

Review of the Coast Information Team
Economic Gain Spatial Analyses:
Minerals Sector Study
and
Oil and Gas Sector Study

10 October 2003

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1. Introduction

Review Initiation and Task

This review was initiated at the request of Dr. Rod Dobell as part of a peer review process examining the work initiated by the Coast Information Team (CIT). In this case, the task was to undertake a peer-review of the work summarized in the following two documents:

1. BriMar Consultants Ltd. and Finisterre Holdings Inc., March 2003, EGSA Minerals Sector Study; and
2. Brimar Consultants Ltd., February 2003, Queen Charlotte/Hecate Basin Oil and Gas Potential.

Review Questions

The following questions served as a guide for the review:

1. Is the methodology used in this work sound? For example:
 - for translating theoretical estimates of the resource potential to concrete assessments of the value of deposits in the ground;
 - for taking into account relevant market prospects; and
 - for representing the cost conditions in production so as to arrive at reasonable estimates of net values arising from extraction.
2. Are the assumptions that underlie this work apparent and are they appropriate?
3. Do the results give a fair picture of the implications of mining (and oil and gas) activities for comparison with other activities; would they facilitate fair/sensible land-use decisions?

Review Process

The review process included the following steps:

1. on September 9, 2003, documents were circulated for review by each member of the review team;
2. an initial conference call was convened October 2, 2003 during which each member offered his observations and a general conversations ensued;
3. a draft report was prepared based on the initial review; and
4. a second conference call was convened October 7, 2003 to review and finalize the draft report.

Conflict of Interest

By accepting to participate in the peer review process, all four participants in this review warrant that the opinions provided are offered as an independent expert in the field and opinions are not vetted or directly influenced by an employer, client, or another third party.

2. Conclusions

Mineral Sector Study

1. The Mineral Sector Study provides a useful baseline assessment that draws on current and historic practices and paradigms in the mining industry. In that regard and as a retrospective analysis, cost estimates, the focus on gold and copper as analytic examples, and the deposit types examined are appropriate.
2. Many individual parameters used in this report could be subject to lengthy debate. However, our opinion is that such debate would result in little helpful change given the impact of the larger issues identified below.
3. The Mineral Sector Study is particularly useful in that it demonstrates the complexity of trying to estimate the dollar value of undiscovered and undeveloped mineral resources. In our view, this complexity undermines the validity of the dollar estimates of the future value of the minerals sector to such an extent that it brings into question the value of initiating this study in the first place. Below we identify a number of methodological limitations. However, the fundamental weakness lies with the definition and appropriateness of the task in the first place.
4. The language of the report is technical and rich in insiders jargon. These characteristics limit its usefulness for communicating to multi-interest planning tables that include many individuals who may not be familiar with the mining industry.
5. There are a number of methodological limitations of the Study. They include the following.
 - a. The study lacks any forward-thinking consideration of scenarios that would bring to light:¹
 - implications of alternative future supply, demand, and related pricing conditions (these implications are driven by global trends and could drive prices and demand up or down);
 - implications of the emergence of new discoveries and deposit types (the northern diamonds, Voisey's Bay nickel, the recent play in gemstones in BC and the Yukon, and non-metallic industrial minerals are all examples of this); and
 - implications of the emergence of new technologies that may translate to dramatically different mining practices (such a robotics leading to a shift away from large open pits to smaller underground operations that dramatically reduce the environmental foot-print while enhancing worker productivity and cost per unit of commodity produced).
 - b. There is no sensitivity analysis related to a number of factors including discount rate, production cost estimates, probability of discovery, probability of development; and the employment – of productivity relationship. It is not possible to predict the future. However, by generating such a sensitivity analysis, current decisions can be made with a fuller understanding of implications, regardless of the future that unfolds.

¹ One option in this regard would be to have worked with the report: *Learning from the Future – Alternative Futures of the North American Mining Industry* which was produced as part of the work of the project Mining, Minerals and Sustainable Development North America (Winnipeg: International Institute for Sustainable Development, 2002).

- c. There is no examination of why there is currently very little mining in the CIT area – nor has there been historically. This fact should have been discussed in the report and any explanations for this situation used as a point of reference for any conclusions.
- d. There is no consideration of the growing importance of non-metallic industrial minerals and construction aggregates (including for example, sand and gravel, cement, stone, clay, kaolin). These are particularly important for coastal British Columbia with tidewater access opening up potential markets in both the US and Asia.
- e. The study calculates a flow of dollars resulting from mining activity and implicitly assumes that these dollars will trickle down to benefits. However, there is no discussion about just how this will happen, what the distribution of those benefits will be, and in particular the implications to coastal communities. This is a significant oversight given the central role of First Nations in coastal B.C. and the pioneering role they have played in establishing negotiated agreements to ensure a fair sharing of costs, benefits, and risks. Such “Impacts and Benefits” agreements are becoming standard practice in the minerals resources industry.
- f. There is a lack of fully examining direct, indirect, and induced or diffuse social, economic, and cultural implications. (Direct, indirect, and induced effects are described in the box below.)

1. **Direct Effects:** includes direct employment, human capital investment, macroeconomic effects and environmental effects.
2. **Indirect Effects:** includes downstream effects, upstream effects, transfer of know-how and technical efficiency and social-infrastructure provision.
3. **Diffused Effects:** includes demonstration effects and sectoral impact.

Source: West, Gerald T., and E. I. Tarazona, 2001. Investment Insurance and Development Impact. Washington D.C.: Multilateral Investment Guarantee Agency (MIGA)/World Bank Group.

- g. The full project life cycle begins with exploration and extends through detailed site investigation, estimating, construction, operation, temporary closure, closure, decommissioning, and post closure. Each phase has significant positive and negative implications that require assessment. The implications of this full project life cycle should be examined more broadly than is done by the Study.
 - h. Referencing is incomplete. There are many quoted statistics for which a specific reference is not provided thus preventing the tracing of sources.
7. The application of sustainability concepts as now committed to and sought by many in the mining industry is not reflected in this Study

8. Some assumptions seem to be reflective of dated thinking that is now changing. An example is the blanket judgment that tourism and mining are mutually exclusive. From a heritage perspective, there are a number of examples that demonstrate this attitude to be overly narrow including Barkerville/Wells, Dawson City, and Britannia Beach. Highland Valley Copper is an operating producer that welcomes a significant number of tourists. While a mine may not present an attractive target for those seeking a wilderness experience, there is significant interest for those interested in industrial and cultural, activity and history.
9. Undertaking analyses that are intended to support current decision-making by attempting to consider future conditions is difficult. This is the domain of formal scenarios analysis, a technique that is not intended to predict the future, but rather is designed to identify a range of plausible futures in the hopes that the future that unfolds will be within the envelope of futures considered. Part of the foundation of undertaking this technique is to specify a time horizon or time horizons for the analysis. Without such a time horizon the effectiveness of the study is significantly undermined.
10. The implications of the above limitations vary in the sense that some of the factors would drive the resulting estimate of the dollar value of undeveloped mineral wealth up while others would drive it lower. The result is much uncertainty about the analysis. Understanding the nature and degree of this uncertainty is critical for good decision-making and a discussion of this factor is completely lacking in the report. Furthermore, in the case of mining and minerals, this uncertainty is so significant that we must question the application of this kind of analysis for use as a basis of land-use planning and decision-making: it does not provide the foundation of insight necessary to fairly represent the implications of mining or to provide an adequate foundation of mining-related knowledge.

Oil and Gas Sector Study

This study is presented as a cursory review of the estimates of the potential for oil and gas development in the study area. In our review, the following concerns emerged:

1. Consideration of the exploration phase of activity should have been matched with a more considered treatment of the production and closure phases. Prince Rupert is identified as a potential regional centre but other shore facilities and distribution infrastructure which will likely have significant implications for the coast are not addressed.
2. While presenting interesting and useful analogous information from Canada's east coast, the experience off the coast of California (which may be just as relevant to the coast of BC) was not mentioned; and
3. Social, economic, and environmental implications from North Sea oil and gas development are also relevant and were not mentioned.

This work is self described as speculative and as such, it does not provide the foundation of insight necessary to fairly represent the implications of the oil and gas sector in the land-use planning and decision-making process.

3. Suggestions for Moving Forward

A useful starting point for moving forward would be to identify the appropriate mix of conditions that would support mining and oil and gas activity in a way that was consistent with ideas of sustainability. Presumably, that means a form of activity that would provide communities, non-government interests, and the province as a whole with certainty regarding ensuring a positive contribution to human well-being and ecosystem integrity. Simultaneously, companies are looking for certainty related to land tenure and predictability regarding the regulatory regime.

The concept of “certainty” means different things to different people. Certainty for an exploration geologist may mean full access to land all of the time while for an environmentalist may mean no access any of the time. In the end, all implicated parties are looking for a degree of fairness and integrity in decision-making processes within some reasonable time frame. This is the real key to certainty – not a particular end result considered “certain” according to one set of values, but rather certainty in the fairness and integrity of the decision-making process. It is this realization that underlies the following comments.

Mining and Minerals

The central weakness of the Study’s method comes from its attempt to put a present day monetary value on an undiscovered and unknown resource. It is a resource whose use has evolved dramatically over time as humankind has evolved. That use will continue to evolve and what is of great value today may have little tomorrow and vice versa. Thus, in suggesting ways to move forward, we turn to methodologies that do not depend on calculating dollar values of undiscovered mineral resources. Rather, they have at their core an emphasis on developing processes of decision-making that are trusted by all implicated interests. These are dynamic processes that are based in ideas of continuous learning and adaptation.

As it turns out, British Columbia is not the first to face this challenge. Others are moving to approaches for integrating mining and minerals values in a land-use planning and decision-making that do not depend on “guesstimates” of the dollar value of undeveloped and undiscovered deposits. Rather, the emphasis is put on developing a collaborative and continuing process of identifying and mapping aboriginal values, mineral potential, and ecological sensitivity. Together, parties discuss and agree on appropriate degrees of access for various activities ranging from zero to full. The process is ongoing and periodic review allows for changing conditions and learning from those changes.

Such a process is underway in Manitoba under the joint leadership of the Canadian Nature Federation and the Manitoba Mining Association. The Government of Manitoba is involved and recently, First Nations have also become engaged. We urge the CIT and participating parties to examine the experience that the Manitoba effort has to offer and consider such an approach for coastal British Columbia.

Oil and Gas

The possibility of developing offshore oil and gas resources is real, though speculative at this time. However, the key to effective planning and decision-making in the region is the full engagement of implicated parties in that decision-making. Speculation about potential value in dollar terms does more to inflame expectations and concerns than to achieve fair and balanced decision-making. Here too the wise way forward is to initiate processes that bring confidence to implicated parties that their concerns will be heard and addressed.