

Royal Commission on Aboriginal Peoples

Rethinking Aboriginal Participation in the Minerals Industry: An Exploration of Alternative Modes

**(with special reference to the potential for small-scale autonomous mineral
development on aboriginal lands)**

FINAL REPORT

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Preliminary Note

This contribution to the discussion of aboriginal participation in the Canadian minerals industry complements a series of other studies and focuses on particular issues associated with this theme. The document was first submitted in March 1994 and reflects events up to that point in time. Subsequent revisions have related mainly to typographic and textual matters, including the clarification of certain arguments and ideas based on peer reviews and additional readings of the manuscript. The text of the three main case studies relating to specific aboriginal experiences in both Canada and the United States were reviewed by the key informants themselves and their suggestions were also incorporated.

The discussion which follows represents an alternative perspective on possibilities for increasing aboriginal participation in the minerals industry. The analysis and conclusions presented are those of the author and do not necessarily reflect the point of view or perspective of the Royal Commission or of the Department of Mining and Metallurgical Engineering, McGill University.

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1.0 Introduction

With the signing of the Nunavut Land Claim Agreement in 1993, the impending settlement of additional land claims within the next few years, and the anticipated devolution of self-government, the formulation of effective natural resource and environmental management strategies will become increasingly important to aboriginal communities. As well, on-going federal-provincial and mining industry discussions concerning the challenges and constraints to Canadian mining industry competitiveness,ⁱ recently culminated in a commitment to create a broader consensus, a "comprehensive accord and vision" for the future of Canada's mining sector. Such an accord may well have significant implications for natural resource development within aboriginal traditional territories.

This new round of discussions is referred to as the **Whitehorse Mining Initiative**, and participation has been widened to include additional "stakeholders", including representatives of aboriginal, environmental, and labour groups. The proponents of the Whitehorse Mining Initiative have suggested that a "comprehensive vision" can only emerge if the process and content reflect the needs and concerns of the various stakeholders. They have also implied that their ultimate objective is a plan of action, in which all stakeholders will have explicit roles and responsibilities.

The mining industry has strongly argued that improving the economic competitiveness of Canadian mines, will necessitate removing as much ambiguity and uncertainty as possible from the mineral supply process. Given the known and inferred mineral potential of many aboriginal reserve and claims areas, aboriginal communities can expect to find themselves under increasing pressure to make their own contribution to the Whitehorse process, most probably by demonstrating a willingness to clarify and commit to "reasonable and workable" management regimes as soon as possible.ⁱⁱ

2.0 Importance of Developing an Aboriginal Minerals Policy

Aboriginal communities will be in a better position to respond to such initiatives, if they have already grappled with the hard issues surrounding mineral development. For some communities, the critical issues may be environmental/cultural; for example, will mining and its related activities place undue pressure on the traditional resource base, on community cohesion and family relationships, etc ? For others, the issues may be economic; will the income returned to the band and its members in the form of wages and/or direct cash payments be sufficient to justify the disruption and disbenefits that may occur ? The identification and clarification of the community's critical concerns, not only in terms of mining activity, but also in terms of its own development goals, will allow it to begin to establish ground rules and guidelines, i.e. a policy framework, for mineral development within traditional territories.

The historical experience over the past 30 years with mineral resource development in developing countries, in underdeveloped areas of industrialized countries, and in aboriginal territories, underscores the importance of communities having a clear sense of their own priorities and direction.ⁱⁱⁱ Without this, **it will be next to impossible to recognize, or take best advantage of opportunities that mineral resource development may or could present for the wider social, economic and/or political development of the community.** It will be difficult to shape policies and establish frameworks which reconcile aboriginal needs and concerns with the limitations and potentialities of various forms of mineral development. Only when a band's development goals and objectives are clearly defined, can it begin to define its own answers to basic questions like:

- under what terms and conditions should mineral resource development be permitted or promoted; e.g. what kinds of mineral projects should be encouraged/discouraged (open pit, underground, placer), and at what scale(s) of plant and operation (small, medium, large); how much mineral development is desirable (one project, as many as possible); what incentives and/or restrictions should mineral development be subject to, if any;
- how can the potential social and economic benefits to the community be maximized and potential social and environmental costs minimized^{iv};
- what kinds of technical, financial and political support and means will be required to ensure effective participation and oversight for the level and kinds of mineral development envisaged.^v

Whatever the outcome of community deliberations, the formulation of coherent and consistent policies and decision-making frameworks will be as important to community leaders as it will be to mine promoters and developers, irrespective of whether they are non-native or aboriginal. The importance of undertaking the exercise is accentuated by recent developments in the international mineral economy, which have made investment in the mineral resources of other countries more attractive. Canadian based mining companies have begun to shift their attention from Canada to those developing countries with good mineral potential, where political stability and "economic rationality" appear to have returned, such as Chile, Bolivia, Ghana and Zimbabwe. This shift of Canadian acquisition and exploration dollars to other countries means that Canadian mineral deposits must now compete globally for investment interest. Unit capital and operating costs, as well as tax and social burdens must be competitive with new projects in developing countries. This is especially important where infrastructure and transportation requirements and costs may be similar due to remote location.

The industry points to still unresolved land claims and uncertainties surrounding self-government as major disincentives to investment within aboriginal territories. This reticence on the part of major mining companies to commit themselves to exploration and development on aboriginal lands can be viewed either negatively or positively. In the first instance (negatively), it may be perceived as a pressure tactic on the part of industry to make aboriginal communities more compliant and flexible vis-a-vis the interests and concerns of the mining companies. On the other hand, the industry's hesitancy may provide an additional opportunity for bands to "get their act together" before making irretrievable commitments to a particular development path.

3.0 Objectives of Study

Recognizing that mining and minerals engineering are not customary activities or career paths for aboriginal peoples in Canada, the objective of this paper is to broaden the discussion of development options that may be available to aboriginal communities. This will necessitate shifting attention from the predominating paradigm of "job and business opportunity creation" attached to large-scale, externally owned, export oriented mineral development to consideration of other models. In particular, the possibilities for smaller, locally or jointly owned commercial operations will be explored.

This is not to say that the predominating paradigm cannot be improved or modified to enhance the scope and nature of aboriginal participation in large-scale mining projects. This is in fact one of the principal objectives underlying the current negotiation of impact and benefit agreements between some aboriginal communities and mining companies (for example, between the Northern Quebec Inuit and Falconbridge, between the Inuit of Nunavut and Metal Mining, among others). This is also not to say that different scales (small, medium, large) and modes (individual or band proprietorship, joint venture, external ownership/management, etc) of mineral development are mutually exclusive, or that they cannot or should not co-exist within a region or territory. It should be understood that the terms of reference for this paper did not include a mandate to elaborate strategies for improving participation in large scale or externally managed mineral development projects, which is covered in other sectoral submissions, but rather to broaden the discussion of options, with a focus on "self-development" possibilities, especially small-scale, locally owned or partnered, commercial mining enterprises.

Within this context, reference is also made to the experience of First Nations living in the United States, whose circumstances may be different, but whose "resource" development problems are similar. US tribes have generally had less than satisfactory experiences with mineral development on and off the reservation and have explored a variety of options for improving the net benefits to their members, including but certainly not limited to the development of locally owned and managed mining enterprises. As well, this paper reviews recent experience and policy shifts in developing countries, where mineral policy makers have finally come to recognize the value of fostering small-scale, as well as large-scale mining.

Clearly, what works in some environments, for some communities, may not work or be the preferred path for others. Taking a wider view and evaluating a range of possibilities will hopefully enable aboriginal peoples to make decisions about mineral resource development that will ultimately increase their participation in the management of their own natural resource base, as well as control over their own social and economic futures.

4.0 Current Modes of Aboriginal Participation

While most recent attention has been focused on aboriginal peoples as wage workers in the mining industry and related service sectors, aboriginal involvement in mining activities on or near aboriginal lands occurs in a variety of direct and indirect ways. In Canada, as in many other

countries, the predominant mode of participation for most people, including aboriginals, is in the form of wage and salaried labour either for formal mining enterprises, owned and operated by non-native parties, or for spin-off businesses and service enterprises that may be owned by aboriginal or non-native parties or both jointly. Individuals and bands are also involved in ad hoc mining of certain minerals for local use and consumption; and in a few cases, in small, incorporated mining and/or manufacturing enterprises. At present there are no full-fledged partnership arrangements with established (non-native) exploration and mining companies.

4.1 Direct Modes

The oldest mode involves the extraction and local use of mineral-based materials for tools, building, adornment, and arts/craft production. **Ad hoc quarrying** of minerals, e.g. turquoise, soapstone, clays, by aboriginal artisans for craft purposes continues to be practised, usually on an as needed basis and as a sort of informal, small-scale "artisanal" mining. Informal sand and gravel pits also exist on many reserves, exploited for local use. While sand and gravel and certain traditional minerals like "soapstone" have been reserved for aboriginal use in certain contexts, e.g. the James Bay and Northern Quebec Agreement, the extent of the mineral resource base and of actual indigenous mining activity within Canada's aboriginal traditional territories is not well documented or understood.

For a number of reasons, which will be discussed later, **aboriginal ownership and operation of commercial mining and/or processing enterprises** has been and continues to be quite rare. There are only two documented instances of independent aboriginal mining enterprises in Canada. One company, a miner of clays and fabricator of burnt clay products, has been in business for 84 years, but only came under band ownership and management in 1980.^{vi} It is located on the reserve. The second business was incorporated in 1990 to mine granite blocks, which are exported to Europe in raw form.^{vii} In this case, land claims have yet to be settled, and the quarry is located on crown land. Both operations are wholly owned community enterprises.

The principal avenue for direct aboriginal participation has been through **wage and salaried employment**, both on and off-reserve, in non-native owned mines. The latest survey^{viii} suggests that aboriginal people account for 4% of the mining industry workforce, while approximately 700,000 native people comprise 3% of the total population of Canada. This is not surprising given

the rural character of most mining activity in Canada and the proximity of aboriginal communities to established mining areas.

4.2 Indirect Modes

Native people have also been able to participate in new **business and service opportunities** presented by mining operations. Here too the principal mode of involvement has been as wage labour in non-native enterprises. Employment and training opportunities have been further enhanced when mining companies have incorporated and enforced preferential hiring criteria into their contract tender and review processes.

Individual native entrepreneurs and small aboriginal owned private companies have at times been able to cash in on some of the new business opportunities. In a number of cases, bands have organized new enterprises and/or have reorganized existing enterprises to bid on project contracts. Trucking, air transportation, road construction and maintenance have been major targets for aboriginal entrepreneurship at both the group and individual levels. Other more technically oriented support services, such as drilling, blasting, assaying, project and environmental engineering, that mining companies often use, are currently beyond the capabilities of most bands. In the case of band initiated ventures, some are wholly owned, while others have been set up as joint venture partnerships with non-native firms. For example, the Tahltan Nation (British Columbia) through its Development Corporation and wholly owned subsidiary, Spatsizi Construction, built a portion of the Golden Bear Mine's access road, and collaborated with Stewart Construction (a non-native firm) to built the mine's settling pond dykes. The Lac La Ronge Indian Band (Saskatchewan), on the other hand, chose to work with established non-native companies to organize new northern based enterprises. Through its Kitsaki Development Corporation, the band set up two joint venture companies - Northern Resources Trucking in partnership with Trimac Transportation, and Six Seasons Catering. The Band has the controlling interest in both companies (a 51% : 49% split).^{ix}

In retrospect, aboriginal involvement in the mining industry has largely occurred as wage labour for mining companies and mine service contractors. A number of band owned and private aboriginal enterprises have won service contracts from the mines. While some are wholly owned aboriginal ventures, others are joint ventures with established non-native contractors. Equity participation of aboriginal communities in mining companies or mining projects has not yet been realized in

Canada, although it is currently being negotiated in a few instances. Unknown numbers of individuals currently mine sand and gravel and a few other minerals on an ad hoc basis, principally for local use. There are only a few small commercialized mining ventures, owned and operated, by aboriginal corporations in the country.

5.0 Evolution of the Prevailing Employment and Business Opportunity Model

The predominant pattern of employment participation and business opportunity creation can be understood as an outgrowth of Canadian government policy towards mineral development on aboriginal reserves and in the north, combined with the limited and highly informal character of most indigenous mining activity and its remote location and distance from international markets. For both federal and provincial levels of government, larger scale, export oriented mining was seen as an important way of making the cash economy accessible to aboriginal communities living in isolated areas where a non-renewable mineral resource base was known to exist, but few or no commercial activities had as yet been established. Federal government departments in particular understood their mandate as one of promotion and facilitation, - creating mechanisms, incentives, support programs that would attract and ease the establishment of large scale commercial mining enterprises on or near reserves.

The model was one of externally financed, privately owned, export oriented mining. Government policy initiatives concentrated on

- (1) establishing procedures for transfer of rights to mineral developers (e.g. the Indian Mining Regulations);
- (2) establishing precedents for hiring and employment of aboriginal peoples (hiring guidelines, training programmes, socio-economic agreements);
- (3) promoting ways by which aboriginal communities could share in the commercial opportunities generated by such activities (e.g. loan funds, socio-economic agreements);
- (4) minimizing potentially adverse environmental and social impacts (through regulation, impact assessment review processes); and
- (5) in a few cases, sharing the direct economic benefits of mineral development through the division of royalties.

Twenty years ago the federal government even went so far as to take an equity position in the Strathcona Sound mining project (i.e the Nanisivik mine) in order to facilitate its development.

There is no doubt that these initiatives did promote mineral development in areas of Federal jurisdiction. Private mining companies which developed properties on or near reserves undertook good faith efforts to employ and involve aboriginal people, but most companies tended to regard preferential hiring objectives as targets only, subject to the availability of appropriately qualified personnel, rather than firm commitments to recruit, train and advance aboriginals. As well, most

mining companies resisted locking themselves into preferential contracting arrangements with aboriginal enterprises.

6.0 The Experience of Aboriginal Communities with Mineral Development

For aboriginal peoples in Canada, as elsewhere, the critical issues with respect to mineral development on or near aboriginal lands have included sovereignty and decision-making, safeguarding the viability of the traditional resource base and lifestyles, and maximizing economic benefits (in terms of employment, business opportunity, compensation and/or revenue generation). The historical experience has been mixed to date.

The benefit regimes of formal mines operating in areas where local labour pools are largely unskilled or semi-skilled, underemployed, and/or partly involved in subsistence activities, have been highly circumscribed - largely restricted to the immediately surrounding communities and to direct employment opportunities for unskilled/semi-skilled job functions. Employment levels, while slowly increasing, remain low relative to the composition of the local labour pool. Job assignment has remained limited to low skilled job categories, with little evidence of improvement thus far.^x

Work and service contracts for local entrepreneurs have also been limited to certain areas of activity (e.g. transportation, custodial, minor construction, catering, site security) and have tended to be relatively small in size and scope (with the exception of transportation and materials handling contracts). Local social infrastructures have benefitted primarily from new or expanded recreational facilities. In a few cases, bands have shared in provincial mining royalties, but the existence of distinct federal and provincial jurisdictions has sometimes interfered with the distribution of funds to eligible communities (e.g. northern Saskatchewan).

Recent environmental experience appears to have been neutral thus far, with traditional resource bases not having been jeopardized or seriously disturbed. Unfortunately no substantive data appears to have been collected or published on the impact of mining activities on harvests or participation levels in traditional activities. This may be partly due to "a tendency to undervalue continuing aboriginal dependence on the land"^{xi} and the "official" belief that the "harvesting of 'renewable resources' by hunting, trapping and fishing" plays a relatively minor role in band income

and employment.^{xii} Nor has the impact of wage labour in the mines on dietary habits and the health and well-being of employees, their families, and local communities been tracked.

As the majority of mineral development to date has occurred off reserve, aboriginal groups have not had a strong legal position from which to promote and protect band interests. The record of company-community interaction has not always been positive, with communities often learning about exploration projects or prospective new mines after the fact. There are no mandated direct consultative processes in place for off-reserve mineral development, nor have exploration and mining companies necessarily felt obliged to "consult" on community concerns or even inform communities in advance of activity. Indirect consultation has occurred within the framework of federal/provincial environmental assessment and review processes, which are invoked when mining permits are sought.

The pattern that has emerged is one of mining companies demonstrating willingness to discuss community concerns and negotiate understandings and agreements with respect to various types of economic benefits (usually jobs, business opportunities and contributions to social infrastructure and environmental issues) only after becoming serious about the possibility of developing a property. Such discussions have resulted in a series of "socio-economic" and other agreements between bands and companies, often promoted and sanctioned by provincial government (e.g. Ontario).^{xiii} While these agreements have articulated aboriginal concerns, concretized company policies and intentions vis-a-vis employment and other benefits, and established formal mechanisms for communication and dispute resolution, they have also reaffirmed the managerial control and operational decision-making authority of the company in virtually all areas, including employment and contracting. Band input when it has been formalized is on a "say what's on your mind" basis only.

The experience has been different on reserve land, where community consent together with federal government approval is clearly required for non-native mineral development. However, the whole business of "enabling" non-native mineral development on reserve land can become quite problematic insofar as bands are required to "surrender" rights in order to convey rights to non-native individuals or corporations.^{xiv} In spite of this difficulty, commercial mining operations under non-native ownership and management have been established on a few reserves (e.g. Sechelt, B.C. and Six Nations, Ontario).

In the case of the Sechelt, the negotiation of a deal with Sechelt Aggregates Limited (a subsidiary of a Vancouver based company) was greatly complicated by the surrender issue.^{xv} It was not until 1986 when the Sechelt Indian Band achieved self-government (i.e. legal standing) and a measure of control over the administration of its natural resource base that it was able to consummate the deal with Sechelt Aggregates, some 16 years after the company had made its first proposal to the Band. With self-government came fee simple title to all of its reserve lands as well as the authority to negotiate, contract, and engage in business without the requirement of final federal approval.

7.0 Weaknesses of the Present Approach

Some mines have clearly been more successful than others in attracting, advancing and retaining aboriginal employees, and in creating positive business relationships with aboriginal enterprises. The obstacles to achieving success have varied from company to company and community to community. Pre-existing conditions, for example,

- variability in the quality and availability of labour and entrepreneurial skills and experience between communities,
- lack of local familiarity/interest/experience with full-time wage labour and industrial work routines and requirements,
- local ambivalence towards entering the wage economy on a full-time basis,

have undoubtedly worked to complicate and impede efforts. But variations in company attitudes, flexibility, creativity and commitment to finding ways of attracting and retaining aboriginal employees and of providing meaningful and significant business opportunities have been equally problematic. In some situations, jurisdictional and legal issues, such as the surrender process, have further complicated matters for the aboriginal community. But more than these, there are a number of inherent difficulties with the model itself that have not necessarily been recognized and addressed.

The model is based on the imposition of an industrial enterprise in areas of pronounced economic marginality. The process of finding and developing mines is particularly undemocratic, and has historically resisted integrating community concerns and input. The model is one of dependent development, whereby the enterprise is set up by outsiders, who determine the terms and conditions of community involvement. Neither the model, nor the legal framework regard the community as an active partner in the development process. As a consequence there has been a failure to properly involve communities in planning and decision-making from the start, i.e. to allow the

community a formal role and social/economic stake in the process of mine development. This has led in a number of instances to confusion, anxiety and dissension within the aboriginal community vis-a-vis the value of mineral development, and its social and environmental trade-offs. It also means that mines do not significantly contribute to the creation of a sustainable economic basis for local empowerment and development, even in the short term. Mines do not strengthen the local communities tax base; instead communities continue to depend on external transfer payments. Mining activities are consequently perceived as both opportunity for and threat to community survival.

Many companies do not recognize this as a fundamental problem, and do not understand why communities do not readily welcome them with open arms. Some tend to see "socio-economic" agreements as ways of buying the peace, after the fact - with recreational facilities, jobs and some business opportunities; while other companies view accommodation as part of their corporate responsibility as good citizens to ensure that some benefits accrue to local people and communities.

In both cases there is a failure to acknowledge the need to create new kinds of relationships with aboriginal communities.

One recent variation on this theme is for the company to deliberately isolate the mining operation and work camp from the local community, as much as possible; an aim being to shield the community from possible adverse social impacts. What is not understood is that while such approaches minimize contact, they also minimize opportunities for the local community to participate in the project. Unless the company is willing to take countervailing measures to ensure aboriginal participation and preference with respect to employment and business opportunities, the benefits of even employment participation will be further reduced.

"Opportunity creation" has failed to become a consistently effective format for aboriginal participation for the reasons described above. Under such circumstances, the best that can be hoped for is a modest number of jobs and contracts. This self-limiting and largely laissez faire approach has managed to increase expectations within aboriginal communities, without being able to deliver the goods in the quantities and of the quality promised.

8.0 Issues in Aboriginal Participation: the US Experience

In the United States, sub-surface rights to minerals under aboriginal lands have long resided with the aboriginal community, but were administered on its behalf by the Bureau of Indian Affairs.

Until 1982, it was illegal for Indians to initiate the external development of minerals which lay under their lands. Instead the development of Indian mineral resources were subject to bidding and leasing procedures similar to those used by the US Bureau of Land Management for minerals located under public lands.^{xvi} A more simplified and flexible mechanism for the marketing of Indian resources was set up under the Omnibus Tribal Leasing Act of 1938 and was administered by the Bureau of Indian Affairs.^{xvii} While the Bureau had only limited knowledge of the mineral resource base of Indian tribes and allottees^{xviii} at the time, large reserves of coal, uranium and oil and gas were later identified with the assistance of the US Geological Survey. Between 1938 and 1974, 11 coals leases had been issued, of which four became producing mines. In the case of uranium, 380 leases had been issued, covering approximately 250,000 acres, of which only 3 were in production in 1974.^{xix}

According to the Council of Energy Resource Tribes (CERT), "once an Indian mineral owner was induced to sign a lease - or the government signed it on his behalf - the development of Indian mineral wealth and any related business decisions (the location of roads, use of timber and water to support mining operations) rested solely with the lessee."^{xx} The system provided no built-in protection or guarantees or even a consultation requirement vis-a-vis tribal priorities and values, or respect for sacred sites and the local environment. "The only legal role for the Indian mineral owner was that of passive royalty owner."

8.1 Rejecting the Old System

By the early 1970's, not only did the limited financial returns provided by the fixed royalty system begin to bother the affected tribes, but a spate of other environmental, cultural and self-government issues stirred dissent. For example, in 1972, the Navajo tribe stepped outside of the leasing system and BIA supervision to issue its own guidelines and hold its own closed bid for selected uranium tracts by invitation only. The tribe selected the best offer, which went far beyond the requirements of the BIA's standard leasing format, and negotiated a uranium lease directly with the company (Exxon). The Crow also decided to circumvent the BIA and negotiated directly with Shell Oil. In 1980, after five years of effort, the Crow and Shell signed off on a major coal deal; which included Shell's acknowledgement of the tribe's regulatory authority related to mining activities, employment, health and sanitation, and land use zoning; its taxation authority; and an option to purchase equity shares at a later date.^{xxi} The deals were ultimately approved by the BIA as faits accomplis. In 1973, the Northern Cheyenne petitioned the Secretary of the Department of the

Interior (the BIA's boss) to cancel a series of BIA negotiated coal leases on the basis of various violations of the BIA's own leasing procedures. A year later, the Secretary invalidated the leases, and offered his support for whatever the Tribe determined to do - whether cancelling, renegotiating, or reinstating the old leases, or issuing new leases to other companies.

Resistance to rapid large-scale mineral resource development emerged on many reservations, as resentment at being excluded from decision-making, at having cultural and religious priorities ignored, at having to bear the brunt of adverse environmental and social impacts without realizing a fair share of the benefits, accumulated.^{xxii} The BIA mineral lease came to be regarded as a prime instrument for effecting the transfer of control and exploitation of Indian mineral and other natural resources to non-Indians.^{xxiii} New attitudes and different approaches emerged as the various tribes tried to move beyond leasing to alternative modes of development that would hopefully allow them to better safeguard their cultures and environments, while benefiting from the jobs, revenues, and operating and management experience that mineral development could potentially provide.

8.2 The Concept of Self-Development

Two divergent paths were explored. In the case of those tribes already involved with large-scale mineral developments (for example, the Navajo and the Crow), the new approach was to press for different kinds of arrangements, such as joint ventures or service contracts, with private mining companies, that would provide the tribe with opportunities to participate in project management and to increase their share of the project's benefits (higher royalty rates, profit sharing, employment, training, and new business opportunities). It was hoped that this approach would ultimately create an internal capacity to "self-develop" other mineral resources in the longer term. Because there has been virtually no new development of coal, uranium, base or precious metals on reservations since 1973, none of these alternative types of arrangements have actually been tested viz. hard minerals development.

The other path was to pursue development at a much smaller scale, i.e. small-scale locally operated mining to meet local needs. This would reduce the direct financial gains that could be derived from larger-scale development, but it would short-circuit the route to "self-development". The Northern Cheyenne, Cheppewa-Cree (Rocky Boy), and Assiniboine and Sioux (Fort Peck) tribes in Montana all gave serious consideration to initiating small-scale coal mining ventures.^{xxiv} The Northern Cheyenne actually opened a small coal strip-mining operation, the Midway Project, in

1975, but the lack of appropriate management and production skills and experience led to its abandonment after only one season of mining. The other two tribes never moved beyond the planning stage.

8.3 Legal Empowerment - Mineral Resources

In spite of the new thinking within the various tribes, mineral development, apart from the issuance of a few new leases and the negotiation of a number of agreements, was at a virtual standstill from 1973 on. Finally in 1982, Congress passed the Indian Mineral Development Act (Appendix I), which was designed to provide opportunities for mineral developers and promoters to deal directly with tribal governments, without need for prior BIA or government approval. But as noted above, many tribes had already attempted to move forward. The Act, in fact, served to validate changes that had already occurred in tribal attitudes and practices, at least towards leasing, and was the culmination of an "evolutionary trend towards tribal self-determination in resource development."^{xxv} The Act allowed tribal councils to waive BIA intermediation and negotiate their own agreements with mining companies, including additional compensation or equity participation options, training and employment packages, contract preference clauses, impact mitigation measures, etc. Under the Act, all fiscal and contract terms of agreement became negotiable, but the agreement and any resulting project would still be subject to applicable operating regulations of the Bureau of Land Management and royalty regulations of the Minerals Management Service.^{xxvi}

8.4 Legal Empowerment - Taxation

During the late 1970's into the '80's, tribes continued to evolve as self-governing authorities, and made further headway in areas of standard setting, permitting, enforcement, and taxation as related to mining projects. The power to tax came quickly to be regarded as the linchpin of any tribal strategy to assure sovereignty and independence. The power would provide tribal governments with a means to stabilize tribal revenues, and support the improvement and expansion of tribal services. Furthermore, a number of surveys had revealed major disparities between the financial returns accruing to tribes from the development of their mineral resources and the tax takes of state and federal governments.^{xxvii}

In 1976, the Jicarilla Apache levied a severance tax on oil and gas production on its reservation in New Mexico. Nineteen major oil companies filed suit, arguing that they should not be subject to

tribal regulatory authority nor to double taxation by tribe and state. In the *Merrion v. Jicarilla Apache* decision (1982), the US Supreme Court ruled that "the power to tax is an essential attribute of Indian sovereignty," deriving from a tribe's right to control economic activity within its jurisdiction and to raise money from non-resident individual and corporate enterprises located on the reservation to help cover the cost of providing governmental services.^{xxviii} This action motivated other tribes to take additional steps to force a clarification of tribal taxation authority.

In 1978, the Navajo Tribe enacted a sulphur emissions tax, a business activity tax (or value-added tax) and a possessory interest tax (or property tax). The goal of the first tax was to reduce emissions from the Four Corners power generating stations located on Navajo land. The other two taxes were meant to encourage the employment of Navajo labour and the use of Navajo products and services by providing the tribe with a means to offer incentives in the form of tax credits. When the surrounding states doubled their pollution control requirements and the plants lowered their emissions, the tribe abandoned its efforts to collect on the emissions tax. The other two taxes went to court. In 1985, the Supreme Court upheld the Navajo's right to collect both taxes on non-native businesses operating within the tribe's jurisdiction.

In 1976, the Crow Tribe of Montana enacted a 25% severance tax on coal removed from its mineral estate. The State of Montana had imposed its own 30% severance tax on coal one year earlier. Jurisdictional issues and the pre-existing tax impeded tribal efforts to enforce its own tax. The tribe sued the State of Montana, and in 1988, the Supreme Court refused to review a lower court decision that ruled that state and local governments had no authority to impose tax levies on Crow coal. The Crow received \$ 29 million from the State of Montana in back taxes.

Taken together, these rulings have upheld the rights of Indian tribes to establish their own mineral taxation regimes, and have indicated that state taxes on Indian resources can potentially be invalidated when their collection interferes with a tribe's efforts to secure economic development on the reservation.

8.5 Legal Empowerment - Environmental Protection

Tribes also moved forward in other areas. In 1977 Congress passed the Surface Mining Control and Reclamation Act (SMCRA), and was prepared to give tribes regulatory authority over coal mining on the reservation under the act. The affected tribes requested additional time to be able to

examine the jurisdictional issues and to review their own thinking about how tribes could best participate, especially in light of their own lack of technical expertise and institutional resources. The newly established Office of Surface Mining (OSM) was asked by Congress to study the issues and the options for future tribal participation in the regulatory process.

A few years later CERT submitted its own proposal for Indian surface mining legislation, which was not acted upon. Instead the coal tribes received training from the OSM and worked with it to enforce federal mining and reclamation regulations. Three tribes - the Crow, Navajo and Hopi - developed their own sets of mining codes and regulations, reclamation codes and permitting/licensing procedures^{xxxix}. But over time the impetus on the part of the government to transfer regulatory authority in one form or another to the tribes seemed to wane, and government reticence seemed justified by the tribes' continuing lack of trained personnel, political factionalism, leadership changes, and concern over the potential for conflicts of interest between the tribe's role as both regulator and owner (i.e. equity participants in some of the private mining operations).^{xxx}

This was not the case for other areas of environmental concern and regulation, such as water and air quality, where federal laws were ultimately amended to provide specific administrative and regulatory authority to tribal governments.

8.6 Laguna Pueblo - Tribal Initiatives in Reclamation Law and Site Rehabilitation^{xxxix}

The now defunct Anaconda Copper Company developed and operated the Jackpile uranium mine on the Pueblo of Laguna for over 30 years. During its time, it was the largest open pit uranium mine in North America. Operations ceased in 1982, and close to 1000 people, most of them Laguna residents, lost their jobs.^{xxxix} Anaconda had been bought out in the 70's by ARCO, a major US oil company. The Pueblo and ARCO entered into negotiations for the reclamation of the Jackpile Mine, even though there was no legal obligation on the part of ARCO to reclaim the pit. At the time, there was no equivalent to the Surface Mining Control and Reclamation Act (1977) for uranium mining, and there was no federal or state requirement on owners to reclaim their operations before abandonment. Some tribes, particularly the Navajo, had ended up using monies allocated to them by the federal government for coal mine reclamation for uranium mine reclamation. Federal regulations for uranium mine reclamation were only approved in 1989, due in large measure to the efforts and involvement of the Laguna Pueblo.

A reclamation agreement was finally signed by the two parties in 1985. In exchange for a sum of money to be paid over five years, the Pueblo released the company from any present or future liability for the clean-up of the site. The Pueblo consequently assumed responsibility for organizing and overseeing the reclamation of the Jackpile Mine. The tribal council decided to set up an independent construction company, Laguna Construction, to undertake the reclamation work on a contractual basis with the council.

From 1982 to 1989, the Pueblo collaborated with a variety of federal government agencies to develop appropriate guidelines, regulations and procedures for the reclamation of the mining site. The reclamation plan was designed by an outside engineering firm. The Bureau of Indian Affairs imposed a number of strict requirements on project implementation, insisting on the Pueblo's need to contract with an independent outside project management team. Instead the Pueblo employed an individual reclamation project engineer on a limited term contract to work directly for the Pueblo; two local people were also taken on and trained as technician/assistants.

The construction company purchased the necessary heavy equipment, mainly off-highway trucks, bulldozers and backhoes, and hired a staff of about 80 people, including many former miners. Actual reclamation work only commenced in 1990, after all the regulations, permits and approvals were in place. Laguna Construction is expected to complete the contract by this summer, under budget and 1.5 years ahead of schedule. The project manager's contract will terminate with the completion of reclamation, and one of the now experienced technicians will be given the responsibility for all monitoring and any follow-up and finishing work that may be needed. After all of the expenditures have been tallied, the Pueblo will be left with a sizeable amount of the ARCO contribution still intact.^{xxxiii} This money will be used by the tribe for the expansion of services and the development of additional economic activities on the reservation.

As a result of the project, Laguna Construction has become one of the nation's fore-runners in uranium mine reclamation, and has already secured a number of small mill tailings reclamation projects in Grants, New Mexico area. The company may be in line for the contract to reclaim a major mine site on the Yakima reservation in Washington state.

8.7 The Current Situation

American Indian tribes first assumed responsibility for exercising their own proprietary rights, then assumed various regulatory responsibilities (including permitting, administration of tax regimes and enforcement of certain environmental standards), and finally began to promote mineral resource development on their own reservations as a means to generate tribal revenues and jobs. The potential for direct economic returns and non-cash benefits of on reservation mineral development only became substantial after tribes began negotiating their own deals. While the Navajo-Exxon and Crow-Shell agreements were never implemented,^{xxxiv} both tribes, as well as the Hopi, have been able to renegotiate their existing coal leases within the past few years. Since 1985, coal revenues have been steadily increasing, earning the tribes additional millions in revenues, although coal production has actually remained stable.^{xxxv} Increased earnings have been due to both the new lease terms and the increasing price of coal. To these tribes, mineral production has historically accounted for 75 - 95% of the total income generated on the reservation.

Despite the Crow and Navajo efforts, and the passage of the Indian Minerals Act of 1982, there has been no new coal or uranium development on reservations since 1973; neither has there been any new base or precious minerals development. As of today, there are only four operating coal mines (on the Crow, Navajo and Hopi reservations); all uranium mines and mills have been closed. Copper mining on the Papago Indian Reservation (Arizona) which commenced in 1961 under the old leasing format, has been consolidated under a single company's ownership and management.

Smaller negotiated leases have been written for sand and gravel deposits located near large urban areas (for example, Sandia Pueblo outside of Albuquerque, and Seattle) and for phosphates.^{xxxvi} A number of Indian owned private companies and individual entrepreneurs are also mining and selling sand and gravels, usually off of public domain allotments to off-reserve clients. A few tribes operate their own quarries for employment and training purposes. The Nez Perce of Idaho took over a limestone mine that was presumed to be close to depletion 8 years ago. The mine is still operating, although it is partly subsidized by the tribe and maintained primarily for the jobs and training it provides. On two reservations in the northwest US, the tribal councils have recently secured highway reconstruction and maintenance contracts with the federal highways department; the contracts also provide for the tribes to supply the aggregates required for the road base.

After a long hiatus, related in part to the recession/slump which has afflicted the international mineral economy for the past decade, there has been a resurgence of interest among non-native private mining companies to develop non-fuel mineral resources under Indian lands - principally

copper and gold.^{xxxvii} Possibilities now exist for the development of gold /platinum and gold mineral deposits on the Flathead and Rocky Boy reservations in Montana. The San Carlos Apache of Arizona have spent the past one and one-half years negotiating a deal with BHP Minerals for the development of a major copper ore body. The Torres Martinez Desert Cahuilla Indian Tribe (California) are negotiating with Kennecott (gold), and the Metlakatla Indian Community (Annette Islands Reserve, Alaska) are in the final stages of making a deal (gold).

The Crow (Montana) have renewed their efforts to develop mining and related enterprises on their reservation.^{xxxviii} Working with a private energy consultant and promoter, the Tribe prepared proposals for the construction of two coal-fired power plants and a new coal mine, as well as additional industries that could make use of the power plants' waste steam (co-generation businesses). These enterprises would basically be tribal-owned with some outside participation. Unfortunately, there has been an overabundance of inexpensive power in the Pacific Northwest, and a market for this new supply has not as yet been identified. The unfavourable market situation has prevented the Tribe from being able to implement its plans, but the Tribe remains hopeful. The Tribe still sees the development of its coal and the establishment of linked enterprises as the most credible and effective way of being able to provide income for the Tribe and significant numbers of jobs for tribal members (75% of whom are unemployed).

Throughout the whole period, Indian concerns with respect to off reservation projects were not generally given much attention. Many communities have been impacted in one way or another, often adversely, by the operation of uranium mines and mills in close proximity to the reservation. These operations and their impacts on nearby tribal communities and environments is a particularly sensitive issue, which has historically been the focus of much heated discussion and protest.^{xxxix}

Bureau of Land Management leases and environmental impact assessments for coal located near reservations have also ignored Indian concerns. Through the use of the courts and other means, a few tribes have managed to secure impact funds and commitments for additional mitigation measures. Cheyenne objections to the Powder River Basin coal lease sale (1982) resulted in the voiding of the leases by a federal court judge. As a result of the Northern Cheyenne challenge, the Department of the Interior finally included Crow and Cheyenne tribal representatives as ex-officio members of the team responsible for selecting and ranking tracts, and for scheduling lease sales.^{xl} The Ute Mountain Indian Tribe recently negotiated an agreement with a nearby coal mine for preferential hiring of Indian applicants.^{xli}

The development of ancillary business opportunities related to mineral development both on and off of reservations seems also to have been problematic. It is not clear how successful tribal initiatives have been in achieving higher levels of employment and skill development on the reservation. According to one aboriginal civil servant, most tribes are still struggling to upgrade technical and management skills in mining.^{xliii}

Within the federal domain, a major restructuring of authority and responsibility between agencies occurred in the mid-1970's. Since 1977, the BIA Division of Energy and Mineral Resources has been actively involved in conducting mineral assessments of Indian lands. About half of tribal trust lands in the continental US have now been surveyed, but recent (1993) budget cuts have curtailed the number of new assessments that the Division can undertake. Since 1988, the Division has been supporting tribal efforts to promote their own "properties" to industry, by providing appropriate documentation and forums for investment promotion; it has also set up a national Indian energy and mineral resources data base, and just launched the Native American Energy and Minerals Institute to "familiarize and train tribal natural resource managers in the fundamentals of energy and mineral resource management on reservation lands."^{xliiii} The Bureau of Land Management, as well, recently established the Native American Minerals Policy Office (NAMPO) based in Santa Fe, New Mexico.^{xliiv} Its mandate is to promote communication and develop a national mineral policy to facilitate implementation of laws related to Native American mineral development.

Despite these initiatives, federal agencies have not always been efficient in strengthening tribal regulatory capabilities. Sometimes, important follow-up work to Congressional initiatives have gotten lost in the bureaucratic maze. For example, supporting regulations for the Indian Mineral Development Act of 1982 are only now being completed by the BIA, while initial plans to transfer coal surface mining and reclamation authority to tribes have been aborted.

The Council of Energy Resource Tribes continues to provide technical support and assistance to tribes interested in assessing or developing their energy resources. Assistance extends to areas of fiscal and environmental management. CERT also operates scholarship, internship and educational programs. While the Council's mandate does not include non-fuel minerals, it has extended its work into areas concerned with alternative renewable energy. CERT has also become involved in supporting member tribes' efforts to diversify their reservation economies.

Despite disappointment with the level of mineral development activity during the past 20 years, creativity has been sorely lacking. Few new "development" ideas or initiatives have emerged (with the exception of the Laguna Pueblo mine reclamation project) - neither from within the Native American community nor from government agencies having responsibilities in this area. The current emphasis among some tribes, particularly those sitting on high value minerals, is clearly on "cutting deals" with private developers.^{xlv} These will undoubtedly include some sort of equity participation component. The abandonment of the standard lease and the focus on new types of arrangements with major mining companies has been a major step forward, and adherence to this path is understandable given the high levels of underemployment and poverty that continue to exist on most reservations today.

In retrospect, however, the comments of David Smith (an assistant Dean of Harvard Law School) regarding the evolution of mineral agreements in developing countries, ring as true today as when they were first made almost 14 years ago.^{xlvi}

Despite the apparent evolution of mineral contracts into ... new forms of joint ventures, production-sharing contracts, service contracts, management contracts, and so forth, we are still often the victims of the concession mentality. We are still thinking about "contracts", not national development. ... **American Indian tribes seem to suffer from this same problem.** [emphasis mine]

The same challenge remains for tribal decision-makers today as before - "to recognize the possibilities available for making natural resource development part of the tribe's economic, social and political development program," and not simply to encourage a deposit's exploitation because the "external" interest is there.

In light of the lack of large-scale mineral developments during the last 20 years, it is unfortunate that more serious effort and attention were not invested by tribes in testing the alternative "self-development" path of small-scale mining (see above p. 15). There has been little tribal interest in promoting entrepreneurship in mining at the local level except for the few examples alluded to above, and efforts in this area have been restricted almost exclusively to non-metallic industrial minerals.^{xlvii} Support from government and non-government institutions for initiatives in this area has been non-existent or lukewarm at best,^{xlviii} but then this is nothing new for even internationally the small-scale mining sub-sector has been largely neglected or ignored.

9.0 International Context for Small-Scale Development of Mineral Resources

Historically, new mines in Canada and the United States were limited in size by the need to become self-financing as quickly as possible. The initial scale of development was large enough to make the operation technically viable but small enough to require only a modest capital investment. The mine was developed to allow for the expansion of production as soon as the mine's earning power was secured. Profits and in some cases, loan funds, were reinvested, enabling small mines to grow on the basis of their demonstrated commercial viability.

During the 1960's and early 1970's, the 'framework' for new mine development was transformed. A variety of factors, including escalating unit capital and operating costs, more stringent environmental standards and government regulation, more complex and sophisticated mineral marketing arrangements (esp. the globalization of many commodity markets), together with technological advances, moved the industry in the direction of seeking to increase project size. Smaller projects were avoided by the major mining companies, which more and more focused their exploration and acquisition efforts on large, world class deposits. Deposits with smaller production potential were left to smaller companies with lower overhead requirements and cash flow expectations to either develop or forget.

The search for large, world class deposits was internationalized. Major new mines were found and developed in Asia, the Pacific, and Africa during the late 60's and early 70's. Even as some governments and analysts were promoting large-scale high technology mining as "motors" for the economic growth and development of "underdeveloped" regions, it soon became apparent to many that large-scale mining's local social and economic benefits were quite limited. In most cases, the mines operated much like economic "enclaves", isolated from the local economy but linked to the industrial centres.^{xlix} The principal benefits to be derived from such ventures were financial and accrued largely to the national sovereignty as foreign exchange receipts and government revenues in the form of royalties, taxes, dividends from equity participation, and/or infrastructure usage fees; but even these returns were sometimes questionably small in comparison to the company take.

These deficiencies, along with questions of sovereign control and management of natural resource activities, became the focal point of much concern and dissatisfaction among governments, and led ultimately to the renegotiation of mining agreements (e.g. Papua New Guinea), or to the government becoming a major or majority shareholder of existing mines (e.g. Ghana, Zambia), or

to outright nationalization (e.g. Chile, Peru). In almost all of the mineral producing developing countries, state mining companies were eventually established. Only a few like Botswana and Papua New Guinea chose to remain at arm's length, to maintain minority positions, and to depend strictly on regulation of a foreign owned, privately developed industry to secure its share of the wealth generated.

From the late 1970's to the present, there appears to have been a "serious structural breakdown" in the growth rates of demand for many mineral products. According to a number of analysts,¹ this breakdown has been due to both the slowdown of economic growth in the industrialized countries and the declines taking place in the intensity at which minerals are being used in retrofitted and new industrial production processes. This does not reflect a temporary drop in consumption, but rather a "saturation of demand", which is expected to persist into the foreseeable future. Over-investment during the '70's also resulted in a situation where the reserves of major metals have grown at a faster rate than the growth in metals demand. Consequently, supply during the '80's has been more than adequate to meet actual needs. Prices remained stable or declined, and investment in exploration and the development of new projects became highly selective of both target countries (e.g. Australia, Canada) and commodities (mainly precious minerals).

Exploration dollars expended in developing countries declined dramatically, as multinational mining companies preferred to consolidate their investments in less risky political environments, and state mining companies found themselves unable to direct part of their cash flows into the renewal of their resource base. During the 1980's, many developing countries also came to operate under the constraints of "structural adjustment" programmes designed and imposed by the World Bank as the price for further extensions of Bank credits and loan facilities. Consequently, many countries have been forced to re-evaluate their past approaches to mineral development.^{li} Many of the countries which had long rejected foreign ownership of their mining sectors are now privatising state industries and welcoming back private foreign investment. Policies are being made more explicit and transparent, while mining codes, taxation regimes and environmental regulations are being revised to reflect the new economic priorities and to facilitate foreign investment.

Interestingly enough, Papua New Guinea, an island state located in the south-west Pacific, is one of a few developing countries which started with and maintained an open-ended and positive approach to large-scale foreign investment in mining. Despite its seeming success at managing the dependence of its budget and economy on mineral exports^{lii}, the country has been experiencing

major resistance to its policies from locally impacted communities. Bougainville Copper's Panguna mine, opened in the early '70's and one of the world's richest copper mines, was prematurely shut down in 1989, in response to attacks on personnel and property by local "rebel" landowners. Their anger and resentment over the loss of their traditional lands and villages 20 years earlier had festered and finally erupted. Protests and conflicts between local landowners and mine developers have also occurred at the country's two other major operating mines. These current problems reflect the failure of the government and companies to properly accommodate from the very start the needs and concerns of the local communities most directly affected by mineral development.^{liii}

While many developing countries are now fiercely competing for foreign investment dollars for their mineral sectors,^{liv} they continue to express concern over the limitations and weaknesses of foreign-owned large-scale mining projects as "motors" for social and economic development at the local level. They have also begun to pay serious attention to supporting and strengthening indigenous entrepreneurship in mining at both the medium and small scales. This is seen as a possible way of remediating the developmental deficiencies of large-scale mining.

9.1 Advantages of Small Mines

There are compelling reasons for countries to re-examine their attitudes to small-scale mining. Smaller mines offer the prospect of making significant contributions to the physical and economic development of rural areas and to the improvement of rural standards of living on a longer term basis. Such activities can provide a basis for additional economic opportunities within the area, contribute to the development of community infrastructure, and lead to improvements in the quality of life for workers, their families, and the community-at-large^{lv}. They can become vehicles for upgrading the trade skills and management abilities of local people.

Small mines, when properly organized and managed, have the potential to become economically self-sustaining and net positive generators of wealth, much of which can be retained within the community. Smaller, locally owned and operated mines, offer other advantages^{lvi} and possibilities as well, including:

(1) operation in remote areas with more modest infrastructural support,

- (2) extraction of smaller deposits that may otherwise be non-viable on the larger scale,
- (3) reduced capital requirements and lead time to bring into production, (4) better capability to respond to and survive market vagaries, and
- (5) less disruption of the existing social and economic framework.

Small mines provide employment and cash income, serving as points of entry to the cash economy, often complementing rather than displacing traditional economic activities, such as farming and fishing.^{lvii}

9.2 Definition of Small Mines and Their Contribution to Mineral Output

The definition of what constitutes a small mining operation has been widely discussed.^{lviii} Various criteria have been suggested, including mine output, labour productivity, organization of the enterprise, level of technology, among others. In a few cases, countries have established legal definitions; some of which are straightforward (e.g. Ghana, Chile, Peru), and others quite complex (e.g. India), reflecting local practice and realities.

In a major study^{lix} of the issues surrounding small-scale mining, quantitative classification limits between size categories were suggested:

TABLE 1
SCALE DIFFERENTIATION BY MINE OUTPUT

Size Segment	Mine Output (run-of-mine ore, tonnes per day)	
	Underground Operations	Surface Operations
Very Small Scale Mining	below 20	below 40
Small Scale Mining	20-200	40-400
Medium Scale Mining	200-2000	400-4000
Large Scale Mining	above 2000	above 4000

These divisions are somewhat arbitrary, based on generally accepted international criteria, but the divisions between segments are often blurred and what is regarded as small in an industrialized country like Canada could well be classified as medium scale in a developing country.

A broad distinction can also be drawn between manual or low technology, very small-scale mining, sometimes referred to as "artisanal", "peasant" or "subsistence" mining, and small-scale commercialized ventures using more modern, often adapted industrial technology. "Peasant" artisanal mining is typically low tech, and limited to near surface workings of precious minerals, strategic metals, industrial minerals and mineral-based building materials. Artisanal mines may or may not be legally registered. Virtually all "informal" mining is artisanal, although high levels of management and organization exist in some of these operations, e.g. alluvial diamond mining in Angola, and historically underground gold mining in Ghana. Semi-mechanized and mechanized mining are with few exceptions organized, formal activities.

In all the major mining countries of Latin America, in parts of Asia and Africa, there is a long history of small, semi-mechanized, commercially viable mining, undertaken by local entrepreneurs or by cooperative associations. In North America and Europe, both small commercial and artisanal operations were the historic basis for large-scale mineral development. Small commercial operations in North America are still significant contributors to mineral output, although they operate at a larger scale than what is found in many developing countries.^{lx}

Certain minerals occur in deposits that are much more amenable to mining at the smaller scale than at a highly mechanized, large scale. Frank Skelding in a seminal study produced for the United Nations over 20 years ago surveyed small-scale mining activities in developing countries and identified those minerals, which had attracted much small-scale entrepreneurship.^{lxi} Certain strategic metals and industrial minerals, such as barite, chromite, feldspar, gypsum, mercury, talc, tungsten, were then and continue to be mined primarily by small-scale operations, while most other minerals had an important small-scale component, including copper, gold, lead, manganese, silver, zinc. These minerals are summarized in Table 1. John Carman, the UN specialist on small-scale mining, drew on Skelding's work to compile an estimate of the value of small-scale mining to world mineral output of non-fuel minerals as of 1982,^{lxii} (Table 2). He concluded that the share of small mines was about 16% of the global output, an "impressive" figure, achieved in the face of generally difficult physical conditions, apathy, disinterest on the part of bankers, unusually high vulnerability to pricing decisions made in far-off parts of the world...^{lxiii}

He further suggested that this contribution was likely to increase, not only because of the difficulties and risks associated with the financing of new large scale operation, but also country concerns over the ownership and control of their non-renewable resource base.

The importance of small-scale mining (both artisanal and commercial) to mineral production of certain commodities in many countries has led to the organization of six major international conferences since 1978. These meetings took place in Jurica, Mexico (1978)^{lxiv}; Taxco, Mexico (1981)^{lxv}; Helsinki, Finland (1983)^{lxvi}; London, England (1987); Ankara, Turkey (1988)^{lxvii}; and Harare, Zimbabwe (1993)^{lxviii}. Two important regional seminars were also held in Mombasa, Kenya (1980)^{lxix} and Calcutta, India (1991)^{lxx}. All of these discussions were specifically devoted to the identifying the prospects for small-scale mining, as well as the problems which needed to

TABLE 2
Scale of Mining Operations Typically Associated with Specific Minerals

<i>Typical scale of mining operations</i>					
<i>Mineral</i>	<i>Usually large</i>	<i>Medium to large</i>	<i>Usually small</i>	<i>Important small-scale component</i>	<i>Co-product or by-product</i>
Antimony				X	X
Asbestos		X		X	
Barite			X		
Bauxite	X				
Beryllium			X		
Bismuth				X	X
Boron		X			
Cadmium	X				X
Chromite		X		X	
Clays			X		
Cobalt				X	X
Columbium			X		X
Copper	X			X	
Feldspar			X		
Fluorspar			X		
Gold		X		X	X
Graphite		X		X	
Gypsum			X		
Iron Ore	X				
Lead		X		X	
Magnesium	X				
Manganese		X		X	
Mercury			X		
Molybdenum	X				X
Nickel		X			
Phosphate rock		X			
Platinum group		X			X
Potash	X				
Pumice			X		
Salt		X		X	
Silver		X		X	X
Sulphur		X		X	
Talc			X		
Tin		X		X	
Titanium		X			
Tungsten			X		X
Vermiculite			X		
Zinc		X		X	

TABLE 3
Estimated Value of Small-Scale Mining in the Production of Non-Fuel Minerals
(as of 1982)

Mineral	Gross Value of Output (\$ Millions)	Share of Small-scale Mining (%)	Gross Value of Small-Scale Mining (\$ Millions)	Price (US\$)	Quantity (Thousands)
Antimony	126	45	57	1.07/lb	59 st
Asbestos	1,444	10	144	355/mt	4,311 mt
Barite	300	60	180	38/st	7,887 st
Bauxite	3,008	Negligible		40.42/mt	74,441 mt
Beryllium	38	100	38	6.30/lb	3 st
Bismuth	15	Negligible		1.87/lb	4 st
Boron	778	Negligible		311/st	2,503 st
Bromine	620	Negligible		0.75/lb	413 st
Cadmium	39	Negligible		1.11/lb	16 mt
Chromite	633	50	316	58/st	10,907 st
Clays	2,592	75	1,944	varies	149,803 st
Cobalt	675	10	68	12.50/st	27 st
Columbium	97	Negligible		3.04/lb	16 st
Copper	12,812	8	1,025	0.73/lb	7,963 st
Feldspar	124	80	99	33/st	3,745 st
Fluorspar	745	90	670	149/st	5,003 st
Gold	16,060	10	1,606	376/tr.oz	42,713 tr.oz
Graphite	221	90	199	364/st	607 st
Gypsum	682	70	477	8.46/st	80,616 st
Iron Ore	32,638	12	3,917	41.72/lt	782,302 lt
Lead	1,977	11	217	0.26/lb	3,450 mt
Magnesium	731	Negligible		1.34/lb	273 st
Manganese	1,634	18	294	66/st	24,754 st
Mercury	77	90	69	377/fl	204 st
Molybdenum	158	Negligible		7.90/lb	100 st
Nickel	4,512	Negligible		3.20/lb	705 st
Phosphate rock	3,788	10	379	31/mt	122,202 mt
Platinum group	1,801	Negligible		280/tr.oz	6,431 tr.oz
Potash	3,830	Negligible		146/mt	26,230 mt
Pumice	114	90	103	9/st	12,702 st
Salt	2,703	20	541	14.53/st	186,000 st
Sand & gravel	10,103	30	3,031	3.23/st	3,128,000 st
Silver	2,962	10	296	7.95/tr.oz	372,528 tr.oz
Stone	14,957	30	4,487	3.78/st	3,957,000 st
Sulphur	5,471	Negligible		108/st	50,660 st
Talc & pyrophyllite	182	90	164	24/st	7,595 st
Tin	3,118	15	468	5.87/lb	241 mt
Titanium	413	Negligible		84/st	4,922 st
Tungsten	272	80	218	5.67/lb	24 st
Vermiculite	51	90	46	90/st	564 st
Zinc	<u>5,064</u>	11	<u>557</u>	0.38/lb	6,047 mt
TOTALS	<u>\$137,565</u>		<u>\$21,610</u>		

be addressed to strengthen the sub-sector's contribution to mineral output and social/economic development in the national and international contexts.

The World Bank, a traditional proponent of large-scale mining, commissioned a major review of the issues surrounding small-scale mining, which was released in 1987.^{lxxi} The United Nations Economic and Social Council's Committee on Natural Resources has been receiving regular updates^{lxxii} on the progress of small-scale mining in developing countries since 1985, and has officially recognized small-scale mining's positive potential and the sub-sector's need for more attention and institutional support as valid and major policy issues for developing countries.

9.3 Taking a Fresh Look Internationally

After much disappointment with the presumed "developmental" impacts of mining, particularly at the large scale, governments are beginning to reassess their whole approach to mineral development and to explore a variety of ways of optimizing the return from the nation's mineral endowment; in a growing number of countries, a more balanced approach is being implemented, which puts the stress on private entrepreneurship, both domestic and foreign. This approach, if successful, will ultimately translate into **more opportunities for private entrepreneurship and domestic involvement at all scales of operation.**

As part of the reassessment, a fresh look is being taken at possibilities for upgrading and expanding the small-scale mining subsector where it already exists, and for fostering the emergence of such activity where the mineral endowment permits.^{lxxiii} Some countries, such as Ghana and Morocco, have already taken integrated and comprehensive approaches to structuring and supporting a small-scale mining sub-sector that allows for local participation and ownership at various levels of scale and organization, from the individual to the limited liability company. In so doing, a wide range of legal, financial, commercial, technical, environmental, and social issues have had to be faced and addressed.

At the recent Harare seminar (1993), a major objective of the sponsoring organizations was to have participants who came from over 35 countries shape a set of guidelines to assist both government and non-governmental organizations in their support of small-scale mining activities.^{lxxiv} Small-scale mining was viewed as being able to make its most positive contribution to developing countries when it is formally organized and operating as a commercial entity linked to legal economic activities within the local and national economies. Participants recognized that many obstacles remain to reducing illegal, ad hoc activities and ensuring the emergence and expansion of commercially viable, productive and relatively efficient small and medium mining operations. Such a development path must initially be nurtured and fostered by government authorities and

technical/development assistance groups, until such time as local business, technical, and capital-generating capacity and experience in mining reach a level that enables self-development. The Harare Guidelines were meant to assist in that process (Appendix II).

10.0 Aboriginal Ventures in Small-Scale Commercial Mining in Canada

While international momentum has recently gathered behind the efforts of developing countries and technical assistance agencies to rationalize, support and strengthen small-scale mining entrepreneurship, to increase its economic and technical efficiency and to maximize its social benefits, the same sense of need and urgency has not found its way back to the large industrialized countries, where entrepreneurship at this level remains a low priority item. In Canada, small-scale mining activities are still significant in the Yukon, parts of Ontario, Quebec and British Columbia. The Ontario Ministry of Northern Affairs and Development has in the past sponsored seminars and workshops for small-scale miners. As already noted (p. 5), however, the Canadian aboriginal experience with ownership and management of mineral enterprises has been quite limited. While there is no official federal or provincial interest or policy for promoting these kinds of endeavours among aboriginal communities, some provincial government agencies have actively supported aboriginal self-development initiatives.

Apart from the lack of strong official support, aboriginal entrepreneurship in small-scale commercial mining has been hobbled by a general lack of direct technical and management experience in industrial operations within the community. Few bands have any substantive direct experience with mine development, except as wage labour in large mines. As well, capital constraints have been a recurrent problem, with commercial lending institutions hesitant to lend to aboriginal businesses and government loan and grant processes slow to approve and provide. While the legal framework does not establish clear title to the mineral estate in any province, further complicating access to commercial funds, it does not prevent bands from developing on-reserve mineral resources on their own.

The surrender of rights or interests to the Crown is not an issue when it comes to autonomous mineral development by the band itself. Surrender of rights becomes problematic when minerals are sold, leased, or any other interest granted to non-band parties and has in a number of instances proved to be an obstacle and disincentive to third party mineral investment and development on reserve land. Unfortunately this absence of the surrender issue has not been sufficient, in and of itself, to motivate serious evaluation of opportunities to develop aboriginal owned, small, commercial mining ventures.

The situation is more daunting off-reserve, and in areas of traditional activity, where mineral rights are unresolved, or absolutely vested in the Crown or Province. In this case, aboriginal communities are at a real competitive disadvantage in terms of capital resources, expertise, and familiarity with claim staking and permitting processes vis-s-vis experienced non-native prospectors and established mineral exploration and mining companies.

Despite the general lack of supportive institutional and legal frameworks, two small aboriginal communities in British Columbia and Newfoundland Labrador have decided to own and operate small-scale commercial mines. In the former case, the mine is attached to a pre-existing manufacturing facility, and the Band had a long history of involvement as the principal source of labour for non-native owned mines and manufacturing both on and off the reserve. In the latter case, the idea is fairly recent (1989/1990), and the development of the business has been actively promoted and assisted by provincial government personnel and agencies. These operations are not well known among the wider aboriginal community; their successes and problems are instructive, and consequently, they are described in greater detail below.

10.1 Sumas Clay Products, British Columbia^{lxxv}

Industry came to the Upper Sumas Indian Reserve No. 6, near Abbotsford, in 1910, when the Sumas Indian Band entered into a lease with a non-native company to build and operate a manufacturing facility based on the use of locally available shales and clays. In 1918, the Band agreed to allow the company to mine raw clays on the reserve. Ownership of the plant and mine was acquired by Clayburn Company Ltd in 1948. This company operated on the reserve until 1970; the mining operation was shut down in the late 60's and the plant sold to another non-native company in 1970. The new owner had to buy its raw material from the previous owner, which continued to operate a mine and fabricating facilities off-reserve. While the new owner was interested in identifying and exploiting other on-reserve sources of supply, the Band was not particularly encouraging. The high raw material and energy costs eventually undercut the new owner's ability to operate the plant economically. The company suspended production in 1978 and indicated its interest in selling the plant to the Band.

According to the General Manager of Sumas Clay Products, the Band had been interested for some time in operating its own business. The Band by committing its own accumulated lease funds, along with assistance from various federal programs, was able to purchase the plant. Sumas Clay Products Ltd was formed in 1980.

The new management rehabilitated a brick extrusion machine and converted the plant from clay pipe manufacturing to burnt bricks.

Initially, Sumas was forced to depend on the neighbouring Clayburn mine as its source of raw shale and clays. However, DIAND, at the Band's request, conducted a geological assessment and diamond drilling program on the reserve's clay and shale resources. The study suggested that there remained 300,000 to 500,000 tonnes of mineable clays and shales of various qualities on the reserve. In 1986, Sumas Clay began supplying its brick plant with raw clays from its own mine on-reserve, designed and developed with technical assistance from Indian Minerals West. The company is now mining at a rate of 15,000 tonnes per year. Drilling and blasting was initially contracted out to two trained Band members using leased equipment; however, in 1993, the company purchased its own second hand air-track drill for use at the mine and elsewhere on the reserve. The excavating and loading is carried out by contractors from a neighbouring community, the Seabird Island Band.

The mine provides seasonal employment (May-October), while the plant provides work on a year round basis. In the best of times, the plant employs 50 people, most of whom are Band members, but is currently operating with a staff of 12. The market to which Sumas Clay sells, i.e. residential brick, is a tough market in which to operate; it is also seasonal. The company competes for small orders in Vancouver, only 50 km away, and in Washington State, and manages to survive on the basis of constant turnover of product. However, this marketing approach has never yielded enough extra cash to mount a proper sales campaign. Furthermore, the company has been unable to secure a line of credit from commercial institutions, and consequently operates strictly on cash flow. Government funding is not easy to access, and requires an investment of \$ 2.00 to every 1.00 obtained.

Previous to Band ownership, the company employed Band members primarily as "trench" labour. Now, Band members hold positions at all levels, and many of the employees are cross-trained in a variety of jobs. This alone allows the company flexibility in accommodating employees during fishing season. To younger people, the manual labour of the mine and plant lack appeal, but the company hopes to attract some youth into areas of office administration, bookkeeping and data processing.

While feelings among Band members regarding the company are mixed, on the whole, the community regards the experience favourably. While Sumas Clay Products can only be regarded as a marginally economic operation, it has provided Band members with on-reserve learning opportunities in skilled trades, management and business functions. It also allowed a small Band (only 200 people under the new definition) on a small reserve to assume control over the rate and disposition of their non-renewable resource endowment. The company would probably not have managed to survive as well as it has, if the Band did not have a long experience and familiarity with mining and manufacturing. The knowledge and skills picked up as "trench" labour served the Band well in its new situation as owner/operator. The Band recently opened a rock quarry in collaboration with a non-native local entrepreneur.

10.2 Torngai Ujaganniavingit Corporation, Labrador^{lxxvi}

The Labrador Inuit have had little historical experience working commercial quarries, but have long known and made use of both soapstone and labradorite resources within their traditional territory. Both are regarded as "sacred" stones. Some commercial activity occurred in the area at the turn of the century; a US backed venture recovered labradorite for sale to jewelry manufacturers in New York. In 1959, the deposit of grey anorthosite with labradorite inclusions located at Ten Mile Bay (part of the Nain anorthosite complex) was inspected by a group of geologists working for a company called Brinex. A number of test blocks were removed by the same company in 1960 and sent to Vermont for cutting and polishing. Brinex's inability to identify a secure market led to the company's abandonment of the property. It was not until the Newfoundland Department of Mines and Energy undertook a formal survey and assessment of the area's gemstone and dimension stone potential between 1979 and 1987 that commercial interest in the area was re-kindled.

Labradorite is considered a semi-precious mineral, with colours ranging from deep blues and greens to yellow, orange, red, purple and bronze. The crystals have an iridescent quality, which is visible when properly cut and polished. The gemstone variety, found principally in Labrador, occurs in small pegmatite veins or pods, as inclusions in the country rock of the area. This rock (anorthosite) is sometimes referred to as labradorite-granite. The presence of labradorite in the granite of Ten Mile Bay imparts such a unique and attractive colour and appearance to the polished stone ("blue granite") that its potential for commercialization was quickly recognized, first by Brinex, and later by the provincial government. This deposit became one of the first that the Department tried to promote, sending out samples of polished blocks to companies in Quebec and Ontario, and displaying them at various trade shows. In this way, a connection to an Italian dimension stone specialist was finally made.

These efforts occurred with the overt approval of the Labrador Inuit Development Corporation (LIDC). The "unofficial" policy of the government, pending the settlement of land claims, has been that both soapstone and gemstone variety of labradorite would be considered as traditional aboriginal materials, and that no permits would be issued for its exploitation to non-aboriginal enterprises. Consequently, the Labrador Inuit Association and the LIDC were involved in most of the discussions and promotional efforts which followed. In 1990 a ten tonne test block was removed from a fresh site close to one of the old Brinex pits and shipped to St. John's and then Italy, where it was evaluated and a ready market identified.

The prospect of a commercially viable quarrying operation at Ten Mile Bay had generated considerable interest among the local Inuit. The deposit was only 10 km from the Inuit community of Nain; the fisheries were in

decline; the project was environmentally acceptable and the work it could offer was appealing. The LIDC formed a separate company, Torngai Ujaganniavingit Corporation (TUK), which, after negotiations with the Province, was issued a quarrying lease for the 5 hectare site on a long term basis (a 20 year lease as opposed to the normal one year permit). More blocks were quarried in 1991, but the lack of appropriate handling and loading equipment on site, as well as unresolved resulted in the blocks not being shipped.

In 1992, financing was arranged from a variety of provincial and federal agencies, including the Atlantic Canada Opportunities Agency, Enterprise Newfoundland and Labrador, the Canadian Aboriginal Business Development Program and the provincial Department of Mines and Energy. As well, an exclusive marketing agreement was concluded with an Italian/German company, which will purchase all of the stone that can be quarried and shaped. Second-hand equipment (front end loader, drills and compressor) were purchased and brought to the site. The quarry was officially opened in late September; employees were trained on site, and 16 blocks were quarried and shipped. During the off-season, Inuit workers received additional training in Italy (quarrying) and in Newfoundland (drilling and blasting). 1993 was the quarry's first full season (20 week) of operation. Eighteen workers were employed full-time for the 20 weeks and they produced 207 cubic metres of stone.

Rough blocks are freed from the quarry face, and then trimmed or "shaped". They are stockpiled at the site. The buyers inspect and measure the product at Ten Mile Bay. TUK is paid 60% of the price on inspection, and the remainder on shipment from a Canadian port. The buyers are responsible for arranging shipment to Europe. The stone is loaded by Inuit workers onto barges at Ten Mile Bay for the voyage first, to Quebec City or Argentina, from where it is then crated and shipped to Europe.

Torngai Ujaganniavingit Corporation pays surface rent and a small royalty to the provincial government. Initial quarry development and equipment expenditure approached \$ 500,000. The funds available were not in fact sufficient to purchase new machinery. Equipment breakdowns have been problematic. In 1993, a mobile crane was purchased to facilitate the loading of blocks onto the barges. Larger blocks (20 tonnes and above) cannot be loaded until such time as a new wharf and handling facilities are constructed. Still, the company expects to have recouped the initial investment with the coming year's anticipated production. In fact the company has already begun investigating other sites, with different colours of granite, even though the original quarry has at least another 20 years of life at an annual production rate of 1000 cubic metres.

As funds become available, TUK hopes to be able to install wharf facilities; the company is also awaiting the publication of the results of last year's effort to chart the Bay, thereby enabling trans-oceanic shipment directly from the quarry. The company also hopes at some future date to exercise its option with the Italian-German

buyer to enter into a joint marketing venture. The company's immediate concern is bringing an experienced quarry manager on board before the start of the upcoming mining season, which will be the first year that the mine is expected to operate at full capacity. Both the local Inuit communities from which the miners come and the Labrador Inuit Development Corporation consider the project to have been a good investment and a positive experience, especially in light of the dismal outlook for the region's fisheries.

* * * * *

The two situations described above seem to suggest that successful management and operation of small commercial mineral enterprises is not beyond the capabilities of aboriginal bands and communities, given the will and availability of appropriate levels of technical support and capitalization. Both operations have been hampered by their limited access to venture capital and commercial lending facilities. Both operations rely on external expertise in certain key areas. While the Labrador Inuit have a reasonably secure long-term international market for their product(s), Sumas Clay is still struggling to establish a level of market security and share in a very local marketplace.

While both companies received some critical technical support and financial assistance from both federal and provincial government agencies, their relative commercial success to date is all the more remarkable in light of the virtual policy vacuum that exists in Canada with respect to autonomous mineral development on aboriginal reserves. While Sumas Clay Products was a natural outgrowth of the long historic experience of the Band with small to medium scale commercial mining and manufacturing on the reserve and in the general area, Torngai Ujaganniavingit Corporation is in many respects a pioneering venture in a region where land claims have yet to be settled. In both instances, there is a will, a pride, and a commitment to make their respective enterprises work.

11.0 Evaluating prospects for aboriginal participation in small-scale mining

The conditions under which both the Sumas Indian and Labrador Inuit have set up community owned and operated commercial mining enterprises are quite specific. Certain favourable conditions existed in each case, which enabled each of the communities to undertake such ventures with a reasonable expectation of commercial success. In both cases, a marketable and recoverable mineral resource existed either on the reserve or within reasonable proximity to a major settlement. The idea of self-development appealed to both communities, and the challenge was not overly daunting. In one case, the community had a long history of experience with clay mining and manufacturing, and was able to access technical assistance when required from the provincial government. In the other case, provincial technical service agencies worked closely enough with the community from the very start, thereby reducing the community's concern with technical uncertainty to an acceptable level. In both cases, financial assistance was made available from federal and provincial programmes, but proved to be as much a hindrance as a help to project implementation. These conditions - regarding the resource base, community outlook, availability of mining experience and/or technical skills or assistance, and funding sources, - must be understood as "minimalist" conditions, that have allowed for these two communities to "take the plunge." Some of the issues and factors that must be given due consideration before "taking the plunge" are discussed in greater detail below.

11.1 Assessing the local/regional resource base

Understanding the nature and extent of the mineral resource base within the traditional territory, its recoverability and its marketability, is fundamental to being able to make informed credible decisions. Bands can take advantage of the work already completed by DIAND and provincial geological surveys with respect to the assessment of mineral resources under aboriginal lands - to evaluate and re-classify deposits in terms of their amenability to economical mining and marketing at different operating scales given distance to market and the various technologies and methods currently available. In this way certain resources can be earmarked for large-scale development and joint venturing with larger companies; while other deposits, better suited to development at a smaller scale by virtue of their geological characteristics, depth of burial, location on reserve, marketing potential, etc., may be reserved for local "self-development"^{lxxvii}.

As an example, the Newfoundland Department of Mines and Energy's Geological Survey Branch and Mineral Resource Management Branch have collaborated in identifying soapstone deposits on the northern Labrador coast that have high potential as a source of carving stone.^{lxxviii} This effort appears to have been in response to a perceived "growing need for carving stone in the Hopedale area." At present, individual carvers pick up loose pieces of stone at or near the water's edge, or chisel away the edges of soapstone boulders found close to

many of the identified deposits. With the depletion of the most accessible sources soon approaching, it has been suggested that the "next step" should be "very small-scale quarrying of those deposits...capable of supplying good quality stone."

11.2 Establishing a community consensus on aboriginal participation

When smaller-scale development of the local or regional mineral endowment makes commercial sense, there are a variety of forms of operation and ownership that can be considered by the community:

- 1) wholly owned community enterprise(s);
- 2) wholly or partly owned private aboriginal enterprises, in which the band has no equity position;
- 3) a joint venture with native and/or non-native private developers; or,
- 4) a cooperative association of individual native (and non-native) miners.

Each of these has their own advantages and disadvantages, and their own particular administrative and support requirements. The appropriateness of each format must be evaluated in terms of a band's particular situation and resource endowment.

While the clay and stone enterprises described above are wholly owned by the community, there does not appear to be any legal *raison d'être* for denying opportunities for investment and entrepreneurship to individuals or private native-owned companies. There may be communal obstacles to fostering private entrepreneurship with respect to natural resource development, especially on reserve lands and in areas of intensive traditional use. The challenge will be for communities to establish policies and frameworks that preserve group rights and interests without unduly muting private initiative.

Given the proximity of many aboriginal communities to existing mining areas, many band members have already gained substantial experience in formal mechanized mining operations. This experience is beginning to accumulate within the community workforce, and could eventually be tapped to operate community-based enterprises or to initiate privately run ventures that employ and train additional numbers of community members.

11.3 Defining a policy framework for mineral development as a part of community development

Aboriginal groups who now or shortly will assert a greater degree of responsibility and authority vis-a-vis mineral development within their traditional territory, will need to clarify community goals and objectives, reassess development options and ultimately shape policies and regulations to better reflect and protect their

own medium and long term interests and aspirations. This process should deal not only with the issue of large-scale mining and its role within the traditional territory, but also with the role of aboriginal entrepreneurship in mining, at both group and individual levels.

In the new mining legislation and regulations being enacted by many developing countries, the role, rights and specific requirements of small and medium scale local miners are being explicitly addressed, alongside those of the foreign-owned mining companies. The purpose of this was to make the business of mining more accessible to country nationals. In a few cases, countries have gone even farther, drafting separate laws. As a case in point, the African country of Ghana promulgated a separate small-scale gold mining law in 1989. This law opened the door to Ghanaians to formal ownership, management and investment in gold mining. In just a few years, the law's implementation led to a tremendous expansion of legal activity, of gold production and of participation by Ghanaians.

Whatever policy frameworks aboriginal communities choose to set in place to guide mineral development, they should:

- recognize the possibility for different modes of development and participation;
- address the unique characteristics, potentialities and needs of each mode;
- establish the scope and extent of accommodation that can be expected from the community for each mode;
- and,
- clearly explain the ways and means by which each mode is itself expected/obligated to contribute to the achievement of community goals and aspirations.

11.4 Identifying and addressing individual and community needs for effective participation

Like large mines, small mines are also risky ventures, especially prone to problems and failure when certain essential enabling pre-conditions and circumstances do not exist. Aboriginal communities in Canada and the US, as elsewhere, will not usually have the means or ability to establish all of these conditions by themselves. Yet they are critical to giving small-scale entrepreneurship in mining, whether group or individual, a reasonable chance for achieving commercial success.

Experience from the developing country context suggests that the following elements are fundamental:^{lxxix}

a) opportunities to access and assimilate the knowledge and skills required to run a mine in business-like fashion, including basic accounting, management and marketing skills, and a reasonable understanding of prospecting, mining geology, mining methods, safety, concentrating and waste management techniques;

b) opportunities to access market(s) that will provide a fair return in relationship to the mine's cost structure, or in the case of exportable commodities, to international market prices;

c) means of procuring and maintaining appropriate prospecting, mining, materials handling, processing and environmental control tools and technology;

d) appropriate and sufficient knowledge of the resource base to be able to make informed decisions;

e) access to sources of capital that are sufficient to develop the mine, install requisite equipment, commence production, bring product to market, and survive any startup problems or delays in the receipt of payment for product;

f) an attitude among aboriginal project managers and mine workers that comes to regard mining as a profession, the mine as a business, and the ore deposit as an asset to be harvested with care;

g) mechanisms in place for ensuring accountability to and regular communication with financiers and shareholders (i.e. band members or partners).

If aboriginal communities choose to explore the possibility of autonomous mineral development or of promoting aboriginal entrepreneurship in mining, then cooperation and support for their efforts **should be** forthcoming from industry and government. At the Harare conference in 1993, it was agreed that small and medium scale mining have made important contributions to national and regional rural development in developing countries, but it was also realized that in order to achieve its full potential,

it needs to be profitable, sustainable and safe. Unfortunately, small-scale mining is often not taken into account in government policies and programmes.

In order to ensure its success, positive action will have to be taken by all those concerned, including governments, mining companies, national and international development assistance agencies^{lxxx}.

Provincial governments have at times extended services to prospectors and small miners. Both federal and provincial authorities should be willing and interested in promoting and assisting aboriginal commercial entrepreneurship in wealth generating activities like mining. Referring again to the Harare guidelines (Appendix II), government should be prepared to consider extending technical and economic support to aboriginal enterprises in the form of vocational, management, technical, environmental and marketing education; property evaluation, feasibility study and mine design services; technical mining and environmental control extension services; marketing intelligence and assistance; assistance in the organization of savings and loan cooperatives; mining trust funds that make risk capital available on a timely basis and credit assistance which accepts mineral rights as collateral. This support can be direct or indirect. It may mean designating certain personnel as small mines officers, or providing explicit mandates to government departments to offer services in these areas, as well as committing pilot or seed funds to special projects and to more effectively designed and managed trust funds or credit facilities. Existing funding mechanisms are clearly inadequate. Or it may mean providing incremental assistance or resource personnel to aboriginal initiatives already being planned or implemented, such as the Cree Nation of Mistissini prospector training program.

Established mining companies, operating within or adjacent to traditional territories, can also play a positive role by lending expertise to the community enterprise or private entrepreneur; by considering complementary work and marketing relationships with smaller aboriginal producers; by jointly or solely sponsoring training programmes and demonstration projects; by voluntarily returning marginal or small deposits to the community or provincial mineral inventory and making the deposit information available to the community or geological survey.

12.0 Conclusions

Aboriginal people in Canada participate in mining and mineral processing activities in a variety of direct and indirect ways. Individuals and incorporated enterprises mine certain minerals for local use and others for sale to a wider market. Others provide services on contract to mining companies, while many aboriginal people have found wage and salaried employment in non-native owned mineral enterprises.

A model of industrial development based on large-scale export-oriented mining was initially promoted by federal and provincial governments for remote and rural areas with known mineral potential. The success of this model in certain regions firmly established direct employment as the primary mode of participation for aboriginal people in the minerals sector given the proximity of their communities to the new mining areas and the lack of any indigenous tradition of organized mining.

The majority of individuals working within the commercial mining sector occupy unskilled and semi-skilled positions. Contract business opportunities have likewise been limited to certain non-technical area of activity, including transport, materials handling, catering, security services to the mines. The presence of mining projects on or near reserves and within traditional territories has resulted in some social and physical infrastructure development, as well as direct cash donations to communities, and royalty payments where mineral and other title rights are involved.

The corporate track record has been variable in terms of attracting, advancing and retaining aboriginal employees and creating positive business relationships. Generally companies have resisted doing much more than they feel compelled to do either by law or by their own sense of social obligation. It is argued that opportunity creation as the principal method for disbursing benefits has not been a very effective conduit to the local community.

This experience reflects realities elsewhere. In the United States, the legal frameworks affecting tribal communities provided for entitlement of minerals, but the promotion and administration of these resources historically resided with the US government through its Bureau of Indian Affairs. Given the energy economy of the US and the presence of large coal and uranium deposits under many reservations in the western United States, large scale mining development occurred in the 1950's and 1960's, but tribal governments grew restless and resentful of the BIA governance of their own natural resource base. During the 1970's, tribes rebelled by either legally challenging BIA leases and proposed projects or by circumventing BIA authority through direct negotiation with mineral developers. Finally in 1982, the Congress recognized the right of tribes to negotiate their own deals.

Tribes were able to effect transfer of regulatory authority in a variety of areas including taxation and environmental protection and to initiate regulation and cleanup of abandoned coal and uranium mines and mills. The Laguna Pueblo's efforts in this area were particularly noteworthy. Unfortunately, little headway was made with respect to mitigating the adverse effects of off-reservation mineral development on reservation environments and communities.

The reality of this experience revolves around the erratic development of large-scale mining operations on select reservations, which has resulted in modest levels of industrial employment, some business opportunities, a small elite of high wage earners, and in the end, a massive flow of funds to tribal authorities. In most cases, tribal governments have failed to convert into these mining revenue flows into an improved standard of living for the reservation community as a whole, not unlike the experience of mineral dependent exporting countries of the Third World. What has also failed to emerge is any sort of true community consensus or common tribal vision vis-a-vis the role that mineral development ought to play within the framework of broader community development goals and aspirations. "Self-development" of tribal mineral resources^{lxxxix} via new forms of arrangements with mining companies has yet to be realized. Neither has the alternative path to "self-development", by means of small-scale autonomous mineral development, been seriously explored or successfully implemented .

Internationally, for developing countries, the outcome has not been much better. While the mineral boom years of the 1960's and early 1970's resulted in the establishment of many large mines, it soon became apparent to many host country governments that large-scale, export oriented mineral development was not the "motor" for a more broad based national social and economic development that its promoters suggested. The benefits were principally financial, and accrued to the national government. The benefit stream to local communities was very limited, including some jobs and local infrastructure, but in many situations, cultural disruption, loss of access to traditional lands and natural resources outweighed the perceived benefits and were sufficient cause to lead to violent protest and local resistance to continued mining and processing activities. In fact in a number of mineral export dependent economies, mineral dependence became more of a curse than a blessing^{lxxxix}, leading to macro-economic distortions within the national economy, misguided re-investment patterns, and destabilization of other non-mining export sectors.

Failure to realize real social and economic welfare gains, coupled with the depressed state of many mineral markets, the lack of investment in exploration and new development, as well as structural adjustment programmes, have resulted in a radical re-think of both macro-investment policies and the role of the mineral sector in national development for many of these countries. This re-evaluation of options has included formal

recognition of the positive potential of local autonomous mineral development at a smaller-scale, and a number of countries have begun to take concrete steps towards establishing a more viable commercial basis for small-scale entrepreneurship in mining and mineral processing.

In Canada, aboriginal communities are increasingly being put in the position of having to consider the prospect of major mineral developments within their traditional territories. In the past, communities have rarely taken the initiative to encourage intensive mineral exploration within their lands, nor have they necessarily welcomed large-scale mineral developments.

The situation has been complicated by the fact that most land claims have yet to be resolved. Securing an interest in the mineral estate should be a critical element of any land settlement. If nothing else, this will ensure a group's legal right to participate in decisions that affect the disposition of the community's natural resource base. This legal right may not, by itself, be sufficient to ensure effective management and control. Even on reserves, the "surrender" process overhangs any attempt to deal with potential developers, and the power to negotiate without undue restraint has only been afforded to those few groups which have achieved self-governing status.

When faced with the prospect of a commercial mining enterprise near the reserve or within the traditional territory, bands and communities have generally been able to negotiate and bargain for benefits, and environmental and social safeguards, at some level. This is in contrast to the US Indian experience, where tribes have had much more difficulty influencing off-reserve mineral developers. The more positive Canadian experience in this area may in fact be partly due to the unresolved claim status of certain areas. By and large, aboriginal groups have done the best they could to secure their own interests under current conditions. Nevertheless, most aboriginal leaders would probably agree that the benefits and agreements derived from the accommodation of such projects within traditional territory still leave much to be desired.

At the same time, aboriginal communities have not given serious consideration to promoting and supporting some sort of regulated small-scale mineral industry on their reserves or within their traditional territories. This is certainly understandable in light of the general lack of an indigenous historical experience with mining and the lack of the technical and commercial skills base necessary for either effective supervision or successful operation at a commercial level.

A few communities (Sumas Indian Band (BC) and the Labrador Inuit), however, have committed themselves to trying to establish and operate commercially viable mining/fabricating ventures, within the framework of community owned enterprises. It has not been particularly easy for the Sumas; even today Sumas Clay

Products continues to have problems accessing capital and appropriate markets. In the case of the Labrador Inuit, assistance from provincial government institutions greatly facilitated the Corporation's ability to make the critical link to a paying market and to appropriate technology and training. In both cases, technical prospecting and mining skills are absent or weakly developed, and the companies remain almost totally dependent on outside assistance in these areas. Yet, in their own estimation, their experience to date has been positive and worthwhile, in spite of the difficulties.

The promise of commercially successful small-scale mining operations is their potential to offer a community substantially more meaningful returns in terms of providing jobs, stabilizing revenue streams, developing managerial, technical and trade skills within the community, creating opportunities to participate in decision-making and in the management and control of potentially adverse environmental and social impacts and their mitigation. Their benefits accrue primarily to the communities near which they are located. Furthermore, mining at the smaller-scale can be more easily integrated into the pre-existing economy, and is potentially more responsive to locally-oriented social, economic and political development needs and objectives, but it can only realize its full potential for benefit generation if properly assisted and nurtured by the community, the federal and provincial governments, and the established industry in its early years.

In Labrador, the case has recently been made for government assistance to develop an integrated arts and crafts industry within Inuit territory.^{lxxxiii} Such an industry would include small-scale quarrying of carving stone to provide regular and high quality supply, and the establishment of carving studios and a centralized marketing system.

Given the limitations of the aboriginal experience to date, the impending settlement of land claims and mineral rights, and on-going pressure from private promoters on aboriginal communities to accommodate mineral resource development within their traditional territories, aboriginal people and their support organizations must be prepared to engage in their own "re-think" exercise, - both apart from and at the same time, part of any on-going "stakeholder" discussions on the future of the Canadian minerals industry.

The ideal approach is to clarify community development goals and objectives first, and then to consider and integrate mineral development policies and programs within that framework, not visa-versa. This is often easier said than done, since the more common tendency is to react to situations as they evolve rather than "pro-act," but this approach also jeopardizes the possibility of achieving consensus on objectives within a community and increases the likelihood that community goals and mineral development will conflict. In theory and hopefully in practice, mineral policies should be formulated that support community development

efforts, not confuse and hinder them. At the least, mineral policies should be shaped in tandem, and preferably in coordination with the articulation of community development goals and aspiration.

Any "re-think" should allow for aboriginal communities to review all possible development options, and to explore a variety of ways of optimizing the return from a territory's mineral endowment. As in developing countries, this may ultimately lead to a more balanced approach being implemented, in which opportunities for aboriginal entrepreneurship and involvement at all scales of operation are more effectively defined and promoted. It may also be possible to avoid having the potential blessing of a mineral resource endowment transformed into just one more curse, and another trauma for aboriginal communities to have to deal with.

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- i. For example, the various meetings and reports of the Intergovernmental Working Group on the Mining Industry over the past few years, and most recently the discussions which occurred at the 49th annual **Mines Ministers' Conference** in Whitehorse in September 1992.
- ii. Mining Association of Canada, "Competing for Future Prosperity," a brief presented to the 49th Annual Mines Ministers' Conference, Whitehorse, Yukon, September 22, 1992, p. 18.
- iii. Cf. David Smith, "New eyes for old: the future, present and past in the evolution of mineral agreements," **Materials and Society**, v 5 no 4, 1981, p 412.
- iv. The inherent risk of mineral development from the community perspective is that the mine will fail to realize its economic potential, that it will become a marginal operation unable to deliver on any of its promises to the community, that it will experience unforeseen economic or technical problems that lead to its premature closure or unanticipated environmental problems. Mines have limited lifespans and uncertain economic scenarios that can be radically altered (either shortened or extended, weakened or strengthened) by market vagaries, price fluctuations, changes in fiscal or political regimes, contraction or expansion of mineable reserves, or technical problems encountered or innovations implemented during the actual mining of the deposit. The upside is that expected/negotiated benefit streams may be exceeded and any adverse residual environmental, negligible; but the more likely scenario today is that the anticipated benefits may never be fully realized for reasons beyond the control of the band and mining company.
- v. Additional relevant issues and questions are raised at the end of each chapter of Royal Commission on Aboriginal Peoples, **Aboriginal Participation in the Minerals Industry** (Final Report), Ottawa, 1993.
- vi. Sumas Clay Products Ltd, Kilgard, British Columbia.
- vii. Torngai Ujaganniavingit Corporation, Nain, Labrador.
- viii. Price Waterhouse (for the Steering Committee of the Human Resources Study of the Canadian Mining Industry), **Breaking New Ground: Human Resource Challenges and Opportunities in the Canadian Mining Industry**, Minister of Supply and Services Canada: Ottawa, 1993, pp. 41-44.
- ix. Creating equitable alliances and partnerships with established non-native enterprises has not come easily. Recent government, community and even mining company expectations have provided additional impetus to non-native service enterprises to enter into partnership arrangements with bands, but it has often been up to the band to press for fuller participation in management and decision-making for itself. The simplest arrangements may increase cash flow to the aboriginal co-owner, while leaving the most critical management and decision-making areas to the non-native

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partner. Although more equal partnerships have been difficult to negotiate, the payoffs to the aboriginal co-owner in terms of management and administrative experience, skill transfer (craft, technical and business), confidence building and even longer term economic returns are potentially much greater, as the La Ronge experience seems to indicate.

- x. Cf. Royal Commission on Aboriginal Peoples, **Aboriginal Participation**, p. 43.
- xi. Environmental-Social Advisory Services, Inc., **A Socio-Economic overview of Uranium Mining in Northern Saskatchewan**, Joint Federal/Provincial Panel on Uranium Mine Developments in Northern Saskatchewan, October 1992, p. 54.
- xii. Environmental-Social Advisory Services, Inc., p. 6.
- xiii. For example, the Dona Lake and Sa Dena Hess agreements, described in both the Royal Commission on Aboriginal Peoples, **Aboriginal Participation**, pp. 57-59, 67-72; and Sub-committee of the Intergovernmental Working Group on the Mineral Industry, **Report on Native Participation in Mining: Phase I**, 1990, pp. 132-141.
- xiv. Royal Commission on Aboriginal Peoples, **Aboriginal Participation**, p. 91.
- xv. Sub-committee, **Report**, pp. 162-165.
- xvi. Commission, **Fair Market Value Policy for Federal Coal Leasing**, Washington, 1984, pp. 143-244, on tract selection and leasing procedures.
- xvii. Selected tracts of land would be assigned by auction or competitive bidding to the highest bidder. Apart from the original "bonus" bid, the tribe would also receive annual surface rental fees of at least \$ 1.00 US per acre, and mineral royalties of not less than \$ 0.10 per short ton of coal or 10% of the marketed value of minerals other than coal, oil and gas, to be paid out quarterly. These monies were held in trust by the Bureau of Indian Affairs. (Federal Trade Commission (Bureau of Competition), **Staff Report on Mineral Leasing on Indian Lands**, Washington, October 1975, p. 13.)
- xviii. Allotted land is defined as land, or any interest therein, held by the US government in trust for individual Indians, subject to federal restrictions against alienation and encumbrance.
- xix. Federal Trade Commission, pp 5-9.
- xx. CERT, **15 Years - Council of Energy Resource Tribes**, Denver, p. 6.
- xxi. The Navajo-Exxon deal contained a similar option. While equity participation options and joint venture agreements were becoming increasingly common for reservation oil and gas properties, this

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was the first time that equity participation options had been made part of uranium or coal deals. The contracts with Exxon and Shell were ground-breaking in this respect.

- xxii. Marjane Ambler, **Breaking the Iron Bonds: Indian Control of Energy Development**, University Press of Kansas, 1990, pp. 72 - 80; also Jeffrey Davidson, "Coal and the New Native Resistance," unpublished manuscript, 1978, pp. 13-20.
- xxiii. A. Zionitz, "Indian self-determination: new patterns for mineral development," paper presented to the Institute on Indian Land Development, Rocky Mountain Mineral Law Foundation, April 1976, pp. 7-8; also Fred Harris and LaDonna Harris, "Indians, coal and the Big Sky," **La Confluencia**, v 1 no 2-4, 1977, p. 26.
- xxiv. Marjane Ambler, "Indians explore alternative energy possibilities," **High Country News**, February 10, 1978; and Jeffrey Davidson, "Mining the middle ground: a reassessment of uranium and coal development policy on the reservation," paper presented at the 7th Annual Conference on Contemporary American Indian Issues, April 16, 1983, Los Angeles, p. 18.
- xxv. Frank Long, "A review of contemporary American Indian mineral agreements," paper presented at the 7th Annual Conference on Contemporary American Indian Issues, April 16, 1983, p. 2.
- xxvi. Stephen A. Manydeeds and Bruce D. Smith (eds), **Mineral Frontiers on Indian Lands**, Bureau of Indian Affairs, Division of Energy and Mineral Resources, December 1991, p. 6.
- xxvii. During 1975, the Navajo tribe had received \$ 1.0 million in the form of royalties, surface rents, bonuses and rights of way from coal and power generating facilities operating on the reservation, but various Arizona taxing entities (school boards, counties and cities) had collected close to \$ 25.0 million in the same year. Over a ten year period the State of Montana had collected \$ 62 million, 3.5 times as much mineral tax from the Crow tribe's coal as the tribe had collected in royalties. A CERT study of 1985 tax takes from lessees operating on Indian reservations indicated that federal and state governments had collected close to \$ 425 million, with very little of it returned to finance development or service activities on the reservations. (Marjane Ambler, **Breaking the Iron Bonds**, pp. 200-201)
- xxviii. Quoted by Marjane Ambler, p. 197.
- xxix. The Navajo set up their own Environmental Protection Commission in 1972. It was empowered by the Tribal Council to establish and implement regulations, etc. with respect to air and water quality on tribal lands. It also developed modest capability to participate in environmental assessments of proposed industrial projects, but seemed to have limited access to the key decision-makers within the tribal government, thus weakening its effectiveness. (Hanna Cortner, "The Navajo Environmental Protection Commission," **The Indian Historian**, v 9 no 4, 1976, p. 35)

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- xxx. The evolution of this situation is described in greater detail by Marjane Ambler, **Breaking the Iron Bonds**, pp. 185-192.
- xxx. Based on information provided by Mr. Conrad Lucero, member, Laguna Pueblo Tribal Council, New Mexico, February 16, 1994.
- xxxii. The Pueblo itself has only 7000 members.
- xxxiii. As much as \$ 30 million, according to CERT, **15 Years**, p. 12.
- xxxiv. The Shell deal was terminated in 1985 for a number of reasons, without a tonne of coal having been mined. Nonetheless, Shell had paid out about \$ 7 million to the tribe.
- xxxv. Richard N. Wilson and Stephen A. Manydeeds, "National Indian Issues," in Larry Godwin (ed), **1994 Annual Report**, Bureau of Indian Affairs, Division of Energy and Mineral Resources, General Publication G-94-2, 1994, p. 7.
- xxxvi. Personal communication with Jim LeBret, Bureau of Indian Affairs, Division of Minerals and Geology, Spokane, March 4, 1994.
- xxxvii. Staff, "Status of Mineral Assessment Projects," in Larry Godwin (ed), **1994 Annual Report**, pp. 17-26.
- xxxviii. Anon., "Crow coal: a rich vein of possibilities for Tribe," **Coal**, v 99 no 1, 1994, p. 12
- xxxix. For example, Ward Churchill, **Struggle for the Land**, Between the Lines: Toronto, 1992, pp. 261-328; Winona LaDuke, "Indigenous Environmental Perspectives: A North American Primer," **Akweskon Journal**, v 9 no 2, 1992, esp. pp. 57-60.
- xl. Ambler, Marjane, **Breaking the Iron Bonds**, pp. 233-234.
- xli. CERT, p.12.
- xlii. Personal communication with Jim Pierce, Chief Operating Officer, Council of Energy Resource Tribes, Denver, February 15, 1994.
- xliii. Larry H. Godwin (ed), p. 65.
- xliv. Rory Raschen, "New BLM Office focused on Native American Issues," **Indian Mineral Resource Horizons**, v 1 no 2, 1992-1993, p. 5.
- xl. Personal communication with Jim Pierce, Chief Operating Officer, Council of Energy Resource Tribes, Denver, February 15, 1994.

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- xlvi. David Smith, p. 412.
- xlvii. The Sandia Pueblo, just outside of the Albuquerque (New Mexico) city limits, signed a lease with a private non-Indian company, which opened a sand and gravel quarry and asphalt operation on the reservation. The Pueblo has nothing to do with its management, and while hiring preference will be given to tribal members, no one has ever applied. The Pueblo is small (less than 400 people on the reservation), and operates its own gaming facility, next door to the sand and gravel pit. While the Council talked about become quarry owner/operators, appropriate business and technical skills were lacking. The gaming facility provides for the employment needs of the Pueblo. (Personal communication with Malcolm Montoya, Sandia Tribal Administrator)
- xlviii. There are a few government employees that devote some of their own leisure time to assisting the few tribes involved in small-scale self-development initiatives.
- xlix. There is an extensive literature relating to the experience of developing countries with large-scale, export oriented, externally owned mining projects, and the issue of its "development" potential. Most analysts agree that such projects tend to operate as enclaves within the economy of the host country, with few backward and forward linkages to the rest of the economy and a limited multiplier effect. The principal benefits of these projects lie in their ability to generate government revenues (royalties, taxes, duties, equity dividends) and foreign exchange earnings. While jobs are created, and in most cases, the workforce has been localized over time, the benefits of wage employment are limited to a relative minority. See Craig Emerson, "Mining Enclaves and Taxation," **World Development**, v 10 no 7, 1982, especially pp. 561-563; Grantley Walrond and Raj Kumar, **Options for Developing Countries in Mining Development**, MacMillan, New York, 1986.
- i. Olivier Bomsel, "Do the mining countries of the Third World have a future?," in UNDTCD, **Mining Policies and Planning in Developing Countries**, United Nations: New York, 1989, p. 174; Charles Johnson and William Pintz, "Minerals and the developing economies," in William Vogely (ed), **Economics of the Minerals Industries**, AIME: New York, 1985, p. 42
- li. There is a long list of countries who have recently clarified or are now in the process of revising their policies and laws, including Mexico, Chile, Bolivia, Brazil, Ghana, Zambia, Vietnam among others. The background and nature of these shifts in attitude and changes in policy are described by Thomas Walde in his essay, "Third world mineral investment policies in the late 1980's: from restriction back to business," **Mineral Processing and Extractive Metallurgy Review**, v 3, 1988, especially pp. 121-145. See also, Paul Fortin, "Recent Trends in Mineral Development Laws," presented at the DNPM/CIDA Mineral Policy and Foreign Investment Seminar, April 27-29, 1992, Brasilia.
- lii. Richard M. Auty, "Managing mineral dependence: Papua New Guinea 1972-89," **Natural**

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Resources Forum, v 15 no 2, 1991.

- liii. William Pintz, "Mining and social conflict: planning strategy in Melanesia," **Pacific Viewpoint**, v 30 no 1, 1989, p. 75.
- liv. Once major country producers in Africa and parts of Asia and South America have suffered from underinvestment and the depletion of operating mines. International mining companies have limited their activities and investments to those countries considered hospitable and secure. Readers are referred to Craig Andrews, "Mining investment promotion," **Natural Resources Forum**, v 15 no 1, 1991; and Charles Johnson, "Ranking countries for minerals exploration," **Natural Resources Forum**, v 14 no 3, 1990, for further discussion of this phenomenon and related issues.
- lv. For example, in the Puno district of Peru, the Santiago de Ananea mining cooperative was able with some external assistance to implement simple, but improved mining and processing technology. In so doing, the coop increased its own income by 350%, created additional full and part-time employment opportunities, provided a better wage and benefits package to its members, and contributed significantly to the upgrading of local community services and facilities. ATI, "Placer Mining in Peru", **ATI Bulletin**, No 22, 1990, p. 2.
- lvi. Both the advantages and disadvantages of small-scale mining are discussed by a variety of analysts, such as J. Carman, "Why small mining?," **Episodes**, v 10 no 3, 1987; R. Notstaller, **Small-scale Mining: A Review of the Issues**, World Bank Technical Paper No 75, Washington, 1987; and D.F. Stewart, "Large-scale vs small-scale mining: meeting the needs of developing countries," **Natural Resources Forum**, v 13 no 1, 1989.
- lvii. This is not always the case, however. Small-scale mining activities can sometimes create or compound resource use and environmental problems. Such is the case with alluvial and lode gold mining which depends on the use of water and mercury to separate the gold from the gangue (barren material). Water resources are often contaminated. In aboriginal areas of the Amazon basin, where small-scale gold mining activities are highly concentrated, non-native small-scale gold miners have contaminated rivers on a significant scale and have confronted and displaced aboriginal communities. On the other hand, there are examples of aboriginal communities in Latin America, particularly in Bolivia and Peru, which are involved in small-scale mining as an important adjunct to traditional activities.
- lviii. See J. Carman, p. 159; R. Notstaller, pp. 3-6; and K.C. Taupitz and V. Malango, "Making the transition from unmechanised manual mining to industrial small scale mining," paper presented at the United Nations Interregional Seminar on Guidelines for the Development of Small/Medium Scale Mining, Harare, Zimbabwe, February 1993, pp. 1-4.

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- lix. Richard Notstaller, **Small-Scale Mining: A Review of the Issues**, World Bank Technical Paper No 75, Washington, 1987.
- lx. A 40,000 ounce per year gold mine in Canada is considered small. For uranium and certain metallic minerals, a daily output of 500 tonnes per day of ore and waste would also be considered small. However, in developing countries, these mines would be considered medium-scale.
- lxi. United Nations Department of Economic and Social Affairs, **Small-Scale Mining in Developing Countries**, UN ST/ECA/155, New York, 1972.
- lxii. J. Carman, "The contribution of small-scale mining to world mineral production," **Natural Resources Forum**, v 9 no 2, 1985, pp. 120-123.
- lxiii. J. Carman, p. 124.
- lxiv. R.F. Meyer and J.S. Carman (eds), **The Future of Small Scale Mining**, UNITAR, 1980.
- lxv. World Mining, **Small Mine Economics and Expansion**, (Papers from the First International Symposium on Small Mine Economics and Expansion, Taxco, Mexico, May 17-21, 1981), Miller Freeman Publications, 1981.
- lxvi. World Mining, **Small Mine Economics and Expansion** (Papers from the Second International Symposium on Small Mine Economics and Expansion, Helsinki, Finland, June 12-16, 1983), Miller Freeman Publications, 1983.
- lxvii. United Nations Department of Technical Cooperation for Development Interregional Seminar on Small Scale Mining in Developing Countries, held in Ankara, Turkey, from 19-25 September 1988. The papers presented were never published.
- lxviii. United Nations, **Guidelines for the Development of Small/Medium Scale Mining**, (Selected Papers presented at the UN Interregional Seminar held in Harare, Zimbabwe, 15-19 February 1993), 1993.
- lxix. James M. Neilson (ed), **Strategies for Small-Scale Mining and Mineral Industries**, (Report of a Regional Workshop held at Mombasa, Kenya, April 14-25, 1980), AGID Report No. 8, 1982.
- lxx. Mining, Geological and Metallurgical Institute of India, **Small Scale Mining '91**, (International Conference on Small Scale Mining held in Calcutta, India, 3-5 October 1991), 1991.
- lxxi. R. Notstaller, 1987.

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- lxxii. United Nations Economic and Social Council Committee on Natural Resources, **Recent achievements in small-scale mining activities in developing countries**, UN E/C.7/1993/11, New York, 19 February 1993; **Small-scale mining prospects in developing countries: a review of recent activities**, UN E/C.7/1991/5, New York, 24 July 1990; **Small-scale mining prospects in developing countries**, UN E/C.7/1989/4, New York, 30 July 1988.
- lxxiii. J. Davidson, "The transformation and successful development of small-scale mining enterprises in developing countries," **Natural Resources Forum**, v 17 no 4, 1993; United Nations, **Guidelines**, 1993.
- lxxiv. United Nations, **Seminar Report** (United Nations Interregional Seminar on Guidelines for the Development of Small/Medium Scale Mining, 15-19 February 1993, Harare, Zimbabwe), New York, March 1993, p. 1.
- lxxv. Based on a personal communication with Larry Ned, General Manager of Sumas Clay Products, March 2, 1994 and the account of the Subcommittee, **Report on Native Participation**, pp. 166-174.
- lxxvi. Based on personal communications with by Ms. Augusta Saunders, Labrador Inuit Development Corporation (March 2, 1994), Mr. Mike Henley, Department of Mines and Energy, Government of Newfoundland and Labrador and Mr. Ed Montague, Labrador district senior mineral industry analyst, Government of Newfoundland and Labrador (March 24, 1994); and on the report of J. Meyer and E. Montague, "The Ten Mile Bay anorthosite quarry, northern Labrador," **Ore Horizons**, v 2, 1993.
- lxxvii. Reserved mineral deposits do not necessarily have to be limited to industrial minerals. High value precious mineral deposits and some strategic metals are viable at this scale as well (refer Table 2).
- lxxviii. J. Meyer and E. Montague, "Soapstone in the Hopedale Area, Labrador," **Current Research** (Newfoundland Department of Mines and Energy, Geological Survey Branch), Report 94-1, 1994, p. 273.
- lxxix. Cf. Jeffrey Davidson, "The transformation and successful development," p. 323.
- lxxx. From the preamble to the Guidelines (Appendix II).
- lxxxi. Refer pages 15 and 16 for an explanation of "self-development" as promoted by certain US tribes.
- lxxxii. R. Auty and A. Warhurst, "Sustainable development in mineral exporting economies", **Resources Policy**, v. 19 no 1, 1993, p. 15.

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lxxxiii. J. Meyer and E. Montague, "Soapstone," p. 273.

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