bars and coins by private investors. Old scrap production increased by 27% in 2009 compared with 2008 old scrap production to an alltime high because of the increase in gold price (Klapwijk and others, 2010, p. 7).

GFMS reported that total fabrication in 2009, including the use of scrap, was 2,417 t, 16% lower than that of 2008, the lowest since 1988. In 2008, gold jewelry fabrication was 1,760 t, 20% lower than that of 2007. The top six gold jewelry manufacturing countries, in descending order—India (474 t), China (340 t), Italy (123 t), Turkey (80 t), United States (63 t), and Saudi Arabia (54 t)—represented 64% of the world's jewelry production. In 2009, production in Turkey, Italy, the United States, and India decreased by 56%, 29%, 18%, and 9%, respectively, compared with jewelry production in 2008 owing to increased gold prices and the economic downturn. In contrast, gold jewelry fabrication in China rose by 8% in 2009. Coin fabrication was 229 t, an increase of 22% compared with that of 2008, the highest level in 23 years, and was the only end use that increased in 2009. The demand for safe-haven investments and the drop in reselling gold coins has led to increases in production, a gold coin shortage, and extended delivery times. In 2009, U.S. Mint sales of the American Eagle gold coins were 44,300 kg, which was 66% higher than sales in 2008, and sales of the American Buffalo coins were 6,220 kg (200,000 coins containing 1 troy ounce of gold each) an increase of only 17% compared with those in 2008. In 2009, Canada increased gold coin minting to 38,200 kg or an increase of 38% compared with minting in 2008, and Austria minted 24,900 kg, or 33% more during the same period. The amount of gold used in electronics declined by 16% to 246 t, which reflected the global economic downturn. Gold used in dentistry declined by 5% to 53 t in 2009 owing to an increase in nonmetallic substitutions. Gold used in other industrial and decorative applications decreased by 18%. Gold used in medals and for imitation coins (nonmonetary coins) decreased by 19% because of high and volatile gold prices (Klapwijk and others, 2010, p. 35–37, 80–106).

## World Review

**Argentina.**—In 2009, production was 47,000 kg or 12% higher than production in 2008 because of new production from the Yamana Gold Inc.'s (Toronto) Gualcamayo Mine, which produced 4,460 kg of gold during the year. Gold production

from Barrick's Veladero Mine also increased by 12% because of higher ore grades and increases in crushing capacity owing to the startup of the crusher circuit expansions (Barrick Gold Corp., 2010a, p. 57; Goldcorp Inc., 2010, p. 28–29).

In 2009, production from AngloGold's Cerro Vanguardia Mine was 6,470 kg of gold, a 25% increase compared with production in 2008. The increase was attributed to the resolution of some technical issues late in 2008 (AngloGold Ashanti Ltd., 2010, p. 102–103). These production increases were partially offset by production losses at 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%)] owing to mining lower grade ore (Yamana Gold Inc., 2010, p. 56–57).

**Australia.**—Australian gold production in 2009 increased by 3% compared with that in 2008. Production increases were from established operations combined with increases from mines that started in 2008. In 2009, two new mines started production—Newmont's Boddington Mine, which started production in November, and OZ Mineral Ltd.'s (Melbourne) Prominent Hill Copper Mine, which started production in April. A portion of the increase were partially offset by production losses at a number of established operations and a number of small-scale mines that closed because of lower ore grades (CPM Group, 2010, p. 90; Klapwijk and others, 2010, p. 44).

In 2009, Barrick had seven operations in Australia, from which Barrick's production was 44,400 kg of gold, 4% more than that in 2008. All operations except the Henty Mine, which Barrick sold to Bendigo Mining Ltd. (Melbourne) in July, saw increases in production compared with 2008 production. In 2009, the Yilgarn South operations produced 10,900 kg of gold, 8% more than production in 2008 because of better ore grades and an increase in mill throughput owing to an ore purchase agreement with a third party mining company. Other Barrick mines produced more gold in 2009 compared with 2008 production—Osborne, 30%; Cowal, 22%; Plutonic, 13%; and Kanowna, 6%. Production from Kalgoorlie, a joint venture with Newmont, increased by 14% in 2009 compared with production in 2008 owing to an increase in overall ore grade (Barrick Gold Corp., 2010a, p. 57–56; b).

In 2009, AngloGold's Sunrise Dam Gold Mine produced 12,500 kg of gold, a decrease of 8% compared with 2008 gold production. The mine consisted of an open pit and an underground mine, and in early 2008, the high-grade ore area had been mined out (AngloGold Ashanti Ltd., 2010, p. 91–92).

In 2009, Newcrest Mining Ltd. (Melbourne) operated four mines in Australia. The Cadia Hill Mine produced 7,120 kg of gold, a 43% decrease compared with 2008 production because of lower ore grade; the 100%-owned Telfer and the 70%-owned Cracow Mines produced 16% and 4%, respectively, more gold compared with gold produced in 2008. The Ridgeway Mine produced 25% less gold in 2009 than it did in 2008 owing to lower ore grade (Newcrest Mining Ltd., 2009a-c, 2010).

Newmont's Boddington Mine poured the first gold bar in September and established commercial production in November. The mine sold 4,100 t of copper and 3,210 kg of gold. In 2009, Newmont also owned the Jundee and Tanami operations as well as the Kalgoorlie joint-venture project with Barrick. The Jundee

operation sold 12,800 kg of gold in 2009, 10% more than sales in 2008. The Tanami operation sold 9,050 kg of gold, 21% less than in 2008 owing to a decrease in ore processed in 2009 (Newmont Mining Corp., 2010, p. 25, 65–66).

In April, OZ Minerals first produced concentrates from its Prominent Hill copper mine. During 2009, the mine produced 96,300 t of copper and 2,350 kg of gold. The company estimated that annual production in 2010 to 2012 would average 100,000 to 110,000 t of copper and 2,500 to 2,800 kg of gold (OZ Minerals Ltd., 2010, p. 15).

Gold Fields produced gold from two mines in Australia—Agnew and St. Ives. In 2009, Agnew produced 5,830 kg of gold, 7% less than that produced in 2008. St. Ives produced 12,900 kg of gold in 2009, about the same as 2008 production (Gold Fields Ltd., 2010, p. 1–8).

In 2009, North Queensland Metals Ltd. (Fortitude Valley) produced 1,540 kg of gold from the Pajingo Mine, slightly less than that of 2008. North Queensland was the operator and owned a 60% share; the remainder was owned by Heemskirk Consolidated Ltd. (Melbourne) (North Queensland Metals Ltd., 2010). In 2009, New Gold's Peak Mines produced 2,900 kg of gold, a 7% decrease compared with 2008 production. The decrease was caused by a drop in ore grade (New Gold Inc., 2010).

Compared with partial-year production data, production at a number of mines increased during their first full year of production. In 2009, Avoca Resources Ltd. (West Perth) produced 5,700 kg of gold from its Higginsville Gold Mine (Avoca Resources Ltd., 2010). The Frogs Leg Mine [a joint venture between La Mancha Resources Inc. (Montreal, Quebec, Canada) (51%) and Dioro Exploration NL (Nedlands) (49%)] produced 2,810 kg of gold, and St Barbara Ltd.'s (Melbourne) Leonora Mine produced 3,300 kg during the same period. Focus Minerals Ltd. (Perth) produced 1,560 kg of gold in 2009 (Focus Minerals Ltd., 2010; La Mancha Resources Inc., 2010; St Barbara Ltd., 2010).

**Azerbaijan.**—In May, Anglo Asian Mining plc (London) poured its first gold at the Gedabek copper and gold project. In 2009, the mine produced 353 kg of gold and planned to produce 1,660 kg of gold in 2010 (Anglo Asian Mining plc, 2010, p. 2, 7).

**Brazil.**—In 2009, Brazilian gold production increased by 11% compared with that in 2008 owing to startup of an expansion project at Kinross's Paracatu Mine that increased production by 88% (Kinross Gold Corp., 2010, p. 43–44).

Production from the AngloGold Ashanti Mineração, the country's leading gold mining complex, was 10,200 kg of gold or 3% more than that in 2008. 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 the increased mining at the Cuiaba Mine in the second half of 2009 (AngloGold Ashanti Ltd., 2010, p. 105–107).

Yamana operated five mines that produced gold in 2009. Chapada produced 4,860 kg of gold, a 4% increase compared with 2008 production because of increased ore mining and processing. The Jacobina complex of underground mines in the State of Bahia produced 3,440 kg of gold, a 51% increase

compared with production in 2008. The increase resulted from the completion of plant upgrades and the mining of higher grade ore. The Fazenda Brasileiro Mine, an underground mine in northeastern Brazil, produced 2,380 kg of gold, 15% lower than that in 2008. 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 expected to be finalized in early 2010. On September 1, São Vicente began commercial production and produced 1,540 kg of gold in 2009. The São Francisco Mine produced 2,570 kg of gold, an 8% increase compared with 2008 production (Yamana Gold Inc., 2009, 2010, p. 53–60).

In 2009, Serra Grande (a joint venture equally owned by AngloGold and Kinross) produced 4,790 kg of gold, a 13% decrease compared with that in 2008. The Serra Grande in central Brazil consists of three underground mines (Mina III, Mina Nova, and Palmeiras) and an open pit mine (Mina III). Difficulties in mining quartz veins and lower ore grades were the main reasons for the decrease in production in 2009 (AngloGold Ashanti Ltd., 2010, p. 108–109).

Jaguar Mining Inc. (Concord, NH) operated two active mines that produced gold in 2009. The company produced 4,820 kg of gold, 34% more than 2008 production. The Turmalina Mine produced 2,550 kg of gold and the Paciencia Mine produced 2,070 kg of gold in 2009. Production increased because the Paciencia had its first full year of production in 2009 (Jaguar Mining Inc., 2010, p. 7–8).

**Burkina Faso.**—In 2009, gold production was 13,500 kg, a 77% increase compared with 2008 production. The increase was partially attributed to the first full year of production from SEMAFO Inc.'s (Saint-Laurent, Quebec, Canada) Mana Mine that produced 4,770 kg of gold in 2009, a 107% increase compared with 2008 production (SEMAFO Inc., 2010, p. 9).

High River Gold Mines Ltd. (Toronto) owned and operated the Taparko-Bouroum Mine that produced 3,100 kg of gold. This was 225% higher than 2008 production owing to resolution of technical problems that surfaced during mill startup (High River Gold Mines Ltd., 2010).

In June, Cluff Gold plc (London) fully commissioned its 78%-owned Kalsaka Mine, which produced 1,690 kg of gold (Cluff Gold plc, 2010, p. 10–11).

**Canada.**—Canada ranked eighth in world gold production, as its output increased slightly to 97,400 kg. Goldcorp operated three mines in Ontario—the Musselwhite, Porcupine, and Red Lake Mines. In 2009, the Red Lake Mine produced 19,400 kg of gold, a slight decrease compared with 2008 production because of lower ore grades resulting from ore body development. The Porcupine and Musselwhite Mines produced 9,900 kg and 7,230 kg of gold, respectively, which was 9% and 10% more than in 2008, respectively, because of higher mill throughput and higher grades (Goldcorp Inc., 2010, p. 16–22).

In April, Barrick purchased the remaining 50% interest of the Hemlo Mine from Teck. Barrick's share of gold production at Hemlo in 2009 was 8,550 kg compared with 8,090 kg in 2008 (Barrick Gold Corp., 2010a, p. 56; 2010b).

Agnico-Eagle Mines Ltd. (Toronto) operated three mines in Quebec—the Goldex, Lapa, and LaRonde Mines. The Goldex Mine had its first full year of production and produced 4,630

kg of gold. On May 1, the Lapa underground mine achieved commercial production and produced 1,640 kg of gold. In 2009, the LaRonde Mine produced 6,700 kg of copper, 6,330 kg of gold, 121,000 kg of silver, and 56,200 kg of zinc. Agnico-Eagle gold production was 6% lower in 2009 than in 2008 owing to lower ore grades. In 2010, the company planned to open another mine, the Meadowbank in Nunavut Territory (Agnico-Eagle Mines Ltd., 2010, p. 14–16, 30).

Other mines either began production or had their first full year of production in 2009. In May, Apollo began production at its Black Fox Mine in Ontario and produced 1,650 kg of gold by yearend (Apollo Gold Corp., 2010). In October, St Andrew Goldfields Ltd.'s (Toronto) Holloway Mine in Ontario commenced production and produced 582 kg of gold (St Andrew Goldfields Ltd., 2010, p. 4). Alexis Minerals Corp.'s (Toronto) Lac Herbin Mine in Quebec produced 1,030 kg of gold in its first full year of production (Alexis Minerals Corp., 2010).

The increases were partially offset by output losses from 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. In 2009, gold production from the Kemess South Mine was 5,380 kg, 7% less than production in 2008 because ore production was shifted to the eastern end of the pit when ore from the western end of the pit was exhausted (Northgate Minerals Corp., 2009, p. 33). Vale's Sudbury operations produced 1,520 kg of gold, which was 42% less than 2008 production because of a strike (Vale S.A., 2010, p. 43).

**Chile.**—In 2009, gold production was 40,800 kg, 4% more than that in 2008. The leading gold-producing mine was Yamana Gold's El Penon Mine, which produced 6,710 kg of gold, 4% less than in 2008. Yamana also produced 2,490 kg of gold from Minera Florida, 28% more than that in 2008 because of changes in mining methods (Yamana Gold Inc., 2010, p. 54, 57).

**China.**—China's production of gold increased by 12% to 320,000 kg compared with 2008 gold production. The increases in gold production were caused by the increase in gold prices, the low cost of labor, support from the central government, and consolidation of the gold mining industry. Historically, the gold mining industry has been greatly fragmented with a large number of small mines and mining companies. In 2009, 40% of the gold output was produced by the top five mining companies.

In 2009, Zijin Mining Group Co., Ltd. (Zijin, Guangdong Province) was the leading gold producer and produced more than 75,000 kg of gold, including 30,700 kg of its own mine-produced gold and 42,700 kg of gold refined from third party ores (Zijin Mining Group Co., Ltd., 2010). In 2009, Shandong Gold Group Co., Ltd. (Jinan, Shandong Province) and Zhaojin Mining Corp., Ltd. (Tianjin Municipality) produced 18,000 kg and 19,000 kg of gold, respectively (Klapwijk and others, 2010, p. 45).

**Côte d'Ivoire.**—In 2009, production of gold was 6,570 kg or 132% more than gold production in 2008 because of the first full year of production from Lihir Gold Ltd.'s (Port Moresby, Papua New Guinea) Bonikro Mine. In 2009, the mine produced 4,670 kg of gold (Lihir Gold Ltd., 2010, p. 10). In September, Cluff Gold fully commissioned its 90%-owned Angovia Mine



and produced 519 kg of gold by yearend (Cluff Gold plc, 2010, p. 12).

**Dominican Republic.**—GlobeStar Mining Corp. (Toronto) started gold production in late 2008 and produced 3,750 kg of gold in 2009 at its Cerro de Maimon Mine (GlobeStar Mining Corp., 2010). Construction of the Barrick and Goldcorp jointly owned Pueblo Viejo project continued in 2009, and the mine was scheduled to start producing in late 2011. The project could produce an average of 31,000 kg of gold per year during the first 5 years of production (Redwood, 2010).

**Ghana.**—Production of gold in 2009 was 86,000 kg, which was 7% higher than that of 2008. Production from Newmont's Ahafo Mine was 16,500 kg, up slightly compared with 2008 gold production owing to an increase in tonnage of ore mined. In 2009, AngloGold's Obuasi and Iduapriem Mines produced 17,800 kg of gold, slightly more than 2008 production (AngloGold Ashanti Ltd., 2010, p. 74–77; Newmont Mining Corp., 2010, p. 28–29).

Gold Fields produced gold from two mines in 2009. The Tarwa Mine produced 20,700 kg of gold, 6% more than production in 2008. The Damang Mine produced 6,300 kg of gold, slightly more than 2008 production (Gold Fields Ltd., 2010, p. 1–8).

Red Back Mining Inc. (Vancouver) began commercial production from the underground mine at Akwaaba, which is part of the Chirano gold mine. In 2009, Chirano produced 5,710 kg of gold, which included 553 kg of gold from Akwaaba. Chirano's output was 52% more than 2008 production (Red Back Mining Inc., 2010, p. 2, 5).

In 2009, Golden Star Resources Ltd.'s (Littleton, CO) Wassa Mine benefited from higher grade ore from the Benso and the Hwini-Butre deposits. In 2008, mining commenced at the Benso deposit, and in 2009 mining operations started at the Hwini-Butre deposit. In 2009, production from the Wassa Mine was 6,960 kg of gold, 78% more than 2008 production. Golden Star's Bogoso gold mine produced 5,790 kg of gold in 2009, 9% more than that in 2008 (Golden Star Resources Ltd., 2010).

**Guatemala.**—In 2009, Guatemala's only gold-producing mine, Goldcorp's Marlin Mine, produced 14% more than in 2008 because of higher mill throughput (Goldcorp Inc., 2010, p. 26–27).

**Guinea.**—Gold production in 2009 fell by 9% compared with that of 2008. AngloGold's Siguirri Mine produced 11,600 kg of gold in 2009, 5% less than 2008 production because the high-grade areas were mined out in 2008. Crew Gold Corp. (Weybridge, United Kingdom) operated the LEFA Mine, which produced 5,520 kg of gold in 2009, 10% less than 2008 production because of lower mill capacity resulting from repairs to the semiautogenous grinding (SAG) mill (AngloGold Ashanti Ltd., 2010, p. 78–79; Crew Gold Corp., 2010, p. 25).

**Indonesia.**—In 2009, gold production rose to 130,000 kg, a 102% increase compared with 2008 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 60% (77,800 kg) and 13% (17,100 kg), respectively, of Indonesian gold production in 2009. Production at Batu Hijau and Grasberg recovered from the low levels in 2008 when heavy rains affected

production (Freeport-McMoRan Copper & Gold Inc., 2010, p. 26; Newmont Mining Corp., 2010, p. 25–26). Offsetting some of the increases in production was Newcrest's Gosowong Mine, which produced 11,600 kg of gold, 11% less than 2008 production (Newcrest Mining Ltd, 2009a-c, 2010).

**Kazakhstan.**—KazakhGold Group Ltd.'s (London) operations produced 5,660 kg of gold in 2009, a slight increase compared with 2008 production because the company processed stockpiled ore and upgraded one of its concentrators (Mining Journal, 2010).

**Kyrgyzstan.**—Gold production for 2009 was 17,000 kg, a decrease of 7% compared with that in 2008. Centerra Gold Inc.'s (Toronto) Kumtor Mine produced 16,300 kg of gold in 2009, a 6% decrease compared with 2008 production because equipment that was supposed to be used for mining was instead used for waste and ice removal (Centerra Gold Inc., 2010, p. 4).

**Mali.**—AngloGold had interests in three gold mines in Mali—Morila (AngloGold and Randgold, 40% each, and Government of Mali, 20%), Sadiola [AngloGold and IAMGOLD Corp. (London), 38% each; Government of Mali, 18%; and International Finance Corp., 6%], and Yatela (AngloGold and IAMGOLD, 40% each, and Government of Mali, 20%). In 2009, these mines produced 28,600 kg of gold, 14% lower than gold production in 2008 (AngloGold Ashanti Ltd., 2008, p. 81–86).

The Morila Mine, 180 km southeast of the Bamako Mine, was operated by Randgold and produced 10,600 kg of gold in 2009. The 19% decrease in production compared with that of 2008 was because mining the open pit was completed in April, and the company was treating low-grade stockpiles. In 2010, production was projected to be about 2,800 kg of gold because only treatment of the low-grade stockpiles was scheduled to continue until 2013 (AngloGold Ashanti Ltd., 2010, p. 81–82).

The Sadiola operation consists of five open pits 77 km south of Kayes. In 2009, the operation produced 11,000 kg of gold, which was 22% less than production in 2008. The decrease was mainly caused by lower ore grades owing to the depletion of the Sadiola main pit reserves. In 2010, production was projected to decline; however, the addition of a gravity circuit could increase production in future years (AngloGold Ashanti Ltd., 2010, p. 83–84).

In 2009, the Yatela Mine, 25 km north of Kayes, produced 6,900 kg of gold, a 35% increase compared with 2008 production. The increase resulted from mining a high-grade area, which was expected to be mined out by early 2010 (AngloGold Ashanti Ltd., 2010, p. 85–86).

Randgold owned 80% of the Loulo Gold Mine; the other 20% was owned by the Government of Mali. In 2009, the mine produced 10,900 kg of gold, which was 36% more than 2008 production because of higher throughput, which was enabled by plant upgrades (Randgold Resources Ltd., 2010, p. 31–34).

**Mauritania.**—In 2009, production from Red Back Mining's Tasiast Gold Mine, the country's only primary gold mine, was 4,930 kg of gold, 13% more than 2009 production. First Quantum Minerals Ltd.'s (Vancouver) Guelb Moghrein copper and gold operation was the only other gold producer in 2009 (Red Back Mining Inc., 2010, p. 5).

**Mexico.**—In 2009, gold production reached an alltime high of 51,400 kg and was slightly higher than 2008 gold production. Goldcorp operated three mines in Mexico—El Sauzal, Los Filos, and San Dimas. The company also owned the Penasquito Mine, which was scheduled to begin commercial production in 2010. In 2009, El Sauzal produced 6,340 kg gold, a 26% decrease compared with gold production in 2008 owing to the age of the mine and anticipated lower ore grades. The Los Filos and San Dimas Mines produced 7,440 kg and 3,510 kg of gold, respectively, in 2009, 12% and 30% more, respectively, than gold production in 2008 because of higher tonnage mined at the Los Filos Mine and the higher ore grade at the San Dimas Mine. The Penasquito Mine began to approach full production, and in 2009, the mine produced 2,810 kg of gold (Goldcorp Inc., 2010, p. 21–25, 42).

Fresnillo plc (London) operated two gold mines and one silver mine with byproduct gold production. In 2009, Fresnillo's gold production was 8,600 kg, 5% more than 2008 gold production. Fresnillo also had limited production from the Saucito Mine, which was scheduled to start commercial production in 2011 (Fresnillo plc, 2010).

Other mines that had increased production in 2009 were New Gold's Cerro San Pedro Mine, which was in its second year of full production and produced 2,970 kg of gold, 13% more than that produced in 2008 (New Gold Inc., 2010). Alamos Gold Inc.'s (Toronto) Mulatos Mine produced 5,550 kg of gold, an increase of 18% because of higher gold recovery from heap leaching (Alamos Gold Inc., 2010, p. 2–3).

In May, Minefinders Corp. (Vancouver) began commercial production at the Dolores Mine and produced 2,400 kg of gold by yearend (Minefinders Corp., 2010, p. 1). Coeur d'Alene began gold production from its Palmarejo Mine in the second quarter and produced 1,700 kg by yearend (Coeur d'Alene Mines Corp., 2010, p. 4). On November 1, Agnico-Eagle started commercial production at the Pinos Altos Mine in Chihuahua State. The open pit operations produced 504 kg of gold in the first year of production. The company planned to begin underground operations in 2010 and expected to produce 4,700 kg of gold from both open pit and underground mining (Agnico-Eagle Mines Ltd., 2010, p. 18).

**Mongolia.**—Gold production in 2009 was 9,800 kg, 35% less than 2008 production owing to losses at Centerra Gold's Boroo gold mine. Gold production from the mine was 4,680 kg in 2009, which was lower because a labor strike temporarily shut down the mine (Centerra Gold Inc., 2010, p. 6).

**New Zealand.**—In 2009, gold production was 13,400 kg, a slight increase compared with production in 2008. Newmont's Waihi Mine produced 3,510 kg, 22% less than 2008 production because an electrical fire temporarily suspended milling operations in May (Newmont Mining Corp., 2010, p. 66). In 2009, OceanaGold Corp. (Melbourne) produced 7,240 kg of gold from the Macraes Goldfield Mine, which was 27% more than 2008 production owing to the higher grades from the open pit and the Frasers underground operations. OceanaGold's other operation, the Reefion Goldfield Mine, produced 2,720 kg of gold in 2009, which was 15% more than production in 2008 (OceanaGold Corp., 2010, p. 13).

**Papua New Guinea.**—Production from Papua New Guinea mines decreased by 3% in 2009 compared with that in 2008. Barrick owned 95% of the Porgera Mine, and the Papua New Guinea Government held the remaining 5%. Barrick's share of production was 19,500 kg of gold in 2009, which was 12% higher than 2008 production (Barrick Gold Corp., 2010a, p. 57–58; b).

In 2009, Lihir produced 26,500 kg of gold, 11% more than that of 2008 from its Lihir Island operations because of the higher quantity of ore processed (Lihir Gold Ltd., 2009, p. 12–15). Production at Ok Tedi Mining Ltd.'s (Tabubil) Ok Tedi Mine was unchanged in 2009, and production at Allied Gold Ltd.'s (Milton, Australia) Simberi was 8% less than 2008 production (Klapwijk and others, 2010, p. 46).

**Peru.**—In 2009, gold production increased slightly to 182,000 kg compared with production in 2008; Peru was the sixth ranked gold-producing country in the world. Newmont and Compañía de Minas Buenaventura S.A.A. (Lima) jointly owned the Yanacocha Mine in the Cajamarca District, which produced 64,000 kg of gold in 2009, 39% more than in 2008 (Newmont Mining Corp., 2010, p. 24).

Buenaventura owned three other mines and a 35.78% share of another mine. In 2009, excluding production from the Yanacocha Mine, Buenaventura produced 13,200 kg, slightly more than production in 2008 (Compañía de Minas Buenaventura S.A.A., 2010, p. 3).

Barrick's Lagunas Norte Mine produced 31,300 kg of gold in 2009, 14% less than production in 2008, because of the planned mining of lower grade ore. As Barrick's Pierina Mine neared the end of its economic mine life, it produced 8,430 kg of gold, 32% less than production in 2008 (Barrick Gold Corp., 2010a, p. 43; b).

In 2009, its first full year of production, Gold Fields produced 10,300 kg of gold from the Cerro Corona copper and gold mine (Gold Fields Ltd., 2009, p. 1–8).

**Russia.**—Russian gold production in 2009 increased to 191,000 kg, 11% more than 2008 production. The leading gold producer in Russia was Polyus Gold Mining Co. (Moscow) with 39,000 kg of production from four mines and several alluvial deposits, a slight increase compared with 2008 production of 38,000 kg. Some of the increase was attributed to startup of the Titimukhta Mine and modernization of the Kuranakh Mine. In 2009, Polyus had two mines under construction and three other projects undergoing feasibility studies (Polyus Gold Mining Co., 2010, p. 4–9).

In its first full year of production, the Kupol Mine (75% owned by Kinross) produced 28,800 kg of gold. In 2010, production was expected to be lower because of lower projected ore grade. As of December 31, the mine had proven and probable reserves of 99,700 kg of gold (Kinross Gold Corp., 2010, p. 42, 145).

In 2009, Petropavlovsk plc (London), formerly Peter Hambro Mining plc, produced 15,100 kg of gold, an increase of 21% compared with production in 2008. Petropavlovsk produced gold from two open pit mines (Pioneer and Pokrovskiy), alluvial operations, and joint ventures. Much of the increase was attributed to the continued ramping up of Pioneer production, which had begun in 2008 (Petropavlovsk plc, 2010, p. 3–7).

Production from JSC Polymetal's (St. Petersburg) eight gold-producing mines increased by 9% to 9,670 kg in 2009. The increase was a result of the acquisition of mines and deposits (JSC Polymetal, 2010, p. 5).

In 2009, the Uzhuralzoloto Group of Companies (Moscow) (UGC) produced 5,300 kg of gold, slightly more than 2008 gold production. UGC had 10 gold mines in 4 regions of Russia (Uzhuralzoloto Group of Companies, 2010).

Highland Gold Mining Ltd. (St. Helier, United Kingdom) (HGM) produced 5,070 kg of gold in 2009. This was 3% more than production in 2008 because of increased mine production from its Mnogovershinnoye Mine (Highland Gold Mining Ltd., 2010, p. 1, 7–8).

GV Gold (Vysochaishy, OJSC) (Moscow) produced 3,450 kg of gold in 2009, 16% less than 2008 gold production. GV Gold had two operations, the Golets Vysochaishy operation in the Bodaibo Area of the Irkutsk Region and the Bolshey Kuranakh placer gold operation in the Aldan Area of the Yakutia (Sakha) Republic [GV Gold (Vysochaishy, OJSC), 2010, p. 13–22].

High River Gold owned and operated three gold operations in 2009. The Zun-Holba and Irokinda underground mines produced 4,650 kg of gold, which was slightly more than 2008 production. Production for the Berezitovy open pit mine was 2,720 kg of gold in 2009. With better mill availability, Berezitovy produced 458% more gold in 2009 than in 2008 (High River Gold Mines Ltd., 2010).

**Senegal.**—In 2009, Senegal opened its first major gold mine. In March, Mineral Deposits Ltd. (Melbourne) finished construction of Sabodala gold mine and produced 4,980 kg of gold by yearend (Mineral Deposits Ltd., 2010, p. 2).

**South Africa.**—In 2009, South Africa's gold production of 198,000 kg was a 7% decrease from that in 2008 owing to a significant increase in labor costs, higher costs associated with deep-level shafts, new royalties on mining revenue, and power issues. In addition, mine production was hindered because of a temporary closure of shafts owing to mine accidents. Companies continued to have problems with finding and retaining a trained labor force and with competition with illegal miners (Klapwijk and others, 2010, p. 39–41).

In 2009, three companies operated mines that accounted for more than 80% of South African gold production. They were, in descending order of production, Gold Fields, AngloGold, and Harmony Gold Mining Co., Ltd. (Randfontein).

In 2008, Gold Fields's South African operations produced 65,200 kg of gold, slightly more than 2008 production from the Beatrix, Driefontein, Kloof, and South Deep Mines. Only the South Deep Mine increased production in 2009 because of an increase in the amount of ore processed. Safety-related work stoppages were responsible for a decrease in production at the company's other mines (Gold Fields Ltd., 2009, p. 1–8).

AngloGold had seven deep-level mines and one surface operation in the West Wits and Vaal River regions that, combined, produced 55,900 kg of gold in 2009, 14% less than that in 2008. In 2009, West Wits operations included the Mponeng, Savuka, and Tau Tona Mines and produced 23,900 kg of gold. The Vaal River operations included the Great Noligwa, Kopanang, Moab Khotsong, and Tau Lekoa Mines. The production decrease was attributed to the decreases in ore

grade and reduced ore volume. In 2009, there were 13 fatalities and 938 accidents at AngloGold's South African operations. These incidents resulted in a loss of 95 full production shifts and 73 partial production shifts. In March, an underground fire disrupted ore production at the Great Noligwa Mine. In May, a seismic event significantly damaged underground infrastructure at the Savuka Mine. In October, inspection and repair of all shaft steelworking following a steel dislodgement from the shaft wall at the Tau Tona Mine resulted in an 8-week work stoppage (AngloGold Ashanti Ltd., 2010, p. 52–69).

Harmony operated 10 underground mines, 2 surface operations, and several other gold-producing operations in South Africa. In 2009, production from Harmony's operations was 44,400 kg of gold, 3% less than that in 2008. Underground operations were relatively unchanged as increases from the Doornkop and Phakisa projects and the Target Mine more than offset decreased production from the Evander and Virginia operations. Much of the decrease was from the surface operations. In 2009, Kalgold surface operations produced 38% less gold than in 2008 because the company processed lower ore grades (Harmony Gold Mining Co., Ltd., 2010, p. 6–11).

Simmer and Jack Mines Ltd. (Johannesburg) had two operations in 2009—the Buffelsfontein gold mine and the Transvall gold mining estates. In 2009, these mines produced 4,010 kg of gold, slightly less than in 2008 (Simmer and Jack Mines Ltd., 2010, p. 6–12).

In 2009, increased output from platinum-group metal mines resulted in increased byproduct gold production. Gold One International Ltd. (Sydney) commissioned the Modder East Mine, and DRDGold South African Operations Pty. Ltd. (Randburg) recommissioned its Ergo tailings plant. First Uranium Corp. (Toronto) began first commercial production from its Ezulwini underground operations and continued to build capacity at its Mines Waste Solutions (MWS). However, permitting problems at MWS have limited its production and threatened the project, and ore production rates at the Ezulwini operations were less than predicted (First Uranium Corp., 2010, p. 1–5; Klapwijk and others, 2010, p. 39–41).

**Suriname.**—IAMGOLD's Rosbel Mine was the leading gold mine in the country in terms of production with 12,200 kg produced, 24% more than in 2008. The increase was attributed to higher throughput because of mill expansion (IAMGOLD Corp., 2010, p. 33, 35).

**Tanzania.**—In 2009, gold production increased by 10% to 40,000 kg, compared with 2008 production. Gold production from Barrick's operations was 22,300 kg, an increase of 31% from that of Barrick's share of production in 2008. In May, Barrick's fully owned Buzwagi Mine started production and produced 5,880 kg of gold. Barrick's other fully owned mines, the Balyanhulu and North Mara Mines, produced 25% and 8% more gold, respectively, in 2009 compared with 2008 production. At the Balyanhulu Mine, production returned to normal levels after a strike in 2007–08 resulted in lower production levels. These increases were partially offset by production losses at the Tulawaka gold mine [70% owned by Barrick and 30% owned by Northern Mining Explorations Ltd. (Montreal)], where production decreased by 55% in 2009 compared with production in 2008 because of a planned shift

from open pit to underground mining (Barrick Gold Corp., 2010a, p. 58–59; b).

AngloGold's Geita Mine produced 8,460 kg of gold in 2009, 3% more than production in 2008. Improvements in ore grades in the second half of the year were the main reason for the increase; however, some of this increase was offset by mill breakdowns in the first quarter (AngloGold Ashanti Ltd., 2010, p. 87–88).

**Turkey.**—Gold production in 2009 was 12,000 kg, an increase of 8% compared with that of 2008. The Eldorado Gold Kisladag Mine, the leading gold mine in Turkey, produced 7,380 kg of gold, 25% more than in 2008. The mine had restarted in the third quarter of 2008 and produced for a full year in 2009 (Eldorado Gold Corp., 2010, p. 10).

**Uzbekistan.**—According to the Uzbekistani Government, the country had the fourth leading gold reserves in the world and was the ninth leading gold producer. State-owned Navoi Mining and Metallurgical Combine (Navoi) (NGMK) owned the Muruntau gold mine in Zarafshan. The mine reportedly produced about 70% of the country's gold production (Musaev and Aminov, 2010).

## Outlook

Worldwide and domestic gold production was expected to increase in 2010 because of new mines starting production and older mines expanding production. However, gold consumption was expected to continue to decrease because the higher gold prices would limit gold jewelry purchases. Investment in gold in various forms was expected to continue to increase as investors purchase gold as a safe haven, hedge against economic failures, portfolio diversifier, and as a store of wealth.

## References Cited

- Agnico-Eagle Mines Ltd., 2010, Annual report—2009: Toronto, Ontario, Canada, Agnico-Eagle Mines Ltd., 222 p.
- Alamos Gold Inc., 2010, Management's discussion and analysis—December 31, 2009: Toronto, Ontario, Canada, Alamos Gold Inc., 29 p.
- Alexis Minerals Corp., 2010, Management's discussion and analysis—December 31, 2009: Toronto, Ontario, Canada, Alexis Minerals Corp., 30 p.
- American Bonanza Gold Corp., 2009, Copperstone mine plan of operations accepted by the BLM: Vancouver, British Columbia, Canada, American Bonanza Gold Corp. news release, November 23, 2 p.
- Anglo Asian Mining plc, 2010, Final results for year ending 31 December 2009: London, United Kingdom, Anglo Asian Mining plc press release, June 4, 19 p.
- AngloGold Ashanti Ltd., 2010, Annual financial statements—2009: Johannesburg, South Africa, AngloGold Ashanti Ltd., 365 p.
- Apollo Gold Corp., 2010, Apollo Gold reports 4th qtr gold production of 17,850 ounces: Greenwood Village, CO, Apollo Gold Corp. press release, January 28, 2 p.
- Atna Resources Ltd., 2010, Annual report—2009: Golden, CO, Atna Resources Ltd., 76 p.
- Avoca Resources Ltd., 2010, Quarterly report for the three months ending 30 December 2009: West Perth, Western Australia, Australia, Avoca Resources Ltd., 11 p.
- Barrick Gold Corp., 2010a, A new era in gold—Annual report—2009: Toronto, Ontario, Canada, Barrick Gold Corp., 168 p.
- Barrick Gold Corp., 2010b, Supplemental information—Fourth quarter & year-end mine statistics: Toronto, Ontario, Canada, Barrick Gold Corp., 7 p.
- Bon, R.L., and Krahulec, K.A., 2010, 2009 summary of mineral activity in Utah: Utah Geological Survey, 16 p.
- Centerra Gold Inc., 2010, Annual report—2009: Toronto, Ontario, Canada, Centerra Gold Inc., 112 p.
- Cluff Gold plc, 2010, Annual report—2009: London, United Kingdom, Cluff Gold plc, 64 p.
- Coeur d'Alene Mines Corp., 2010, Annual report—2009: Coeur d'Alene, ID, Coeur d'Alene Mines Corp., 150 p.
- Compañía de Minas Buenaventura S.A.A., 2010, Compañía de Minas Buenaventura announces fourth quarter 2009 results: Lima, Peru, Compañía de Minas Buenaventura S.A.A. press release, 14 p.
- CPM Group, 2010, The CPM Group gold yearbook 2010: New York, NY, CPM Group, 213 p.
- Crew Gold Corp., 2010, Annual report—2009: Weybridge, United Kingdom, Crew Gold Corp., 89 p.
- Dobra, John, 2010, Economic overview of Nevada's minerals industry 2009: Reno, NV, Natural Resource Industry Institute, 32 p.
- Eldorado Gold Corp., 2010, Annual report—2009: Vancouver, British Columbia, Canada, Eldorado Gold Corp., 112 p.
- Elkhorn Goldfields LLC, 2010, Montana Tunnels property: Denver, CO, Elkhorn Goldfields LLC. (Accessed September 7, 2010, at [http://www.elkhorngoldfields.com/?page\\_id=12](http://www.elkhorngoldfields.com/?page_id=12).)
- Emgold Mining Corp., 2009, Emgold Mining Corporation presents corporate update and 2010 outlook: Vancouver, British Columbia, Canada, Emgold Mining Corp. news release, December 21, 2 p.
- First Uranium Corp., 2010, Management's discussion and analysis of the financial results for the three and nine months ended December 31, 2009: Toronto, Ontario, Canada, First Uranium Corp., 24 p.
- Focus Minerals Ltd., 2010, Activities report for the quarter ended 31 December 2009: Perth, Western Australia, Australia, Focus Minerals Ltd., 14 p.
- Freeport-McMoRan Copper & Gold Inc., 2010, Annual report—2009: Phoenix, AZ, Freeport-McMoRan Copper & Gold Inc., 108 p.
- Fresnillo plc, 2010, Production values: London, United Kingdom, Fresnillo plc. (Accessed June 9, 2010, at [http://www.fresnilloplc.com/downloads/OPERATING\\_STATISTICS.pdf](http://www.fresnilloplc.com/downloads/OPERATING_STATISTICS.pdf).)
- Global Minerals, Ltd., 2010, Management discussion and analysis for the six months ended December 31, 2009: Vancouver, British Columbia, Canada, Global Minerals, Ltd., 22 p.
- GlobeStar Mining Corp., 2010, Building on production focused on growth: Toronto, Ontario, Canada, GlobeStar Mining Corp., 9 p.
- Goldcorp Inc., 2010, Annual report—2009: Toronto, Ontario, Canada, Goldcorp Inc., 130 p.
- Gold Fields Ltd., 2010, Quarterly report—For the quarter ending 31 December 2009: Johannesburg, South Africa, Gold Fields Ltd., 40 p.
- Golden Star Resources Ltd., 2010, Annual report—2009: Littleton, CO, Golden Star Resources Ltd., 88 p.
- Great Basin Gold Ltd., 2010, Annual report—2009: Vancouver, British Columbia, Canada, Great Basin Gold Ltd., 124 p.
- GV Gold (Vysochaishy, OJSC), 2010, Annual report—2009: Moscow, Russia, GV Gold (Vysochaishy, OJSC), 62 p.
- Harmony Gold Mining Co., Ltd., 2010, Quarterly report for the quarter ending 31 December 2009: Randfontein, South Africa, Harmony Gold Mining Co., Ltd., 40 p.
- Hecla Mining Co., 2010, Annual report—2009: Coeur d'Alene, ID, Hecla Mining Co., 84 p.
- Highland Gold Mining Ltd., 2010, Highland Gold Mining Limited announces final results for the year ended 31 December 2009: St. Helier, United Kingdom, Highland Gold Mining Ltd., 21 p.
- High River Gold Mines Ltd., 2010, High River Gold announces late filing of annual filings and provides operational and financial update: Toronto, Ontario, Canada, High River Gold Mines Ltd. press release, March 31, 3 p.
- IAMGOLD Corp., 2010, Annual report—2009: Toronto, Ontario, Canada, IAMGOLD Corp., 156 p.
- Jaguar Mining Inc., 2010, Annual report—2009: Concord, NH, Jaguar Mining Inc., 76 p.
- JSC Polymetal, 2010, A golden future—Annual report—2009: St. Petersburg, Russia, JSC Polymetal, 196 p.
- Kinross Gold Corp., 2010, Annual report—2009: Toronto, Ontario, Canada, Kinross Gold Corp., 164 p.
- Klapwijk, Phillip, Walker, Paul, Ryan, Peter, Newman, Phillip, Meader, Neil, Tankard, William, Piggott, Matthew, Furuno, Ayako, Liang, Junlu, Strachan, Ross, Heathman, Oliver, Alexander, Cameron, Shah, Gargi, Burton, Paul, O'Connell, Rhona, Fellows, Mark, Wheeler, Paul, Pickens, Nicholas, and Coles, George, 2010, GFMS gold survey 2010: London, United Kingdom, GFMS Ltd., April, 121 p.

- La Mancha Resources Inc., 2010, La Mancha's 2010 gold production set to increase by up to 48%: Montreal, Quebec, Canada, La Mancha Resources Inc. press release, January 25, 2 p.
- Lihir Gold Ltd., 2010, Annual report—2009: Port Moresby, Papua New Guinea, Lihir Gold Ltd., 136 p.
- LKA International, Inc., 2010, Golden Wonder exploration yields another 390 ounces gold in fourth quarter: Gig Harbor, WA, LKA International, Inc. press release, February 12, 2 p.
- Lowrey, Jim, ed., 2009, Overview of worldwide exploration budgets—Targets and stages of development, *in* Metals Economics Group Strategic Report: Halifax, Nova Scotia, Canada, v. 22, no. 6, November–December, p. 7–11.
- Minefinders Corp., 2010, Management's discussion and analysis—December 31, 2009: Vancouver, British Columbia, Canada, Minefinders Corp., 19 p.
- Mineral Deposits Ltd., 2010, Business review—2009: Melbourne, Victoria, Australia, Mineral Deposits Ltd., 28 p.
- Mining Journal, 2010, Kazakhstan—Rapidly recovering: Mining Journal, April 23, p. 20–22.
- Musaev, Dosbergen, and Aminov, Akmal, 2010, Uzbekistan—Chinese target: Mining Journal, April 23, p. 18–19.
- Newcrest Mining Ltd., 2009a, Quarterly report Newcrest Mining Ltd. for the three months ending 30 June 2009: Melbourne, Victoria, Australia, Newcrest Mining Ltd., 8 p.
- Newcrest Mining Ltd., 2009b, Quarterly report Newcrest Mining Ltd. for the three months ending 30 September 2009: Melbourne, Victoria, Australia, Newcrest Mining Ltd., 8 p.
- Newcrest Mining Ltd., 2009c, Quarterly report Newcrest Mining Ltd. for the three months ending 31 March 2009: Melbourne, Victoria, Australia, Newcrest Mining Ltd., 8 p.
- Newcrest Mining Ltd., 2010, Quarterly report Newcrest Mining Ltd. for the three months ending 31 December 2009: Melbourne, Victoria, Australia, Newcrest Mining Ltd., 8 p.
- New Gold Inc., 2010, New Gold announces record 2009 production, provides 2010 annual guidance and updates reserves and resources: Vancouver, British Columbia, Canada, New Gold Inc. news release, January 25, 11 p.
- New Mexico Energy, Minerals and Natural Resources Department, 2010, 2009 New Mexico mineral industry statistics preliminary figures: Santa Fe, NM, New Mexico Energy, Minerals and Natural Resources Department. (Accessed September 7, 2010, via <http://www.emnrd.state.nm.us/mmd/mrrs/2009proddata.htm>.)
- Newmont Mining Corp., 2010, Form 10–K—2009: Securities and Exchange Commission, 201 p.
- Northern Dynasty Minerals Ltd., 2009, Pebble budget increased to US \$70 million for 2009: Vancouver, British Columbia, Canada, Northern Dynasty Minerals Ltd. press release, September 23, 3 p.
- Northgate Minerals Corp., 2010, Annual report—2009: Vancouver, British Columbia, Canada, Northgate Minerals Corp., 98 p.
- North Queensland Metals Ltd., 2010, Quarterly report for period ended 31 December 2009: Fortitude Valley, Queensland, Australia, North Queensland Metals Ltd., 5 p.
- NovaGold Resources Inc., 2010, Annual report—2009: Vancouver, British Columbia, Canada, NovaGold Resources Inc., 24 p.
- OceanaGold Corp., 2010, Annual report—2009: Melbourne, Victoria, Australia, OceanaGold Corp., 41 p.
- OZ Minerals Ltd., 2010, Annual report—2010: Melbourne, Victoria, Australia, OZ Minerals Ltd., 128 p.
- Petropavlovsk plc, 2010, Building a Russian far east mining champion—Annual report & accounts—2009: London, United Kingdom, Petropavlovsk plc, 158 p.
- Polyus Gold Mining Co., 2010, Annual report—2009: Moscow, Russia, Polyus Gold Mining Co., 194 p.
- Preston, Gwen, 2009, Livengood resources hits 12M oz for Tower Hill: The Northern Miner, v. 95, no. 36, October 26–November 1, p. 1.
- Quadra Mining Ltd., 2010, Management discussion and analysis for the year and fourth quarter ended December 31, 2009: Vancouver, British Columbia, Canada, Quadra Mining Ltd., 24 p.
- Randgold Resources Ltd., 2010, Annual report—2009: London, United Kingdom, Randgold Resources Ltd., 160 p.
- Red Back Mining Inc., 2010, Annual report—2009: Vancouver, British Columbia, Canada, Red Back Mining Inc., 38 p.
- Redwood, Stewart, 2010, Encouraging outlook for Dominican Republic: Mining Journal, January 15, p. 12–14.
- Rio Tinto plc, 2009, Annual report—2009: London, United Kingdom, Rio Tinto plc, 240 p.
- Romarco Minerals Inc., 2010, Management's discussion and analysis for the year ending December 31, 2009: Vancouver, British Columbia, Canada, Romarco Minerals Inc., 22 p.
- Santa Fe Gold Corp., 2009, Santa Fe Gold nearing production of gold and silver at Summit project: Albuquerque, NM, Santa Fe Gold Corp. news release, December 7, 2 p.
- SEMAFO Inc., 2010, Annual report—2009: Saint-Laurent, Quebec, Canada, SEMAFO Inc., 24 p.
- Simmer and Jack Mines Ltd., 2010, Report to shareholders for the six months and quarter ended 31 December 2009: Johannesburg, South Africa, Simmer and Jack Mines Ltd., 17 p.
- St Andrew Goldfields Ltd., 2010, Annual report—2009: Toronto, Ontario, Canada, St Andrew Goldfields Ltd., 60 p.
- St Barbara Ltd., 2010, Quarterly report for three months ended 31 December 2009: Melbourne, Victoria, Australia, St Barbara Ltd., 11 p.
- Sutter Gold Mining Inc., 2009, Sutter Gold provides technical updates: Lakewood, CO, Sutter Gold Mining Inc. news release, November 19, 2 p.
- Szumigala, D.J., Hughes, R.A., and Harbo, L.A., 2010, Alaska's mineral industry 2009—A summary: Alaska Division of Geology and Geophysics Surveys Information Circular 63, 18 p.
- Uzhuralzoloto Group of Companies, 2010, 2009 production results: Moscow, Russia, Uzhuralzoloto Group of Companies press release, January 15, 1 p.
- Vale S.A., 2010, Annual report—2008: Rio de Janeiro, Brazil, Vale S.A., 210 p.
- Wilburn, D.R., 2010, Exploration review: Mining Engineering, v. 62, no. 5, May, p. 39–52.
- Yamana Gold Inc., 2009, Yamana Gold enters into agreement for the sale of certain non-core assets: Toronto, Ontario, Canada, Yamana Gold Inc. press release, June 9, 3 p.
- Yamana Gold Inc., 2010, Annual report—2009: Toronto, Ontario, Canada, Yamana Gold Inc., 136 p.
- Yukon-Nevada Gold Corp., 2010, Management discussion and analysis for the year ended December 31, 2009: Vancouver, British Columbia, Canada, Yukon-Nevada Gold Corp., 77 p.
- Zijin Mining Group Co., Ltd., 2010, Annual report—2009: Zijin, Fujian Province, China, Zijin Mining Group Co., Ltd., 194 p.

## GENERAL SOURCES OF INFORMATION

### U.S. Geological Survey Publications

- Geology and Resources of Gold in the United States. Bulletin 1857, 1998.
- Gold. Ch. in Flow Studies for Recycling Metal Commodities in the United States, Circular 1196–A–M, 2004.
- Gold. Ch. in Mineral Commodity Summaries, annual.
- Gold. Ch. in United States Mineral Resources, Professional Paper 820, 1973.
- Gold. Mineral Industry Surveys, monthly.
- Principal Gold Producing Districts of the United States. Professional Paper 610, 1968.
- Principles of a Resource/Reserve Classification for Minerals. Circular 831, 1980.

### Other

- Gold. Ch. in Mineral Facts and Problems, U.S. Bureau of Mines Bulletin 675, 1985.
- Mining Journal, biweekly.
- Northern Miner, The, weekly.
- Platts Metals Week, weekly.
- World Gold—A Minerals Availability Appraisal. U.S. Bureau of Mines Special Publication 24, 1994.

TABLE 1  
SALIENT GOLD STATISTICS<sup>1</sup>

		2005	2006	2007	2008	2009
United States:						
Production:						
Mine:						
Quantity	kilograms	256,000	252,000	238,000	233,000	223,000
Value	thousands	\$3,670,000	\$4,910,000	\$5,350,000	\$6,550,000	\$7,000,000
Gold recovered by cyanidation:						
Extracted in vats, tanks, closed containers <sup>2</sup>	kilograms	W	W	W	W	W
Leached in open heaps or dumps <sup>3</sup>	do.	229,000	217,000	207,000	194,000	188,000
Refinery:						
Concentrates and dore	do.	195,000	181,000	176,000	168,000	170,000
Recycled materials (new and old scrap)	do.	81,300	89,100	135,000	181,000	189,000
Exports, refined	do.	182,000	228,000	392,000	459,000 <sup>r</sup>	281,000
Imports for consumption, refined	do.	105,000	136,000	113,000	118,000	127,000
Net deliveries from foreign stocks in Federal Reserve Bank of						
New York	do.	--	--	189,000	220,000	--
Stocks, December 31:						
Industry <sup>4</sup>	do.	2,040	2,000	1,140	W	9,200
Gold exchange traded funds holdings, United States only	do.	285,000	498,000	683,000	847,000	1,210,000
COMEX	do.	211,000	234,000	229,000	265,000	305,000
U.S. Department of the Treasury	metric tons	8,140	8,140	8,140	8,140	8,140
U.S. Gold Futures Trading <sup>5</sup>	do.	49,400	49,500	77,900	119,000	110,000
Consumption:						
American Buffalo Bullion gold coin <sup>6</sup>	kilograms	--	10,500	4,250	5,890	6,220
American Eagle gold coin <sup>6</sup>	do.	13,800	9,770	12,800	35,600	44,300
In industry and the arts	do.	183,000	185,000	180,000	176,000	150,000
Price, average <sup>7</sup>	dollars per troy ounce	446.20	605.83	698.95	873.50	974.68
Employment, mine and mill only <sup>8</sup>		7,910	8,350	9,130	9,560	9,630
World:						
Production, mine	kilograms	2,470,000	2,370,000	2,360,000 <sup>r</sup>	2,290,000 <sup>r</sup>	2,450,000 <sup>e</sup>
Official bullion reserves <sup>9</sup>	metric tons	30,800	30,400	29,900	28,700	30,700

<sup>e</sup>Estimated. <sup>r</sup>Revised. do. Ditto. W Withheld to avoid disclosing company proprietary data. -- Zero.

<sup>1</sup>Data are rounded to no more than three significant digits, except prices.

<sup>2</sup>May include small quantities recovered by gravity methods.

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

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

<sup>5</sup>COMEX only.

<sup>6</sup>Data from U.S. Mint.

<sup>7</sup>Engelhard quotation.

<sup>8</sup>Data from the Mine Safety and Health Administration.

<sup>9</sup>Held 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 STATE<sup>1</sup>

(Kilograms)

State	2008	2009
Nevada	178,000	161,000
Other States <sup>2</sup>	55,400	62,500
Total	233,000	223,000

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

<sup>2</sup>Includes Alaska, Arizona, California, Colorado, Idaho, Montana, New Mexico, South Dakota, Utah, and Washington.

TABLE 3  
LEADING GOLD-PRODUCING MINES IN THE UNITED STATES IN 2009, IN ORDER OF OUTPUT<sup>1</sup>

Rank	Mine	County and State	Majority owner	Quantity (kilograms)
1	Goldstrike <sup>2</sup>	Elko and Eureka, NV	Barrick Gold Corp.	42,100
2	Eastern Nevada Operations <sup>3</sup>	Eureka, NV	Newmont Mining Corp.	36,500
3	Bingham Canyon <sup>4</sup>	Salt Lake, UT	Kennecott Utah Copper Corp. <sup>5</sup>	18,100
4	Cortez <sup>6</sup>	Lander, NV	Barrick Gold Corp.	16,100
5	Twin Creeks	Humboldt, NV	Newmont Mining Corp.	13,600
6	Smoky Valley Common Operation	Nye, NV	Kinross Gold Corp.	13,300
7	Pogo	Southeast Fairbanks, AK	Sumitomo Metal Mining Co.	12,100
8	Fort Knox <sup>7</sup>	Fairbanks North Star, AK	Kinross Gold Corp.	8,190
9	Phoenix	Lander, NV	Newmont Mining Corp.	6,800
10	Cresson	Teller, CO	AngloGold Ashanti Ltd.	6,780
11	Turquoise Ridge	Humboldt, NV	Barrick Gold Corp.	5,520
12	Kettle River-Buckhorn	Okanogan, WA	Kinross Gold Corp.	5,400
13	Mesquite	Imperial, CA	New Gold Inc.	4,670
14	Marigold	Humboldt, NV	Goldcorp Inc.	4,570
15	Midas	Elko, NV	Newmont Mining Corp.	3,850
16	Ruby Hill	Eureka, NV	Barrick Gold Corp.	3,220
17	Robinson	White Pine, NV	Quadra Mining Ltd.	3,080
18	Bald Mountain	do.	Barrick Gold Corp.	2,330
19	Wharf	Lawrence, SD	Wharf Resources Inc. <sup>8</sup>	2,110
20	Greens Creek	Juneau, AK	Hecla Mining Co.	2,090
21	Storm	Elko, NV	Barrick Gold Corp.	2,000
22	Florida Canyon	Pershing, NV	Jipangu Inc.	1,390
23	Hycroft	Humboldt and Pershing, NV	Allied Nevada Gold Corp.	1,320
24	Hollister	Elko, NV	Great Basin Gold Ltd.	970
25	Golden Sunlight	Jefferson, MT	Barrick Gold Corp.	871
26	Denton-Rawhide	Mineral, NV	Kennecott Minerals Co. <sup>5</sup>	602
27	Rochester	Pershing, NV	Coeur d'Alene Mines Corp.	395
28	Lone Tree <sup>9</sup>	Humboldt and Lander, NV	Newmont Mining Corp.	374
29	Briggs	Inyo, CA	Atna Resources Ltd.	348
30	Jerritt Canyon	Elko, NV	Yukon-Nevada Gold Corp.	304

do. Ditto.

<sup>1</sup>Data 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 2009.

<sup>2</sup>Formerly listed as Betze-Post Mine.

<sup>3</sup>Includes Carlin East, Deep Post, Gold Quarry, and Pete Mines.

<sup>4</sup>Quantity refers to total quantity of gold produced in concentrates.

<sup>5</sup>Wholly owned subsidiary of Rio Tinto plc.

<sup>6</sup>Includes Cortez Hills and Cortez Pipeline Mines.

<sup>7</sup>Quantity refers to gold equivalent produced (that is, includes value of associated metals).

<sup>8</sup>Wholly owned subsidiary of Goldcorp Inc.

<sup>9</sup>Includes Mule Canyon and Trenton Canyon Mines.

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



TABLE 4  
U.S. EXPORTS OF GOLD, BY COUNTRY<sup>1,2</sup>

Year and country	Ores and concentrates <sup>3</sup>		Dore and precipitates		Refined bullion <sup>4</sup>		Total	
	Quantity (kilograms)	Value (thousands)	Quantity (kilograms)	Value (thousands)	Quantity (kilograms)	Value (thousands)	Quantity (kilograms)	Value (thousands)
2008	2,430	\$52,300	106,000	\$3,000,000	459,000 <sup>r</sup>	\$13,100,000	567,000	\$16,200,000
2009:								
Australia	88	2,690	--	--	26,600	900,000	26,700	903,000
Austria	--	--	61	1,870	21	797	81	2,660
Bahrain	--	--	--	--	31	1,040	31	1,040
Bolivia	--	--	--	--	17	226	17	226
Brazil	1	20	--	--	136	2,150	137	2,170
Canada	37	609	243	6,990	2,830	89,900	3,110	97,500
China	(5)	3	--	--	51	1,500	51	1,510
Costa Rica	484	10,500	--	--	53	1,510	537	12,000
France	5	128	--	--	99	2,480	104	2,610
Germany	88	2,550	82	1,810	661	18,300	832	22,700
Guatemala	(5)	5	1	16	9	256	10	277
Hong Kong	159	3,420	--	--	684	19,500	844	22,900
India	2	10	--	--	21,000	633,000	21,000	633,000
Indonesia	--	--	--	--	9	339	9	339
Ireland	239	3,130	--	--	4	66	244	3,190
Israel	--	--	--	--	8	211	8	211
Italy	(5)	4	--	--	21	576	21	580
Jordan	14	355	--	--	4	128	18	483
Korea, Republic of	70	2,470	--	--	--	--	70	2,470
Lebanon	--	--	--	--	20	400	20	400
Malaysia	--	--	--	--	361	10,200	361	10,200
Mexico	790	19,900	--	--	2,330	66,300	3,120	86,200
Pakistan	--	--	--	--	25	821	25	821
Peru	--	--	95	2,870	--	--	95	2,870
Poland	--	--	--	--	8	194	8	194
Singapore	5	98	--	--	74	2,150	79	2,250
Switzerland	6	63	96,700	2,980,000	6,270	166,000	103,000	3,150,000
Turkey	8	75	--	--	60	1,310	68	1,390
United Arab Emirates	--	--	--	--	147	4,390	147	4,390
United Kingdom	110	2,000	154	3,330	219,000	6,840,000	220,000	6,840,000
Vietnam	9	176	--	--	58	1,330	67	1,500
Other	47	483	2	33	27	591	74	1,110
Total	2,160	48,600	97,400	3,000,000	281,000	8,760,000	381,000	11,800,000

<sup>r</sup>Revised. -- Zero.

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

<sup>2</sup>Ash and residues data were zero for listed years.

<sup>3</sup>Includes base-metal ores, concentrates, and matte destined for refining.

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

<sup>5</sup>Less than ½ unit.

Source: U.S. Census Bureau.

TABLE 5  
U.S. EXPORTS OF GOLD, BY COUNTRY<sup>1</sup>

Year and country	Waste and scrap		Metal powder		Gold compounds	
	Quantity (kilograms)	Value (thousands)	Quantity (kilograms)	Value (thousands)	Quantity (kilograms)	Value (thousands)
2008	886,000	\$1,970,000	1,210	\$25,300	2,920,000	\$67,900
2009:						
Belgium	183,000	18,500	--	--	--	--
Bolivia	--	--	1	10	650	12
Brazil	--	--	--	--	870	8
Canada	76,500	1,510,000	21	270	531,000	9,560
China	--	--	1	5	331,000	10,500
Colombia	--	--	--	--	1,880	34
Dominican Republic	1	15	--	--	201,000	4,010
Ecuador	--	--	--	--	1,780	18
France	8	129	(2)	9	759	14
Germany	112,000	48,900	8	91	44,000	798
Guatemala	70	640	5	124	--	--
Hong Kong	1	45	19	408	33,000	404
India	2	14	56	1,620	5,920	107
Ireland	--	--	--	--	14,700	265
Israel	--	--	2	15	10,900	197
Italy	1,500	2,340	--	--	673	46
Japan	619	16,700	16	419	2,180	19
Korea, Republic of	--	--	1	30	5,530	99
Lebanon	--	--	--	--	683	12
Malaysia	--	--	--	--	90,600	1,630
Mexico	--	--	14	195	20,200	370
Netherlands	--	--	4	115	11,200	201
Norway	21	235	--	--	69	3
Singapore	--	--	3	11	1,240,000	33,900
Sweden	--	--	--	--	318	6
Switzerland	2,730	76,000	6	170	--	--
Taiwan	--	--	12	252	125,000	2,250
Thailand	(2)	4	1	34	694	12
Turkey	--	--	70	1,960	--	--
United Arab Emirates	185	4,410	--	--	--	--
United Kingdom	351,000	79,900	85	2,690	8,860	104
Other	1	18	4	31	161	3
Total	728,000	1,750,000	329	8,460	2,680,000	64,600

-- Zero.

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

<sup>2</sup>Less than ½ unit.

Source: U.S. Census Bureau.

TABLE 6  
U.S. IMPORTS FOR CONSUMPTION OF GOLD, BY COUNTRY<sup>1</sup>

Year and country	Ores and concentrates <sup>2</sup>		Dore and precipitates		Refined bullion <sup>3</sup>		Total	
	Quantity (kilograms)	Value (thousands)	Quantity (kilograms)	Value (thousands)	Quantity (kilograms)	Value (thousands)	Quantity (kilograms)	Value (thousands)
2008	27,500	\$15,700	85,100	\$1,830,000	118,000	\$3,190,000	231,000	\$5,050,000
2009:								
Argentina	--	--	203	7,440	168	5,450	371	12,900
Australia	13	168	--	--	665	21,800	678	21,900
Austria	--	--	--	--	1,620	43,300	1,620	43,300
Belgium	--	--	--	--	50	941	50	941
Bolivia	--	--	47	1,350	11	409	59	1,760
Brazil	--	--	--	--	3,270	97,600	3,270	97,600
Canada	90	1,160	1	29	66,300	2,070,000	66,300	2,070,000
Chile	--	--	3,940	86,400	4,950	151,000	8,890	237,000
Colombia	--	--	22,100	630,000	14,300	397,000	36,400	1,030,000
Congo (Kinshasa)	--	--	5	143	2	70	7	213
Costa Rica	--	--	933	17,400	6	99	939	17,500
Dominican Republic	--	--	776	15,100	146	2,680	922	17,800
Ecuador	--	--	281	7,840	297	6,490	579	14,300
El Salvador	--	--	6	102	4	117	10	219
France	--	--	--	--	25	914	25	914
Germany	--	--	--	--	78	2,450	78	2,450
Ghana	80	2,000	30	968	23	600	133	3,570
Guatemala	--	--	8,070	295,000	--	--	8,070	295,000
Guinea	--	--	--	--	30	887	30	887
Guyana	--	--	2,400	76,600	201	7,150	2,600	83,800
Honduras	--	--	2,470	68,500	11	337	2,480	68,800
Hong Kong	--	--	1	43	93	2,900	95	2,940
Japan	--	--	--	--	15	429	15	429
Mexico	46,500	29,800	79,400	2,270,000	26,300	556,000	152,000	2,850,000
Netherlands Antilles	--	--	591	18,400	25	906	616	19,300
Nicaragua	--	--	1,200	37,600	115	1,280	1,310	38,800
Panama	--	--	445	12,200	392	9,090	837	21,300
Peru	--	--	19,500	602,000	15	466	19,500	603,000
South Africa	--	--	--	--	1,500	50,300	1,500	50,300
Spain	--	--	125	3,340	21	719	146	4,060
Sweden	--	--	--	--	46	1,260	46	1,260
Switzerland	--	--	1,560	55,000	3,120	105,000	4,680	160,000
Thailand	--	--	--	--	29	938	29	938
United Arab Emirates	--	--	--	--	13	411	13	411
United Kingdom	--	--	2,160	51,100	2,830	41,000	4,990	92,100
Venezuela	--	--	--	--	152	3,980	152	3,980
Other	--	--	13	204	33	645	45	848
Total	46,600	33,100	146,000	4,260,000	127,000	3,580,000	320,000	7,870,000

-- Zero.

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

<sup>2</sup>Includes base-metal ores, concentrates, and matte destined for refining.

<sup>3</sup>Bullion 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 COUNTRY<sup>1</sup>

Year and country	Waste and scrap		Metal powder		Gold compounds	
	Quantity (kilograms)	Value (thousands)	Quantity (kilograms)	Value (thousands)	Quantity (kilograms)	Value (thousands)
2008	36,500	\$485,000	324	\$6,620	102,000	\$2,210
2009:						
Bahamas, The	79	629	(2)	3	--	--
Belize	162	787	--	--	--	--
Bolivia	131	3,100	--	--	--	--
Canada	5,290	85,200	22	386	2,280	104
Cayman Islands	13	228	--	--	--	--
China	8	111	--	--	--	--
Colombia	88	1,940	--	--	--	--
Costa Rica	1,770	18,400	--	--	--	--
Dominican Republic	9,990	171,000	3	27	--	--
Ecuador	6	107	--	--	--	--
El Salvador	3,680	52,400	--	--	--	--
Germany	8	102	101	2,360	3,860	92
Ghana	--	--	89	1,850	--	--
Greece	11	194	--	--	--	--
Guatemala	1,270	9,210	--	--	--	--
Honduras	5,630	81,900	--	--	--	--
India	25	918	--	--	--	--
Israel	--	--	6	224	--	--
Italy	165	2,250	(2)	3	--	--
Jamaica	164	2,050	--	--	--	--
Japan	1	3	(2)	3	19,800	504
Korea, Republic of	12	323	--	--	--	--
Malaysia	69	809	--	--	--	--
Mexico	11,600	122,000	63	823	--	--
Netherlands	--	--	--	--	11,600	238
Netherlands Antilles	364	6,120	1	5	--	--
Nicaragua	1,310	18,400	8	152	--	--
Panama	1,080	14,200	22	620	--	--
Sierra Leone	2	66	110	1,710	--	--
Singapore	28	526	--	--	--	--
Slovakia	13	147	--	--	--	--
St. Lucia	38	384	--	--	--	--
Switzerland	--	--	7	192	--	--
Taiwan	44	512	--	--	--	--
Thailand	66	1,560	--	--	--	--
United Kingdom	146	1,190	1	12	26,600	486
Venezuela	87	2,470	--	--	--	--
Other	50	345	45	389	78	5
Total	43,400	600,000	476	8,760	64,300	1,430

-- Zero.

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

<sup>2</sup>Less than ½ unit.

Source: U.S. Census Bureau.

TABLE 8  
GOLD: WORLD MINE PRODUCTION, BY COUNTRY<sup>1,2</sup>

(Kilograms)

Country	2005	2006	2007	2008	2009 <sup>e</sup>
Algeria	697	377	236	656 <sup>r</sup>	1,010
Argentina	27,904	44,131	42,021	42,046 <sup>r</sup>	47,000
Armenia <sup>c</sup>	1,300 <sup>r</sup>	1,300 <sup>r</sup>	1,300 <sup>r</sup>	1,359 <sup>r,3</sup>	944 <sup>3</sup>
Australia	262,000	247,000	247,000 <sup>e</sup>	215,000	222,000
Azerbaijan	--	--	--	--	353
Belize <sup>c</sup>	--	5 <sup>3</sup>	5	5	5
Benin <sup>c</sup>	20	24	19	20	20
Bolivia	8,871	9,628	8,818	8,405 <sup>r</sup>	7,000 <sup>p,3</sup>
Botswana <sup>c</sup>	2,770 <sup>3</sup>	2,800	2,800	3,300 <sup>r</sup>	2,000
Brazil <sup>4</sup>	38,293	43,082	50,000 <sup>r</sup>	54,000 <sup>r</sup>	60,000 <sup>p</sup>
Bulgaria	3,868	3,818	3,964	4,160 <sup>r</sup>	4,200
Burkina Faso	1,397	1,571	2,250	7,633	13,500 <sup>3</sup>
Burma <sup>c</sup>	90	100	100	100	100
Burundi <sup>c</sup>	750	750	750	750	750
Cameroon <sup>c</sup>	1,500	1,500	1,500	1,500	1,600
Canada	119,549	103,513	102,211	95,004	97,367 <sup>3</sup>
Central African Republic <sup>c</sup>	15	10	10	10	10
Chad <sup>c</sup>	150	150	150	100 <sup>r,e</sup>	100
Chile	40,447	42,100	41,527	39,162	40,834 <sup>3</sup>
China <sup>c</sup>	225,000	245,000	275,000	285,000	320,000
Colombia	35,783	15,683 <sup>r</sup>	15,482	34,321 <sup>r</sup>	47,837 <sup>3</sup>
Congo (Brazzaville) <sup>e</sup>	120	100	100	100	100
Congo (Kinshasa) <sup>e</sup>	7,200 <sup>r</sup>	10,300 <sup>r</sup>	5,100 <sup>r</sup>	3,300 <sup>r</sup>	2,000
Costa Rica	424	1,210	2,065	198 <sup>r</sup>	500
Côte d'Ivoire	1,335	1,324	1,243	2,836 <sup>r</sup>	6,573 <sup>3</sup>
Denmark <sup>5</sup>	2,324	1,129	1,861	1,665	1,117 <sup>3</sup>
Dominican Republic	--	--	--	47	173
Ecuador <sup>6</sup>	5,338	5,168	3,186	800 <sup>r,e</sup>	2,092 <sup>3</sup>
Equatorial Guinea <sup>c</sup>	200	200 <sup>r</sup>	200 <sup>r</sup>	200 <sup>r</sup>	200
Eritrea <sup>c</sup>	30 <sup>3</sup>	30	30	30	30
Ethiopia <sup>7</sup>	4,376	4,028	4,368 <sup>r</sup>	3,465 <sup>r</sup>	3,400
Fiji	3,236 <sup>r</sup>	1,961 <sup>r</sup>	837 <sup>r</sup>	871 <sup>r</sup>	1,040
Finland <sup>c</sup>	5,000	5,000	5,000	5,000	7,000
France <sup>c</sup>	1,500 <sup>3</sup>	1,500	1,500	1,500	1,500
French Guiana <sup>e</sup>	1,955 <sup>3</sup>	2,000	2,000	2,000	2,000
Gabon <sup>e,8</sup>	300	300	300	300	300
Georgia <sup>c</sup>	2,000	2,000	2,000	2,000	2,000
Ghana	66,852	69,817	83,558	80,503	86,000 <sup>3</sup>
Greece	--	--	--	400	500
Guatemala	741	5,036	7,068	7,448 <sup>r</sup>	8,485 <sup>3</sup>
Guinea	25,097	16,922	15,628	19,945	18,083 <sup>3</sup>
Guyana	8,325 <sup>r</sup>	5,668 <sup>r</sup>	7,412 <sup>r</sup>	8,131 <sup>r</sup>	8,183 <sup>3</sup>
Honduras	4,438	4,100 <sup>e</sup>	3,275	2,561 <sup>r</sup>	2,127 <sup>3</sup>
India <sup>9</sup>	3,100	2,400	3,000 <sup>e</sup>	2,700	2,800
Indonesia <sup>10</sup>	130,620	93,176	117,851	64,390 <sup>r</sup>	130,000
Iran <sup>c</sup>	200	200	252 <sup>r,3</sup>	400	400
Italy <sup>c</sup>	150	200 <sup>3</sup>	450	450	450
Japan	8,318	8,904	8,869	6,868	7,000 <sup>3</sup>
Kazakhstan <sup>c</sup>	18,062 <sup>3</sup>	20,000	22,000	22,000	22,000
Kenya	616	432	3,023 <sup>r</sup>	340 <sup>r</sup>	300
Korea, North <sup>e</sup>	2,000	2,000	2,000	2,000	2,000

See footnotes at end of table.

TABLE 8—Continued  
GOLD: WORLD MINE PRODUCTION, BY COUNTRY<sup>1,2</sup>

(Kilograms)

Country	2005	2006	2007	2008	2009 <sup>e</sup>
Korea, Republic of	266	277	162	175	175
Kyrgyzstan	16,700 <sup>e</sup>	10,721	10,559	18,132	16,950 <sup>3</sup>
Laos	7,058	6,088	4,161	4,300 <sup>r</sup>	5,000
Liberia	27	9	311 <sup>e</sup>	624 <sup>r</sup>	600
Madagascar <sup>e</sup>	10 <sup>r</sup>	30 <sup>r</sup>	50 <sup>r</sup>	72 <sup>r,3</sup>	70
Malaysia	4,250	3,497	2,913	2,489 <sup>r</sup>	2,794 <sup>3</sup>
Mali	44,230	51,957	48,850	41,160	42,000
Mauritania	--	322	2,251	6,254 <sup>r</sup>	8,000
Mexico	30,356	38,961	39,355	50,365	51,393 <sup>3</sup>
Mongolia	24,120	22,561	17,473	15,184	9,803 <sup>3</sup>
Morocco <sup>e</sup>	1,200	1,200	1,200	1,200	1,200
Mozambique	63	85	97 <sup>r</sup>	298 <sup>r</sup>	511 <sup>3</sup>
Namibia	2,703	2,790	2,496 <sup>r</sup>	2,126 <sup>r</sup>	2,022 <sup>3</sup>
New Zealand	10,583	10,618	10,638	13,402 <sup>r</sup>	13,442 <sup>3</sup>
Nicaragua <sup>e</sup>	3,674 <sup>3</sup>	3,595 <sup>3</sup>	3,400	3,400	3,400
Niger	4,962	2,615	3,427 <sup>r</sup>	2,314 <sup>r</sup>	2,000
Nigeria <sup>e</sup>	30	40	180	200	200
Oman	384	186 <sup>r</sup>	124 <sup>r</sup>	46 <sup>r</sup>	28 <sup>3</sup>
Panama	--	--	--	--	800
Papua New Guinea	68,483	58,349	65,000 <sup>e</sup>	68,000	66,000
Peru <sup>11</sup>	208,002	202,826	170,236	179,872 <sup>r</sup>	182,391 <sup>3</sup>
Philippines	37,490	36,141	38,792	35,726 <sup>r</sup>	37,047 <sup>3</sup>
Poland	713	1,700	883	902	814
Romania <sup>e</sup>	400	400	400	400	400
Russia <sup>12</sup>	164,186	159,340	156,975	172,031 <sup>r</sup>	190,693 <sup>3</sup>
Rwanda <sup>e</sup>	10	15	17 <sup>3</sup>	20	20
Saudi Arabia	7,456	5,200 <sup>e</sup>	4,440	4,527	5,500 <sup>3</sup>
Senegal <sup>e</sup>	600	600	600	600	5,600
Serbia <sup>e</sup>	335 <sup>3,13</sup>	450	500	500	500
Sierra Leone	53	71	212 <sup>e</sup>	196 <sup>r</sup>	200
Slovakia	109	84	92 <sup>e</sup>	198 <sup>r</sup>	200
Solomon Islands <sup>e</sup>	10	10	--	--	--
South Africa	294,671	272,128	252,598 <sup>r</sup>	212,744	197,698 <sup>3</sup>
Spain	3,971 <sup>r</sup>	3,421 <sup>r</sup>	3,500 <sup>e</sup>	3,400 <sup>r</sup>	3,450 <sup>p</sup>
Sudan	3,625	3,158	2,703	2,276	1,922 <sup>3</sup>
Suriname	10,619	9,362	9,360 <sup>r,e</sup>	9,798 <sup>r</sup>	12,193 <sup>3</sup>
Sweden <sup>e</sup>	5,100	5,100	5,000	5,000	5,000
Tajikistan	1,927 <sup>r</sup>	1,920 <sup>r</sup>	2,000 <sup>r</sup>	1,672 <sup>r</sup>	1,361 <sup>3</sup>
Tanzania	52,276	47,000 <sup>e</sup>	40,193	36,434 <sup>r</sup>	40,000
Thailand	4,400	4,300 <sup>r</sup>	3,401 <sup>r</sup>	2,721	3,000
Turkey	4,170	8,040	9,920	11,120	12,000
Uganda <sup>e</sup>	1,700 <sup>3</sup>	1,600	1,600	1,500	1,600
United Kingdom	--	--	--	164	185
United States	256,000	252,000	238,000	233,000	223,000 <sup>3</sup>
Uruguay	3,151	3,000 <sup>r</sup>	2,820 <sup>r</sup>	2,182 <sup>r</sup>	2,180 <sup>p</sup>
Uzbekistan <sup>e</sup>	90,000	85,000	85,000	85,000	90,000
Venezuela <sup>e</sup>	10,480 <sup>r</sup>	11,600 <sup>r</sup>	10,092 <sup>r</sup>	10,100 <sup>r</sup>	10,500 <sup>p</sup>
Vietnam <sup>e</sup>	2,138 <sup>3</sup>	2,500	3,000	3,000	3,000
Zambia	440 <sup>r</sup>	956 <sup>r</sup>	1,270 <sup>r</sup>	1,930 <sup>r</sup>	1,500 <sup>3</sup>
Zimbabwe	14,023	11,354	6,750	3,600	4,200
Total	2,470,000	2,370,000	2,360,000 <sup>r</sup>	2,290,000 <sup>r</sup>	2,450,000

<sup>e</sup>Estimated. <sup>p</sup>Preliminary. <sup>r</sup>Revised. -- Zero.

TABLE 8—Continued  
GOLD: WORLD MINE PRODUCTION, BY COUNTRY<sup>1,2</sup>

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

<sup>2</sup>Table includes data available through August 19, 2010.

<sup>3</sup>Reported figure.

<sup>4</sup>Officially reported figures are as follows, in kilograms: Major companies: 2005—29,942; 2006—37,907 (revised); 2007—44,790 (revised); 2008—48,373 (revised); and 2009—48,000 (estimated). Garimpos: 2005—8,351; 2006—5,175; 2007—5,210 (revised); 2008—5,627 (revised); and 2009—6,000 (estimated).

<sup>5</sup>All production from Greenland.

<sup>6</sup>Includes undocumented artisanal production.

<sup>7</sup>Year ending July 7 of that stated.

<sup>8</sup>Undocumented artisanal production.

<sup>9</sup>Refinery output.

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

<sup>11</sup>Includes documented production from placer artisanal production.

<sup>12</sup>Mine output including gold recovered as a byproduct, but excludes secondary gold production, which, in kilograms, was 2005—4,882; 2006—4,981; 2007—5,867; 2008—8,140 (revised); and 2009—12,404.

<sup>13</sup>Montenegro and Serbia formally declared independence in June 2006 from each other and dissolved their union.