

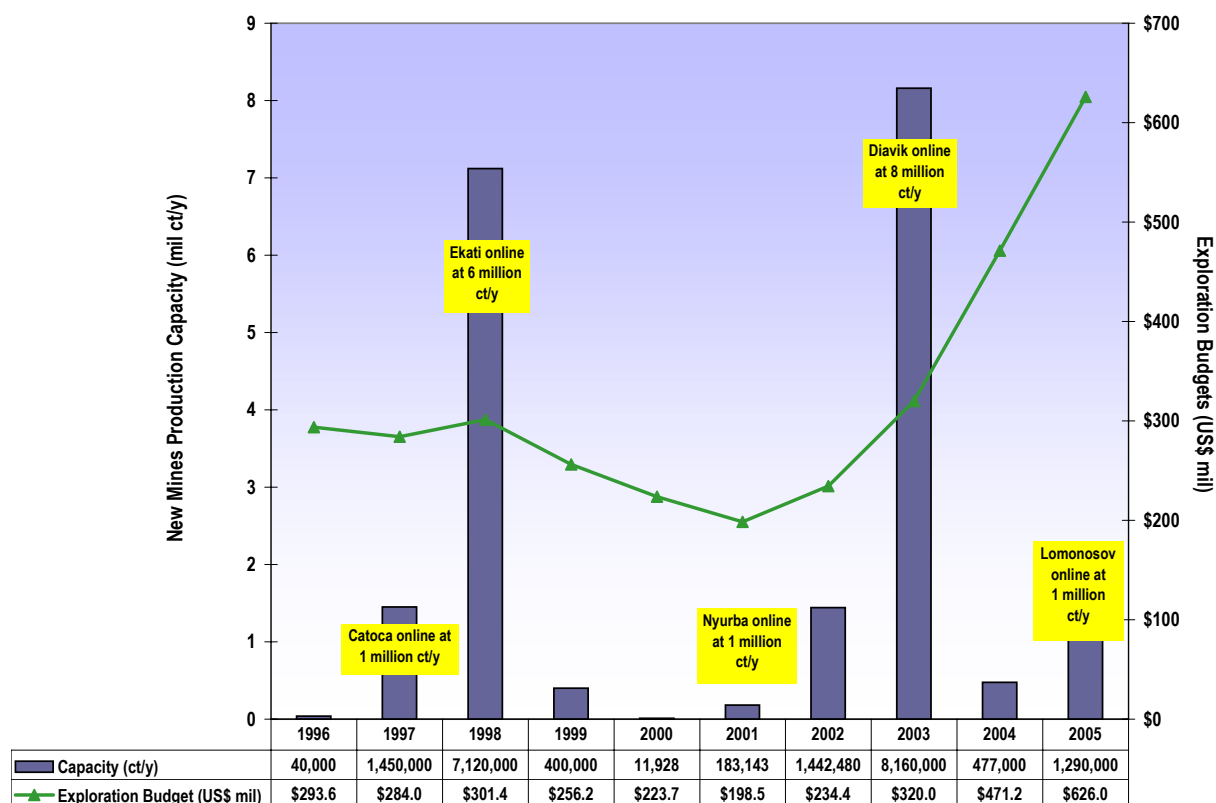
DIAMOND PIPELINE, 2006

Diamond exploration and development

Beginning with the Ekati discovery in Canada's Northwest Territories in the early 1990s, diamond exploration spending has become an increasingly significant part of total world exploration spending—rising to 12.8% in 2005 from 7.2% in 1996, with a high of 14.6% in 2003—and has totaled \$3.2 billion during the 1996-2005 period. During this ten-year period, 22 different operators have brought 28 new diamond mines into production, although most of the mines were small and many were alluvial deposits.

As illustrated in Figure 1 below, the capacity of new diamond mines totaled more than 1 million ct/y in only five of the past ten years. The largest new mine in the period was the Rio Tinto 60%/Aber Resources 40% joint venture at **Diavik** in Canada's Northwest Territories, which started production in 2003 and produced 8.3 million ct of diamonds in 2005 at an average recovered grade of 3.72 ct/mt. Diavik is expected to produce 7-9 million ct/y until at least 2010. The second-largest new diamond mine of the last decade is also in the Northwest Territories, BHP Billiton's wholly-owned **Ekati** mine. In April 2001, BHP Billiton bought out its 29% joint venture partner, Dia Met Minerals, for \$435 million. At the end of June 2005, Ekati production capacity was 4.5 million ct/y, with proven and probable reserves of 28.41 million ct of diamonds.

Figure 1: Exploration Spending and New Mines, 1996-2005



Data sources: Company reports, MEG's Corporate Exploration Strategies.

Table 1: Exploration Spending and New Mines, 1996-2005

Year	Number of New Mines	Reserves/ Resources Tonnage (mil mt)	Average Grade (ct/mt)	Diamonds in Reserves/ Resources (mil ct)	Production Capacity (ct/y)	Diamond Exploration Budgets (US\$ mil)
1996	1	19.4	0.07	1.4	40,000	\$293.6
1997	3	0.0	N/A	0.0	1,450,000	\$284.0
1998	3	121.0	1.26	152.4	7,120,000	\$301.4
1999	2	21.7	0.22	4.7	400,000	\$256.2
2000	2	12.7	0.00	0.1	11,928	\$223.7
2001	3	68.1	0.04	2.5	183,143	\$198.5
2002	6	137.2	0.11	14.9	1,442,480	\$234.4
2003	3	40.1	2.98	119.5	8,160,000	\$320.0
2004	3	113.7	0.23	25.9	477,000	\$471.2
2005	2	404.5	0.69	280.9	1,290,000	\$626.0
Totals	28	938.4	5.60	602.3	20,574,551	\$3,209.0

The other three mines with estimated production capacity of more than 1 million ct/y are all controlled by Russian diamond monopoly, Alrosa. Alrosa rarely reports reserves and production, requiring analysts to estimate the details, based on Alrosa's financial reports. Alrosa's 32.8%-owned *Catoca* mine in Angola (Endiama 32.8%, Odebrecht, 16.4%, Daumonty Financing 18%) started up in 1997, producing about 1 million ct/y, and has since been expanded to more than 4 million ct/y. Another Alrosa mine, wholly-owned *Nyurba* in central Siberia, started production in 2002. Alrosa reported that it had commissioned a new ore mill at Nyurba in August 2003, and that the diamond mine will become Alrosa's fifth largest when it achieves full ore processing capacity of 1.5 million mt/y.

Two startups occurred in 2005

In 2005, Alrosa's 92.5%-owned Severalmaz subsidiary (state government 7.5%) officially launched the first stage of a diamond mine and mill at the *Lomonosov* project in the Arkhangelsk region of Russia. The mill can process 1 million mt/y of ore, and phase two, due to be commissioned in 2009, will cost about \$150 million and increase mill capacity to 5.6 million mt/y.

In July 2005, European Diamonds began commissioning its *Liqhobong Satellite Pipe* mine in Lesotho, South Africa, with diamond production from tailings left over from bulk sampling and surface operations. In January 2006, Liqhobong Satellite Pipe began processing primary kimberlite. European Diamonds has contracted BHP Billiton to market the first year's diamond output from Liqhobong. The mine has projected diamond output of 290,000 ct/y.

Six late-stage diamond projects scheduled for production in 2006 to 2009

In addition to Alrosa's projects included in this review, the company is also carrying out several major mine developments in its traditional producing area of Sakha (Yakutia) in eastern Siberia. These projects mainly involve replacing Alrosa's exhausted open pit operations at Udachny and Mir with new underground mines, but Alrosa is also continuing production buildup within the more recently developed Nakyn field of orebodies in Siberia. In May 2004, Alrosa reported that the capital expenditure on the Nakyn ore field during 2003 was \$227.4 million. Alrosa is beginning to publish more information about its assets, costs, and activities, but useful comparative data on its diamond development programs is still only sporadically available.

Alrosa is also participating in a new diamond project in Angola—the 20%-owned *Luo Joint Venture* in the Camachia and Camajicu diamond fields in Lunda Norte province. As of July 2005, the pilot plant, auxiliary complex, and construction of roads, housing, and power supplies had cost \$100 million; the 16-MW hydropower station cost about \$70 million. The Luo Joint Venture is expected to process up to 1 million mt/y of ore and produce 500,000 ct/y of diamonds, beginning in 2006. Portuguese financial-industrial group Espirito Santo holds a 25% interest in the joint venture, and the remaining interest is held by Angolan government-owned Endiama and a number of other Portuguese firms. These are the same companies that founded the Catoca Mining Co in Angola in 1997.

The second new project expected to start up in 2006 is Tahera's wholly-owned *Jericho* project in Nunavut, Canada. In January 2006, construction of Jericho was substantially completed and the first diamonds had been produced. The mine is scheduled to achieve commercial production by April 2006. The mine plan calls for production of 4.7 million ct averaging \$95/ct over a nine-year mine life, from resources of 5.5 million mt grading 0.85 ct/mt at a stripping ratio of 5.2 to 1. Part of the financing for the \$84.4 million project is coming from a \$37.7 million share offering completed in November 2004 and from a \$28 million loan from Tiffany & Co, which has agreed to buy Jericho's diamonds.

Table 2: Recent Startups and Late-Stage Diamond Development Projects

Project	Owner(s)	Actual or Projected Startup	Reserves and Resources/ Grade/ Average Value (US\$)	Contained Ct/ In-Situ Value (US\$)	Initial Capital Costs (US\$)/ Estimated Annual Production
RECENT STARTUPS					
LOMONOSOV Arkhangelsk, Russia	Alrosa 92.5% State Gov't 7.5%	2005	365 million mt 0.75 ct/mt N/A	273.8 million ct N/A	\$150 million 1,000,000 ct/y
LIQHOBONG SATELLITE PIPE Lesotho, South Africa	European Diamonds 75% Industrial Development 25%	2005	1.4 million mt 0.69 ct/mt \$42/ct	966,000 ct \$40.6 million	\$80 million 290,000 ct/y
LATE-STAGE DEVELOPMENT PROJECTS					
LUO JOINT VENTURE Lunda Norte, Angola	Alrosa 20% Espirito Santo 25% Endiama Odebrecht Ascorp Daumonty Financing	2006	N/A N/A N/A	N/A N/A N/A	\$100 million 500,000 ct/y
JERICHO Nunavut, Canada	Tahera 100%	2006	5.5 million mt 0.85 ct/mt \$95/ct	4.7 million ct \$432.4 million	\$84.4 million 522,000 ct/y
SNAP LAKE Northwest Territories, Canada	De Beers 100%	2008	18.3 million mt 1.46 ct/mt \$109/ct	26.7 million ct \$2.9 billion	\$505 million 1.5 million ct/y
VOORSPOED Limpopo, South Africa	De Beers 100%	2008	N/A N/A N/A	N/A N/A	\$177 million 1,000,000 ct/y
VICTOR Ontario, Canada	De Beers 100%	2009	28.7 million mt 0.223 ct/mt \$300/ct	6.4 million ct \$8.6 billion	\$820 million 600,000 ct/y
SOUTH AFRICAN SEA AREAS South Africa	De Beers 100%	N/A	N/A	N/A	\$115 million N/A

In May 2005, De Beers committed an investment of \$505 million to build the *Snap Lake* project in the Northwest Territories, its first mine in Canada. Full production of 1.5 million ct/y is due in the third quarter of 2008, and the mine has a 20-year life. In February 2005, De Beers announced that its 2004 predevelopment underground work and bulk-sample testing had turned up a slightly coarser diamond frequency than expected and that it had revalued the Snap Lake diamonds at \$109/ct (up from \$76/ct) and increased the capital cost estimate to \$505 million (up from \$320 million). By opting for an underground-only mine, De Beers is limiting the surface footprint of the operation to 2.5 sq km on Snap Lake's northwestern peninsula, with access by ramp from a single portal. The project is based on a hypabyssal

kimberlite dike that subcrops on the narrow peninsula and gently dips subhorizontally beneath the lake. Resources included in the mine plan total 18.3 million mt with a recoverable grade of 1.46 ct/mt. The ore zone is generally about 2-3-m thick, and about 75% of the mining will be by room-and-pillar methods, followed by paste backfill and pillar removal at most locations. Primary crushing of the ore will occur underground. The mine and 1.1-million-mt/y processing plant are expected to produce about 1.5 million ct/y for 22 years.

In November 2005, the De Beers board approved \$177 million for the *Voorspoed* project, located in Limpopo, South Africa, subject to receiving the required mining license. Voorspoed is expected to produce about 1 million ct/y. De Beers applied for the mining permit without finalizing its new BEE structure. During 2005, De Beers and Ponahalo Investment Holdings signed a memorandum of understanding relating to the proposed sale of a 26% indirect equity interest in De Beers Consolidated Mines (DBCM) to Ponahalo, a black-economic-empowerment company. The sale is likely to be completed by the middle of 2006, once a due diligence process has been completed and appropriate funding has been arranged.

At its second most-advanced Canadian project, wholly-owned *Victor*, in the James Bay Lowlands of Ontario, De Beers received approval for its environmental assessments in October 2005, and its board approved \$820 million in capital costs for the project. Full production will be achieved by the third quarter of 2009. In February 2005, revised mineable resources at Victor were reported at 28.7 million mt grading 0.223 ct/mt, with the diamonds valued at about \$300/ct (up from a 2003 estimate of 25 million mt grading 0.38 ct/mt at an average value of \$66/ct). Production is projected at about 600,000 ct/y from processing 2.5 million mt/y of ore during a mine life of about 12 years.

De Beers has also approved \$115 million for the *South African Sea Areas* marine mining project, where diamonds are mined in sea-beds, and in February 2006, a ship was being prepared in Cape Town for the work. No further information has been released.

181.5 million ct in feasibility and reserves development projects

In addition to the six preproduction-stage diamond projects discussed in the previous section, eleven other diamond projects in the reserves development and feasibility stage currently hold more than 2 million carats in defined reserves and resources. These projects are shown in Table 3 on the next page. Four of these projects are the subject of feasibility work and seven are in reserves development. Five of the projects hold more than 10 million carats in estimated resources—four are in Canada and one in Botswana.

Figure 3 below includes the six preproduction-stage projects discussed in the previous section and the eleven reserves development- and feasibility-stage projects, listed in Table 3. It shows the relationship between 2005 diamond exploration spending by geographical region and the number of active projects in each region. As illustrated in the graph, Africa received almost 43% of the exploration dollars (\$265.9 million) and holds eight significant projects; Canada was second with 36% (\$226.2 million) and seven projects; Australia received 4% (\$22.5 million) and holds one large project; Latin America 2.5% (\$15.8 million), with no large resources currently active; and the rest-of-world category received about 15% (\$94.4 million) and includes one project.

Figure 3: Exploration Spending and Large Diamond Resources, 2005

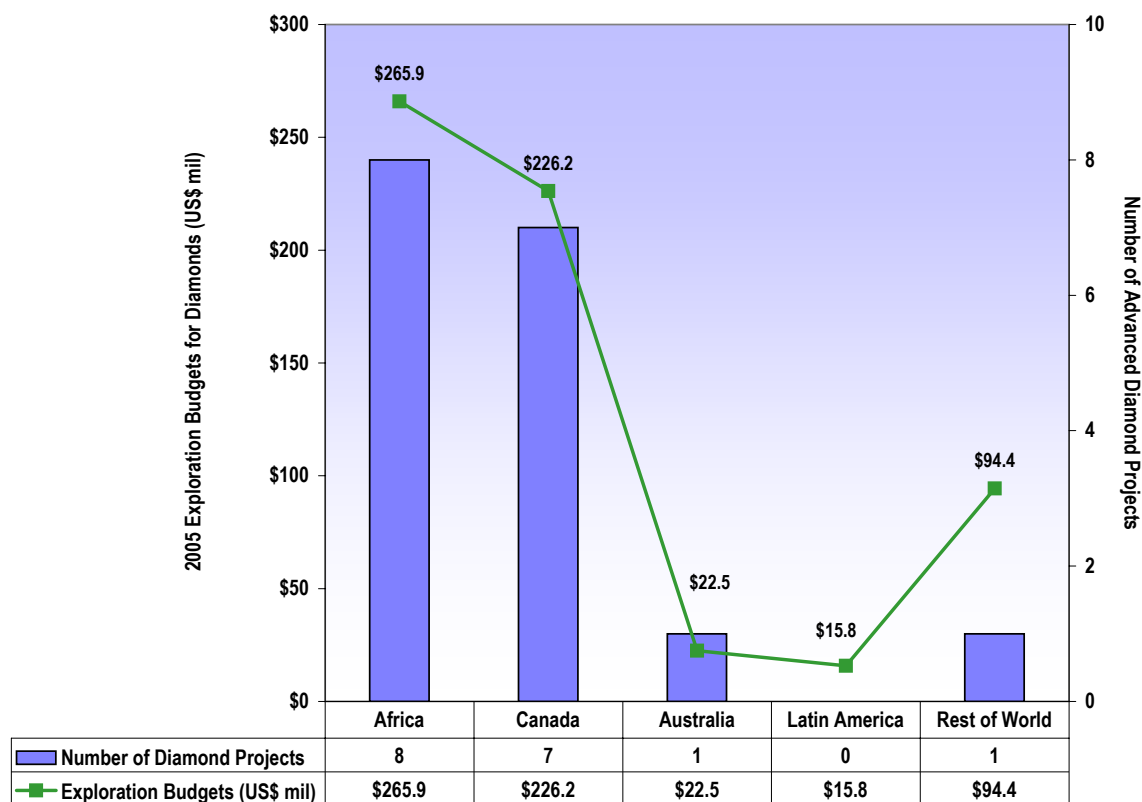


Table 3: Additional Large Diamond Resources

Deposit	Owner(s)	Country	Status	Mine Type	Reserves & Resources Tonnage (mil mt)	Grade (ct/mt)	Contained Diamonds (mil ct)
Gahcho Kue	De Beers Group 51% Mountain Province 44%	Canada	FEA	OPPT	31.4	1.48	46.5
Fort a la Corne	De Beers Group 42.5% Shore Gold 42.5% Cameco 10.5% Areva 5.5%	Canada	RD		487.5	0.074	36.1
Star Kimberlite	Shore Gold 100%	Canada	RD	UGRD	225.0	0.150	33.8
Foxtrot	Ashton Mining 50% Soquem 50%	Canada	RD		25.3	0.802	20.3
Orapa Kimberlite	De Beers Group 51% African Diamonds 49%	Botswana	RD	OPPT	54.0	0.250	13.5
Kao	Lesotho Diamond 100%	South Africa	RD		130.0	0.070	9.1
Groen River Valley	Firestone Diamonds 39% De Beers 61%	South Africa	RD	PLAC	360.0	0.025	9.0
702 Linyi	China Diamond 60% Linyi Pan Asia 40%	China	RD	UGRD	37.3	0.104	3.9
Martins Drift Area	Diamonex 100%	Botswana	FEA		13.5	0.274	3.7
Merlin	North Australian Diamonds 100%	Australia	FEA	TLGS	19.1	0.174	3.3
Koidu	Energem 40% Magma Diamond 35% BSG Resources 25%	Sierra Leone	FEA	UGRD	5.6	0.380	2.1
Totals					1,388.7	0.131	181.5

The largest defined resources are at De Beers's third advanced Canadian project, *Gahcho Kue*, in the Lac de Gras area of the Northwest Territories. De Beers is earning a 51% interest by committing to a full feasibility study, and can increase its interest to 60% upon the start of commercial production. As currently proposed, Gahcho Kue will be an open pit mine, with estimated capital costs of \$708 million. The project is expected to produce an average of 3 million ct/y annually over 15 years of operations from resources of 31.4 million mt grading 1.48 ct/mt. In July 2005, De Beers approved funding of \$31.6 million to begin the environmental assessment and permitting process and to conduct a drilling and sampling program in the winter of 2005-06.

At *Fort a la Corne* in Saskatchewan, Canada, ongoing drilling and bulk sampling have defined estimated resources of 487.5 million mt grading 0.074 ct/mt containing 36.1 million ct of diamonds, in five of at least 63 kimberlite bodies identified to date. De Beers (42.25%) and its partners Shore Gold (42.25%), Cameco (10.5%), and Areva (5%) have been exploring and bulk sampling at the Fort a la Corne kimberlite field for many years, but the complex, mostly low-grade resources buried beneath more than 100 m of glacial till, have proven to be very difficult to evaluate. The property hosts at least 69 kimberlite

bodies ranging from 2.7 to 250 ha in surface area. In October 2005, a total of 212 microdiamonds were recovered from samples totaling 309.4 kg from the 122 kimberlite. Drilling and bulk sampling are ongoing. A management disagreement recently arose between De Beers and its partners, but it is unclear how it will affect the exploration program.

Shore Gold owns and operates an adjoining project in the Fort a la Corne kimberlite belt in Saskatchewan, the *Star Kimberlite* underground deposit, where analysts have estimated resources at 225 million mt grading 0.15 ct/mt containing 33.8 million ct of diamonds. By the end of January 2006, a total of 1,419 commercial-sized diamonds, weighing a total of 312.33 ct, had been recovered from the six batches of the 15,000-mt bulk sample taken from the Joli Fou kimberlite. Fifty-four diamonds of more than 1 ct each had been recovered, and the four largest stones graded 19.3 ct, 17.7 ct, 9 ct, and 5.7 ct. The color of 58% of the recovered diamonds was classified as white, with a further 15% classified as off-white.

In February 2006, Ashton Mining started a bulk sample designed to recover at least 6,000 ct of diamonds at its *Foxtrot* project in Quebec, Canada. The minimum 6,000-mt sample was to be collected from four of the Renard kimberlites, 2, 3, 4, and 9, and is part of a C\$24 million sampling program. Earlier, a 4.57-mt sample of kimberlitic boulders collected from the projected surface expression of the Hibou dike was processed by dense media separation and returned 2.87 ct of commercial-sized diamonds; a 56.5-kg sample from a kimberlite dike returned 662 diamonds. The largest diamond weighed 0.04 ct. In mid-November 2005, drilling data on Renard 2, 3, 4, and 9 indicated that the kimberlites could contain about 20.3 million ct of diamonds within about 25.3 million mt of material.

In Botswana, De Beers is drilling the AK6 pipe at *Orapa Kimberlite*, one of three projects in the Orapa area in northeastern Botswana, including its 200,000-ct/y Orapa mine. De Beers is in a 51/49 joint venture with African Diamonds on Orapa Kimberlite, and can increase to a 70% interest by funding the project through completion of a bankable feasibility study. As of December 2005, resources at the AK6 pipe were estimated at 54 million mt of kimberlite grading 0.25 ct/mt containing 13.5 million ct of diamonds, at an estimated value of \$138/ct. De Beers is considering building a mine processing 5 million mt/y to produce about 1 million ct/y. It plans to spend about \$20 million on AK6 in 2006. ◆