CITY OF YELLOWKNIFE

GOVERNANCE AND PRIORITIES COMMITTEE AGENDA

Monday, April 8, 2024 at 12:05 p.m.

Chair: Mayor R. Alty,
Councillor S. Arden-Smith,
Councillor G. Cochrane,
Councillor R. Fequet,
Councillor B. Hendriksen,
Councillor C. McGurk,
Councillor T. McLennan,
Councillor S. Payne, and
Councillor R. Warburton.

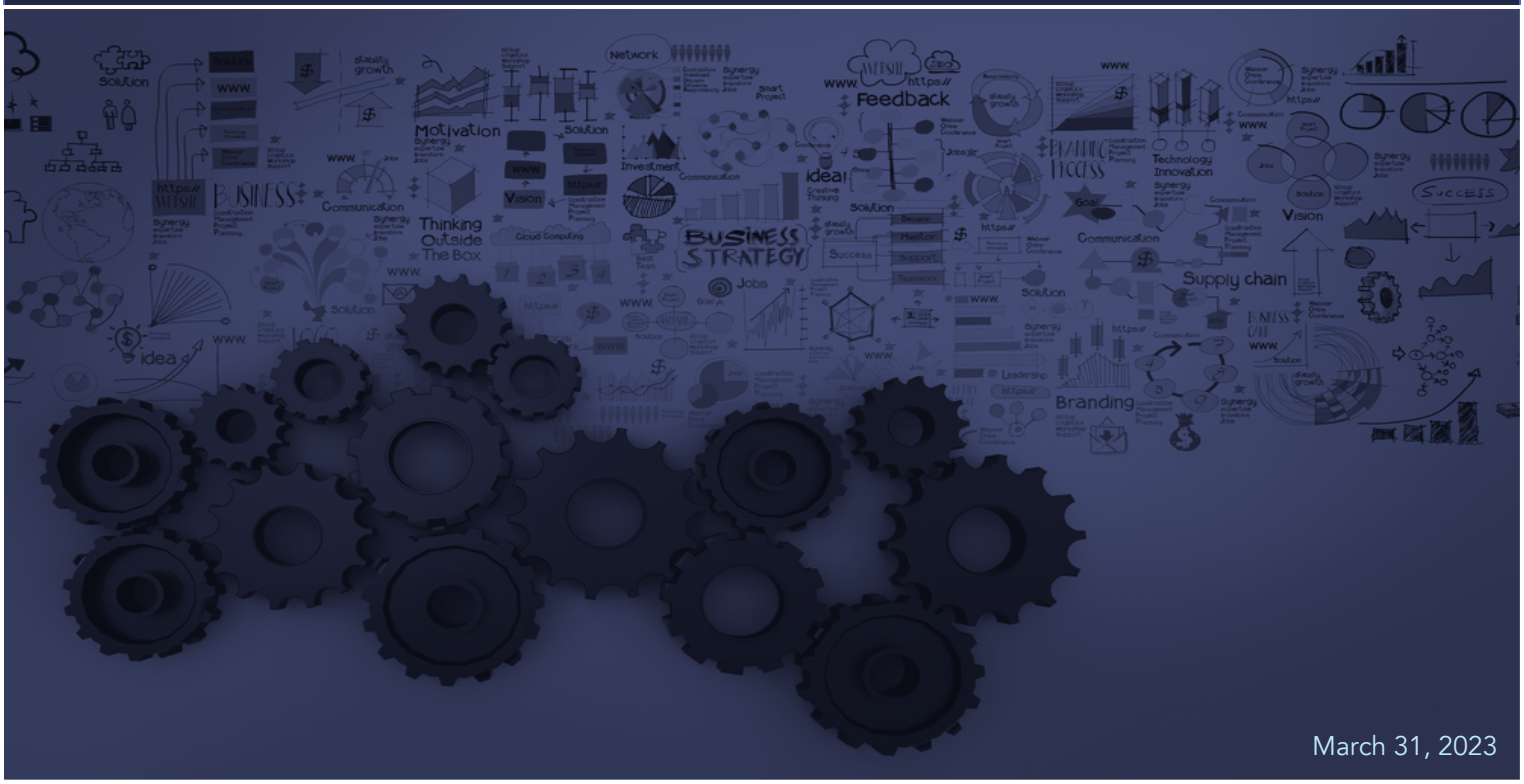
Item	Description
1.	Opening Statement: The City of Yellowknife acknowledges that we are located in Chief Drygeese territory. From time immemorial, it has been the traditional land of the Yellowknives Dene First Nation. We respect the histories, languages, and cultures of all other Indigenous Peoples including the North Slave Métis, and all First Nations, Métis, and Inuit whose presence continues to enrich our vibrant community.
2.	Approval of the agenda.
3.	Disclosure of conflict of interest and the general nature thereof.
4.	A presentation regarding Giant Mine Annual Update.
ANNEX A 5.	A presentation from Graeme Clinton regarding the Eyes Wide Open report.

IMPACT ECONOMICS

WORKING PAPER

Eyes Wide Open

Understanding the Effects of a Diminished Resource Economy in the NWT



March 31, 2023

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INTRODUCTION

The NWT economy is on a trajectory that will see its mining, oil, and gas sector diminish to a small fraction of what it is today. It will leave the territory's economy almost entirely dependent on Canadian taxpayers to fund its existence. This may sound farfetched, alarmist, and perhaps even controversial. The purpose of this paper is not to frighten or stoke controversy. It is fact that the diamond mines will close and that oil production at Norman Wells will come to an end. It is also fact that minerals, oil, and gas make up the lion's share of the territory's total exports (66%). When these products are no longer available for sale, the territory will lose an important source of income that finds its way through the economy affecting businesses, labour, and government revenues.

Therefore, it seems reasonable to look at the pending loss of mineral, oil, and gas production with some concern and to learn what we can about the implications of a diminished resource sector. What will economic life look like when the resource sector is no longer a dominant part of the territory's economic landscape?

BACKGROUND

The NWT economy has included an active mining industry for over 90 years. The territory has produced gold and silver, lead and zinc, oil and gas, diamonds, uranium, tungsten, and rare earths. A vibrant economy has grown to support and oversee this production, including

- a larger and increasingly diverse and inclusive workforce,
- road, rail, and air infrastructure,
- power generation and transmission,
- mining services, supplies, and logistics,
- trucking and warehousing services,
- exploration,
- public administration,
- science,
- regulatory and environmental oversight, and, most recently,
- a waste management and remediation industry.

The jobs created and wages earned through mining and its wide network of indirect effects have brought growth and prosperity to a remote economy within the Canadian confederacy with its relatively small population that is otherwise dependent on transfers from the federal government to maintain basic health and education services and community infrastructure.

However, despite its long history, the future for mining in the NWT is unclear. Not since the mid-1990s has the immediate outlook been quite so grim; a time when gold production was slowing and the territory was about to be divided in two. Back then, the discovery of diamonds saved the territory from economic uncertainty, but 30 years later, diamond mining is entering its twilight years. Diavik will close in

2026; Gahcho Kué will close sometime around 2030. Ekati's future is dependent on innovative underwater mining technology that could see operations continue into the mid-2030s should they prove viable. If not, that operation will not make it to 2030. What's left of the mining sector is the potential for smaller operations at Nechalacho, Pine Point, Prairie Creek, and NICO. These are advanced projects, with

- Nechalacho half-way through a development phase to determine the viability of a larger operation,
- Pine Point receiving a Class A water licence that is important for advancing exploration and moving the project closer to development,
- Prairie Creek building an all-season road to the property to support future mining, and
- NICO needing financing for mine development and construction of a processing facility.

All are important to the territory's medium-term economic outlook. And, all face barriers to full-scale production. So, none of them can be viewed with absolute certainty just yet. Equally important, these four prospects do not represent a like-for-like replacement of the economic juggernaut that is the diamond industry.

Meanwhile, in Norman Wells, the end of NWT's oil industry is quickly approaching. The last barrel will be brought to surface in 2026, some 35 years after peak production in 1991 and 100 years since production began. There are no viable prospects for a full-scale oil and gas industry in the territory beyond that date at this time. The opportunity that once existed in the Mackenzie Gas Project has long since expired. The last attempt to breathe life into the industry came in the mid-2010s where the focus turned to oil in the Sahtu. The renewed interest didn't last long. The need for hydraulic fracturing to access the oil made the opportunity too costly for prospective developers and undesirable from an environmental perspective.

From the outside looking in, this story of mining in the NWT could be viewed as nothing more than the natural ebb and flow of a natural resources industry that is known for its ebbs and flows. However, this view is lacking an understanding of context into how the territory managed to place itself on an economic cliff where the demise of its largest private-sector industry is within sight, despite evidence of this on clear display since 2011 if not before that.[1] With no clear vision for the territory's future, there has been insufficient urgency that might otherwise result in investments to reinvigorate the resource economy; nor has there been adequate investment into whatever is to be the alternative.

Labour and business whose livelihoods are tied to the extractive industries today will suffer losses as a result of the decline. In Yellowknife alone, as many as 1,000 residents are employed in jobs created by the diamond mines, a number that does not include a full accounting of indirect effects or the critically-important induced effects flowing from consumers spending their labour income.[2] One cannot be dismissive of the importance of these jobs or what will happen to the economy when they're gone. It is this last point that is under investigation in this Working Paper.

[1] Impact Economics, 2019. *Investigation of the Underlying Challenges in the NWT Economy*, Working Paper. Prepared for Indigenous and Northern Affairs Canada, March 2019.

[2] These 1,000 jobs include those created by the mining companies and by contractors working directly for the mines' operations.

What is the full economic effect of the mining sector on the NWT economy? How will the pending mine closures effect that economy? And, most important, how will these changes affect the people living here?

Above all else, the purpose of this paper is to initiate a conversation on the economic future of the territory. It is about understanding the NWT economy and what makes it tick. Life after oil and diamonds will be different than it is today. The economy will be smaller, there will be fewer jobs, and less disposable income. Government revenues will decline. There might even be fewer people that will mean additional declines in government revenues as a result of lower transfers from the federal government.[3] When all the effects are considered together, what will life be like? There are other jobs and other industries. How much of the loss can be absorbed by these "other" economic activities? How will the availability of goods and services within the local economies be affected? These are questions that require attention if the territory is to plan and prepare, and to make what it can from this future that is almost upon us.

[3] The Government of Canada anticipates its 2023-24 transfers will amount to $37,000 per person.

PURPOSE AND METHODS

The Working Paper presents a quantitative analysis of the mining, oil, and gas sector in the NWT economy. It is an exercise in following money, learning where it comes from, how it flows through the economy, and who, where, and how it affects the people who live here. In following the money, we will learn a lot about what economic life will be like without it. The hope is that this information can stimulate and inform a conversation about the future that will help determine whether it will include a resource economy or not. And whether it does or does not, this new vision will have to be matched with investments that move the territory in the direction it wants to go.

TOOLS TO SUPPORT THE DISCUSSION

The focus of this working paper is the people living in the NWT, with a particular emphasis on Yellowknife where a rich dataset allows for a detailed study of the full effect of the resource sector on the city's economy. We start from the primary concern for most people when assessing their standards of living—their employment income.

Estimating the number of NWT residents directly involved in resource sector employment and their employment income is a rather simple assignment from a data perspective and an economic modeling perspective. This working paper takes the assessment quite a bit further. We want to know all the additional (indirect) jobs that exist as a result of resource sector spending. We also want to know where these people live and where they spend money that will allow for an estimate of effects of consumer spending. And finally, we want to investigate what will happen in the broader population if the economy finds itself with no resource sector whatsoever—in particular, what happens to the labour market and how will the population respond.

All of these changes will affect government revenues. While not an exhaustive accounting of the effects on government, there are some obvious changes that can be traced without a detailed financial model of GNWT tax revenues such as personal and payroll tax collections, resource royalties, and federal transfers.[4]

What is a Model?

Economic models were built to help in this analysis. But what is an economic model? Simply put, a model is a representation of something. Often times, the real subject being studied is large and can benefit from a scaled down version. A model airplane is a representation of a real airplane. Likewise, an economic model is a representation of the economy. Economic models are typically mathematical representations of economic relationships that explain past, present, or future changes.

Model of NWT's Resource Sector

The primary relationship we are concerned with is the one between the resource sector and the rest of the NWT economy, including its labour supply. We want to trace the flow of money from the resource

[4] Note that Indigenous governments, including Tlicho and Deline, collect a share of income tax revenues. These governments' revenues will be affected by the diminished resource sector. The total dollar amount was not estimated as a part of this study.

sector through the NWT economy. This exercise is made possible using something called the Symmetric Input-Output tables published by Statistics Canada. These tables combine to form a rather complex accounting tool that traces the flow of money through an economy through thousands of transactions between buyers and sellers.

While complex in its construction, it is not complicated. It is not hard to imagine that when you spend money on a product or service, the sale price represents the cost of bringing that product to market (all the input costs including labour, capital, and intermediary goods) plus a bit more that goes to the seller (profit margin) and a bit more still that goes to government (sales tax). This basic accounting is recorded for every purchase made by consumers, governments, and businesses. And when combined, these expenditures show us how money goes from buyers to sellers then back to buyers, only to repeat itself over and over again. In building a model from these Input-Output tables, it is possible to tabulate the net effect of all these transactions in terms of gross output, business demand, GDP, labour income, and employment.

Employment Reports

The economic model is the primary tool, but is supported by numerous other tools and data sources. The diamond mines publish employment reports annually that not only tell us total employment but separate those records into numerous categories including residency, ethnicity, job classification, gender, and for Diavik and Gahcho Kué mines, the home community of resident employees. These datasets also offer records of the mine owners' contractors and their employment. All of these variables give evidence of who, where, and by how much people will be affected by mine closures.

Other datasets are introduced to help in the analysis, including

- other Statistics Canada and NWT Bureau of Statistics products, and
- Government of the Northwest Territories reports including its annual Main Estimates and its records on sources of revenue.

Demographics and Labour Market Models

Mine closure is a major event in the NWT economy and it is reasonable to expect a reaction from residents. In particular, we are concerned with changes in the labour market that will affect migration patterns. Two models were built to help this assessment; a demographic model and a labour market model. They are built to find an equilibrium where the population and labour market are relatively stable and within reasonable limits. For example, initial layoffs can be expected to have a limited effect on the labour market and population because the economy will be able to absorb those changes. As the number of layoffs grow, the market will respond through increased out-migration. Changes in population will affect the economy, especially if they occur quickly. We will avoid too much speculation in this area, but we do want to learn how a change in population alters economies of scale and government revenues.

SOURCES OF LABOUR INCOME IN THE NWT

Have you ever stopped to think where the money you earn comes from? The easy answer is from your employer. If you work for a diamond mine or for a company with a contract with a diamond mine, you may well recognize that your paycheque is somehow tied to the sale of diamonds. If you work in the oil and gas sector, then your job and employment income is connected to the sale of oil and gas. If you work for a construction company or a retailer, your pay comes from contracts or projects you are working on or from the revenues generated from the store's sales.

This understanding can be taken one step further; a step that will allow us to see the NWT economy in a different light. Diamonds are sold to international buyers, most of whom are located in Belgium or India. These are exports and, as such, the revenues generated from sales represent new money flowing into the NWT and Canadian economies. Revenue generated from the sale of diamonds to international markets was approximately $1.6 billion in 2019. From that sum, $1 billion was paid to businesses supplying goods and services to the mine, while $326 million was paid out in direct wages and benefits.

For public sector employees including those working in public administration (at all levels of government including federal, territorial, municipal, and Indigenous), health, education, and defence, salaries are paid for by governments from revenues collected through taxation. In the NWT, the majority of public sector employees work for the territorial government or one of the territory's health and education authorities. For the fiscal year 2023-24, the GNWT expects revenues of about $2.5 billion. The majority of these revenues are not generated from within the NWT. Approximately 80 cents of every GNWT dollar originates from taxpayers living elsewhere in Canada. Of the 20 percent that is generated from taxing economic activity in the NWT, a portion is paid by the resource sector.

The origins of the construction worker's paycheque are not so easily traced, but there is a relatively good chance that it too is the Canadian taxpayer. This will vary from one year to the next, but for the upcoming construction year, 2023-24, it is anticipated that between 60 percent and 70 percent of all construction activity in the NWT will be sponsored by the federal government directly or by the territorial government with as much as 75 percent of costs being paid by Canadian taxpayers. The remaining 30 percent is the result of private sector investment. Mine development is one example. More visible examples include residential construction, Yellowknife Motor's new showroom, or the Starbucks and KFC building in Yellowknife; these are examples of new construction being paid for by the private sector.

Whether you work for Yellowknife Motors or Starbucks, your wage is the result of sales of vehicles or coffee. But where did the buyers of vehicles and coffee get their money? Some consumers will be spending income that was paid for from the sale of diamonds, others will be spending income that came from the GNWT and that originated with taxpayers from across Canada. In fact, in Yellowknife, the chances are greater than 50/50 that such purchases are made using money from one of these two sources.

In economics, this is a discussion of the flow or circulation of money. Broken down into each transaction, the economic activity is described as the direct, indirect, and induced effects of labour income. In the next section, we look at the contribution of the resource sector to the NWT economy. With those facts laid out, we can then return to our discussion regarding the source of labour income, and more precisely, the source of future labour income, and answer the question, "why does it matter where the territory's money comes from?"

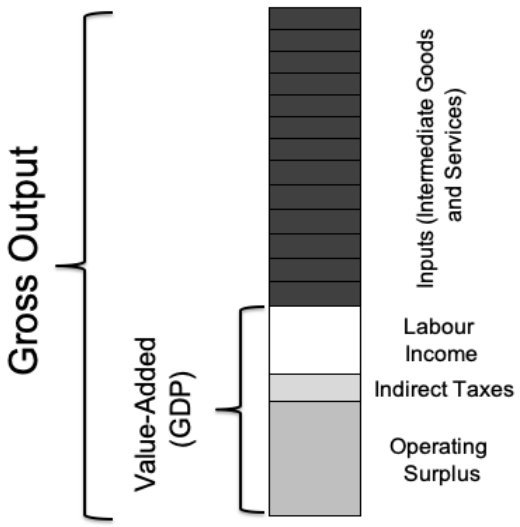
MACROECONOMICS OF THE RESOURCE SECTOR

GROSS OUTPUT AND GROSS DOMESTIC PRODUCT

Definitions

Gross output is an important measure. It is the sum of all costs associated with a good or service, including input costs, wages and salaries, depreciation of capital, indirect taxes paid, and profits.

The input costs (also referred to as expenditures on intermediate goods and services) represents the business demand created by a producer—this is the sum of all purchases a business makes as part of its production process. These are separate from the value-added components in the production process, which include the labour, capital, indirect taxes, and surplus, which are a producer's contribution to Gross Domestic Product—the business is adding value to the intermediate goods in order to produce a good or service.



Gross Output

The gross output of the resource sector was $2 billion in 2019 (Table 1).[5,6] This is the value of all the diamonds, oil and gas, and mining services produced that year.

- The diamond industry produced 16 million carats in 2019 and sold them to international buyers for $1.626 billion.
- In the same year, Imperial Oil extracted 2.7 million barrels of oil and 2.5 billion cubic feet of natural gas from its production facilities in Norman Wells. An additional 100 million cubic feet was produced from the Ikhil gas field near Inuvik. The combined value of this oil and gas was $234 million.
- The resource sector also includes a services industry that do things such as exploration, drilling, and site preparations. These activities generated $145 million in revenues for mining services businesses in 2019. Together, the value of diamond mining, oil and gas extraction, and mining services output was $2 billion.

[5] The term "resource sector" is used throughout this working paper to represent what Statistics Canada refers to as Mining, Quarrying, Oil, and Gas Extraction Industries.

[6] All economic figures in this report are from 2019 unless otherwise stated. 2019 was the last year in which a complete data set was available at the time the report was developed, ignoring the COVID-19 years (2020 and 2021). When a complete dataset for 2022 is available, the models can be rerun to update the figures.

Table 1

Gross Output of NWT's Resource Sector (Mining, Oil, Gas, and Support Services), 2019

	($, current prices)
Oil and Gas Production	234,000,000
Diamond Production	1,626,000,000
Mining, Oil, and Gas Services	145,000,000
Total	2,004,000,000

Source: Statistics Canada, Symmetric Input-Output Tables, rounded to nearest million

Direct Effect

The $2 billion gross output from the resource sector can be separated into its different components.

The sector spent

- $994 million on intermediate goods and services,
- $985 million on labour income and operating surplus, and
- $25 million of indirect taxes less subsidies on products and -$2 million of indirect taxes less subsidies on production

The value-added contribution can be further separated into labour income ($406 million) and operating surplus ($580 million), where the latter includes the cost of capital (depreciation) and other operating surplus (profits) (Table 2). The $985 million contribution to GDP is also referred to as the direct effect of mining, oil, and gas production. This gives us another important measure, the GDP to Gross Output Ratio, which is 49.1%—meaning that, in 2019, almost half of the resource sectors' value went towards value added components (labour, capital, indirect tax, and surplus).[7]

[7] A truly confusing aspect of economic accounting is the numerous measures of Gross Domestic Product. We encounter two of them in this working paper, Gross Domestic Product at Basic Prices and Gross Domestic Product at Market Prices. The difference is how indirect taxes and subsidies on products are treated. These are taxes such as the federal Goods and Services Tax (GST) that are applied when a product is sold. The tax alters the dollar amount paid by the purchaser; it is the price paid in the market. GDP at Basic Prices excludes the taxes and subsidies on products but includes tax and subsidies on production, which are levied regardless of whether the product is sold. These taxes are embedded in the cost of production and therefore form part of the basic price.

We want to keep things simple and therefore we will use only one definition, GDP at Basic Prices, throughout this report. And to make it even simpler, we will only introduce indirect taxes in the discussion on government revenues later in the report.

Taxes on products, on goods and services themselves, include the Goods and Services Tax, provincial sales taxes, federal and provincial taxes on sales volumes of gasoline and other motive fuel taxes, tobacco and alcohol, etc. These taxes only arise as a result of the actual production or sale of goods and services.

Taxes on production include property taxes, taxes on payrolls and capital, and the costs of business licences, permits and fees. These taxes are levied regardless of the production volumes, revenues, or profits.

Table 2

Direct Contribution of Resource Sector to NWT Economy, 2019

	($, current prices)
Gross Output	2,004,000,000
Intermediate Expenditures	994,000,000
Taxes less subsidies on production	-2,000,000
Labour Income	406,000,000
Gross operating surplus	580,000,000
Gross Domestic Product (Basic Prices)	985,000,000
Taxes less subsidies on products	25,000,000
Gross Domestic Product (Market Prices)	1,010,000,000
GDP to Gross Output Ratio	49%

(rounded to the nearest million, missing is mixed income which is income earned by non-incorporated businesses, its value was less than $100,000)

Indirect Effects

These measures (gross output and GDP) of the resource sector's economic contribution do not tell the entire story. Missing is the economic activity that takes place as a result of the resource sector's spending. The $994 million spent on intermediate goods and services creates another round of economic activity, affecting 207 industrial categories within the NWT and Canadian economies.[8] Some of these expenditures are highlighted in Table 3, while the entire list is provided in Appendix A.

Table 3

Business Demand (Input Costs) of the Resource Sector, Top 15 Expenditures, 2019

	($, current prices)
Petroleum refineries	163,154,699
Support activities for mining	96,500,252
Support activities for oil and gas extraction	59,609,551
Truck transportation	43,019,817
Repair and maintenance (except automotive)	36,966,749
Architectural, engineering and related services	36,776,545
Machinery, equipment and supplies merchant wholesalers	35,169,850
Agricultural, construction and mining machinery manufacturing	26,791,805
Air transportation	25,986,179
Computer systems design and related services	23,549,122
Support activities for transportation	21,173,663
Other provincial and territorial government services	17,341,191
Management, scientific and technical consulting services	16,087,632
Basic chemical manufacturing	15,939,164
Banking and other depository credit intermediation	14,179,834

[8] Statistics Canada separates the Canadian economy into 234 distinct industries in its detailed level Input-Output tables.

It is worth paying attention to these expenditures. They represent opportunities for business growth. One can appreciate that many of the required goods and services needed cannot be produced in the NWT. For example, fuel is the single most expensive input cost, which must be sourced from Alberta. However, even in these cases, there are still opportunities to capture a portion of the expenditure through the transportation, storage, or logistical services associated with the purchase.

Other expenditures do remain in the NWT. For example, the resource sector spent $26 million on air transportation services in 2019. The NWT business community includes airlines and therefore there exists the potential for some of them to benefit from the resource sector. These airlines will have their own operational expenditures including intermediate goods and services, labour and capital. In this example, the mining sector's demand for air transportation has created another round of economic effects (referred to as indirect effects), which stimulate more business demand, generating more labour income, and potentially more profits. With every successive purchase of goods and services, another round of economic effects is created.

Tracing every dollar flowing from the mining sector into NWT's businesses, and then tracing the dollars flowing from those businesses into other NWT businesses is how we are able to estimate the total direct and indirect effects of the mining sector on the NWT economy. This is sometimes referred to as the multiplier effect or the trickle-down effect. Industry might refer to it as the vertical integration of the domestic business community.

Another way to look at direct and indirect effects is from the shock-minus-control perspective, where the control is the NWT economy in 2019 and the shock is that same economy with the resource sector removed. If the resource sector were to disappear tomorrow, not only would the economy lose the $2 billion in output and the $406 million in labour income associated with production, it would also lose the $994 million in business expenditures, as well as all the trickle-down spending associated with those businesses.

Table 4 contains the direct and indirect effects flowing from the mining, oil, and gas sector in 2019. These results are restricted to the effects that occur within the NWT economy. If we were to measure the flow of money into the broader Canadian economy, the total gross output from indirect effects would be in the neighbourhood of $1.3 billion.[9]

Table 4

Direct and Indirect Contribution of Resource Sector to NWT Economy, 2019

	Direct	**Indirect**
Gross Output	2,004,000,000	**295,000,000**
Intermediate Expenditures	994,000,000	**136,000,000**
Labour Income	406,000,000	**100,000,000**
Gross Domestic Product (Basic Prices)	985,000,000	**158,000,000**
GDP to Gross Output Ratio	0.49	**0.54**

[9] While not addressed in this paper, the contribution of the NWT's resource sector to the Canadian and provincial economies should not be ignored.

LABOUR INCOME AND EMPLOYMENT

For most of us, economic activity is really only important because of the jobs and wages commonly associated with it. The resource sector creates thousands of direct jobs and its spending on business goods and services creates thousands more.

It was already discussed that labour income is a component of GDP. Looking at Table 5, it shows the direct and indirect effects of the resource sector on labour income were $406 million and $100 million, respectively.

All of this income was earned by labour working in the NWT, but only the portion earned by resident labour remains in the territory. Using information from Statistics Canada's Symmetric Input-Output tables and the annual employment reports published by the three active diamond mines provides evidence that is used to estimate the participation of NWT resident labour (1,530) in this workforce (3,110).[10]

Table 5

Direct and Indirect Contribution of Resource Sector to NWT Labour Income and Employment, 2019

	Direct	Indirect	Total
*Labour Income (wages and salaries, employers' social contributions)**	406,000,000	100,000,000	506,000,000
Number of Jobs (in full time equivalency)	2,045	1,065	3,110
Jobs filled by NWT residents	1,020	510	1,530

(income results have been rounded to the nearest million; number of jobs rounded to the nearest 10)

INDUCED EFFECTS

The total contribution of the resource sector includes one more effect. This comes as a result of the resource sector's direct and indirect labour force spending their wages on consumer goods and services. The sellers of these products will have their own input costs associated with running their businesses, will require their own labour and capital, and will earn their own profits. The business expenditures and value-added costs (GDP components) are the induced effects of direct and indirect labour associated with the resource sector.

Again, thinking about this from the shock-minus-control perspective, if the resource sector were to disappear,

- there would be no more direct employment with resource sector businesses (mining companies or oil producers),
- there would be no more demand for business goods and services and therefore no indirect employment, and

[10] Note that the employment reports do not capture the entirety of indirect effects. It misses those beyond the first round of indirect effects. Also note that this working paper includes the economic effects of the oil and gas and mining services industries. The domestic effect in these cases were estimated using a combination of model results, employment reports, and other available statistics. The same sources are used in converting the labour income into estimates of jobs, whereby the average labour income by industry can be combined with knowledge of pay scales by job category and other data on labour income and compensation.

- without the labour income being earned at these jobs, there would be no more spending of that income.
- The result—businesses selling consumer goods and services to people working in the resource sector will experience a loss in sales.

For induced effects, the participation of resident labour in the direct and indirect employment opportunities is key since it is their domestic spending that creates this effect.

How much money are we talking about? It is estimated that the resident direct and indirect labour working as a result of the resource sector earns wages and salaries worth $225 million annually. Not all of it is spent on consumer goods and services though. A portion goes to federal and territorial personal income tax. Some will be saved. Another portion is spent on direct imports, which includes such things as driving to Edmonton for shopping, spending on vacations outside the NWT, and online purchases from non-NWT sellers. With assumptions in place for taxes, imports, and savings, it is estimated that as much as $133 million entered the NWT economy in 2019 in the form of consumer spending as a result of the resource sector's direct and indirect income effect.

The induced effects of this consumer spending on gross output, business demand, labour income and GDP are presented in Table 6. Note that this includes the creation of 350 jobs.

Table 6

Direct and Indirect and Induced Contribution of Resource Sector to NWT Economy, 2019

	Direct	Indirect	**Induced**
Gross Output	2,004,000,000	295,000,000	**106,000,000**
Intermediate Expenditures	994,000,000	136,000,000	**44,000,000**
Labour Income	406,000,000	100,000,000	**22,000,000**
Gross Domestic Product	985,000,000	158,000,000	**61,000,000**
Jobs (NWT residents)	1,020	510	**350**

THE RESOURCE SECTOR'S EFFECT ON NWT RESIDENTS

The previous chapter offers a macroeconomic view of the resource sector. But what about the effects on people and communities? We want to looker closer at the effects on employment, income, labour markets, consumer spending, and population. The data available are sufficient to develop a reasonable estimate of the direct, indirect, and induced effects of the resource sector on Yellowknife in addition to the territory-wide effects. The results show the degree to which the Yellowknife economy benefits from the resource sector and what would be lost if it were to disappear.

CURRENT EMPLOYMENT AND INCOME

Table 7 offers statistics on population, number of taxfilers, and employment income for the NWT and Yellowknife. The context helps with understanding the relative contribution of the resource sector. In 2019, the population of Yellowknife was 21,200 with 15,340 residents reporting income in their tax filings and 13,430 reporting employment income. The total income in the city was $1.175 billion, with reported employment income totalling $1 billion.

Outside Yellowknife

- the population was estimated to be 23,870
- total income of $852 million was reported by 15,850 taxfilers
- employment income of $670 million was reported by 12,570 taxfilers

Table 7

Population and Labour Markets in Select NWT Communities/Regions. 2019

Community/ Region	Population	Taxfilers reporting income (#)	Total Income ($,000s)	Average Total Income ($)	Taxfilers reporting Employment Income (#)	Employment Income ($,000s)	Average Employment Income ($)
Yellowknife	21,200	15,340	1,175,615	76,637	13,430	1,004,545	74,799
Rest of NWT	23,870	15,850	852,250	53,770	12,570	670,065	53,307
Total	45,070	31,190	2,027,865	65,017	26,000	1,674,610	64,408

Source: Statistics Canada, T1 Family File, Prepared by NWT Bureau of Statistics. https://www.statsnwt.ca/labour-income/income/index.html

DISTRIBUTION OF RESOURCE SECTOR JOBS AND INCOME

The resource sector created approximately 3,110 FTE direct and indirect jobs in 2019 with NWT residents filling 1,530 of them (Table 8). The consumer activity associated with the earned wages and salaries added another 350 jobs. Using the employment reports published by the diamond mines combined with the model estimates, it was determined that 1,045 of the direct and indirect jobs were filled by Yellowknife residents, while 260 of the estimated induced jobs are located in the city.

The wages and salaries earned by NWT residents totalled $245 million when including all direct, indirect, and induced income effects (Table 9). For Yellowknife, total wages and salaries from the direct and indirect effects is estimated to equal $158 million with an additional $15 million earned as a result of the induced effects.

The relative contribution of these jobs and wages to the territory and to Yellowknife are important (Table 10). It is estimated that 7.8 percent of all taxfilers reporting employment income were earning at least a portion of their salary as a direct or indirect result of the resource sector. And because the salaries paid in this sector are amongst the highest in the territory, especially when considering allowances and bonuses over and above the basic salaries, the income earned represents over 15 percent of the city's employment income and over 13 percent of total income.

Table 8

Employment in the NWT's Resource Sector, by Geographic Region, FTE Jobs, 2019

	Direct	Indirect	Direct and Indirect	Induced	Total
Yellowknife	695	350	1,045	260	1,305
Rest of NWT	325	160	485	90	575
Total	1,020	510	1,530	350	1,880

Table 9

Employment Income in Resource Sector, total dollars earned, by Geographic Region, 2019

	Direct	Indirect	Direct plus Indirect	Induced	Total
Yellowknife	127,000,000	31,000,000	158,000,000	15,000,000	173,000,000
Rest of NWT	55,000,000	13,000,000	67,000,000	5,000,000	73,000,000
Northwest Territories	182,000,000	44,000,000	225,000,000	20,000,000	245,000,000

Table 10

Relative Contribution of the Resource Sector (Direct and Indirect Employment and Income)

	Employment Taxfilers (%)	Employment Income (%)	Total Income (%)
Yellowknife	7.8%	15.7%	13.4%
Rest of NWT	3.9%	10.1%	7.9%
Northwest Territories	5.9%	13.5%	11.1%

Induced Effects on the Yellowknife Economy

There is good reason to highlight the induced effects of the resource sector on the Yellowknife economy. Understanding where the money used to pay wages comes from was discussed earlier in the paper. One of the examples was in regards to the purchase of a new vehicle from Yellowknife Motors or a coffee from Starbucks. We are now a little closer to knowing the relative contribution of the resource sector to these induced effects.

We estimate that $100 million from the total income earned by NWT residents as a direct or indirect result of the resource sector is spent by consumers in the Yellowknife economy (Table 11). Where they spend the money was approximated by assuming that the spending pattern of these consumers is identical to the average NWT consumer. We have to acknowledge that the actual spending choices of people working in the resource sector might be different.

Also, it was assumed that a portion of this consumer spending will go toward direct imports. This can be a difficult statistic to track, especially as it relates to online shopping and those trips to Ikea in Edmonton. The reality could be that more or less is spent outside Yellowknife or the NWT than was assumed. We have also made assumptions on income taxes paid and savings based on personal income tax calculations and historical savings rates. Again, higher or lower taxation and more or less saving will also affect the results.

With these caveats in place, the results represent a reasonable estimate of the induced effects of the resource sector on the Yellowknife economy. And from that estimate, we learn that from the $100 million in annual consumer spending, $4.0 million is spent on new and used cars, trucks, and SUVs, while $4.5 million is spent on restaurants that would include coffee shops (food and non-alcoholic beverage services).

Table 11 contains the spending pattern across all final demand categories. Some additional noteworthy results include:

- $9.77 million for groceries
- $2.5 million for alcoholic beverages
- $2.9 million for clothing (garments)
- $1.66 million for air transportation
- $1.2 million for alcoholic beverage services (bars and taverns)
- $890 thousand for furniture and furnishings
- $872 thousand for sports, camping and open-air recreation
- $860 thousand for major durables for outdoor recreation
- $680 thousand for major and small electric household appliances
- $440 thousand for major and small tools and equipment
- $367 thousand for pets and pet food

These expenditures are highlighted to illustrate the extent to which the resource sector affects the Yellowknife economy. Some retailers will be able to withstand or adjust to lower sales; others will not.

It is also true that this spending isn't likely to fall to zero. Resource sector workers might receive severance packages, will qualify for employment insurance, and/or might end up on income support, but in all cases will still spend money across all of these categories, just in lower amounts. Those who live in households with other sources of income (spouse, investments, etc) may continue spending in a similar way but cut out vacations or savings.

In a worst-case scenario, the out-of-work resource sector worker might decide to leave the city and territory taking their consumer activity with them. This case is exaggerated when considering these departures would include their families.

This last case is a worst case but it is also a reality. Some people will leave as a result of the diminished resource sector. The extent to which people leave will have a direct effect on consumer spending, housing markets, government revenues, and more. How many will leave? We turn to this question next.

Table 11

Induced Effect of the Resource Sector's Direct and Indirect Labour Income, Consumer Spending in Yellowknife

Food	9,775,288	Hospital services	96,285	Cinemas	65,253
Non-alcoholic beverages	930,752	New passenger cars	238,533	Photographic services	52,234
Alcoholic beverages	2,517,590	New trucks, vans and sport utility vehicles	2,537,250	Other cultural services	242,093
Tobacco	2,133,461	Used motor vehicles	1,191,125	Games of chance	770,809
Cannabis products for non-medical use (licensed)	168,339	Other vehicles	741,690	Books	141,239
Cannabis products for non-medical use (unlicensed)	348,368	Spare parts and accessories for vehicles	1,117,529	Newspapers and periodicals	79,121
Garments	2,901,241	Fuels and lubricants	2,312,214	Miscellaneous printed matter and stationery	157,605
Cleaning of clothing	68,281	Maintenance and repair of vehicles	700,774	University education	0
Clothing materials, other articles of clothing and clothing accessories	362,237	Parking	43,041	Other education	596,944
Footwear	602,576	Passenger vehicle renting	268,024	Food and non-alcoholic beverage services	4,479,151
Paid rental fees for housing	12,913,042	Services related to the operation of transport equipment	64,615	Alcoholic beverage services	1,234,963
Imputed rental fees for housing	11,606,397	Railway transport	0	Accommodation services	1,741,201
Materials for the maintenance and repair of the dwelling	193,579	Urban transit	53,881	Life insurance	555,816
Services for the maintenance and repair of the dwelling	34,858	Interurban bus	54,253	Health insurance	109,463
Electricity	3,598,986	Taxi and limousine	186,831	Insurance related to transport	237,524
Gas	126,095	Air transport	1,666,118	Property insurance	172,165
Other fuels	2,249,300	Water transport	74,392	Implicit loan charges	743,921
Water supply and sanitation services	752,211	Other transport services	635,893	Implicit deposit charges	371,961
Furniture and furnishings	891,324	Postal services	135,234	Stock and bond commissions	99,367
Carpets and other floor coverings	12,168	Telecommunication equipment	43,573	Other actual financial charges	437,266
Household textiles	147,456	Telecommunication services	2,369,496	Trusteed pension funds	987,290
Major household appliances	416,330	Information processing equipment	256,972	Mutual funds	1,290,704
Small electric household appliances	262,551	Recording media	161,856	Personal grooming services	547,367
Major tools and equipment	226,737	Audio-visual and photographic equipment	727,130	Electrical appliances for personal care	102,130
Small tools and miscellaneous accessories	217,066	Major durables for outdoor recreation	860,239	Other appliances, articles and products for personal care	815,922
Other semi-durable household goods	325,359	Musical instruments and durables for indoor recreation	95,381	Jewellery, clocks and watches	373,980
Other non-durable household goods	714,590	Games, toys and hobbies	495,930	Other personal effects	189,966
Repair of personal and household goods except vehicles	225,833	Equipment for sport, camping and open-air recreation	871,717	Child care services outside the home	455,174
Renting and leasing except passenger vehicles	223,867	Garden products, plants and flowers	159,890	Child care services in the home	145,330
Other services related to the dwelling and property	119,612	Veterinary and other services for pets	175,194	Other social services	372,705
Pharmaceutical products and other medical products (except cannabis)	678,935	Pets and pet food	367,657	Undertaking and other funeral services	93,415
Cannabis products for medical use	18,970	Recreational and sporting services	605,818	Legal and other services	792,383
Therapeutic appliances and equipment	312,022	Cable, satellite and other program distribution services	809,918	Expenditure by Canadians abroad	1,989,193
Out-patient services	931,283			Expenditure by Canadians in other provinces or territories	2,696,131
				Total Expenditures	**100,264,941**

Population Effects

An NWT economy without the resource sector will look a lot different than it does today. For instance, there will be far fewer jobs. It was estimated that the sector created 3,460 jobs in 2019 when including all direct, indirect, and induced effects, 1,880 of which were filled by NWT residents. We are interested in having a conversation about the fate of these people who would be out of work if the resource sector were to disappear. Would they find other work? Would they choose to leave, taking their families with them? How many people leave leave? These are difficult questions to answer, but are really important if we are interested in the territory's future economy.

The answers come from a careful study of demographics and the domestic labour market using models built as part of this study. Like all models, these include numerous assumptions, where small changes can have a statistically significant effect on the results. They are powerful tools in that sense, and so care is needed when using them and when looking at their results.

The approach taken is to be clear on how the models work and the assumptions made in their development. For the purpose of this paper, an overriding principle is one of caution. The results must be reasonable, where there is minimal risk in exaggerating the effects one way or the other.

Baseline Population

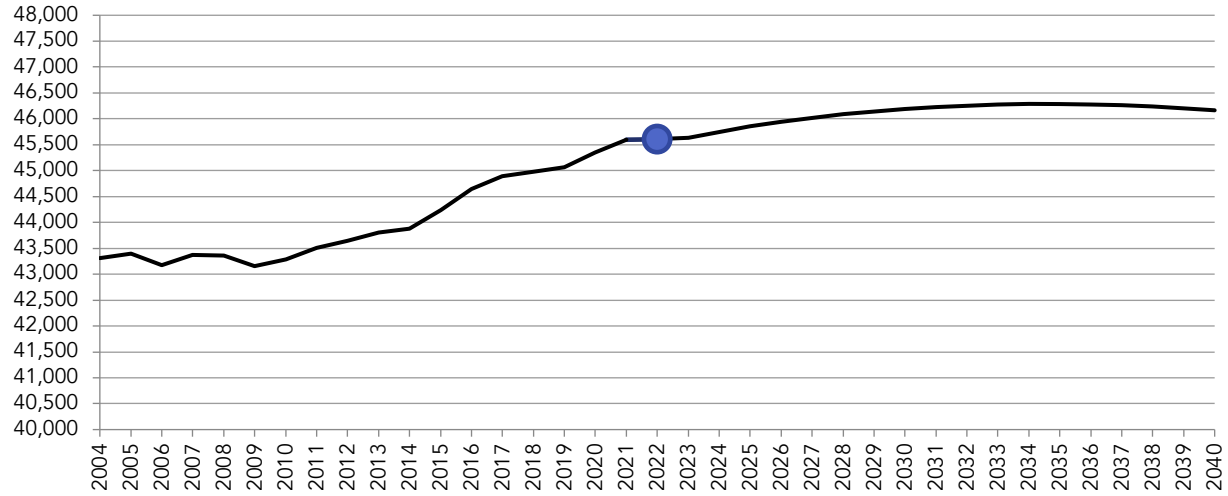
We want an estimate of the migration effects from the loss of jobs and economic activity that would be associated with a diminished resource sector. The first step is to establish a baseline for population growth. Population growth is a function of the natural rate of growth which is the number of births minus the number of deaths, and net migration which is the sum of all people arriving minus all those departing from within Canada and across the world.

The natural rate of population growth was estimated from a detailed demographics dataset that includes males and females by single age cohort residing in the territory. Future fertility and death rates were established based on ten-year trends. The rates were applied annually based on the age- and gender-specific demographics model.

Net migration was estimated from trends in age-based interprovincial migration and from trends in international immigration.

The result is a baseline population projection that is slightly positive, rising to a peak in 2035 around 46,300 (Figure 1). This growth is the result of a positive natural rate of growth that is decreasing at an increasing rate; in other words, the number of births in a year are trending downwards while the number of deaths in a year are trending upwards. When they cross, the natural rate of growth will turn negative. In our baseline prediction, this will happen sometime around 2040 and possibly a little sooner. This trend is largely driven by an ageing of the population and a slight downward trend in fertility rates.

Figure 1: Baseline Population Projections



Meanwhile, the number of residents leaving the territory for other Canadian jurisdictions almost always outnumbers the number of Canadians moving to the NWT in any given year, even when the economy is growing. In fact, over the past ten years, the average interprovincial migration has been close to 400 net departures. Countering that trend is a steady rise in the number of immigrants. This trend began ten year ago when the territory welcomed more than 100 immigrants in a single year, on net, for the first time. Since then, the number has risen steadily, and now regularly tops 200. These immigrants are key to the territory's future population. Without them, the population growth would soon turn negative. The trends included in the baseline include a slow but steady improvement in interprovincial migration moving to a net negative of 200 in the long term, with international migration holding relatively steady. The result is a net negative migration through the study period, but at a decreasing rate.

In viewing this baseline population growth, be mindful that it is not a forecast. We are not attempting to account for the ebbs and flows and influence of numerous factors, such as changes in economic activity not being studied in this paper, changes in governments' fiscal regime or spending programs, climate change, or any other exogenous effect on population. It is purely based on historical trends. This was done on purpose, such that our focus can be on the effects of a diminished resource sector.

Baseline Labour Market

With the labour market set as the test variable, we need a baseline estimate of it into the future. A model was built that includes historical labour market data starting in 1999. There is a lot of information contained within this database. Important to our study are some trends in workforce participation and employment rates.

- The participation rate (the number of people in the labour market relative to the number of people eligible to be in that market) is high in comparison to national levels
- Unemployment rates (number of people working in relation to the number of people in the labour market) are typically low in Yellowknife and high elsewhere (again, when considered alongside national averages),

- The employment rate (number of people working in relation to the number of people eligible to be in the labour market) is also high, and
- There are measurable differences in labour statistics between Yellowknife, regional centres, and smaller communities, and between Indigenous and non-Indigenous labour.

These historical data provide information useful in building a model. There is a natural order to the NWT's labour market that can be observed. When the number of jobs rise quickly, the immediate effect is a drop in the unemployment rate followed by an increase in the labour force, which occurs through a combination of in-migration of labour and new entrants to the market from within the NWT population. The result is a new steady-state within the labour market.

The labour market built for this working paper makes use of these tendencies towards an equilibrium, where

- participation rates tend to remain close to 75 percent and rarely dip below 70 percent,
- employment rates tend to remain close to 70 percent and above 65 percent, while
- unemployment rates oscillate more, driven by changes in the job market and from people coming in and out of the labour force, resulting in rates that have dropped as low as 5.0 percent and risen as high as 8.5 percent.

The model was built with these tendencies in place, where the market responds to negative shocks to the employment through a combination of departures from the labour market and an acceptance of labour market rates rising towards and even temporarily above the upper bounds set by the historical trends. Overtime, it is assumed that the people who choose to remain in the NWT will find other employment, retire, or leave the labour market. The labour market model is dynamic, meaning it makes small changes at a time, and then recalculates the effects of those changes. It continues to do this until a new equilibrium is reached.

The model also considers differences within the source population that might affect people's decision to stay or leave after losing their job in the resource sector. The resource sector workforce is divided into three categories:

- A permanent (or enduring) population that will not leave the territory regardless of the economic conditions
- A semi-permanent population that would be reluctant to leave, even in the midst of difficult economic times, and
- A transient population that comes and goes due to numerous factors including economic opportunities.

This type of categorization could apply to any workforce in any region in Canada, though the NWT does have a relatively large transient population. The resource sector workforce was modelled according to these categories based on information built up in the demographics model, as well as statistics regarding ethnicity, community of residency, job classification, and new hire data.

Estimated Migration Effect

We estimate the net effect on population from a diminished resource sector is a net reduction of 1,100 residents from the baseline prediction. In our models, the population would be approximately 45,200 by the mid-2030s under the test scenario. The estimate includes a relatively small out-migration effect from the closure of Diavik and the end of oil production at Norman Wells that will keep the population from growing beyond 46,000 over the next 3 to 5 years. In the years that follow, further closures and lost jobs will cause the unemployment rate to approach 10 percent that will be brought back to 8 percent through increased net out-migration.

While this is a reasonable estimate based on the information available, appreciate some of the key assumptions. Changes in these assumptions result in dramatically-different results. Most influential is the assumption that a portion of resource-sector workers find other employment in the NWT economy. There is good reason for this assumption. The territory imports $400 million to $500 million worth of labour annually. A portion of these job tourists are here working in the resource sector, but a large number are here working on public-sector infrastructure projects, to work in health or education, in trades-related work, in the justice system, professional services, and numerous other areas. While resource-sector labour would qualify for many of the jobs, they may not want them. For example, for some workers with many years of experience working on a two-week rotation, they may not want to follow construction work around the territory, which would require being away for longer periods of time and living in temporary workcamps.

Context is of the utmost importance in interpreting these results. In the scenario we are considering, all resource sector activity comes to an end over the next 8 years, and nothing else changes. There are numerous market-based and public-driven reactions to these events that would result in a different outcome. For example:

- In a scenario where the resource sector diminishes to nothing, one might expect governments to respond in such a way as to soften the negative effects through fiscal measures, job creation, or increased spending.
- The current mining prospects across the territory remain prospects in the baseline; that is, in this scenario, they do not materialize into fully-operational mining projects. This is certainly a possibility. But it is also possible that one or more will be developed, thus mitigating a portion of the negative effects of closures elsewhere.

These potential responses are actually new scenarios that could be studied. For example, it might be worthwhile to investigate the effects of different government actions to determine which, if any, if effective in slowing out-migration.

Contribution of Mining to Government Revenues

A diminished resource sector will result in lower revenues for government. We don't have access to the complex financial models, personal taxable income and corporate profit data, or government tax revenue data that would allow a precise estimate of these revenues, but we can reference the Main Estimates published by the Department of Finance to learn what it receives in revenues and from where, and build simple tax models to estimate government revenues from some of its sources such as personal income tax, payroll tax, and bridge tolls.

As with all of the modelling presented in this paper, the estimation of government revenues was approached with caution to be sure not to err on the side of overinflating the effects. This prudent approach meant that taxes paid as a result of indirect and induced economic activity were excluded.

The result is an estimated loss of $69 million in own source revenues, which include personal income tax, payroll tax, non-renewable resource revenues, carbon and fuel tax, and property tax. Adding bridge tolls and the lower Territorial Formula Financing (TFF) Grant that would result from a smaller population brings the net loss of revenues close to $105 million (Table 12).

Table 12

Resource Sector's Contribution to Government Revenues, 2019

Source	Total Revenue ($) to GWNT[1]	Estimated Contribution from Resource Sector ($)	Assumptions
Personal Income Tax	97,800,000	11,500,000	Based on 1,880 FTE jobs and an employment income of $245 million
Corporate Income Tax	(8,800,000)	Unknown	Corporate profits are unknown
Payroll Tax	42,900,000	7,100,000	Based on 3,450 FTE jobs and an employment income of $475 million
Non-Renewable Resource Revenues	23,800,000	11,900,000	Half of the NWT's resource revenues go to the federal government through a reduced TFF Grant. The GNWT then redirects a portion of its share to Indigenous governments and to its Heritage Fund.
Carbon Tax	12,600,000	6,300,000	Based on direct and indirect demand for petroleum flowing from the resource sector versus the total demand from the NWT economy.
Fuel Tax	17,600,000	8,800,000	Assumes 50% of tax paid by resource sector; in line with Carbon Tax
Property Tax	29,200,000	23,400,000	Assumes 75% of tax paid by resource sector
Total Own Source Taxation and Non-Renewable Resource Revenues	235,900,000	69,000,000	
General Revenues	108,000,000		Excludes bridge tolls
Bridge Tolls	4,000,000	2,300,000	Based on an estimated 7,500 trucks at $300 per crossing[2]
TFF Grant (2019-20)	1,309,000,000	33,600,000	$30,500 per person in TFF transfers; net out-migration of 1,100 residents[3]
Total Revenues (2019)[4,5]	1,850,800,000	104,900,000	

Notes:
(1) Based on actual amounts reported by GNWT, Department of Finance, Main Estimates, 2021-22 for the 2019-20 fiscal year.
(2) The estimates for truck crossing were made from the NWT Highways Traffic Reports for 2019, and estimates from the Tibbett-to-Contoyto Road Joint Venture. Actual rates paid depend on vehicle size. $300 was used as an estimate of the average rate paid. Actual amounts paid by each mine operator is unknown.
(3) With lower own-source revenues, the TFF would be adjusted upwards. The effect of this change is unknown.
(4) Includes all sources of revenue including sources not shown in this table such as Transfer Payments from the Government of Canada (that are separate from the TFF Grant), and General Revenues. The Resource Sector contributes more to government revenues than is shown in the table through, in particular as a result of indirect and induced effects. These are not included out of caution because it was not possible to establish an acceptably accurate dollar amount.
(5) All figures rounded to near $100 thousand

It is worth noting that 2019 wasn't the best year for tax collections from the resource sector. In 2023-24, the GNWT is predicting

- non-renewable resource revenues will be $28.5 million after deducting the 50% share that goes to the federal government,
- that a higher carbon tax will mean revenues for the resource sector from this tax will climb to $31.4 million, and
- that a higher per capita TFF grant will amount to $37,000 per person.

These higher revenue streams would bring the resource sector's contribution to government revenues up to $150 million.

Not included in these estimates are the cumulative effects associated with the out-migration of resource-sector families apart from the effect on transfers from the federal government. A smaller population would affect numerous consumer-driven markets, all of which lend to additional economic activity and generate revenues for government. A few examples include

- commercial and residential vacancy rates and housing markets,
- airport traffic at the Yellowknife Airport and elsewhere
- revenues generated by the City of Yellowknife from property tax collections to facility user fees.

CONCLUSION AND NEXT STEPS

TEST CASE VERSUS REALITY

In this paper, we are interested in understanding the contribution of the resource sector to the NWT economy. The method used to test this case is to remove the sector from the economy and trace the effects of that change. It is a "What If?" scenario. We have to distinguish this from a forecast though. We are not predicting the resource sector will fall to zero, even though that is what has been modelled.

With that said, this isn't an entirely academic experiment either. The territory's diamond mines are all well past their half-lives, with Diavik set to close in early 2026, less than three years from now. Ekati and Gahcho Kué mines will also close and potentially within a few years of one another between 2028 and 2030. Oil production in Norman Wells will also end in 2026. This scenario could be altered. Ekati could continue for several more years if its underwater mining technology proves profitable. De Beers is looking at underground options at Gahcho Kué that might extend its life by a few years. But the test case where all four producers cease production by 2030 remains the most likely.

What's left after that? We cannot be certain. Exploration will continue. There are projects that are advanced and have obtained regulatory approval, and the Inuvialuit are in the final stages of developing a small natural gas deposit for domestic use. A scenario where the resource sector consists of these activities should be examined as a next step.

- one or two mines where employment at each is 100 to 200,
- some natural gas production and its associated jobs, and
- a modest amount of mineral exploration throughout the territory

These activities would mitigate some of the projected losses. It would be worthwhile to know by just how much.

LIFE AFTER MINING

A diminished resource sector will have a multitude of effects that will be felt throughout the economy and that affect most residents. In the paper, we looked at several.

- Loss of exports and therefore a loss of new money to Canada, and new money to the NWT
- Loss of direct jobs
- Loss of business spending that results in a loss of business activity and indirect jobs
- Loss of direct and indirect income causing a loss in consumer spending causing a loss of induced effects including jobs, especially in retail trade
- Loss of people through out-migration
- Market response to lower personal income and fewer residents (cumulative effects)
- Loss of government revenues, including personal income tax, resource royalties, payroll tax, carbon tax, gas tax, licences and fees, and bridge tolls
- Loss of TFF grant money and other tax revenues associated with the out-migration.

There is enough evidence to determine, with reasonable accuracy, the size and extent of these losses. The resource sector brings close to $2 billion of new money into the NWT economy, creates over 3,400 jobs in the NWT, and more than $475 million in labour income annually. This all disappears if the resource sector is reduced to nothing or something close to it.

What the NWT will be left with is an economy that is almost entirely dependent on the federal government for economic activity, job creation, and income. Why that is a bad thing (or at least, a less desirable thing) requires another conversation; one that the territory ought to have given this is the direction it is heading without a change in course.

The conversation shouldn't focus exclusively on the lost economic activity, jobs, population, and government revenues either. At some point, the territory has to reconcile the divergence of opinions about society's goals and its definitions of a long-term and sustainable quality of life; it is this divergence and an inability to choose a clear direction that has left the territory's economy in its current state. What standard of living do people want and expect? How important is it that the NWT can determine its own destiny? Can residents formulate a vision for the territory that has substance such that it affects decision making regarding how and where public money is spent?

Societies that are entirely dependent on central governments tend not to advance, and in fact, it is more common for conditions to deteriorate slowly over time, where the status quo is the best one can hope for. It is worth studying how society reacts to a slowing economy; there are examples elsewhere that provide evidence. Does society tend to become more or less welcoming? Is it more open? More just? Or do people become more protective of what they have? Do they share less? Become less open?

A recommendation from this working paper is to spend some time considering the implications of becoming a welfare state that go beyond the lost resource sector economy. We shouldn't care so much about economic growth, but rather what that current economy provides people and families. It is not that an economy without resource extraction is a bad thing on its own, it's what it means for a society that has used it to advance their own lives and the lives of others around them. What does society become without it? It is also worthwhile considering whether this future is the territory's destiny, or if it could do better?

Before racing ahead though, the first recommendation is for the results of this paper to enter a territory-wide discourse regarding its future. The nature of the NWT economy is about to change in a profound way. Anyone who considers themselves a leader, whether an elected leader or a leader through action, needs the information presented in this paper. What has been presented is largely fact, with conjecture only entering the conversation when attempting to follow the money beyond the first few transactions and in predicting how people will react. But even there, the assumptions were conservative. In truth, this is a conversation that should have started the day Ekati mine produced its first diamond almost 25 years ago, but having not done so then is not reason to avoid it now.

APPENDIX A: BUSINESS DEMAND FROM THE NWT MINING, OIL, AND GAS SECTOR IN 2019

Business Demand from the NWT Mining, Oil, and Gas Sector (Direct Business Expenditures)			
Crop production (except cannabis, greenhouse, nursery and floriculture production)	181,559	Other miscellaneous manufacturing	2,549,884
Greenhouse, nursery and floriculture production (except cannabis)	2,460	Farm product merchant wholesalers	136,024
Cannabis production (licensed)	0	Petroleum and petroleum products merchant wholesalers	12,674,197
Cannabis production (unlicensed)	0	Food, beverage and tobacco merchant wholesalers	548,576
Animal production (except aquaculture)	314,734	Personal and household goods merchant wholesalers	1,693,140
Aquaculture	52	Motor vehicle and motor vehicle parts and accessories merchant wholesalers	2,934,108
Forestry and logging	94,858	Building material and supplies merchant wholesalers	8,707,046
Fishing, hunting and trapping	0	Machinery, equipment and supplies merchant wholesalers	35,169,850
Support activities for crop and animal production	0	Miscellaneous merchant wholesalers	7,013,142
Support activities for forestry	0	Business-to-business electronic markets, and agents and brokers	1,840,277
Oil and gas extraction (except oil sands)	432,544	Motor vehicle and parts dealers	7,521,333
Oil sands extraction	44,623	Furniture and home furnishings stores	356,049
Coal mining	521	Electronics and appliance stores	613,981
Iron ore mining	300	Building material and garden equipment and supplies dealers	2,912,891
Gold and silver ore mining	66,980	Food and beverage stores	3,355,713
Copper, nickel, lead and zinc ore mining	174,730	Health and personal care stores	669,219
Other metal ore mining	0	Gasoline stations	2,936,128
Stone mining and quarrying	84,968	Clothing and clothing accessories stores	288,689
Sand, gravel, clay, and ceramic and refractory minerals mining and quarrying	3,338,888	Sporting goods, hobby, book and music stores	352,163
Diamond mining	7,424,818	General merchandise stores	908,848
Other non-metallic mineral mining and quarrying (except diamond and potash)	1,698,405	Miscellaneous store retailers (except cannabis)	418,642
Potash mining	13,410	Cannabis stores (licensed)	0
Support activities for oil and gas extraction	59,609,551	Cannabis stores (unlicensed)	0
Support activities for mining	96,500,252	Non-store retailers	1,002,983
Electric power generation, transmission and distribution	7,130,345	Air transportation	25,986,179
Natural gas distribution	10,878	Rail transportation	2,772,916
Water, sewage and other systems	0	Water transportation	1,138,695
Residential building construction	0	Truck transportation	43,019,817

Non-residential building construction	0
Transportation engineering construction	0
Oil and gas engineering construction	0
Electric power engineering construction	0
Communication engineering construction	0
Other engineering construction	0
Repair construction	10,013,000
Other activities of the construction industry	3,585,910
Animal food manufacturing	70,698
Grain and oilseed milling	386,842
Sugar and confectionery product manufacturing	25,796
Fruit and vegetable preserving and specialty food manufacturing	115,885
Dairy product manufacturing	190,836
Meat product manufacturing	74,929
Seafood product preparation and packaging	135,778
Bakeries and tortilla manufacturing	110,488
Other food manufacturing	167,884
Soft drink and ice manufacturing	267,451
Breweries	405,400
Wineries and distilleries	67,713
Tobacco manufacturing	40,851
Textile and textile product mills	36,928
Clothing and leather and allied product manufacturing	207,148
Sawmills and wood preservation	292,864
Veneer, plywood and engineered wood product manufacturing	245,691
Other wood product manufacturing	331,804
Pulp, paper and paperboard mills	187,097
Converted paper product manufacturing	639,068
Printing and related support activities	577,132
Petroleum refineries	163,154,699
Petroleum and coal product manufacturing (except petroleum refineries)	6,412,046
Basic chemical manufacturing	15,939,164
Urban transit systems	10,796
Other transit and ground passenger transportation and scenic and sightseeing transportation	31,594
Taxi and limousine service	131,373
Crude oil and other pipeline transportation	4,674,608
Pipeline transportation of natural gas	153
Support activities for transportation	21,173,663
Postal service	174,806
Couriers and messengers	579,180
Warehousing and storage	365,375
Newspaper publishers	455,597
Periodical, book and directory publishers	245,145
Software publishers	801,288
Motion picture and video industries (except exhibition)	1,670
Motion picture and video exhibition	11,937
Sound recording industries	232
Radio and television broadcasting	22,042
Pay and specialty television	1,222
Telecommunications	8,280,308
Data processing, hosting, and related services	859,874
Other information services	24,657
Monetary authorities - central bank	0
Banking and other depository credit intermediation	14,179,834
Local credit unions	267,084
Non-depository credit intermediation	1,552,848
Activities related to credit intermediation	54
Financial investment services, funds and other financial vehicles	5,054,102
Insurance carriers	13,735,035
Agencies, brokerages and other insurance related activities	48
Lessors of real estate	508,127
Offices of real estate agents and brokers and activities related to real estate	270,717
Owner-occupied dwellings	0
Automotive equipment rental and leasing	1,748,399

Resin, synthetic rubber, and artificial and synthetic fibres and filaments manufacturing	373,506
Pesticide, fertilizer and other agricultural chemical manufacturing	153,952
Pharmaceutical and medicine manufacturing	190,347
Paint, coating and adhesive manufacturing	2,059,611
Soap, cleaning compound and toilet preparation manufacturing	2,219,865
Other chemical product manufacturing	11,253,121
Plastic product manufacturing	9,166,245
Rubber product manufacturing	2,080,606
Non-metallic mineral product manufacturing (except cement and concrete products)	7,533,045
Cement and concrete product manufacturing	1,664,701
Iron and steel mills and ferro-alloy manufacturing	2,312,167
Steel product manufacturing from purchased steel	7,825,616
Alumina and aluminum production and processing	37,300
Non-ferrous metal (except aluminum) production and processing	196,997
Foundries	3,661,623
Forging and stamping	222,999
Cutlery, hand tools and other fabricated metal product manufacturing	9,639,066
Architectural and structural metals manufacturing	5,688,006
Boiler, tank and shipping container manufacturing	494,654
Hardware manufacturing	94,792
Spring and wire product manufacturing	1,457,447
Machine shops, turned product, and screw, nut and bolt manufacturing	5,347,963
Coating, engraving, cold and heat treating and allied activities	182,507
Agricultural, construction and mining machinery manufacturing	26,791,805
Industrial machinery manufacturing	4,694,996
Commercial and service industry machinery manufacturing	683,197
Ventilation, heating, air-conditioning and commercial refrigeration manufacturing	5,968,727
Metalworking machinery manufacturing	292,210
Engine, turbine and power transmission equipment manufacturing	8,327,360
Other general-purpose machinery manufacturing	13,912,590
Computer and peripheral equipment manufacturing	251,233
Communications equipment manufacturing	319,802
Other electronic product manufacturing	9,123,807
Rental and leasing services (except automotive equipment)	3,737,750
Lessors of non-financial intangible assets (except copyrighted works)	234,933
Legal services	7,171,639
Accounting, tax preparation, bookkeeping and payroll services	7,208,848
Architectural, engineering and related services	36,776,545
Specialized design services	1,632,172
Computer systems design and related services	23,549,122
Management, scientific and technical consulting services	16,087,632
Scientific research and development services	637,573
Advertising, public relations, and related services	1,193,840
Other professional, scientific and technical services	245,442
Holding companies	9,027,240
Office administrative services	1,035,012
Facilities and other support services	584,435
Employment services	1,800,282
Business support services	92,129
Travel arrangement and reservation services	866,600
Investigation and security services	2,742,505
Services to buildings and dwellings	6,281,784
Waste management and remediation services	6,125,068
Educational services	2,994
Offices of physicians	0
Offices of dentists	0
Miscellaneous ambulatory health care services	0
Nursing and residential care facilities	1,685
Social assistance	0
Performing arts, spectator sports and related industries, and heritage institutions	116,773
Amusement and recreation industries	115,716
Gambling industries	3,137
Traveller accommodation	3,194,174
Recreational vehicle (RV) parks, recreational camps, and rooming and boarding houses	287,367
Food services and drinking places	1,124,122
Automotive repair and maintenance	3,053,024

Semiconductor and other electronic component manufacturing	65,967
Electric lighting equipment manufacturing	10,066
Household appliance manufacturing	2,837,356
Electrical equipment manufacturing	12,302,319
Other electrical equipment and component manufacturing	11,961,567
Automobile and light-duty motor vehicle manufacturing	22,692
Heavy-duty truck manufacturing	6,703
Motor vehicle body and trailer manufacturing	184,516
Motor vehicle gasoline engine and engine parts manufacturing	14,070
Motor vehicle electrical and electronic equipment manufacturing	8,148
Motor vehicle steering and suspension components (except spring) manufacturing	360,857
Motor vehicle brake system manufacturing	1,504,327
Motor vehicle transmission and power train parts manufacturing	41,940
Motor vehicle seating and interior trim manufacturing	9,010
Motor vehicle metal stamping	37,349
Other motor vehicle parts manufacturing	25,515
Aerospace product and parts manufacturing	77,655
Railroad rolling stock manufacturing	11,442
Ship and boat building	13,023
Other transportation equipment manufacturing	79,021
Household and institutional furniture and kitchen cabinet manufacturing	145,940
Office furniture (including fixtures) manufacturing	54,271
Other furniture-related product manufacturing	6,352
Medical equipment and supplies manufacturing	147,729
Repair and maintenance (except automotive)	36,966,749
Personal care services and other personal services	102,174
Funeral services	1,778
Dry cleaning and laundry services	21,967
Business, professional and other membership organizations	3,142,465
Private households	0
Educational services	290
Ambulatory health care services	0
Social assistance	2,739
Arts, entertainment and recreation	0
Religious organizations	13,617
Grant-making, civic, and professional and similar organizations	74,497
Other non-profit institutions serving households	50,427
Elementary and secondary schools	877
Community colleges and C.E.G.E.P.s	385,157
Universities	240,596
Other educational services	0
Hospitals	281,878
Nursing and residential care facilities	1,666
Defence services	7,421
Other federal government services (except defence)	842,804
Other provincial and territorial government services	17,341,191
Other municipal government services	1,943,235
Other aboriginal government services	0
Total	993,991,000

ABOUT IMPACT ECONOMICS

Impact Economics is an economic research firm owned and operated by Mr. Graeme Clinton since January 2004. Mr. Clinton is a professional economist with 25 years of experience, is a recognized expert in the field, and is a regular contributor to the economic discourse in Nunavut and the Northwest Territories. The company is based in Yellowknife, Northwest Territories.

Impact Economics offers economic research, advice, advocacy and education services on a range of economic topics, including economic effects assessments, macroeconomic and baseline research, economic modeling, and custom research in such areas as development economics, housing and homelessness, poverty, food security, and local food production (traditional economy), tourism, demographics, and labour.

Impact Economics offers its services to a diverse group of clients including industry, government, Indigenous groups, non-government and non-profit organizations.

Impact Economics' mission is to provide economic services that are based on thorough and dedicated research and sound economic principles, the results of which are provided to clients through thoughtful verbal and written presentation.

A guiding principle for Impact Economics is the belief that economics is the study of choices and the job of an economist is to quantify and qualify the outcomes of choices made and those passed over, and to explain the results in everyday language. In doing their job, an economist helps people, organisations, governments, and companies make informed decisions based on a better understanding of the economic consequences of their choices. To that end, Impact Economics is dedicated to helping clients understand the economy around them through the delivery of quality work, supporting clients with their economic questions, and sharing knowledge of economic concepts and theory and how they apply to our everyday lives.