



The MSA Group

Trends in Exploration

Presented by Christiaan Ndoro

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This document provides an outline of a presentation and is incomplete without the accompanying oral commentary and discussion.

- **Overview of MSA**

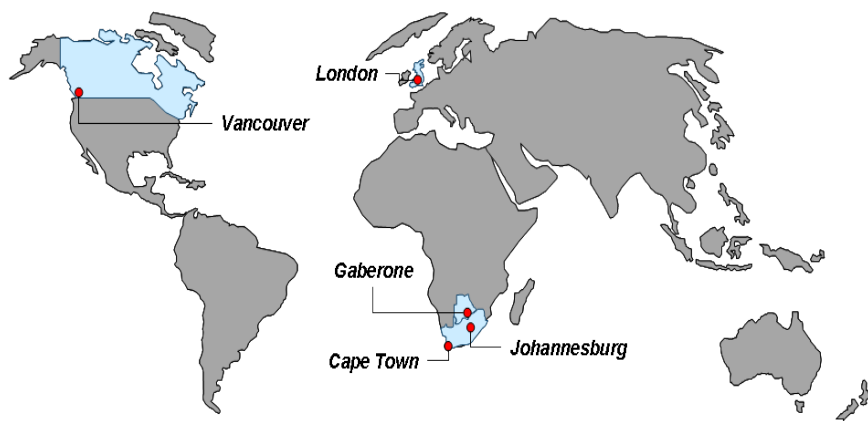
- Setting the Scene: Defining Exploration as a Business
- Drivers of Exploration Activity
- Global Exploration Trends
- Exploration in Africa
- Concluding Remarks

Introduction

***MSA** is Africa's largest consulting and contracting company in the minerals sector.*



- Established in 1983, The **MSA** Group initially began as an exploration contractor and has grown into a **holistic mining and exploration service provider**
- The **MSA** Group provides **specialist technical input** into international projects on almost **all mineral commodities** on a project consulting and contracting basis.
- Clients include the **largest multi national mining companies** and Canadian, Australian, UK and South African listed juniors.
- The **MSA** Group services the resource industry from **five international offices** through **six business units**: **MSA Geoservices**, **MSA Consulting**, **MSA Environmental**, **MSA Occupational Risk Management**, **MSA Diamond Laboratories** and **MSA Data Management & GIS**.
- Most rigorous HSEC in the industry
- Comprehensive insurances and cover
- ISO 17025 pending, ISO 9001 and ISO 18001 in progress expected before end 2009
- Employment Equity Compliant
- Full BEE Compliance by 1 October 2008



The MSA Group Overview

The MSA Group comprises of six business units offering specialist technical consulting and contracting.



MSA Geological Services fields the largest independent team of geologists on the continent working in more than 20 African countries for more than 40 international clients.



MSA Analytical Services offers a complete service from kimberlite exploration and evaluation to resource evaluation and modelling. World class laboratories staffed with Specialist geoscientists to manage all phases of the diamond exploration pipeline.



MSA Occupational Risk Management offers complete solutions tailored to meet specific client requirements, and is affiliated to the international associations to ensure a world class service



MSA Environmental , Legal & Mining Services undertakes comprehensive technical and legal assessments and offers recommendations to mitigate physical and social environmental impacts.



MSA GIS & Data Management offers customized data solutions for all spatial and process driven datasets. Specialist data, GIS, image processing and interpretation services are undertaken for a variety of industries including exploration, environmental, mining, civil and infrastructural development.



MSA Consulting Services provides specialist technical and advisory support to the mineral resource industry – from field and mine, through to government and the board room.

- Overview of MSA

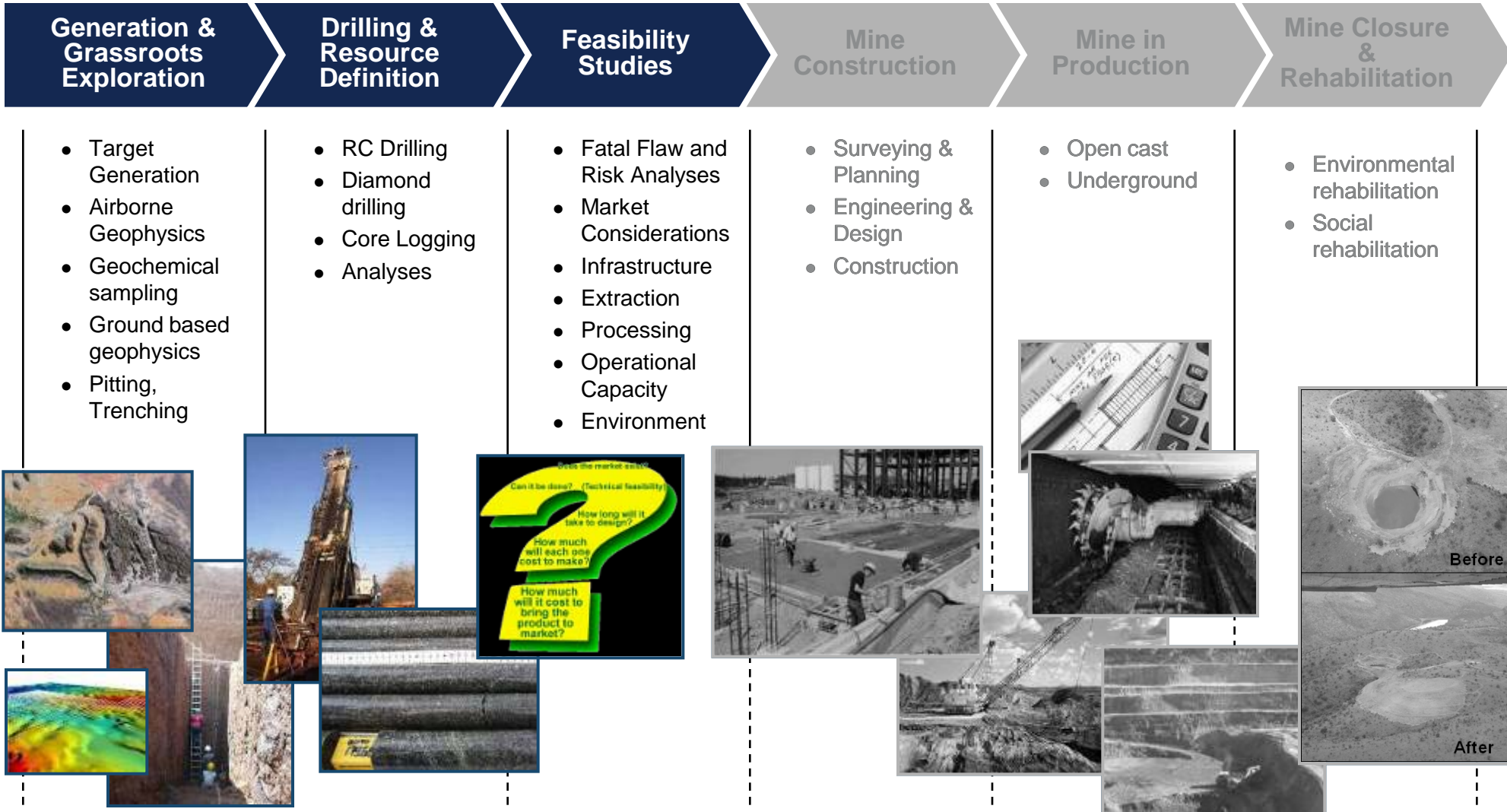
- **Setting the Scene: Defining Exploration as a Business**

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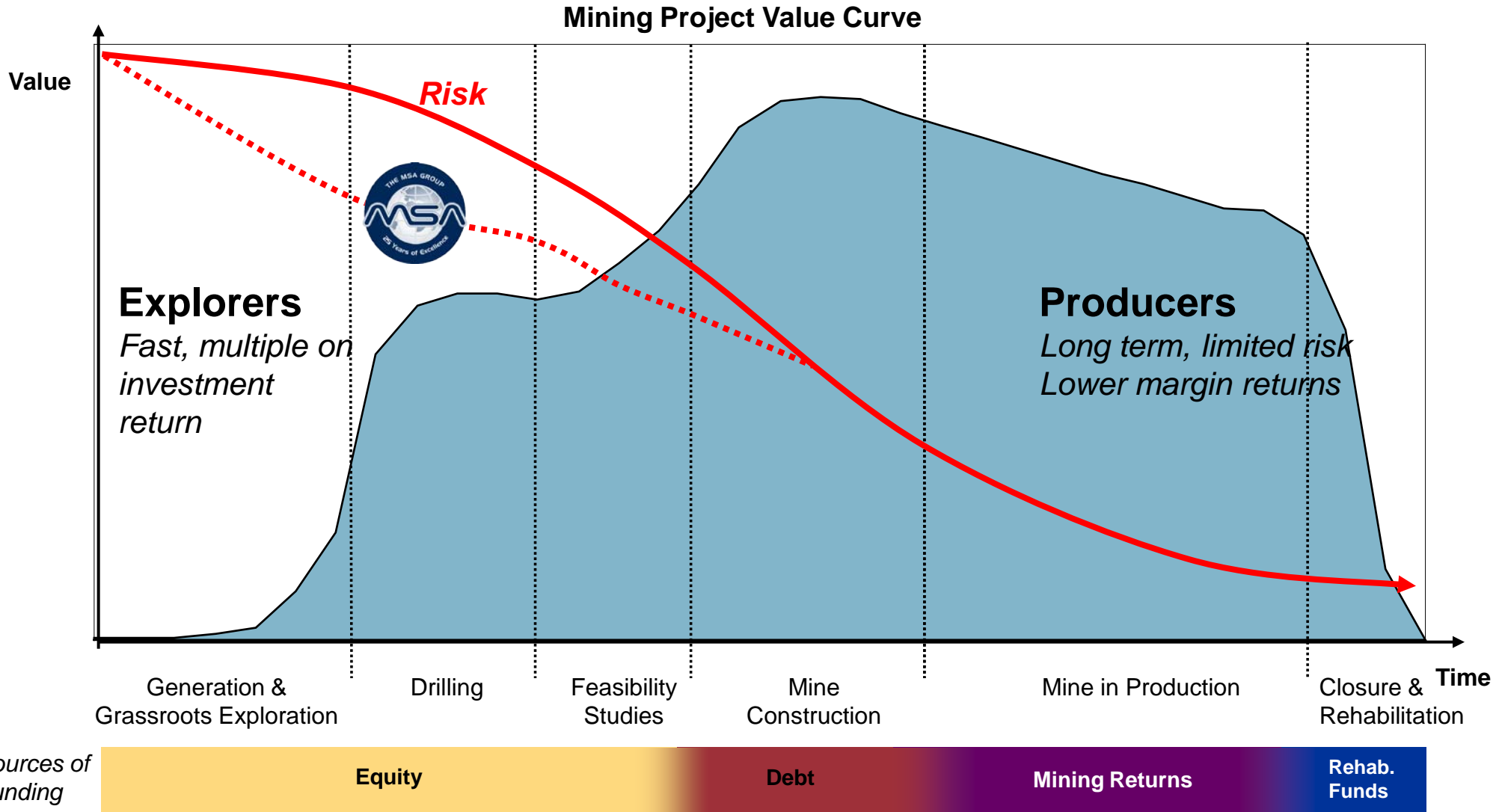
We define the business of exploration as:

“The realization of value added through technical and commercial means to an exploration project either through an exit (listing/sale) or by profitably producing an ore to market.”

Exploration and Mining Value Chain



The Mining & Exploration Value Curve



Source: MSA Analysis

- Overview of MSA
- Setting the Scene: Defining Exploration as a Business

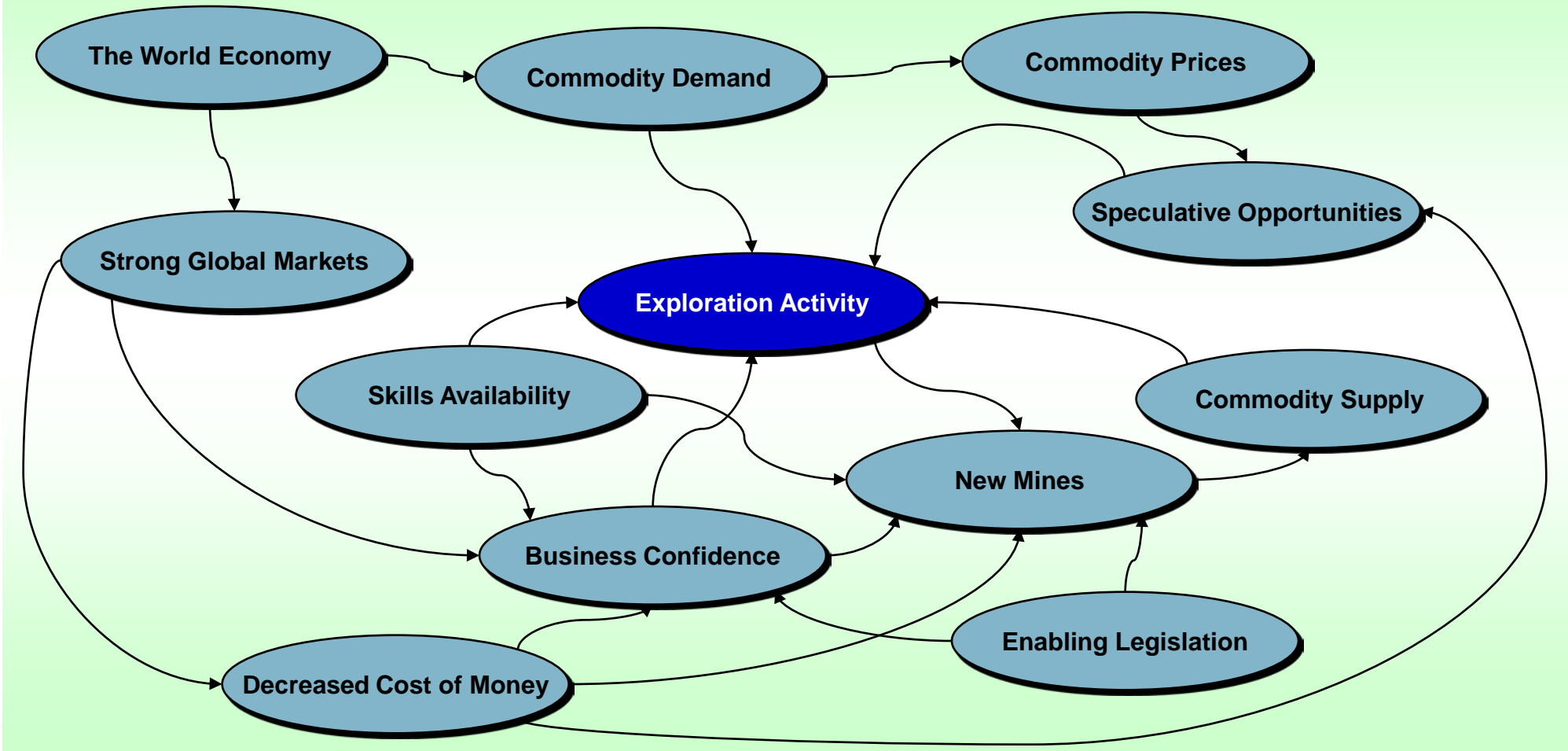
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Inter-connected Industry Drivers

The factors affecting exploration activity are all related and inter-dependant

Dynamic Illustration of Drivers of Exploration Activity



Key Drivers of Exploration Activity



The World Economy

Commodity Prices (Demand and Supply)

Business Confidence

Global Markets

- In the first part of 2008, the world economies was at an all time high, driving exploration spend to global highs
- Though we are experiencing a recession, the long term outlook remains positive
- Commodity prices have seen record drops, but are expected to normalise at about 60-75% of their all- time highs
 - This will have a positive effect on exploration spend, which can be directly correlated to commodity prices
- Business confidence in Africa for aspects relevant to our industry is high, however political stability will continue to detract exploration activity
- As markets remain weak, and will challenge explorers in raising finance
- Skills in Africa will continue to be a challenge, although the recession has eased pressure somewhat
- **The short term outlook for the exploration industry is low to negative, however in the long term our outlook remains positive**

World Economies Driving Commodity Prices



After 2005 the global economy was at its all time high, with China and India emerging as powerhouses, and by 2050 the global economy is forecasted to more than triple, with China and India accounting for half the world's economic activity

The World Economy

Commodity Prices

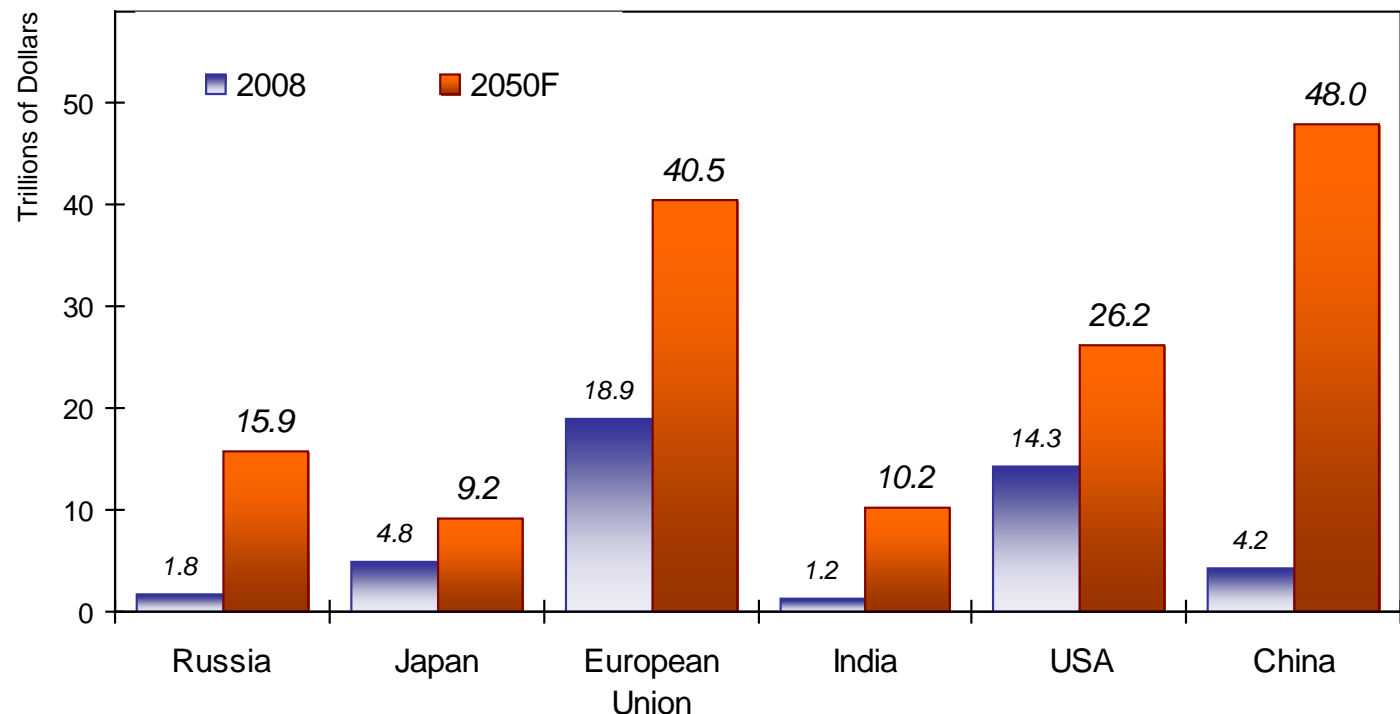
Business Confidence

Global Markets

“Over the next 10 years, we anticipate strong demand growth of 4 to 5% compounded annually for most key commodities – driven mainly by China, as well as by India and other developing countries.”

Cynthia Carroll, Chief Executive, Anglo American plc. AGM 15 April 2008¹

Gross Domestic Product (2005-2050)²



CAGR	5.5%	1.6%	1.9%	5.3%	1.5%	6.1%

Source: ¹Business Day; ³CIA World Factbook; MSA Analysis

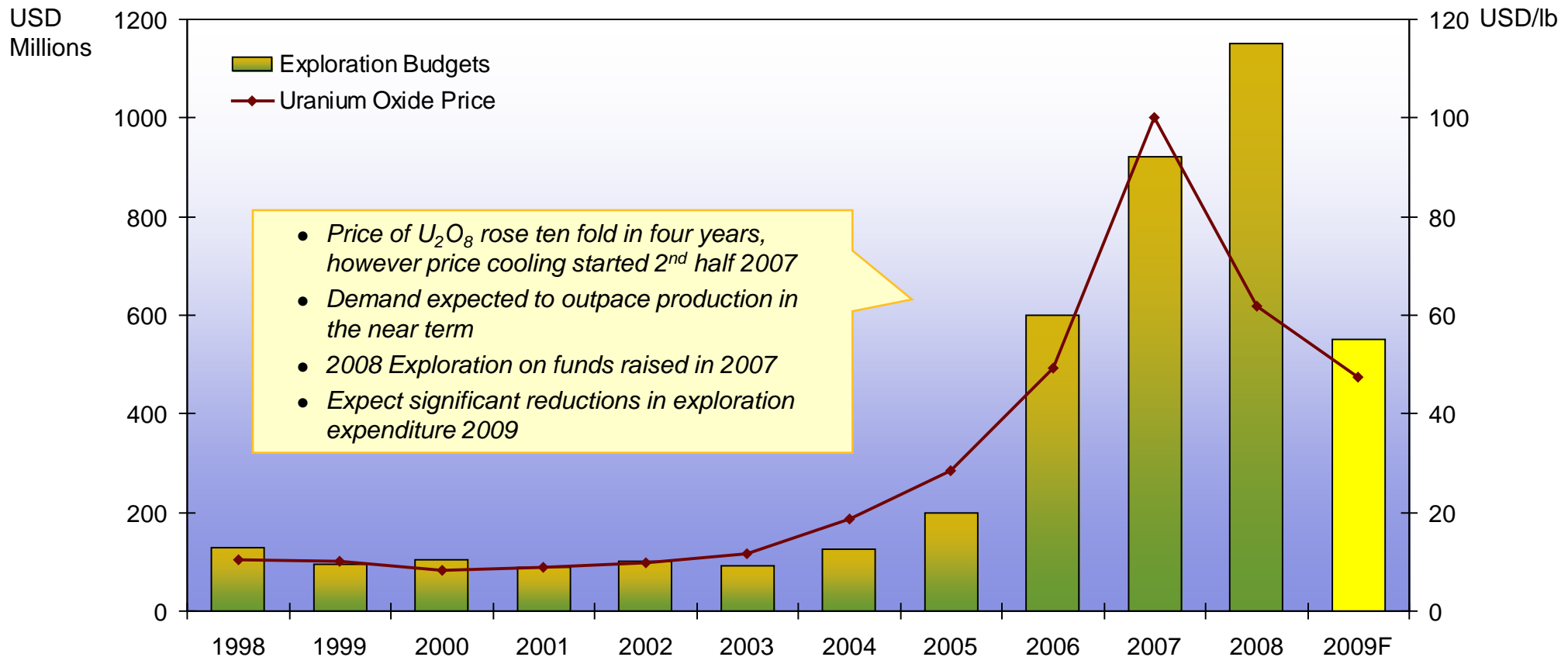
The case of Uranium



The price of Uranium Oxide peaked at \$138 in 2007, and is strongly correlated to the spend in exploration

The World Economy
Commodity Prices
Business Confidence
Global Markets

Average Uranium Price and Uranium Exploration Expenditure (1998-2009)



Source: Metal Economics Group; Uraniumminer.net; MSA Analysis



Short term sentiment in the mining industry is negative, however the industry has high expectations for another boom cycle

The World Economy

Commodity Prices

Business Confidence

Global Markets

Key Outcomes from Fraser Institute Annual Survey of Mining Companies 2008/2009

Big fears trouble the industry

- Survey responses indicate that the mining sector expects dramatically decreased investment plans along with a large number of bankruptcies in the sector.

A wave of bankruptcies to come

- More than 80% miners believe that **at least 30 percent of exploration companies will be forced out of business** in the current economic downturn.

Exploration and production activities to be severely curtailed

- Over 90% of respondents believe the exploration and development activities of *exploration* companies will be curtailed,
- Nearly 85 percent of respondents say that the activities of *production* companies will be curtailed

Commodity shortages could hinder recovery:

- Possible shortage of raw materials and skyrocketing commodity prices as the world economy moves into renewed growth.
- The negative impact from the lack of exploration on commodity supplies will begin to hit as the recovery matures.

Long-term price increases

- Over 70 percent of miners believe that **commodity prices will resume an upward trend as the economy recovers**,
- The long-term decline in commodity prices has led to uncertainty as to whether the run-up in commodity prices prior to the recent economic crisis would reverse itself, as other short-term price run-ups have, or endure due to long-term increased demand from developing nations such as China, India, and Brazil.

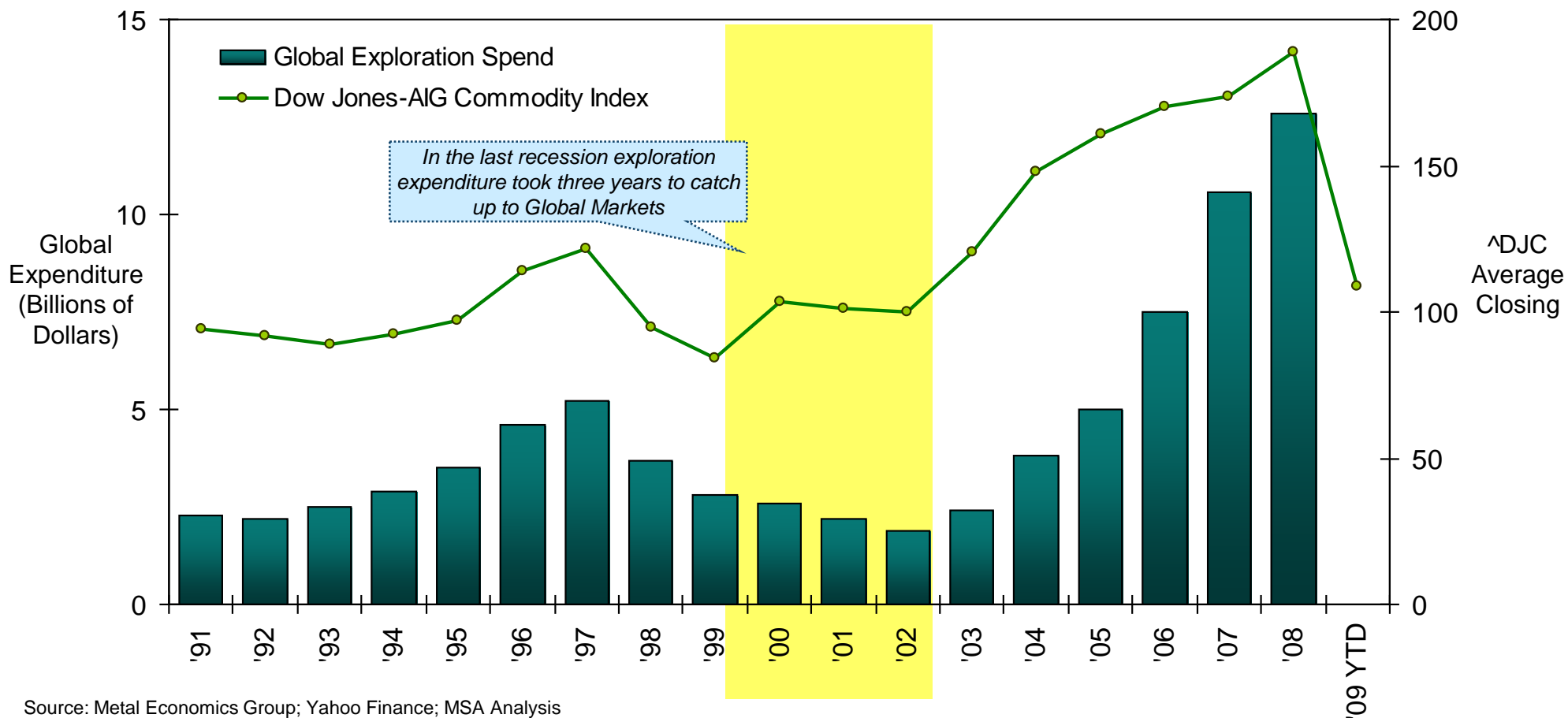
Global Trends in Exploration and Markets



Exploration expenditure grew by an unprecedented 11% annually for seven years, but history suggests that tough times are ahead for explorers

The World Economy
Commodity Prices
Business Confidence
Global Markets

Global Exploration Expenditure and ^DJC Commodity Index



Source: Metal Economics Group; Yahoo Finance; MSA Analysis

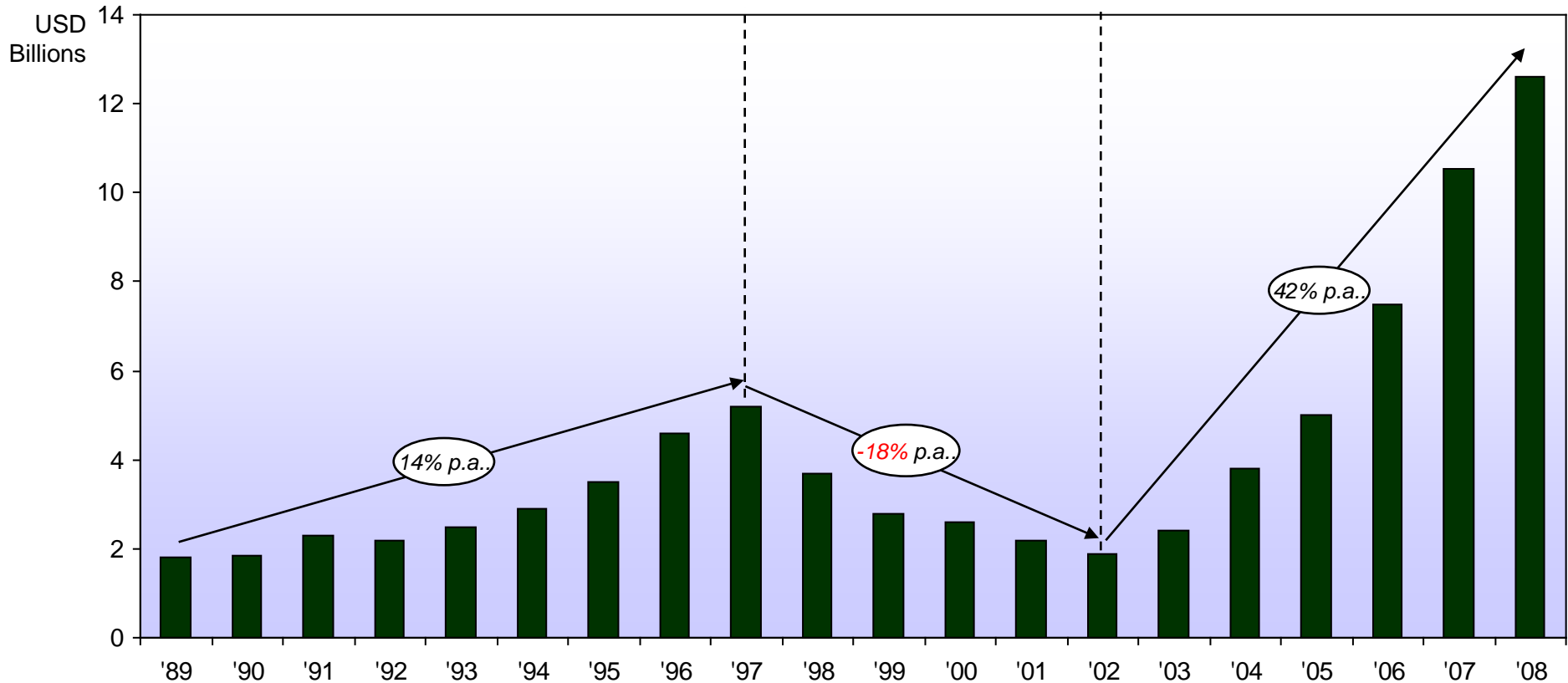
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How much are Explorers spending?



At over US\$12 Billion, the current exploration boom exceeded previous highs, but is now headed for a downward trend – 2009 expenditure is expected to be significantly less

Global Exploration Expenditure
(1997-2008 nonferrous, excludes Uranium)



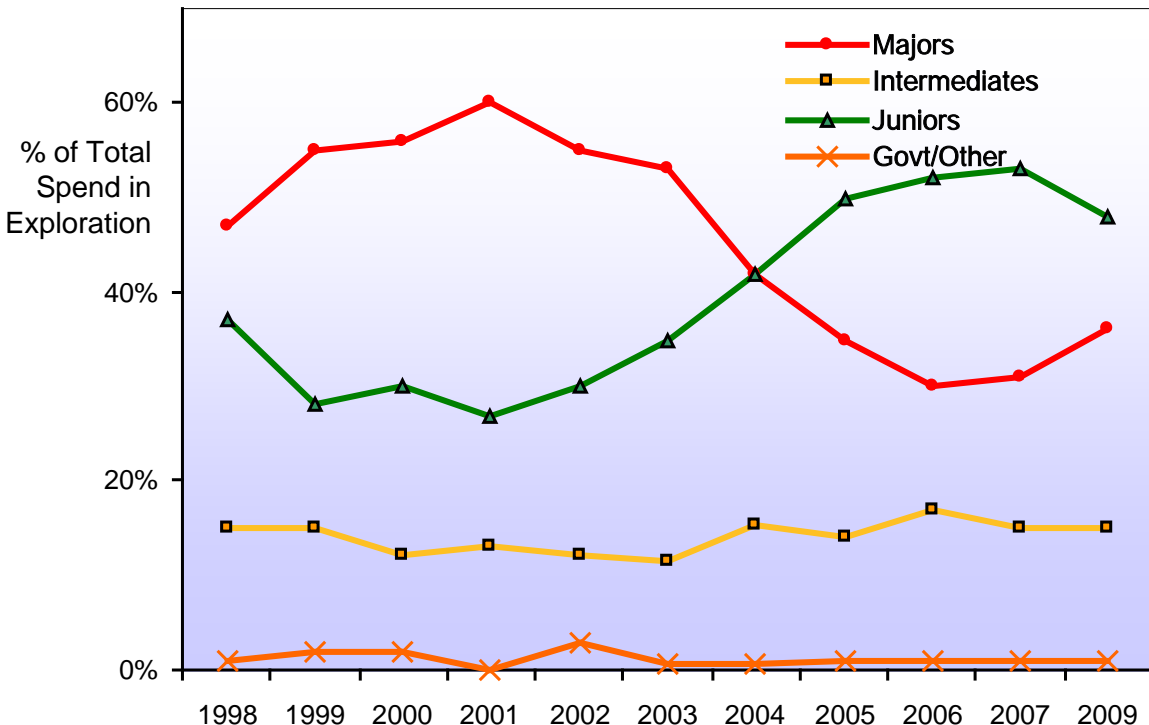
Source: Metal Economics Group; MSA Analysis

Who is exploring?



As the resource sector continues to show strong growth, however with the slowdown, junior mining companies are injecting less money into exploration

Sources of Exploration Spend (1997-2008)



- Juniors led exploration charge over last five years
- Slower growth in junior budgets
- Dismal equity markets and tumbling commodity prices have severely diminished most of the group's near-term access to capital
 - likely to result in majors driving exploration spend in 2009
- No visible movement of government/other expenditure

MEG Definitions

Major — a company with adjusted annual nonferrous mining-related revenue of more than US\$500 million that is considered to have the financial strength to develop a major mine on its own. Exceptions are made when a company's adjusted revenue figure substantially understates the size of the company.

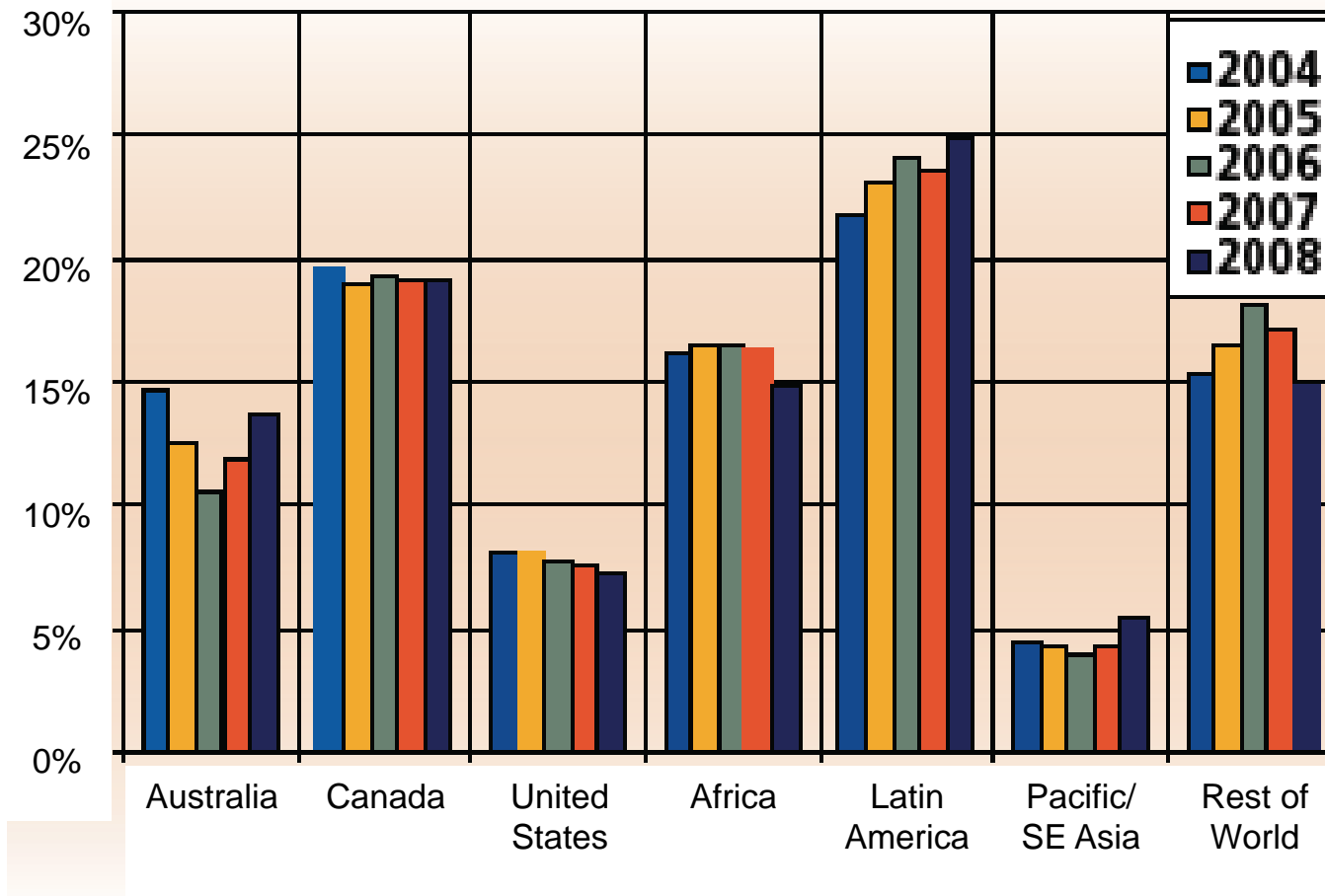
Intermediate — also based primarily on a company's adjusted annual revenue*, with at least \$50 million in annual nonferrous revenue but less than the \$500 million major threshold.

Junior — the company's principal means of funding exploration is through equity financing, although some companies may have limited adjusted annual revenue* of less than the \$50 million intermediate-company threshold. This category mainly includes pure explorers but also many aspiring producers that have not yet reached the "intermediate" threshold.

Source: Metal Economics Group; MSA Analysis

Non-Ferrous Exploration by Region (2004-2008)

- Latin America remains No.1 and is trending up
- Australian Expenditure recovered from 2006 levels
- Canada static, USA trending downward
- Pacific and SE Asia starting to move upward
- Rest of World trending up
- Africa allocation decreasing



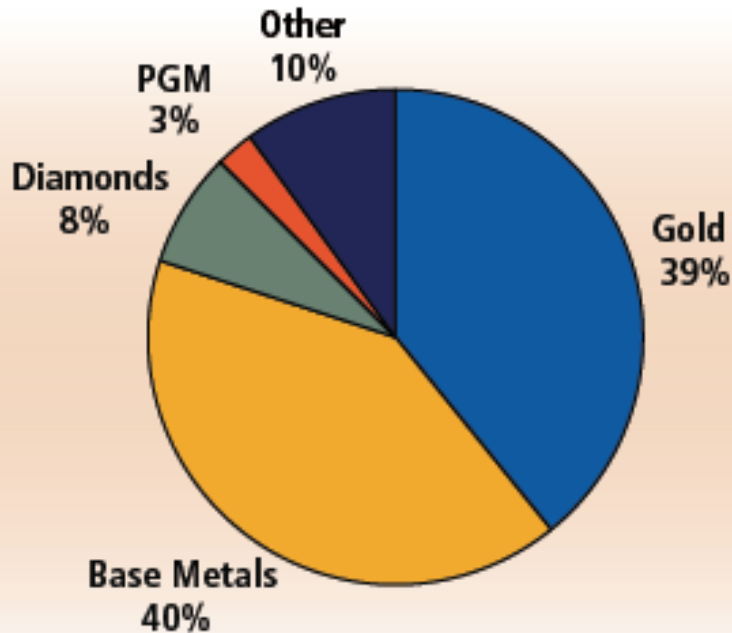
Source: Metal Economics Group;

What are Explorers looking for?

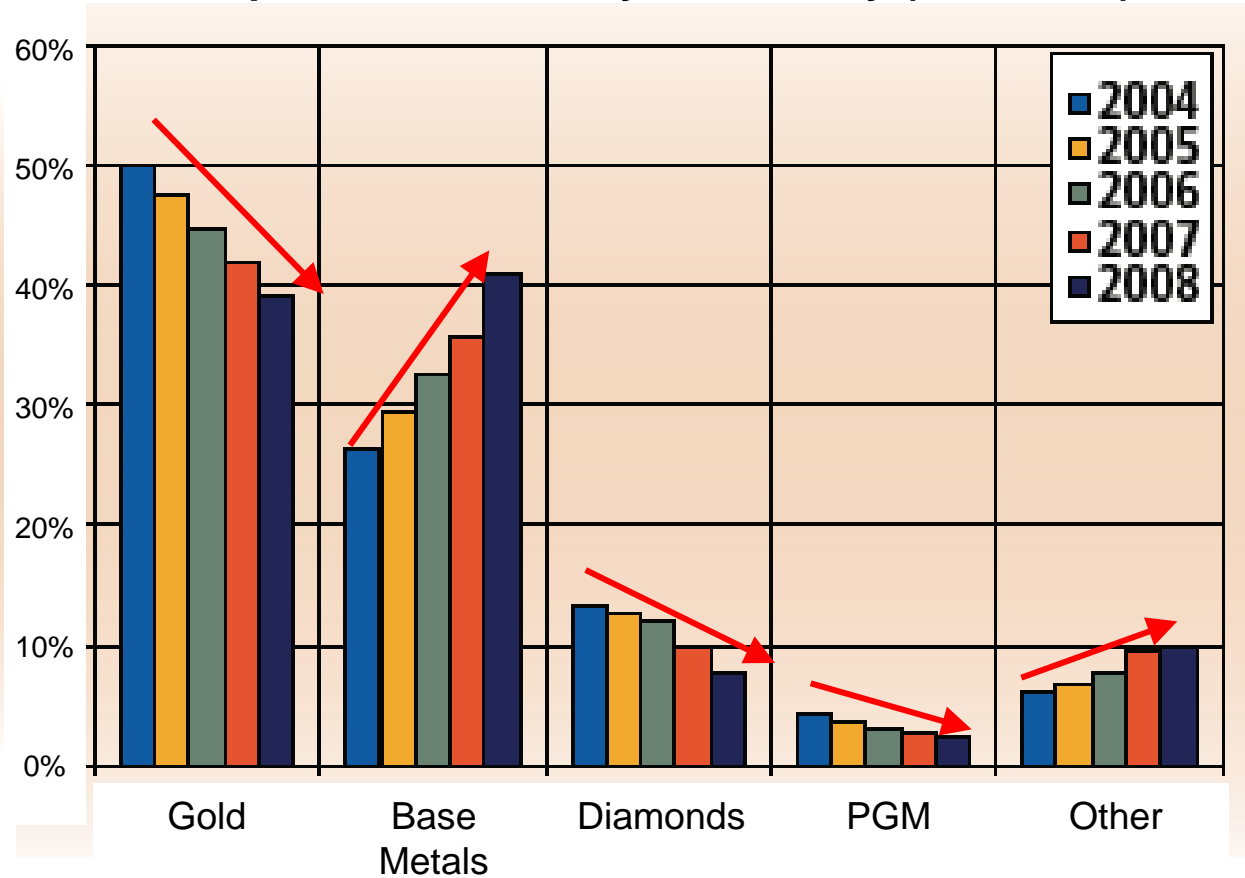


Gold exploration has been overtaken by Base Metals

Exploration by Commodity (2008)



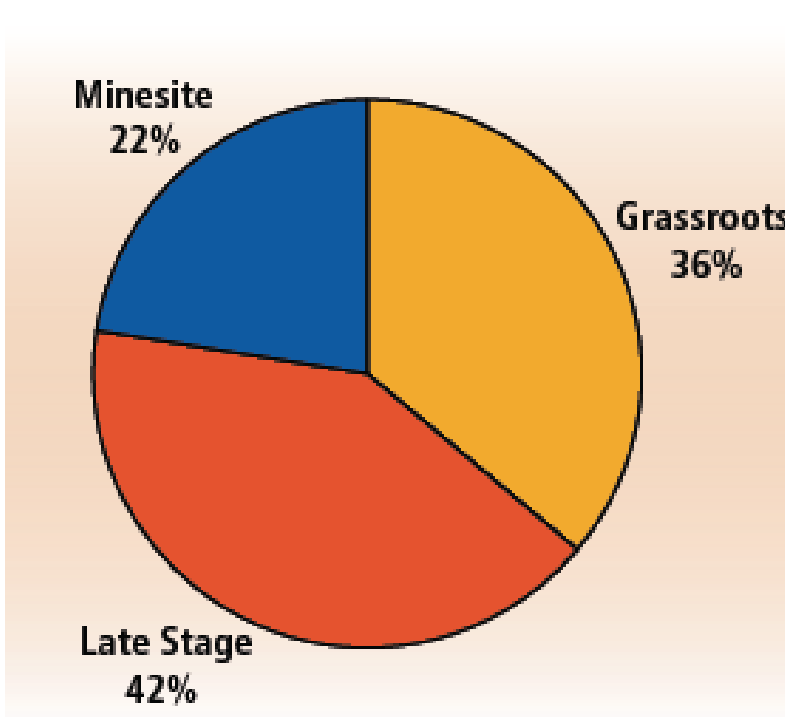
Exploration Trends by Commodity (2004-2008)



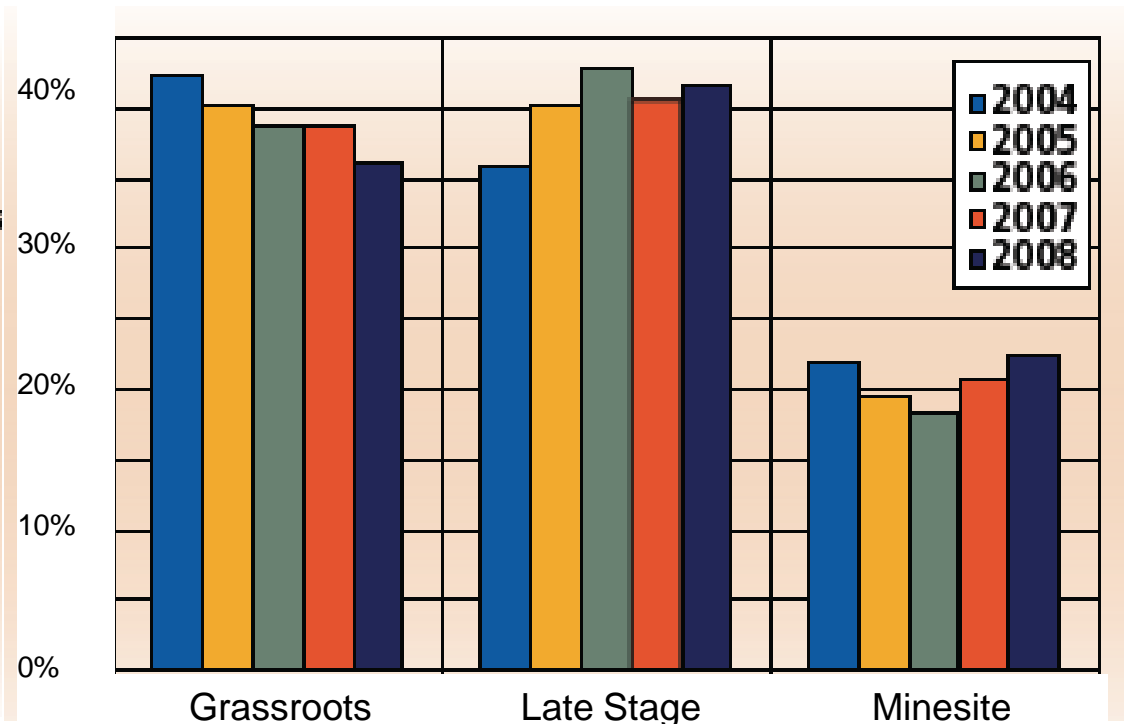
Source: Metal Economics Group

It is encouraging to see that the largest share of exploration is in late stage

Exploration Stages (2008)



Exploration Trends by Stage (2004-2008)



MEG Definitions

Grassroots — exploration from the earliest stage through perimeter drilling prior to the quantification of initial resources; also includes reconnaissance and evaluative forays.

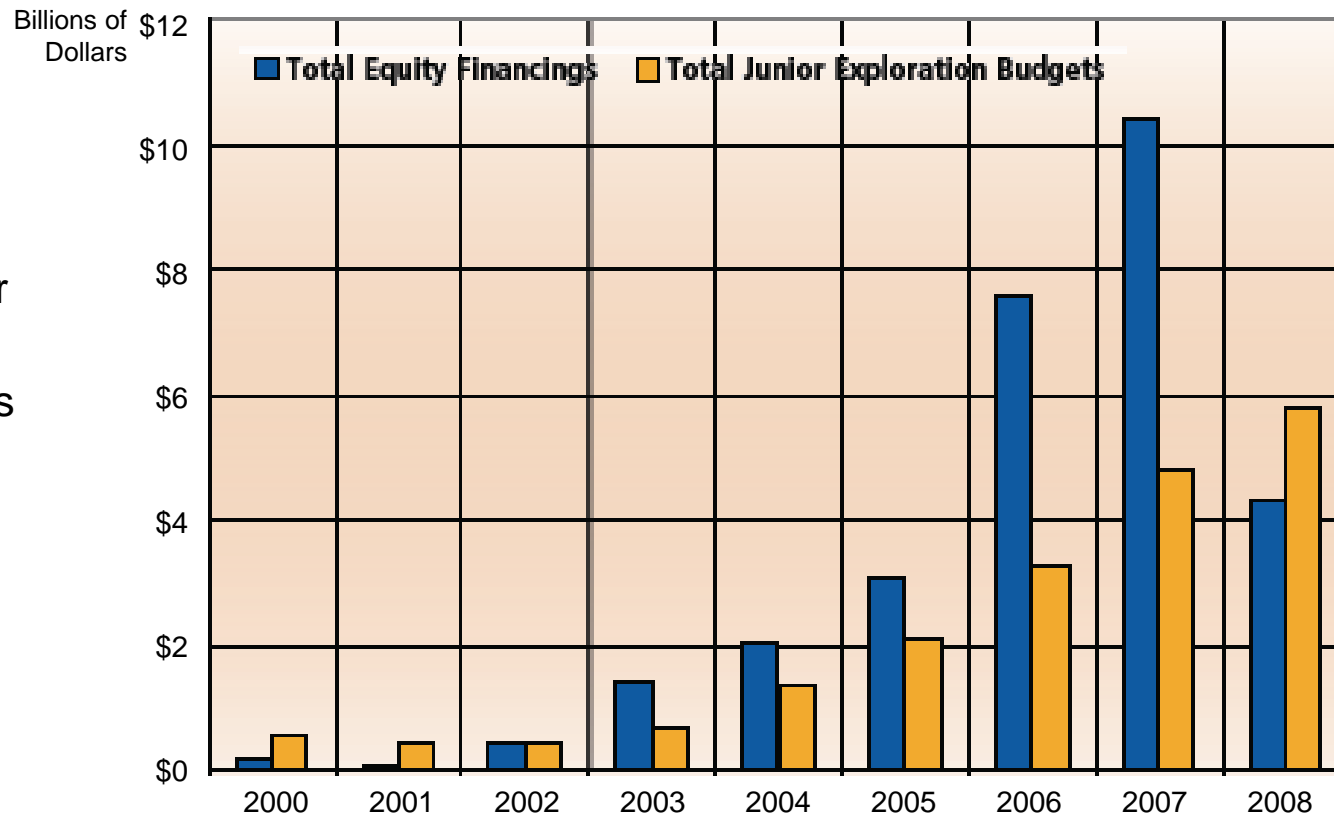
Late stage and feasibility — exploration to further define, quantify, and upgrade a previously identified orebody after initial resources have been identified; also includes all feasibility work up to a positive production decision.

Minesite — all exploration (regardless of phase) at or immediately around an existing mine site held by the company (excluding production geology on the orebody being mined, such as geotechnical/rock engineering, reserves estimation, and grade control or confirmation drilling on the producing orebody); includes the search for satellite orebodies within an economical transportation distance of an operating mine, and exploration at or immediately around a project that has been committed

Source: Metal Economics Group

- Junior equity financings for exploration drop by \$ 6billion in 2008
- **Why the disconnect ?**
 - Total amount raised over period ≈ \$30Billion
 - Total exploration budgets over period ≈ \$20Billion
- Industry must look at alternative financing models
- Trend towards application of **Equator Principles** in financing projects in Africa

Junior Company Exploration Related Equity Financings and Exploration Budgets*, 2000-2008



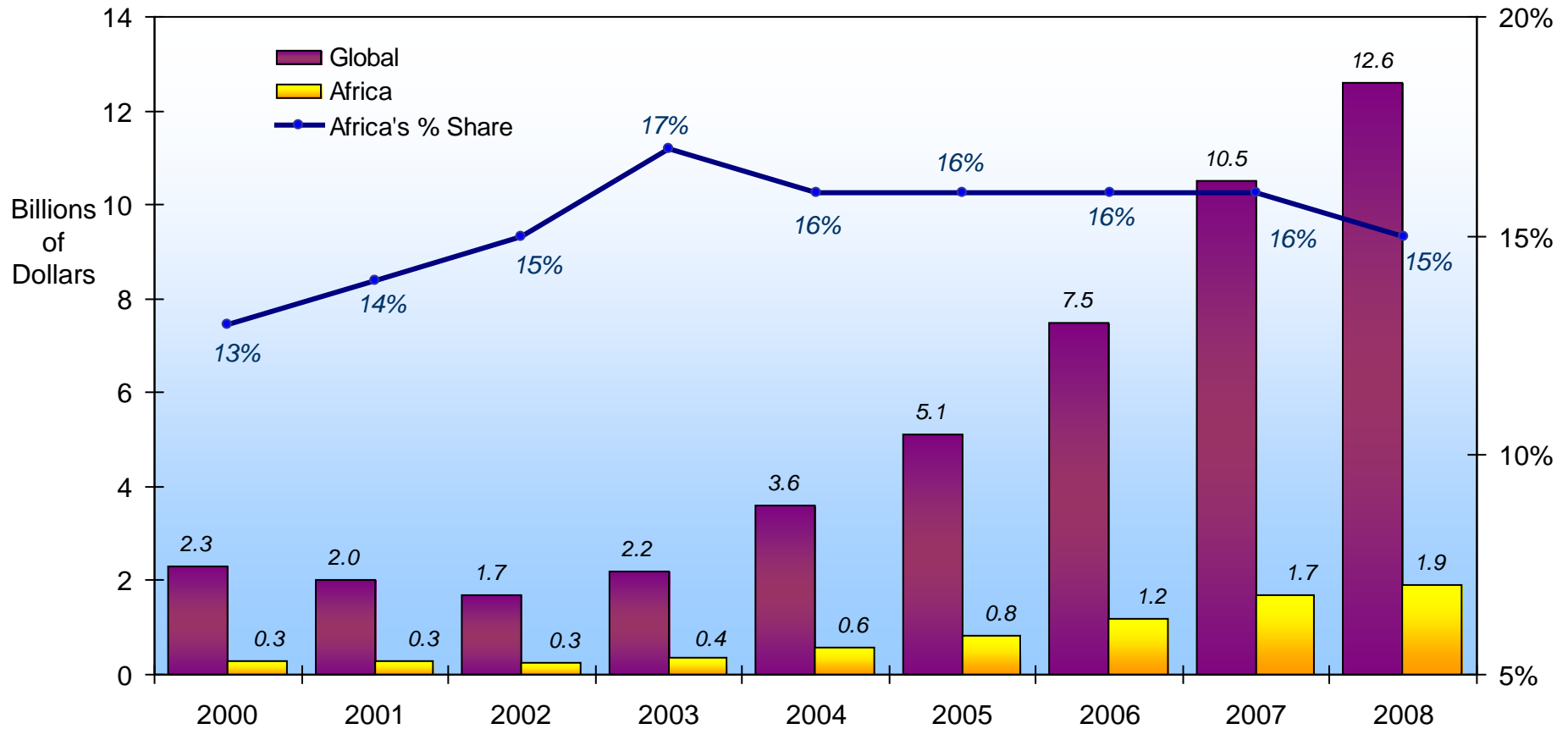
Notes: Exploration-related equity financings include equity financings of \$2 million or more (as reported in MEG's Gold and Base Metals Exploration Activity Services) by juniors included in the CES series of studies for which the company indicated all or part of the financing proceeds were for exploration. The annual exploration totals shown in the graph exclude allocations for diamonds and uranium,
 Source: Metal Economics Group

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Exploration Investment in Africa has been lacklustre ...

Global exploration expenditure has increased over the years, however the growth of Africa's exploration expenditure has lagged that of other markets, this despite **Africa having most of the world's natural resources**

Global Exploration Budgets 2000-2008



Source: Metal Economics Group; MSA Analysis

... this may be because Africa is not an easy place to do business

There are four areas that make doing business in Africa risky

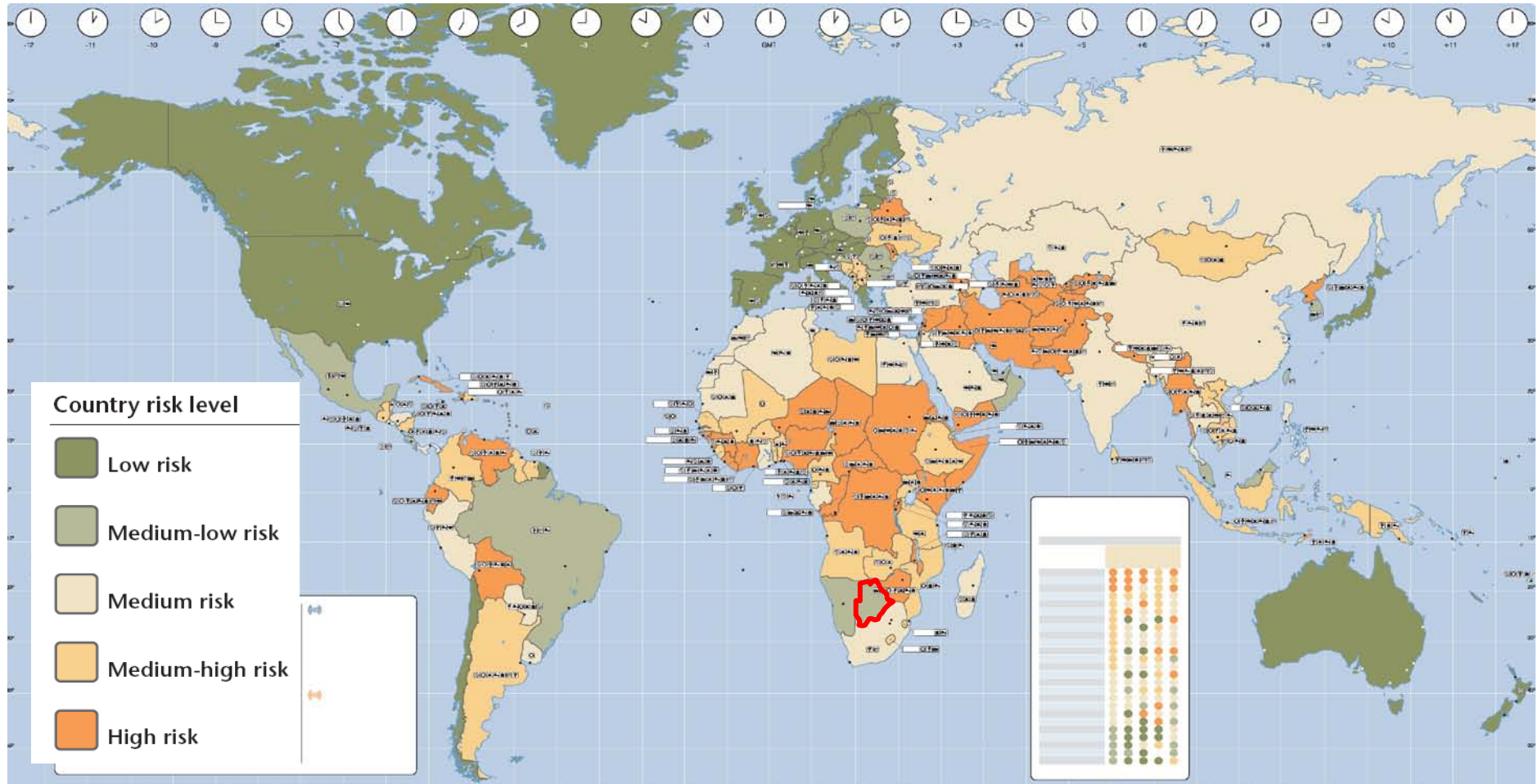


- **Political and Economic Instability**
 - *(Security of Tenure)*
- **Health Safety and Security Concerns**
- **Lack of Infrastructure and general inaccessibility**
- **Shortage of Skills**

Political and Economic Instability

Africa is perceived as a high risk region, with Botswana and Namibia being the only African countries perceived as low risk

Global Political and Economic Risk 2008



Source: AON Risk Consulting

The Result of Instability

- Lack of security of investment has led to Africa being the world's **poorest** and most **under-developed** continent
- Over **36%** of the population is living on **under US\$1/day**
- Africa was **poorer in 2003** than it was **30 years before**.
- Africa's share of global FDI fell to **2.7%**
- High **debt accrual**
- Africa's allocation of global exploration spend **static at 16%** for **4 years**
- **Explorers need a high risk profile to operate here!**
- **China – the Joker in the pack**



Political Instability

High Investment Hurdles

Destruction of Infrastructure

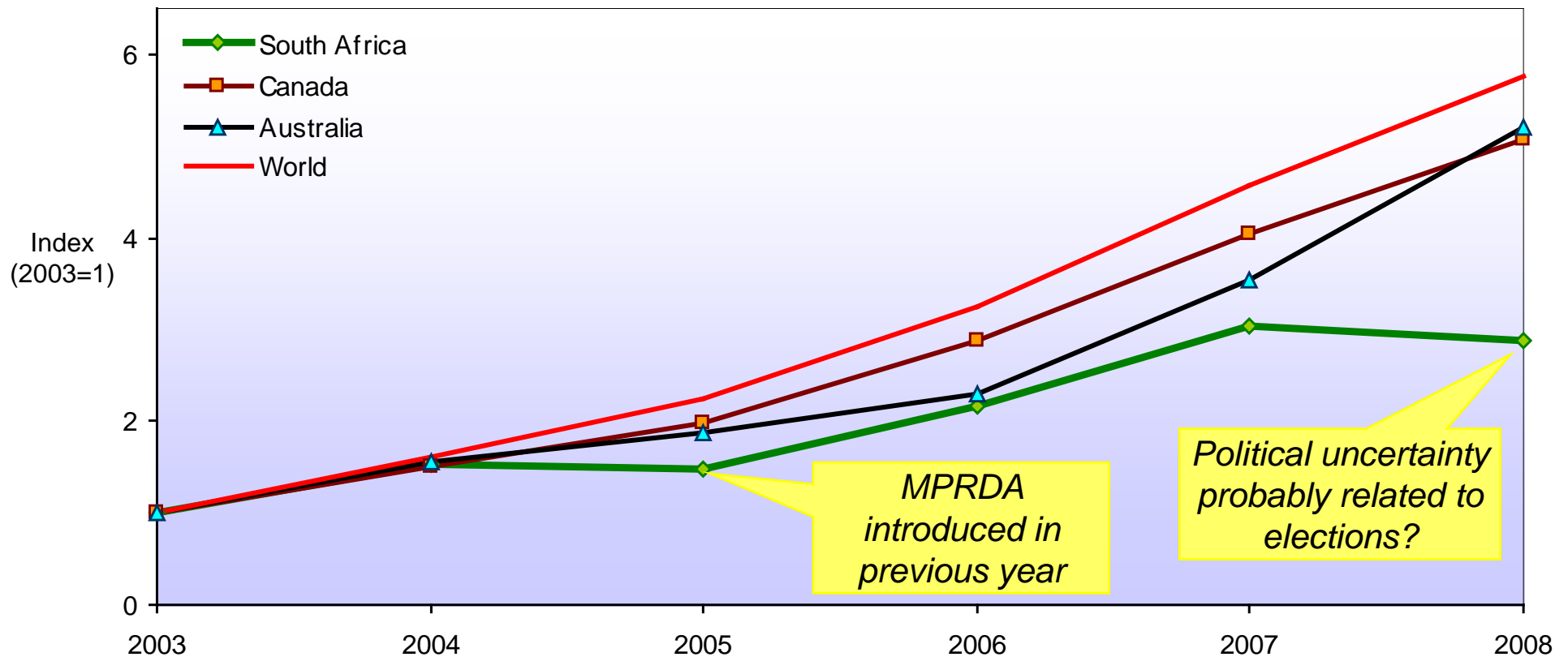


A measured result of instability – the South African Story



There are two distinct periods in South African history where global exploration investors have slowed investment in exploration owing to an increase in perceived risk – this has seen exploration investment in SA visibly lag the rest of the world

Indexed Exploration Expenditure (2003-2008)



Source: Metal Economics Group; MSA Analysis



Light Motor Vehicle Accidents



Malaria



Rebels - Colonel Cobra (DRC) and friends

Lack of Infrastructure and general inaccessibility

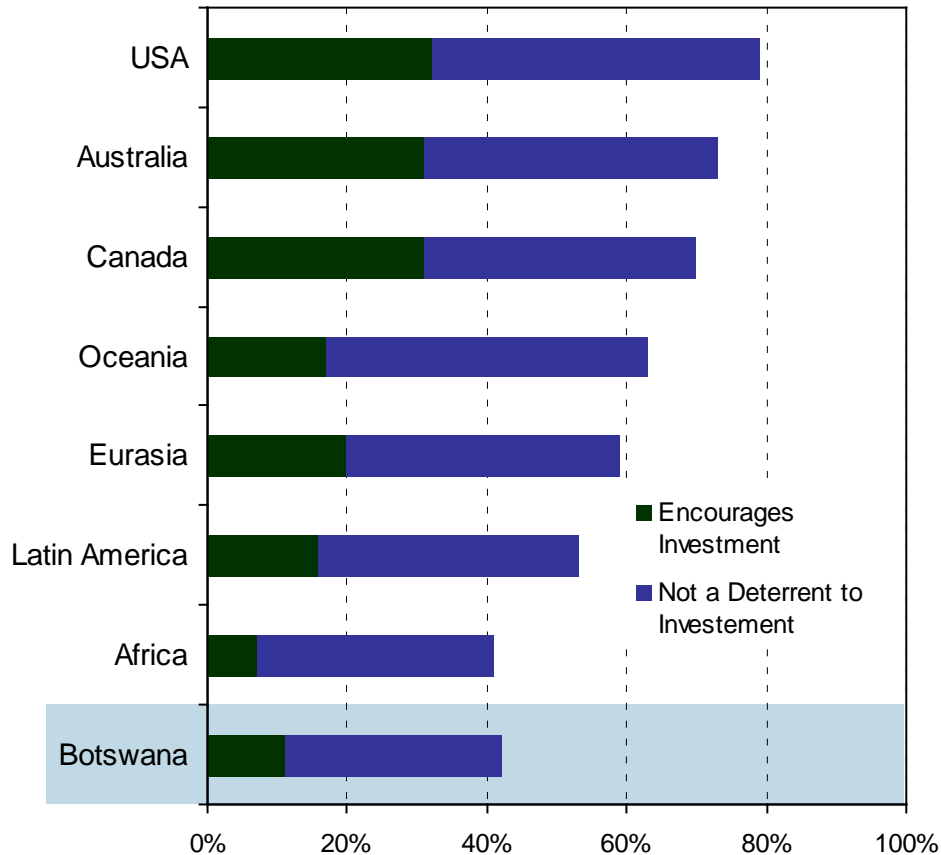


Shortage of Skills



Despite the skills shortage easing up during the recession; the global perception (and reality) is that skills will continue to pose a challenge in Africa

Global Perception of Availability of Labour and Skills¹



¹Source: Fraser Institute, Annual Survey of Mining Companies 2008/2009; MSA Analysis

Some Interesting Numbers

35,000	The number of vacant positions in SA in that cannot be filled in the country owing to lack of available skills – Source: Department of Home Affairs
1.2 Million	The number of professional jobs that will need to be filled in SA between 2007 and 2014 – Source: Accelerated and Shared Growth Initiative for South Africa (ASGISA)
81%	The percentage of companies experience difficulty in recruiting staff due to a shortage of skills – Source: National Remuneration Guide
70%	The average increase in the remuneration paid to geologists with 0-2 years experience between 2000 and 2007 – AAPG Salary Survey
18.5%	The average premium above market wages that companies had to pay to secure affirmative candidates – Source: National Remuneration Guide

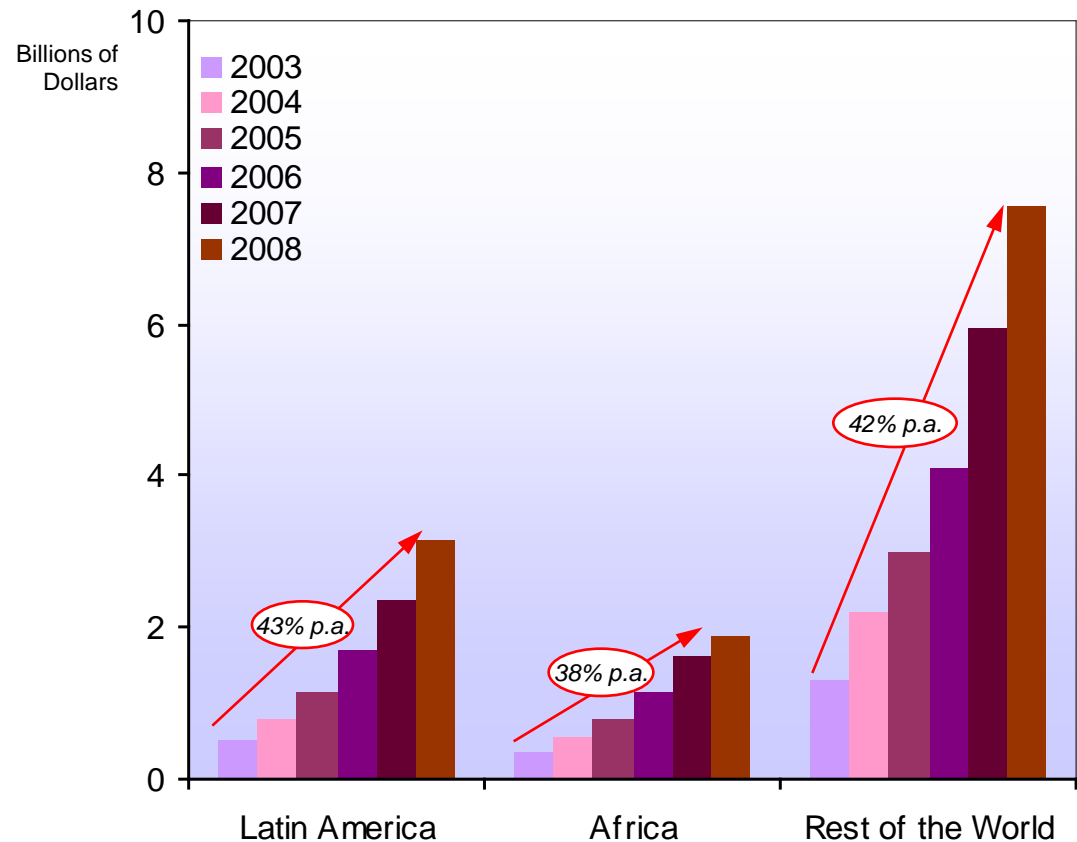
Despite Africa having most of the world's minerals, risk and ease of doing business have contributed to Africa losing out during the exploration boom

Africa's Production and Reserves

	Production		Resources to Proven Reserves*	
	% of Global	Rank	% of Global	Rank
Platinum	78%	1	88%	1
Rhodium	85%	1	90%	1
Gold	19%	1	50%+	1
Chrome	51%	1	95%	1
Manganese	32%	1	82%	1
Vanadium	40%	1	44%	1
Cobalt	46%	1	50+ %	1
Diamonds	54%	1	60+ %	1

* includes reserves plus measured, indicated and inferred resources
 Source: Metal Economics Group; MSA Research and Analyses 2008

Exploration Expenditure (2003-2008)



Recent African Success Stories

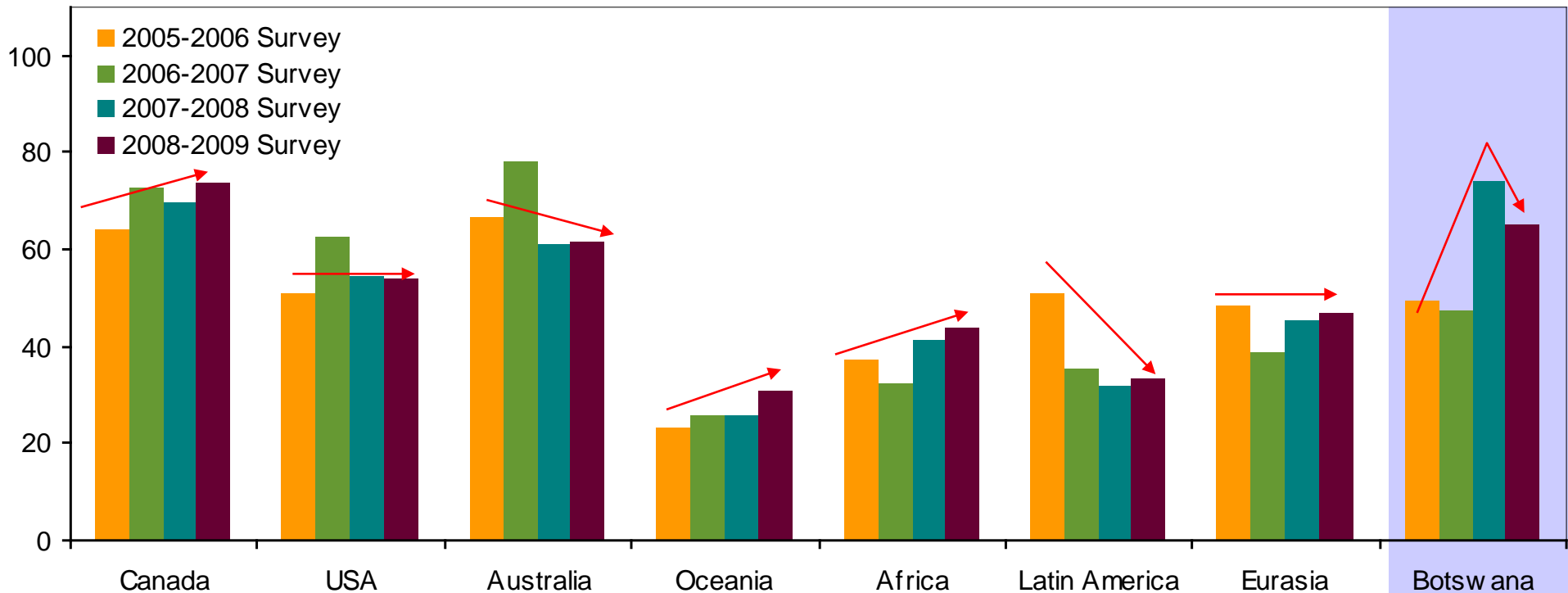
- Gold in Tanzania, Mali and Ghana
- Copper-Cobalt in Central Africa
- Nickel in Zambia
- Bauxite and Iron in Guinea Conakry
- Gold and Uranium in Namibia
- **Diamonds, Base Metals and Coal in Botswana**
 - 4 decades ago Botswana was one of the poorest nations in the world
 - Now Botswana is the most attractive country in Africa for mining related investment
 - Fraser Policy and Potential Index (mineral potential in relation to policy and legislative governance, or the lack thereof), has consistently scored the highest for an African nation
 - 18th most attractive country globally for mining related investment (down from 11th)



... and sentiment towards Africa's mining policies is changing

... but what is happening to Botswana??? In 2008 Botswana was rated the 11th most attractive destination for mining investment and now is 18th, overtaken by mostly North American territories

Frasier Policy Potential Index (2006-2009 Surveys)
 A "report card" to governments on the attractiveness of their mining policies



Note: The policy potential index serves as a report card to governments on how attractive their policies are from the point of view of an exploration manager. The jurisdiction that receives the highest percentage of "encourages investment" in any policy area is ranked first in that policy area; the jurisdiction that receives the lowest percentage of this response is ranked last

Source: Fraser Institute, Annual Survey of Mining Companies 2008/2009; MSA Analysis

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Concluding Remarks

- Exploration is a business whose investors have very different value propositions
- The industry has enjoyed an unprecedented boom in exploration, but the global financial crisis has spared no one, and exploration will be harshly affected
 - It will likely be some time before exploration activity can fully recover, even after the recovery of world markets
- The precipitous decline of most metals prices and general market and economic uncertainty in the short to midterm make it very difficult to accurately forecast how mining and exploration companies will be affected going forward
- Africa is a highly prospective continent but presents many risks
 - The global perception of risk in Africa thought to have led to the continent losing out on exploration spend
- Several countries in Africa have proved that exploration can be very successful on the continent
 - Botswana remains the jewel of Africa, however is on the decline
- Africa can wrestle the top spot from South America
- Role of government cannot be understated (to provide infrastructure, stability of tenure and taxation legislation attractive for investment)
 - Alternative financing methods may need to be considered e.g., flow through shares
- **China – the Joker in the Pack**

