

Minimising mineral project risk: New Zealand in a global context

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Abstract

Mining ventures are essentially risky businesses. Explorers and project developers (plus their investors and financiers) attempt to minimise the risks involved or at least manage them. Core considerations are the obvious technical and commercial risks, but the socio-political system and regulatory environment in which the project will operate can be more important. Successful mineral investments in a country depend upon obtaining realistic and reliable technical results in a country that provides certainty, to gain and maintain investor confidence in a project. Brief commentary is provided on the usefulness of professional accreditation and ethics plus other specific reporting codes (eg, JORC/VALMIN Codes) in reducing risks by reinforcing high technical competence and reputable individual professional behaviour (particularly in the context of currently perceived high corruption levels in so many countries). These various risk components are reviewed, especially in a global context, to showcase New Zealand's current position. Successful projects are those which provide investors with credible and reliable optimal results in less volatile environments because investors/lenders hate uncertainty and surprises even more.

Keywords: *Mining project risks, technical risk, legal risk, commercial risk, sovereign risk, socio-political regulatory risk, disaster risk, New Zealand, corruption ranking, policy ranking, prospectivity ranking, civil society, personal liability, due diligence defence.*

Background to the risk debate

Most of mankind's endeavours carry some quantum of risk. It is not so much about limiting or removing these natural phenomena (although it is natural to try to do so) but about managing it, usually by trying to reduce the associated uncertainty that is its co-conspirator against success. All within a timeframe that is never long enough. However, it is relevant to recognise that there can be no reward without risk and that the rational assumption of risk represents a business opportunity.

It is useful, at the outset, to also distinguish between 'risk' and 'uncertainty'. In risky situations, probabilities can be given to outcomes, but uncertain situations are those where there is insufficient information to do so. When attempts are made to quantify risk, usually a single point value is given (implying some certainty) when a range is more appropriate. Mining professionals thus concentrate on reducing uncertainty and managing risk.

The author also considers risk (in money terms) as having a **Hazard** component (the product of the probability of an event's occurrence and the magnitude of financial detriment due to that specific event subsequently occurring that reflect the physical catastrophic impact); plus a **Moral Outrage** component (the bio-physical/emotional aspects related more to the social/environmental effects coming from the lack of power and ethics involved).

There are numerous ways to try and catalogue the various risks faced by mineral project explorers and developers, who face slightly different risks. Use could be made of the detailed listing of risks in Standards Australia (1999) publication, *Australian/New Zealand Risk Management Standard (AS/NZS) 4360*. Edwards and Bezzina (2003) provides a good outline of its approach and usefulness. In it, reference was made also to the numerous *AS/NZS Handbooks*¹ that provide specific guidelines on applying *AS/NZS 4360* and also indicate how it can be specifically applied to various industries. See Lawrence (2004) for an overview of the general issue of mining venture risk identification and management.

Those involved in mineral project risk minimisation and management broadly includes the explorers and project developers (owners and their investors). Each has specific imperatives and responsibilities. ‘Owners’ means directors, management and employees, but involves suppliers, contractors and consultants in this context. ‘Investors’ could be individuals, government-run or private companies (listed or not on a stock exchange), banks or investment funds. It is all about **good governance** and the **duty of care** - corporate or otherwise. It is also all about **avoiding surprises** (see Lawrence, 2005 on issues involved in promoting and funding mineral ventures).

Any mineral venture will have its own specific **Technical Risk**, no matter where it is located, depending upon whether it is an exploration prospect (involving myriad aspects of the tenement’s prospectivity) or a developed project with a Feasibility Study. These risks tend to be reasonably well addressed and they are outlined more fully below. But beware of the use of cutting edge innovation that aims to magnify rewards, because it also magnifies risks.

The other major risk area can be embraced by the term **Sovereign Risk** and that depends upon the specific country in which the mineral deposit is located. Obviously, to varying degrees, this depends upon the **socio-political system and regulatory environment** there, the levels of **security** and **corruption** in the country, and whether the area is **disaster prone**. Nevertheless, the initial crucial issue is whether the **equitable interest/agreement** covering ownership of the project is recognised in law; and that there is speed and certainty in the **approval, land access and tenure processes**. Since today’s investment regime is global, this means that the socio-political systems and regulatory environments of both the project-host and the investors-home country (or countries) must be considered; as well as all those that importer of the mine’s products. This mix of local and international stakeholders can be large, complicating the risk management task.

Every country, too, has a unique **physical and cultural/religious environmental setting** that can further complicate a project’s risk profile. For example, New Zealand has relatively large and politically sophisticated First Nation-component to its current population (some 14% in the 2001 Census).² Add to this its unique historical political/policy/legislative regime (post-Treaty of Waitangi) and one can appreciate the problems and opportunities for exploration and mining companies seeking to develop projects there on Maori Land. It interesting to note, however, that many say it is actually easier to deal with Maori Land than Department of Conservation Land.

Most communities have concerns about any change and purely concentrating on indicating to them only the financial or material benefits will not suit everyone’s perspective on life, because it is too simplistic an approach. “*Not-In-My-Backyard*”, is also a related protest cry, and these NIMBY-ites can not be easily disregarded. Often, project-host and finance-source countries

¹ For example: *HB141 (Risk Financing)*; *HB142 (Basic Introduction to Managing Risk)*; *HB250 (BHP Billiton and Qantas case study guides)*; *HB231 (Information Security Risk Management)*; and *HB203 (Managing Environmental Risk)*.

² Compare this with a much lower 2% for Australia’s indigenous population (Australian 2001 Census), yet Native Title resolution is a day-to-day reality that is solved by mineral explorers and developers there.

have a very sophisticated *Civil Society*³ that is adept at media management and well organised protests, as well as having considerable political influence at a local, national and even international level. Hence, mineral project developers who ignore the concerns of Civil Society, assuming it is merely a NIMBY response, do so at great risk.

There has been a philosophic shift also in respect of workplace safety today that reflects the increasing risks involved in today's occupational health and safety (OH&S) environment. Positive changes are being justified on humanitarian and economic/operational grounds.⁴ Research work by the Minerals Industry Safety & Health Centre (University of Queensland)⁵ generated a national Mineral Industry risk assessment guideline in 2004 to assist in the design and execution of health and safety risk assessments, since mine workers did not consider that safety issues were their concern and that mine management lacked respect from the workers for its commitment to safety (King, 1999).

New graduates must become more aware of all these issues and the need to acquire these life skills, too, which are not always taught at university (see Catalano, 2000; and Lawrence, 2001a and 2001b). Mineral Industry professionals⁶ tend to be better prepared to deal with the hard technical issues rather than the soft human and 'green' issues. Nevertheless, they are becoming increasingly aware of the importance of soft skills in dealing with Civil Society as the debate still rages over how to create a sustainable future which accommodates both industrial development and the environment, particularly the emotion-filled concern with greenhouse gasses, global warming, etc.

Thus, there may be regulatory and litigation risks to which companies may be exposed if they fail to address the consequences of any activities undertaken by them which contribute to greenhouse gas emissions. It is noted that compliance with today's standards are unlikely to be a defence to future actions. As with corporate governance issues, having an eye to the future is always prudent. Also, the loss of corporate or personal reputations is a risk area in itself today – particularly when one wants to start new projects in new jurisdictions.

Ethical investing protocols, too, are also increasingly being applied by individuals, companies and fund managers, as they decide between competing investment opportunities, irrespective of where the project is located. They apply not only to mining but to other business activities, such as exploiting timber and using low cost labour.

As with most risks, it is always better to identify and attempt to manage them at the start, then have them unexpectedly require attention subsequently. It is within this multi-faceted context that mineral project exploration and development risk is discussed more specifically below. It is a complex subject and many papers at many recent conferences⁷ have attempted to address these issues before, so this paper will of necessity be merely an introductory overview to set the scene and explore less obvious areas of risk.

³ Civil Society" is a term that describes the increasingly influential, community-based organisations that claim to (and often do) represent the public's conscience eg. those that presently form the outspoken political pressure groups in the indigenous land rights, global warming/clean environment and sustainable development debates. It is also true that there can be a '*Not-in-My-Backyard* [NIMBY]' component, but that doesn't lessen the need to try and address their concerns.

⁴ It is not only about controlling production costs and throughputs, and avoiding huge fines or imprisonment and loss of reputation (which magnify any operational inefficiencies) – it is also the right thing to do.

⁵ Available at www.mishc.uq.edu.au.

⁶ 'Minerals Industry professionals' encompasses an increasingly diverse group of graduates, but at its core are the geologists, mining engineers, metallurgists and environmental scientists.

⁷ Particularly see numerous relevant papers in *Proceedings Mining Risk Management Conference 2003, 5/2003*, Sydney, 9-12 September, 488p (Australasian Institute of Mining and Metallurgy: Melbourne).

Mineral project risk categories

Central to funding success and longevity in the minerals industry is to be direct, trustworthy and transparent in dealings with investors. This primarily means clearly and openly identifying the areas of risk and not over-promoting a project in the context of these limitations and uncertainty. **All investors hate surprises!** Project risks,⁸ then, can be categorised as follows.

Legal risk. Ownership; rights and title security; organisational issues; material contracts and dispute resolution mechanisms; rule of law and system; corruption; intellectual property protection; indigenous rights; land access.

Technical risk. Geological eg, reliability of Resources/Reserves,⁹ grade/quality; geotechnical eg, depth, structural complexity and mine stability/water flow issues; mining eg, type and specific method, production rate, equipment productivity/availability and mining loss and dilution effects; metallurgical eg, product recovery and quality, process suitability, new technology and reliability/complexity, recovery; human resources eg, skill level, availability, conditions; procurement, construction and spare parts/maintenance issues; transport links to move the product to port. McCarthy (2003) provided a good summary of the risks involved and their management. He identified the key risks as:

- Mine design & scheduling 32%
- Resources/Reserves (geology) 17%
- Metallurgical test work (scale-up) 15%
- Process design/equipment selection 12%
- Geotechnical analysis 9%
- Cost estimation 7%
- Mining equipment selection 4%
- Hydrology 4%

Political risk. Policy issues eg, royalties and charges, taxation and capital repatriation rights; overall stability and positive attitude to foreign investment.

Commercial risk. Economic conditions like interest rates and inflation; market supply/demand, commodity prices/hedging and forex issues; insurance availability.

Social risk. Cultural and religious issues; first nation/indigenous and local/regional issues; managing change; general *Civil Society* protest impacts.

Environmental risk. Waste disposal eg, solid mining overburden/waste and mine/mill discharges from physical and chemical perspective; visual and physical impact; pollution limits; overall community opposition).

OH&S risk. Systems/reporting; workforce health; workplace safety; operational conditions/unions; permits/licences; penalties in financial and criminal contexts.

Security and disaster risk. Industrial/civil unrest; illegal mining; famine; terrorism; war. Included here are normal geographic risks turn into natural disasters, like lack of water, floods, fire, wind storms, volcanoes, earthquakes, tsunamis, etc.

‘Sovereign Risk’ is sometimes used as a primary or catch-all risk filter. It combines the socio-political and regulatory uncertainty of a country in which a mineral deposit occurs, together with security (like riots and war), community and corruption issues. In essence, this risk

⁸ See also Standards Australia (1999) and Edwards and Bezzina (2003) for the Standards-approach to risk management.

⁹ AusIMM Monograph 23, *Mineral Resource and Ore Reserve Estimation – The AusIMM Guide to Good Practice* (Ed. AC Edwards), 2001. It looks at numerous risk areas from the collection and treatment of sample data, integrity of the database and the geostatistical model/modelling parameters used.

encapsulates the likelihood of expropriation and the repudiation of contracts that can precipitate project finance loan default. For those who rely upon external sources of finance, it is major risk to address, because of its inherent unpredictability, yet regional specificity. It means that **essentially the same project will be denied funding simply because of its location**. It is quite separate to the inherent technical merits of a project. Most of the other major mineral project risks (especially technical risk) can be usually solved by money and research time. Note that emotion and prejudice may drive sovereign risk, so it may reflect only a clash of cultures and value systems rather than reality.

‘Force Majeure Risk’ is another composite risk index that can be used since it can include political unrest, union strikes, terrorism, war as well as natural disasters.

Finally, **‘Civil Society Risk’** is another composite risk measure that may be used to identify the likelihood of opposition to a project which can cause delays, even project closure. It draws upon aspects in a number of traditional risk areas that relate to the community interface eg, legal (indigenous rights/land access), socio-political, environmental, OH&S, disaster and security risks.

These risks, in the author’s experience, must be adequately addressed by those promoting mining ventures and before seeking funding. Since risk attaches to most activities, it is important to identify, quantify and manage material risks, whilst trying to eliminate them. Some risks may be unavoidable, but good information and effective insurance policies can reduce their impact. Funds flow to projects that provide investors with credible and reliable optimal results in less volatile environments.

Ethical investing protocols are also increasingly being applied by individuals, companies and fund managers today, as they decide between competing investment opportunities, irrespective of where the project is located and the commodity. Today, project financiers embrace better management of the environmental and social impacts through the Equator Principles (Fuzi and Bateman, 2003).

As with most risks, it is always better to identify and attempt to manage them at the start, than to have them unexpectedly subsequently appear and require urgent attention. Hence the **main project-killers are** found below.

- Startup delays to the project.
- Poorer than expected mill recovery.
- Production less than expected’
- Poorer quality and/or quantity of Ore Reserves.
- Tenement title insecurity and /or partner disputation.
- Changed environmental constraints.
- Civil Society and local community opposition.
- Sovereign risk (socio-political/regulatory uncertainty & security deterioration.
- Natural disasters

Project finance rating schemes - S&P template

Standard & Poor’s Risk Solution Team, recently reviewed and modified a template for a major bank to assist it in evaluating its project finance exposure.¹⁰ It is reproduced below to identify key weighting areas both for Shareholder Risks and Completion Risks. This template summarises typical areas of concern to lenders that must be addressed before mineral ventures seek funds today.

¹⁰ See Standard & Poor’s website under Risk Solutions for more detailed discussion and papers.

Shareholder Risks
Credit standing / credit rating of shareholder(s)
Mode/Timing of equity injection
Strategic interest in and relevance of the project to the sponsor(s)
Financial / contractual support for the project (excl. compl.guarant.)
Experience, track record w/this type of project
Other
Total
Completion Risks
Credit standing of contractor, subcontractors, suppliers
EPC contract [or the major construction contracts]
Percentage of completion already reached
Experience, track record of EPC contractor with this type of project
Contingency funds, financial reserves, insurance coverage sufficient?
Quality of technical feasibility study, Info policy
Other
Total

Risk management strategies

Background

Risk management is the treatment of risk to the best economic advantage of the parties involved¹¹; and it involves the cultures, processes and structures that are directed towards the optimal potential opportunities and adverse effects (see *AS/NZS 4360*). Risks are usually retained or transferred, too.

Any risk management strategy starts with **identifying what are all the reasonably foreseeable risks**, uncertainties and hazards in the particular context. They are then analysed to ascertain the likelihood of an event occurring (**frequency**) and its expected **severity** and consequential damage to the activity. The envisaged result is then balanced against the estimated cost of taking precautions against the likelihood of the event occurring in terms of effort (time and money) and effect on the ultimate purpose of the activity (**evaluated**). Here, insurance can play a significant part in risk-reduction.

Thus, it is critical today to clearly identify and document the appropriate lines of responsibility for various defined risks, since there are criminal as well as civil consequences if many risky events eventuate. There may be personal as well as corporate consequences. Always seek independent peer review, especially by third parties, through regularly monitoring programmes and due diligence reviews. However, to solve any problem requires **updated, reliable input data** to the strategy development process and **good people**.

Individual liability is a real risk to mitigate

Many participants in mineral developments are subject the legal requirement to broadly act with reasonable care and diligence in respect of their contribution to a company's activities. This objectively tested duty of care arises out of common law, equity, and statute. Ignorance and failure to enquire are no protection. See Williamson-Noble and Lawrence (1994), Lawrence (1995) and Phillips (2000).

¹¹ Whilst this may be generally true, it is the reality that not everyone is driven by simple 'economic advantage' that complicates the risk management process.

The quality/quantity of disclosure about a project involves a chain of parties, all of whom must properly play their part for the system to work and for investment risk to be minimised and effective promotion to occur.

Value of professional accreditation schemes

Professionals working in the minerals industry are generally expected to have gained appropriate tertiary technical competencies and to always act with probity. Proof of Corporate Membership of an appropriate reputable, internationally recognised organisation (eg, AusIMM), demonstrates this to ones' employers (or clients), peers and the wider community - including government and regulators (see Lawrence, 1999). Use of such professionals bolsters the use of the Due Diligence Defence against a claim for breach of the duty of care, too.

Usefulness of industry codes of best practice

Using best practice Codes like JORC (Resources/Reserves) and VALMIN (technical assessment and valuation of mineral properties) also bolsters the use of the Due Diligence Defence against a claim for breach of the duty of care. They objectively document what a reasonable person of ordinary caution would do in similar circumstances in that commercial/technical setting.

Another value of best practice Codes is that they encourage the use of nomenclature with globally accepted meanings - that itself mitigates risk. Effective communication is assisted when words mean what they appear to say.

Global competitiveness country rankings

In the context of risk management it is important to look at independent global benchmarks of the core risk components discussed above, particularly competitive rankings of the project's host country.

Since 1997, the influential Canadian Fraser Institute¹² has conducted an annual survey of exploration managers in mining and mining consulting companies operating around the world to assess how mineral endowment and public policy factors (eg, taxation and regulatory regime) affect exploration investment. It generally found that the Mining Industry is dissatisfied with government policies that deter exploration investment in a region, whether it is, *a priori*, mineral-rich or not. Since so many regions exist around the world that already have attractive geology and competitive policies, those explorers that could explore globally clearly go elsewhere to those jurisdictions that already have attractive policies, rather than waste efforts trying to obtain better policies in those regions that don't have them.

The Fraser Institute Annual Survey of Mining Companies 2004/2005 (Fraser Institute, 2005) was sent to 1,121 exploration, development, and mining consulting companies around the world. The 259 companies participating in the 2004-05 survey accounted for expected 2005 exploration budgets totalling US\$798.1M out of the total global exploration planned spending of US\$3,800M in 2004, as estimated by the Canadian Metals Economics Group (MEG). MEG reported exploration spending of US\$574.7M in 2004.

The Fraser Institute uses quite a number of specific criteria that generate various consequential worldwide rankings for a jurisdiction, so that all the results can be a little confusing at first (though reading the detailed background basis for each index assists). Criticisms, too, can be always levelled at any survey, but it these survey results provide useful indicators of exploration

¹² See www.fraserinstitute.ca.

managers' opinions on the relative investment attractiveness of 64 jurisdictions, (up from 53 in 2003-04). Regulators would be foolish to dismiss them. The Fraser Institute considers that the following two of its measures provide the most telling rankings.

Policy potential index (measuring the attractiveness of a jurisdiction's mining policies), including *“uncertainty concerning the administration, interpretation, and enforcement of existing regulations, environmental regulations, regulatory duplication and inconsistencies, taxation, uncertainty concerning native land claims and protected areas, infrastructure, socioeconomic agreements, political stability, labour issues, geological database, and finally, security. The question of security is new this year and was added because of increased awareness of terrorism, banditry, and other security threats”* (pages 5-6). Note that the Fraser Institute, consistently over time, has reported that this aspect is always considered the dominant consideration for explorers, assuming that a country's geology can justify being there in the first place.

For the 2005 survey companies were asked to rate jurisdictions on the following 12 policy-related factors, that contribute to the ability of jurisdictions to attract exploration investment under current and under 'best practices' policies, on a scale of 1 to 5 (1 = encourages exploration investment; 2 = not a deterrent to exploration investment; 3 = mild deterrent to exploration investment; 4 = strong deterrent to exploration investment; and 5 = would not pursue exploration investment in this region due to this factor).

- Uncertainty concerning the administration, interpretation, and enforcement of existing regulations, particular its capricious nature [New Zealand scored 38/64 jurisdictions].
- Environmental regulations [New Zealand scored 56/64 jurisdictions].
- Regulatory duplication and inconsistencies (including federal/provincial or federal/state and interdepartmental issues and overlap) [New Zealand scored 15/64 jurisdictions].
- Taxation regime (including personal, corporate, payroll, capital taxes, and the complexity associated with overall tax compliance) [New Zealand scored 15/64 jurisdictions].
- Uncertainty concerning First Nation/Native Title land claims and access difficulties [New Zealand scored 46/64 jurisdictions].
- Uncertainty concerning which areas will be protected as wilderness areas or parks [New Zealand scored 51/64 jurisdictions].
- Infrastructure availability and quality [New Zealand scored 4/64 jurisdictions].
- Socioeconomic agreements [New Zealand scored 31/64 jurisdictions].
- Political stability [New Zealand scored 3/64 jurisdictions].
- Labour regulation/employment agreements [New Zealand scored 4/64 jurisdictions].
- Geological database availability, including quality, map scale and ease of access [New Zealand scored 50/64 jurisdictions].
- Security issues ((law and order, enforceability of contracts, etc) [New Zealand scored 5/64 jurisdictions].

Looking at a jurisdiction's suite of policies (particularly the regulatory regime, as well as ease of access to land and security of tenure) the “Top Ten” **most appealing** jurisdictions in order were: Nevada Ireland, Manitoba, Utah, Saskatchewan, Spain, Quebec, Ontario, Alberta and Tasmania (Figure 1). If the 7 Canadian/US state/provincial jurisdictions are removed (and only countries counted), one can add Western Australia, Chile, South Australia, Mexico, Queensland, NSW and India. **New Zealand was 25th, which is a middle-of-the-road overall ranking.** However, New Zealand has shown some improvement over the past 3 reporting years, having risen from 35/47 (2002-03), through 22/53 (2003-04) and 27/64 (2004-05) to today's 25/64 ranking. Note, too, the detailed results above showing excellent rankings for political stability and security, labour regulations and employment agreements, and infrastructure availability and quality – all ranking New Zealand in the top 5 jurisdictions. The opposite very low rankings for environmental

regulations and uncertainty concerning which areas will be protected as parks, land claims and access issues are seen as areas of concern. Surprisingly, outsiders see New Zealand as not providing adequate data bases of geological information, ranking it very lowly at 50/64.

The 10 **least appealing** jurisdictions, ranked in order, were: Zimbabwe, DRC(Congo), Indonesia, Russia, Bolivia, Venezuela, Philippines, PNG, Wisconsin, California. If the two Canadian/US state/provincial jurisdictions are removed (and only countries counted), one can add Kazakhstan and South Africa.

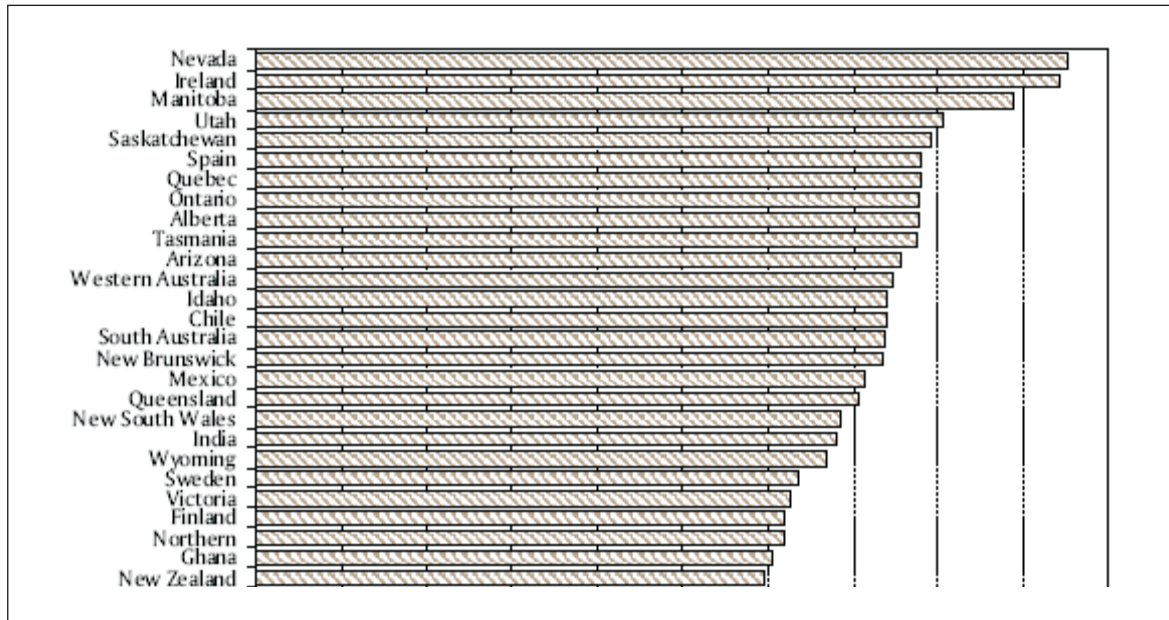


Figure 1: Policy Potential Index

Best practices mineral potential index measures the ‘pure’ technical attractiveness or exploration potential of a jurisdiction by ignoring its actual present policies and assuming it had adopted current global ‘best practices’ policy settings.

From a purely mineral prospectivity viewpoint, the top ten **most appealing** jurisdictions in order were: Tasmania, Nevada, Alaska, Northwest Territories, Western Australia, Indonesia, Peru, Queensland, Papua New Guinea and Nunavut (Figure 3). Note three Australian jurisdictions make the cut, with the Northern Territory ranking 11/64, NSW ranking 20/64, South Australia ranking 22/64 but Victoria ranking 52/64. If the 4 Canadian/US state/provincial jurisdictions are removed (and only countries counted), one can add Northern Territory, Chile, Russia and Argentina.

The 10 **least technically appealing** jurisdictions, ranked in order, were Ireland, Alberta, Wisconsin, New Brunswick, Nova Scotia, Minnesota, **New Zealand**, Wyoming, Washington and Spain. If the 7 Canadian/US state/provincial jurisdictions are removed (and only countries counted), one can add Zimbabwe, Victoria, Burkina Faso, India, Sweden, Bolivia and Venezuela. **New Zealand was thus not ranked highly at 58/64**(being 50/53 in 2003-04 and 43/47 in 2002-03).

This is a curious overall result for New Zealand, since a recent World Bank (2005) survey of 145 countries to find those that encourage business activity.¹³ The top 20 countries in which to start and run a new business ranked New Zealand first and Australia 5th (Figure 2). This survey

¹³ See <http://rru.worldbank.org/Documents/DoingBusiness/DB-2005-Overview.pdf> and also see World Bank (2004) for more details on the main regulatory impediments.

highly regarded those with the least costly and burdensome regulatory environments eg, ease of company registration (including business licensing), hiring and firing workers, contract enforcement, taxation and ease of access to credit (creditor protection and bankruptcy laws) ease of closing a business, registering property and protecting investors. *“Fewer than a third of poor countries reformed. And those reformers concentrated on simplifying business entry and establishing or improving credit information systems. Almost no reforms took place in making it easier to hire and fire workers or in closing down unviable businesses. Across regions, African countries reformed the least, according to the World Bank.”* In fact, 20 poor countries—four-

Top 20 economies on the ease of doing business			
1	New Zealand	11	Switzerland
2	United States	12	Denmark
3	Singapore	13	Netherlands
4	Hong Kong, China	14	Finland
5	Australia	15	Ireland
6	Norway	16	Belgium
7	United Kingdom	17	Lithuania
8	Canada	18	Slovakia
9	Sweden	19	Botswana
10	Japan	20	Thailand

Note: The ease of doing business measure is a simple average of the country's ranking in each of the 7 areas of business regulation and property rights protection measured in Doing Business in 2005.

Figure 2: 2005 World Bank Survey.

fifths of them in sub-Saharan Africa—make up the list of economies with the most difficult business conditions.

Nevertheless, it would be too easy to simply dismiss the Fraser Institute's unfavourable results, and not try and address the concerns of international mining explorers and investors with New Zealand's mineral resource regulatory regime. Even the World Bank was cautionary saying, *“Being in the top 20 on the ease of doing business does not mean zero regulation. Few would argue it's every business for itself in New Zealand.”* Hence, the Fraser Institute's rankings should be a real wake-up call to Middle Earth, since perception becomes reality.

Worldwide exploration in 2004 (highest level since 1997 peak)

According to the 2005 edition of the Metals Economics Group (MEG, Canada) *World Exploration Trends*, this year's analysis of 1,138 companies' exploration budgets (using a budget cutoff of US\$100,000) totals US\$3.55B, covering an estimated 95% of worldwide commercially oriented nonferrous expenditures. When we also include estimates for budgets that could not be obtained by MEG, its estimate of total 2004 expenditures for commercial nonferrous metals exploration is almost \$3.8B. It puts the exploration effort into Australia (about US\$355M) into perspective and shows what is available to spend down under.

Worldwide nonferrous exploration budgets steadily increased through the early 1990s to a crest of US\$5.2B in 1997, before falling for five straight years to a 12-year low of US\$1.9B in 2002—an overall decline of more than 63%. Since that time, exploration budgets have risen for two straight years, rebounding to a level just slightly above MEG's 1998 estimate. The 2004 estimate of \$3.8B is up 58% over last year's, and is double the estimated worldwide total seen at the bottom of the cycle in 2002.

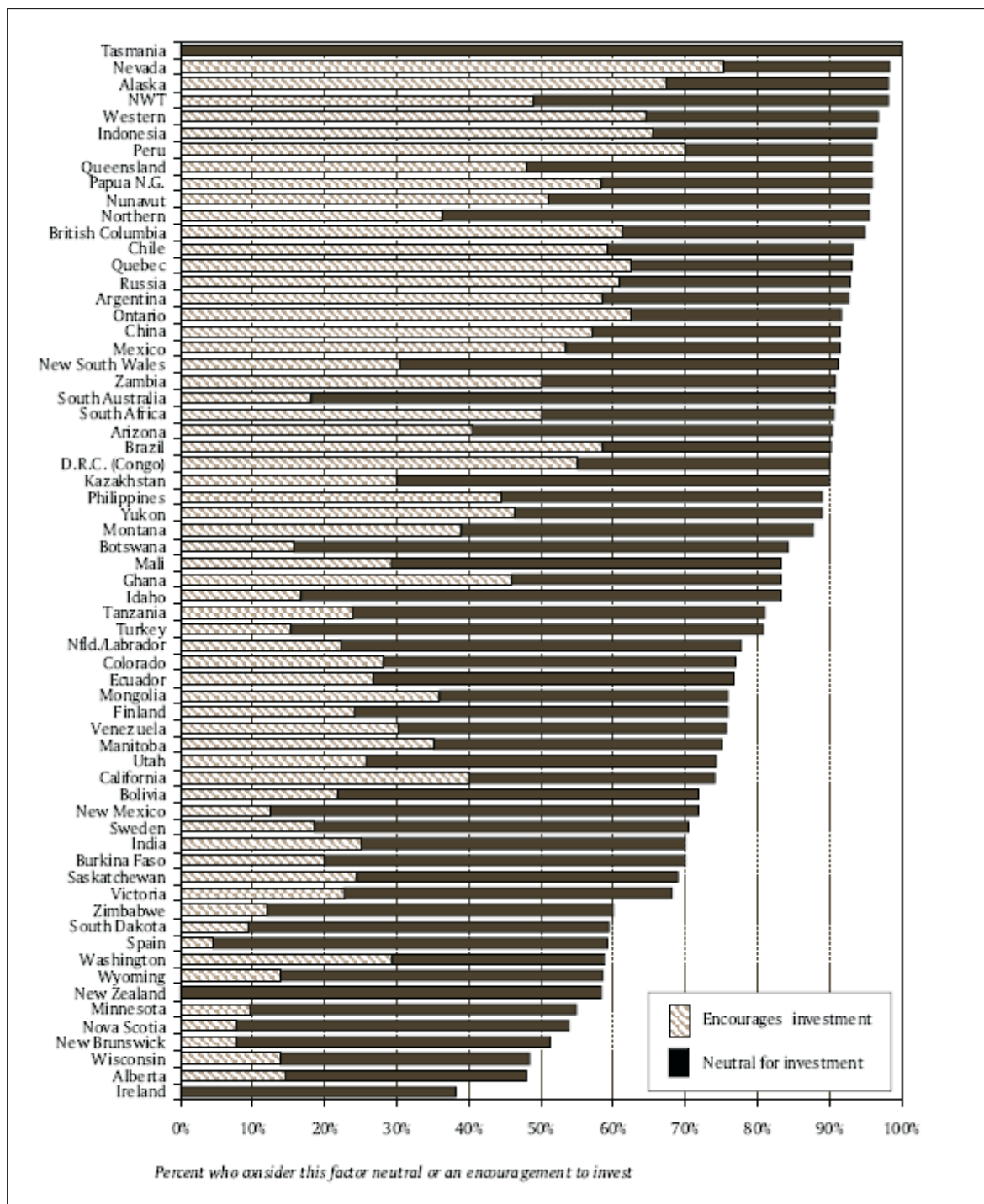
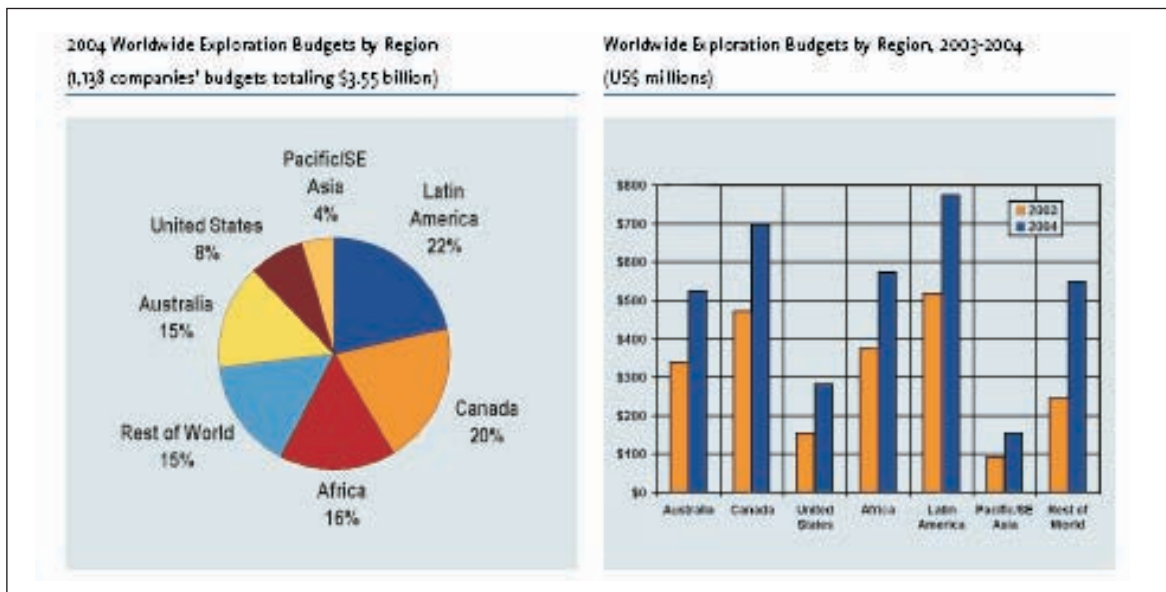


Figure 3: Best Practices Mineral Potential – Assuming No Land Use Restrictions in Place and Assuming Industry “Best Practices”

The Figures below show the regional distribution of the US\$3.55B in non ferrous exploration allocations by the 1,138 companies included in this year’s study and the comparison with the \$2.19B budgeted by 917 companies in 2003.

Exploration budgets had declined for 5 straight years (from a high of \$4.57B in 1997 to a low of \$1.73B in 2002 - a decline of some 63%) is explained by MEG as being due to substantial cutbacks by the majors, the negative impact of industry consolidation, and a loss of funding for a great number of juniors. The resurgence in expenditure (since 2003) has been due both to the realisation by the majors that there were few new projects moving up the pipeline; and to the



increased availability of risk funds raised by the juniors (budgets up 103% in 2004) as investors gained confidence from the commodity boom. MEG believe that “Canada’s exploration tax incentives (flow-through and super flow-through share programs) have also significantly contributed to the scale at which junior spending has risen.”

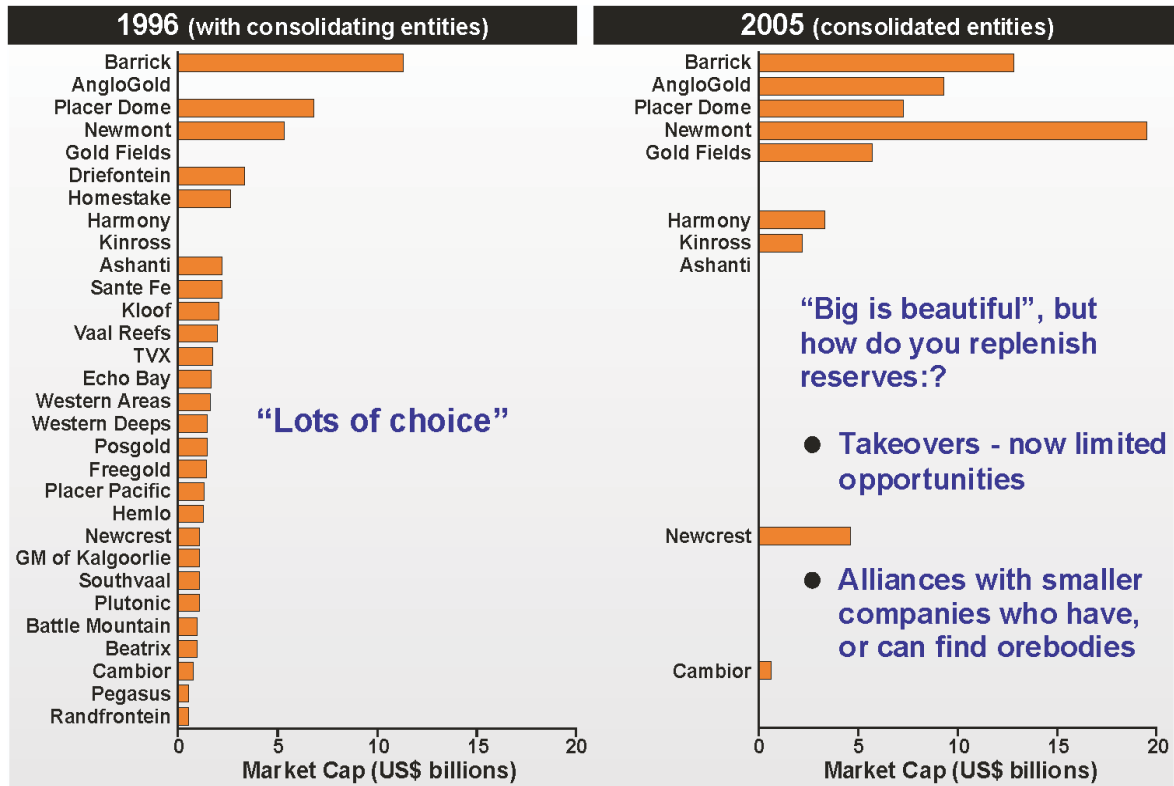
Latin America continues to be the most popular destination for exploration led by increased allocations in Peru and Mexico, increasing its lead over second-place Canada to more than \$76 million this year from the \$46 million margin in 2003. Africa remains in third place by region, having surpassed Australia for the first time in 2003. The substantial increase in allocations in our rest-of-world region (encompassing Europe, the Middle East, and most of mainland Asia), led by sharp increases in Russia, Mongolia, and China, moved it to fourth place by region, outstripping a more moderate recovery in Australia, which slipped to fifth position. Before beginning its gradual slide in recent years, Australia had firmly held second place by region from 1994 to 2001, when Canada displaced it for the first time. The United States and the Pacific/Southeast Asia region remain in sixth and seventh place, respectively, positions they have held since 2001. Despite multiple layers of regulatory involvement and strong environmental activism, exploration in the United States has shown surprising strength, led by increased activity in Nevada and Alaska, whereas growth in the Pacific/Southeast Asia region remains somewhat muted amidst uncertainty of tenure and continued political and social unrest.

According to MEG, from 1997-2003, “the industry saw the demise of 39 significant mining and exploration companies, effectively erasing a cumulative \$433M from worldwide exploration efforts during this period.” This is illustrated by the graphic below (from CIBC World Markets).

Exploration allocations by surveyed companies have increased in each of our regional categories and classifications for the second consecutive year. In dollar terms, budgets increased the most this year in our rest-of-world category, led by sharp increases in Russia, Mongolia, and China; Latin America, led by increased spending in Peru and Mexico; and Canada.

Latin America continues to be the most popular destination for exploration spending, increasing its lead over second-place Canada to more than \$76 million this year from the \$46 million margin in 2003. Africa remains in third place by region, having surpassed Australia for the first time in 2003. The substantial increase in allocations in our rest-of-world region have outstripped a more moderate recovery in Australian spending, moving the region to fourth place with Australia slipping to fifth. Before beginning its gradual slide in recent years, Australia had held second place by region from 1994 to 2001, when Canada displaced it for the first time. The United States and the Pacific/Southeast Asia region remain in sixth and seventh place, respectively, positions they have held since 2001.

The problem, as noted, is the diminishing number of major mining companies (see above). Where a county has its state/provincial jurisdictions individually ranked (eg, Canada, USA and Australia) the highest scoring one is noted for the country (see below).



Courtesy of CIBC World Markets

Table 1. FRASER INSTITUTE RANKINGS 2004-05

MINING COUNTRY	POLICY RANK [out of 64]	PROSPECTIVITY RANK [out of 64]
New Zealand	27 th	58 th
Australia (Tasmania)	10 th	1 st
Canada	3 rd (Manitoba)	4 th (NWT)
USA (Nevada)	1 st	2 nd
Chile	14 th	13 th
South Africa	53 rd	23 rd
Mexico	17 th	19 th
Peru	39 th	7 th
China	36 th	18 th
India	20 th	49 th
Papua New Guinea	57 th	9 th
Philippines	58 th	28 th
Indonesia	62 nd	6 th

The **Composite Policy & Mineral Potential Index** best ranks jurisdictions overall from the Fraser Institute's viewpoint. One need to carefully consider the respondent's answers, the exact methodology and weighting factors used, but it does produce some useful (if interesting and surprising) results. It has been constructed from a 40% weighting from policy and 60% by mineral potential. The 60/40 weighting relationship used is probably not stable at the extremes eg, extremely bad policy that would virtually confiscate all potential profits, or an environment that would expose workers and managers to high personal risk, would discourage mining activity regardless of that jurisdiction's mineral potential. In such a case, mineral potential (far from having a 60% weight) might carry very little weight.

The top ten **most appealing** jurisdictions, in order, were: Nevada, Western Australia, Quebec, Ontario, Chile, Alaska, Peru Mexico, Queensland and Brazil (NSW was 27th out of the 64 jurisdictions). If the 4 Canadian/US state/provincial jurisdictions are removed (and only countries counted), then one can add China, Argentina, Ghana and Indonesia.

The 10 jurisdiction with the **least appealing** jurisdictions, ranked in order, were: Zimbabwe, Wisconsin, **New Zealand**, Bolivia, South Dakota, Botswana, Nova Scotia, Tasmania, Minnesota and Burkina Faso. If the 4 Canadian/US state/provincial jurisdictions are removed (and only countries counted), then one can add Venezuela, Turkey, Spain and Kazakhstan.

One can thus quibble with any rating methodology, especially the weightings that go into a composite index, but it does reflect the overall perceptions of global explorers/miners if not the reality. Hence, New Zealand's bureaucrats might agree that the Fraser Institute is not a reliable rating agency, but the fact remains that it is really only the "messenger". Its bureaucrats must tread carefully at this time if they wish to propose any material changes to an already under-appreciated regulatory regime.

The Republic of the Philippines previously ignored negative sentiments, as measured by the Fraser Institute. As a result, foreign investment fell and its ranking dropped from 37/47 (2002-03), through 51/53 (2003-04), to 58/64 (2004-05). In August this year a high powered government-sponsored road show travelled the world to tell global explorers and miners that they had listened to the complaints and that the new Mining Law and regulations would redress any previous concerns. This delayed proactive response may have been a little late for many, but it has taken place, at least.

Countries that do not learn from the Philippine's mistakes will suffer and not attract new investment and even lose some that they already have. The lesson is simple – investors/lenders hate surprises. If they do not like your exploration and mining regulatory regime, they will avoid you as a place to invest from the start. If you suddenly change the rules (especially tenement allocation rules), that is worse and global investors/bankers have very unforgiving and long memories. "*Once bitten, twice shy*," is an appropriate saying to remember.¹⁴

Perceived corruption level in host country

Transparency International (TI), founded in 1993, is the leading international non-governmental organization devoted solely to curbing corruption worldwide and it currently has 90 national chapters around the world, with its International Secretariat in Berlin, Germany. It annually produces the *TI Corruption Perceptions Index* that is a poll of polls, reflecting the perceptions of business people and country analysts, both resident and non-resident, of the extent of corruption (misuse of public power for private benefit) existing in a country's politicians and officials. This year's *TI Corruption Perceptions Index* draws on 18 surveys provided to TI between 2002 and 2004, conducted by 12 independent institutions (Table 2). The score from 0-10 reflects rampant corruption to none and some 146 countries were ranked out of about 200 sovereign

¹⁴ It comes from "*Aesope*", William Caxton's 1484 translation of Aesop's Fables.

nations in the world. Whilst a country's rank is useful, a country's score is a much more important indicator of the likely corruption there.¹⁵

“Corruption in large-scale public projects is a daunting obstacle to sustainable development, and results in a major loss of public funds needed for education, healthcare and poverty alleviation, both in developed and developing countries,” said TI's Chair Peter Eigen. TI estimated that in 2004, the amount lost due to bribery in government procurement was at least US\$400 billion per year worldwide. Hence, international donors and national governments must do more to ensure transparency in public procurement by introducing no-bribery clauses into all major projects (*Media Release*, 20 October 2004).¹⁶

The public sector is the main source of corruption, with many oil-producing nations (eg, Angola, Azerbaijan, Chad, Ecuador, Indonesia, Iran, Iraq, Kazakhstan, Libya, Nigeria, Russia, Sudan, Venezuela and Yemen) being prone to high levels corruption.

Corruption is perceived to be most acute in Bangladesh, Haiti, Nigeria, Chad, Myanmar, Azerbaijan and Paraguay, all of which have a score of less than 2, but 60 countries scored less than 3 out of 10. A total of 106 out of 146 countries scored less than 5 against a clean score of 10 and 86 less than 4, according to TI's 2004 Index.

On the basis of data from sources that were used for both the 2003 and 2004 index, since last year an increase in perceived corruption can be observed for Bahrain, Belize, Cyprus, Dominican Republic, Jamaica, Kuwait, Luxembourg, Mauritius, Oman, Poland, Saudi Arabia, Senegal,

Table 2. TI CORRUPTION PERCEPTION INDEX 2004

MINING COUNTRY	RANK [out of 146]	SCORE
New Zealand	2 nd	9.6
Australia	9 th	8.8
Canada	12 th	8.5
USA	19 th	7.5
Chile	20 th	7.4
South Africa	46 th	4.6
Mexico	65 th	3.6
Peru	68 th	3.5
China	71 st	3.4
India	91 st	2.8
Papua New Guinea	103 rd	2.6
Philippines	104 th	2.6
Vietnam	106 th	2.6
Indonesia	137 th	2.0

¹⁵ A detailed description of the underlying methodology is available at www.transparency.org/surveys/#cpi.

¹⁶ Transparency International, 2004. *Transparency International Corruption Perceptions Index 2004*, Media Release, 20 October, London, UK, 8p. For more information see www.transparency.org.

and Trinidad and Tobago. On the same basis, a fall in corruption was perceived in Austria, Botswana, Czech Republic, El Salvador, France, Gambia, Germany, Jordan, Switzerland, Tanzania, Thailand, Uganda, United Arab Emirates and Uruguay.

Countries with a score of higher than 9, with very low levels of perceived corruption, are predominantly rich countries, namely Finland, **New Zealand (2nd)**, Denmark, Iceland, Singapore, Sweden and Switzerland. Australia was ranked 9th (scoring 8.8), Canada 12th (scoring 8.5) and USA 19th (with a score of 7.5). Table 3 below lists the ranking and scores of well-known mining jurisdictions. Exploration funds will generally not flow to low scoring countries with a high risk of corruption. In this respect, New Zealand has an enviable reputation.

Over the longer term ten-year period of the TI survey, countries that have improved over time include Colombia, Bulgaria, Estonia, Hong Kong, Mexico and Spain. Countries that have deteriorated include Argentina, Ecuador, Poland and Zimbabwe.

According to the Standard and Poor's (Australia) Pty Ltd (Standard & Poor's) rating agency there were more rating movements among Australian and New Zealand issuers in the Second Quarter of 2005 than in any quarter since December 2003. Rating actions were dominated by M&A activity and operating performance affecting credit quality. Fifteen rating changes were made in all, with 7 stemming from takeover activity and 4 from actions on foreign parents. Overall, with 8 ratings upgraded and 7 downgraded the picture was fairly balanced. Four of the 15 rating actions took an issuer across the great divide between investment grade and sub-investment grade.¹⁷

In the region, generally the tally of outlooks was mildly negative at the end of the Second Quarter. The number of rated entities in Australia and New Zealand not on its *CreditWatch* came to 275. Of these, 239 (87%) have a stable outlook; 19 have a negative outlook; 14 a positive outlook and 3 a developing outlook. Standard & Poor's believes that the main risk to issuers is that having beefed up their balance sheets (using recent good profits), they now overextend themselves on acquisitions or capital returns, perhaps just as economic conditions become more bearish." It believes that the credit cycle in the region has peaked, with credit quality to be generally balanced, but on a mildly negative trajectory.

¹⁷ Dalton, C, 2005. Australian & New Zealand Ratings Round-Up, 2nd Quarter 2005; Still Warm, But Cooling? *Ratings Direct*, 28 July.

Table 3. TI CORRUPTION PERCEPTION INDEX

Country Rank	Country	CPI 2004 Score*
1	Finland	9.7
2	New Zealand	9.6
3	Denmark	9.5
	Iceland	9.5
5	Singapore	9.3
6	Sweden	9.2
7	Switzerland	9.1
8	Norway	8.9
9	Australia	8.8
10	Netherlands	8.7
11	United Kingdom	8.6
12	Canada	8.5
13	Austria	8.4
	Luxembourg	8.4
15	Germany	8.2
16	Hong Kong	8.0
17	Belgium	7.5
	Ireland	7.5
	USA	7.5
20	Chile	7.4
21	Barbados	7.3
22	France	7.1
	Spain	7.1
24	Japan	6.9
25	Malta	6.8
26	Israel	6.4
27	Portugal	6.3
28	Uruguay	6.2
29	Oman	6.1
	United Arab Emirates	6.1
31	Botswana	6.0
	Estonia	6.0
	Slovenia	6.0
34	Bahrain	5.8
35	Taiwan	5.6
36	Cyprus	5.4
37	Jordan	5.3
38	Qatar	5.2
39	Malaysia	5.0
	Tunisia	5.0
41	Costa Rica	4.9
42	Hungary	4.8
	Italy	4.8
44	Kuwait	4.6
	Lithuania	4.6
	South Africa	4.6
47	South Korea	4.5
48	Seychelles	4.4
49	Greece	4.3
	Suriname	4.3
51	Czech Republic	4.2
	El Salvador	4.2
	Trinidad and Tobago	4.2
54	Bulgaria	4.1
	Mauritius	4.1
	Namibia	4.1
57	Latvia	4.0
	Slovakia	4.0
59	Brazil	3.9
60	Belize	3.8
	Colombia	3.8
59	Brazil	3.9
60	Belize	3.8
	Colombia	3.8
62	Cuba	3.7
	Panama	3.7
64	Ghana	3.6
	Mexico	3.6
	Thailand	3.6
67	Croatia	3.5
	Peru	3.5
	Poland	3.5
	Sri Lanka	3.5
71	China	3.4
	Saudi Arabia	3.4
	Syria	3.4
74	Belarus	3.3
	Gabon	3.3
	Jamaica	3.3

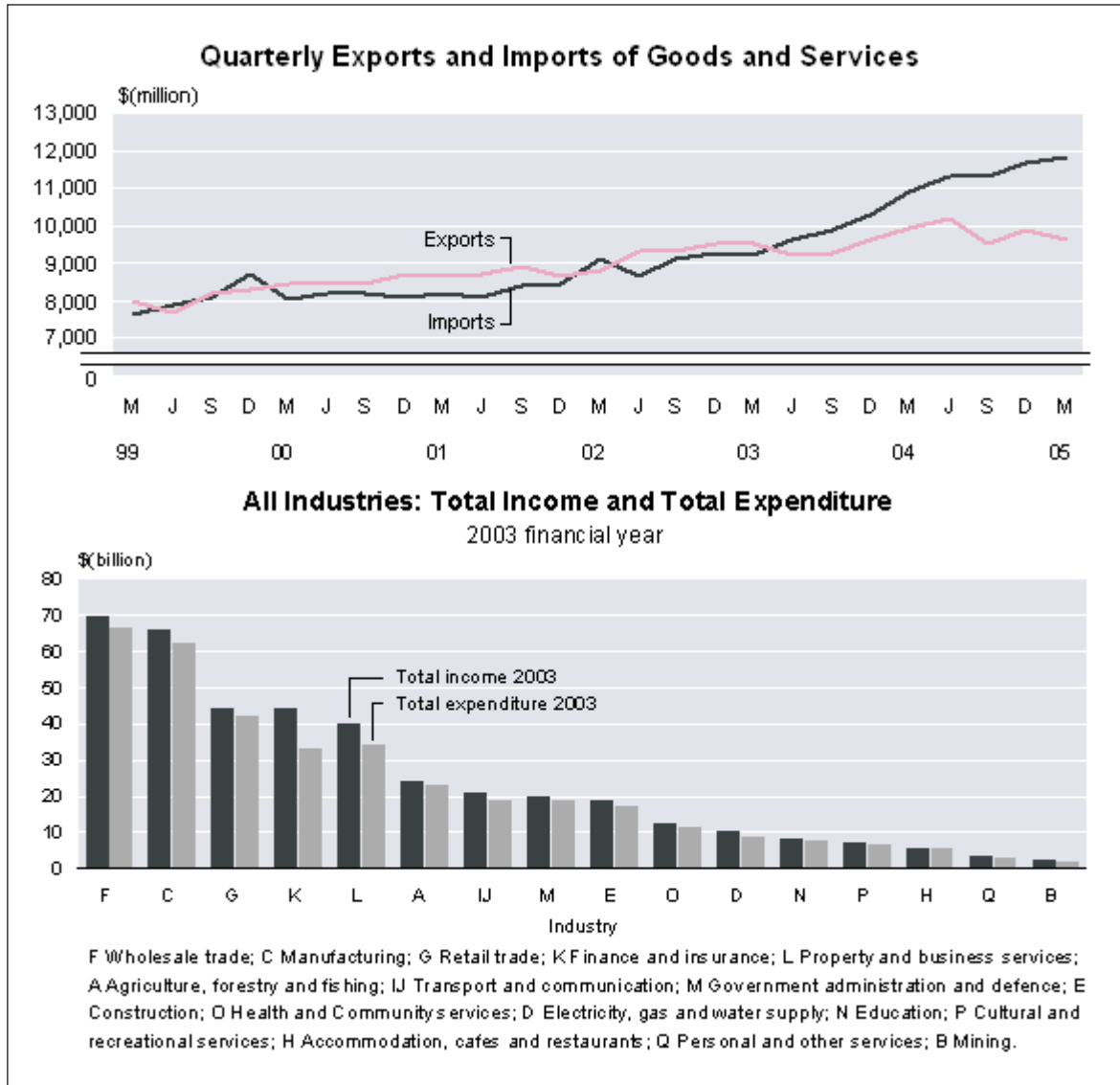
Country Rank	Country	CPI 2004 Score*
77	Benin	3.2
	Egypt	3.2
	Mali	3.2
	Morocco	3.2
	Turkey	3.2
82	Armenia	3.1
	Bosnia and Herzegovina	3.1
	Madagascar	3.1
85	Mongolia	3.0
	Senegal	3.0
87	Dominican Republic	2.9
	Iran	2.9
	Romania	2.9
	Gambia	2.8
90	India	2.8
	Malawi	2.8
	Mozambique	2.8
	Nepal	2.8
	Russia	2.8
	Tanzania	2.8
97	Algeria	2.7
	Lebanon	2.7
	Macedonia (FYR)	2.7
	Nicaragua	2.7
	Serbia and Montenegro	2.7
102	Eritrea	2.6
	Papua New Guinea	2.6
	Philippines	2.6
	Uganda	2.6
	Vietnam	2.6
	Zambia	2.6
108	Albania	2.5
	Argentina	2.5
	Libya	2.5
	Palestinian Authority	2.5
112	Ecuador	2.4
	Yemen	2.4
114	Congo, Republic of	2.3
	Ethiopia	2.3
	Honduras	2.3
	Moldova	2.3
	Sierra Leone	2.3
	Uzbekistan	2.3
	Venezuela	2.3
	Zimbabwe	2.3
122	Bolivia	2.2
	Guatemala	2.2
	Kazakhstan	2.2
	Kyrgyzstan	2.2
	Niger	2.2
	Sudan	2.2
	Ukraine	2.2
129	Cameroon	2.1
	Iraq	2.1
	Kenya	2.1
	Pakistan	2.1
133	Angola	2.0
	Congo, Democratic Republic	2.0
	Côte d'Ivoire	2.0
	Georgia	2.0
	Indonesia	2.0
	Tajikistan	2.0
	Turkmenistan	2.0
140	Azerbaijan	1.9
	Paraguay	1.9
142	Chad	1.7
	Myanmar	1.7
144	Nigeria	1.6
145	Bangladesh	1.5
	Haiti	1.5

Source: Transparency International (2004)

Why bother to attract mining?

New Zealand economic snapshot

In the year ended March 2005, the New Zealand economy grew 4.2%, up from the 3.6% growth recorded in the March 2004 year. Partly offsetting this quarter's increase in internal demand (6.8%) were lower export volumes, however. See the graph of exports against imports for the period 1999-05, noting the growing gap as imports exceed exports. In the March 2005 quarter, economic growth was largely due to increased activity in the service industries.



New Zealand Annual Enterprise Survey (AES) data is revealing in showing the relative contribution of the various industry sectors. Note Mining's position in the graph above belies its relative contribution to the New Zealand economy. Besides helping to minimise the increasing gap between imports and exports, Mining has very favourable indices when the comparative data from the *Annual Enterprise Survey* data for other sectors like Manufacturing and Agriculture-Forestry-Fishery are compared (see Table 4 below). Basically, it has very favourable Return on Total Assets (RoA)¹⁸ and Return on Shareholder Equity (RoE)¹⁹, as well as particularly favourable

¹⁸ **Return on Total Assets (RoA)** ie, Operating Surplus before tax and salaries and wages paid to working proprietors divided by Total Assets.

¹⁹ **Return on Equity (RoE)** ie, Operating Surplus before tax and salaries and wages paid to working proprietors divided by Shareholders Funds.

Income/Full time Equivalent Employee (FTE)²⁰ and Operating Surplus²¹ /FTE , due to a lower numbers of employees and the high value of their output.

To put this New Zealand data above and its paucity of mineral exports²² into a more global (or trans-Tasman) context one should reflect on some recent Australian mineral commodity export data from ABARE, released recently.²³ Australia's mineral export earnings leapt 29% to a record A\$67.4billion (NZ\$72.8 billion)²⁴ in 2004-05, with some 35% of export income came from the Resources Sector. Substantial increases occurred in the following mineral commodities: tin (37%), diamonds (34%), refined silver (17%), manganese (16%), salt (16%), uranium oxide (15%), and iron ore/concentrate (14%); but refined gold fell 13%. The overall strong performance is explained by increased prices for about 80% of the commodities exported and volumes were all up for more than two thirds of them.

Table 4. Selected Economic Indices for Mining Sector

PARAMETER	TOTAL	MANUFACTURING	MINING	AGRICULTURE FISH FORESTRY
INCOME	NZ\$398,386M	NZ\$66,073M	NZ\$2,682M	NZ\$24,266M
EXPENDITURE	NZ\$362,464M	NZ\$62,176M	NZ\$1,936M	NZ\$23,116M
SURPLUS	NZ\$40,740M	NZ\$4,500M	NZ\$753M	NZ\$1,230M
ASSETS	NZ\$982,275M	NZ\$53,625M	NZ\$7,514M	NZ\$86,768M
Income/FTE	NZ\$247,900	NZ\$	NZ\$730,900	NZ\$144,500
Surplus/FTE	NZ\$40,740	NZ\$	NZ\$205,100	NZ\$7,300
RoE	10.6%	18.4%	14.8%	2.7%
RoA	4.1%	8.4%	10.0%	1.4%

Source: Annual Enterprise Survey Data 2003 [www.stats.govt.nz].

The commodities that recorded the largest increases in export earnings in 2004-05 were no surprise and related to China's booming steel and power needs: coking coal (up A\$4,220M or 65% to A\$10,730M); steaming coal (up A\$1,964M or 45% to A\$6,336M); and iron ore and pellets (up A\$2,808M or 53% to A\$8,085M). Other commodities that recorded significant increases in export earnings in 2004-05 were petroleum and base metals: crude oil (up A\$1,275M or 25% to A\$6,330M); LNG (up A\$1,025M or 47% to A\$3.199 million; copper, up A\$879 million (41 per cent) to A\$3045 million; alumina, up A\$600M or 16% to A\$4,381M; nickel, up A\$590M or 19% to A\$3,707M; lead (up A\$313M or 43% to A\$1,041M); aluminium (up A\$271M (8% to A\$3,712M); and zinc (up A\$231M or 19% to A\$1,465M).

²⁰ **Full-time equivalent persons engaged** (FTE) ie, the total number of full-time employees and working proprietors plus half the number of part-time employees and working proprietors.

²¹ **Operating Surplus** ie, Total Income less Total Expenditure (excluding salaries and wages to working proprietors), before income tax.

²² *New Zealand External Trade Statistics June 2004*, and other New Zealand Statistics data show little contribution from Minerals.

²³ ABARE, 2005. *Australian Mineral Statistics*, June Quarter 2005, 7 September, 37p.

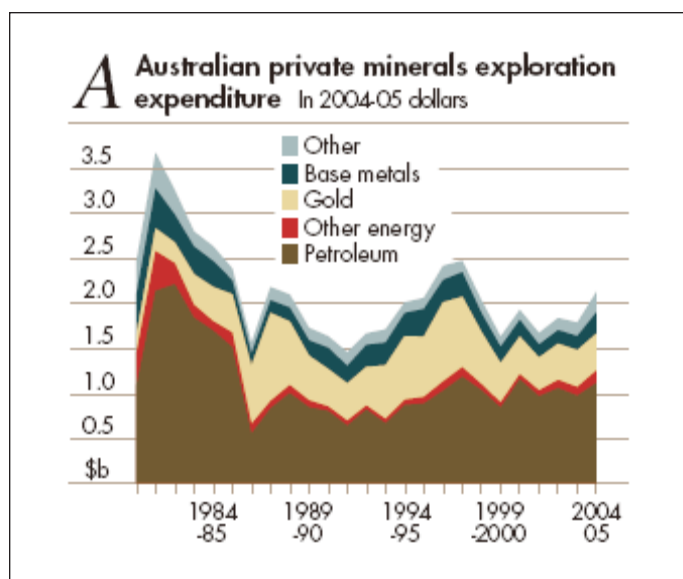
²⁴ MINVAL has adopted a forex rate of A\$1 = NZ\$1.08 for this paper.

The New Zealand Minerals Industry Association (NZMIA) has claimed for some time that there is the potential to double total annual output of minerals from around NZ\$1 billion NZ\$2 billion by 2010 and the Institute of Geological and Nuclear Sciences conservatively valued New Zealand's metallic mineral resources alone at more than \$85.5 billion in 2000,²⁵ with additional growth potential for industrial minerals, ironsands and coal (mining only some 3Mtpa presently).²⁶

Whilst the above favourable economic statistics for Australia demonstrates the importance of the Minerals Industry to Australia's economic well-being, it and the NZMIA data shows how much a local vibrant Minerals Industry could contribute to New Zealand's future economic well being. Hence, it highlights the continuing need for New Zealand to try and attract more exploration effort right now, so that it can develop a wider and more significant range of mineral exports and so prosper from the global mineral commodity boom. This is not news to many in New Zealand, but the contrast between the approach and legacies of both countries has never been so dramatic in potential economic benefits.

Australian exploration scene 2004-05

In 2004-05, all major commodity categories recorded increases in estimated minerals exploration expenditure. Australian minerals exploration expenditure, in real terms (2004-05 dollars), for the period 1980-81 to 2004-05 is shown in Figure A below (from ABARE)²⁷.



Total Australian minerals exploration expenditure in 2004-05 is estimated to rise by 23% to A\$2.13 billion. In real terms, estimated expenditure in 2004-05 was the highest since 1997-98 and was equal to the average annual expenditure on minerals exploration in the past 24 years. All major commodity categories, except gold, recorded expenditure in 2004-05 above their 24 year averages, according to ABARE (2005).

Expenditure on gold exploration is estimated to rise by 3% in 2004-05, to A\$408M in real terms, being less than half the level in 1996-97 (A\$878M). In 2004-05, gold exploration expenditure is estimated to account for 47% of total non-energy exploration expenditure, compared with its share in 1996-97 of 68% (ABARE, 2005). Exploration expenditure decisions have been adversely affected by rising industry costs (especially for labor and fuel).

²⁵ *Globe Newsletter*, July 2004, No 14, page 1 [newsletter of NZIGNS].

²⁶ For information o specific minerals outlook visit the NZMIA site (www.minerals.co.nz) or that of Institute of Geological and Nuclear Sciences (www.gns.cri.nz).

²⁷ ABARE (2005). *Australian Commodities, June Quarter*, vol 12, no 2, p1.

Base metals exploration expenditure is estimated to rise by 57% to A\$238M in 2004-05. This expected increase is mainly attributable to strong rises in expenditure on nickel and copper exploration (up 67% and 77% respectively) and reflects the substantial rises in global prices in the past two years and a positive outlook for A\$-denominated prices in the short term. Estimated expenditure on base metals was the highest since 1997-98 (ABARE, 2005).

Apart from the main exploration sectors referred to above, three other commodities — iron ore, coal and uranium — are expected to have significant expenditure increases in 2004-05. Spending on iron ore exploration is expected to double to an estimated A\$128M, reflecting faith in China's demand continuing. Uranium expenditure is also expected to double to an estimated A\$21M stimulated by significant rises in world spot prices in the past eighteen months. Expenditure on coal exploration is expected to rise by over 40% to around A\$117M reflecting high global demand and substantial price increases, particularly for coking coal (ABARE, 2005).

Impact of the the China factor

China is the key to global mineral project developments in the future is whether its current phenomenal growth offsets the expected global slowdown of the developed countries and for how long? The Australian Bureau of Agricultural and Resource Economics (ABARE) forecasts that China's expected growth is expected to be around 8%pa for the 2006 calendar year (compared to forecasts of average growth in the OECD, US, Japan and Europe of around 2%; and 3% for Australia and New Zealand²⁸). The main unknown, for those seeking successful promotion and funding of their mineral ventures today, is whether China's relatively recent huge impact on commodity prices will continue for a short few years or decades? **Is it a bubble or a super cycle?** The difference is critical because miners and their investors/lenders have to take a long view when assessing outlays for exploration and development and the overall economics of competing projects. This is in the context of also growing company profits and shareholder value to attract funds over the long term.

Fortunately, China's sheer size (1.4 billion population) and its formidable infrastructure needs (as workers relocate from rural to urban areas) suggest that its insatiable raw material need is likely to continue over the long term. Also, its amazing GDP growth has continued unabated for several decades and its rapidly expanding consumer market, growing middle class and savings rates underpin this growing appetite. To put it into perspective, China constructs a city the size of more than 4 x Auckland (or a Brisbane) every month.²⁹

The recent views of BHP Billiton (BHPB) are particularly relevant. In its latest results, released on 24th August 2005, BHPB announced its very profitable 2004-05 financial results - a profit of US\$6.5M (A\$8.6M or around NZ\$9.3M) which was the largest profit in Australia's corporate history. In the accompanying *Presentation Notes*, Chip Goodyear paid tribute to China's significant contribution and predicted it foreshadows a likely longer term "*secular change*" by saying³⁰: "*From a BHP Billiton point of view, we do think there is a reasonable probability that it [a super cycle] is going to occur.*" BHPB is among many influential global miners that have been saying this for some time and observing that global commodity price growth is not only due to China's needs. Other Asian economies have also grown and together with India's resurgence is not just producing short term, cyclical tightness in commodity markets with high metal prices. MINVAL believes that it is evidence of a long-term structural change in demand for raw materials – a super cycle. BHPB also noted that diversified miners do best and that successful miners need to diversify their markets (China still contributes only 12.6% of BHPB's total company revenue).

²⁸ In the year ended March 2005, the NZ economy grew 4.2% (up from the 3.6% growth recorded in the March 2004 year, according to Statistics New Zealand (<http://www.stats.govt.nz>).

²⁹ China, *Personal Investor*, September 2005, page 79. Assumes Auckland's population is some 0.4M and Brisbane's is 1.7M people.

³⁰ BHPB Transcript, *Results for Financial Year 2005*, page 8 [www.bhpbilliton.com].

The recent Chinese RMB revaluation was neutral to positive to the Minerals Industry, in BHPB's view, but it is a future wild card. That said, BHPB admits that the current China-driven, soaring commodity price boom probably cannot go on forever – but it will be very profitable for those who can take advantage of it, however long it lasts. China's economic activity must go up and down, like all economies over time, whilst miners everywhere respond by bringing on new production. However, the rather slow supply-side response to this unexpectedly high global demand has magnified China's current effect. This supply-side slowness is due to a number of reasons, including shortages of skilled mine workers, tradespeople and professionals; shortages of mining equipment & services; lack of capacity is compounded by logistical and infrastructure bottlenecks in many regions; consolidation in the Minerals Industry means less responsive competition from fewer players; a general lack of preparedness due to being in a commodity price cyclical downturn for a while; regulatory regimes throughout the world are slower and more onerous today and the fact that Civil Society's influence has grown globally and negotiations are more complex & slower today.

It is also worth noting that BHPB still continues to assume real metal prices are declining over the long term in its internal price forecasts for project evaluation. This very long term trend is too often ignored by mining promoters. One must not also forget that 2001-02 (only a few years ago) saw real commodity prices at the lowest they have been in the last 200 years. See BHPB Slide 15 Figure below for a 200-year graph of US Commodity Prices that show the key events and their effects on prices.

Thus, the lesson is to be able to respond quickly to such windows of opportunity. BHPB put it well recently³¹: *“We benefit from the technical skills that come with having operated these businesses in an industry that has shrunk over the last 30 years in terms of the number of companies as well as the number of individuals participating in our industry. We have used our tentacles into the marketplace to understand where our customers want to take their business. We have used our global footprint to identify opportunities, not just from the market point of view, but from where products are produced.”* The BHPB approach is useful, but it is obviously not your average exploration and mining company. To June 2005 it spent US\$533M (including US\$182M capitalised expenditure) on exploration and capital expenditure was US\$2,624M. Most junior explorers raise only A\$3M - A\$5M in a float.

Whatever the ultimate answer to China's future impact on the global Minerals Industry, one must remember that it is one thing recognise China's potential impact, but another to make money in China.

AMP Capital Investors chief economist (Shane Oliver) believes that China is likely to surpass the US to be the world's biggest economy by 2014. *“China's inflation rate remains benign - at just 1.8% for the year to May - and the pressure to grow the economy strongly enough to absorb the 20 million rural workers moving to the cities each year remains intense,”* said Dr Oliver.³²

If New Zealand is to join Australia as a beneficiary of this Chinese growth spurt, it needs to find and fast-track develop more of the mineral resources likely to be in demand, such as coal. Australia's Resources Minister (Ian Macfarlane) announced at the first Australia-China Coal Summit that ABARE *“estimates that China could potentially be a A\$2 billion coal market by 2010”*. According to Macfarlane:³³

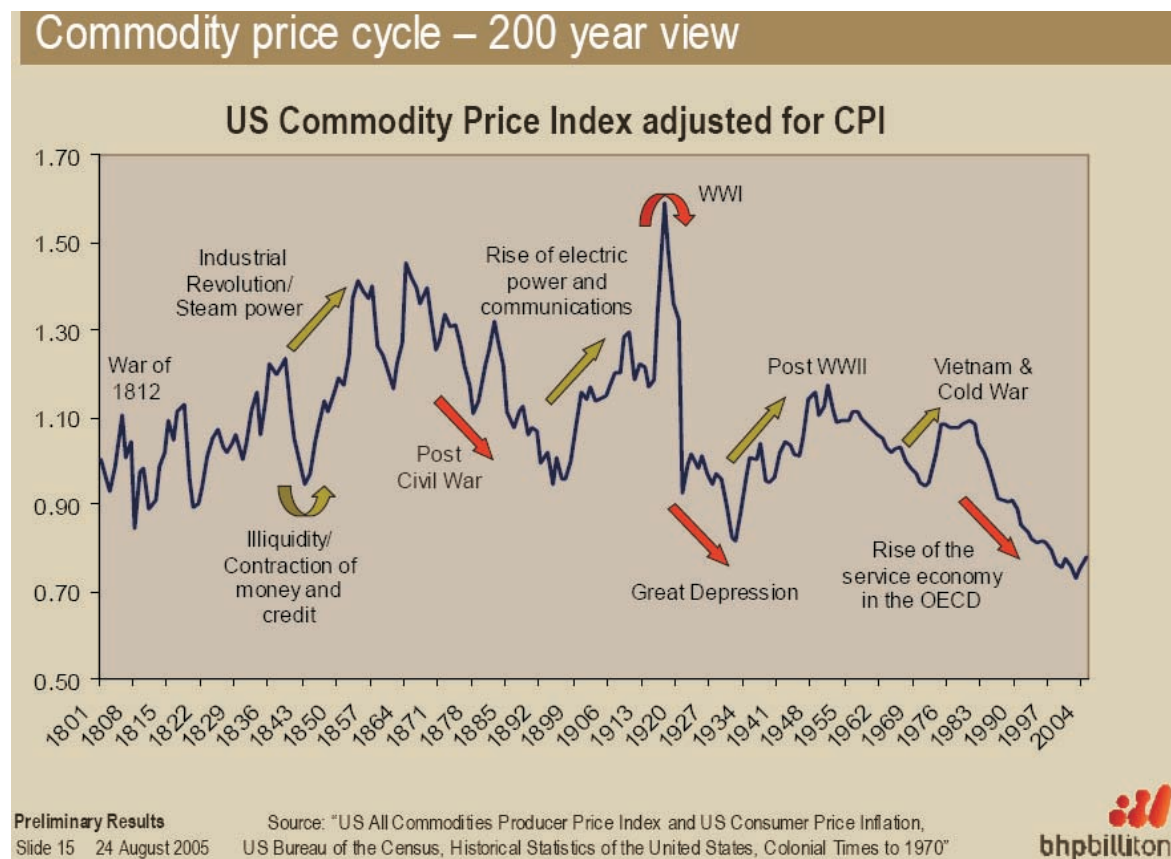
- In 2003-04, Australia's exports to China included iron ore worth more than A\$1.8 billion, crude petroleum worth A\$670M and coal worth A\$325M;
- China's coal consumption reached 1.6 billion tonnes in 2003, up 66% from 2000; and
- 500 coal-fired power stations are planned for China over the next 10 years.

³¹ BHPB Transcript, Results for Financial Year 2005, page 9 [www.bhpbilition.com]

³² *AusIMM Week-In-Review*, Week 26 (week ending 26 June 2005), Item 18.

³³ *AusIMM Week-In-Review*, Week 26 (week ending 18 July 2005), Item 14.

See also an ABARE 2004 report on China's energy sector, for a bullish picture of China's impact over the next decade.³⁴



Conclusions

Good decisions require good input data to all relevant people. This data must be effectively communicated, retained and protected as part of future liability management (on an individual or company basis). Effective and real public relations capacity is a must.

Also, when allocating promotional and funding management responsibility, those responsible must have the authority to control or influence those tasks; the instructions must be clear and well known. The Minerals Industry, whether here or abroad, is governed by a complex regulatory and legal system that constantly changes. Companies and increasingly individuals are being held liable for any breaches, involving civil or even criminal sanctions. This puts personal assets at risk and can involve imprisonment. Owners, company directors, managers and employees, together with consultants, contractors and suppliers of equipment or consumables are all at risk for decisions to act (or failure to act) in managing operations or carrying out directions, as well as for the actions of others under their control.

The critical step in preparing for inevitable conflict and disputation is to be able to avail oneself of the **Due Diligence Defence**. That is, demonstrate (with hard evidence) in respect of any task undertaken by a professional that all that could be done had been done to avoid the problems that has arisen. More specifically, that it can be reasonably claimed that any defect was caused by a reasonable mistake; or resulted from reasonable reliance on information supplied by another person, (preferably after independent verification); or was caused by the act or error of another person beyond one's control. Don't ignore personal liability.

³⁴ Schneider, K. (2004). China's Energy Sector: recent developments & outlook, June Quarter, ABARE Australian Commodities, 11 (2): 299-305 (available at <http://abareonlineshop.com/product.asp?prodid=12740>).

Technical professionals tend not to initially consider, to the required depth, the 'soft' issues, the promotional issues and the funding issues. The emphasis is on project hardware and the better understood technical, operating/capital cost and regulatory risks. Hence, ensure the right specialists handle these critical functions ('hire brains' from accredited institutes).

Typical issues that impact on project viability and/or investment attractiveness and which are often relegated or forgotten include the impacts of construction delays and slow production ramp-up (eg, due to unexpected local opposition, procurement, human resource and contract management problems) on debt reduction schedules. Poorly understood and documented future mine closure provisions (site clean-up/environmental remediation) are another. However, the reality is that poor Resource/Reserve estimation is often the pivotal reason mines fail. In the main, it is not due to finding less tonnes, but much lower than expected grade/quality. Related technical concerns are poor mill recovery and lower than expected annual production rates.

All the risk areas identified can cause a project to fail but the other "project-killers" are worth restating eg, Tenement title insecurity and /or partner disputation; changed environmental constraints; sovereign risk (socio-political/regulatory uncertainty & security deterioration); and natural disasters.

Too often, there is little real cultural awareness of the environment in which the project will operate and the real likely impact on project funding if Civil Society (with its global reach) and the specific community in which the project will operate, becomes hostile. Typically those emotionally based problems that money just can't fix cause the greatest concern if not identified early. That said, the project has to make money!

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