# THE SILVER INSTITUTE



# World Silver Survey 2008 A Summary

Produced for The Silver Institute
by GFMS Limited

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#### Coeur d'Alene Mines Corporation

Coeur d'Alene Mines Corporation is one of the world's leading silver companies and also a significant gold producer, with anticipated 2008 production of approximately 16 million ounces of silver, a 40% increase over 2007 levels. Coeur, which has no silver or gold production hedged, is now set to commence production at the world's largest pure silver mine - San Bartolomé in Bolivia - and is currently another world-leading silver mine - Palmarejo in Mexico. The Company also operates two underground mines in southern Chile and Argentina and one surface mine in Nevada; and owns non-operating interests in two low-cost mines in Australia. The Company also owns a major gold project in Alaska and conducts exploration activities in Argentina, Bolivia, Chile, Mexico and Tanzania. Coeur common shares are traded on the New York Stock Exchange under the symbol CDE, the Toronto Stock Exchange under the symbol CDM, and its CHESS Depositary Interests are traded on the Australian Securities Exchange under symbol CXC.



#### Industrias Peñoles, S.A.B. de C.V.

Peñoles is a mining group with integrated operations in smelting and refining non-ferrous metals, and producing inorganic chemicals. Peñoles is the world's top producer of refined silver, metallic bismuth and sodium sulfate and the leading Latin American producer of refined gold, lead and zinc. Its mission is to add value to non-renewable natural resources in a sustainable manner. The company was founded in 1887. Its shares have traded on the Mexican Stock Exchange since 1968 under the ticker PE&OLES.

#### Pan American Silver Corp.



Pan American Silver Corp. was founded in 1994 with the mission to be the world's largest and lowest cost primary silver mining company and to achieve this by increasing its low cost silver production and silver reserves. The Company currently operates seven mines in Mexico, Peru and Bolivia. Manantial Espejo, the Company's eighth mine, is scheduled to commence production in mid 2008. Pan American has increased its silver production for 13 consecutive years and is planning to do so again. Silver production should reach 19.5 million ounces in 2008 and 25 million ounces in 2009.

#### Silver Wheaton Corp.



Silver Wheaton is the largest pure silver company in the world, expecting to sell approximately 15 million ounces of silver in 2008 and growing to 25 million ounces by 2010, without any capital expenditures being required to generate that growth. The Company has long term contracts to purchase all or a portion of the silver production from mines in Mexico, Sweden, Peru, Greece and the United States, at a low fixed cost. Silver Wheaton's unique and simple business model is designed to create long term shareholder value, providing the best leverage to increases in the silver price while mitigating downside risks. Silver Wheaton is unhedged and well positioned for further growth.



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The **World Silver Survey** has been published annually by The Silver Institute since 1990. Copies of the full *World Silver Survey 2008* can be obtained by contacting The Silver Institute at the address and telephone number on the opening page. For copies outside of North America, contact GFMS at the address on the front cover. The price per copy for the 2008 edition of the Survey is US\$225, €180 or £130.

#### **Notes**

#### **Units used:**

supply and demand data are given in units of million troy ounces (Moz) rounded to one decimal place.

1 Moz = 31.103 t (metric tons)

1 ton = 32,151 troy ounces

1 ton = 1,000,000 grams (g)

#### **Terminology:**

"-" = not available or not applicable

0.0 = zero or less than 0.05

"dollar" refers to the US dollar unless otherwise stated.

Implied Net Investment = the residual from combining all other GFMS data on silver supply/demand as shown in the table on page 6. As such, it captures the net physical impact of all transactions not covered by the other supply/demand variables.

#### **Prices:**

Unless otherwise stated, US dollar prices are for the London Silver Market fixing.

#### **Table Rounding:**

Throughout the tables and charts, totals may not add due to independent rounding.

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This report is a summary of *World Silver Survey 2008*. The *World Silver Survey* (WSS) is an annual review of the international silver market. It contains the only truly global analysis of the world's silver markets and has been produced by GFMS Limited, the London-based analysts of global precious metals markets, on behalf of the Silver Institute in Washington DC since 1994. The WSS is a unique source of silver supply and demand statistics for more than sixty countries. It contains a comprehensive analysis of investor activity, worldwide silver stocks and bullion flows as well as a lucid and concise account of the financial, economic and social factors underlying market trends. Details on how to order the full 100-page survey can be found on Page 5.

#### 1. Review & Outlook

Silver prices performed strongly in 2007, with the annual average rising 16% to a 27-year high of \$13.38 and with the fourth quarter rally setting the stage for the surge over \$20 in March this year. Investors remained the key to price strength, particularly during the fourth quarter. This may seem contradicted by the slump in implied net investment but that, in the main, only reflected investors' disenchantment with earlier rangebound conditions. That prices did not then fall away was chiefly due to fabrication's resilience and the fall in scrap.

Total supply in 2007 fell by 19.2 Moz (597 t), to total 894.5 Moz (27,821 t). Mine production, however, registered an increase of almost 4%, to achieve 670.6 Moz (20,858 t) in 2007, due to gains in Latin America and China, and a recovery in Australian output. Net government sales fell by 46% to 42.3 Moz (1,314 t), primarily because of the conspicuous absence of China and India, although Russian releases offset their losses somewhat. Scrap supply also fell, declining by 3% to 181.6 Moz (5,649 t). This was largely attributable to falling supply from photographic materials, which have historically been the largest contributor to scrap from fabricated products.

Total fabrication staged a rise of 0.9% in 2007, reaching 843.7 Moz (26,241 t). This was solely as a result of gains by the industrial segment, with last year's total up in excess of 7% to 455.3 Moz (14,162 t). Increased industrial offtake, combined with declines elsewhere, meant that its share of total demand passed 50% for the first time. All regions posted growth in this sector, with the three largest gains occurring in India, the United States and China. In contrast, all other areas of fabrication saw losses, of which almost 70% were due to the ongoing decline in photographic demand resulting from the shift to digital technology. This and other

World Silver Supply and	Demand	(Moz)
	2006	2007
Supply		
Mine Production	647.4	670.6
Net Government Sales	78.2	42.3
Old Silver Scrap	188.0	181.6
Producer Hedging	-	-
Implied Net Disinvestment	-	-
Total Supply	913.7	894.5
Demand		
Fabrication		
Industrial Applications	424.8	455.3
Photography	144.0	128.3
Jewelry	166.3	163.4
Silverware	61.2	58.8
Coins & Medals	39.8	37.8
Total Fabrication	836.0	843.7
Net Government Purchases	-	-
Producer De-Hedging	6.8	25.0
Implied Net Investment	70.8	25.8
Total Demand	913.7	894.5

factors in other areas, such as changing western tastes in silverware and Indian concerns over metal purity, meant that the bulk of all losses were due to drivers other than the price. Jewelry demand fell, albeit by less than 2%, to an estimated 163.4 Moz (5,083 t).

Producer de-hedging also served to boost demand. There was little fresh hedging by producers, and several moved into being unhedged through delivering into large positions and accelerating buy-backs. Looking ahead, the prospects for another year-on-year price gain for silver seem positive, based on: expected gains in gold prices; continued US dollar weakness; growing inflation fears; and a substantial inflow of money into the commodities sector.









## 2. Silver Price - Developments in 2007

The average price that silver achieved in 2007, \$13.38, was the highest ever save for the \$20.98 posted in 1980. This result represented a 16% increase year-onyear, a rise that was stronger than that enjoyed by gold, platinum and palladium (up respectively 15%, 14% and 11%). However, it is worth recalling that 2007's gain was far smaller than the 58% leap that 2006 managed. In real terms, price gains remain impressive, with 2007's annual average representing a 23-year high, if still far below 1980's inflation adjusted average of \$52.80. Though much of these gains remained investor driven, the fundamentals were critical, such as the resilience of fabrication and the jump in producer de-hedging. While a dramatic fourth quarter last year took the price to a 26year daily high of \$15.82 in early November, these gains were overshadowed by moves in the first quarter this year as the price streaked up to \$20.92 in mid-March.

In other currency terms, price gains on the producer side tended to undershoot US dollar prices, with the Peruvian sol and the Australian dollar annual average price up only 11% and 4% respectively. A similar story was seen on the consumer side with the yuan, euro and, perhaps most importantly, the rupee price up by only 10%, 6% and 7% respectively.

Price volatility last year at 26% was markedly lower than 2006's 45%, chiefly as there was no single event like the prior year's boom/bust in April/May. Within 2007, volatility was greatest in the fourth quarter at 30%, yet this was far lower than in the second quarter of 2006 (at 69%) and in the first quarter this year (45%).

Lease rates last year at the short end traded largely sideways at trivial levels, though there was weakness at the longer end, with the 12-month sliding from around 1.5% to almost zero. These subdued conditions were a clear sign of ample liquidity and limited interest in either producer hedging or investor shorting of the market.

Investor activity, although core to firmer prices, remained modest from January to late April and there were bouts of selling through to late August. This was largely because of disappointment over sideways prices and several investors, as a result of the credit crisis, were seen moving out of positions in metals, partly to raise cash to cover margins elsewhere or simply as a result of

#### **Silver - Trading Details**

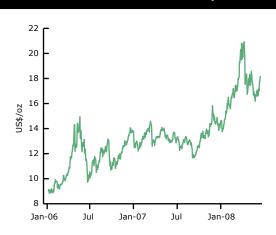
Silver is predominantly traded on the London Bullion Market and Comex in New York. The former, as the global hub of OTC (Over-The-Counter) trading in silver, is the metal's main physical market. Here, a bidding process generates a daily reference price known as the fix. Comex, in contrast, is a futures and options exchange. It is here that most fund activity is focused. Silver is invariably quoted in US dollars per troy ounce.

heightened risk aversion. It was also of note that silver's response during the correction phases was greater than gold's, largely as silver saw limited safe haven buying and any selling being into a less liquid market.

All this, however, was more than offset by the jump in interest seen in the last four months of the year. The rally was chiefly driven by investors and their reactions to the emerging sub-prime crisis, motivated in the main by the successive cuts in US interest rates and the consequent slump in the dollar. The ETFs were an important center for this investment, in that they saw a rise of 42% or 51.1 Moz (1,591 t) over the year.

It would be wrong, however, to claim that investors were the sole drivers of the price. The emergence of fairly high levels of producer de-hedging and the resilience of fabrication demand (particularly on the industrial side), for example, were instrumental in allowing the rally to be staged. The non-essential area of jewelry even performed comparatively well, slipping by less than 2%. As for supply, total scrap fell, chiefly as a result of lower photographic scrap, and prices also received decent support from the slump in government sales, again an area with changes having little to do with the price.

#### The Silver Price since January 2006











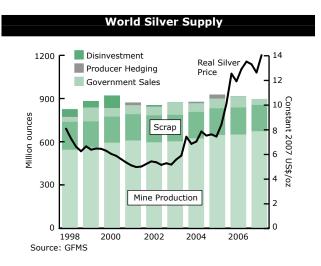


# 3. Supply

- Mine production in 2007 totaled 670.6 Moz (20,858 t), a fresh record following a rise of 4% from the 2006 total.
- The lack of any material sales from China and India drove a 46% decline in government sales.
- The 6.4 Moz (199 t) decline in scrap supply was largely the result of falling Indian recycling, with the rest of the world virtually flat year-on-year.

Global silver mine production continued on an upward trend in 2007. Output in Latin America, the world's biggest silver producing region, expanded by 9%, buoyed by a fifth consecutive year of growth in Chile. Two of the country's major silver related operations, El Peñón and La Coipa, experienced strong growth due to the completion of expansion activities at the former and the exploitation of silver-rich ores at the latter's Puren deposit. Of great significance was the start in August 2007 of production at San Cristobal, which added 2.2 Moz (68 t) to the regional total.

Asia also registered solid gains. China's firm growth was led by a continued strong performance from their base metal producers who generate silver as a byproduct. Australian production partially recovered from a lull in 2006, as production at several mines picked up, most notably at the world's largest primary silver mine Cannington, following the completion of rehabilitation activities. European output registered a moderate 0.5 Moz (16 t) increase from last year. The results were not all positive, however, with declining production reported in the CIS (-5%), Africa (-12%) and, finally, North America (-1%).



Net government sales last year fell by 46% to 42.3 Moz (1,314 t), and they accounted for 5% of total net supply in 2007. The near-complete absence of both Chinese and Indian government sales was the driving force behind this decline. With regard to the former, it is understood that following several years of heavy sales, China's holdings have been reduced to a level that makes further sales unlikely. The absence of Indian government sales was due to the fact that the country seems to have now offloaded all of its silver stocks. A rise in sales from Russian stocks partly offset these falls.

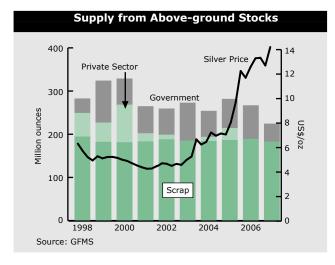
World **scrap** supply fell for the first time since 2004, dropping by 3% to 181.6 Moz (5,649 t). Every region, aside from East Asia, where China was the main contributor to the 3% rise in the region's scrap supply last year, recorded a decline in recycling. This suggests that there was little reaction in the price responsive jewelry markets, especially India, despite the near 16% rise in average dollar prices in 2007. In Europe, jewelry and silverware scrap seemed to have risen, but was limited in scale. Perhaps surprisingly, the recovery from

#### Silver Supply - Its Components

Mine production remains by far the largest component of silver supply, normally accounting for around two-thirds of the total (last year was higher at 75%). However, mine production is not the sole source; the others being scrap, disinvestment, government sales and producer hedging. Scrap, or more properly "old scrap," is the silver that returns to the market when recovered from manufactured goods. This could include old jewelry, photographic chemicals, even discarded computers. However, it excludes silver that is returned untransformed by the manufacturing process or that never becomes an end product - so called "process scrap". Old scrap normally makes up a little over a fifth of total supply.

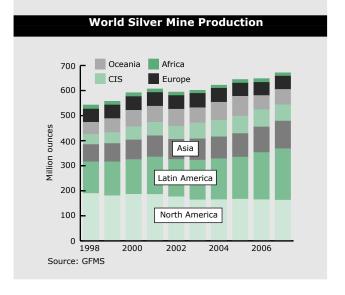
Disinvestment and government sales are similar in that both comprise the return to the market of old bars and coins by the private sector and governments. It is worth bearing in mind that these sources may not add to supply every year on a net basis. In some years, individuals have been net investors (as was the case in 2007) and governments net buyers. The final, though normally minor, component of supply is producer hedging or the early sale by mining companies of future production. Hedging may also not appear every year on the supply side on a net basis as it can form part of demand as de-hedging (as occurred last year).





old photographic materials was only moderately lower in most markets (steeper falls in the United States and Japan being two notable exceptions), primarily because of the steady flow of old X-rays. Added to this was a rise in recovery from industrial products. The ethylene oxide (EO) sector accounted for much of the growth last year, most notably in the United States.

Silver Output by Source Metal						
(million ounces)						
	2006 Output	% of Total	2007 Output	% of Total	Change y-o-y	
Primary	177.8	27%	198.1	30%	11%	
Gold	64.4	10%	64.1	10%	-1%	
Lead/zinc	207.0	32%	213.3	32%	3%	
Copper	183.1	28%	182.8	27%	0%	
Other	15.0	2%	12.2	2%	-19%	
Total	647.4		670.6		4%	
Source: GFMS						



#### 4. Demand

- Total fabrication in 2007 rose by 0.9% to reach 843.7 Moz (26,241 t).
- Industrial offtake, up by 7%, saw a sixth consecutive year of growth to a new record of 455.3 Moz (14,162 t).
- Jewelry demand fell if only slightly (2%) to 163.4 Moz (5,083 t) but this was an eight-year low.
- Silverware offtake slipped by 4% to 58.8 Moz (1,828 t), roughly half of the level 10 years earlier.
- Photographic demand continued its secular slide, falling by 11% to 128.3 Moz (3,991 t).
- Coin fabrication dipped by 5%, largely because of lower minting in Germany and the United States.
- In 2007, net producer de-hedging grew strongly to 25.0 Moz (779 t).
- Implied net investment was down by nearly twothirds owing to liquidations in the middle months largely offsetting later net purchases.

Total **industrial** offtake in 2007 grew, for the sixth consecutive year, to reach 455.3 Moz (14,162 t). This represented growth of 7%, broadly similar to that in 2006, allowing industrial offtake's share of total demand to increase to over 50% for the first time. Growth was illustrative of the largely price inelastic nature of fabrication demand (in the short term at least), the difficulties in substituting the metal and a close link to world GDP growth, which in 2007 stood at a still robust 4.9%.

# **Silver Mine Production - Where It Comes From**

Geographically, just over half of mined silver comes from the Americas with Peru, Mexico and the United States respectively the first, second and eighth largest producing countries. The third largest producer is China, taking Australia's 2005 spot on the back of dwindling Australian production. Of greater market relevance however, is the type of mine that silver comes from – most silver emerges as a by-product of the mining of other metals.

Only around 30% of output comes from so-called primary silver mines, where silver is the main source of revenue. This is noteworthy given that the impact of the price of silver is most acute on primary silver production, whereas by-product silver production is in large part a function of the price of the other metals, with which silver is mined.









With a rise of 6%, electrical and electronics demand once again led the growth in industrial uses. These were, in the main, driven by end-uses such as cell phones, flat panel displays, PMP and MP3 players, along with electronics in the automobile industry (for example, GPS navigation systems, touchscreens and digital TV turners) which are likely to dominate segment growth. Offtake for brazing alloys and solders was also up a respectable 10% globally, driven mainly by the construction industry. The three largest gains in the total industrial demand occurred in India, United States and China, accounting for over 70% of the world rise. While much of the growth in India came from plating salts, it was silver's use in ethylene oxide catalysts that led US demand growth. Chinese demand was typical of most other countries, in that it was led by electrical and electronics and brazing alloys and solder offtake.

World jewelry demand in 2007 at 163.4 Moz (5,083 t) was down by less than 2% despite higher prices, although this was to an eight-year low. Prices were most damaging in India, which saw a 12% fall in jewelry demand with a 7% increase in the rupee price. Other factors such as concerns over silver purity also remain in place, hampering demand in that country. The other major fall, that for Italy, was more driven by export market share loss and weak domestic sales. Such weakness was unusual in the West as most countries there saw rough stability as losses to non-precious rivals and fading consumer confidence were broadly balanced by price-led gains from gold. A marked rise in offtake was noted for China and Russia, thanks chiefly to buoyant local consumption, although the former also increased its export market share.

**Silverware** fabrication fell 4% to 58.8 Moz (1,828 t) or more than 55 Moz (1,700 t) less than 10 years ago. The major drop in India was mainly price driven, while hefty European and US losses were more due to taste changes and imports' rising market share. Higher exports in turn help explain China's growth, while booming domestic sales largely drove the surge in Russian fabrication.

The 11% drop in **photographic** offtake to 128.3 Moz (3,991 t) in 2007 was all but surprising, given the continued penetration of digital technology. Of particular interest was the regional split, as demand in East Asia remained essentially flat, with Europe and North America accounting for the bulk of the overall fall. This was

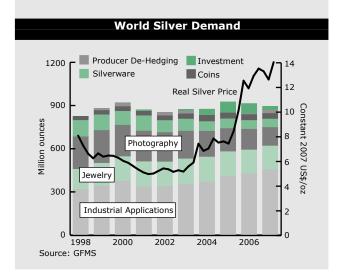
largely the result of the relocation of production from the latter two to the former. Photography's contribution to demand has now fallen by 99.6 Moz (3,097 t) from the peak of 227.9 Moz (7,087 t) recorded in 1999.

In 2007, **coin** fabrication fell by nearly 5% to 37.8 Moz (1,177 t). Lower output in Germany and the United States offset healthy gains in Canada and China.

Net **producer de-hedging** reached a meaningful 25.0 Moz (779 t) last year in comparison to a meagre 6.8 Moz (211 t) in 2006. This left the outstanding end-year position down some 30% at 58.7 Moz (1,824 t). The measured global options book was reduced by a substantial 46% as short-dated positions expired or were delivered into and, in one instance, were converted to forward sales. Forwards were also scaled back by around one-fifth as a handful of producers delivered into positions, most notably Polymetal. Fresh hedging

#### **Silver Demand - Its Components**

Demand is dominated by the steadily growing industrial offtake category, which for the first time in 2007 accounted for just over half the total. The second most important areas are the relatively price sensitive segment of jewelry (18% of total demand) and photography (14%), whose share has been falling greatly due to digital technology. The rest of fabrication is made up of silverware (7%) and coins (4%). The other elements of demand (government purchases, producer de-hedging and investment) are alike in that, on a net basis, they may not feature every year on the demand side. The official sector, for example, has not generated net purchases since 1997. Investment, as noted previously, was the main driver of last year's rally and this stands in contrast to the sustained net disinvestment seen in the 1990s.



1998

Source: GFMS

2000











last year was comparatively limited, in part due to offmarket transactions in the form of silver stream purchase agreements continuing to feature in 2007.

2002

2004

2006

Taken at face value, the 25.8 Moz (801 t) implied net investment figure GFMS derived for the year might appear contradictory to the 51.1 Moz (1,591 t) inflow into, by year-end, the three silver ETFs, as well as other identifiable net increases in investors' holdings of silver achieved during 2007. Much of the explanation for this 'mismatch' is the large level of net selling our information suggests took place in the OTC market last year. This mainly comprised profit taking and stop-loss liquidations in the middle months of the year and a shift away from such positions and into, largely, ETFs. As is often the case, the above outlined investor activity in silver shadowed price movements in gold for most of 2007 (and during the first three months of this year), which in turn were mainly driven by such factors as the US dollar, interest rates and the oil price.



#### Silver's Fabrication Uses

Industry: Silver is the best electrical and thermal conductor of all metals and so is used in many electrical applications, particularly in conductors, switches, contacts and fuses. Contacts provide junctions between two conductors that can be separated and through which current can flow, and account for the largest proportion of electrical demand. The most significant uses of silver in electronics are in the preparation of thick-film pastes, typically silver-palladium for use as silk-screened circuit paths, in MLCCs, in the manufacture of membrane switches, silvered film in electrically heated automobile windshields and in conductive adhesives. Uses of silver in photo voltaic cells, plasma display panels (PDPs) and use of silver links in smart cards and RFID tags are regarded as high growth areas. Miscellaneous industrial uses for silver include as a coating material for compact disks and digital video disks, mirrors, glass coatings and cellophane and batteries (both rechargeable and non-rechargeable).

Jewelry and Silverware: Silver possesses working qualities similar to gold, enjoys greater reflectivity and can achieve the most brilliant polish of any metal. Consequently, the silversmith's objective has always been to enhance the play of light on silver's already bright surface. Pure silver (999 fineness) does not tarnish easily but to make it durable for jewelry, it is often alloyed with small quantities of copper. It is also widely used with base metals in gold alloys. Sterling silver, at a fineness of 925, has been the standard of silverware since the 14th century, particularly in the manufacture of "hollow-ware" and "flatware".

Photography: The photographic process is based on the presence of light sensitive silver halide crystals, prepared by mixing a solution of soluble silver, usually silver nitrate, with a soluble alkali metal halide such as sodium chloride or potassium bromide. These grains are then suspended in the unexposed film. The effect of light on the silver halide disturbs the structure of this compound, rendering it selectively reducible to metallic silver by reducing agents called developers. The resulting negative image is converted to the positive by repeating the process under specific conditions. Photographic film is used in radiography, the graphic arts and in consumer photography. Photographic film manufacturers demand very high purity silver.

Coins: Historically, silver was more widely used in coinage than gold, being in greater supply and of less value, thus being practical for everyday payments. Most nations were on a silver standard until the late 19th century with silver coin forming the main circulating currency. But after the gold rushes, the silver standard increasingly gave way to gold. Silver was gradually phased out of regular coinage, although it is still used in some circulating coins and in bullion coins for investors in such countries as the United States, Australia, Canada and Mexico.