

The Outlook for the Exploration Industry

The 2nd South African Exploration Drilling Forum
24 July 2014

The Outlook for the Exploration Industry

- How bad is it ?
- What made it so bad ?
- What has to happen for things to get better ?
- When will it get better ?

The Outlook for the Exploration Industry

- How bad is it ?
 - What is the extent of the “downturn and how does it compare to previous “downturns”?
 - How is the exploration industry doing globally and locally?

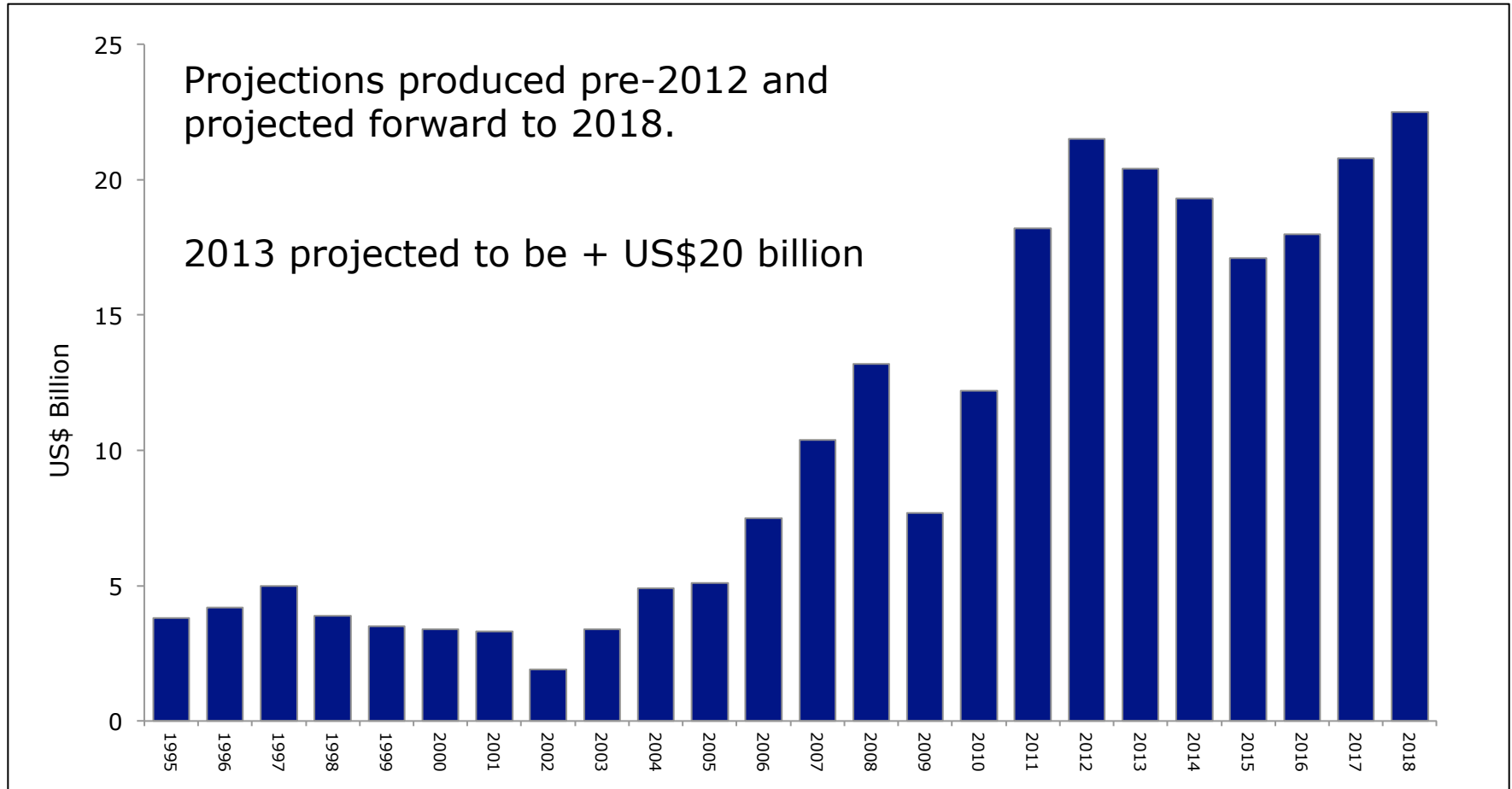
What is the extent of the downturn and how does it compare to previous downturns?

- SNL Metals Economics Group report generally recognised as a very good source of data on exploration expenditure.
- SNL obtains information from 3500 mining and exploration companies worldwide with exploration budgets of at least US \$100 000.
 - Study includes spending for gold, base metals, platinum group metals, diamonds, uranium, silver, rare earths, potash/phosphate, and many other hard-rock metals.
 - Specifically excludes iron ore, coal, aluminum, oil and gas, and many industrial minerals.

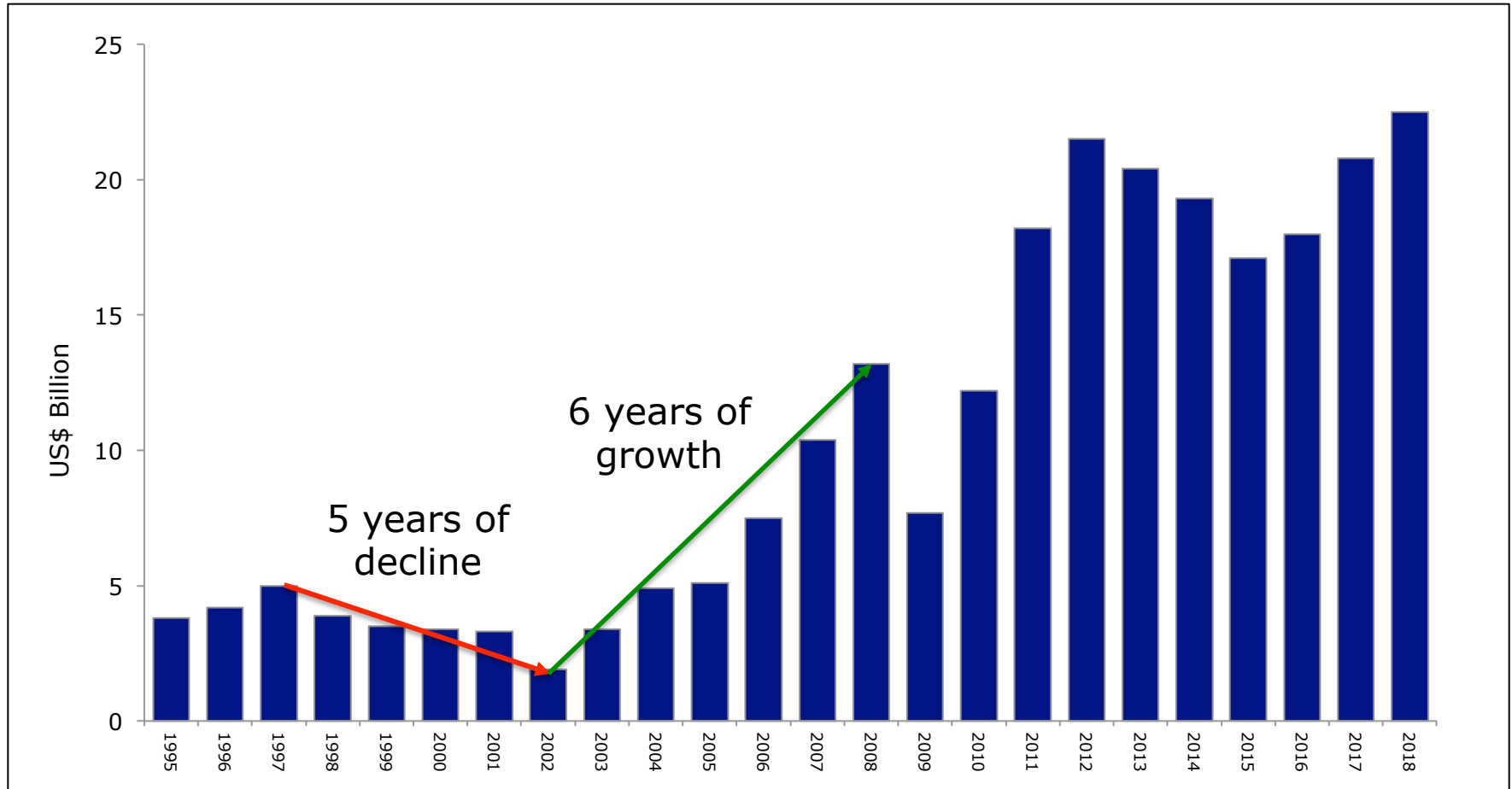
What is the extent of the downturn and how does it compare to previous downturns?

- SNL believe that their survey covers approx. 95% of total worldwide expenditure.
 - Total budgets for 2012 = US\$ 20,53 billion increased to US\$ 21,5 billion to include non-surveyed companies.
- This refers to non-ferrous exploration spend only.
- Began collecting data on iron ore expenditure in 2011 and estimate expenditure levels at:
 - US\$ 1,84 billion in 2011 and
 - US\$ 2,89 billion in 2012.
- Total 2012 estimate (including iron ore) = US\$23,42 billion.
- Iron ore therefore represents 12% of 2012 worldwide exploration expenditure.

SNL Estimates of Worldwide Exploration Expenditure



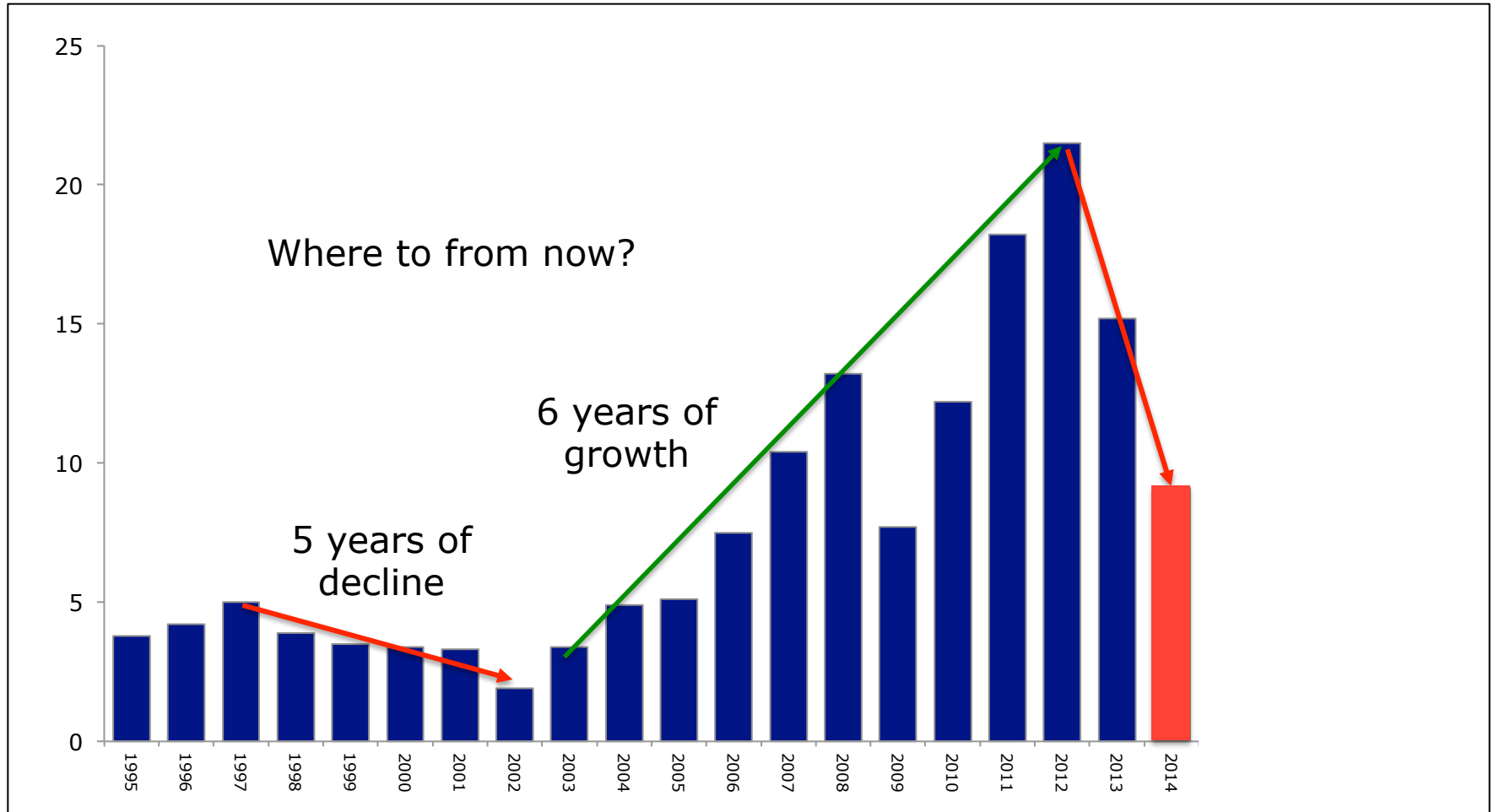
SNL Estimates of Worldwide Exploration Expenditure



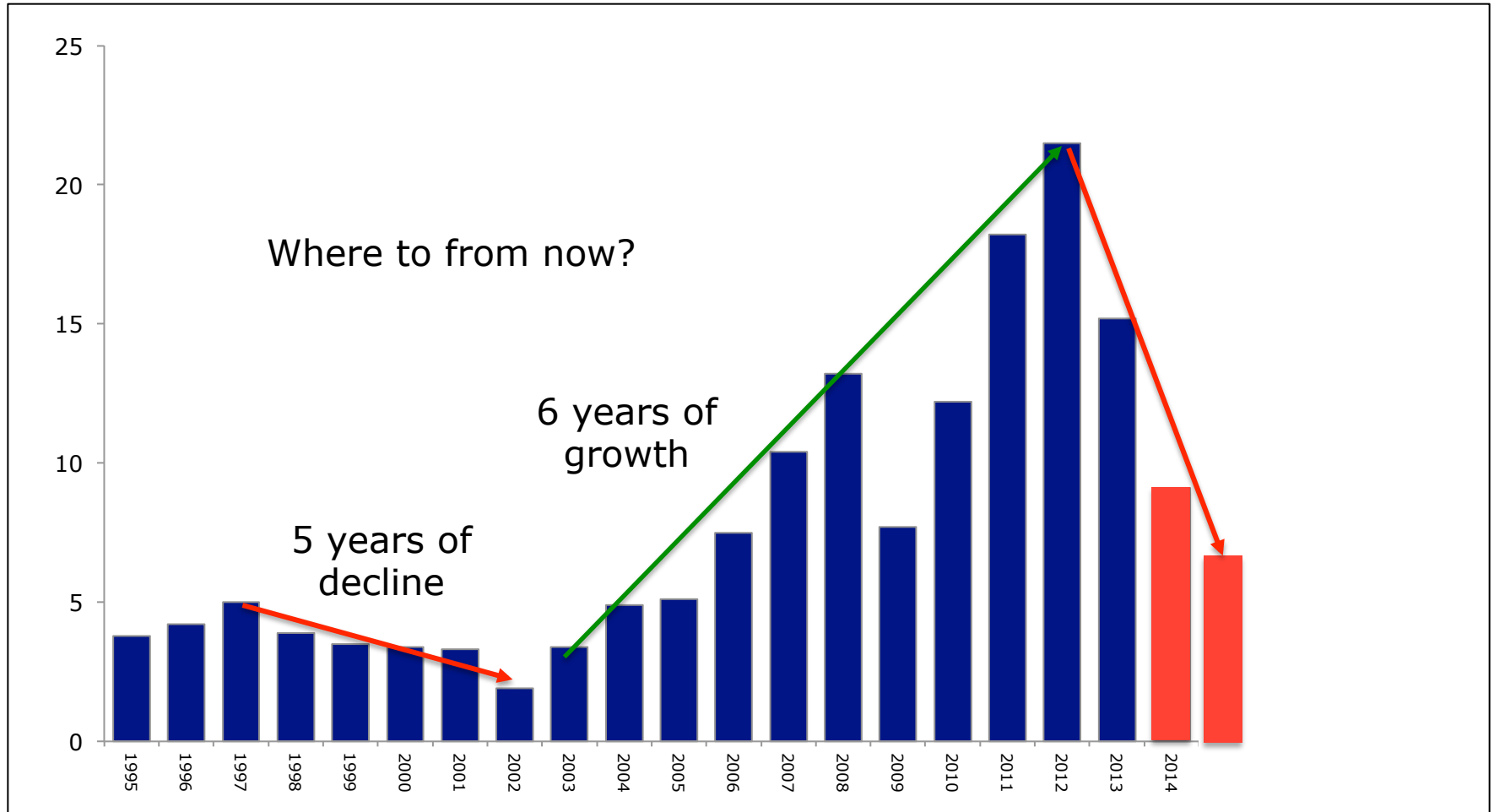
How bad is it?

- SNL report for 2014 suggests that 2013 exploration expenditure on non-ferrous metals was down 29% on 2012 levels – US\$ 21.5 billion to US\$ 15.2 billion.
- International and local trends suggest that the extent of the downturn is much greater than 29%.
 - Opinions range from 40% to 60% down on 2012 levels.
 - Boart Longyear suggests 35% down on 2012 levels.

SNL Estimates of Worldwide Exploration Expenditure



SNL Estimates of Worldwide Exploration Expenditure



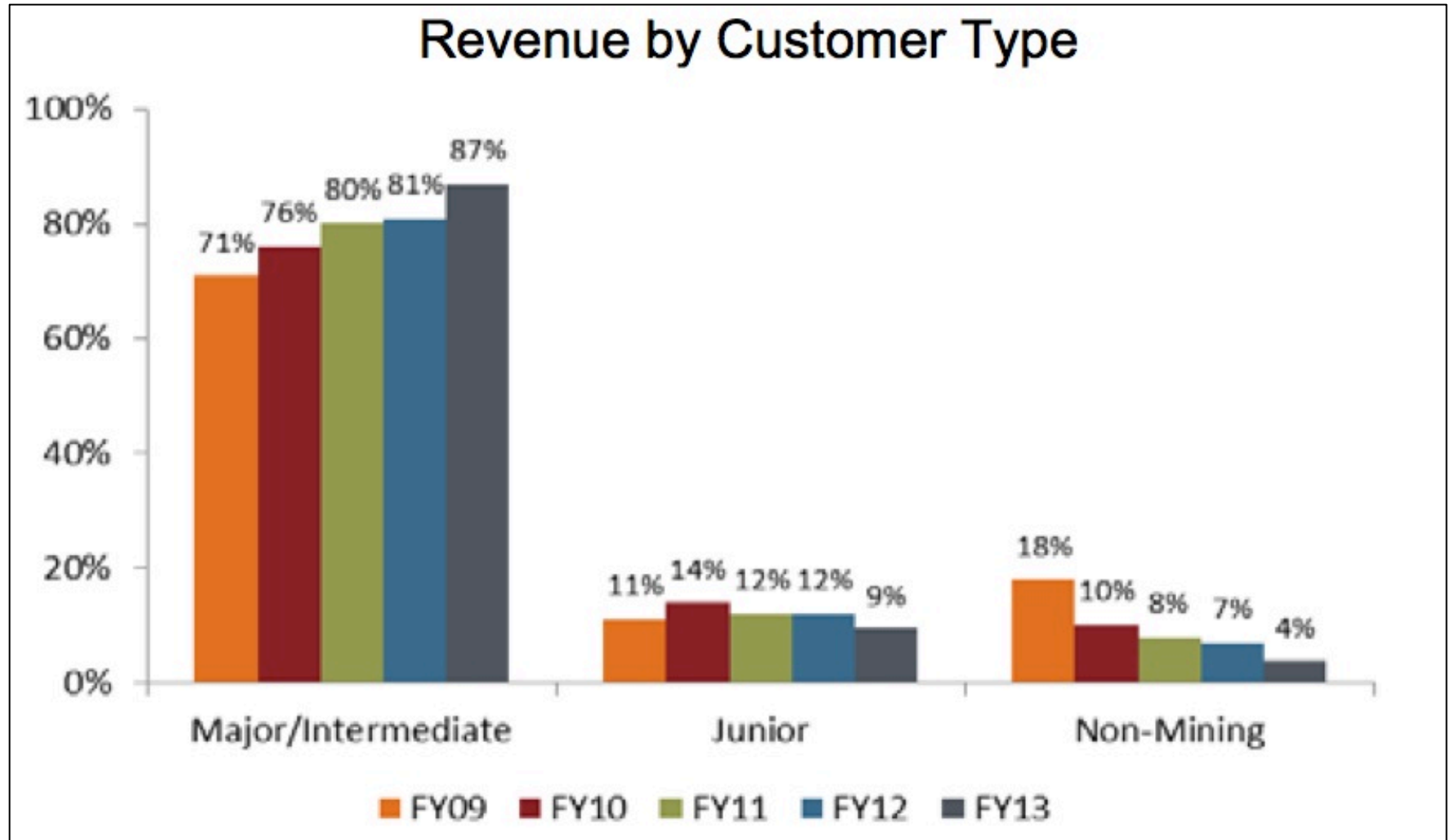
How bad is it ?

- Must remember that only a part of exploration budgets is spent on drilling activities - much is spent on other activities.
- How much is spent on drilling activities?
 - Good barometer is the activity levels of drilling contracting companies
 - Private contractors do not disclose revenues or meterage drilled
 - Investigate listed drilling contractors:
 - Boart Longyear
 - Major Drilling
 - Layne Christensen
 - Energold
 - Orbit Garant
 - Masterdrilling

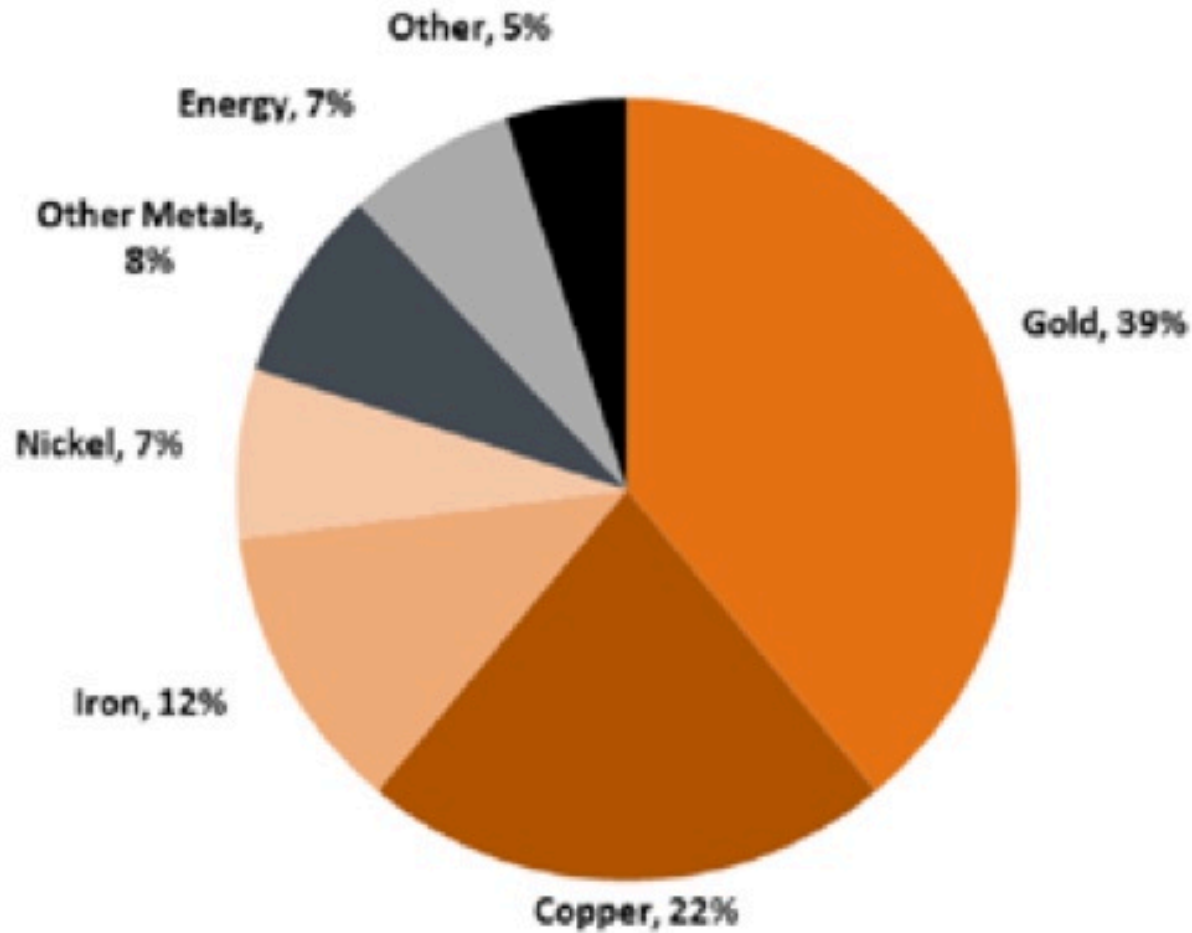
Boart Longyear

- Largest drilling contractor in the world.
- Operates in 35 countries through 2 divisions
 - Global Drilling Services
 - Global Products
- 2012 drilling revenues = 1,516 billion
= 7,4% of global spend

Boart Longyear



Drilling Services Commodity Breakdown¹



Boart Longyear

Extracts from 2013 Annual Report	2013	2012	2011
Revenues (US\$ Million)	1223	2012	2020
Drilling	917	1516	1448
Products	306	495	572

Boart Longyear

Extracts from 2013 Annual Report	2013	2012	2011
Revenues (US\$ Million)	(39%)	2012	2020
Drilling	917	1516	1448
Products	306	495	572
	(38%)		

Boart Longyear

Extracts from 2013 Annual Report	2013	2012	2011
Revenues (US\$ Million)	1223	2012	2020
Drilling	917	1516	1448
Products	306	495	572
No. of Staff	5681	9162	10877
Fleet size	951	1165	1225
Rig Utilisation (1st half)	42%	61%	
(2 nd half)	35%	53%	

Boart Longyear do not report meterage drilled

Boart Longyear

- 39% decline in Drilling revenues
- 38% decline in Products revenues
- Closed 30% of stocking locations
- Reduced the number of manufacturing facilities from 25 to 6

"2013 was a difficult year for the industry and the Company, as declining prices for metals resulted in most of the world's mining companies significantly reducing their exploration, development and capital expenditures from 2011 and 2012 levels."

"Central to our strategy is a clear focus on continuing to drive safety improvements..... We regard safety as fundamental to our relationships with, and commitments to, our employees and customers.

We consider our safety performance to be one of our most significant opportunities and operational as the customers are increasingly looking to safety as a basis to differentiate their suppliers."

Major Drilling

2nd largest drilling contractor in the world.

Extracts from 2013 Annual Report	2013	2012	2011
Revenues (CAD\$ Million)	355	696	482
No Staff	3518	5422	4016
Fleet size	725	602	598

49% decline in revenue

33% drop in staff count

Layne Christensen Drilling

- 3rd largest mineral exploration contractor in the world
- Operate 3 divisions:
 - Water
 - Energy and
 - Mineral services

Extracts from 2014 Annual Report	2013	2012	2011
Revenues (US\$ Million)	173	302	322

- 43% drop in revenue

Extracts from 2013 Annual Report	2013	2012	2011
Revenues (US\$ Million)	49	80	106
Meters drilled	296 500	428 300	585 900
Average rate per meter	164	188	181
Fleet size	138	133	128

- 40% drop in revenue

Orbit Garant Drilling

Extracts from 2013 Annual Report	2013	2012	2011
Revenues (CAD\$ Million)	104,2	154,8	127,7
Meters drilled	997 000	1 490 000	1 413 000
Revenue per meter	99	103	88
No Staff	650	950	900
Fleet size	214	224	180

- 33% drop in revenue

Masterdrilling

- Only public drilling company in SA.
- Listed in 2011
- World leader in raisebore drilling
 - Recently completed world record 7,2 meter diameter shaft

Extract from 2013 Annual Report	2013	2012
Revenues (US\$ Million)	10,77	10.83
Meters drilled		
Revenue per meter		
No Staff		
Fleet size	74	64

How bad is it?

- Australian government reports suggest that exploration expenditure is 40% down in Q1 2014 compared to same period last year.
- Rio Tinto have more than halved exploration budgets in 2013 to US\$ 948 million.
- All major mining companies have restructured and reduced exploration division size and numbers.
- Australian Institute of Geologists surveyed 1100 geologists and 20% had lost their jobs in the previous 3 months.

How many meters are drilled globally?

- Exploration budgets are used not only for drilling – reduced budgets means that a larger proportion of budgets is going into non-drilling activities.
- Estimate of total global meterage depends on:
 - Actual drilling spend
 - Split between Dual-tube RC and Diamond drilling
 - Drilling rate per meter
- Contracting and consulting companies estimate that the percentage of exploration budgets used for drilling ranges from 40% to 85%.

How many meters are drilled globally?

Total global exploration expenditure (US\$ Billion)		%age of spend applied to drilling				
		30%	40%	50%	60%	70%
Drilling Revenues(US\$ Billion)		6,45	8,60	10,75	12,90	15,05
		Meters drilled (x 10 ⁶)				
Cost per meter (US\$/meter)	100	64,5	86,0	107,5	129,0	150,5
	150	43,0	57,3	71,7	86,0	100,3
	200	32,3	43,0	53,8	64,5	75,3
	250	25,8	34,4	43,0	51,6	60,2
	300	21,5	28,7	35,8	43,0	50,2
	130	49,6	66,2	82,7	99,2	115,8

How many meters are drilled globally?

Total global exploration expenditure (US\$ Billion)	21,50	%age of spend applied to drilling				
		30%	40%	50%	60%	70%
Drilling Revenues(US\$ Billion)		6,45	8,60	10,75	12,90	15,05
		Meters drilled (x 10 ⁶)				
Cost per meter (US\$/meter)	100	64,5	86,0	107,5	129,0	150,5
	150	43,0	57,3	71,7	86,0	100,3
	200	32,3	43,0	53,8	64,5	75,3
	250	25,8	34,4	43,0	51,6	60,2
	300	21,5	28,7	35,8	43,0	50,2

How many meters are drilled globally?

Total global exploration expenditure (US\$ Billion)	21,50	%age of spend applied to drilling				
		30%	40%	50%	60%	70%
Drilling Revenues(US\$ Billion)		6,45	8,60	10,75	12,90	15,05
		Meters drilled (x 10 ⁶)				
Cost per meter (US\$/meter)	100	64,5	86,0	107,5	129,0	150,5
	150	43,0	57,3	71,7	86,0	100,3
	200	32,3	43,0	53,8	64,5	75,3
	250	25,8	34,4	43,0	51,6	60,2
	300	21,5	28,7	35,8	43,0	50,2

How many meters are drilled globally?

Total global exploration expenditure (US\$ Billion)	21,50	%age of spend applied to drilling				
		30%	40%	50%	60%	70%
Drilling Revenues(US\$ Billion)		6,45	8,60	10,75	12,90	15,05
		Meters drilled (x 10⁶)				
Cost per meter (US\$/meter)	100	64,5	86,0	107,5	129,0	150,5
	150	43,0	57,3	71,7	86,0	100,3
	200	32,3	43,0	53,8	64,5	75,3
	250	25,8	34,4	43,0	51,6	60,2
	300	21,5	28,7	35,8	43,0	50,2

How many meters are drilled globally?

Total global exploration expenditure (US\$ Billion)	21,50	%age of spend applied to drilling				
		30%	40%	50%	60%	70%
Drilling Revenues(US\$ Billion)		6,45	8,60	10,75	12,90	15,05
		Meters drilled (x 10 ⁶)				
Cost per meter (US\$/meter)	100	64,5	86,0	107,5	129,0	150,5
	150	43,0	57,3	71,7	86,0	100,3
	200	32,3	43,0	53,8	64,5	75,3
	250	25,8	34,4	43,0	51,6	60,2
	300	21,5	28,7	35,8	43,0	50,2

How many meters are drilled globally?

Total global exploration expenditure (US\$ Billion)	21,50	%age of spend applied to drilling				
		30%	40%	50%	60%	70%
Drilling Revenues(US\$ Billion)		6,45	8,60	10,75	12,90	15,05
		Meters drilled (x 10 ⁶)				
Cost per meter (US\$/meter)	100	64,5	86,0	107,5	129,0	150,5
	150	43,0	57,3	71,7	86,0	100,3
	200	32,3	43,0	53,8	64,5	75,3
	250	25,8	34,4	43,0	51,6	60,2
	300	21,5	28,7	35,8	43,0	50,2
	130	49,6	66,2	82,7	99,2	115,8

What made it so bad ?

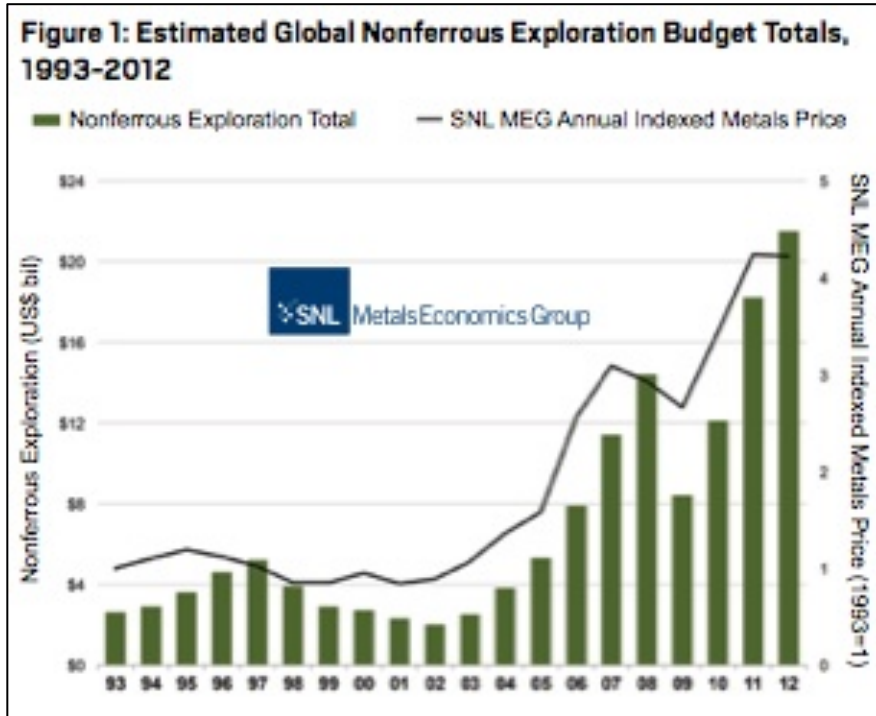
- Why have exploration expenditure budgets been reduced?
 - What drives exploration expenditure?

Drivers of exploration expenditure

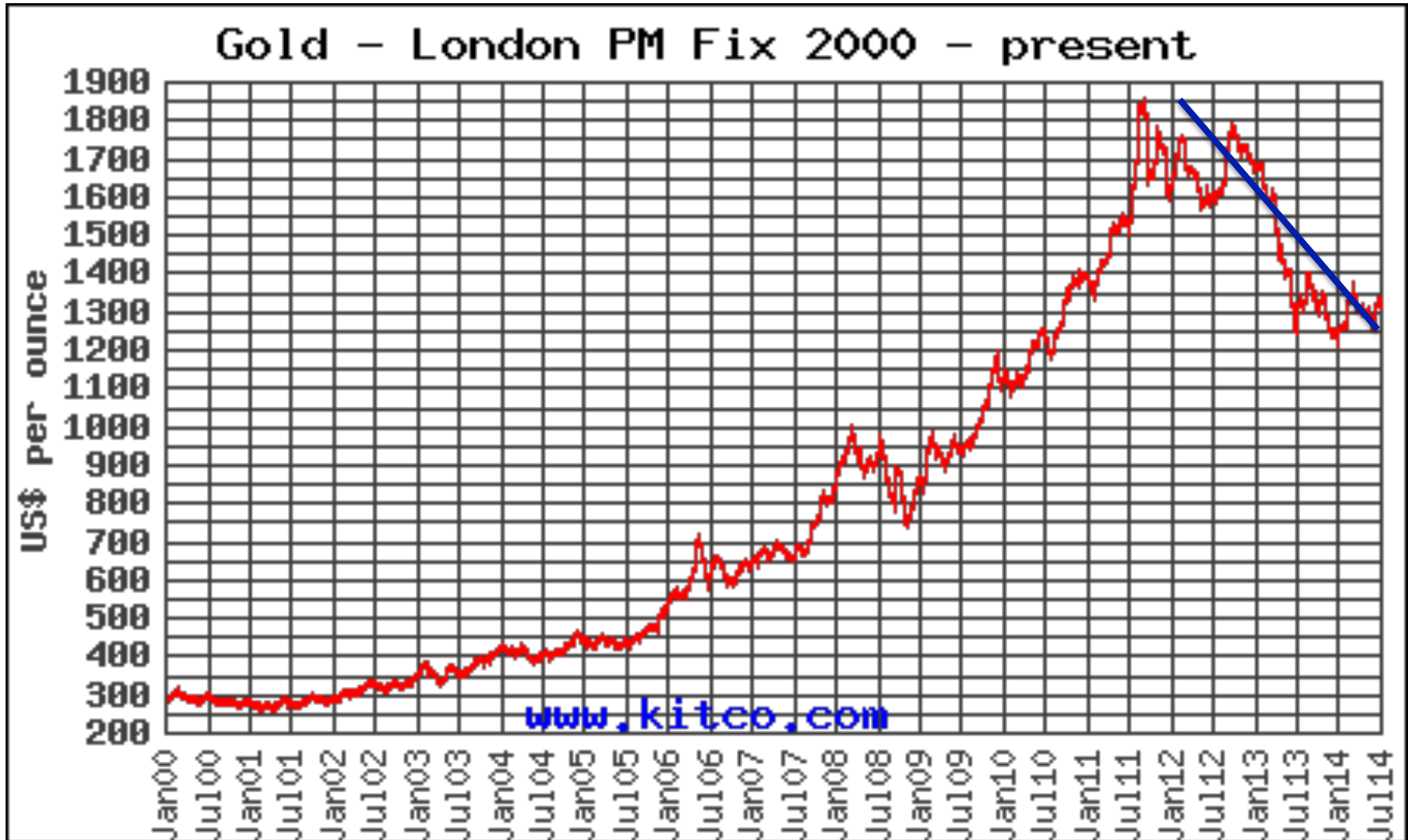
- Three main drivers of exploration spend
 - Price / demand for the commodity
 - Investment climate
 - Availability of funding

Commodity price

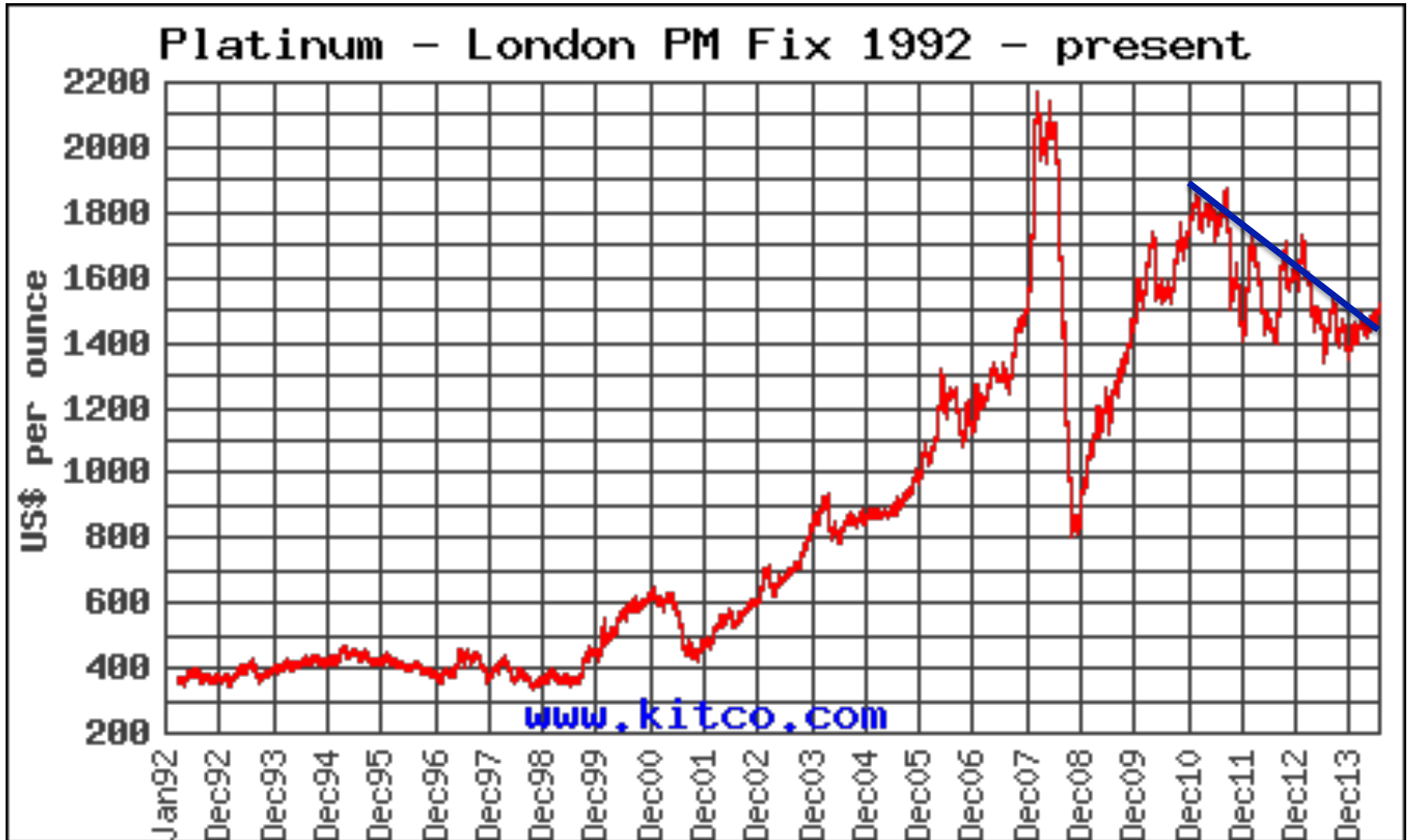
- Exploration expenditure tracks mineral price
- Lag between price and spend



Gold price



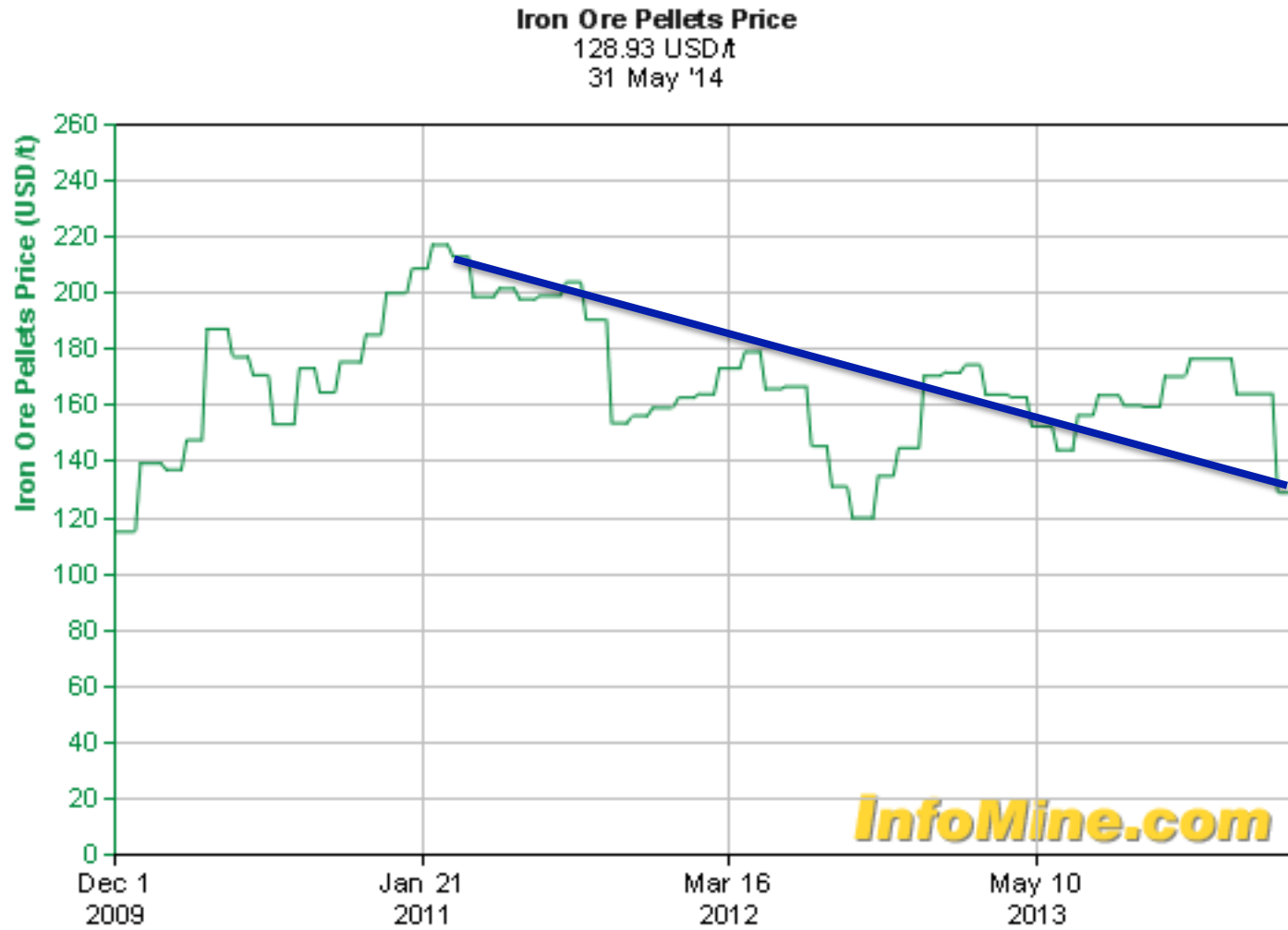
Platinum price



Copper price



Iron ore price



Investment climate

- Investment driven by perceived risk
 - Geologic risk
 - Economic risk
 - Environmental / social risk
 - Political risk – resource nationalism

Investment climate

- In the mid-1990's; the Bre-Ex scandal resulted in a write-off of US\$ 6 billion.
- Resulted in the closure of the Vancouver stock exchange
- Resulted in the development of reporting codes across most mining countries – SAMREC, JORC etc.

Investment climate

Top “write-offs” of 2013:

	Write offs in 2013 FY (US\$ billion)
Barrick Gold	13,0
Newcrest Mining	5,6
AngloGold Ashanti	2,6
Kinross	2,2
Goldcorp	1,9
Newmont Mining	1,8
Total	27,1

Estimates put worldwide assets write-offs at **+US\$ 50 billion.**

Investment climate

- Rio Tinto – US\$ 14 billion write off in 2012.
- US\$ 11 billion on aluminium assets and US\$ 3 billion for Mozambique coal assets.
- Bought Riversdale Mining for US\$3.7 billion - spent US\$ 0,7 billion and then wrote off US\$ 3 billion !!!!

Investment climate

*"During the boom, the industry lost "discipline" leaving investors now unhappy with budget overruns on growth projects that have often failed to deliver what was hoped." –
Diego Hernandez (CEO Antofagasta Copper)*

The Outlook for the Exploration Industry

- When will it get better ?

"The key differentiator between the 2009 downturn and the present downturn is that activity levels during 2009 were directly related to the global credit markets. Once the credit markets reopened, the industry witnessed accelerated recovery from 2010 to mid-2012.

As the current downturn is not credit related, our expectation is that the downturn will be more prolonged than that of 2009 and that any recovery may be drawn out over several years."

Major Drilling

"The industry is currently in a cyclical downturn. Most senior and intermediate mining companies remain committed to the large majority of their projects in order to replace their reserves. For the most part, these mining companies are in a much better financial position than during the financial crisis of 2008 but at the moment are being more cautious with investments in exploration. Large base metal producers will need to expand existing mines and develop new ones to meet the world's growth, especially in emerging markets. Activity from senior gold producers is likely to show greater volatility as gold prices vary, which will impact their exploration budgets."

"Management believes that 2014 will be a difficult year for junior explorers as capital markets will seek out to fund only the highest quality projects with greatest exploration potential. Management expects meaningful recovery will be slow until 2015."

When will it get better ?

"Energold continues to believe that in order to identify new and larger deposits, the mining industry will continue to conduct exploration farther afield into frontier areas with difficult topography and poor infrastructure, as well as areas sensitive to social and environmental challenges."

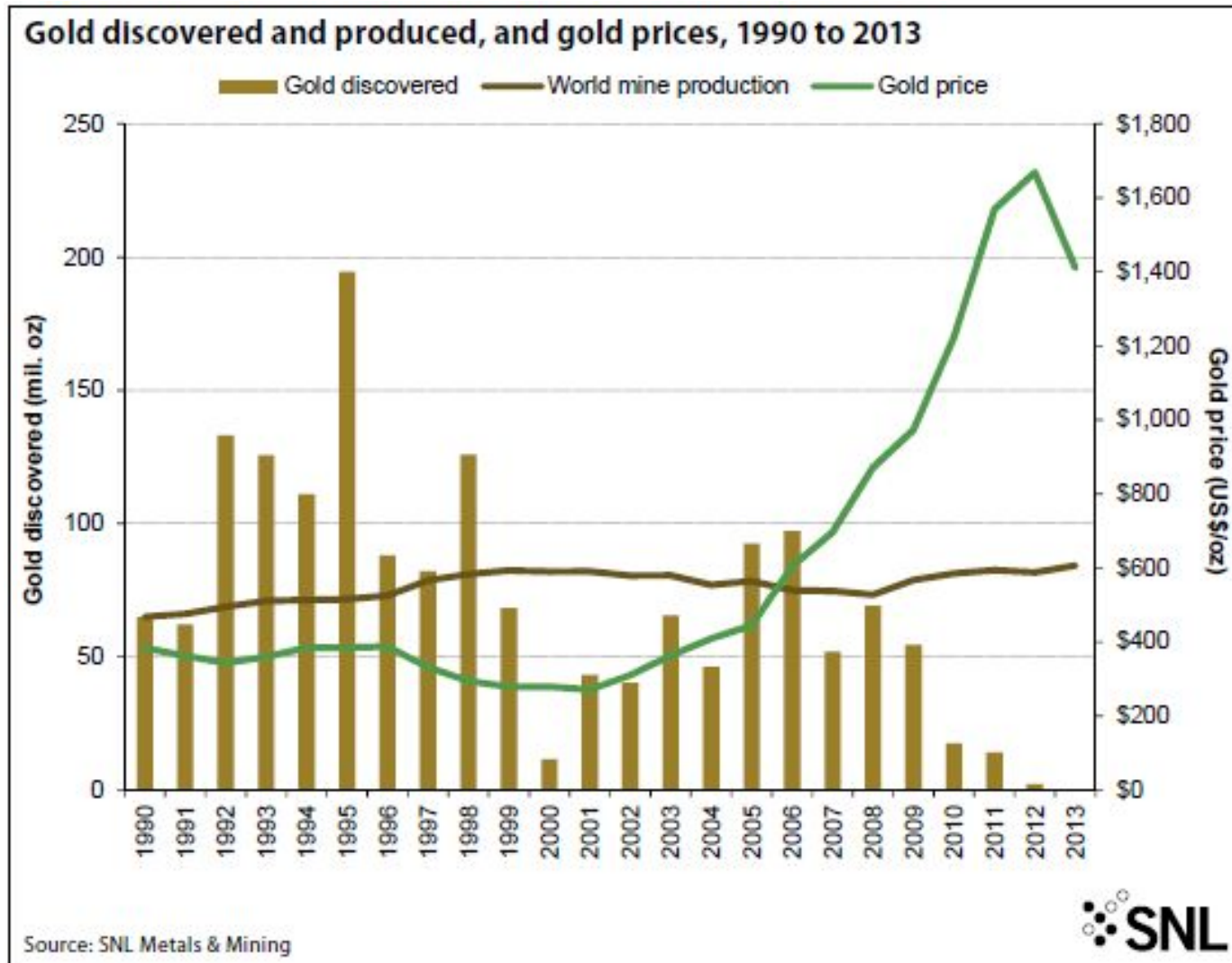
When will it get better ?

"Management believes a continued focus on underdeveloped regions such as Africa, the Middle East and parts of South East Asia will continue to see growing levels of exploration activity over the medium to long term."

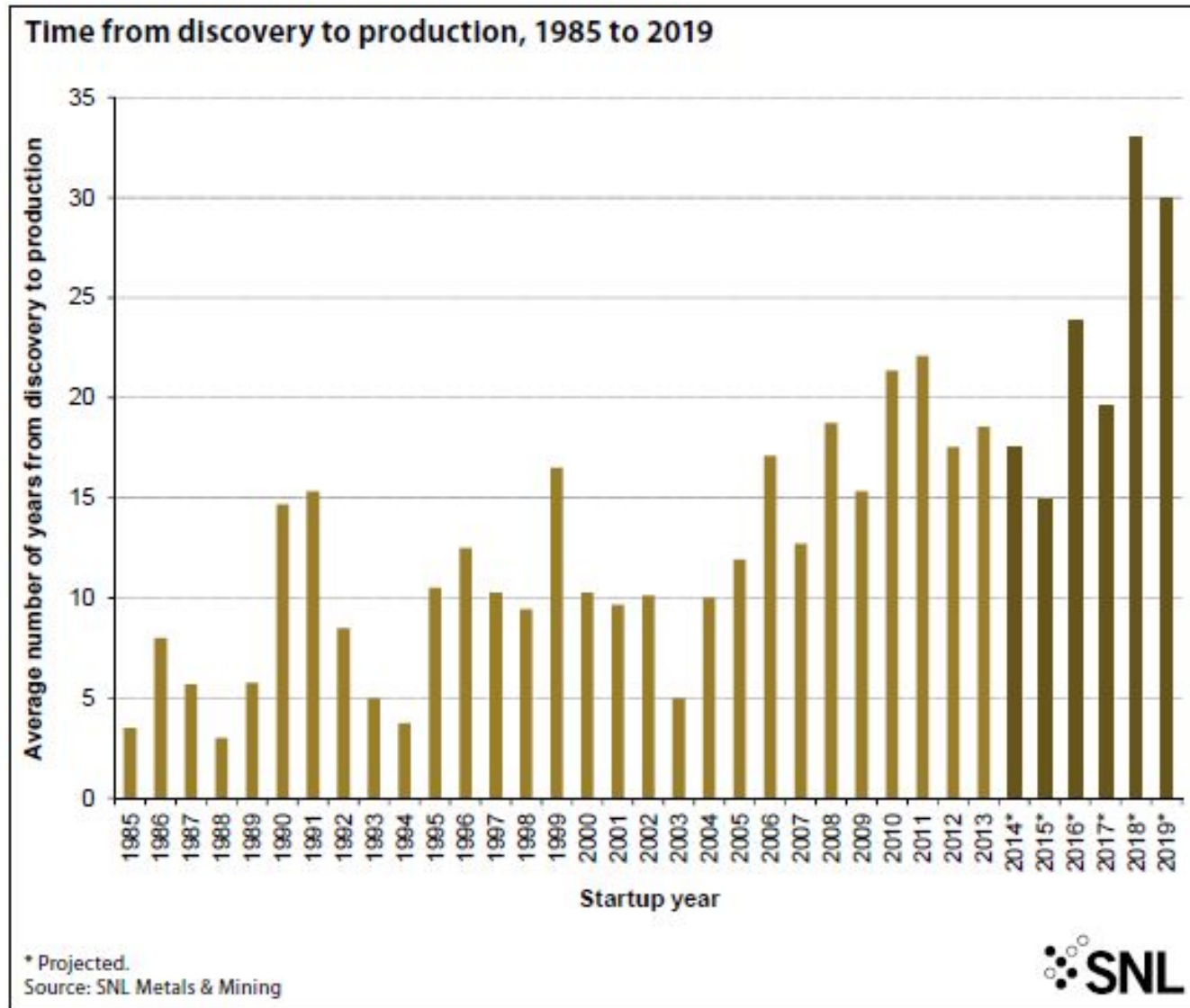
Reserves running out

- SNL report suggests that in the past 24 years mining companies have discovered 1,66 billion ounces of gold in 217 major discoveries
- In the same period the world has consumed 1,84 billion ounces of gold
- Despite massive increase in gold price rate of discoveries has not kept pace.
- Taking longer to bring a project from discovery to production
 - Need for increased feasibility work
 - Environmental requirements
 - Permitting issues
 - Location
 - Increased infrastructure due to lower grades

Reserves running out



Reserves running out



South African peculiarities

- Amendments to the MHSA
- Amendments to the MPRDA
- Labour issues
- Political risk
- Minimal greenfields exploration

Largest mining companies

Rank	Company Name	Market Cap (US\$ Billions)	%age of Top 100	Cumulative % age of Top 100
1	BHP Billiton Ltd.	176.21	20.6%	
2	Vale SA	96.03	11.2%	31.8%
3	Rio Tinto PLC.	88.59	10.3%	42.1%
4	Anglo American	43.94	5.1%	47.2%
5	Xstrata	42.48	5.0%	52.2%
6	PotashCorp	36.98	4.3%	56.5%
7	Barrick Gold Corp.	34.05	4.0%	60.5%
8	Freeport-McMoRan	33.48	3.9%	64.4%
9	Norilsk	30.71	3.6%	68.0%
10	Goldcorp Inc.	29.08	3.4%	71.4%

South African challenges

- Current exploration levels will probably persist for at least the next few years – or they will get worse.
- Foreign interest in SA will increase.
- Legislative pressure places increased pressure on mining companies and therefore drilling contractors.
- Cost pressures will increase.

How do we address these challenges?

- Develop and support local technology and capability.
- Develop new exploration technologies.
- Recognise that people are truly our greatest asset.

Challenges

- Based on an assessment of 1.4 million holes drilled in Western Australia since 1977, 50% of the holes were less than 34 metres deep. Only 10% of the holes went beyond 96 metres and less than 1% of the holes were deeper than 300 metres.

How do we address these challenges?

- Develop and support local technology and capability.
- Develop new exploration technologies.
- Recognise that people are truly our greatest asset.