

# Diamonds – The Threats to Rough Supply

Recovery in global demand could create another price bubble...

**Royal Bank of Canada Europe Limited**

Des Kilalea (Analyst) +20-7653-4538 Des.Kilalea@rbccm.com

September 2009

**This report is priced as of market close August 31, 2009 EST.**

**All values in U.S. dollars unless otherwise noted.**

**For Required Non-U.S. Analyst and Conflicts Disclosures, please see page 22.**



**RBC Capital Markets®**

# Putting Diamond Mining into Context

---

## The Diamond Mining World is Small

- Four large producers account for ~90% of all Rough Diamond production
- The Big Four are: De Beers, Alrosa, Rio Tinto & BHP Billiton
- Smaller players are: Harry Winston Diamond Corp, Petra Diamonds, Gem Diamonds
- A host of mid-tier and juniors kick in the rest; they are small and often not well financed

## On the other side of the Fence are the Cutters & Polishers

- A multitude of companies with a handful of large players
- Characterised by high Bank Debt
- Often beholden to customers who force unhealthy payment terms
- They pay cash for diamonds and extend credit to customers

## Difficult Business, both sides of the Fence

# Putting Diamond Mining into Context

---

## How big is the global diamond Mining Sector?

- Total production: ~160 million carats per year
- Value of production: ~\$14 billion per year (\$8bn-\$9bn in 2008)
- Average value of production: ~\$90 per carat (~\$75/ct in 2008)
- Value of polished gem diamonds: ~\$17 billion-\$20 billion per year
- Value of diamond jewellery: ~\$69 billion-\$71 billion

## Diamond mining is a relatively small industry

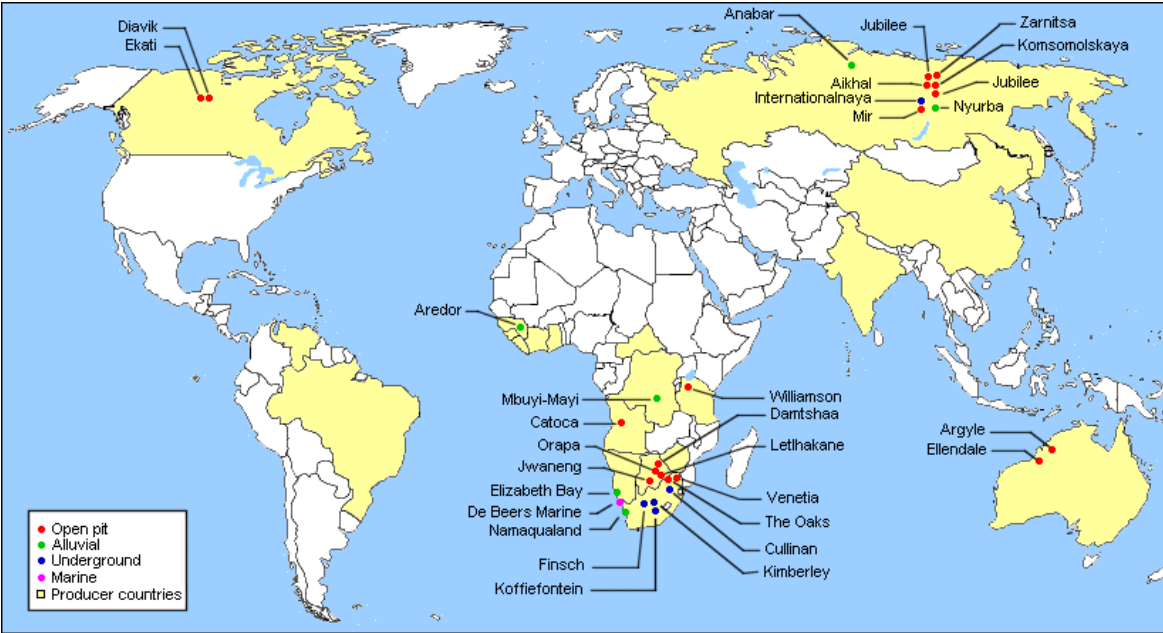
- Value of total gold production: ~\$70 billion
- Value of nickel production ~\$40 billion
- Value of copper production ~\$120 billion
- Value of platinum production ~\$20 billion

**But it is one of the world's most profitable mining sectors – margins >80%!**

Source: Company reports and RBC Capital Markets estimates for 2008

# Putting Diamond Mining into Context

Mining concentrated in few areas - and not always hospitable



Remote locations, low grade, costly to operate

Diavik Mine in Canada in Winter

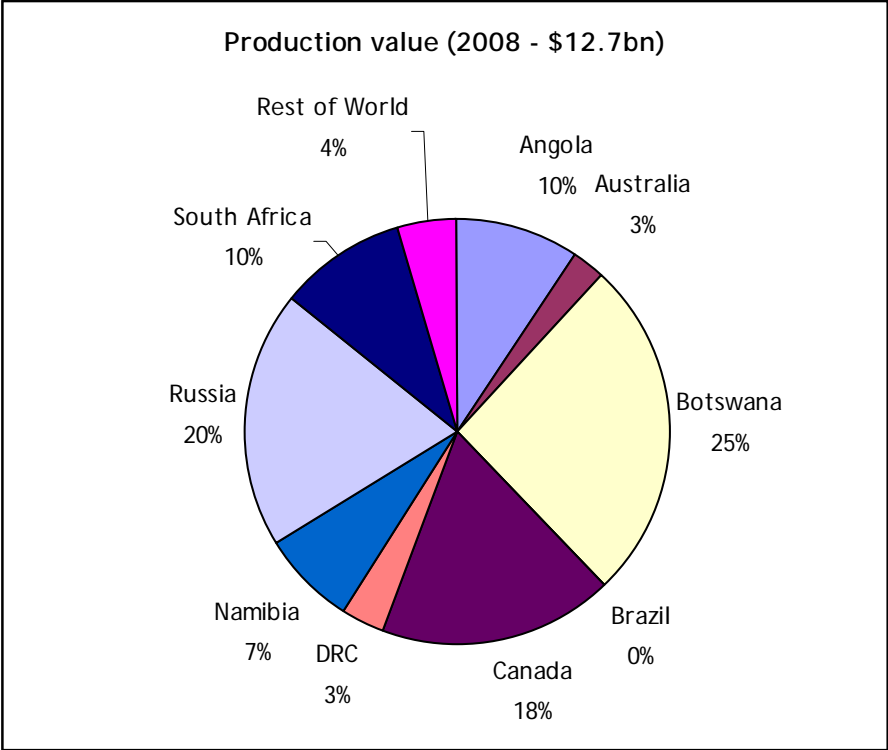
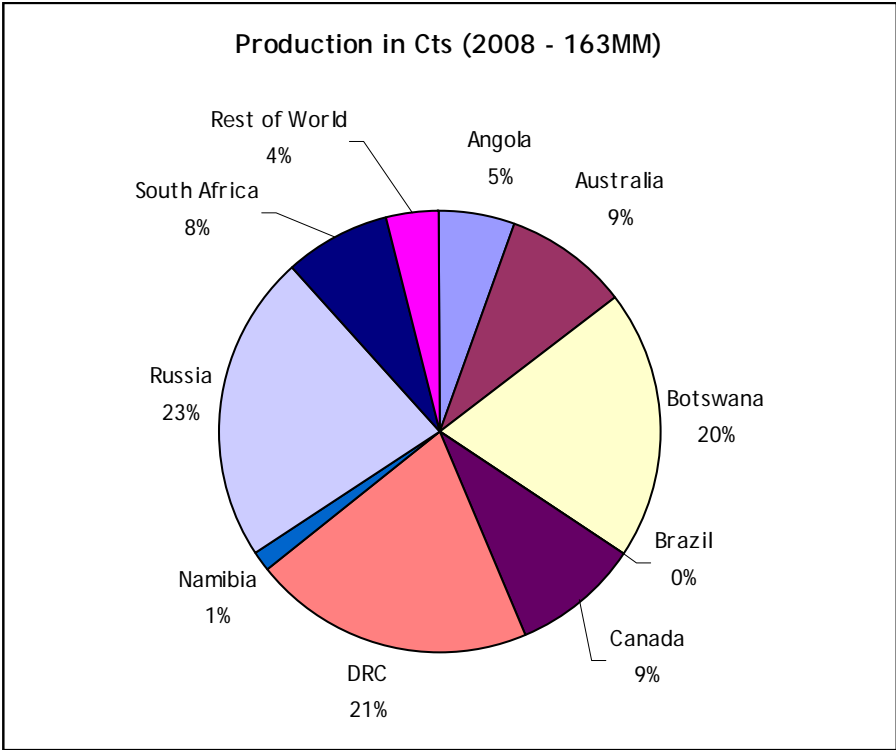


Source: Company records

# Putting Diamond Mining into Context

## Who produces diamonds (2008)

Core producers in value terms are Botswana, Russia, Canada, South Africa & Angola



Source: Kimberley Process data

# Putting Diamond Mining into Context

---

## The Major Mining Players (2008)

De Beers*	~50m carats valued at \$5.5-\$6bn
Rio Tinto**	~25m carats valued at \$1.1bn
Alrosa	~36m carats valued at \$2.5bn
BHP Billiton	~3.2m carats valued at \$440m
Harry Winston Diamond+	~3.2m carats valued at \$350m
Gem Diamonds	~0.3m carats valued at \$150m
Trans Hex	~0.2m carats valued at \$100m
Petra Diamonds	~1.1m carats valued at \$100m

\* Debswana included

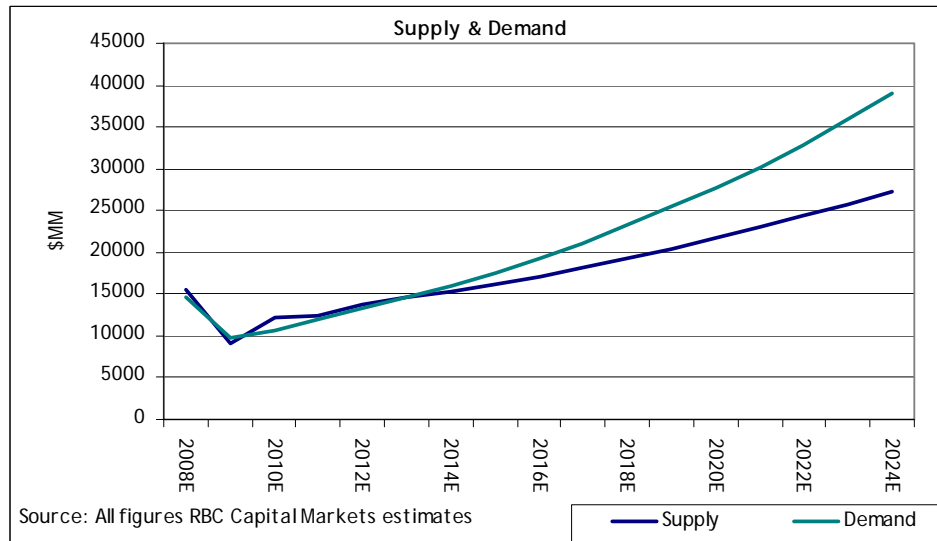
\*\* Includes 60% of Diavik

+ 40% of Diavik

## Of the 100+ listed companies, fewer than 20 have meaningful production

Source: Company reports and RBC Capital Markets estimates (Gem Diamonds and Petra Diamonds)

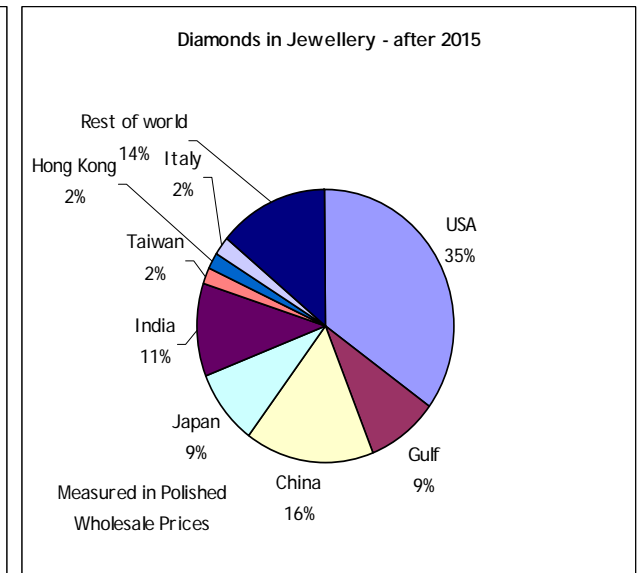
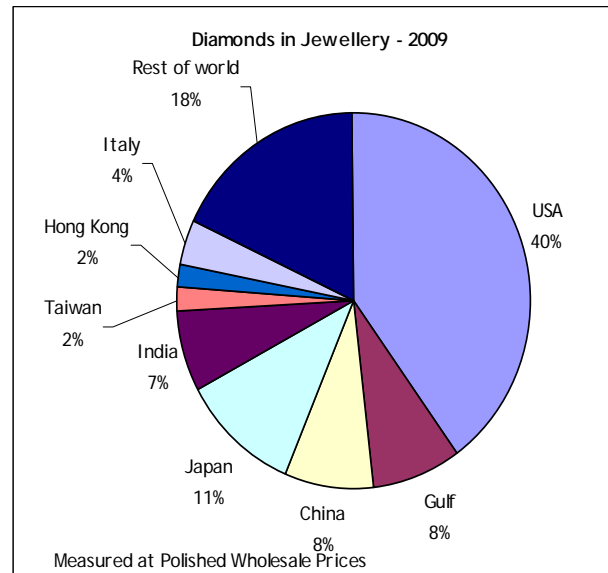
# The Demand Outlook is Good!



## Longer-term Demand Still Look Good

- Demand driven by recovery in US economy – still ~35% of demand in 2015
- Growth spurred by China and India
- China growing in double digits – market share set to double
- India not far behind – more than 10% of demand by 2015

**Major challenges will be supply of rough diamonds as demand recovers and availability of bank credit**



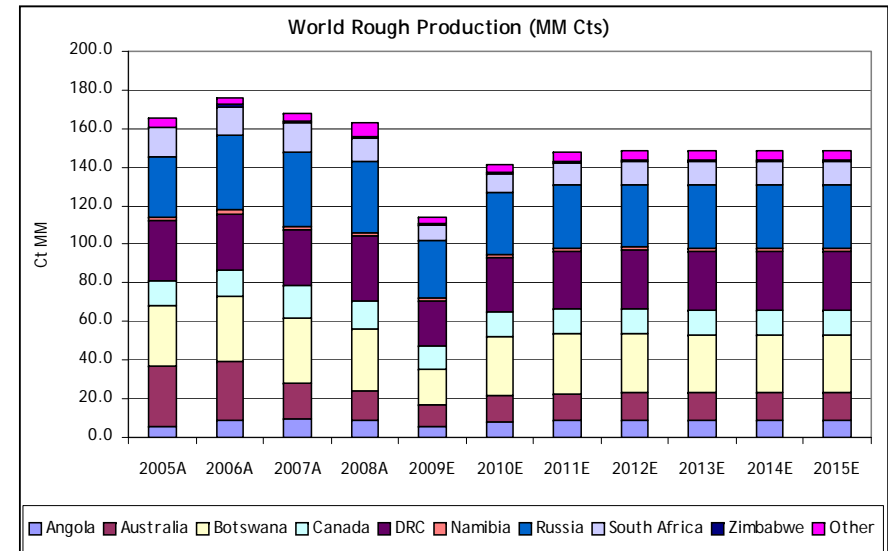
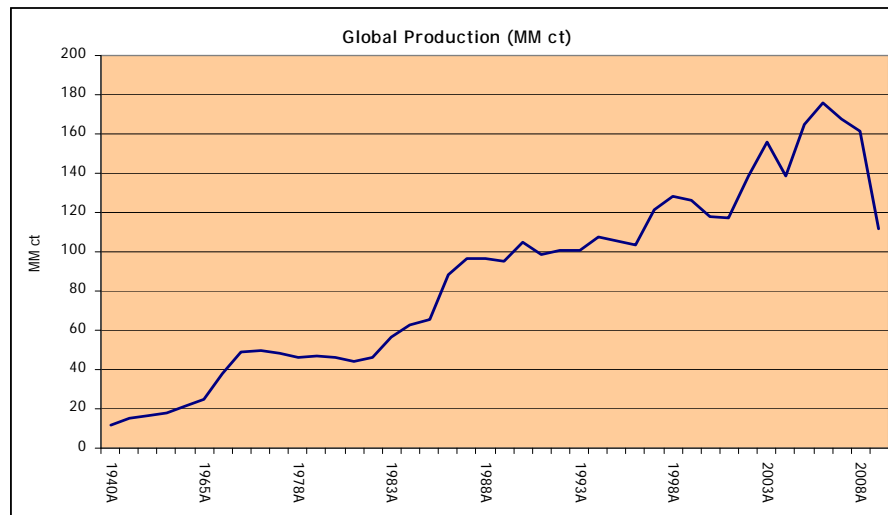
Source: De Beers

# Putting Diamond Mining in Context

Global Rough Diamond Production (MM Carats)							
	1980A	1990A	2000A	2005A	2006A	2007A	2008A
Angola	1.5	1.3	5.8	5.9	9.2	9.7	8.9
Australia	0.0	34.3	26.6	30.7	29.9	18.6	14.9
Botswana	5.1	17.3	24.7	31.9	34.3	33.6	32.3
Canada	0.0	0.0	2.6	12.8	13.3	17.0	14.8
DRC	14.0	24.0	18.5	31.0	29.0	28.4	33.4
Guinea	0.0	0.1	0.6	0.5	0.5	1.0	3.1
Namibia	1.6	0.8	1.6	1.8	2.4	2.2	2.1
Russia	12.0	15.0	22.2	31.0	38.4	38.3	36.9
South Africa	8.7	8.5	10.7	15.5	14.9	15.2	12.0
Zimbabwe	0.0	0.0	0.0	0.3	1.0	0.7	0.8
Other Countries	4.4	4.4	5.2	4.1	3.0	3.0	3.8
<b>World Total</b>	<b>46.1</b>	<b>104.7</b>	<b>117.8</b>	<b>164.6</b>	<b>176.0</b>	<b>167.6</b>	<b>161.1</b>

## Where will the New Supply Come From?

- 2009's output was driven by brutal cuts to output by De Beers
- Alrosa produced but did not sell
- Rio took production holidays
- Only Ekati kept the pace
- Ramping up already – but no real growth



Source for all charts Company records and RBC Capital Markets estimates



# Mines are Getting Older

## It Takes A Long Time to Bring a Diamond Mine into Production

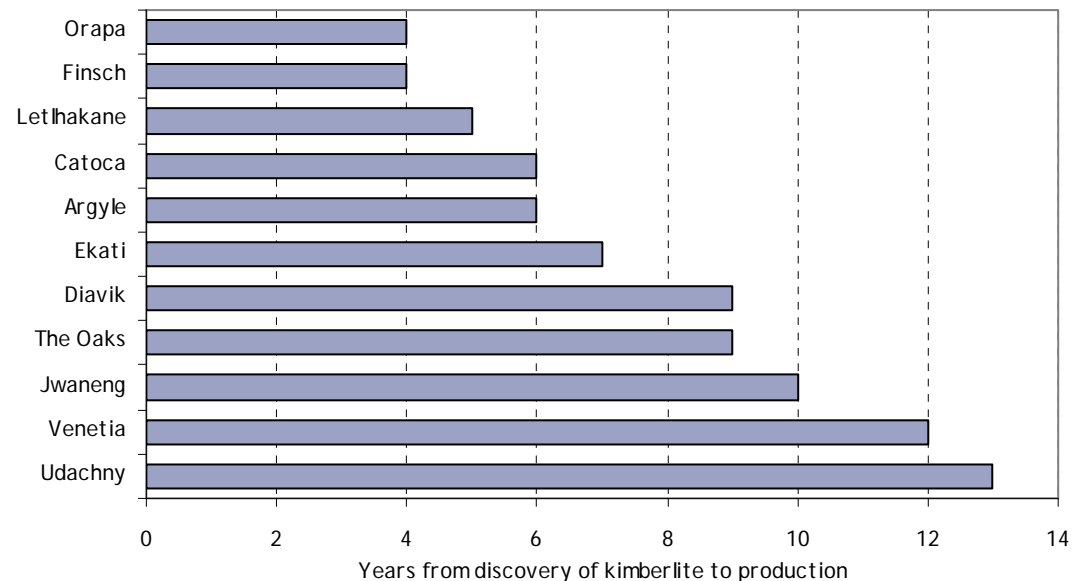
The older mines are getting older .... and older .. And need to go underground

The world's largest mines started producing more 20 years ago!

- Cullinan (~1m ct) opened in 1904
- Mining Area 1 in Namibia (~1m cts) opened in 1936
- Williamson (~150k ct) opened in 1940
- Orapa's (17m cts) opened in 1971
- Letlhakane (~1m cts) opened in 1975
- Jwaneng (16m cts) opened 1982
- Argyle (14m cts) opened in 1985
- Venetia (+6m cts) opened in 1992
- Ekati (4m cts) opened in 1998
- Diavik (8m cts) opened in 2003
- The Russian mines are also tired

### Finding deposits takes time

- Proving them takes years .. and is costly
- Orapa was on surface – yet four years!
- Ekati took 10 years to find and seven years to prove and build ... Diavik even longer!



Source: Company records

# Proving there are Diamonds takes Time and Money

## Jwaneng – The World's Greatest Diamond Mine

- Jwaneng in Botswana is De Beers' largest mine
- The mine is 300 metres deep, 2.5 km long and 1.5 km wide
- Each year 15m tonnes of ore is moved from the pit
- This produces ~15m carats of diamonds
- Total value of production ~\$1.9bn (2008)



- Ore is drilled, blasted, loaded into 240 tonne trucks
- Height of tyres 2.5 metres!
- Each full truck contains ~240 carats valued
- Takes 63,000 truck loads a year to produce 15m ct
- Value in each full truck ~\$24,000

Source: Company records

## Where are the New Mines?

---

### Not much to fill in the gaps created as older mines in Africa, Canada and Russia start slowing

- Gahcho Kue in Canada
- Owned by Mountain Province (49%) and De Beers Canada (51%).
- Take 10 years to date and may be in production at end-2012 producing 3m ct per year for 15 years.
- Remote and has been working on this for 10 years so far
- Renard in Canada
- Owned by Stornoway (50%) and Soquem (50%).
- Started exploring in 1999 and unlikely to be a mine before 2013.
- Annual output could be ~1m ct/year.. but needs infrastructure
- Star Project in Canada
- Owned by Shore Gold.
- Bought the claims in 1995 and spent ~\$300m so far.
- Could produce 1m-2m ct a year but production still a way off – perhaps 2012-2013
- AK6 Mine in Botswana
- Owned by Africa Diamonds (28%) and De Beers (66%)
- Could be producing 0.5mct-1mct a year for 12 years by mid 2011
- Lace Mine in South Africa
- Owned by DiamondCorp (74%)
- Could produce 0.5m ct per year by 2012

# Where are the New Mines?



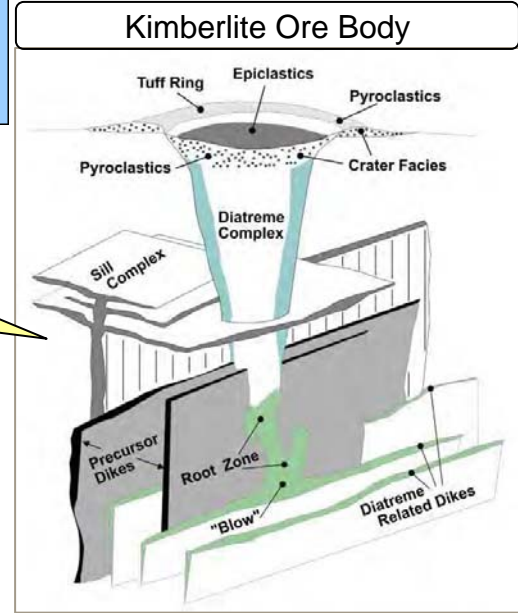
But these new mines will not make up for the shortfall as older mines slow down

Argyle used to produce ~30m cts per year - now ~15m cts



Kimberlites are complex to prove up

Alluvials are lower grade challenging



Source: Company records

Source: Company records

# Where are the New Mines?

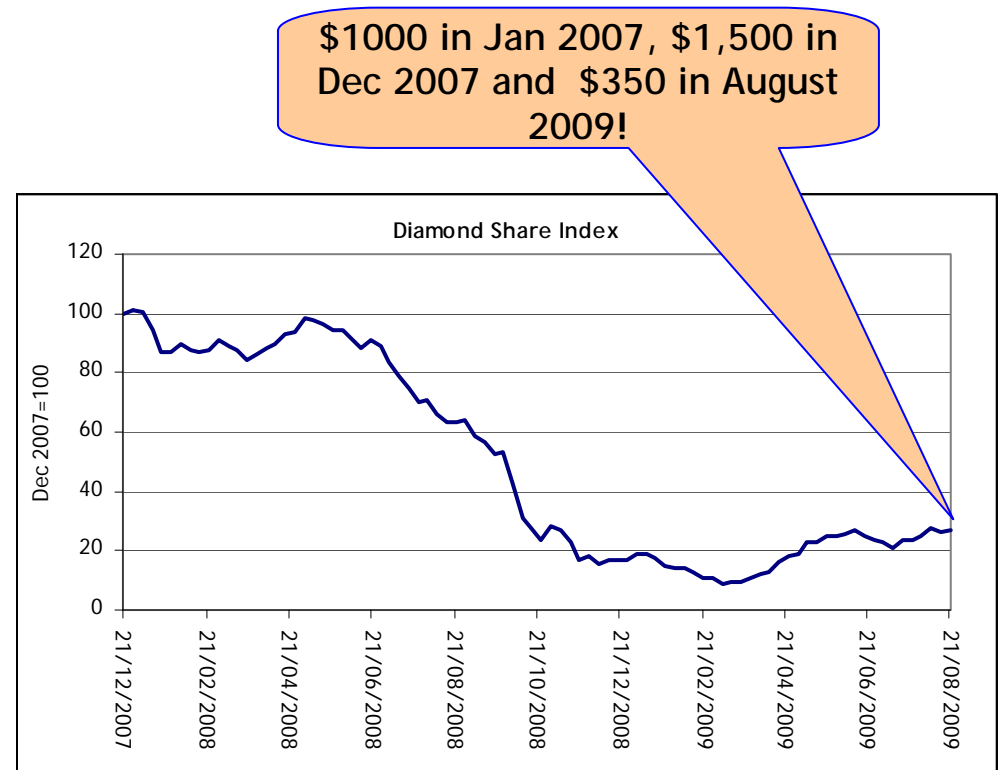
Areas which are challenging to mine



Source: Company records

# Financing New Mines is Challenging

- When it comes to investment performance.....
- Diamond shares have been truly bad investments
- Probably the worst sector in the resources space....
- Yet, Diamonds are scarce...
- But they are hard to find....
- And expensive to prove ...
- And take time to bring into production



Source: Bloomberg August 2009

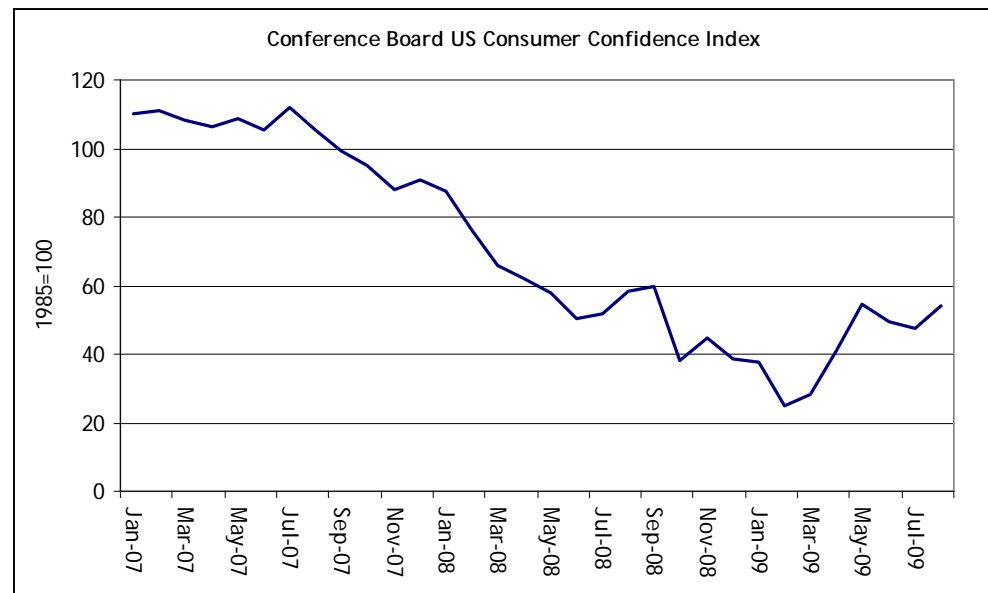
**Raising capital to find new deposits and to build new mines will likely be challenging ...  
production forecasts may be too optimistic!**

# So What Does this All Mean?

## “Green Shoots” or a “False Dawn”

- Rough Diamond Prices have probably bottomed .....
- Continued recession in the US the major threat to diamond sales – US is ~40% of the market!
- Europe and Japan also likely to hit sales
- Japanese polished imports stalled
- China growing strongly – now ~10% of market
- India the next major market
- Cutters/polishers bankruptcies; small miners in trouble
- A shortage of gem-quality rough is likely to create firm long-term prices
- But lack of bank debt and speculation will likely dissuade cutters and polishers from building inventories

### Confidence recovered from all-time LOW but still struggling

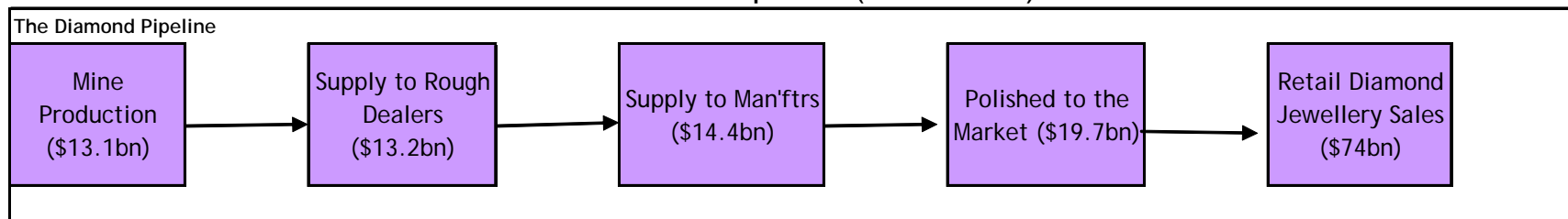


Source: Conference Board records

# Many unknowns in the Diamond Sector

## Not Yet Out of the Woods – but prospects are Better

The Diamond Pipeline (2006/2007)



The recovery in rough diamond prices have risen in recent months has been “in the teens” of percent.

But there is no real evidence of a pull through at the retail end as yet. *Bob Gannicott, CEO Harry Winston Diamond Corp*

**It may simply be restocking of the Pipeline and thus will be short-lived**

The Diamond Pipeline (2009)



Source: Company reports and RBC Capital Markets estimates

**Polished inventories are still too high – no pull-through at retail end (Tiffany, Zale, Harry Winston)**

**What's the likely impact of De Beers and Alrosa returning to the market?**

**The Sector remains testing!**

**But when the Pipeline needs to be replenished, there could be a rush for Rough**

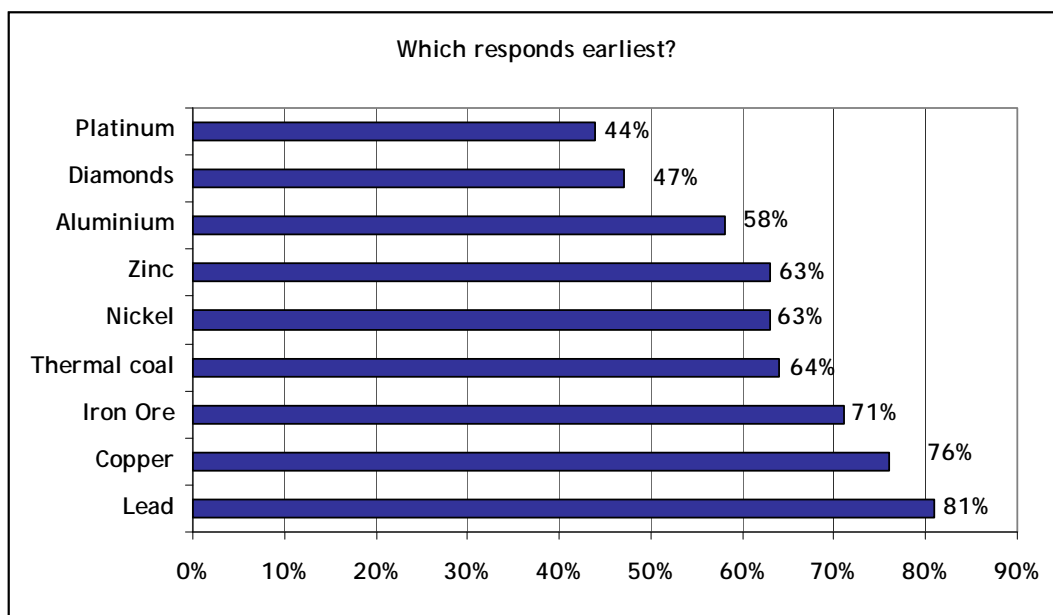


# Many unknowns in the Diamond Sector

## Some BIG questions

- Is the world recovering?
- Will Rough follow?
- Will Polished tag along with Rough?
- Who are the new competitors for Rough?

The World is recovering but diamonds are late cycle



### Three things drive diamond demand

#### Consumer disposable income

US has become much poorer and has to repair his balance sheet in the face of rising joblessness

#### Consumer confidence

Confidence is not high in recessions; no reason for great optimism short-term

#### Price points

Destocking provides bargains, but will people buy?

Source: Xstrata presentation august 2009

The benefits of filling the inventory larders will take time – funding a major constraint

# Many unknowns in the Diamond Sector

---

Will Rough prices follow?

## The price of Rough is no longer controlled

- Historically De Beers controlled the rough price by holding goods off the market
- DTC forced contracted suppliers (Alrosa, Argyle, Debswana) to cut production of build inventories (Quotas)
- DTC also bought surplus rough in the market to support prices and enlisted the support of “close” clients in this
- De Beers’ balance sheet was strong: it owned ~35% of Anglo American which was non-diamond collateral
- Now BHP auctions its rough, Alrosa sells its own, Rio sells on sights
- Marketing is more fragmented
- Bankers have to adhere to different rules
- Synthetics may become an issue at the margin
- Rough is moving more “free market”



Rough prices are expected to be more volatile

# Many unknowns in the Diamond Sector

---

## What about Polished prices?

Long term Polished must follow rough

Trends can diverge materially in the short-term:

- Rough prices are influenced by De Beers Sights
- Demand for rough is influenced by debt levels in cutting centres
- Polished prices can rise when rough is falling due to shortages – Q2 2009
- Polished can fall when rough is rising – shortages in new mine supply



The important message is that short-term factors can lead to Rough prices putting pressure on margins when Polished is battling to sell. Longer-term mine production growth will mean pressure on Rough; Polished is determined by consumers

# Many unknowns in the Diamond Sector

---

## Who are the NEW COMPETITORS for ROUGH?

### The Diamond Miners themselves are the new competitors!

- Beneficiations or Value-Adding are the new words on the mining block – governments are encouraging it
- How to get better prices for rough is the consuming questions
- De Beers has ForeverMark and a share in a retail business
- Harry Winston has 60% of Diavik Mine and the Harry Winston retail chain
- Petra Diamonds recently sold a polished pink through Sotheby's for +\$13m
- Rockwell has an arrangement with the Steinmetz group
- Gem Diamonds owns Matrix and Calibrated – high-tech cutting operations to polish Letseng diamonds

And then there are the Diamond Funds – no threat yet but ....

# Immediate outlook – Not Much Visibility

---

## Some Challenging Trends

- The bottom of the cycle may be behind us – rough prices bottomed
- But global economic recovery is fragile - no immediate spur to jewellery sales
- Cutting centres are constrained by lack of capital and available bank debt
- Do not rely on China to pull the Diamond industry out of recession – the US is still critical
- Governments are becoming increasingly involved in Diamonds – Botswana Sights
- Producers do not co-operate as before – Competition Authorities
- Exploration spending dries up – Majors spending less and less on grass roots exploration
- Ability of Diamond Miners to raise capital is constrained – supply will remain tight longer term
- Miners moving downstream
- Is the Kimberley Process in danger?
- Are synthetic diamonds a threat?

**The industry has great long-term fundamentals – but near-term challenges are SIGNIFICANT**

# Required Disclosures

## Non-U.S. Analyst Disclosure

Des Kilalea(i) is not registered/qualified as a research analyst with the NYSE and/or FINRA and (ii) may not be an associated person of the RBC Capital Markets Corporation and therefore may not be subject to FINRA Rule 2711 and NYSE Rule 472 restrictions on communications with a subject company, public appearances and trading securities held by a research analyst account.

## Conflicts Disclosures

The analyst(s) responsible for preparing this research report received compensation that is based upon various factors, including total revenues of the member companies of RBC Capital Markets and its affiliates, a portion of which are or have been generated by investment banking activities of the member companies of RBC Capital Markets and its affiliates.

## Distribution of Ratings

For the purpose of ratings distributions, regulatory rules require member firms to assign ratings to one of three rating categories - Buy, Hold/Neutral, or Sell - regardless of a firm's own rating categories. Although RBC Capital Markets' ratings of Top Pick/Outperform, Sector Perform and Underperform most closely correspond to Buy, Hold/Neutral and Sell, respectively, the meanings are not the same because our ratings are determined on a relative basis (as described above).

Rating	RBC Capital Markets		Investment Banking Serv./Past 12 Mos.	
	Count	Percent	Count	Percent
BUY [TP/O]	539	46.71	128	23.75
HOLD [SP]	530	45.93	95	17.92
SELL [U]	85	7.37	5	5.88

# Required Disclosures

---

## Conflicts Policy

RBC Capital Markets Policy for Managing Conflicts of Interest in Relation to Investment Research is available from us on request. To access our current policy, clients should refer to <http://www.rbccm.com/cm/file/0%2C%2C63022%2C00.pdf> or send a request to RBC CM Research Publishing, P.O. Box 50, 200 Bay Street, Royal Bank Plaza, 29th Floor, South Tower, Toronto, Ontario M5J 2W7. We reserve the right to amend or supplement this policy at any time.

## Dissemination of Research and Short-Term Trading Calls

RBC Capital Markets endeavors to make all reasonable efforts to provide research simultaneously to all eligible clients, having regard to local time zones in overseas jurisdictions. RBC Capital Markets' research is posted to our proprietary websites to ensure eligible clients receive coverage initiations and changes in ratings, targets and opinions in a timely manner. Additional distribution may be done by the sales personnel via email, fax or regular mail. Clients may also receive our research via third party vendors. Please contact your investment advisor or institutional salesperson for more information regarding RBC Capital Markets' research.

RBC Capital Markets also provides eligible clients with access to a database which may contain Short-Term trading calls on certain of the subject companies for which it currently provides equity research coverage. The database may be accessed via the following hyperlink <https://www2.rbccm.com/cmonline/index.html>. The information regarding Short-Term trading calls accessible through the database does not constitute a research report. These Short-Term trading calls are not formal ratings and reflect the research analyst's views with respect to market and trading events in the coming days or weeks and, as such, may differ from the price targets and recommendations in our published research reports reflecting the research analyst's views of the longer-term (one year) prospects of the subject company. Thus, it is possible that a subject company's common equity that is considered a long-term 'sector perform' or even an 'underperform' might be a Short-Term buying opportunity as a result of temporary selling pressure in the market; conversely, a subject company's common equity rated a long-term 'outperform' could be considered susceptible to a Short-Term downward price correction.

## Analyst Certification

All of the views expressed in this report accurately reflect the personal views of the responsible analyst(s) about any and all of the subject securities or issuers. No part of the compensation of the responsible analyst(s) named herein is, or will be, directly or indirectly, related to the specific recommendations or views expressed by the responsible analyst(s) in this report.

# Disclaimer

---

RBC Capital Markets is the business name used by certain subsidiaries of Royal Bank of Canada, including RBC Dominion Securities Inc., RBC Capital Markets Corporation, Royal Bank of Canada Europe Limited and Royal Bank of Canada - Sydney Branch. The information contained in this report has been compiled by RBC Capital Markets from sources believed to be reliable, but no representation or warranty, express or implied, is made by Royal Bank of Canada, RBC Capital Markets, its affiliates or any other person as to its accuracy, completeness or correctness. All opinions and estimates contained in this report constitute RBC Capital Markets' judgment as of the date of this report, are subject to change without notice and are provided in good faith but without legal responsibility. Nothing in this report constitutes legal, accounting or tax advice or individually tailored investment advice. This material is prepared for general circulation to clients and has been prepared without regard to the individual financial circumstances and objectives of persons who receive it. The investments or services contained in this report may not be suitable for you and it is recommended that you consult an independent investment advisor if you are in doubt about the suitability of such investments or services. This report is not an offer to sell or a solicitation of an offer to buy any securities. Past performance is not a guide to future performance, future returns are not guaranteed, and a loss of original capital may occur. RBC Capital Markets research analyst compensation is based in part on the overall profitability of RBC Capital Markets, which includes profits attributable to investment banking revenues. Every province in Canada, state in the U.S., and most countries throughout the world have their own laws regulating the types of securities and other investment products which may be offered to their residents, as well as the process for doing so. As a result, the securities discussed in this report may not be eligible for sale in some jurisdictions. This report is not, and under no circumstances should be construed as, a solicitation to act as securities broker or dealer in any jurisdiction by any person or company that is not legally permitted to carry on the business of a securities broker or dealer in that jurisdiction. To the full extent permitted by law neither RBC Capital Markets nor any of its affiliates, nor any other person, accepts any liability whatsoever for any direct or consequential loss arising from any use of this report or the information contained herein. No matter contained in this document may be reproduced or copied by any means without the prior consent of RBC Capital Markets.

## **Additional information is available on request.**

**To U.S. Residents:** This publication has been approved by RBC Capital Markets Corporation (member FINRA, NYSE), which is a U.S. registered broker-dealer and which accepts responsibility for this report and its dissemination in the United States. Any U.S. recipient of this report that is not a registered broker-dealer or a bank acting in a broker or dealer capacity and that wishes further information regarding, or to effect any transaction in, any of the securities discussed in this report, should contact and place orders with RBC Capital Markets Corporation.

**To Canadian Residents:** This publication has been approved by RBC Dominion Securities Inc. (member of IIROC). Any Canadian recipient of this report that is not a Designated Institution in Ontario, an Accredited Investor in British Columbia or Alberta or a Sophisticated Purchaser in Quebec (or similar permitted purchaser in any other province) and that wishes further information regarding, or to effect any transaction in, any of the securities discussed in this report should contact and place orders with RBC Dominion Securities Inc., which, without in any way limiting the foregoing, accepts responsibility for this report and its dissemination in Canada.

**To U.K. Residents:** This publication has been approved by Royal Bank of Canada Europe Limited ('RBCEL') which is authorized and regulated by Financial Services Authority ('FSA'), in connection with its distribution in the United Kingdom. This material is not for general distribution in the United Kingdom to retail clients, as defined under the rules of the FSA. However, targeted distribution may be made to selected retail clients of RBC and its affiliates. RBCEL accepts responsibility for this report and its dissemination in the United Kingdom.

**To Persons Receiving This Advice in Australia:** This material has been distributed in Australia by Royal Bank of Canada - Sydney Branch (ABN 86 076 940 880, AFSL No. 246521). This material has been prepared for general circulation and does not take into account the objectives, financial situation or needs of any recipient. Accordingly, any recipient should, before acting on this material, consider the appropriateness of this material having regard to their objectives, financial situation and needs. If this material relates to the acquisition or possible acquisition of a particular financial product, a recipient in Australia should obtain any relevant disclosure document prepared in respect of that product and consider that document before making any decision about whether to acquire the product.

**To Hong Kong Residents:** This publication is distributed in Hong Kong by RBC Investment Services (Asia) Limited, a licensed corporation under the Securities and Futures Ordinance or, by Royal Bank of Canada, Hong Kong Branch, a registered institution under the Securities and Futures Ordinance. This material has been prepared for general circulation and does not take into account the objectives, financial situation, or needs of any recipient. Hong Kong persons wishing to obtain further information on any of the securities mentioned in this publication should contact RBC Investment Services (Asia) Limited or Royal Bank of Canada, Hong Kong Branch at 17/Floor, Cheung Kong Center, 2 Queen's Road Central, Hong Kong (telephone number is 2848-1388).

**To Singapore Residents:** This publication is distributed in Singapore by RBC (Singapore Branch), a registered entity granted offshore bank status by the Monetary Authority of Singapore. This material has been prepared for general circulation and does not take into account the objectives, financial situation, or needs of any recipient. You are advised to seek independent advice from a financial adviser before purchasing any product. If you do not obtain independent advice, you should consider whether the product is suitable for you. Past performance is not indicative of future performance.

® Registered trademark of Royal Bank of Canada. RBC Capital Markets is a trademark of Royal Bank of Canada. Used under license.

Copyright © RBC Capital Markets Corporation 2009 - Member SIPC

Copyright © RBC Dominion Securities Inc. 2009 - Member CIPF

Copyright © Royal Bank of Canada Europe Limited 2009

Copyright © Royal Bank of Canada 2009

All rights reserved