

Title Economic risk and mineral taxation on indigenous lands

Authors

Ciaran O’Faircheallaigh, Professor of Politics and Public Policy, Griffith University, Brisbane, Nathan, Queensland 4111, Australia (7)37357736

Ginger Gibson*, Adjunct Professor, University of British Columbia, 5360 Stores Road, Vancouver, BC, V6T 1Z4, Canada (780)488-3921

*Corresponding author

Abstract

Mining generates risk of environmental and social harm for Indigenous peoples but can also generate substantial revenues for them, creating opportunities for community development in a context where economic and social disadvantage is the norm. Especially as mining revenues should, in part, compensate for mining’s negative social and environmental impacts, it is vital that mineral taxation on Indigenous lands reflect a careful assessment of appropriate tax mechanisms and a matching of these with community priorities. Yet little has been written that could serve as a guide for Indigenous decision-makers. This article contributes to an understanding of the issues and choices facing Indigenous communities in designing mineral taxation regimes, by focusing on the question of economic risk. Risk arises as a key variable in choosing or designing a mineral taxation regime in three ways. Different approaches to mineral taxation are inherently more or less risky, in the sense that they are more or less certain to generate tax revenues. A second aspect of risk involves the degree of economic certainty or predictability associated with different types of commodities and projects. Third, the risk tolerance of Indigenous peoples and communities can vary significantly. We show how Indigenous groups can integrate and address these different dimensions of risk, by recognizing the ‘risk consequences’ associated with different approaches to mineral taxation and choosing an approach that reflects, as fully as possible, the group’s risk tolerance.

Keywords

Indigenous, mineral taxation, economic risk, community development, mining, resource development

1.0 Introduction

Mining creates significant environmental, social and cultural risks for Indigenous peoples. It can have devastating effects on the environment, and negative cultural and social effects can be associated with its impact on sites of cultural or religious significance, with the in-migration of mineworkers, and with sudden rises in cash incomes (Ali 2003; Bowes-Lyon et al 2009; Bebbington et al 2008, 893-94; Kimberley Land Council 2010a). But mining can also generate employment, business development opportunities and substantial revenues for Indigenous groups, assisting them to overcome social and economic disadvantage and offering an economic base on which to maintain their cultural and social vitality (Kimberley Land Council 2010b; O’Faircheallaigh and Ali 2008). Thus for many Indigenous peoples, mineral development represents a complex terrain that must be carefully navigated in the hope that its positive aspects can be maximised and its negative impacts minimized.

Negotiated agreements with mining companies, in some cases mandated by legislation or by comprehensive land claim settlements, offer a mechanism through which Indigenous peoples pursue acceptable outcomes from development on their lands. Typically, agreements provide for Indigenous sharing of project revenues, and preferential Indigenous access to employment and business development opportunities. Agreements also usually deal with protection of Indigenous cultural heritage, and provide for Indigenous participation in environmental management (Bielawski 2003; Kennett 1999; Macintye 2003; Public Policy Forum 2005; O’Faircheallaigh 2006). In Australia and Canada such agreements now apply to virtually all mining projects on Indigenous land. They are also common in the United States and New Zealand, and are

becoming more widespread in developing countries (ICMM 2011; ICME 1999; Langton et al 2004; Macintyre 2003).

In relation to provisions for sharing of project revenues, agreements effectively give Indigenous signatories a capacity to negotiate the imposition of the equivalent of ‘royalties’ or ‘taxes’ on mining projects (referred to here as ‘mineral taxation’). Unlike state-imposed taxes, which generally apply equally across mining projects in the jurisdiction concerned, Indigenous mineral taxes are negotiated on a project-by-project basis. While this places a significant administrative burden on Indigenous communities it also confers on them, within the limits of what it is feasible to negotiate, an opportunity to tailor taxation regimes to the specific company and project and to their community’s economic and social circumstances and priorities. This capacity raises a number of important questions for Indigenous communities.

What taxation mechanism should they employ (for example fixed dollar payments, production-based royalties, profit taxes)? At what point in project life should they focus their ‘tax effort’? How can and should they take company and project characteristics into account? How are community priorities and economic and social characteristic relevant in designing taxation provisions? How can community priorities be established within the short time frames that often apply to negotiation of agreements with mining companies?

In 1998 this journal published what was one of the first systematic discussions of issues related to Indigenous people and the taxation of mineral resources. O’Faircheallaigh (1998) outlined certain general considerations affecting the approach of Indigenous people to extraction of financial benefits, and discussed some alternative models for the taxation of mineral resources.

He also outlined some ‘composite’ approaches, combining a number of models, which could help meet the needs of Indigenous groups while at the same time facilitating the development of mineral resources. Since 1998 the capacity of Indigenous people to extract financial benefits from mining projects has increased substantially, reflecting a major expansion of the areas of land and sea over which Indigenous rights are recognised under national legislation or land claim settlements; the increasing international recognition of Indigenous rights; the growing political and organizational capacity of Indigenous groups; and the widespread adoption of ‘corporate social responsibility’ policies by major international mining companies (Kimberley Land Council 2008; O’Faircheallaigh and Ali 2008; United Nations General Assembly 2007).ⁱ It is now commonplace for Indigenous groups to negotiate financial benefits that are highly significant in terms of the economic viability of proposed resource projects.ⁱⁱ

While a growing literature has developed over the last decade on the negotiation of Indigenous – mining company agreements (see references above), little additional work has been published on the issue of Indigenous people and taxation of mineral resources. In particular, there is an absence of any guidance for Indigenous groups to help them identify what specific approaches to extraction of financial benefits from resource projects best suit their needs, while at the same time recognising the particular characteristics of individual projects and commodities. As O’Faircheallaigh (1998, 189-90) noted, the general literature on mineral taxation is of limited assistance because it focuses on state taxing authorities, whose economic, political and legislative circumstances are very different to those of Indigenous groups.ⁱⁱⁱ

Neither are state authorities a source of assistance. They play a critical role in creating the legal framework within which Indigenous communities negotiate with mining companies, for example

in Australia through the ‘Right to Negotiate’ provisions of the Commonwealth *Native Title Act 1993*, Australia’s national legislative response to the High Court’s 1992 *Mabo* decision, which recognised the existence of inherent Indigenous rights in land (Bartlett 2004, 524-32); or through negotiation of regional land claim settlements in Canada (AANDC 2011). The latter do sometimes provide for a (usually small) share of state royalties to accrue to the Indigenous claimants, but the State plays no role in negotiation of tax regimes between the Indigenous groups and mining companies. So for example under the Labrador Inuit Interim Land Claim Agreement, signed as part of the approval process for the Voisey’s Bay mine, the Inuit are entitled to five per cent of the royalties received by the Province from the project (Canada et al 2002). But neither Canada nor Newfoundland played any part in negotiating taxation arrangements between the project developer, Inco, and the Inuit, which are vastly more significant in revenue terms than the Provincial revenue-sharing arrangement.^{iv}

Faced with a dearth of relevant information regarding taxation options and their likely impacts, there is a tendency for Indigenous communities and organisations to apply standard approaches across a number of projects within particular regions or jurisdictions, often reflecting the ‘precedent’ effect of early agreements, the influence of individual technical advisers or Indigenous leaders, or the preferences of resource developers.^v Given the diverse characteristics and needs of Indigenous communities and the quite different economic imperatives associated with individual projects and commodities, this tendency is likely to result in sub-optimal outcomes for both Indigenous peoples and resource developers.

This article contributes to an understanding of the issues and choices facing Indigenous communities and developers in extracting financial benefits from resource development by

focusing on a central question, that of risk. Risk arises as a key variable in choosing or designing a mineral taxation regime in three distinct ways. First, different approaches to mineral taxation are inherently more or less risky (in the sense that there is more or less certainty that tax revenues will eventuate) depending on the point of time at which, and the basis on which, financial charges are imposed on a project. This dimension of risk is discussed in the next section. The following section focuses on the second aspect of risk, which involves the degree of economic certainty or predictability associated with different types of commodities and projects, depending in particular on the nature of specific mineral commodity markets and the characteristics of the companies responsible for developing and operating resource projects. We then turn to the third dimension, which involves the risk tolerance of Indigenous peoples and communities. As O’Faircheallaigh noted (1998, 190), the risk tolerance of Indigenous groups may be different from those of the governments that have traditionally extracted taxes from resource projects. In addition, the risk tolerance of individual Indigenous communities can vary significantly, depending for instance on the diversity and stability of income sources available to them, their stage of economic and social development, and their cultural and social priorities. We complete the paper by considering how Indigenous groups can recognise and integrate these different dimensions of risk, by choosing an approach to mineral taxation that will reflect, as fully as possible, the group’s risk tolerance while taking into account the degree of risk expected to be associated with a particular commodity and project.

As noted above we recognise that Indigenous communities must generally achieve agreement with mining companies on mineral taxation regimes, and that identification of an approach that is optimal from an Indigenous perspective does not guarantee its adoption. However as in all negotiations, bargaining power is enhanced by clarity of objectives and a strong and explicit

rationale for their pursuit (Lewicki et al 2001, 32-34). In addition, a capacity to demonstrate that a proposed tax regime takes account of project and commodity characteristics is both more likely to render it acceptable to a mining company, and also to enhance the credibility and persuasive powers of Indigenous negotiators.

2.0 A risk perspective on approaches to mineral taxation

This section reviews a number of approaches to taxation of mineral resources that can be employed by Indigenous communities. They are reviewed separately here to highlight the degrees and types of risk each can create for Indigenous parties, and also for project operators. Effective risk management (DFID 2003) may involve using a number of them together in ‘composite’ approaches, an issue we return to later in the article.

2.1 Single ‘upfront’ cash payment

The first approach involves payment of a single sum on signing of a mining company – Indigenous agreement, which encompasses the entirety of payments for the life of the project. From one perspective, this involves the least risk for the Indigenous community, because it receives its entire financial benefit regardless of whether the project ever achieves profitability or indeed whether it is developed. Knowing in advance how much the project will generate also facilitates planning in relation to use of project payments, reducing the risk of a failure to maximise the community benefits potentially associated with income flows.

On the other hand there is a danger that the community will, as a result of the limited project

information available when the agreement is negotiated, underestimate what the revenue the project is capable of generating, and so incur a serious opportunity cost. A single upfront cash payment may discourage the progressive development of capabilities and governance arrangements to utilise revenues effectively, with the result that decisions are based on short-term considerations and there is a failure to take advantage of opportunities to create a positive long term legacy. Such a payment is also made prior to the experience of impact or change from the project, negating opportunities to adapt spending decisions to the experience of change. For a project developer, the risk associated with a single upfront payment is very high if the amount involved is substantial, as the payment cannot be recouped or reduced if the project does not proceed or proves unprofitable. For this reason such payments are very rarely used, though more modest upfront payments may occur as a component of other approaches. This option is included because it represents one end of the 'risk spectrum'.

2.2 Multiple or ongoing fixed payments

An alternative approach is to use multiple fixed payments over the life of the project. Such payments may occur at specific milestones, such as at signing of the agreement or commencement of construction, and thereafter at set intervals (for example quarterly or yearly). As mentioned in Note v, the diamond mines in Canada's Northwest Territories (NWT) negotiated this kind of payment (with some recent exceptions). They are also the standard form of payment utilised in agreements in the coal industry in New South Wales and Queensland.

Fixed cash payments significantly reduce risk for the Indigenous party as they generally continue as long as a mine is in production and indeed may continue during periods when production is

suspended. In addition they are not, unlike some other approaches, susceptible to manipulation by the project operator (see below). However here again there is a risk of significant opportunity cost if the project turns out to be larger in scale or more profitable than anticipated when payments are negotiated. Thus in the NWT, for instance, some operators increased diamond production significantly after proving many new economic pipes in the early years of the mines, and there was no corresponding increase in financial benefits for affected Indigenous communities.

For a developer, substantial fixed payments carry a higher risk than some alternative approaches in that they may render a project uneconomic because they do not adjust downwards if revenues are lower or costs are higher than expected.

2.3 Royalties based on volume of production

Another alternative is to charge a fixed sum on each unit of mineral produced by a project (e.g., dollars per tonne). This approach has been applied, for instance, in agreements for bauxite mining in Cape York, northern Australia. The source of risk for the Indigenous community in this case is that output may cease entirely or production may be suspended, and so revenues will be lower than expected. On the other hand the risk of opportunity costs resulting from the limited availability of project information at the time an agreement is signed is somewhat reduced, because if output is greater than expected, there will be a corresponding increase in the revenue accruing to the Indigenous community. From a developer's perspective, unit royalties reduce risk to some extent, because if is forced to cut production for market or technical reason, its financial liability to the Indigenous party will fall proportionately.

2.4 Royalties based on the value of production

In this approach, described as an *ad valorem* royalty, payments are calculated as a percentage of the sales value of the minerals produced by the project. This amount is determined by multiplying the volume of output by the price received by the company per unit sold. The risk for the community is that the price of the mineral, as well as the volume of output, may fall, seriously eroding its revenues. An additional risk arises from the possibility that the project operator may be in a position to manipulate the price attributed to a mineral commodity, so reducing its liability to the Indigenous party. This is a particular problem where a commodity is not homogenous in terms of features such as its chemical characteristics and level of impurities, and is traded largely through transactions between related corporate parties rather than on open, competitive markets. A case in point is bauxite, the raw material for aluminum which unlike gold, for instance, has no standard characteristics and no common price set through international markets, and is often traded between related corporate entities that own bauxite mines, alumina refineries and aluminum smelters. A number of Indigenous groups in Australia have recently decided not to utilise an *ad valorem* royalty in situations where project output was to be purchased largely by a metal processing company with a substantial interest in the project involved, fearing that prices would be set so as to minimise corporate exposure to revenue-based taxes.

On the other hand *ad valorem* royalties have the substantial benefit that they allow communities to share in the benefits of price increases. The potential impact of such an approach is illustrated by recent events in the iron ore industry in Australia's Pilbara Region. Faced with a need to rapidly increase iron ore production, Rio Tinto entered into a series of 'Binding Initial Agreements' which Indigenous groups that allowed tenure to be granted in return for the

payment of ad valorem royalties on new iron ore capacity, an approach not generally used in the Pilbara until then. As a result these groups have benefitted greatly as iron ore prices have quadrupled, whereas groups using fixed payments have received no benefit while those using volume-based royalties or have benefitted only from rising production levels and not from higher prices.

For a business operator, this approach further reduces risk because the mining payment changes with another critical business parameter, the price it receives for its output. However, the cost of production is another major business factor, and if these costs increase dramatically, the operator still has the same mining payment obligation.

2.5 Payments based on profits

Profit-based payments are a charge on the funds that remain after a company has deducted, from its revenues, costs that can be defined to include a range of operating and capital charges. They are the principal tax mechanism utilised, for instance, in the Argyle Diamonds Ltd Agreement (Western Australia) (ADM et al 2005). Profits can be defined differently depending on what specific costs are deducted in its calculation. For example the Argyle Agreement uses a definition of profit that does not allow deduction of interest, tax, depreciation and amortization payments. Other definitions allow deduction of some or all of these items.

The risk for communities is that not all mines turn out to be profitable, and as most mines lose money during at least part of their lives (often through the first years until capital costs are recouped), the communities will receive very little for at least a part of project life and their income highly variable. For example Argyle's payment in 2007 was about A\$6 million, but technical problems in the open pit and a delay in a project to develop underground mining led to

a rapid decline in production so that profit-based payments ceased a few years later. Some projects never achieve profitability. This means there can be substantial delays to communities in receiving any benefits, or they may receive no benefits at all from mining on their lands.

Profit based royalties can also be susceptible to corporate manipulation, via the capacity of related subsidiaries of a firm to set prices for inputs used in mining and traded between them, as well as to influence the price at which a commodity is sold. For example, O’Faircheallaigh (2003, 6-11) has shown how one mine operating on Indigenous land in Australia purchased key inputs such as shipping and banking services from related firms, effectively giving it a considerable capacity to determine whether or not profits accrued and whether, therefore, any income accrued to the Indigenous party.

2.6 Grant of equity in a project to Indigenous parties

The final approach involves Indigenous communities taking their financial benefits in the form of equity in a project, and so receiving entitlement to the dividends that flow to shareholders. The risks of the previous model also apply here, in that dividends can only be paid once a project achieves profitability, which means that Indigenous groups have to wait a considerable time before receiving income and, in the case of unprofitable projects, receive no income. Indeed in this approach the risk that limited or no income will be received is heightened, as bank loans often have to be repaid from profits before any dividends can be distributed, and there may also be a need to retain a portion of profits in the business as working capital and/or financial reserves. This model comes with additional risks if a community has to pay for its equity, as projects can fail or costs change and shareholder dividends shrink, with the result that not only will no income be received, but the investment may be lost or yield little return. On the other

hand obtaining equity does create the possibility of substantial gains if a project turns out to be highly profitable, or if capital gains are generated by the sale of shares at prices much higher than the cost of initially obtaining them.

For project operators, equity reduces risk even more substantially than a profit based royalty, as additional financial commitments such as repayment of bank loans can be met before there is any obligation to make payments to Indigenous parties.

3 The risk effects of companies, projects and commodities

The degree of risk borne by Indigenous communities in adopting particular approaches to mineral taxation is also influenced by characteristics of the company developing the project; the nature of the project concerned; and the commodity involved, particularly the structure of relevant commodity markets.

In relation to the company involved, a key consideration is the breadth and depth of its experience in developing and operating complex projects. While no project developer is immune from the risk of failure, this risk is substantially reduced where a firm has extensive experience in developing a range of projects, in different environments and involving different challenges. Experienced personnel are a critical asset in this regard, and large diversified firms with decades of experience in developing and operating projects will be able to bring considerable expertise to bear in seeking to resolve any problems that do arise. Financial resources are also important. A large diversified multinational company may be able to ‘carry’ a project through teething problems or unexpected reversals arising from technical difficulties or poor market conditions, whereas a small ‘single mine’ company may be unable to do so (see, for example, Sudol 2005,

for a discussion of the failure of the Annaconda nickel project in Western Australia).

Projects also have inherent characteristics that affect the degree of risk involved. These may be locational, as for example where infrastructure must be built over difficult terrain susceptible to natural disasters or global warming trends, as in arctic and sub-arctic environments. They may also relate to the characteristics of the ore body and the technology employed to develop it. For instance, risk is lower where the ore type can be treated using technologies that have been employed successfully for generations, and higher where the opposite is the case. A clear illustration of this point involves nickel laterite ore bodies, which required application of technologies different to those traditionally employed in developing nickel sulphide ore bodies; a number of the laterite nickel projects have run into serious technical and financial difficulties (Sudol 2005).

The degree of risk associated with a particular project is also influenced by the commodity involved and arrangements for its marketing. For instance, certain commodities such as bauxite, iron ore or Liquefied Natural Gas (LNG) have traditionally been marketed on the basis of long term contracts that provide for limited price variation at least in the short term. In some cases sales occur between related companies and involve the supply of feedstock to a smelter or refinery which may be designed to process raw materials with particular physical and chemical characteristics. In such contexts the risk that a mining project may be rendered uneconomic due to short-term market fluctuations may be considerably lower than, for example, for a gold project selling a homogenous product in a highly competitive global market subject to the vagaries of short term swings in demand and supply. Particular commodities can also have inherent characteristics that affect the 'risk profile' of projects that produce them. A case in point is uranium. Individual uranium projects have been halted by governments because of political

opposition to uranium mining and/or nuclear proliferation, as occurred for example in Australia during the 1980s and 1990s as a result of a federal government policy that prohibited the opening of new mines. Uranium prices have also been characterised by a high degree of volatility due to changing market sentiment regarding prospects for expansion of the nuclear fuel industry.

The general point emerging from this discussion is a simple but important one. The degree of risk associated with a particular approach to mineral taxation is not independent of the nature of the company involved, the project it is developing or the commodity it plans to sell. For example, the risk associated with a profit based tax, discussed in section 2.5, may be very much higher for a uranium project being developed by a ‘single mine’ company using a novel technology, than for a large, diversified company opening up another in a series of iron ore mines whose output will be sold to well-established customers on the basis of long-term contracts.

4 Community risk tolerance: funding base and community priorities

Two factors are critical in assessing an Indigenous community’s risk profile in the context of taxing mining projects. The first relates to the nature and composition of its revenue flows from other sources. The second involves the use to which it intends to put revenues raised from taxation of mining projects, which in turn will reflect its existing revenue base and its current and future development priorities.

4.1 Diversity and reliability of non-mining revenue sources

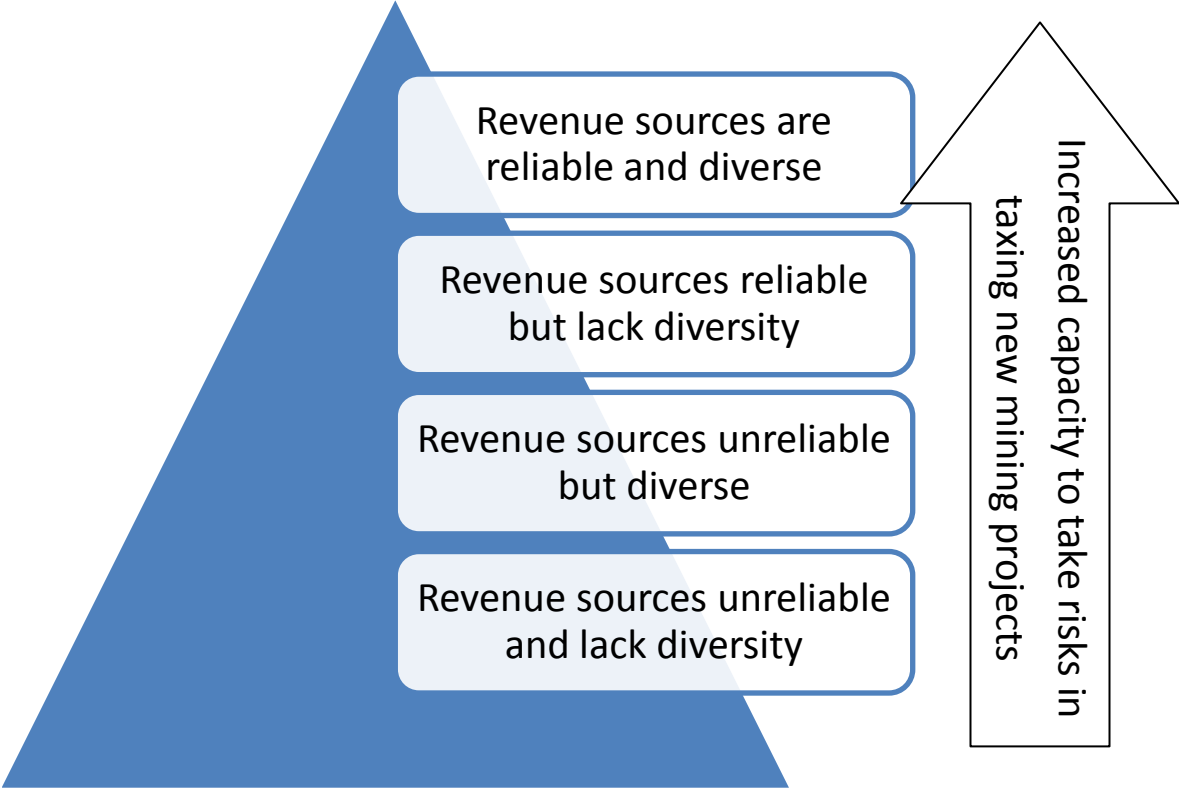
In assessing community revenue flows from sources other than the resource project that is to be taxed, reliability and diversity are critical factors. Reliability refers to the degree of certainty that

a source of funds will materialize and to the length of time over which its availability is guaranteed. For example, a number of land claim settlement agreements in Canada include legally-binding commitment by the Canadian Government to provide a minimum income stream to Indigenous communities for up to 20 years, which represents a highly reliable income source. In contrast, a community's income stream from a state/provincial government might be less reliable because it is tied to an annual or tri-annual budgetary cycle and may disappear as a result of changes in government priorities. Income from a project which is selling minerals or other products whose prices fluctuate from year to year in response to global economic factors is even less reliable.

Diversity refers to the variety of sources from which funds are and will be derived, for instance other mining projects, non-mining commercial activities, community-owned business enterprises, state/provincial and federal government grants. It focuses on the relationship of income streams to each other and the extent to which they are subject to the same influences. If the bulk of a community's revenue stream is derived from mining projects subject to volatile markets, or from other sectors such as tourism that are also vulnerable to the same economic cycles, then diversity is low. On the other hand if commodities produced by mining projects are not subject to global economic influences in the same way, this enhances diversity. For example, gold prices tend to be counter-cyclical, and may rise in times of economic recession as people purchase gold as a store of value, whereas prices for 'industrial' metals tend to fall during recessions. Thus a community that relies on income streams from both a gold mine and an iron ore mine may enjoy a degree of diversity, because while both are sensitive to global economic conditions, the prices for each will head in different directions under the same economic circumstances.

Figure 1 illustrates the relationship between the reliability and diversity of a community’s revenue streams and its capacity to bear risk in relation to income from a new mining project. Where there is high reliability and high diversity, the community faces little risk in relation to existing revenues and can accept a substantial degree of risk in taxing a new mining project. In a case where revenues are reliable but there is little diversity, the community may again be in a position to bear a substantial (albeit somewhat lower) degree of risk. Where there are diverse sources but all lack reliability, risk tolerance in relation to a new project will be considerably lower. Finally, where existing revenues are unreliable and lacking in diversity, there is a strong argument for adopting a low-risk approach to taxing a new project to ensure that the new income stream it generates is reliable.

Figure 1: The relationship between revenue diversity and reliability and capacity to bear risk



4.2 Community needs and priorities

The second factor in assessing community risk tolerance involves the purposes to which mining payments will be put, the importance and urgency to the community of the activities that will be funded, and the adequacy of existing revenues in meeting community needs. For instance even where existing revenue sources are diverse and reliable, if a community has an unmet need that is a high priority and must be funded by revenue from a new mining project, a community's risk tolerance in relation to the new project may be low. Similarly, if the unmet need is urgent, this may create a preference for a taxation approach that is likely to generate revenue in the short term.

Resources need to be applied in a way that is relevant to community needs, effective, and can be sustained in the long term (Renshaw 2001). A starting point in addressing these issues is to identify a community's development priorities and the time frame over which it wants to achieve these. Such information can be identified in two ways, either from existing community plans or through a dedicated planning process. The key point is that a community needs to establish where it is now and where it wants to go. If a community has recently gone through a planning exercise where key priorities and time frames have been established, this work can be utilized. If relevant information is not already available, ideally a community planning exercise should occur. The nature of such a process will depend on the available time and resources. If sufficient time and resources are available, a full review of the social and economic baseline and a profile and analysis of social trends should be undertaken (Burdge 2004; DFID 2003; ICMM 2005).

If project time frames are tight and/or resources are scarce, negotiators will need to quickly 'take the pulse' of the community, as a lengthy community planning exercise that fails to produce

results in time for use in negotiating a tax regime with project developers may be a wasted exercise. Such a ‘short cut’ may involve workshops with senior people in the community, or a short and sharp review of priorities based on interviews with key service providers. For example, in one remote Albertan community under pressure to negotiate multiple agreements with oil sands companies, a review of community planning documents and interviews with key administrators quickly revealed a series of priorities. These included upgrades to socio-economic and physical and infrastructure; additional funding for youth and elder services; employment and entrepreneurial business opportunities; employment in a conservation based economy; and employment on-reserve rather than in distant communities or remote locations. While sometimes unavoidable, this type of short cut may pose significant risks and potentially result in a loss of legitimacy and long-term problems for a community.

Whatever approach is used, the key point is to ensure that management and use of revenues is dictated by community needs, especially given that mining companies may have their own priorities, for example promotion of Indigenous employment or support of key services or infrastructure development (Render 2010). An emerging trend is to focus on how a ‘commercial mining operation can fit into Indigenous life’ (Render 2010, 35; see also IFC 2000; DFID 2003). For example the ICMM Community Development Toolkit (ICMM 2005) illustrates how mining can fit into community development. It provides five categories of tools for community development planning and implementation, including assessment, planning, relationships, program management, and monitoring and evaluation. Each section encompasses basic tools, such as a competencies assessment and a process for measuring and recording the skills of an individual or group which identifies the people and structures that exist internally to run

programs and any gaps that exist in this area (ICMM 2005). This is one tool of many that are available, including institutional assessment and community mapping

An understanding of a community's social, economic and cultural status is essential background to any community development planning or priority-setting exercise. As an example, the community's population profile—birth rate, death rate, and age distribution—will provide insight into short and long term needs for infrastructure. If the population is comparatively young, as is the case in many Australian and Canadian Indigenous communities, there will be large number of youth and adults who may be able to participate in economic activity, and therefore generate a tax base to support investment in health and other services. If, however, the population is aging, the available tax base may be smaller while at the same time there is an urgent need for services to support elders. Education levels are also relevant. High school graduation rates and post-secondary achievement can tell leaders about the ability of adults to enter into the workplace and participate actively. Low levels of educational attainment point to priorities such as training and education support, through mechanisms such as scholarships or targeted programs. Social equity measures can also provide valuable information. For example the relative income levels of men and women can alert planners and negotiators to existing disparities that could widen further as growth of mining employment exacerbates existing wage divides. Base line studies carried out by proponents as part of environmental impact assessments may represent a useful source of data in this regard.

Once priorities and time frames are established for community development, then subsequent consideration of taxation models for mining projects can be based on this information. Three key questions need to be addressed: what level of funding is required in priority areas; how urgent is the need for funds; and how adequate are overall community revenues in meeting community

needs.

4.2.1 What funds are needed to meet priorities?

The cost and feasibility of identified priorities must be assessed. For example:

- Capacity building and entrepreneurial skill development programs or flexible business loan arrangements may be required to support Indigenous business enterprises.
Government may have existing programs in these areas, and so it may be possible to negotiate cost sharing; if so, the extent of the community's contribution will have to be established.
- Health and social programs may require funds for programs, salaries and/or for infrastructure, such as a new health clinic or sports facility (Renshaw et al. 2001). The time frame within which funds will be needed must also be established (e.g., an 'upfront' capital investment may be needed over two years, followed by 15 years of salaries for staff who will operate the facility).
- Educational programs may need to be funded to prepare individuals for employment through training, scholarships or targeted support for individual learning.
- Major and minor infrastructure needs may be identified in areas such as recreation, housing, access roads, schools, community centres, culture or health facilities, churches, roads or airstrips. Such infrastructure needs will generally involve large and 'lumpy' costs at the construction stage.
- Cultural programs or activities may need support, such as language training, cultural events and activities on the land; people may need funds for funerals or Assemblies; or

specific vulnerable groups, such as harvesters, hunters or trappers may need funds to pursue their livelihoods despite increased costs. Again, the feasibility and cost of each item needs to be established.

Planners can dissect each priority using a core set of questions for planning, project management and implementation, such as: Who will the beneficiaries be of new services or infrastructure? Where will programs or services be located? How will benefits be equitably distributed? What is the culturally appropriate executing agency? How will vulnerable populations benefit from development? (Renshaw et al. 2001). Once the cost and feasibility of each priority is clear, this information needs to be considered in light of the next two questions.

4.2.2. Urgency

The second question involves how urgent are funding needs and how critical are they to the welfare and survival of the community? For example, is there a crisis among young people? Is extra revenue needed immediately to shore up services that are seriously under-funded? The implication of a crisis in a particular program or section of the population is that the community will not seek a high risk approach to taxing a mining project, unless existing revenue sources are highly reliable and diverse and can be targeted to the urgent priority. For example if the community adopted a high risk approach and used mining revenue to fund scholarships for at-risk youth to stay in school, but then had to terminate scholarships because of a drop in mineral prices that affected the community's revenue stream, this would force young people to abandon their learning paths. Thus, in the case of an urgent and critical need, the community will need to assume a low risk approach to taxation, including for example guaranteed up-front payments made on project milestones. If the priority is a new health facility—or adding to an existing

centre, focused for instance on child and maternal health—then the community will need funding for up-front capital cost, and also guaranteed income to operate the facility and fund staff salaries. In this case, a low risk model is again warranted, involving for instance a large upfront payment and fixed annual payments tied to the company's occupation of the mining lease rather than to revenues or profits.

4.2.3 Overall adequacy of community revenues

A critical part of the context for a consideration of funding requirements and of the urgency of funding needs involves the existing adequacy of community revenues relevant to community needs. For example if a community's finances are already under pressure and insufficient funds are available to meet urgent needs, this will reinforce the need for a low risk approach to taxing new mining projects.

Using information on the diversity and reliability of revenue sources, on community priorities and their urgency, and on the overall adequacy or otherwise of existing revenues, decision makers can assess a community's risk tolerance. As an example, a community may have three mining projects generating income streams, and stable revenues from a long term agreement with the federal government. This represents high income diversity and reliability, therefore the risk tolerance for a fourth additional project may be very high. If the community priority for investment is to provide business capital, and the need is not urgent, this may add further to the community's ability to accept a highly risky approach to taxation. In contrast, an Indigenous nation with four remote communities in the process of negotiating a land claim, with limited access to existing revenue streams and with strong demand for health and social services may have an entirely different risk profile and may take a very risk adverse approach to mineral

taxation. Table 1 illustrates the relationship between the key variables discussed above and the choice between a low risk and a high risk approach to mining taxation.

Table 1 Relationship between existing revenue patterns, funding needs and risk

Question	Low risk approach to mineral taxation	High risk approach to mineral taxation
How diverse and reliable is the community funding base?	Low diversity and/or reliability characterises existing revenue sources. Mining revenues need to be guaranteed both to provide an alternative revenue source and to enhance reliability.	Highly diverse revenue sources that are reliable over the long term enhance ability to take a riskier approach.
What are priorities and what funds are required?	Community has priorities that demand substantial funding which is currently unavailable	Priorities (e.g. building a capital fund for future generations) can be met even if revenue streams from mining are delayed or interrupted.
What is the urgency for these funds?	'Crisis' needs exist that demand to be urgently met and so failure of mining revenues to eventuate could impose substantial costs.	Urgent priorities can be met from existing revenue sources.

5 Measuring a community's risk tolerance

While it is possible to identify the factors that will influence a community's approach to risk in general terms, how can the degree of risk acceptable to individual communities be assessed in practice?

Risk tolerance has emerged in the banking sector as a key concept in characterizing financial attitudes. It is the level of risk that an individual believes he or she is willing to accept, and the

level selected is used in financial planning. It reflects an individual's values, beliefs and personal goals, and overlaps with feelings of wanting to feel confident and in control of an individual's finances. It has been defined as the willingness to engage in 'behaviors in which the outcomes remain uncertain with the possibility of an identifiable negative outcome' (Irwin, 1993, p. 11; Grable and Lytton 1999).

Measurements of risk tolerance for individuals are common in the banking industry. The respondent will generally work with a financial planner, responding to a series of graphs listing potential capital growth scenarios over time. A 'low risk' position is a scenario that will bring, for example, a return of somewhere between a gain of 10% growth and a loss of 0% over the life of an investment. In comparison, a 'high risk' portfolio might involve a range of returns from a 50% gain to a 25% loss over the same time period.

For the purposes of community planning, the measure of risk is based on how much the community is willing to lose and how much it would aim to gain from having an industry operating in or near its traditional territory. Thus the concept of risk tolerance is transferable to a community, even if the standard tests for individual risk tolerance may not apply. Getting at how much a community wishes to gain, and is willing to risk losing, requires dialogue and interaction, the nature of which is likely to differ from community to community and over time. It may be that a technical working group can be established that informs the leadership, and that the leadership then makes decisions on the appropriate degree of risk and on the taxation model to pursue. Alternatively, there may be a public consultative process to identify priorities and their urgency, and on this basis technical advisers can work out what taxation model best 'matches' the priorities and degrees of urgency identified by community members. As Robinson et al. (1989, 275) suggest, a crucial issue will involve balancing political and financial considerations

in management decisions.

Regardless of who will make the relevant decisions, they need to understand the nature of alternative financial models and the information that is available on priorities and time frames and on existing sources of revenue and demands on these. Once people have this context, they can work through a variety of scenarios in order to choose the taxation approach that best suits their needs. Ideally this should be an in-depth process informed by advice from expert economists and investment fund managers, but this will depend on how much money and time is available. Community consultations can be phased if resources are limited, with early discussions revolve around priorities and their urgency, and later meetings focusing on the variety of available taxation approaches. The final outcome should be a collective understanding of what level of risk the community is willing to accept.

The process should generate a short report or presentation for decision makers that consists of:

- A list of priorities, and their cost in the short, medium and long term;
- A statement setting out the urgency for each priority.
- A budget depicting existing fund sources (including shortfalls) and a qualitative assessment of their reliability and diversity.

At this point it is necessary to return to the six approaches to taxation of mineral resources discussed in Section 2.0 and identify the nature of risk associated with each in relation to the specific mining project under consideration. This work may be done by a resource economist, who models what type of income stream would be generated for the community under each approach, determining the sensitivity of the net present value to a range of variables, such as changes in the capital cost of the project or in commodity prices. The analyst can then depict

how the pattern of returns that each approach to taxation of a project is likely to provide to the community, as well as indicating the factors that might result in changes in expected outcomes. With this information to hand, decision makers can identify the approach to taxation that best meets the short, medium and long term needs of the community.

It cannot of course be assumed that all members of a community will have the same level of tolerance for risk. For example business-orientated people may feel that the community should be willing to bear a significant degree of risk in order to earn high returns, and may lean towards taxation of profits or taking equity in a project. Others who are primarily concerned with generating a reliable income stream to support health and wellness programs may feel risk averse and so lean towards fixed annual payments. Where conflicting perspectives exist in a community, the conflict can be managed through consultation and discussion designed to identify an approach to taxation, involving a combination of the models outlined in Section 2.0, that acknowledge different risk assessments and perspectives. So for example the Innu and Inuit negotiated a tax regime for the Voisey's Bay nickel mine that combines fixed annual payments established for the entire life of the project (low risk), with a revenue-based royalty that is high by Canadian and international standards but only applies when nickel prices surpass a certain level (high risk, high return).

6 Conclusion

Any approach to mineral taxation also embodies an approach to risk. In the authors' experience, most Indigenous communities negotiating agreements with resource companies do not explicitly recognise this reality, or attempt to manage it in a way that enhances their ability to derive maximum benefits from mineral development on their traditional lands.

This article seeks to raise awareness of the need to develop an explicit and coherent approach to risk management in negotiating taxation arrangements for resource extraction on Indigenous land, to identify critical issues that must be considered in assessing and managing risks, and to begin a discussion of how these issues can be addressed. A key starting point involves the recognition that risk assessment and management involves three key components. Two of these are not specific to the Indigenous context, an understanding of the risks inherently associated with different approaches to mineral taxation and of risks associated with different types of mineral commodities, mining projects and mining companies. The third component involves the specific context of individual Indigenous communities, and in particular the degree of diversity and reliability that characterised their existing revenue flows; their social, cultural and economic priorities; the degree of urgency associated with various priorities; and the overall adequacy of their revenue flows relative to needs. All three components and the interactions between them must be considered if risk is to be managed through choice of an appropriate approach to mineral taxation.

A consideration of these components involves technical analysis based on the compilation of relevant economic, fiscal and social data, and the development of scenarios designed to test the consequences of adopting various approaches to taxation and the sensitivity of outcomes to changes in key variables such as project costs and commodity prices. However just as with individuals, assessment of community attitudes to risk requires input from the community, both in terms of providing relevant information (for example regarding needs and priorities) and, critically, because risk assessment, no matter how well informed by technical data, is still a matter of judgment. The extent and form of community participation will depend in part on the extent of available time and resources, but even where these are limited it is critical that use is

made of whatever information is available on community needs and priorities and that even a limited and selective assessment of community attitudes to risk is undertaken. In the latter regard it must be recognised that not all community members will assess risk in the same way. A critical role for community leaders and negotiators is to identify approaches to mineral taxation that best balance conflicting risk assessments.

We recognise that, unlike national or state/provincial governments, Indigenous peoples are rarely in a position to legislate tax regimes, and so the value of an appropriate risk management strategy can only be realised if an Indigenous community can negotiate its acceptance with the developers of a mining project. This may mean that some modifications to a community's preferred approach are required. However an Indigenous community will be in a much better position to negotiate a mutually acceptable outcome if its negotiating position is based on a careful calculation of the risk implications, both for itself and for the developer, of different approaches to mineral taxation. In addition, given that mining companies are under growing pressure to demonstrate their 'social responsibility' and their contribution to local economics and communities, Indigenous negotiators are more likely to be successful where they can demonstrate to developers that their approach to taxation is based on a careful and systematic analysis of community needs and priorities.

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ⁱ The impact of the growing recognition of Indigenous rights in land and sea is especially important because it has been most significant in precisely those regions that increasingly account for mineral production, for instance the Pilbara, Kimberley, and Cape York regions and in the Northern Territory in Australia, and in the Northwest Territories, Nunavut, British Columbia, Newfoundland and Labrador, and northern Ontario and Quebec in Canada. For example in 1999 Indigenous rights in land (‘native title’) had been recognised to less than 10 per cent of the Kimberley region of northern western Australia. Today the equivalent figure is 61 per cent.

ⁱⁱ For example, a substantial number of Aboriginal – mining company agreements in Australia and Canada provide for benefits that are equivalent to between 2 and 3 per cent of gross project revenues, equivalent to the royalty rates imposed by many state or provincial governments,

ⁱⁱⁱ For the classic study of mineral taxation see Garnaut and Clunies Ross 1983; for a more recent review see Otto et al 2006.

^{iv} The Voisey’s Bay impact and benefit agreements (IBAs) are not public, but one of the authors has been granted access to their terms, and also to general information on revenues flowing into the relevant Inuit and Innu trusts during recent years. These revenues completely overshadow those from Provincial revenue-sharing.

^v For example the financial provisions of almost all agreements in Australia’s Northern Territory are based on an ad valorem royalty, while most agreements in Canada’s Northwest Territories use fixed annual payments.