

# Strategies for Gold Reserves Replacement

The Costs of Finding and Acquiring Gold

## Gold Exploration Budgets, 2001-15



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**S&P Global**

Market Intelligence



## STRATEGIES FOR GOLD RESERVES REPLACEMENT: THE COSTS OF FINDING AND ACQUIRING GOLD

Gold Exploration Budgets, 2001-15  
June 2016

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### **S&P Global Market Intelligence**

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## GOLD EXPLORATION BUDGETS, 2001-15

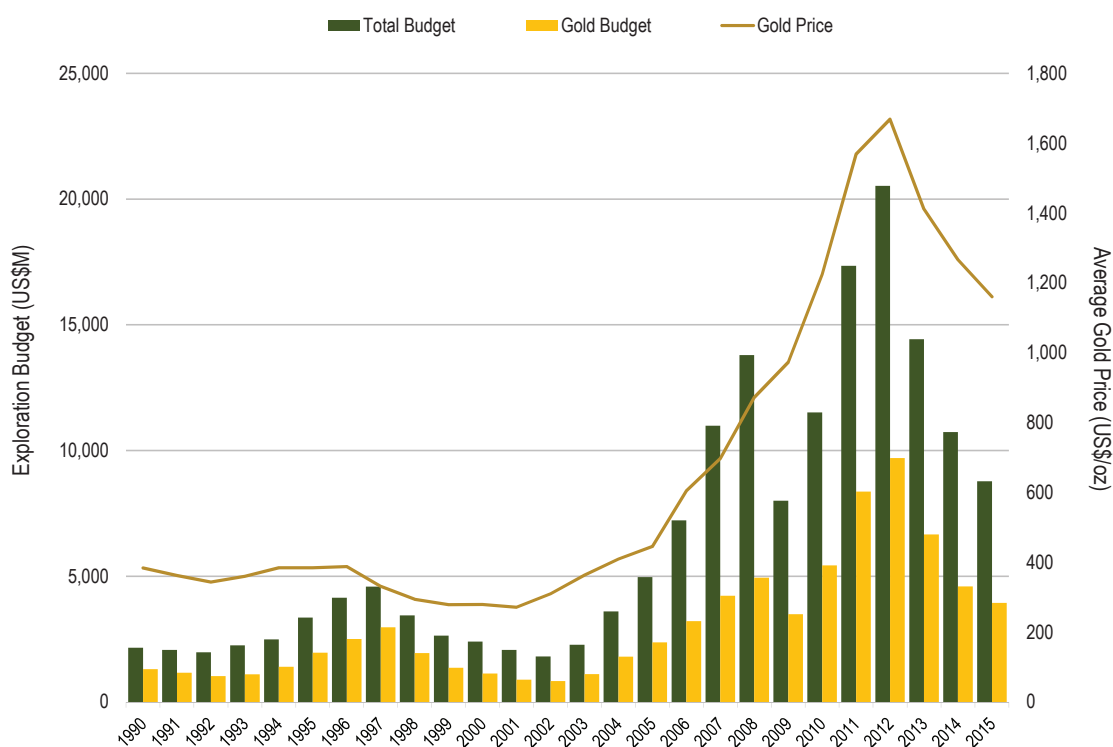
*In this initial Reserves Replacement Strategies (RRS) report covering gold exploration budgets over the past 15 years, SNL Metals & Mining examines the industry's organic efforts to find new reserves and resources. Leveraging SNL's Corporate Exploration Strategies series of studies, this report presents a historical recap of exploration spending patterns, noting emerging trends in where companies are exploring, who is exploring and the types of assets being explored. In a forthcoming RRS report, Significant Gold Discoveries, SNL examines the distribution and historical patterns of major gold discoveries since 1990. These two reports will be followed by a subsequent report analyzing the exploration cost of discovering gold over the past 15 years.*

(All currency is in U.S. dollars throughout, unless otherwise indicated.)

Between 2001 and 2015, over 4,100 companies budgeted more than \$138 billion for global nonferrous metals exploration. Almost 3,300 of them budgeted a total of \$61.58 billion for gold exploration, including 200 that budgeted \$50 million or more over the period. While gold's share of total exploration budgets averaged 45% from 2001 to 2015 (see Figure 2 on page 3), the yellow metal's share fluctuated over the period, rising from 43% in 2001 to 50% in 2004, and then steadily declining to 36% in 2008. Gold's share rebounded to reach 48% in 2011 before dipping to 43% in 2014 and rising slightly to 45% in 2015.

Figure 1 below and Table 1 on the next page show total worldwide nonferrous exploration budgets (excluding oil and gas, iron ore, aluminum, coal and uranium) and the amount allocated for gold relative to the average annual gold price from 1990 through 2015. The data comes from the CES

Figure 1: Annual Nonferrous Budgets, Gold Budgets and Average Gold Prices, 1990-2015



Data source: SNL Metals & Mining's Corporate Exploration Strategies.

Table 1: Annual Nonferrous Budgets, Gold Budgets and Average Gold Prices\*, 2001-15

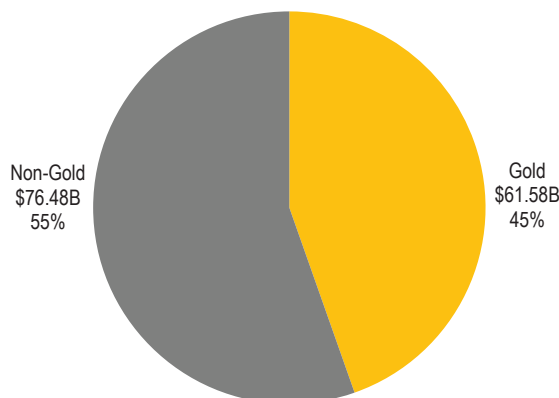
Year	Total Budget (US\$M)	Year-on-year Change in Total Budget (%)	Gold Budget (US\$M)	Year-on-year Change in Gold Budget (%)	Gold's Share of Total (%)	Number of Companies Exploring for Gold	Average Gold Budget/ Company (US\$M)	Average Gold Price (US\$/oz)
1990	2,160.0	-4.0	1,305.0	-10.0	60.4	N/A	N/A	383.47
1991	2,070.0	-4.2	1,160.0	-11.1	56.0	N/A	N/A	362.18
1992	1,980.0	-4.3	1,030.0	-11.2	52.0	N/A	N/A	343.55
1993	2,250.0	13.6	1,100.0	6.8	48.9	N/A	N/A	359.77
1994	2,490.0	10.7	1,400.0	27.3	56.2	N/A	N/A	384.01
1995	3,360.0	34.9	1,960.0	40.0	58.3	N/A	N/A	384.16
1996	4,146.2	23.4	2,504.1	27.8	60.4	N/A	N/A	387.67
1997	4,587.6	10.6	2,972.8	18.7	64.8	577	5.2	331.10
1998	3,440.8	-25.0	1,948.2	-34.5	56.6	620	3.1	294.16
1999	2,635.9	-23.4	1,362.4	-30.1	51.7	539	2.5	278.77
2000	2,401.7	-8.9	1,129.9	-17.1	47.0	490	2.3	279.03
2001	2,074.6	-13.6	890.3	-21.2	42.9	434	2.1	270.96
2002	1,812.9	-12.6	832.1	-6.5	45.9	500	1.7	309.95
2003	2,273.6	25.4	1,109.1	33.3	48.8	667	1.7	363.51
2004	3,598.4	58.3	1,805.1	62.8	50.2	860	2.1	409.09
2005	4,968.9	38.1	2,373.6	31.5	47.8	1,037	2.3	444.88
2006	7,223.4	45.4	3,212.2	35.3	44.5	1,192	2.7	604.34
2007	10,985.3	52.1	4,223.7	31.5	38.4	1,289	3.3	696.71
2008	13,791.5	25.5	4,942.7	17.0	35.8	1,320	3.7	871.71
2009	8,006.1	-41.9	3,490.0	-29.4	43.6	1,284	2.7	972.98
2010	11,515.8	43.8	5,428.4	55.5	47.1	1,444	3.8	1,224.57
2011	17,345.7	50.6	8,370.2	54.2	48.3	1,660	5.0	1,568.92
2012	20,527.0	18.3	9,702.9	15.9	47.3	1,675	5.8	1,668.83
2013	14,426.5	-29.7	6,665.7	-31.3	46.2	1,321	5.0	1,411.14
2014	10,736.4	-25.6	4,593.5	-31.1	42.8	1,136	4.0	1,266.21
2015	8,774.5	-18.3	3,941.8	-14.2	44.9	1,073	3.7	1,159.98
Totals/Averages	169,582.8	9.2	79,453.7	8.1	49.5		3.3	655.06
2001-15 Totals/ Averages	138,060.6	14.4	61,581.3	13.6	45.0		3.3	882.92

Gold's Share of Cumulative 2001-15 Total: 44.6%

\*Original data for 1990-1995 excluded companies with budgets of less than \$3 million; the figures in the table have been adjusted to cover an estimated 90% of industry allocations in those years.

Data source: SNL Metals & Mining's Corporate Exploration Strategies.

Figure 2: Comparison of Total Budgets for Gold and Non-Gold Targets, 2001-15  
(Total: \$135.06 billion)



Data source: SNL Metals & Mining's Corporate Exploration Strategies.

study and includes all annual exploration budgets of at least \$100,000, thereby capturing an estimated 90-95% of all annual nonferrous metals exploration budgets. This analysis primarily concerns the 2001-15 period, which corresponds with the period analyzed in the separate *Major Gold Discoveries, 1990-2015* report. (The Exploration and Discoveries reports begin earlier than the forthcoming Acquisitions and Pipeline reports to allow for the time required to define resources after an initial discovery hole is drilled.) Comparable exploration data for the years prior to 2001 is included for historical interest.

SNL Metals & Mining expects gold exploration to attract more interest compared with other metals in 2016, thanks to the strengthening gold price, which has remained above \$1,200/oz since mid-February. In its 2015 *Corporate Exploration Strategies* (CES) study, SNL Metals & Mining forecast a 15% decline in the global nonferrous exploration total budget year on year in 2016. Although gold is expected to increase its share of exploration budgets, the total allocated to gold will nevertheless decline year on year as ongoing economic uncertainty applies downward pressure on investor interest in exploration for all metals.

### Summary of worldwide exploration trends

Through the early 1990s, the aggregate nonferrous exploration budgets reported by companies included in SNL's analysis steadily increased to crest at \$4.59 billion in 1997. As metals prices slumped in the following years, a combination of substantial cutbacks by the majors, the negative impact of industry consolidation, and a loss of funding for many juniors caused exploration budgets to decline for five consecutive years to a low of \$1.81 billion in 2002. The initial increase in worldwide exploration from 2002's low was due to a combination of higher gold prices and significantly less consolidation at the top of the industry. Annual gold price increases and a multiyear run by prices for most other metals to the peak levels reached in 2007 and early 2008 were matched by yearly budget increases by the majors and meteoric budget increases by the juniors, pushing the worldwide exploration budget total to a new high of \$13.79 billion in 2008.



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Major Gold Discoveries, 1990-2015







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Major Gold Discoveries, 1990-2015  
July 2016

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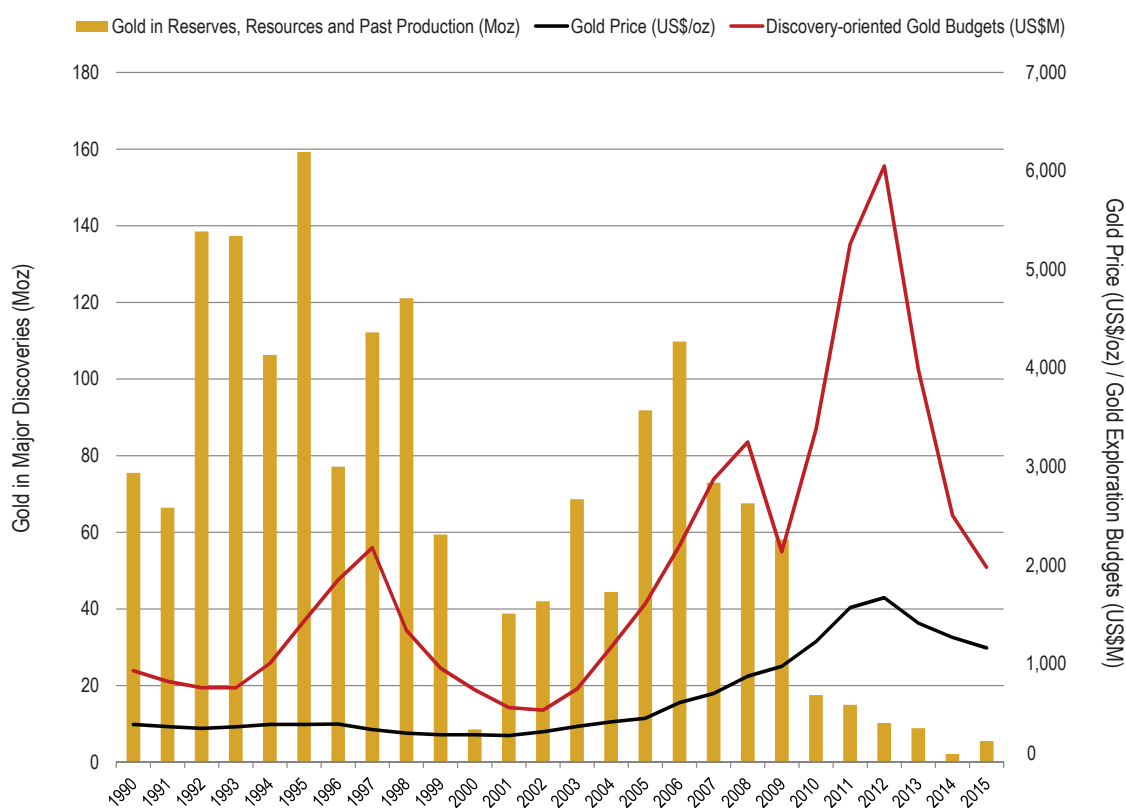
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## MAJOR GOLD DISCOVERIES, 1990-2015

240 major gold discoveries found between 1990 and 2015 contain a total of 1,715.2 Moz of gold in reserves, resources and past production

From 1990 to 2015, 240 major gold deposits were discovered, delineated and found to be potentially economic. Employing a nominal gold price of \$1,200/oz, these deposits host US\$2,081.5 billion of gold in reserves, resources and past production, plus an additional US\$522.3 billion in other metals.

Figure 1: Gold in Major Discoveries and Exploration Budgets by Year, 1990-2015



Data source: SNL Metals & Mining, an offering of S&P Global Market Intelligence.

Figure 1 above illustrates the reserves and resources in discoveries by year of discovery and the annual aggregate exploration budgets targeting new gold discoveries. While the amount of gold discovered varies widely from year to year, it roughly follows the trend of exploration spending for gold — although comparing the return for gold discovered with exploration dollars allocated shows the 1990s to be a more fruitful decade than the 2000s.

The exploration spending for discoveries and the returns on the spending will be examined in the Analysis section of this study. SNL attributes 100% of grassroots and 75% of late-stage gold exploration budgets to work on finding new discoveries. As it generally takes at least three years for a deposit to progress from a promising discovery hole to a potentially economic resource, the number of discoveries can change from year to year as new resources are defined. As it takes time for drilling to define a sizable resource and for scoping studies to produce positive results, older discoveries are expected to be larger and more numerous annually than newer ones. Furthermore, one large discovery can have significant impact on the success of a year; for example, 2006 was the best year in the past 17 years in terms of gold identified in new discoveries; however, around 30% of that comes from the La Colosa deposit in Colombia and its more than 33 Moz resource. There were 17 other deposits identified in the same year, but each contains less than a third of that amount.

Major gold discoveries from 1990 to 2015 contain over \$2,604 billion in all-metals value

Table 1 on the next page summarizes the major gold discoveries by year of discovery from 1990 to 2015. As illustrated in Figure 1, the 1990s was a successful period for new gold discoveries, in spite of declining exploration budgets through 1993. The decade saw 132 deposits identified in total, with annual totals ranging between four and 19 discoveries. On average, each year there were 13 discoveries containing 105 Moz of gold, and discovery-oriented exploration budget of \$1.20 billion.

In the first decade of the 2000s, gold became more difficult to find; there were 93 discoveries in total, with annual totals ranging from two to 18 discoveries. On average, the pace of discovery was slower with just over nine discoveries containing 60 Moz of gold; however, exploration budgets went up by 31% to \$1.58 billion per year.

Using SNL Metals & Mining's nominal annual metals prices, the in situ value for all metals in reserves, resources and past production in the 240 discoveries totals \$2,604 billion, with gold accounting for \$2,082 billion, copper \$413 billion, silver \$78 billion, and other metals (mostly molybdenum, lead and zinc) \$31 billion. Discovery-oriented annual exploration budgets from 1990 to 2015 totaled \$51 billion.

SNL Metals & Mining 2016 Nominal Metals Prices (US\$)

Gold	Copper	Molybdenum	Silver	Zinc	Lead
\$1,200/oz	\$2.46/lb	\$8.25/lb	\$16.10/oz	\$0.88/lb	\$0.84/lb