



REVIEW OF ROYALTY REGULATIONS IN THE DEVELOPMENT OF RESOURCES LEGISLATION IN THE NWT

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Government of
Northwest Territories

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As the Government of the Northwest Territories (GNWT) begins a full review of the regulations that govern royalties in the Northwest Territories (NWT), this paper aims to provide the context necessary to facilitate an informed discussion.

The current review of royalty provisions is the first full examination of these regulations since they were mirrored in 2014 as part of Devolution.

► *The NWT Royalty Regime: Past and Current*

Prior to Devolution, the core elements of the NWT's royalty regulations were administered for over 60 years by Indian and Northern Affairs Canada (INAC) as the Canada Mining Regulations (CMR).

They have been applied to a broad spectrum of producing mines in the NWT and Nunavut, covering a variety of commodities including diamonds, gold, silver, uranium, lead, zinc, tungsten, and copper.

Changes to the CMR provisions were made in 1995 when, along with a number of modifications, rates were increased. The last review of the NWT regime was commissioned in 2008 by INAC and captured in the Two Ducks Report.

The only updates to the NWT royalty regime have been administrative changes to diamond related provisions.

For the most part, the core elements of the NWT's "Mining Regulations," have not changed since their initial implementation:

- Royalties are determined using the value of production reported by the operator of each mine;
- Rates are progressive, increasing as the calculated value of output increases;
- Value of production is reduced by direct and indirect costs for extraction, processing, and marketing;
- Royalties are not commodity specific. While there are specifics for the valuation of diamonds, all minerals are subject to the same progressive rates;
- Discretion in decision-making given to government officials is limited.

The NWT's royalty calculation is comparatively simple. Royalties are calculated based on the value of a mine's output (total production revenue minus expenses).

The GNWT gathers 100 percent of the royalties. A percentage of this total is shared first with Indigenous governments under modern treaties. After that, the GNWT shares 50 percent of royalties (and all other resource revenues) with Canada and 25 percent of the remaining revenue with Indigenous governments that are signatories to the Devolution Agreement.

Payments to Indigenous government signatories are formula based and calculated using the cost of living and population of each region. The remaining revenues are allocated for investment in the territory, through legacy infrastructure and debt payment, or collected in the Heritage Fund.

EXECUTIVE SUMMARY

► *The Basic Framework of Mine Taxation in Canada*

Natural resources are commonly held to be public property. Royalties allow jurisdictions to realize value or “rent”¹ for these resources.

Canadian jurisdictions, including the NWT, are empowered to manage resources within their boundaries and to impose resource taxes and royalties.

Income taxes are fairly consistently applied across Canada. The federal corporate income tax rate is currently 15 percent, while provincial rates vary from 11 percent in BC to 16 percent in Nova Scotia and Prince Edward Island. The NWT tax rate is 11.5 percent.

A criticism of the Canadian tax regime, however, is that federal, provincial and territorial governments are increasingly adding non-profit-based taxes to augment their revenues. These include payroll taxes, property taxes and user fees.

► *A Comparison of the NWT Framework Within Canada*

In contrast to income taxes, provincial and territorial mining taxes, duties, or royalties are treated differently in each jurisdiction and are levied on the profits of a company’s mining stage. Most regimes allow for the recovery of exploration, development and capital costs before the mine becomes taxable.

In a mining context the minimum level that tax considerations influence mining choices or decisions is referred to as “efficiency”. Under this definition, the profit-based royalty system used in the NWT (described as an almost-pure “resource-rent based tax”) is viewed by economists as a desirable and most efficient system.

► *A Comparative Review of the Mining Fiscal Regime*

Given the volatility of commodity prices (and other complex market forces shaping investment flows), the extended time lags between resource discoveries, extraction decisions, and eventual sales yields, forecasting royalties in the mining sector is challenging.

Furthermore, without a full understanding the regulatory and legal frameworks of each jurisdiction, a meaningful comparison of provisions or regimes is difficult.

¹ The origin of the term rent or Ricardian rent stems from David Ricardo’s *Principles of Political Economy and Taxation* (1817). Ricardo’s formulation of the law of rent is among the most important and firmly established principles of economics. Economic rent on land is the value of the difference in productivity between a given piece of land and the poorest [and/or most distant], most costly piece of land producing the same good (e.g. bushels of wheat) under the same conditions (of labour, capital, technology, etc.).

Ricardo argued that when all of that surplus or ‘economic rent’ was ‘captured’ or expropriated by the landlord, that the landlord could evict those tenants that refused to hand over the surplus and replace them with those working marginal lands or with landless peasants. Furthermore, the peasant’s costs of production in producing grain on this land, include his own implicit wage or salary income, which, in terms of opportunity cost, must equal his ‘transfer earnings’: i.e., must be an income sufficient to dissuade him from seeking an alternative employment (or some alternative rental land). Therefore, denying the peasant the economic rent on this land will not cause him to leave.

Like profit, a Ricardian rent is a surplus earning above the costs necessary to deploy and use a resource. Unlike profit, however, it would continue to exist in a hypothetical state of equilibrium as long the resource remained scarce.

Rather than trying to compare actual mines and their responses to fluctuating commodity prices and tax rules, the World Bank, the International Monetary Fund, Natural Resources Canada and other government agencies develop financial mine models to measure the functionality and competitiveness of varying regimes in the context of common impacts or environments.

In 2020, PricewaterhouseCoopers (PwC) used this technique to complete a benchmarking of the NWT's mining tax regime against 21 Canadian and international systems. The study used a modelling similar to that used for the 2008 Two Ducks Report to assess changes that may have occurred over time.

PwC found that, like many Canadian jurisdictions, the NWT falls within 10 percent of the median value for most tax components. Consideration of the NWT's overall tax burden and specific tax components positioned the NWT firmly in the middle of the jurisdictions measured. The NWT's competitive tax ranking changed only modestly from 2008.

PwC (2020) concluded that the NWT regime has maintained a competitive² position that encourages the substantive, long-term investment levels needed to keep the mining industry active while also returning a fair portion of a project's profit to the people of the NWT.

► *Foundational Principle Concepts for Future Mining Regulations*

Three principles specific to Royalties should also be considered for framing the discussions:

- As the GNWT prepares to update its mineral taxation regime as part of the Intergovernmental Council, the approach will follow the principles developed during the Mineral Resources Act to ensure that the changes meet the goals of the NWT. The collaborative approach taken in its development reflects the partnership that exists between the NWT's territorial and Indigenous governments and was guided by mutually shared goals to:
 1. regulate mineral interests efficiently, effectively and in a transparent manner;
 2. support the economy of the NWT;
 3. realize benefits from mineral development for indigenous governments and organizations, communities and the people of the NWT;
 4. ensure that wealth generated by mineral resources will be used for the benefit of present and future generations of the people of the NWT;
 5. encourage positive relationships between proponents, indigenous governments and organizations, communities and the Government of the NWT;
 6. respect Aboriginal and treaty rights;
 7. complement the systems for collaborative management of land and natural resources;
 8. improve geological knowledge; and
 9. recognize sustainable land use.

² In this paper, "competitiveness" refers to the concept in economics known as competitive advantage which describes the factors that allow a company to produce goods or services better or more cheaply than its rivals. These factors allow the productive entity to generate more sales or superior margins compared to its market rivals. In this context, competitiveness is an assessment of the performance of one government's policies when compared to another using standardised measures.

EXECUTIVE SUMMARY

These same principles will underpin the work to develop regulations that will serve to interpret and define the intent and purpose of the Act.

► *The Nature of the Mining Industry and Implications for Mineral Regimes*

An understanding of the mining industry is needed when considering new taxation regulations, or changes to existing ones. Mining has unique characteristics that distinguish it from other sectors of the economy and is traditionally afforded different tax treatments.

The objective of an “ideal” tax and royalty regime is to balance the needs of government with the requirements of investors and industry in light issues unique to mining.

Some believe that a well-designed mineral fiscal regime should allow for a fair return for government while also allowing investors to generate their needed return on the investment. The standard as expressed by the World Bank and the International Monetary Fund is that the government share (the amount that government receives from the sector in terms of taxes and royalty) should be in the range of between 40 to 60 percent of pre-tax cash flow generated by a project – i.e. government and investors should share pre-tax cash flow over the life of a mine roughly on a 50:50 basis. This is the range that all Canadian jurisdictions fall into.

► *Types of Royalties*

How a royalty is determined and calculated can vary and any royalty system has advantages and disadvantages that will impact the feasibility of a given project and the jurisdiction it is in.

Approaches can be classified into six royalty types (detailed in this paper).

- Royalties based on production volume
- Royalties based on the value of production, also called *ad valorem*³ royalties
- Royalties based on profits
- Royalties based on resource rents or “exceptional profits”
- Hybrid royalties, a combination of an *ad valorem* royalty and a royalty on profits or resource rent; and
- Production-sharing contracts.

³ The term “*ad valorem*” is Latin for “according to value.”

The effectiveness of a royalty regime also depends on its ability to achieve a balance of seven fundamental government objectives (detailed in this paper).

- Revenue maximization/adequacy
- Optimal tax
- Economic allocative efficiency⁴
- Revenue stability
- Equity
- Transparency and stability; and
- Administrative efficiency

In reality, taxation and royalty policies in most jurisdictions represent compromises and a level at which a government has the capacity to administer them.

Given the sizable role that the mining industry plays in the NWT economy, it is appropriate to expect the NWT's royalty regime to adapt to a changing and competitive investment environment.

As the GNWT continues to develop the regulations that will enable its new *Mineral Resources Act* (MRA) a complete review of the NWT's regulatory provisions is timely.

⁴ In economics, the term refers primarily to the "allocation of resources," the process by which resources get allotted (apportioned, assigned) to their particular uses for directly or indirectly satisfying human wants. Efficient allocation represents an optimal distribution of goods and services to consumers in an economy, as well as an optimal distribution of financial capital, i.e. all goods, services, and capital are allotted and distributed to their best use.

INTRODUCTION

The passage of the *Mineral Resources Act* (MRA) by the 18th Legislative Assembly presents the timely opportunity to examine and amend the royalty provisions of the *Mining Regulations* (MR). During development of the MRA, public consultation was undertaken, and the comments were recorded (ITI, 2018). Representatives of Indigenous governments and organizations acknowledged the need for the royalty regime to remain unchanged until a broader comprehensive review could be completed with the Devolution partners.

A number of topics of interest regarding NWT royalties were raised in the 2018 *Mineral Resources Act: What We Heard Report* (ITI, 2018):

- Participants from the public and industry commented that the level of taxes and royalties should address the impacts of mining without discouraging investment;
- Opinions were expressed about royalty allocation, especially that not enough money was shared with Indigenous organizations;
- Some respondents indicated a desire to increase the amount of revenue collected by government;
- Comments also included suggestions that the GNWT was missing opportunities for mineral sector growth or not maximizing benefits from current production;
- Most industry participants commented that the current royalty approach seems to work well. The royalty system should be clear and competitive;
- Members of the public frequently commented that the NWT should receive a fair return for its mineral resources; the level of transparency combined with the complexity of the royalty regime were also criticized.

This research paper aims to continue and expand this discussion as the GNWT moves to revise the regulations that govern mining in the NWT. The determination of an optimal royalty scheme for the NWT must account for the unique characteristics of (i) governance of the NWT, (ii) the current state but also the potential of the territories' mining sector; and (iii) the position of the sector compared to other mineral-producing regions around the world. Since the mining regulations currently in use were mirrored from the federal regulations in 2014 as part of Devolution, no comprehensive examination of the regulations has occurred from the perspective of residents of the NWT.

The mandate of the 19th NWT Legislative Assembly includes provisions to increase resource exploration and development and to adopt a benefit retention approach to economic development. This paper is guided by these provisions recognizing that resource development can play an important role in the future economy of the NWT.

Best governance practices suggest that reviews of a regime should be undertaken once every decade. The ten-year cycle allows mining companies with capital-intensive projects reasonably long periods of fiscal stability for planning purposes while ensuring that governments can address changes in the governance landscape. At a minimum, periodic reviews of a royalty regime are needed to confirm the regime's competitiveness. The last review of the regime included the commissioning of the Two Ducks Report (2008) by Indian and Northern Affairs Canada (INAC). At that time, recommendations for amendments to regulations were suggested, but none were enacted. Thus, the current review of the NWT regulations is timely.

In order to project how the regulations should look, it is important to examine the current regulations and assess their functionality.

The core elements of the current royalty regulations were developed and administered as the *Canada Mining Regulations* (CMR) by INAC for over 60 years⁵. During this time, they have been applied to a relatively broad spectrum of producing mines in the NWT and Nunavut, including small- to medium-scale gold mines (Giant, Con, Lupin, and Meadowbank), small- to medium-scale base metal mines (Pine Point, Nanisivik, Polaris, and Cantung) and large diamond mines (Diavik and Ekati). The provisions that make up the regulations have seen minimal changes over 60 years. The few changes made were in response to both the changing nature of the mining industry in the North and formal appeals by industry.

The most recent revision of the CMR royalty provisions was completed in 1995 (Department of Indian Affairs and Northern Development DIAND, 1996). This DIAND report made numerous recommendations for changes in response to a government strategy to increase revenues. A comparative financial analysis using base metal and gold mines demonstrated that the NWT royalty rates were somewhat lower than comparable Canadian and international jurisdictions. As a result, the NWT's minimum rate (levied on mine outputs of \$10,000-5million) increased from three to five percent while the maximum rate (levied on mine outputs exceeding \$45 million) increased from 12-14 percent.

In light of the discovery and mining of diamonds, the DIAND report also examined options for the overall structure of the regulations on royalties. The first part looked at alternative approaches applying a single royalty to all minerals in production. It included the following options:

- Project-specific royalty through contract (similar to that for the Argyle Diamond Mine in Australia);
- Commodity-specific royalty (similar to Saskatchewan and Western Australia);
- Retaining the single mining royalty structure for all minerals.

Options 1 and 2 were rejected. A project-specific taxation system provided no certainty to potential mine developers. The level of taxation would be subject to negotiation once the mining company had found a deposit, and therefore would depend upon the expected profitability of the project and the political climate at the time. Moreover, the division of taxation powers between various levels of government would make any such agreement a complex and time-consuming endeavour. The option for separate royalty regimes for different minerals was also rejected on the basis of equity. Even in the case of diamonds, which is one of the more complex minerals to value⁶, mining is not so significantly different from a technical perspective as to warrant a different structure of royalty. It was determined that there was no justification for levying a different level of royalty on two mines of equal profitability just because they happen to produce different minerals. Instead, the recommendation was made to retain the single royalty structure for all minerals. It was concluded that making modifications to the existing royalty regime could meet the objectives of the review without the uncertainties inherent in instituting a new royalty regime.

⁵ Government of Canada 1985 Territorial Lands Act. <https://laws-lois.justice.gc.ca/eng/acts/T-7/> and Canada Mining Regulations. https://laws-lois.justice.gc.ca/eng/regulations/C.R.C.,_c._1516/20060322/P1TT3xt3.html

⁶ Unlike most minerals where the value for royalty purposes can be easily determined based upon quantity and a price quoted on a recognized commodities exchange, the price of diamonds varies according to both quantity and quality. Moreover, as diamonds do not usually trade on open markets, the determination of price is a specialized task. As a result, the governments of most diamond-producing countries generally insist on valuing diamond production prior to sale or export. Use of the independent valuations allows for the consistent assessment of a very complexly priced and high-value commodity where determining a fair market value would not be possible by normal market monitoring. This function is critical for ensuring that the NWT is receiving a fair return on its resources.

THE NWT ROYALTY REGIME: PAST AND CURRENT

Based on this decision, the issue of whether to modify the existing royalty regime or replace it with a new regime was examined. In particular, the idea of a two-tiered system (*Ad valorem* royalty plus a profits-based royalty) was considered. While it was recognized that this type of system provides a more stable flow of revenue, it was rejected because of the unreasonable burden on mines during periods of low commodity prices. Other Canadian provincial models were examined, but eventually it was decided that the profit-based system in place would be retained as it was determined that the objectives of increasing revenues and clarifying aspects of the regime could be achieved with the rate changes and incorporating ideas from other jurisdictions.

Major proposed revisions (in addition to the rate increases discussed above) included:

- Elimination of the then-available three-year royalty-free period. It was determined that in order to simply and equitably increase the effective royalty rate, the elimination of the three-year royalty-free period for a new mine was the optimal approach;
- Introduction of accelerated depreciation (100 percent) was used to recognize the high-risk nature of mining. The annual maximum allowances for depreciation and preproduction costs were increased from 15 percent to 100 percent of the original cost of the assets. This would give a mine the option to completely recover its capital investment for mining royalty purposes prior to actually paying any royalty;
- Expansion of the asset base for the depreciation allowance to include all buildings, plant, machinery and equipment used in the mine operations. This made capital expenditures on the camps and dedicated town sites that are necessary for the operation of mines in remote areas eligible for the depreciation allowance;
- Deductible mining reclamation trust contributions in order to recognize the cost of providing this form of security for reclamation obligations under federal legislation in the NWT.
- Diamond valuation⁸ which required the valuation of diamond production by a federal government-appointed valuer prior to sale or export from Canada.
- Narrowing the asset base for the processing allowance to those assets used directly in processing and that were purchased prior to commercial production or as part of a major expansion while excluding replacement costs and those assets used only indirectly in processing;

All of these revisions were implemented with the exception of the proposal to narrow the processing allowance asset base. A number of other sections of the regulations saw language amended to increase clarity.

THE NWT ROYALTY REGIME: PAST AND CURRENT

The 1995 amendments were the last substantive adjustments to the royalty regulations. A review of the regulations was undertaken in 2007-2008 (Two Ducks, 2008) to examine the competitiveness of the royalty rates, while a separate review examined the diamond valuation process. The Two Ducks report confirmed that the royalty rates were competitive, and the diamond valuation review made recommendations to improve the administration of the regulations and suggested that INAC should look at statistical valuation methodology and improving the sales cycle times (working capital from production of rough to final sales). While both analyses were completed, no changes were made at that time.

The current royalty provisions in the mining regulations were mirrored from the federal *Northwest Territories Mining Regulations* in 2014, after the *Devolution Act* came into force. The only post-devolution change amended the diamond-specific section of the royalty provisions in October 2015 to allow more frequent shipping of certain sizes of diamonds. This amendment was made in order to address working capital concerns that had been expressed by producers while maintaining valuation process integrity. A second amendment in June 2018 added S. 76(3) which authorizes royalty information to be shared such that policies can be developed within or among GNWT departments and approved by the applicable Minister or Executive Council.

Throughout the implementation history of the mining regulations, the core royalty provisions have not changed:

- Royalties are determined by the value of production of minerals reported by the operator from a specific mining property (Ring-fenced⁷) (Table 1);
- The rates charged on production are progressive, increasing with the calculated value of output subject to the royalty;
- The amount of production value is reduced by the direct and indirect costs incurred to extract, process, and market the minerals;
- Royalties are not commodity specific. While there are sections specific to the valuation of diamonds, all minerals are subject to the same taxation rate;
- The amount of discretion in decision-making given to government officials is very limited.

⁷ Ring-fencing describes the situation where a portion of a company's activity is financially separated without necessarily being operated as a separate entity. For purposes of royalties, each mine or project is treated as a distinct entity and so expenses or profits can not be moved from one site to another.

THE NWT ROYALTY REGIME: PAST AND CURRENT

Royalties are calculated based on the “value of the output of the mine”. In simple terms this is the total production revenue minus expenses.

The equation used is $A + B - C + D + E + F + G + H - I + J$

A = Sales/Revenue

B = Closing balance of inventory on hand at year-end

C = Opening balance of inventory on hand

D = Funds received that offset deductions

E = Asset disposals

F = Funds withdrawn for reclamation and restoration provisions

G = Funds received from insurance claims

H = Forgiven government grants

I = Deductions and allowances

J = Funds paid to other facilities for the sorting and processing of goods

Sales and inventory (production revenue)

Sales are recorded at the dollar value received for the diamonds by the producer when they are sold. The inventory on hand at year-end is based on a valuation completed by the government diamond valuator.

Expenses that are used as Deductions can include:

Initial construction

This includes the camp and processing facilities, on site roads, an airport, power plant, water treatment plant, tailings containment, fuel tank farms.

Development cost

These are the costs to gain access to a deposit. This cost would generally be for the removal of any dirt, rock or water located over the ore body or to create access to an underground mine.

Depreciable allowance

This is what it costs to purchase new equipment, upgrade or extend the useful life of equipment.

*** The initial construction cost, development cost and depreciable allowance are treated the same. These costs can be pooled and used to reduce the amount of royalties paid at the discretion of the producer. For example, if the costs are \$1 billion to bring the mine to the production stage, the producer can choose to deduct any portion of the billion dollars in any year. Any of the \$1 billion that is not used can be transferred to subsequent years until the pool balance is zero.

Operating costs

Examples are diesel fuel to run the mine’s machinery, labour, the cost to house and feed employees, flights to and from the site, maintenance of equipment and facilities, mining and processing, and additional costs incurred for marketing and selling the diamonds.

*** Operating costs must be used to reduce the amount of royalties paid in the year the money is spent.

Processing asset

The processing asset is made up of the cost incurred to build and sustain a facility that can process a raw mineral to bring to saleable form. The processing asset was created to encourage producers to build a processing facility in the location of the resource versus shipping to another location in Canada or overseas for processing.

*** The lesser of 8 percent of the total money spent on equipment to build and sustain the processing facility that is still being used in the processing of materials or 65 percent of the value of the output of the mine can be deducted.

Table 1 – Calculation of the NWT royalties from section 69(4) Northwest Territories Mining Regulations.

THE NWT ROYALTY REGIME: PAST AND CURRENT

In the NWT, royalty revenue is directly correlated with the profitability of a mining operation. Regulations prescribe that mineral royalties be paid annually, based on the value of the output of the mine. The amount of mineral royalties owed are calculated as the lesser of a straight percentage calculation of 13 percent of the mine output value or on a tiered scale. The tiered scale has mines paying from 5 percent to 14 percent of the value of the output of the mine (Table 2).

Value of Output of the Mine	Percent Payable
On the first \$10,000	0%
> \$10,000 to \$5 million	5%
> \$5 million to \$10 million	6%
> \$10 million to \$15 million	7%
> \$15 million to \$20 million	8%
> \$20 million to \$25 million	9%
> \$25 million to \$30 million	10%
> \$30 million to \$35 million	11%
> \$35 million to \$40 million	12%
> \$40 million to \$45 million	13%
> \$45 million	14%

Table 2 – Schedule 3 of the Mining Regulations showing the sum of the royalty payable for the corresponding dollar value of the output.

The tiered scale ensures a higher share of royalty revenue is derived from the most profitable developments and a lower share from less profitable developments. This profitability is largely dependent on the quality of the various production sources, commodity prices, and the costs associated with the ongoing development of future ore sources i.e. depreciation, development and processing. Capital investment by producers for initial construction as well as development of additional ore sources will create or increase royalty pools. The pools act as a bank account and deductions from these pools may be used to offset the royalty payable, reducing and even eliminating the amount of royalties owed to the government. This approach is intended to allow producers the opportunity to recover their significant investment prior to paying royalties. The timing of the draw-down or use of the value in the pools is at the discretion of the mine owners, a feature that is common in many other Canadian jurisdictions.

THE NWT ROYALTY REGIME: PAST AND CURRENT

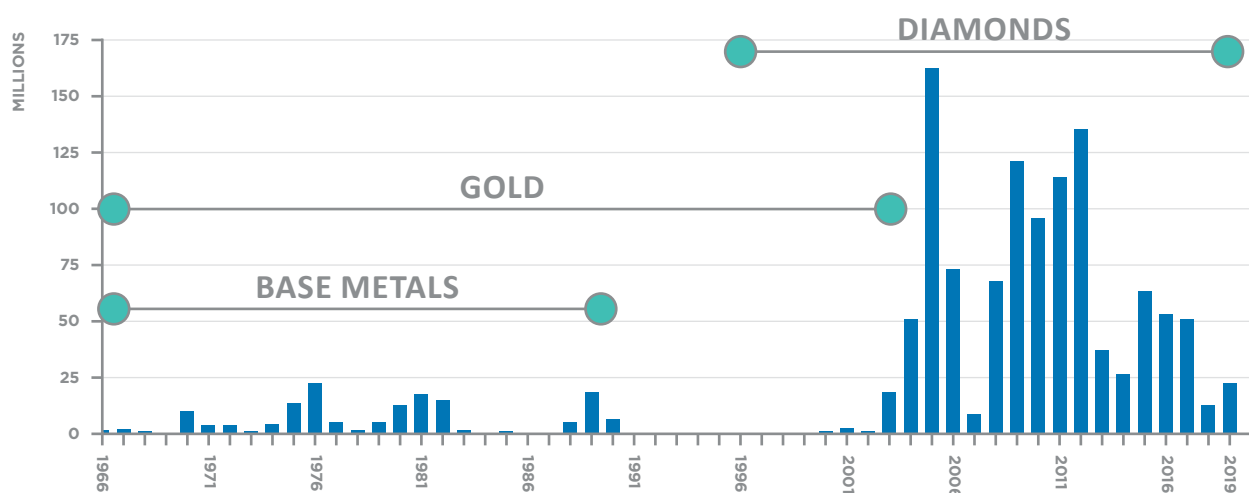


Figure 1 – The relative amount of royalties paid in the NWT from 1966-2019. Presented in 2019 Canadian Constant Dollars.

The GNWT gathers 100 percent of the royalties (Figure 1) and then distributes them based on modern comprehensive land claim treaties and Devolution agreements. The percentages paid to Indigenous governments under modern treaties are calculated based on 100 percent of the total received by the government (Table 3)⁸. The remainder is then divided and distributed to signatory Indigenous governments based on the Devolution Agreement.

Under the resource revenue sharing arrangements, the GNWT shares 50 percent of royalties (and all other resource revenues) with Canada and then 25 percent of the remaining revenue with Indigenous governments that are signatories to the Devolution Agreement. For example, from \$1 million received, the GNWT will be entitled to \$375,000, or 37.5 percent (Table 4). The Devolution Agreement also included a cap on the amount of royalties that the GNWT can collect equal to 5 percent of the GNWT Gross Expenditure Base in each fiscal year. Any amount above the set limit is clawed back by the federal government in the form of a reduction to Territorial Formula Financing payments. The current cap for 2021/2022 is \$91million meaning the GNWT would have to collect \$182 million (which includes 50 percent for Canada) for the cap to be enforced, a measure that has not been reached in the history of mining in the NWT.

Aboriginal Government	Percentage of Royalties (First \$2 Million)	Percentage of Royalties (Over \$2 Million)
Tłıchq Government	10.429%	2.086%
Sahtú Secretariat Inc.	7.5%	1.5%
Gwich'in Tribal Council	7.5%	1.5%
Total	25.429%	5.086%

Table 3 – Royalty revenue distribution based on modern comprehensive land claim treaties.

⁸ The Inuvialuit Final Agreement does not include a royalty sharing clause.

THE NWT ROYALTY REGIME: PAST AND CURRENT

Canada	\$ 500,000	50.0%
GNWT	\$ 375,000	37.5%
Indigenous Government Signatories to the Devolution Agreement	\$ 125,000	12.5%
Total	\$ 1,000,000	100.0%

Table 4 – Example calculation of the resource revenue distribution after modern comprehensive land claim treaty obligations have been met.

The payments to the Indigenous government signatories are based on the formula in Part 3 of the signed agreement. Each region's share is calculated based on a combination of two factors: the cost of living and the size of the population (GNWT, 2014) (Table 5). Resource revenues are generated from non-renewable sources and they are different from on-going revenues like income or commodity taxes and user fees that are used to pay for government programs and services. The GNWT directs its resource revenue benefit to infrastructure investment, debt reduction or savings. The net fiscal benefit is excluded from operating costs, which are generally steady year to year. A decline in resource revenues does not result in a gap to fill as operating costs would not decline in step. In this way, the revenue generated from non-renewable resources is converted into assets that can have legacy impacts. After sharing with Indigenous partners, the remaining resource revenues are used for investments in the territory, through legacy infrastructure, debt payment, or collected in the Heritage Fund.

Indigenous Group	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Acho Dene Koe First Nation	188,133	135,105	197,272	174,755	74,162	117,712
Deninu Kue First Nation	238,226	181,971	265,450	244,861	102,559	94,305
Gwich'in Tribal Council	1,182,521	942,063	1,373,398	1,254,427	527,224	483,126
Inuvialuit Regional Corporation	1,815,566	1,441,671	2,101,856	1,973,271	821,920	759,980
Kátl'odeeche First Nation	131,661	126,627	184,153	167,322	70,503	64,442
Northwest Territory Métis Nation	627,601	497,521	725,368	645,201	273,568	248,491
Sahtú Secretariat Inc.	1,335,446	1,067,134	1,555,666	1,448,762	605,048	557,972
Salt River First Nation	250,542	191,636	279,544	247,922	105,205	95,484
Tłıchǫ Government	1,213,736	961,408	1,401,716	1,269,178	534,950	488,807
Total Distributed Resource Revenues	6,983,432	5,545,136	8,084,423	7,425,698	3,115,140	2,910,318

Table 5 – Resource revenues distributed under resource revenue sharing by signatories to the devolution agreement (CAD).

THE BASIC FRAMEWORK OF MINE TAXATION IN CANADA

Royalties are one component of a resource taxation system that has been developed to get value out of the physical resource assets buried underground without discouraging the investment and effort required to find and extract those assets (Boadway and Dachis, 2015). The justification for taxing natural resources stems from the concept that the finite resources are public property. The *Constitution Act 1982* of Canada empowers the provinces to manage resources within their boundaries and to impose resource taxes. With the signing of the Devolution Agreement, that responsibility was also transferred to the NWT and collection of resource revenues reflect that exercising of provincial authority.

Numerous summaries of the Canadian tax framework are publicly available. The following summary is based on PricewaterhouseCooper's Canadian mining taxation publication (PwC, 2016).

In Canada there is a three-tiered tax system consisting of federal income taxes, provincial/territorial income taxes and provincial/territorial mining taxes or royalties. The federal, provincial and territorial income tax systems normally segregate a mining operation as follows: exploration and development, extraction, processing (concentrating, smelting and refining) to the "prime metal stage", and subsequent activities, such as fabricating.

Federal income tax is levied on a mining operation's taxable income (generally net of operating expenses, financing costs, depreciation on capital assets and the deduction of exploration and pre-production development costs). Provincial and territorial income taxes are based on the same or similar taxable income. The tax system has an impact on the rate of exploration for and discovery of new deposits. Measures that decrease the profitability of discovered deposits naturally have a negative impact on the rate of exploration (Heaps and Helliwell, 1985). Taxation measures can escalate the rate of exploration either by accepting reduced shares of the economic rent or giving mining corporations special concessions with respect to corporate income tax.

Currently, the federal corporate income tax rate is 15 percent, while provincial rates vary from 11 percent in BC to 16 percent in Nova Scotia and Prince Edward Island. The NWT tax rate is 11.5 percent. Generally, income tax and mining laws distinguish industrial minerals such as limestone, sand and gravel, as is done in the NWT *Quarrying Regulations*, from other minerals such as precious metals and gemstones, in their tax treatment. Expenses for capital items and costs are recognized through a capital cost allowance, including an allowance for depreciable property and interest payments. Royalties and other mining taxes are treated as 100 percent deductible for income tax purposes. Mineral resource industries benefit from additional capital cost deductions including the Canadian Exploration Expense (CEE – 100 percent deduction) and the Canadian Development Expense (CDC - 30 percent deduction).

As it is common for a company involved in exploration to have no net income for tax purposes, expenditures on exploration and development can only reduce taxes owing down to zero, leaving the company with deductions that they cannot use. At the same time, without income the company will need to raise financing to fund ongoing operations. The use of flow-through shares provides mining companies with reduced-cost access to financing. The approach is that if a mining corporation is willing to forego the tax benefit of certain exploration expenses and development expenses, it can "renounce" these expenditures to investors buying shares in the corporation. The investors purchasing the flow-through shares are permitted to deduct the amount of exploration and development

THE BASIC FRAMEWORK OF MINE TAXATION IN CANADA

expenses the corporation has incurred and renounced to the investors.

In addition to the flow-through shares credits, the Mineral Exploration Tax Credit (METC), a 15 percent non-refundable tax credit on eligible exploration expenses, has been developed to help exploration companies raise equity funds (NRCan, 2019b). Investors can apply the credit against the federal income tax that would otherwise be payable for the taxation year in which the investment was made. The credit can be carried back three years and carried forward 20 years. A taxpayer claiming the METC may also claim the 100 percent exploration expense (CEE) deduction, which applies for both federal and provincial/territorial income tax purposes.

Taxpayers in provinces or territories that provide additional exploration incentives may combine them with the METC but using any tax credit offered by the provinces or territories reduces the amount of expenses that are eligible for the METC and the amount of deductible exploration expense. Provincial income taxes also can include incentives to enhance the attractiveness of a jurisdiction to exploration (Figure 2). Currently, there are no incentives equivalent to provincial incentives available in the NWT.

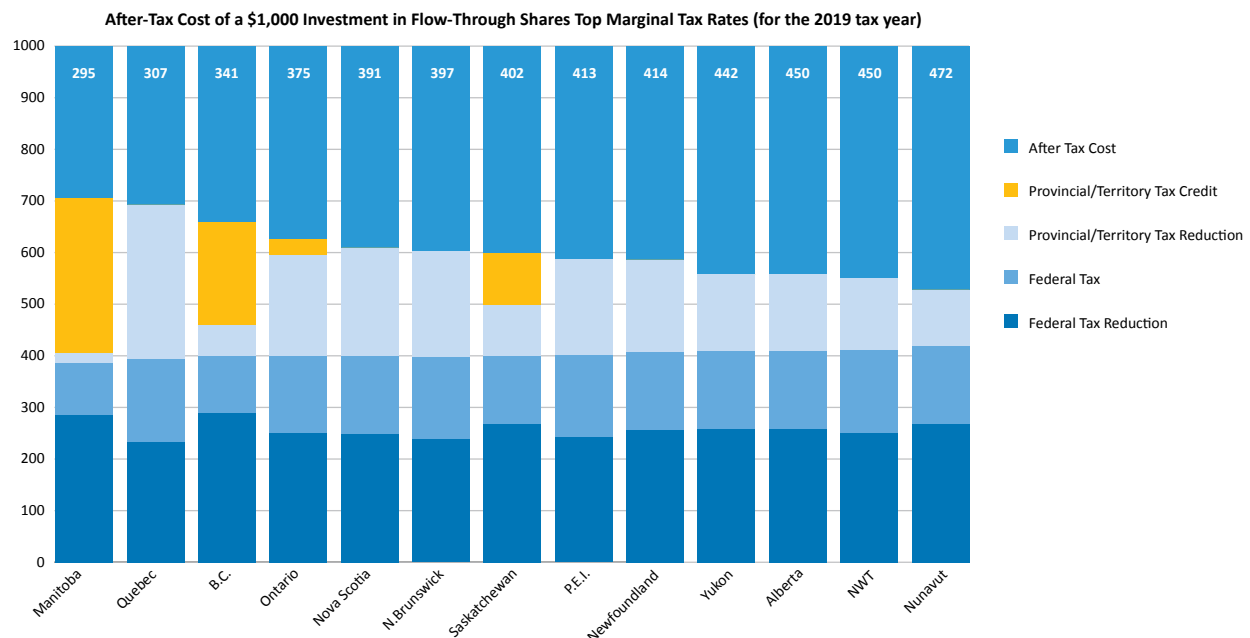


Figure 2 – Tax incentives for encouraging exploration using Mineral Exploration Tax Credits and their application across Canada. The chart shows the after-tax costs of a \$1,000 flow-through-share investment depending on which province or territory the taxpayer lives in. (from NRCan, 2019b)

Income taxes are fairly consistently applied across Canada, and as they are not the focus of this paper, they will not be examined in detail.

A COMPARISON OF THE NWT FRAMEWORK WITHIN CANADA

All provinces and territories with significant mining activities impose mining taxes and/or mining royalties or mineral land taxes on mining operations within their jurisdictions (NRCan 2019a). This is a third level of government revenue from mining and, from the view of industry, can be the most significant tax burden on a mining operation (PwC, 2016). Royalties are treated as an allowable deduction against the determination of income taxes, so are in many ways the first level of taxation. In contrast to income taxes, royalties are levied on a separate measure of production profits or revenues and are treated differently in each jurisdiction in Canada (Table 6).

While the rules vary widely between different jurisdictions and distinct rules can apply to individual minerals or commodities, there are some commonalities that apply across Canada. All provincial and territorial mining taxes and royalties are conceptually levied on profits derived from the operations at the mining stage only. Most provincial and territorial regimes allow for the recovery of exploration, development and capital costs before the mine becomes taxable, but as stated previously, the details vary by jurisdiction. The write-off rates for exploration and development are often rapid, and sometimes more than 100 percent is allowed as an incentive, although the costs of acquiring mining properties, including gross-revenue royalties to property owners, are usually not deductible. Interest is often not deductible.

Some governments use a system with a two-tiered tax rate, with lower rates applying early on at low production rates or until companies recover their costs. Instead of a lower tax rate, Quebec uses an *ad valorem* (levy on the gross-revenue) royalty based on the value of output, which is creditable against future profit-based royalty liabilities.

Boadway and Dachis (2015) conclude that in Canada, mining taxes and royalties approximate taxes on cash flows, but with imperfect loss-offsetting. This means that they apply similarly to both rents from the resources and the normal return on profitable risk-taking initiatives.

Meanwhile, provincial rates of mining profit tax are low from the point of view of obtaining maximum rents by government. From a purely theoretical position, i.e. the absence of full loss-offsetting and progressive two-tiered rate structures, provincial mining taxes and royalties, including those applied in the NWT, would seem to discourage risk-taking. However, this is partly offset by the tax treatment of exploration and development as deductions.

An additional criticism of the Canadian tax regime is that federal, provincial and territorial governments are increasingly adding non-profit-based taxes to augment their revenues (Boadway and Dachis, 2015). These include payroll taxes, property taxes and user fees (Figure 3). As these costs are absorbed by the mining operations and cannot be added to the price of their goods, comparisons between different national jurisdictions need to consider the entire tax regime for a complete assessment.

A new example of such an assessment for the NWT is discussed in a following section.

A COMPARISON OF THE NWT FRAMEWORK WITHIN CANADA

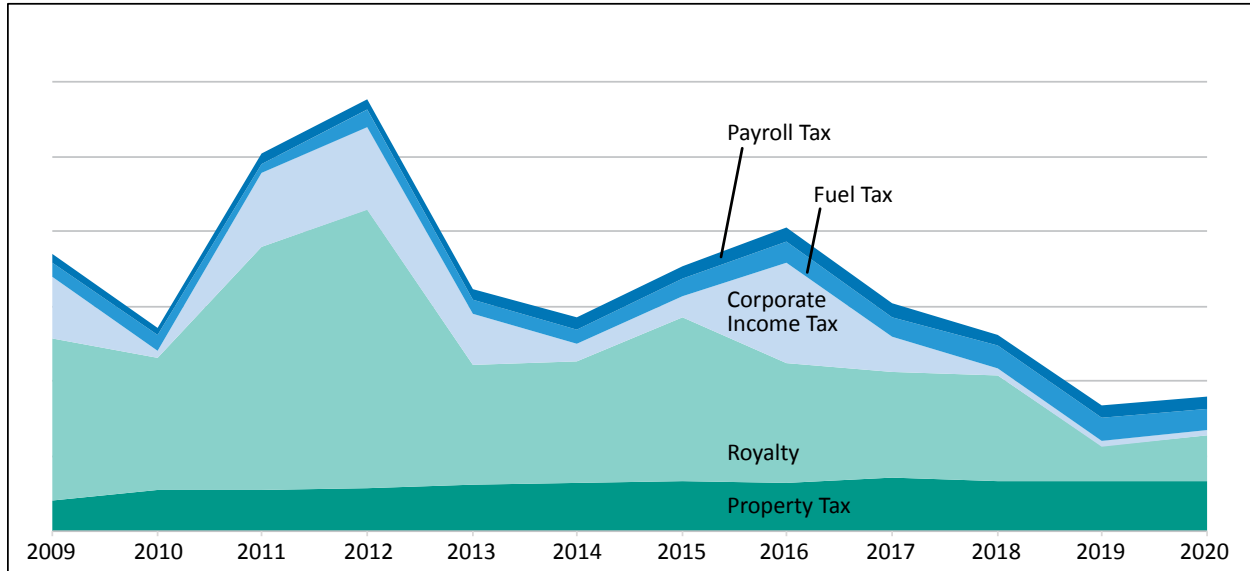


Figure 3 – Relative proportions of royalties and taxes received by the NWT from 2009-20 based on statistics from the Department of Finance. The fluctuations reflect changing contributions of the mines depending on the commodity price cycle and the stage of development of the mines. For this period, the totals included two mature mines, two mine closures, and one mine opening. Federal taxes are not included.

* Gross royalties (land claims not removed) reported on a calendar year (cash) basis.

** 2019-20 corporate income tax revenue estimate only as the returns are not yet available due to delays relating to the COVID-19 pandemic.

*** Corporate income tax reported on companies' fiscal year.

A COMPARISON OF THE NWT FRAMEWORK WITHIN CANADA

Province/Territory		Ontario	Quebec	Saskatchewan	Northwest Territories	Nunavut
Title of statute		<i>Mining Tax Act (ON1)</i>	<i>Mining Tax Act (QC1)</i>	<i>The Mineral Taxation Act 1983 (SK1)</i>	<i>Northwest Territories Lands Act Mining Regulations R-015-2014</i>	<i>Territorial Lands Act Nunavut Mining Regulations SOR/2014-69</i>
Mining tax or royalty rate	First Tier	n.a.	Minimum Mining Tax (Impôt minier minimum) mine-mouth value 1% of mine-mouth value - 4% when mine-mouth value is above 80 M\$.	n.a.	n.a.	n.a.
	Second Tier	10% (5% for remote area)	If mining profit 0 to 35%: 16% If mining profit 35-50%: 22% If mining profit above 50%: 28%	5% (cumulative sales up to 1 M troy oz of precious metals or 1 M metric tonnes of base metals); 10% (above the thresholds)	Lesser of 13% and following formula: \$10 000 to \$5 M: 5%; \$5 M - \$10 M: 6%; for every additional \$5 M annual profit, rate increases by 1% to a max of 14%	Lesser of 13% and following formula: \$10 000 to \$5 M: 5%; \$5 M - \$10 M: 6%; for every additional \$5 M annual profit, rate increases by 1% to a max of 14%
Mining tax exemption for new mines (\$)		no tax for profit under \$0.5 M/year; no tax for the first \$10 M or first 3 years (10 years for remote area), whichever comes first	No	10-year holiday for new mines	No	No
Exploration expenses deductibility rate		100%	100-125% (QC3)	150%	100%	100%
Pre-production development expense deductibility rate		100%	150%	100%	100%	100%
Depreciation	Mining Assests	30% straight-line (100% for new mine)	30%(QC4)	100%	100%	100%
	Processing Assests	15% straight-line				
Processing allowance rates	Milling	8%	7%	n.a.	8%	8%
	Smelting	12%	13%		8%	8%
	Refining	16%	13%		8%	8%
	Other	20% northern Ontario refining	n.a.		n.a.	n.a.
Processing allowance caps		15 - 65%	0 - 55%		0 - 65%	0 - 65%
Exploration expenses deductibility rate		100%	100 - 125% (QC3)	150%	100%	100%
Special features		No mining taxes are payable in first three years of production on profits below \$10 M; the period is extended to 10 years for mines in remote locations; 5% tax rate for mines in remote locations	Effective April 1, 2010, a cash refund equal to the lesser of 16% of the non-capital loss and 8% of the aggregate of exploration and development costs is available	10-year tax holiday for new mines, starting in 2007; 150% of pre-production expenses are recovered prior to any royalties being payable; separate royalties apply to potash, coal and uranium producers	Acquisition cost of expansion claims deductible within limits.	Acquisition cost of expansion claims deductible within limits
Can mine reclamation fund contributions be deducted?		Yes	Yes	Yes	Yes	Yes

Table 6 – A summary of royalty and mining tax provisions in Canada. Adapted from Natural Resources Canada.

A COMPARISON OF THE NWT FRAMEWORK WITHIN CANADA

Yukon	Alberta	British Columbia	Manitoba	New Brunswick	Newfoundland and Labrador	Nova Scotia
<i>Quartz Mining Act</i>	Metallic and Industrial Minerals Royalty Regulation	<i>Minerals Tax Act</i> (BC1)	<i>The Mining Tax Act</i>	<i>Metallic Minerals Tax Act</i> (NB1)	<i>Revenue Administration Act</i>	<i>Mineral Resources Act</i>
n.a.	1% of mine-mouth revenue	2% on operating income (BC2)	n.a.	2% on net revenue	15%	2% of net revenue or NSR
\$10k-\$1 M: 3%; \$1-\$5 M: 5%; \$5-10 M: 6%; for every additional \$5 M, rate increases by 1% to a max of 12%	12% of net profits after payout (AB1)	13% on cumulative net profit (BC3)	< \$50 M: Mining profit x 15% (\$50-55M: (Mining profit - \$50M) x 65% + \$5M \$55-100 M: Mining profit x 15% \$100-105 M = Mining profit - \$100M x 57% + 15M\$ (>\$105 M) = Mining profit x 17%	16% on net profit (NB2)	20%	15% of net income (NS1)
No	No	No	Yes (MB1)	The first tier 2% royalty is exempted in the first 2 years	Up to \$2 M/year credit for first 10 years	No
100%	100%	100%	100-150%	150%	100%	100% first 3 years, 30% after
	100%	100% (BC4)	20% (MB2)	100%	Over the life of the mine	100% first 3 years, 30% after
15% straight-line	15% straight-line	100%	20% (MB2)	5% minimum for new or expanded mine assets, other assets 33.33% (NB3)	25% (100% for new or expanded mine assets)	100% first 3 years, 30% after
					25%	
Ministerial decision	n.a.	n.a.	20%	8%	8%	10%
n.a.			20%	15%	15%	10%
n.a.			20%	15%	8%	10%
n.a.			n.a.	n.a.	n.a.	n.a.
Ministerial decision			0-65%	0-65%	0-65%	0-65%
(YT 1)	A 10% allowance is permitted in lieu of overhead	Investment allowance replaces the deduction for interest expenses; a 33.33% super-deduction for capital and pre-production costs of new or reopened mine or major expansion	Tax holiday until payback is achieved, available for new mines established after January 1, 1993	Finance allowance replaces the deduction for interest expense; new mine exempt from the 2% royalty in the first 2 years; the amount of 16% tax payable is reduced by 25% of eligible process research expenditures	In computing mining profit subject to 15% tax, a deduction is allowed equal to the greater of 20% of profits (before this allowance) and non-Crown royalties paid; income taxes on mining (up to \$2 M per year) deductible from mining taxes for first 10 years of production	n.a.
No	Yes	Yes	Yes	Yes	Yes	n.a.

<https://www.nrcan.gc.ca/mining-materials/mining/taxation/mining-taxation-canada/tables-structure-and-rates-main-taxes/8890>

A COMPARISON OF THE NWT FRAMEWORK WITHIN CANADA

An efficient royalty system is important for both company and government success. The profit-based royalty system used in the NWT, in contrast to that of other provinces, can be described as nearly a pure “resource-rent based tax” in terms of economic allocative efficiency (Table 7). In a mining context, the level of efficiency indicates the minimization of tax considerations in the formulation of mining decisions about ore resource extraction (Chen and Mintz, 2013). This efficiency is important to ensure long-term sustainable development by reducing suboptimal extraction through either over-exploitation or “high grading”⁹.

Proposed Ideal Rent Royalty	NWT Royalty regime
Rents should be measured as the difference between sales revenue and current and capital expenditures (with no deduction for interest expense and depreciation). A presumptive deduction should be given for overhead costs based on a percentage of costs.	The NWT system is a profit-based system. There is a depreciation allowance that can be deducted 100 percent at the operator’s discretion which models in a fashion similar to the Chen and Mintz 2013 proposal.
The elimination of any super allowances or special tax credits for exploration, in favour of allowing the expensing of both successful and unsuccessful exploration costs.	There are currently no super allowances or special tax credits for exploration. This is a topic where NWT may choose to implement something to encourage mines to explore more.
The elimination of processing allowances in favour of allowing the expensing of all depreciable assets, including processing asset expenditures, undermining taxes.	There is a processing allowance. However, it is not delivering on original policy objectives of encouraging value-added processing in the NWT and could be replaced.
Allowing the carry forward of all unused deductions (losses) at an appropriate uplift factor reflecting the government’s share of risk (while no longer allowing excessive uplift factors or investment allowances to carry forward unused deductions).	This is not currently part of the regime in the NWT, although development and depreciation pools can be carried forward indefinitely.
Protecting the revenue base by levying a minimum tax on net sales (i.e. the selling price net of transportation and distribution costs), which should be creditable against the rent-based tax (no holidays from the mining tax would need to be provided).	There is no minimum tax in the NWT although the existing property tax provides a similar function but is not deductible against the profit-based royalty.
The provincial mining tax would be assessed on mining at a rate compatible with provincial policy maker’s judgement of their fiscal conditions and other policy concerns, such as competitiveness.	The NWT regime is competitive. There may be potential to make amendments to better reflect policy objectives.

Table 7 – The current NWT minerals taxation regime compared with an idealized cash-flow-based “rent royalty” as defined by Chen and Mintz (2013).

⁹ The term high-grading can be traced back to the early days of the California gold rush, when miners would sneak into claims belonging to others and steal the most valuable pieces of ore. In the context of mining today, high-grading remains essentially unchanged whereby an individual or corporation will enter an area and selectively mine or harvest only the most valuable specimens, before moving on to a new area. The remaining mineral resource become uneconomic to work and is lost as a resource.

A COMPARATIVE REVIEW OF THE MINING FISCAL REGIME

A comparison of the merits of all the different approaches to taxing mineral extractive industries within Canada is a difficult task. Assessing them on a global basis based on comparisons of rates and deductions without understanding the regulatory and legal frameworks of each nation is virtually impossible (Bourne, 1993). Instead, determining the strengths or weaknesses of the NWT's regulations in the context of the broader competitive nature of the mining sector can be measured using financial modelling. Rather than try to compare actual mines and their responses to fluctuating commodity prices and tax rules, a financial mine model is developed (Jones, 2020).

Mine fiscal models allow a comprehensive assessment in that they amalgamate the impact of all taxes on a typical or model mine and then allow the completion of a sensitivity analysis to determine the impact of various scenarios on measures such as internal rate of return and total effective tax rate. This type of analysis has been widely used by industry and governments with success, to the degree that tools such as the Fiscal Analysis of Resource Industries Methodology and supporting software developed by the International Monetary Fund are now freely available (Luca and Payo, 2016).

At the core of a fiscal model is the representation of project cash flows (based on estimates of revenue and costs over time) which are integrated with key tax policy-related parameters to provide guidance on the tax levy. As the variables of importance do impact some commodity types and industry segments to varying degrees, a selection of different commodity models under different pricing scenarios may be required to fully evaluate the fiscal responses. However, all the models will commonly include macro variables such as commodity prices, industry or project inputs such as production volumes and costs, and key fiscal parameters such as corporate income tax, royalty rates, capital outlays, and allowances.

In 2019, the GNWT engaged PricewaterhouseCoopers LLP (PwC) to assess the tax and royalty competitiveness of the regime that is now administered by the Department of Industry, Tourism and Investment (ITI) and the Department of Finance. The PwC Report (2020) compared the NWT regime to the other Canadian jurisdictions and a number of mineral-producing countries. The choice of mine models and jurisdictions examined by PwC were specifically selected to match those used in the 2008 Two Ducks Report, allowing the changes over time to be examined. Using the Two Ducks methodology as a base, the PwC study also examines the impact of indirect taxes, the implications of local cost differences, and an examination of the question: Is the NWT receiving a fair return on its non-renewable mineral resources?

A COMPARATIVE REVIEW OF THE MINING FISCAL REGIME

For the assessment, PwC utilized financial modelling to examine the taxes and royalties paid over the life of mine for two representative mine models: a base metal mine with an initial capital investment of \$400 million and a large diamond mine with an initial capital investment of \$1.2 billion. The cost models were based on blends of representative data from existing mines and do not represent actual mines. Both mine models were set to have an operating life of 15 years. In order to account for the variability of the commodity prices, each mine model was configured for profitability of 10 percent, 15 percent, and 20 percent, respectively, based on the after-royalty-and-tax return on investment in the NWT, by varying the annual revenues while keeping the costs constant. For each representative mine, the NWT tax and royalty requirements were modelled in comparison with those of 21 other jurisdictions, including all Canadian jurisdictions.

The assessment was conducted in phases to analyze the following:

- Phase 1: Compared the direct taxes (corporate income tax and royalties) of the NWT to 21 other jurisdictions while holding revenue and costs constant. This phase represented an update of the Two Ducks Report, allowing for a direct comparison over time;
- Phase 2: Indirect taxes (payroll, property, fuel, and carbon taxes) were added to Phase 1;
- Phase 3: Compared the total after-tax costs for the NWT and six other jurisdictions, accounting for underlying differences in costs of mine development and operation in those jurisdictions. The six jurisdictions were Alaska, British Columbia, Quebec, Saskatchewan, South Africa, and Western Australia, were selected to represent similar regimes with alternative approaches to royalties;
- The fair return analysis had two components. Using the 21 jurisdictions analyzed in Phase 2, the division of pre-tax profits between companies and governments were compared, holding costs constant. A more complete examination then used the variation in costs between the seven jurisdictions examined in Phase 3 to demonstrate the full tax and costs that a mining operation would need to consider (Figure 4).

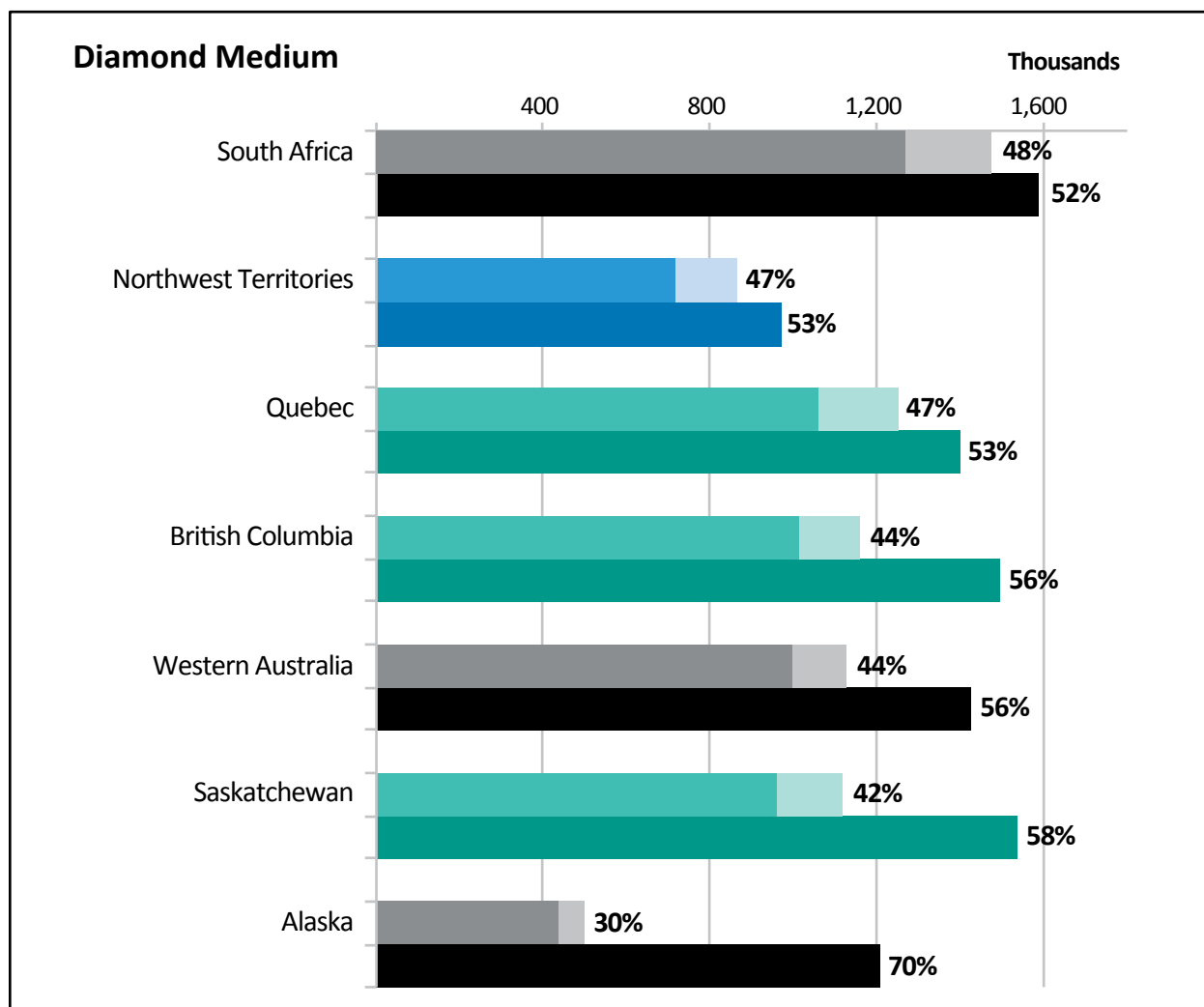


Figure 4— An example of the royalty and mining tax fair return assessment of the NWT. The graph displays the variable cost results for a diamond mine mode under a medium diamond price scenario. The graph shows the balance of taxes to government (light for indirect taxes and medium colour bar for direct taxes including royalties) on top for each jurisdiction and the company profit as the darker bar underneath. Canadian jurisdictions are shown in dark teal/light teal, international in grey/black and NWT in light blue/dark blue. Idealized regimes recommend a split of 50:50 between the government share and company share (Osstenson et al., 2014).

A COMPARATIVE REVIEW OF THE MINING FISCAL REGIME

The determination of the strengths or weaknesses of the NWT's regulations is not an achievement of absolute values but measured in a relative manner, based on the broader competitive nature of the mining sector. By comparing the computed tax results to a median value derived from all the different jurisdictions, a recognition of the merits of the tax regime can be defined. The NWT, like many Canadian jurisdictions, falls within 10 percent of the median value for most tax components. When considering the overall tax burden and most specific tax components, the NWT's position is firmly in the large middle grouping of jurisdictions. (Figure 5). As a similar exercise was undertaken during the 2008 Two Duck Report, changes in time can also be assessed. The position of the NWT has changed only modestly since 2008 in the competitive tax ranking with respect to specific individual jurisdictions. This suggests that the NWT's tax and royalty system is similar in its impact on mining decisions to other Canadian jurisdictions.

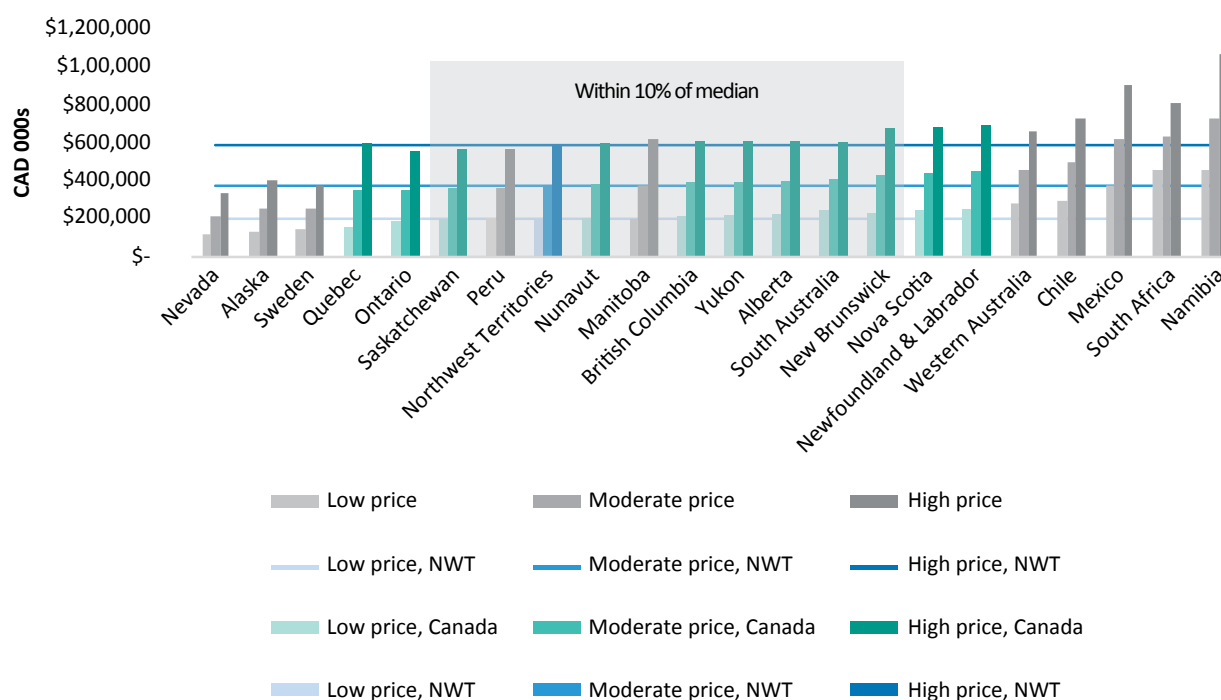


Figure 5 – Net Present Value (NPV) of taxes and royalties over the life of mine for the diamond model (sorted by total taxes and royalties in moderate price scenario). From PwC (2020).

A COMPARATIVE REVIEW OF THE MINING FISCAL REGIME

PwC (2020) concluded that the NWT regime continues to maintain a competitive position that encourages the substantive, long-term investment levels needed to keep the mining industry active while returning a fair portion of a project's profit to the people of the NWT. However, the study does note that the north's high costs, including the costs for winter roads, diesel power generation, and fly in/fly out mines mean that only exceptional mineral deposits are profitable enough to warrant being developed. Therefore, while mines can generate high revenues, a large portion of this revenue is required to pay for the operating and capital expenses. This situation results in the actual profits of a mine being lower than a similar operation in other jurisdictions, ultimately lowering the taxes and royalties collected by governments.¹⁰

¹⁰ Dr. Michael Doggett of Beach Meadows Resources Inc. was contracted in January 2020 by the Diamonds, Royalties and Financial Analysis (DRFA) group in the Department of Industry, Tourism and Investment, GNWT, to provide an independent review of PwC (2020). His review focused on the methodology, empirical results, and conclusions presented in the final draft document. Doggett concluded that the PwC (2020) provided a thorough examination of the competitive position of the NWT in terms of the overall tax burden for selected mine types. In summation, he suggests that the conclusions reached were logical and supported by the findings presented in the study.

"The report gets to the heart of the competitive challenges faced by the mining sector in the NWT which is the higher capital and operating costs associated with remote locations. They rightly conclude that the GNWT has limited options or ability to offset these challenges through direct mining tax policy."

FOUNDATIONAL PRINCIPLE CONCEPTS FOR FUTURE MINING REGULATIONS

“Designing a mineral taxation regime is not a simple task...”¹¹

Before examining the variety of options that can be applied to the task of designing or modify a mineral taxation regime, it is important to establish that there are fundamental considerations that must frame the discussion (UN, 2019). Mineral resources are finite and non-renewable because their extraction permanently depletes a jurisdiction’s resource inventory. Mining is capital intensive and risky but can be financially rewarding. An effective royalty system needs to assume a portion of that risk and reward.

Assembling a well-designed royalty system should follow three general principles:

- As the owner of the resource, the people of the NWT are entitled to a significant share of profits.
- To attract the best producers, the royalty system should provide stability and a competitive rate of return consistent with other Canadian and international jurisdictions. (This requires that the producers and their investors will also receive a share of profits. The more profits for the company, the more taxes and royalties paid under a profit-based regime.)
- The royalty system should ensure that decisions regarding resource extraction are made to maximize the resource utility and minimize wastage to ensure long-term sustainable development. (The royalty should distort investment decisions as little as possible in order to maximize profits earned on projects.)

¹¹ Ostensson, et al., 2014.

THE NATURE OF THE MINING INDUSTRY AND IMPLICATIONS FOR MINERAL REGIMES

The mining sector has unique characteristics that distinguish it from other sectors of the economy. (Table 8). Otto (2001) has observed that most governments afford the mining sector a tax treatment that differs from other economic sectors. An understanding of the mining industry is important for considering the potential impacts that introducing new taxation regulations or changing existing ones might have.

Finding a mineral deposit that is economical to mine is a high-risk proposition with a low likelihood of success (Whiting and Schodde, 2006). Exploration is an expensive activity with many projects resulting in failure (Cairns, 1990; AAS, 2010). Once found, the geologic variability of deposits is such that both the size and quality will vary significantly even when successfully overcoming the odds of finding an economic deposit.

Mining projects have a finite lifespan in a capital-intensive industry that requires long lead times with large expenses before a project can be brought to production. The products of these efforts have a value that mines do not set as prices are typically set by the market. Operations are mostly price-takers faced with cyclical changes in prices and demand changing the value of minerals being mined. The majority of the work takes place in remote areas far from the markets that will utilize their products. As governments do not often choose to participate directly, the capital-intensive nature of the industry results in the need for investors to fund the mining company until the project reaches profitability.

Characteristic	Implications for mineral fiscal regime
High risk	Returns to compensate for risk
	Tax stability
	Transparency
Capital intensive	Minimization of upfront tax costs
Long lead time to production	Tax stability
Price taker with cyclical prices	Loss carry-over periods in profit tax system
	Excess profits taxes are problematic
Finite life	Tax stability
Remote areas	Tax relief for infrastructure investments and employee incentives
Environmental and social impact	Tax incentives for environmental and social investments

Table 8 – Mining sector characteristics and potential implications for mineral fiscal regimes.

THE NATURE OF THE MINING INDUSTRY AND IMPLICATIONS FOR MINERAL REGIMES

Companies and the investors that support them are exposed to significant risks that result from combinations of the substantial capital investments required, the long exploration and pre-production periods during which no revenue is generated, and the generally long life of mining projects, paired with the volatility of commodity markets along with other technical and environmental uncertainties inherent in individual mining projects (Guj, 2012). Additionally, the quality of the business environment (the stability and predictability of the political, legal and fiscal context, availability of technical expertise and a trained workforce, staff safety, geoscience database) must also be factored into the anticipated internal rate of return (IRR) by the investors, who need to generate a return on their investment (SECOR KMPG, 2012).

There are several important discrete issues that the taxation regimes must address, and Otto (2017) suggests they must be managed through policy approaches. Some of the main issues facing developing taxation regulations are listed below (Table 9), and each of them can be addressed in a fashion to encourage or discourage investment and development. Not all of these factors may be in the purview of territorial regulations, but they may still apply to the company under federal requirements and, as such, still need to be considered. It is the taxation regime in its entirety that determines the competitive advantage and the ability to influence investment decisions.

THE NATURE OF THE MINING INDUSTRY AND IMPLICATIONS FOR MINERAL REGIMES

Mineral type

Because operational economics may differ from mineral type to mineral type, some minerals are important in large quantities with limited technical risks in the mining process like iron ore, while others are valuable in small quantities but are highly unevenly distributed and very risky to recover like gold. Consequently, many jurisdictions statutorily define groups of minerals into categories like industrial minerals to different royalty rates from other minerals such as precious metals and gemstones. For example, diamond mines have the potential to generate much higher profit levels that may not be obtainable by a gravel mine, and the royalty rate for diamonds will be set higher than that for gravel mines.

Commodity price cycles

Mines produce raw materials used to be sold to make other things and are vulnerable to substantial price changes on a periodic, business cycle-related basis. Some countries allow royalties to be waived or deferred from time to time for projects experiencing short-term financial stress and most countries provide for the carrying forward of losses.

Level of investment

Mines come in many sizes and some are on an enormous scale requiring substantial equipment and infrastructure while a single miner with the invested cost of a shovel may define the opposite end member. Many jurisdictions exempt artisanal miners and prospectors, whether licensed or not, from paying royalty, as tax enforcement is considered to be unrealistic. Smaller-scale miners may enjoy a reduced royalty or royalty exemption and may also be subject to only a low-income tax rate if the taxation system is graduated. Very large mines and mines may negotiate unique tax terms in a special agreement with the state. Large, expensive to build, long-lived mines may be offered the ability to stabilize all or some types of taxes for a defined time period. Some jurisdictions entice the investment in a large project using incentives or by assisting project financing. In some cases, the incentives may not be in the form of funds but can be in the form of sharing agreements for large infrastructure projects such as roads or railways. Some of the incentives can be used to provide a 'holiday' from one or more types of taxes for qualifying projects.

Nationality

As mining and commodity trading are global industries, the financial elements of a project, the mine, the investors, the operating company may not all be collocated in the same jurisdiction. Bilateral investment and double taxation treaties offer special tax treatment for investors from partner nations and are not available to investors from non-treaty countries.

Exploration expenses

Exploration expenses are largely incurred before a project generates a taxable income. Governments can provide provisions for how exploration expenses are handled for future tax purposes. Many nations allow exploration expenditures to be carried forward to the first year of mineral production when the accumulated expenditure is either expensed or amortization is commenced.

Mine development and equipment

The development of a mine is dependent on specialized equipment and the developer will initially need to import large quantities of equipment from specialized suppliers. Many jurisdictions exempt mining equipment from import duty and value added tax (VAT) during at least the initial development period. Other jurisdictions provide refunds or apply zero-rating schemes that have the same impact as an exemption. Preferred contracting arrangements or benefit agreements could be considered to be part of this issue.

Post-production expenses

After a mine closes and there is no sales income, an operation will still incur significant costs relating to the closure and reclamation of the site. Many governments require a deposit of funds or guarantees to cover closure and reclamation costs in advance of closure. Some regimes provide a deduction for this deposit against current income tax liability. These levels require periodic adjustment to account for changed operational circumstances and inflation, thus related deductions can occur on an ongoing basis.

Table 9 – Mining sector characteristics and potential implications that must be addressed by mineral fiscal regimes (adapted from Otto, 2017).

THE NATURE OF THE MINING INDUSTRY AND IMPLICATIONS FOR MINERAL REGIMES

The objective of an “*ideal*” tax and royalty regime is to balance the needs of the government with the requirements of investors and industry in light of all the issues unique to mining. A well-designed mineral fiscal regime should allow for a fair return for government while also allowing investors to generate their needed return on the investment. The standard as expressed by the World Bank and the International Monetary Fund is that the government share (the amount that government receives from the sector in terms of taxes and royalty) should be in the range of between 40 to 60 percent of pre-tax cash flow generated by a project – i.e. government and investors should share pre-tax cash flow over the life of a mine roughly on a 50:50 basis. (Ostensson et al., 2014).

These returns correspond with the varying internal rate of return for investors (the return investors receive from investment differs from the ‘share of the pie’ of around 50 percent received by the company). Currently, a project with relatively low jurisdictional risk would need a minimum internal rate of return of 15-17 percent to attract financing (*Mining Journal*, 2021). In situations where the financial analysis suggests that the resultant rates of return for a project would be below this level, it would be difficult to find people willing to take the investment risk to fund the mining project. This would mean that little or no investment will take place, and the resources may remain unexploited, generating no revenue for government.

Fortunately, a balance can be achieved to mutual benefit. While the investor’s goal is to meet or exceed a projected internal rate of return in a timely fashion, a government’s objectives are generally broader and include both financial and non-financial aspects. Governments often can defer short-term gains in order to ensure longer-term revenue from an operation and they are often also interested in other benefits that mining can provide (ICMM, 2018). These broader benefits include contributions to economic growth and diversification through employment, service and supply opportunities, and skills development.

Many examinations of the mining industry describe it as capital-intensive and generating relatively few direct jobs (Bauer, 2017). In the NWT, the direct job numbers translate into the industry being the territory’s second-largest employer, and it is responsible for approximately 22 percent of the GDP. The total employment generated can have a substantial impact on the economy, partly through backward linkages or local content. This refers to the extent to which goods and services used in the mining industry are sourced from northern suppliers (Ostensson et al., 2014). For goods in particular, the level of local content in the supply chain depends on the competitiveness of local suppliers. Services tend to be a large part of local content which has an important impact on how the benefits are spread throughout the economy.

Further processing of mineral resources can bring additional benefits to a jurisdiction. This is however, a more contentious discussion. Further processing can increase environmental impact and generally does not generate that much employment. It often has lower profit margins and thus lower tax generation potential. However, skills building is also an important consideration. A significant long-term benefit generated by a modern and internationally competitive mining industry is that it raises general skills levels of those directly and indirectly connected to the industry, thereby building the human capital for the jurisdiction.

THE NATURE OF THE MINING INDUSTRY AND IMPLICATIONS FOR MINERAL REGIMES

Over the life of a mine, the combination of governments initially receive revenue in the form of income tax and sales tax during exploration to pre-production development (Figure 6). Once production starts, tax revenue largely consists of employee tax and property tax until the project starts to make a profit. When projects become profitable, property tax and employee tax remain the same, and once the invested capital and operating costs have been returned to the investors, the royalties increase.

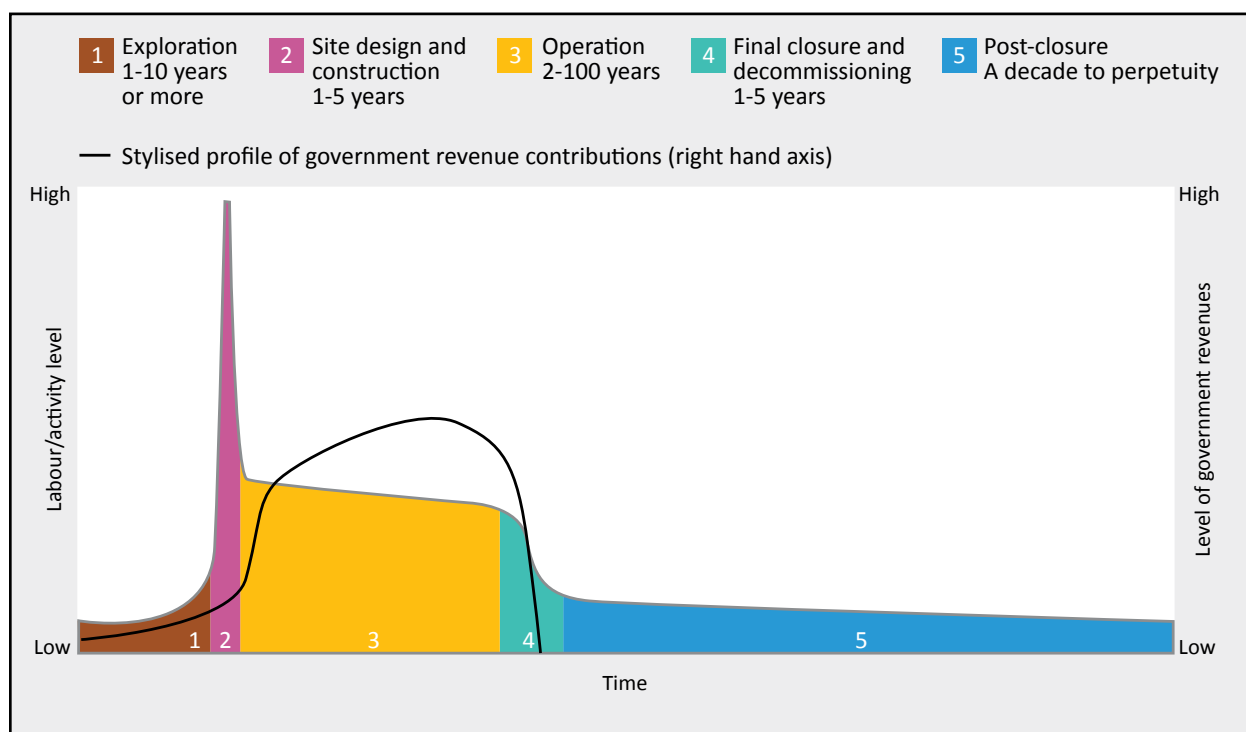


Figure 6. Mining Life Cycle - revenue and employment contributions (from ICMM, 2009).

Fiscal incentives can play an important part in determining investment in the industry (Otto, 2017). Two forms of incentives are common – accelerated depreciation and amortization, and duty-free treatment of inputs. Mines are capital intensive and large expenditures are required before operations can commence. Many governments provide various means to accelerate recovery of capital costs (i.e. depreciation) once production commences. Accelerated depreciation and amortization allow companies to write-off capital costs against profits in early years of production. These deductions reduce tax liability in early years of production and helps companies recover their initial capital investments quicker. This benefits the investors substantively improving the internal rate of return and the likelihood that a mine will be built while having no long-term impact on the total amount of tax that government receives.

THE NATURE OF THE MINING INDUSTRY AND IMPLICATIONS FOR MINERAL REGIMES

The International Council on Mining and Metals (ICMM) “Minerals Taxation Regimes” study (ICMM, 2009) concluded that many companies consider tax incentives to be less important than tax disincentives, such as high rates. However, in several countries, the failure of governments or investors to explain the reasoning behind these incentives in terms understandable by the general public has led to a perception that companies pay too little taxes. The obvious does need to be stated however - if a mine is not profitable, neither the company nor the government will receive any money, no matter how much money is being spent and product generated. This highlights the need for communicating the long-term nature of developments when analyzing mining taxes and communicating the results.

One of the most common reasons that revenue streams fall short of government and public expectations relates to inefficient or ineffective tax administration, often coupled with a complex fiscal system (NGRI, 2014). Common characteristics of internationally competitive tax regimes are that they are comprehensive, clearly translated, easy to understand, and easy to administer. These features make the tax system more transparent and less prone to risk of corruption (Schneider et al., 2018). These characteristics also ensure that effective administration and accountability are possible to achieve and verify. The importance of sound administrative practices cannot be over-emphasized. Effective tax administration requires cooperation among different departments, and adequate and industry-specific skills and knowledge among tax officials (Otto, 2017).

In designing a fiscal regime for mining, it is important that taxes and royalties not be considered in isolation of one another. The rates of individual taxes are less important than the regime as a whole as it is the overall tax regime of a jurisdiction that determines the internal rate of return potential evaluated by investors. The holistic tax assessment and a sensitivity analysis of the impact of various scenarios are essential to ensure the development of successful tax policy (Jones, 2020).

Mineral royalties have traditionally been considered a form of compensation to the community for the depletion of non-renewable resources. The legal purpose of this payment, which is also called a severance tax, is to provide a compensation to the resource owner, usually the state (which has legal title to the resource itself), for the right to take ownership of its property. The financial structure and rates of this payment can vary widely internationally, but they are collected as a payment to the owner of the mineral resource in return for the removal of the minerals from the land. As a tax, royalties represent a different way for a government to levy an additional share of the revenue flowing from mining operations relative to other non-mining activities. For this reason, royalties are commonly recorded in the fiscal accounts as non-tax revenues, but for the investor and the mine operator, the impact is the same regardless of whether a payment is called a royalty or a tax.

How this royalty is determined and calculated can vary and the different approaches can be classified into royalty types. Not all parties (industry or government) are impacted by each royalty type in the same way. The advantages and disadvantages of various royalty approaches may have different consequences for each participant. Some royalties are relatively easy to assess and monitor and others are more difficult. Some can have unanticipated financial impacts on investment and production decisions. The following royalty regimes are examples of different approaches used around the world (Otto et al., 2006; ICMM, 2009; Guj, 2012):

- Royalties based on production volume;
- Royalties based on the value of production, also called *ad valorem* royalties;
- Royalties based on profits;
- Royalties based on resource rents or “exceptional profits”;
- Hybrid royalties, a combination of an *ad valorem* royalty and a royalty on profits or resource rent;
- Production-sharing contracts.

Two of the six royalty regimes listed are not relevant to this discussion. Volume-based royalties are applied mainly to low-value and large volume raw materials such as gravel, stone or coal. Royalties based on production-sharing contracts (a kind of joint venture) are used mainly for the petroleum industry and aluminium production.

Each of the remaining four royalty regimes are potentially applicable in the NWT and warrant further examination. This section examines the implications of each royalty type from an NWT perspective.

TYPES OF ROYALTIES

1) *AD VALOREM* ROYALTIES

Ad valorem royalties are royalties based on calculating a percentage of the value of the ore extracted. They are commonly calculated by one of two methods.

The first method uses the realized value of sales. This is the value shown on the sales invoices, which often represents the Net Smelter Return (NSR) including the deduction of transportation costs. The advantage of this calculation is that the values are unequivocally defined resulting in simpler audits, lower administrative costs and fewer disputes. The disadvantage of this type of royalty is that it relates to the payable metal rather than the value of the resource at the mine gate and that it may include hedging or streaming gains and losses, effectively sharing in the marketing risk with the government.

The second method of *ad valorem* calculation determines the value of the resource by multiplying the weight of the mining product sold by its grade to identify the amount of contained metal. This amount (weight or volume) can then have its value assessed using a quoted market price for the metal on the day of the sale. Auditing of this type of royalty often involves the difficult verification of quantities and grades of product sold. The main advantages of this type of royalty are the relative stability of tax revenues as well as relative ease of set up.

The main disadvantage of both approaches arises from the fact that these fees can lead to distortions in investment and production decisions because their calculation does not account for the "ability to pay" of mining companies or the increased cost base. The use of this royalty type has the consequence that in conditions of falling prices, the royalties can accelerate the closure of temporarily less-profitable mines. This potentially results in the same amount of revenue being extracted from high-cost mines as from low-cost mines and thereby reduces the viability of the former. It has the effect of increasing the costs of mining the ore in the remaining operations, by forcing them to selectively extract the best grade material. This effect can result in an inefficient rate of extraction, ultimately inducing firms to shut down production too soon. In addition, it has the more hidden aspect of discouraging exploration since the cost of producing the resources includes both extraction costs and the royalty (Boadway and Keen, 2010).

Most jurisdictions that use this approach have a single royalty rate that is often applied to the value base regardless of how it is defined and irrespective of the nature of the product sold. However, this approach punishes products to which value has been added, creating a disincentive to invest in additional processing. To address this issue, some jurisdictions apply progressively lower royalty rates as the nature of a product progresses from crude ore to metal. Deduction of transport, insurance and other marketing costs may also be allowed in an attempt to approximate an ex-mine value base.

Ad valorem royalties are conceptually simple, even though somewhat economically inefficient. They ensure that as long as the mine operates, a royalty will be paid. The magnitude of a government's revenue will of course be variable, as it will reflect changes in commodity prices. They are most successfully used in jurisdictions with large tonnage ores that have predictable grades and are amenable to bulk transportation such as iron ore and potash. For these reasons and their administrative ease, *ad valorem* royalties are the most common form of mining taxation (Otto, 2006). However, some examples of *ad valorem* systems can get complex as in the case of Western Australia. There multiple rates for different commodities needed to be set up and then continually reviewed and adjusted to maintain currency with changing markets.

2) PROFIT-BASED ROYALTIES

Royalties based on profits consist of a percentage of profits made by the company mining (where profits = mining revenues - production costs - depreciation - other deductions attributable to the operation of a mine). Ore grades in many commodities can be highly variable, making it challenging to predict profitability on a monthly production basis. Some jurisdictions use the consolidated profits (made by all of the company's mines in the territory concerned) while others accept the variability and follow a mine-by-mine approach as the NWT uses. A second approach known as "ring-fencing" limits situations where a company with multiple mines can use the losses of one mine to reduce the profits of another mine and eliminate the taxable profits.

Establishing revenues involves all the difficulties of valuing the main production, but also the difficulties of valuing other secondary revenues that might be included. It also includes all the challenges of establishing costs. Consequently, when profit-based approaches are used, the calculation of taxes is commonly based on self-reporting, backed up with auditing and enforcement. Royalties on profits generally have a flat rate but some jurisdictions use progressive scales such as the NWT, Manitoba and Alaska.

Profit-based royalties are most often found in developed countries with a strong and rigorous tax administration. The effectiveness of this royalty is strongly linked to the treatment of expenses deductible for the calculation of mining profits, in particular the depreciation methods. The main advantage of this type of royalty on mining profits is that it takes into account the company's "ability to pay." This is particularly important in the event of a sharp drop in prices. Indeed, in such situations, the profit falls as does the royalty, generally falling proportionately more than prices. In addition, in times of a mining boom, royalties on profits make it possible to seek higher royalty amounts, with profits generally increasing proportionately more than prices.

As the taxation of this royalty type is based on self-reporting, there are known collection problems, particularly from multinational businesses. Firms may attempt to avoid taxes by profit shifting, using transfer pricing and intra-firm financial transactions, and by routing income through low-tax countries. These problems are particularly difficult to assess in the case of multinational firms that are vertically integrated and sell their products worldwide. As a result, *ad valorem* gross-revenue royalties are perceived to have an advantage over profit taxes in that they are not prone to international profit-shifting using transfer pricing, financial transactions or establishing offshore establishments in low-tax jurisdictions.

TYPES OF ROYALTIES

Under conditions of high progressively scaled taxation rates, the profits may be sharply reduced at set thresholds. With a too-steep progressive scale, companies may be induced to install extra equipment or costs. These “gold plating” expenses can prevent the profits from reaching the higher royalty rate threshold at times of high prices to avoid paying royalties. Crossing these thresholds may deter entrepreneurial efforts and reduce the overall efficiency of factor use (Heaps and Helliwell, 1985). Generally, a well-designed tax will avoid this situation (Land, 2010).

In the NWT, the issues are managed through the combination of “ring-fencing,” audit and the use of an independent valuation of high-value goods before their shipment out of the territory. Each mine is treated as a royalty-paying entity and intra-firm transactions and tax manipulations are not applicable. In circumstances where a third-party sale cannot be established or verified, the independent valuation determination is used as the sales value to establish the output value of an operation.

NWT regulations do not allow the deduction of financing costs and the costs of other financial arrangements including streaming, hedging etc. The inclusion of financial costs by other jurisdictions has been identified as one of the main areas of contention between governments and industry and a complication in the use of profit-based royalties.

3) ROYALTIES ON RESOURCE RENT OR "EXCEPTIONAL PROFITS"

Resource rent-based royalties are very similar to royalties on profits and are frequently cited in literature as an ideal guided by the “resource rent” principle since the 1980s (ICMM, 2009; Land, 2010). Resource rent is defined as the surplus amount above the level of profit required to motivate an investor in the resource industry to invest. A royalty system would collect pure rent (that is, the Ricardian rents), and this would not have any effect on the application of production decision factors and effort into extracting mineral resources. In an ideal case, it includes exploration and remediation costs and determines the value that is produced from an operation as a whole before establishing the profit for a mining operation, including a payment to the resource owner (Land, 2010). Theoretically, this amount can be taxed without impacting a company's decision-making.

When utilized for oil and gas royalties, its effectiveness lies in the application of a threshold below which profits will not be taxed. However, the complexities of a mining operation do not lend themselves well to the application of a single threshold. The Australian Resource Super Profits Tax/ Mineral Resources Rent Tax (MRRT) which was used briefly from 2010-2014, belongs to this type of royalty (Valle de Souza et al., 2016).

Although the general concept of taxing rent is relatively simple, its practical implementation may be complex, often misunderstood and can potentially lead to disputes and significant compliance costs (Calder, 2010). Resource rent is very difficult for governments to measure, especially given the long life of most mining projects and the unpredictability of commodity prices.

The key challenge for a rent tax system is that the highest value use of a particular tract of land or ore body is not known in advance, but rather needs to be discovered. Entrepreneurial activity and the mining process are processes of discovery and it is the idea of earning a “bonanza” from economic rents that drives the discovery process.

Uncertainty is pervasive and discovery of new resources, extraction techniques and uses for existing resources do not occur automatically or smoothly (Kombo-Harms and Sanyal, 2011).

The resource rent royalty, although widely touted as the ideal royalty system (Chen and Mintz, 2013; Boadway and Dachis, 2015), has no practical mining examples with successful long-term implementations. In the Australian example, taxes were levied on the positive cash flows or profits but without refund when losses were incurred. Losses were carried forward, “uplifted” by an interest rate and deducted from future positive cash flows (Valle de Souza et al., 2016). Setting of the uplift rate was problematic. The MRRT was ultimately a failure and only raised a fraction of its projected revenue, demonstrating how challenging it is to devise a rent taxation scheme.

In practical terms, the resource rent principle supports the argument that taxation should be based on profit, not on production or sales. Taxation based on profit encourages the economically efficient exploitation of mineral resources, as well as the search for new deposits, and therefore maximizes tax revenue generation for governments over the long term.

4) HYBRID REGIMES

Hybrid regimes usually combine a variant of *ad valorem* royalties and profit-based royalties. The aim is to devise a system that provides a minimum royalty but has the efficiency of taxes based on profits or rent. This combination can be cumulative or mutually exclusive: the amount of the *ad valorem* royalty then gives the right to a tax credit, reducing the amount of the second royalty calculation by the same amount. The goal is to ensure that the government receives a steady revenue, even if a given mining project never becomes profitable. This approach can reduce the optimal design and utilization of a mine but offers the government a more predictable revenue stream. Hybrid regimes have the advantages and disadvantages of the regimes that comprise them.

COMPARISON OF THE DIFFERENT ROYALTY TYPES

Any royalty system has advantages and disadvantages. Figure 7 presents some of the impacts that the different regimes may have on the feasibility of a given project.

Contrary to widely held opinions, there are few mining projects whose profitability is high enough to be certain that the project will be carried out. Most projects fall into a level of uncertainty where investors will look at all the elements relating to the project before making the final investment decision. Different royalty regimes will have different impacts on those investment decisions.

TYPES OF ROYALTIES

In Figure 7, the “no royalties scenario” provides a reference frame for the examination of the impact of royalty type on investment decisions and corresponds to the absence of any royalty regime. Depending on the net present value and internal rate of return, projects will be distributed along this continuum such that projects having a very low or no net present value will not be undertaken (“no go”), while those at an average net present value will be in the zone of uncertainty (very random project implementation). Conversely, with the right mix of variables, they could fall into the area of possible projects. Finally, projects with a high net present value will plot in the area of certain “go ahead” projects. The impact of the royalty type will be the shifting of the boundaries between these four confidence levels.

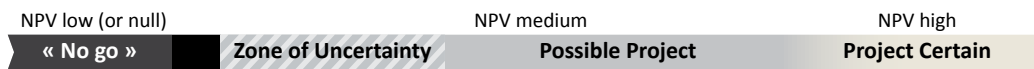
All royalty regimes will take a part of the cash flows resulting from the project and as such they will reduce the profitability and likelihood of the project getting built. The magnitudes of the impacts shown in the comparisons are merely illustrative as the actual impacts vary greatly depending on the tax rate and the deductions used in the calculation of the tax base.

The impact of a hybrid type royalty regime has not been illustrated as its impact will depend heavily on different types blended in the hybrid. Overall, the hybrid regime will tend to embody both the various advantages and disadvantages of the royalty regimes used.

FACTORS AFFECTING INDUSTRY INVESTMENT DECISION-MAKING FOR A MINING

Analysis Factors	Global Factors	Project Factors
Potential income	<ul style="list-style-type: none"> Evolution of world mineral prices Evolution of exchange rates 	<ul style="list-style-type: none"> Volume and average grade of ore
Costs	<ul style="list-style-type: none"> Equipment (positive correlation with the ore value) Energy (oil in particular) Transport (freight rate in particular) 	<ul style="list-style-type: none"> Type of Mine Power and Water Salaries Transportation (location of the project)
Context	<ul style="list-style-type: none"> Evolution of the economic context and demand Policy of competing countries at the mining level 	<ul style="list-style-type: none"> Politics Fiscal Local Communities Infrastructure

Factors affecting the NPV of projects and determining the investment decision



Each project is assessed individually and compared to other potential projects at a global level, and for certain mining companies even to different minerals.

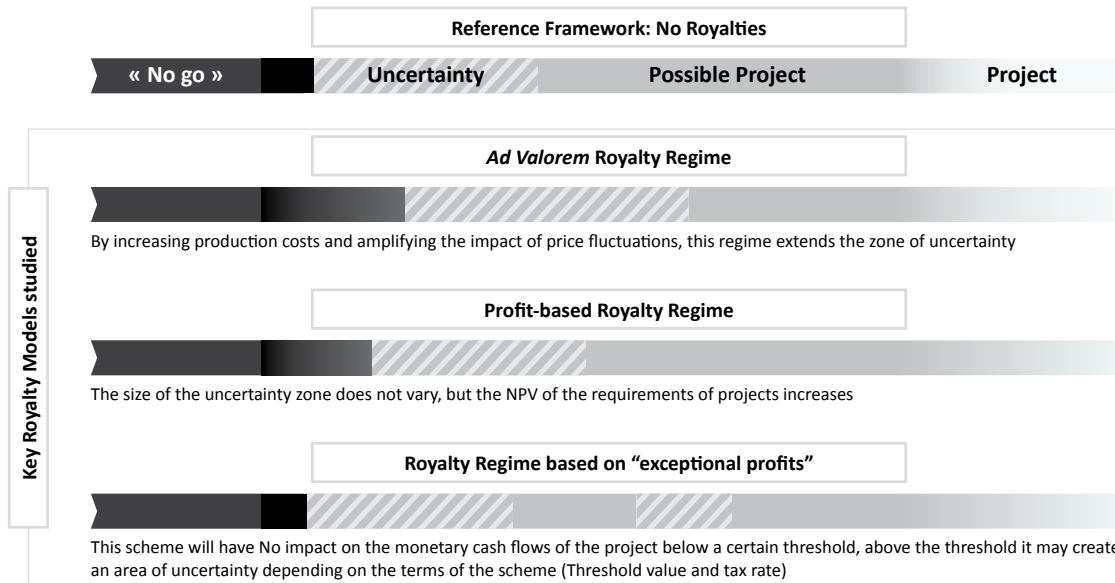


Figure 7 - Illustration of the impacts of different types of royalties on a project's viability. The left (Black) side of the bar represents no likelihood that a project will be constructed, whereas the right side (light grey) represents 100 percent certainty that it will be built. Hatched grey portions of the bar indicate considerable uncertainty for project development, while solid grey indicates the proportion of likelihood is greater, and it is more likely that a project can be built (adapted from KPMG-SECOR, 2012).

While the above examination is illustrative from the industry perspective, the effectiveness of a royalty regime also depends on its ability to achieve a balance of fundamental government objectives (Table 10).

TYPES OF ROYALTIES

Factors or attributes used by a government to achieve fiscal policy objectives:
(It should be noted that in some cases the factors are incompatible.)

- 1) **Revenue maximisation/adequacy** is a factor that determines the maximal return of economic rents from the development of mineral resources which must be balanced against the amount of “take” from industry that is possible before investment attractiveness is impaired.
- 2) **Optimal tax base** is a factor that refers to government’s desire for a stable share of rent over a longer time frame from a broad diversified base of mining projects (as opposed to a high imposed tax base on a limited number of mines). The successful achievement of this factor ensures that the government does not discourage new investment in exploration and development. Compromises with the previous factor can result in policies and approaches that are contradictory and difficult to balance depending on the political reality at any given point in time.
- 3) **Economic allocative efficiency** is a measure of the influence that a royalty structure has on a company’s approach to exploiting a resource – for instance, non-profit sensitive royalty systems can have the effect of increasing cut-off grades¹² for deposits and can consequently result in wastage of part of the resource while contributing to shortening the overall project life.
- 4) **Revenue stability** measures the stability of the income flow for governments. Some systems result in unstable revenue flows because of the impact of commodity prices on mine revenues. Geological factors controlling the uniformity of mill feed of different commodity types may also be significant determinants of revenue stability.
- 5) **Equity** refers to how the tax impact is spread among various taxpayers, commodities, project size etc. There are two different aspects; (i) horizontal (similar taxpayers taxed at a similar rate) and (ii) vertical (which measures whether the tax system fails to deal with various projects’ ability to pay). Equity also considers the distribution of revenue amongst communities and inter-generationally.
- 6) **Transparency and stability** consider whether (i) companies are fully informed about the tax rules prior to making investment decisions and (ii) how open the tax process is to scrutiny by the public. It also determines the consistency of the process over the life of a project.
- 7) **Administrative efficiency** refers to the compliance burden on both industry and government.

Table 10. Royalty fiscal objectives. This is a list of fundamental government objectives that need to be balanced in a successful mining fiscal regime (adapted from Guj, 2012).

Some of these government objectives are mutually incompatible and cannot be optimized simultaneously. For instance, it would be impossible to achieve a high degree of revenue stability at the same time as maximum economic efficiency. In reality, most jurisdictions set taxation and royalty policies such that they represent acceptable compromises and reflect to some degree the jurisdiction’s capacity to administer them. A comparison of the royalty structures has been summarised in Table 11 with a ranking of the regime against the seven main government objectives (Guj, 2012).

¹² Cut-off grade is the minimum grade required for a mineral or metal to be economically mined and processed. Material found to be above this grade is called ore, while material below this grade is considered to be waste.

Royalty/Tax Type	Criteria							
	Revenue Maximization/Adequacy	Optimal Tax Base	Economic Allocative Efficiency	Revenue Stability	Equity	Transparency and Stability	Administrative Efficiency	Total Score
Specific/Unit Based	2	2	1	5	1	5	5	21
Value Based (<i>ad Valorem</i>)	3	3	2	3	3	3	4	21
Profit-based	4	4	4	2	4	3	1	21
Hybrid	4	4	3	3	3	2	1	20
Resource Rent-based	5	5	5	1	5	2	1	24
Production Sharing Contract (Uncommon in Mining)	5	3	3	3	2	4	4	24
Key								
5	Strong in this area							
1	Poor in this area							
	With 2,3,4 representing below average, average and above average							

Table 11 – A comparison of various royalty and mining tax systems. Red indicates areas where the royalty type is weak for the given criteria, while teal indicates strengths. (adapted from Guj, 2012).

As can be seen from the table, when examined in terms of government objectives, each type of royalty achieves a similar overall score. Application of a particular royalty type depends not on a selection of one choice over another but the selection of a regime that is best suited for the geological and political characteristics of the jurisdiction. Jurisdictions with large iron mines such as Western Australia benefit from an *ad valorem* approach as do many developing nations, but the reasons for that selection may stem from very contextual factors. Management of a large bulky commodity may be significant for one country, while ease of administration may be the determining factor for another. Countries with a wide variety of deposit types and commodities, along with robust taxation institutions, tend to favour the profit-based approach.

A quantitative analysis by Otto et al. (2006) demonstrated the impact that different royalty schemes may have on project economics. It compared nine different royalty regimes (one unit-based, five value-based and three profits-based) on three different mineral commodities (gold, copper and bauxite) and three different profit scenarios. The results showed that the choice of a royalty could have a dramatic impact not only on the return of a project, but also the risk-sharing between the investor and the government and the economic cut-off point that determines the life of a mine. It should be noted that a generic comparison of such models has limitations when compared to the application of different fiscal regimes to actual projects, where physical and economic conditions can vary tremendously.

CONCLUSION

Economic growth is a recognized catalyst for improving social well-being in NWT communities. Effective management and development of the NWT's land and natural resources is central to developing the NWT's economy.

While Canadian jurisdictions, including the NWT, are empowered to manage resources within their boundaries and to impose resource taxes and royalties, the last significant review of the regulatory framework governing resource royalties was completed by the federal government in 2008.

Detailed reviews of fiscal systems for the mining sector are generally undertaken roughly every ten years.

In 2020, a benchmarking exercise completed by PricewaterhouseCoopers concluded that the current profit-based regime is still well positioned in comparison to other jurisdictions and generating a fair return for residents of the NWT.

That said, the development of regulations for the new NWT Mineral Resources Act (MRA) provides an opportunity to review the NWT's royalty provisions – one part of the GNWT's broader mining fiscal regime framework.

The content of this paper exists to support a comprehensive, collaborative, and deliberate review of the NWT's fiscal framework around royalties.

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