

# Measuring success 1996-2016: Diamond mines deliver big benefits to the Northwest Territories

Compiled by the NWT & Nunavut Chamber of Mines  
November 2017



## ***Measuring Success: Two decades of diamond mine benefits***

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## Highlights

- **Safety**
  - Gahcho Kué received two safety recognitions
  - Ekati reduced all injury frequency rate 27% to 0.77 from 1.06
  - Diavik supported safety programs in participation agreement communities
- **Employment**

*At the four diamond mine sites:*

  - 3,761 person years of total employment (includes all employees and contractors at Ekati, Diavik, Gahcho Kué, and Snap Lake care-and-maintenance team)
  - 1,667 northern workforce, 44% of the total workforce
  - 798 northern Indigenous, 48% of the northern workforce and 21% of overall total
  - 54,918 person years of employment since 1996
  - 26,441 person years of northern employment since 1996, 48% northern

*At the three operating mines:*

  - 1,649 northern employment exceeds original projections of 964, a 71% increase
- **Training and education investment**
  - Industry has supported Mine Training Society programs with \$12.1 million in cash and in-kind investments 2004-fiscal 2016/17, including \$500,000 in 2016/17
  - 3,745 people have been assessed for training by the Mine Training Society
  - 3,823 people have received training/support from the Mine Training Society
  - 1,302 people gained mining employment through the Mine Training Society
  - Mining has assisted in the development of 168 Government of the Northwest Territories (GNWT) certified trained trades journeypersons
  - 92 apprentices employed (72 northern, of which 50 are Indigenous) at 2016 year-end
  - Over \$390,000 in scholarships awarded during 2016
- **Business spending**
  - \$1.4 billion spending in 2016, of this, \$817.9 million (59%) was with northern businesses, of which \$325.3 million (23%) was with northern Indigenous business
  - \$18.7 billion in total cumulative spend for construction and operations (1996-2016)
  - \$13.1 billion (70%), in northern business spending, of which \$5.6 billion (30%) was with northern Indigenous businesses
- **Community contributions**
  - In 2016, the three diamond mines provided approximately \$11 million to communities through donations, sponsorships, scholarships, and other financial contributions

Throughout this report, unless otherwise noted, employment figures are in person years. For the purposes of this report, one person year equals 2,184 hours (one employee working 12-hour shifts over a two weeks on/two weeks off rotation over 1 year). Unless otherwise stated, amounts are in Canadian dollars.

Photos courtesy Dominion Diamond, Rio Tinto, De Beers Canada/Mountain Province Diamonds, and Mine Training Society NWT.

## Introduction

*Measuring success 1996-2016*, produced by the NWT & Nunavut Chamber of Mines, describes the cumulative combined benefits of 21 years of diamond mine construction and diamond mine operations in the Northwest Territories. The benefits include:

- Increased skills base and capacity for northern residents
- Several thousand well-paying jobs that have contributed to federal and territorial taxes, local business and community growth
- Strong safety performance protecting workers
- Northern and northern Indigenous businesses with proven ability to compete
- Support for cultural activities and community wellness through donations, sponsorships, and scholarships
- Research and knowledge advancements as monitoring programs developed for and supported by the mining companies continues to expand understanding of the northern ecosystem
- Innovations and efficiencies to reduce greenhouse gas emissions

These and other benefits help explain why the diamond mines are the largest single private sector contributor to the Northwest Territories economy, and the economies of many northern communities. For detailed information on the mines' efforts and successes in meeting their socio-economic commitments click on the links to their respective 2016 socio-economic reports:

- Ekati Diamond Mine: [socio-economic agreement report](#)
- Gahcho Kué Diamond Mine: [socio-economic agreement report](#)
- Diavik Diamond Mine: [sustainable development/socio-economic agreement report](#)

To learn more about the NWT's three operating diamond mines visit their web sites:

- Ekati Diamond Mine: [www.ddmines.com](http://www.ddmines.com)
- Gahcho Kué Diamond Mine: [www.canada.debeersgroup.com/  
www.mountainprovince.com/](http://www.canada.debeersgroup.com/www.mountainprovince.com/)
- Diavik Diamond Mine: [www.diavik.ca](http://www.diavik.ca)

Additional NWT & Nunavut Chamber of Mines information:

- [Significant NWT Diamond Mining Benefits Reported, 2016](#)
- [Measuring Success 2014](#)
- [www.miningnorth.com](http://www.miningnorth.com)

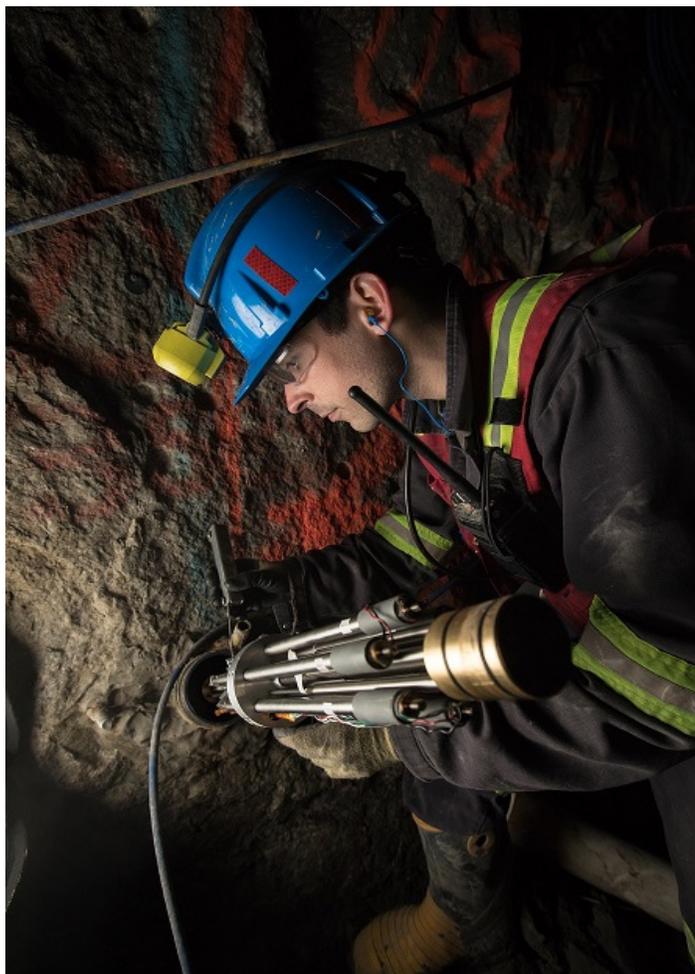
*Measuring Success 1996-2016* provides annual and cumulative information to 31 December 2016 on the opportunities and benefits created by Northwest Territories diamond mines. It updates the NWT & Nunavut Chamber of Mines 2014 report which provided detailed data on the positive impact of diamond mines in the Northwest Territories from 1998 to 2013 and the Chamber of Mines diamond mining benefits media release issued in November 2016 which updated/added 2015 cumulative benefits. The information contained in this report amalgamates and highlights data and information from annual socio-economic reports produced by Dominion Diamond (owner/operator of the Ekati Diamond Mine and 40 percent owner of the Diavik Diamond Mine), Diavik Diamond Mines Inc., the Rio Tinto company which operates the Diavik Diamond Mine, a 60/40 joint venture of Rio Tinto and Dominion Diamond, and De Beers Canada, 51% owner/operator of the Gahcho Kué Diamond Mine (49% Mountain Province Diamonds), and owner/operator of the Snap Lake Diamond Mine placed on care and maintenance in December 2015. In 2016, there were two mines in commercial production (Ekati and Diavik), one in the process of completing construction and beginning diamond production (Gahcho Kué), and one on care and maintenance (Snap Lake). The information in this report may not be exhaustive and the Chamber of Mines accepts full responsibility for any errors or omissions.

## Numerous safety recognitions and achievements

There is a shared commitment to mining diamonds safely, securely, efficiently, and profitably, without harm to people or environment. All the mines have training, policies, procedures, analyses, and interactions that focus on making sure safety is part of everyone's work activity – all the mining companies believe zero harm is achievable and all injuries are preventable.

The mines have received numerous external recognitions for safety performance, including:

- In November 2017, De Beers Canada received a national Silver Award in the Mining and Natural Resources Division at the 2017 Canada's Safest Employers awards.
- De Beers Canada Gahcho Kué Mine received the Hatch-CIM Project Safety Award from the Canadian Institute of Mining in 2017 and the Yellowknife Chamber of Commerce Workplace Health and Safety Award in late 2016. The company's exploration division is also a multiple safety award.
- In 2016, Ekati achieved 1.2 million consecutive hours worked without a recordable injury.
- Competing for the first time, Gahcho Kué mine rescue team won two surface events at the Workers' Safety and Compensation Commission NWT/NU Mine Rescue Competition in 2016.
- In 2016, Gahcho Kué surpassed one million hours worked without a lost-time injury.
- In 2016, Gahcho Kué construction team received Gold in the private project and construction management category from the Project Management Institute.
- Dominion received the AME award for achieving zero reportable injuries in completing its large-scale drilling program at Ekati in 2014. The winter drilling program at Jay was completed without a single recordable injury during almost 300,000 hours worked.
- Diavik has won four regional John T. Ryan Safety Awards and one national John T. Ryan Safety Award since 2004, and in 2010 recorded 3 million hours without a lost time injury.



*All the mines employ numerous systems to ensure worker safety. For example, at Diavik, technology installed in underground mine tunnels detects potential movement of the nearby open-pit wall.*

- During the exploration phase at Jay and Sable projects, 468,000 hours were accumulated by employees with Dominion and seven contract companies. For this performance, Dominion received the Safe Day Everyday Gold Award from British Columbia-based Association for Mineral Exploration (AME) and Prospectors & Developers Association of Canada for highest number of hours without a lost time incident in 2015.
- Snap Lake achieved one million hours without a lost time injury in October of 2013, and was John T. Ryan Western Regional Award winner for 2009 and 2013. Among De Beers' awards are two successive national John T. Ryan Awards for mining safety at Victor Mine in Northern Ontario for 2015 and 2016.

All mine sites have facilities staffed with trained medical teams. All have emergency response teams (ERTs) comprised of volunteers from their workforces.

ERT members make up mine rescue teams which compete in the Workers' Safety Compensation Commission annual mine rescue competition during NWT & Nunavut Chamber of Mines Mining Week.

Often, NWT teams qualify for the National Western Region Mine Rescue Competition; a biennial event held in British Columbia, this is North America's biggest mine rescue competition and teams have gone on to compete at the international level.

The mines also have an ERT mutual aid agreement and are available to assist each other if ever needed.

### Employment continues to exceed original commitments

In 2016, Ekati, Diavik, and Gahcho Kué, the NWT's operating mines exceeded environmental assessment predictions by 721.

2016 NWT Operating Diamond Mine Employment – Predictions vs Actuals					
Mine	Predicted Total Workforce	Actual Workforce (Dec. 2016)	Predicted Northern Workforce	Actual Northern Workforce*	Difference (Actual Northern vs Predictions)
Ekati	926	1,889	574	920 (49%)	+ 346
Diavik	400	1,187	264	557 (47%)	+ 293
Gahcho Kué*	360	628	126	172 (27%)	+46
<b>Predicted Total</b>	<b>1,686</b>	<b>3,704</b>	<b>964</b>	<b>1,649 (45%)</b>	<b>+ 685</b>

\*Construction only and does not represent operations figures.

In 2016, the mines, including three operating and one on care and maintenance, generated 1,667 person years of northern employment, of which 798 was northern Indigenous. Northern employment represented 44 percent of the total person years of 3,761. Northern Indigenous employment was 48 percent of the northern employment, and 21 percent of the total.

2016 Diamond Mine Employment – Northern Indigenous & Northern							
Mine	Northern Indigenous			Total Northern			Total Workforce
	Achieved	Committed		Achieved	Committed		
Ekati	500	26%	31%	920	49%	62%	1,889
Diavik	221	19%	40%	557	47%	66%	1,187
Gahcho Kué	70	11%	n/a	172	27%	35%*	628
Snap Lake**	7	12%	n/a	18	32%	n/a	57
<b>Total</b>	<b>798</b>	<b>21%</b>	n/a	<b>1,667</b>	<b>44%</b>	n/a	<b>3,761</b>

\*Construction target

\*\*Snap Lake, on care and maintenance, reports individual workers as opposed to person years

Since 1996, diamond mines have generated 54,918 person-years of employment of which 26,441, or 48%, is northern, and half of the northern employment is northern Indigenous (13,110 person years).

1996-2016 Diamond Mine Employment – Northern Indigenous & Northern					
Mine	Northern Indigenous		Total Northern		Total All
Ekati	7,621	27%	14,854	52%	28,365
Diavik	4,071	24%	8,703	51%	17,097
Snap Lake	1,301	17%	2,571	33%	7,784
Gahcho Kué	117	7%	313	19%	1,672
<b>Total</b>	<b>13,110</b>	<b>24%</b>	<b>26,441</b>	<b>48%</b>	<b>54,918</b>

### Training investment for the future

All three mining companies remain committed to training and supporting the development of the next generation of northern mine workers.

Much has been accomplished in cooperation with various training agencies, especially the Mine Training Society (MTS) of the NWT. Since 2004, the MTS has received \$50.8 million in funding and in-kind support from federal and territorial governments, and Indigenous and industry partners. Of the \$50.8 million, industry's contributions include \$1.2 million in funding support plus \$10.8 million in in-kind support. Funding for continued MTS training support is in place to 2020.

That investment has resulted in 1,302 northern residents gaining employment. This group represents 5.8 percent of the NWT's employed workforce of 22,500 people.

In total, 3,823 people have been assessed/trained by MTS between 2004 and 31 March 2017.

Through its training plan *Mining the Future*, MTS has targeted training in several areas including, mineral process operating technician, camp cook, cook apprenticeship, heavy equipment operator, geoscience

field assistant, introduction to underground mining, underground mining, and general construction. Most recently, the MTS has undertaken a series of 'safety boot camps' designed with industry input. Focusing on safety leadership, as well as fall protection, lock out and tag out procedures and confined space entry, the program meets or exceeds Canadian Standards Association requirements. In addition to specific job skills, each program includes life skills training to help participants settle into employment and balance home and work life.

The training plan, *Mining the Future*, has assessed the suitability for training of Indigenous persons and assisted applicants with removing barriers to employment including criminal records, lack of skills, and low literacy. Participants are assisted in obtaining employment with mining and mine services companies in the NWT. As a result of MTS efforts, targets have been exceeded. The MTS has assessed 623 people for suitability, provided training or support for 526 people, and assisted 221 people.

Students from the underground miner training and mineral process operator training programs are provided paid term training positions at the mines and many are hired full-time.

MTS, McCaw Drilling and Blasting, and Service Canada, will expand the successful driller helper program with potential training for 48 northerners through 2020 in this \$1 million training initiative. In 2016, McCaw North Drilling and Blasting contributed \$300,000 in in-kind support for the MTS driller helper course which resulted in jobs for six northerners.

In 2016, diamond mining supported 92 apprentices of whom 72 were northern. Of the northerners, 50 were Indigenous. In 2016, 61 individuals were involved in the apprenticeship program at the Ekati mine: 22 for Dominion and 39 for on-site contractors. Of the 61 positions, 51 were northern and of the 51, 39 were Indigenous.

In 2016, Diavik employed 31 apprentices, of which 21 were northern and of the 21, 11 were Indigenous.



1,302 northerners have gained employment through the Mine Training Society of the Northwest Territories.

Since 2003, 168 apprentices working for the mining companies and for their contractors have completed their apprenticeships and achieved journeyman certifications from the GNWT.

While operational, De Beers' Snap Lake mine, which was placed on care and maintenance in 2015, provided training opportunities to 103 NWT residents through the end of 2015. Some 52 trainees have completed their programs at Snap Lake, 16 earning trades' certifications, eight journeyman status, and 28 completing training to move into higher levels as underground miners. With the Gahcho Kué mine operational in 2017, training details related to the new mine will be included in future Chamber of Mines measuring success reports.

De Beers has been a significant contributor to establishment of the Kimberlite Career and Technical Centre, a trades training facility operated by Yellowknife Catholic Schools.

At Gahcho Kué, the site's Mine Professional in Training Program (MPiT) continues. Through 2016, 11 individuals have completed the three-year program open to university graduates. In 2016, two northern residents completed the program and had full-time roles at the mine. One NWT MPiT participant left employment to return to university. In 2017, De Beers hired two additional NWT residents into MPiT positions, both working at Victor Mine in Ontario.

The Ekati mine has a site-based adult educator who works with apprentices and any others interested in developing their skills. While all apprentices have a minimum of a grade 10 education, some may lack other school-based knowledge. With the help of the adult educator, these individuals can overcome the barriers that might otherwise keep them from completing their apprenticeships and achieving journeyman status.

The adult educator works one-on-one with each apprentice to assess their math, language, and computer skills, and prepare them for the classroom. The adult educator also maintains regular contact with apprentices and provides ongoing support. This role helps build sustainability because skills learned can be taken back to communities.

Diavik maintains a workplace learning centre at its mine site. The centre is intended to help employees build their skills in tasks directly related to their daily work role as well as assist employees in upgrading education through General Education Development preparation and exam invigilation.

Employees writing exams for other courses can do so at the mine site under supervision in the learning centre. A training adviser is available to provide learning support to apprentices preparing to attend technical training. The learning centre is the first point of contact for new employees and contractors.



*Diamond mines support MTS training with cash, in-kind contributions, and on-site training totalling \$12 million.*

### *Scholarships supporting education*

Through scholarship programs, the mines invest significantly to support higher education. Because of the mines, several thousand northerners have benefited from several million dollars in scholarship funding which has assisted students in their educational pursuit and career development.

In 2016, the three companies provided over \$390,000 in scholarships under a variety of banners including impact benefit or participation agreement programs, socio-economic agreement commitments, employee dependants, and post-secondary scholarships.

### *Employment by gender*

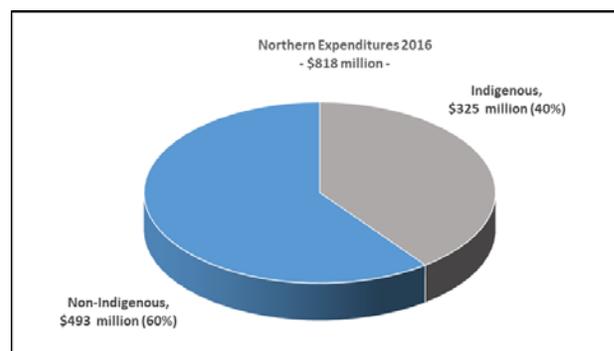
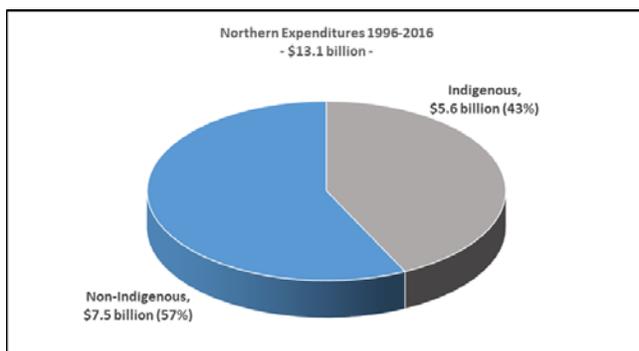
In 2016, the three operating and one care-and-maintenance mine, generated 508 person years of female employment and 3,612 person years male employment. In terms of percentage, female employment was 14 percent and male employment was 86 percent. Totals are approximate as this reporting is combined person years and individuals, and results vary at each mine.



*The mines are focused on raising the number of women they employ.*

## Northern business spending is robust

Diamond mines are the largest private sector driver of the Northwest Territories economy and northern business spending continues to be strong. In 2016, the mines spent \$1.4 billion, of which \$817.9 million (59 percent) was with northern businesses. Of the northern business, \$325.3 million was spent with northern Indigenous firms. Total combined spending from 1996-2016 to construct and operate the diamond mines was \$18.7 billion. Of this, \$13.1 billion (70 percent) was spent with northern companies and joint ventures, including \$5.6 billion (30 percent) with Indigenous companies.



2016 NWT Diamond Mine Purchasing (\$ million)							
	Northern Indigenous			Total Northern			Total North plus South
	Achieved	Committed		Achieved	Committed		
Ekati	\$144	27%	n/a	\$335	62%	70%	\$539
Diavik	\$124	29%	n/a	\$262	61%	70%	\$430
Gahcho Kué	\$42	11%	n/a	\$179	48%	35%	\$371
Snap Lake*	\$15	27%	n/a	\$42	76%	n/a	\$55
<b>TOTAL</b>	<b>\$325</b>	<b>23%</b>	<b>n/a</b>	<b>\$ 818</b>	<b>59%</b>	<b>n/a</b>	<b>\$ 1,395</b>

\*De Beers Canada/GNWT socio-economic agreement suspended when Snap Lake placed on care and maintenance, meaning there is no official northern spending commitment.

1996-2016 NWT Diamond Mine Purchasing (\$ million)							
	Northern Indigenous			Total Northern			Total North plus South
	Achieved	Committed		Achieved	Committed		
Ekati	\$1,880	24%	n/a	\$5,551	70%	70%	\$7,876
Diavik	\$2,683	37%	n/a	\$5,159	71%	70%	\$7,248
Gahcho Kué	\$108	13%	n/a	\$404	49%	35%	\$819
Snap Lake*	\$924	34%	n/a	\$1,964	72%	70%	\$2,741
<b>TOTAL</b>	<b>\$5,587</b>	<b>30%</b>	<b>n/a</b>	<b>\$13,079</b>	<b>70%</b>	<b>n/a</b>	<b>\$18,684</b>

\*See above

### Payments to public governments

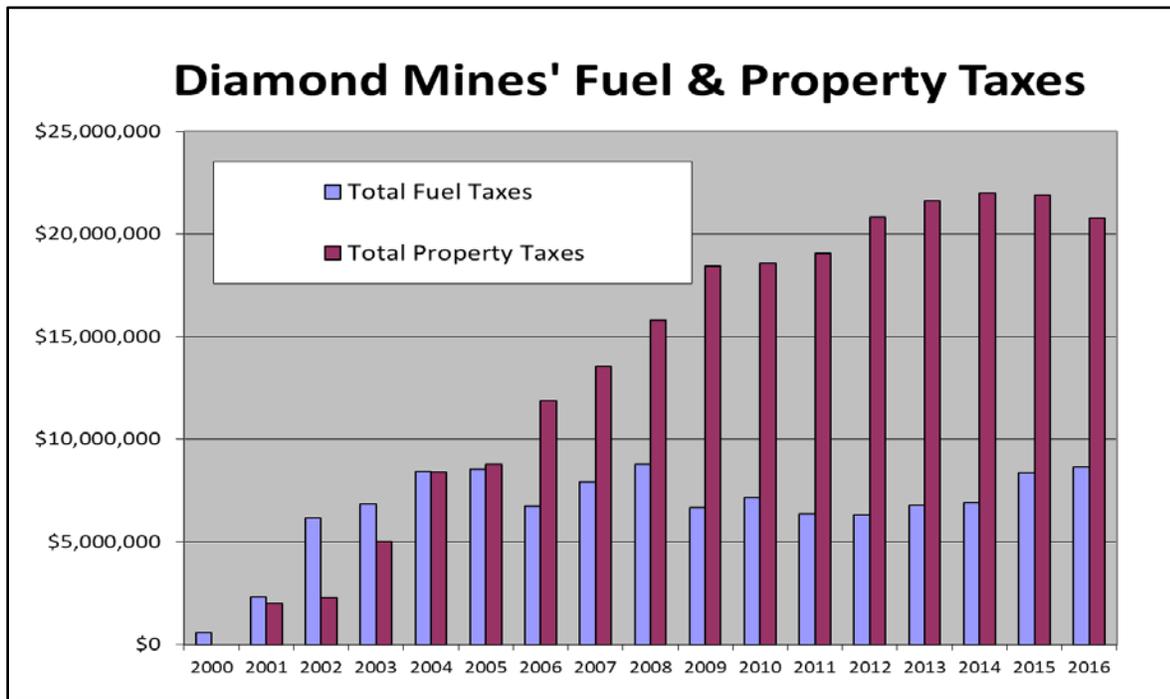
Besides the value of income tax generated from mine workers, under the GNWT/federal government Devolution Agreement, the GNWT also benefits from direct mine company taxation, as well as resource royalties. Resource royalties are paid to the territorial government by mining companies and are profit based. This is in addition to the many other taxes paid, personal income and payroll taxes, fuel and property taxes, and bridge tolls. Other significant tax payments are difficult to find in the public domain and thus are not included.

### Fuel and property taxes

Mines in the NWT pay taxes to the GNWT on fuel consumed at the mine sites, and they pay property taxes assessed on the value of their mine site assets. Since 2000, the mines have collectively paid approximately \$115 million in fuel taxes and approximately \$230 million in property taxes. The three operating diamond mines are projected to pay similar amounts to the end of their expected mine lives.

NWT and Nunavut are the only Canadian jurisdictions that levy property taxes at significant levels. Mines in similar areas (remote hinterland) in provinces would not pay property taxes. Furthermore, the GNWT applies a fuel tax on off-road fuel consumption which mines do not pay in other jurisdictions.

Source: [Northwest Territories Revenue Option, February 2016](#)



## ***Strong community payments and investments***

There has also been significant spending by the companies to support communities through social investment, including participation and impact benefit agreement payments, investments in community cultural programs and events, in community programs, and in scholarships. During 2016, the diamond mining companies provided approximately \$11 million to communities. Recipients included:

- Aboriginal Sports Circle of the NWT
- Behchoko Chief Jimmy Bruneau Regional School
- Behchoko Elizabeth Mackenzie Elementary School
- Bosco Homes winter activities
- Breakfast for Learning in Northern Schools
- Canadian Aboriginal Minerals Association (CAMA) Conference
- Canadian Championship Dog Derby
- Christmas Hampers for Communities
- City of Yellowknife bike rodeo
- Deninu Kué First Nation – youth at risk summer student protective equipment
- Deninu Kué First Nation’s Fort Resolution Mission Island Boardwalk
- Dettah Kaw Tay Whee School
- Diavik Super Soccer
- Food Rescue
- Fort Resolution Deninu School
- Fort Resolution Pre-Trades Demonstration
- Fort Smith Council Culture Camp for kids
- Fort Resolution Métis Council Youth Fiddling Camp
- Fostering Open eXpression among Youth (FOXY)
- Foster Family Coalition of the NWT
- Gameti Sewing Skills Development
- Gameti Healing Workshops
- Gameti Jean Wetrade School
- Gameti Traditional Skill Development
- Hay River Curling Club
- Hay River Métis council jigging classes
- Inuit Tattoo Revitalization Project
- Kát’odeeche First Nation
- Kaw Tay Whee School literacy program
- Kitikmeot Inuit Association celebration
- Kitikmeot Inuit Association Naonaiyaotit TK Project
- Kidsport NWT
- Kugluktuk Elders and Youth Program
- Kugluktuk Jimmy Hikok Ilihakvik School
- Kugluktuk High School
- Literacy Outreach Centre Aurora College
- Lutsel K’e arena floor asphalt project
- Lutsel K’e Denesoline Pop-Up Café
- Lutsel K’e Denesoline Youth Centre
- Lutsel K’e Dene First Nation Desnethche arbour and Parry Trail/Kache Spiritual Gathering
- Lutsel K’e Dene First Nation Reindeer Shipment
- Lutsel K’e Dene First Nation TK Commitment Agreement
- Lutsel K’e Dene First Nation Youth Handgames Program
- Lutsel K’e Dene School
- Lutsel K’e safety programs
- N’dilo K’alemi Dene School
- North Slave Métis Alliance Business Development Consultant
- North Slave Métis Alliance National Aboriginal Day Celebration
- Northern Arts and Cultural Centre
- Northern Youth Abroad
- NWT Breast Health Living the Journey
- NWT Disabilities Council
- NWT SPCA
- NWT Soccer
- Opportunities North Conference
- SideDoor
- Snowking Festival
- Skills Canada NWT
- Soaring Eagle Friendship Centre
- Stanton Territorial Hospital Foundation
- Tides Canada for NWT on the land fund collaboration
- Tides Canada Northern Youth Leadership Initiative
- Tlicho community cultural programs
- Tlicho Arts and Training Workshop
- Tlicho Ekwo Naowo Monitoring Program
- Tlicho Imbe cultural learning program
- Tlicho Reviving Training Canoe Trip
- Ulukhaktok Western Drummers and Dancers
- Unlimited Potential (UP) Community Services

- Uncle Gabe's Friendship Centre
- Wekweeti Alexis Arrowmaker School
- Wekweeti Healing Workshop (Phase II)
- Wekweeti Traditional Clothing Workshop
- Whati Justice Program
- Whati Mezi Community School
- Whati Youth Centre
- Whati Youth Handgames Program
- Whati Youth Sewing Instruction Program
- Yellowknife Catholic Schools Youth Handgames
- Yellowknife High Performance Ski Team
- Yellowknives Dene First Nation Goyatiko Dene Language Conference
- Yellowknife Women's Society Centre for Northern Families vehicle
- Yellowknife Association for Community Living
- Yellowknives Dene First Nation Aboriginal HeadStart Program
- Yellowknives Dene First Nation BEAHR Training Program
- Yellowknives Dene First Nation safety programs
- Yellowknives Dene First Nation youth sports jerseys
- Yellowknife Community Foundation
- Yellowknife Food Bank
- Yellowknife Minor Hockey League girls' AWG team
- YWCA NWT/YWCA Girls' Space
- YWCA Inspire luncheon
- 500 blankets from Snap Lake Mine to charities in Yellowknife and to Lutsel K'e Dene First Nation

### ***Diamond royalties shared with Indigenous groups***

Under the terms of the Gwich'in, Sahtu and Tlicho land claim agreements, each of these groups negotiated a share of royalties generated by non-renewable resource industries in the Northwest Territories. Through 2016, over \$40 million of diamond royalties have been shared with the three Indigenous groups.

Additionally, under Devolution, resource royalties are shared equally by the two governments. The GNWT has committed to share one quarter of the 50 percent net fiscal benefit with the nine Indigenous signatories to the agreement. In its *Communities and Diamonds 2016 Annual Report*, the GNWT reports the 12.5 percent shared with indigenous governments cumulatively totals \$12.5 million. Further resource revenue allocation details are included in the *GNWT Communities and Diamonds 2016 Annual Report*.



*Under Devolution, the GNWT and the Federal Government share resource revenues equally. The GNWT's portion, known as the net fiscal benefit, is then shared with Indigenous governments.*

## Environment

### *Teamwork on initiatives*

All three mines have extensive environmental monitoring programs and they support many scientific and Traditional Knowledge (TK) studies that are increasing knowledge and understanding of a variety of species. Some examples include:

**Grizzly Bear and Wolverine:** Companies support regional monitoring programs. Many hundreds of thousands of dollars are being invested to employ community monitors, to distribute hair snag posts to collect samples for DNA analysis, and to provide helicopter and other support services. Dominion leads and runs its own Grizzly Bear DNA program at the Ekati mine, and baseline programs in 2012-2013 exceeded \$500,000. Dominion invested another \$60,000 in conducting a wolverine DNA program on its property, which is combined with the GNWT-Environment and Natural Resources (ENR) program.

**Fish and aquatic studies:** These studies – some conducted in partnership with universities and others – are providing better understanding of movement of inland fish in Arctic lakes and potential effects of increased nutrient levels on nutrient-poor Arctic aquatic food webs generating new insight into northern aquatic ecosystems.

**Wolf:** Dominion contributed \$30,000 annually to GNWT-ENR wolf study and collaring work at the Ekati mine. Dominion also made an in-kind contribution of hosting a MSc student working with ENR.

**Caribou:** The mines continue to support work to learn more about caribou. This includes cash contributions of \$75,000 each, as well as in-kind donations, to the GNWT for caribou studies, including the Bathurst Caribou Range Plan and Bathurst caribou calving surveys. The mines also conducted their own work including TK studies and camera monitoring on roads at mines, and they are participating with government and other stakeholders in caribou and wildlife monitoring workshops. Dominion has also provided money for new collars including geo-referenced collars, and software and time for data management. Dominion has also supported community TK projects with the Tlicho Government through the 'Boots on the Ground' program, and with the Lutsel K'e Dene First Nation through the 'Moccasins on the Ground' and the 'Winter Harvest Monitoring' programs.



*For their joint grizzly bear monitoring program, in 2015, Dominion Diamond and Diavik Diamond Mines were recognized through the Mining Association of Canada's Towards Sustainable Mining initiative and presented with the top Environmental Excellence Award.*

## *Programs and recognitions for best practices*

Since purchasing the Ekati mine in 2013, Dominion has been working hard to modify procedures, improve organic waste management awareness across site, and invest in innovative technologies to reduce waste, fuel, and water consumption.

For preservation of the environment and focus on sustainable development, Dominion received the Environmental Excellence Award from the Northwest Territories and Nunavut Association of Professional Engineers and Geoscientists (NAPEG). The award was presented to Dominion for the organic waste management process at the Ekati mine, which includes an industrial scale composter, along with incineration, landfill, and hazardous waste management practices.

Dominion also received the Environmental Excellence Award from Towards Sustainable Mining in recognition of the company's comprehensive waste management program at the Ekati mine.

Dominion has received recognition for being the first northern mine to compost a significant portion of waste through its industrial composting unit, which was brought online in 2015. Today, over half of the organic waste at the Ekati mine is composted.



*To reduce the amount of waste incinerated, Ekati is the first northern mine to compost a significant portion of waste through an industrial composting unit brought online.*

Diavik operates the NWT's only large-scale wind farm and the world's largest wind-diesel hybrid power facility. Funded by the joint venture partners, the four 9.2-megawatt turbine wind farm is operational to -40°C. It began delivering power to the mine's grid in September 2012, and in 2016, it provided 7.6 percent of the mine's power needs. This reduced the mine's 2016 diesel fuel requirement by 4.1 million litres, an estimated reduction in emissions of 9,030 tonnes of CO<sub>2</sub>, and a reduction of Diavik's seasonal winter road fuel haul by about 80 loads. Since 2012, diesel offset is 18.2 million litres and availability rate is 97.5 percent. Payback on the mine's \$31 million investment is estimated at seven years.

The extreme location of the mine meant a highly innovative design was needed for the turbines; one which also included adjustments made during the first several months of operations. To eliminate frost accumulation Diavik adapted the blade heating system de-icing technology, retrofitted the base with heating. As well, monitoring wind variations is important to assist in achieving optimum results, ensuring wind power is successfully integrated into the wind-diesel power system.

At Gahcho Kué, the ground-breaking Ni Hadi Xa (NHX) collaborative environmental monitoring group was active throughout 2016. This program includes five Indigenous communities who work together with staff to review environmental monitoring. A NHX monitor works alongside Gahcho Kué's environment team on site. In addition, a cabin was built nearby to provide a base for two traditional monitors who will spend at least 12 weeks a year on the land. The cabin will also host a family visit program. In September 2016, Gahcho Kué hosted its first fish-tasting event. Elders from all local communities participated, sampling fish caught in Lake N11.

Over the years, De Beers has supported dozens of environmental study programs, including over 25 peer-reviewed papers on the Snap Lake mine aquatic ecosystem. One of the most recent programs at Gahcho Kué involved a two-year program to study the impact of Gahcho Kué construction on downstream grayling. The 2014/15 study was done in collaboration with the University of Waterloo and it included monitoring fish activity. This involved implanting radio tracking devices in fish and using radio frequency sensors placed throughout the downstream watershed. The study showed that the Grayling continued to inhabit waters close to the mine and were thriving in waters about 10 kilometres downstream from the mine.



*Through 2016, Diavik's innovative wind farm has replaced 18.2 million litres of diesel with renewable energy reducing its carbon footprint by 50,801 tonnes CO<sub>2</sub>e and saving about \$22 million in fuel costs.*

### *Innovative technologies create efficiencies and savings*

Dominion introduced road ‘trains’ at the Ekati mine for ore haulage, reducing fuel consumption, improving efficiency, and reducing emissions. A road train consists of one engine unit towing multiple trailers to haul larger amounts ore by road.

To reduce operator fatigue risk, Dominion introduced camera-based, non-contact, non-intrusive sensor to observe drivers. The system works with glasses, including most sunglasses, and measures head orientation, eyelid closure, and GPS location to monitor fatigue events, provides audio warnings and seat stimulation, provide video feedback, map the face, and measure pupil/eye/head movement.

In 2015, Dominion Ekati mine’s underground production changed to depend solely on tele-remote operation. As a result, the scoop fleet tele-remote operation was relocated, and surface-based remotes now control the underground mining scoops.

Dominion is implementing projects that reduce diesel fuel use, and by extension, greenhouse gas emissions. Examples include installation of a new state-of-the-art waste incinerator in 2015 that significantly reduces emissions and installation of low-power high-intensity LED lighting in all maintenance facilities, which is being extended to the main accommodation and process plant, as well as to exterior lights.

Gahcho Kué Mine has a business improvement program working to develop several initiatives that will improve operational costs and energy efficiencies. This includes installation of a heat recovery system to



*At Ekati, to improve fuel efficiency and reduce emissions, Dominion uses road trains for ore haulage.*

heat to many buildings at the mine, driving significant energy savings and reducing greenhouse gas emissions. In addition, there was an active program to install LED lighting across the mine.

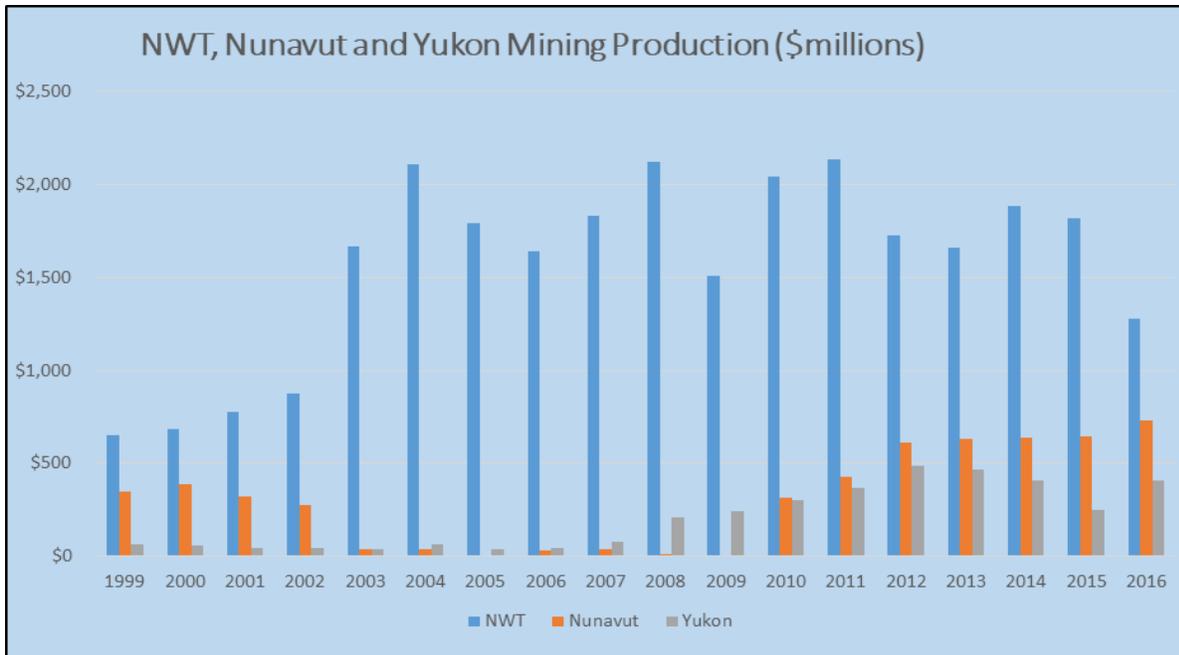
Other initiatives, planned for implementation at Gahcho Kué in 2017 and 2018, include expanding the glycol heating system and implementing a composting system for organic waste. De Beers is also planning to establish a rock testing lab to expedite identification of mine rock with higher sulphur content. This is expected to significantly reduce the amount of rock needing special handling and this lab will eliminate the need to ship samples to British Columbia for testing.

### NWT diamond production value declines

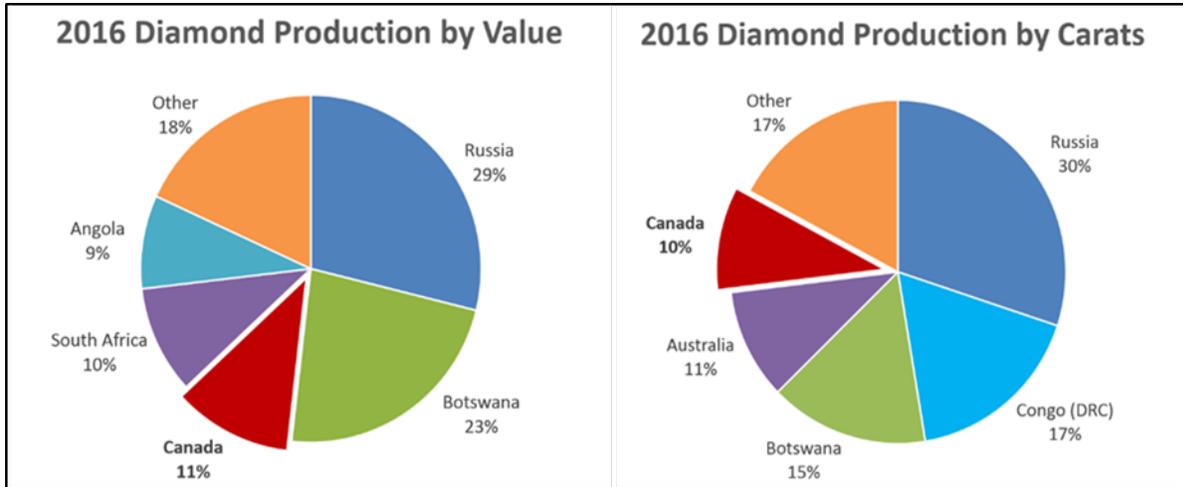
Challenging global diamond prices saw the 2016 average value per carat fall 16 percent to US\$92 from the previous year’s US\$109. In the NWT, average per carat value was US\$120 compared to US\$158 in 2015, a drop of 24 percent (Kimberley Process data).

The amount of diamonds produced by the NWT mines declined in 2016 to 10.5 million carats (source: Natural Resources Canada) from 11.0 million carats in 2015. Although carat production was down only five percent, value of diamonds produced fell 25 percent, down to \$1.3 billion from \$2.2 billion in the previous year. Annual production is shown in the following charts. NWT annual production has been consistent, about 10 million to 11 million carats per year, since 2009. Note that De Beer Snap Lake mine ceased production in late 2015. In 2016, production was helped by the addition of Gahcho Kué. Production in 2017 will include a full year’s production from Gahcho Kué.

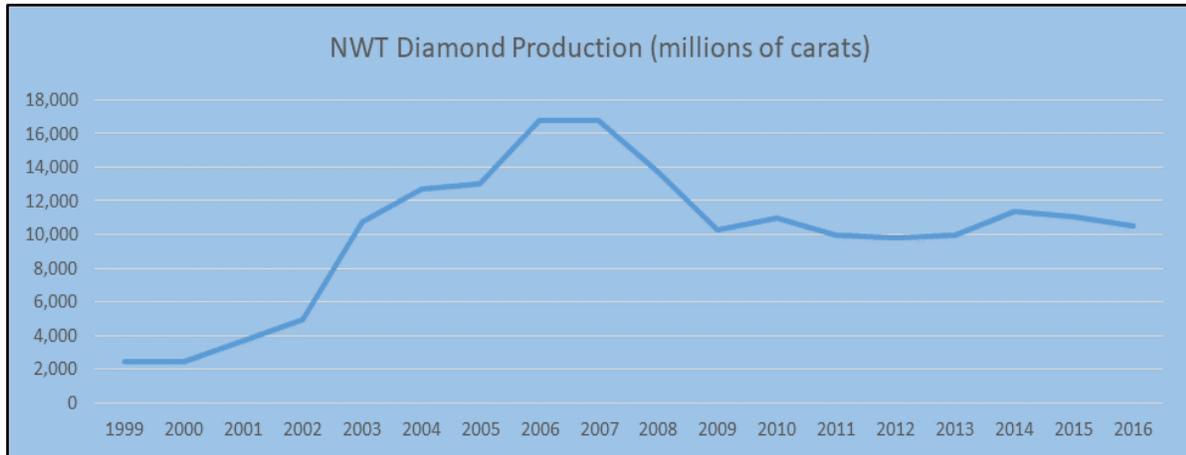
The NWT, which produces 95 percent of Canada’s rough diamonds, remains a top international producer both by value and volume.



Source: Natural Resources Canada, 2016 data is a projection



Source: Kimberley Process



Source: Natural Resources Canada, 2016 data is a projection

## Diamond mining opportunities – positive developments

In the near term, opportunities arising from our diamond mines now look positive as all three of the Northwest Territories diamond mine operators have recently made significant announcements about the future of their respective mines. Together, the three operating mines’ 2016 proven and probable reserves included 207 million carats with another 62 million carats classified as resource.

### Ekati Diamond Mine

Dominion Diamond operates and owns a controlling interest in the Ekati Diamond Mine.

During 2016, Dominion began production from the Lynx deposit project and moved forward with the Sable and Jay deposits. The company also recently announced plans to develop underground projects at the Misery pit and the Fox pit, which, if approved and permitted, will extend mining life to 2041. This is significant as just a few years ago, Ekati’s mining life was projected to end in 2019.

The Jay Project has been progressing well. Focus areas for 2016 have been on receiving the water licence and building an access road to the project site. In July 2017 the NWT Minister of Environment and Natural Resources approved the Type A Water Licence. Road construction to the Jay Project site

began in June and was completed in October. At the Sable Project, Dominion is in the final stages of completing site infrastructure. Frozen core dam at the outlet of Two Rock Lake was completed in April. Pre-stripping began in July 2017, many months ahead of pre-feasibility schedule. Sable is the second new pipe, following Lynx, Dominion has advanced from an early concept to development and mining.

In July, the Washington Companies announced an agreement had been reached by which an affiliated entity will acquire all Dominion outstanding common shares. The acquisition closed November 1, 2017.

#### **Jay highlights** (July 2016 feasibility study)

- Mining life 13 years
- 44.7 million tonnes ore
- 78.6 million carats

#### **Misery Deep highlights** (May 2017 preliminary feasibility study)

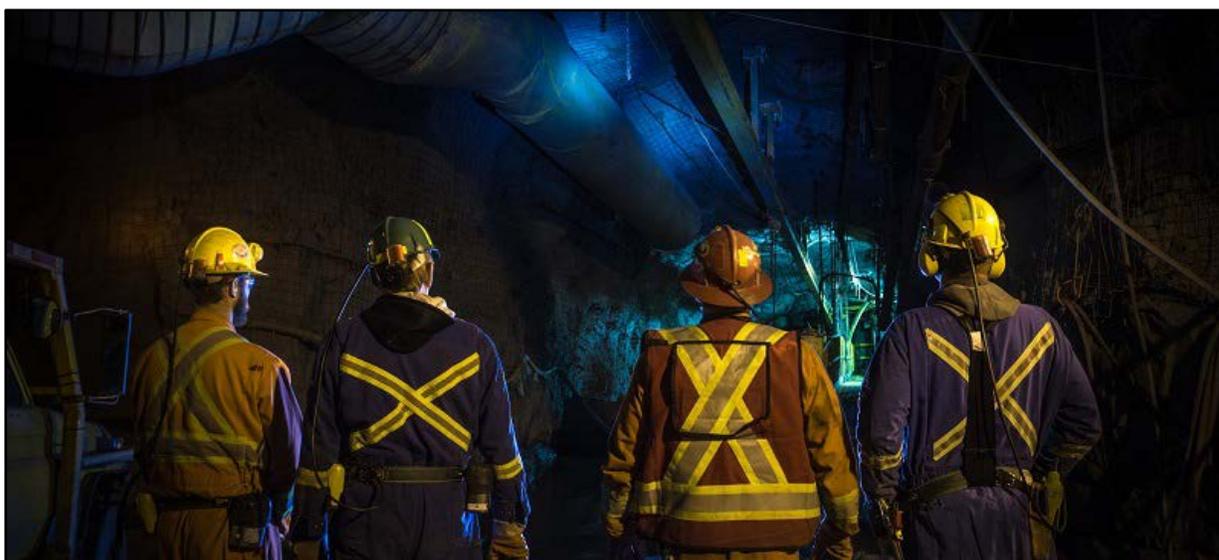
- Mining life 2018 to 2022
- 1.8 million tonnes ore
- 8.7 million carats

#### **Fox Deep highlights** (September 2017 preliminary economic assessment)

- Mining life 10 years
- 31.3 million tonnes ore
- 11.0 million carats

#### **Sable highlights** (February 2015 preliminary feasibility study)

- Mining life 8 years
- 12.0 million tonnes ore
- 10.1 million carats



*Dominion Diamond estimates mine life to 2041 at its Ekati Diamond Mine.*

## Diavik Diamond Mine

The Diavik Diamond Mine is a 60/40 joint venture of Rio Tinto and Dominion Diamond. Rio Tinto is the mine operator. Through delineation drilling and evaluation, Diavik, a 60/40 joint venture of Rio Tinto and Dominion Diamond, has identified new diamond reserves to extend its mining life into 2025. This addition, represents an extension to the previous mining life projection of 2023.

In 2016, Diavik continued work to construct a third water retention structure, or dike, to safely open pit mine a fourth kimberlite ore body, the A21 pipe. One of the biggest construction aspects of the US\$350 million project is providing three million tonnes of crushed rock to construct the A21 dike.

Other work included constructing roads and laydown areas, dewatering/dredging pipeline, dredging, and north and south embankment. In 2016, rock crushing, dredging, and dike construction continued.

A21 is being constructed with an integrated project team, one which has the A21 team working with many other Diavik departments, including fixed plant, and health, safety, and environment.

Dike enclosure was the big milestone in 2016, a year which also included the start of construction of the central cutoff wall to make it watertight. Dewatering is scheduled to begin in 2017 and first diamonds are expected in late 2018.

Development of the A21 ore body is a major investment in Diavik. Ore from A21 will ensure consistent production levels for several more years.

Prior to commercial production, which began in 2003, Diavik projected a 16 to 22-year mining life. Producing into 2025, would result in Diavik successfully achieving the high end of its original projected mining life.



*Diavik's total reserves at 31 December 2016 included 16.3 million tonnes ore at 2.8 carats per tonne for 46.0 million carats.*

### **A21 highlights** (March 2017 technical report)

- Mining life 2018-2023
- 3.3 million tonnes ore
- 9.4 million carats

- Incremental ore supply (does not extend mining life but fills available processing capacity)



Left is the A21 rockfill structure surrounding the A21 kimberlite. First diamonds from A21 are expected in 2018.

### ***Gahcho Kué Diamond Mine***

The Gahcho Kué Diamond Mine is a De Beers (51%)/Mountain Province Diamond (49%) joint venture, operated by De Beers Canada.

In first quarter 2017, Gahcho Kué achieved commercial production after the \$1 billion construction phase was completed ahead of schedule and on budget. A report released by De Beers Group of Companies in September 2016 predicted that Gahcho Kué will have a significant positive impact on the NWT and Canadian economies during its mining life, providing a Gross Value Add to the NWT economy of \$5.7 billion.

Through 2016, De Beers successfully transitioned Gahcho Kué from construction to a fully staffed operating mine. Some 107 Snap Lake mine workers were transitioned to Gahcho Kué.

The Gahcho Kué training department completed 1,197 training profiles on the mine's eLearning training tool. Of these, 530 are still active as many employees and contractor employees remained at the mine for the operations phase. On average, it takes approximately 24 hours over three days for employees to complete their induction training. This translates into 28,728 total hours of induction training in 2016.

A major success was the implementation of De Beers Canada's first long-term supplier contract, awarded to 100 percent Yellowknives Dene-owned company Bouwa Whee Catering. Under the agreement, Bouwa Whee will continue to hold the contract for the life of the mine, providing they continue to meet contractual commitments. A second contract was awarded to Paul Bros. Welding in 2017.

These were the first two contracts to be awarded under a new business model approach by De Beers Canada to prioritize Indigenous/Northwest Territories owned, managed and operated businesses to

create broader benefits for all community members. A similar program is in place at De Beers' Victor Mine in Northern Ontario. These types of contracts can provide long-term certainty to Aboriginal and NWT contractors to allow them to compete against large southern businesses and maximize the number of NWT-residents employed by mine-based contractors. The contracts included key NWT hiring and training commitments.

De Beers also launched a gender diversity and inclusion program in early 2017 to develop new policies, practices, and procedures that would improve the number of women and visible minorities, especially among leadership, beginning in 2018. The focus on diversity includes a US\$600,000 investment in scholarships to support Canadian girls entering Science, Technology, Engineering and Math degree programs and a program to support girls from Indigenous communities to attend science camps at the University of Waterloo.

Gahcho Kué was recognized with national and international awards during 2017, including the Viola R. MacMillan Award for project development from the Prospectors & Developers Association of Canada, the Hatch-CIM Mine and Minerals Project Safety Award, a Global IT Infrastructure Award for planning the mine's IT infrastructure, and a top three finalist for International Project of the Year.

Located approximately 280 kilometres northeast of Yellowknife, Gahcho Kué is an open pit mine with an estimated life of 12 years and projected average annual production of 4.5 million carats.

Gahcho Kué consists of a cluster of four diamondiferous kimberlites, three of which have a probable mineral reserve of 35.4 million tonnes grading 1.57 carats per tonne for total diamond content of 55.5 million carats.



*The Gahcho Kué Diamond Mine plan includes the 5034, Hearne and Tuzo kimberlite ore bodies. Centre left is the 5034 open pit.*

## ***Snap Lake Diamond Mine on extended care and maintenance***

In 2015, De Beers Canada placed the Snap Lake Diamond Mine on extended care and maintenance. Most employees departed site by 2015 year-end and during early 2016. A challenging deposit to mine and difficult market conditions were cited as reasons for the decision. At the end of 2016, the care-and-maintenance team numbered 57 people, down from peak operations employment of 776 people in 2013. A permit to allow the flooding of the underground workings was received in June 2016 and this process continued until mid-December when a buyer could not be found, and the decision was made to allow the mine to flood.

De Beers Snap Lake mine created employment, business spending, training opportunities, community investment, paid many different taxes, including property and fuel taxes, as well other taxes listed above. Snap Lake did not pay royalties as the mine, despite best efforts, was unable to achieve profitability. Since 2008, Snap Lake has generated 2,571 person years of employment for northern residents including 1,301 person years of employment for Indigenous northern peoples. De Beers, through Snap Lake, spent \$2 billion with northern business; this included \$1.3 billion in spending with northern Indigenous business. De Beers also contributed to the Northwest Territories through its training programs and community investment.

## **Sustaining benefits with new mines – longer term potential**

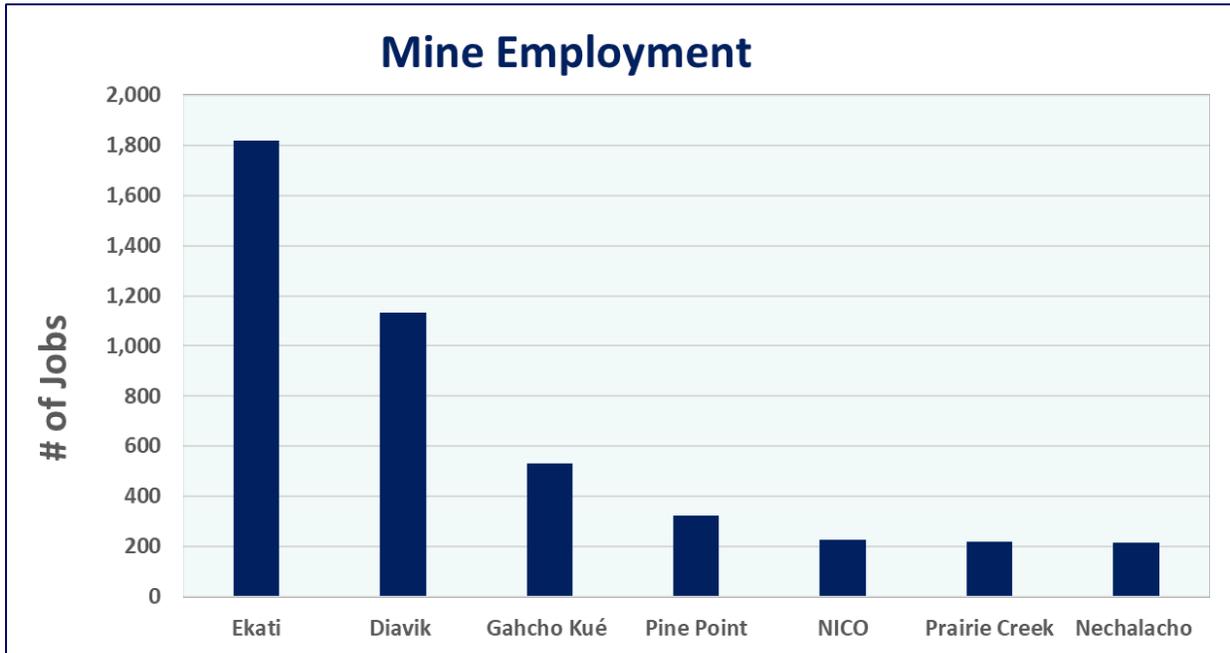
Several metal mines, currently in various stages of development, point to additional potential benefits for the Northwest Territories. They include:

- Canadian Zinc Corporation's Prairie Creek, a zinc-lead-silver proposed underground mine 120 kilometres west of Fort Simpson. All permits are in place to construct and operate the mine. Feasibility study completed in fall 2017 supports 15-year mining life. In 2017, the company's proposed all-season road was approved by the Mackenzie Valley Environmental Impact Review Board and was submitted to the federal minister of Crown-Indigenous Relations and Northern Affairs. Subject to financing, and after a 2.5-year construction phase, Canadian Zinc is projecting production start in mid-2020.
- Fortune Minerals Ltd.'s NICO cobalt-gold-bismuth-copper proposed open pit and underground mine located 50 kilometres northeast of Whati. The project requires road access and the new highway to nearby community of Whati is in the environmental approvals process and federal funding commitments have already been made.
- Avalon Advanced Materials Inc.'s rare earth metals proposed underground mine 100 kilometres southeast of Yellowknife. With a completed feasibility study and an approved environmental assessment in place, the Nechalacho Project is positioned to bring a new supply of critical rare earth materials to the marketplace.

If Pine Point, Prairie Creek, NICO, and Nechalacho projects become mines, they would require approximately 980 workers, this would provide additional employment opportunities to the North. However, it is important to remember that this combined workforce equals just one half of Ekati; it brings into focus the importance to the NWT economy of not only attracting new mining opportunities, but also sustaining existing ones.

Additionally, Darnley Bay acquired a 100% interest in the Pine Point lead-zinc project in December 2016. The company subsequently changed its name to Pine Point Mining Ltd. Drill programs are ongoing and

the property, dormant for several years, shows promise of potentially returning to production. Pine Point Mining, in its preliminary economic assessment, is projecting a 13-year mining life.



*Pine Point, NICO, Prairie Creek and Nechalacho are projected employment.*

## Promising news on infrastructure development

Recently, there have been several developments which focus on developing the Northwest Territories infrastructure deficit gap. The latest infrastructure announcements include:

- The Tlicho All-Season Road, approximately 97 kilometres from Highway 3 to Whati, will be funded 25 percent by the federal government under the P3 Canada Infrastructure Fund and 75 percent by a P3 arrangement with a private consortium that will pay the cost to design, build and maintain the road under a long-term contract. The consortium will be repaid by the Government of the Northwest Territories with interest. Notably, three consortiums of Canadian and international companies are advancing to the RFP stage, having successfully completed the RFQ phase.
- The road will facilitate construction and operations of Fortune Mineral's NICO cobalt-gold-bismuth-copper mine, mill and concentrator in the Northwest Territories. Fortune has environmental approval to build a 50-kilometre all-weather spur road from the proposed mine site to the Tlicho All Season Road.
- For the NWT portion of the Slave Geological Province Access Corridor and the Mackenzie Valley Highway, the GNWT has submitted expressions of interest to the Government of Canada seeking funding for these major transportation projects.
- For the Prairie Creek Mine Access Road, the Mackenzie Valley Environmental Impact Review Board has completed an environmental assessment of the road proposed by Canadian Zinc Corp. and recommended to the Federal Minister of Crown-Indigenous Relations and Northern Affairs that the project be approved. The road would be a 180 kilometre all season road from Prairie Creek Mine to Liard Highway, with half of the proposed road in Nahanni National Park Reserve.

## Challenges to future success

Diamond mining has made great inroads in creating opportunities and benefits. However, it is not without its challenges. While mining companies are taking actions to help overcome many of them, not all the challenges can be addressed by private industry.

For example, industry is not responsible for social programs. While it supports employees in addressing their personal challenges, it is the government's role to provide quality education and address community-based social issues. Some of the problems existed prior to the opening of the diamond mines and continue to this day:

- Lack of available skilled northern workers due to low literacy. This creates difficulties in training and advancing a greater number of northern employees into senior positions. Literacy and lack of education is most clearly demonstrated by high school students who are unable to pass trades entrance exams, a pre-requisite for apprenticeships. Just over 40 percent of Indigenous residents of the NWT have less than a grade 12 education; however, 40 percent of Indigenous northerners have a university degree
- Students have limited knowledge and technical understanding of our largest industry
- Health and wellness issues like addictions, money management and the family pressures that come with adapting to a new work-life balance, which affect family life

While regulatory certainty is improving through regulatory reform and devolution, there are still regulatory changes to be implemented by Canada. In addition, unsettled land claims in some areas continue to contribute to uncertainty.

The high cost of living creates a challenge to enticing skilled southern workers to live and work in the North, and it is contributing to outmigration of northern residents.

Access to land for development is a major issue. As of November 2017, 43 percent of the land in the Northwest Territories is unavailable for development. This includes currently protected lands, lands withdrawn for conservation and lands proposed for conservation, as well as lands withdrawn for land claim negotiations, and settlement lands held by Indigenous governments.

By taking actions to address these challenges, government can help industry in attracting and retaining the people it needs to grow the North and its economy.

## Changes and trends

Over the past decade, the Northwest Territories population has grown only slightly. In 2016, the territory's population of 44,617 people, was just under three percent higher than the 42,374 total of 2007. The net gain since 2007 results from in/out migration, and birth/death totals.

Over the last decade, 2,503 people have left the territory; 2003 was the last year in which there was a net in-migration (more people coming here to live versus leaving).

Since the first *Measuring Success 2013* was released, the total number of jobs at the diamond mines has increased by 24 per cent to 3,761 from 3,028. Actual northern resident employment has increased to 1,667 from 1,541, an increase of eight percent, but this rate has not kept pace with the overall mining employment numbers.

From a percentage basis, since 2011, northern employment at the diamond mines has dropped to 44 percent from 51 percent.

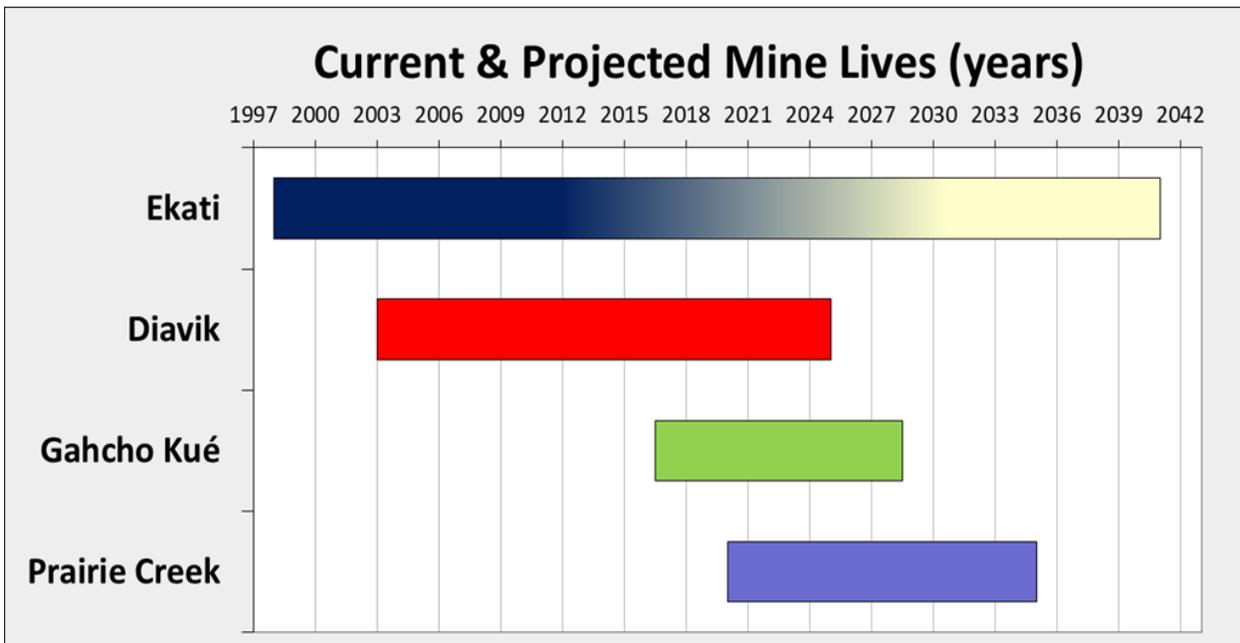
Part of the Northwest Territories mining job losses are the result of De Beers Canada moving some staff from its regional office in Yellowknife to Calgary and Dominion Diamond relocating its corporate office to Calgary from Yellowknife. Both reduced their workforces as part of these relocations. Diavik has also eliminated roles associated with its mining operations and its A21 construction project.

On business spending, in 2016 Ekati and Diavik both were below their percentage commitments while De Beers Canada exceeded its target. However, cumulative totals for each mine meet or exceed targets and collectively these companies have achieved an impressive 70 percent northern spend, or \$13.1 billion of the \$18.7 billion in total spend.

It is encouraging that all three diamond mining companies continue to contribute substantial amounts to support the social and cultural well-being of people living in northern communities, from literacy and training like the Kimberlite Career and Technical Centre, to recreation and health facilities, to social initiatives like Bailey House and Lynn’s Place. Often, contributions to an organization are spread over many years. For example, since 2003, De Beers has invested approximately \$750,000 to support literacy development in the NWT, primarily through its Books in Homes program and with support for the NWT Literacy Council and other initiatives.

The mines remain committed to creating socio-economic opportunities and benefits as specified in their socio-economic agreements, and continue to take steps to help grow a northern workforce by:

- Participating in, or sponsoring career fairs in communities
- Flying workers to and from a variety of northern communities and adding more pickup points
- Reinvigorating northern and Indigenous recruitment strategies, which include advertising all positions in northern newspapers and distributing postings to employment officers in several communities
- Promoting opportunities, like job openings, through company web sites and social media



*Projected existing and future mining lives. Ekati Diamond Mine projection includes underground mining of Fox Deep which would extend mining life to 2041 from 2034. The 2034 closure date reflects inclusion of the mine’s approved Misery Deep project. Prairie Creek Mine is projecting a mid-2020 production start after a proposed 2.5 construction phase.*

- Offering financial incentives to employees to encourage living in the North, including northern living allowances, fuel purchase plans and/or other competitive incentives
- Providing financial relocation packages for the recruitment of southern employees who choose to relocate to the NWT
- Supporting community social and cultural events, helping finance community development projects, and a variety of other community payments have seen a combined investment since 1998 which exceeds \$120 million
- The mines continue to invest millions of dollars with the NWT Mine Training Society partnership, which they helped found, and the society continues to develop successful workers through its numerous training initiatives, including underground miner, mineral processor, building trades helpers, small engine repair
- Offering a variety of health and wellness programs/initiatives, like employee family assistance programs to support employees and their families through counseling services, financial management training, work life balance, and substance abuse and addiction
- Helping Indigenous employees advance by providing training through Aurora College's Northern Leadership Training Program



*In 2016, NWT diamond mines created 1,667 person years of employment for northern residents.*

## **Climate change and the role of mining**

The North's diamond mines focus on improving energy usage; reducing greenhouse gas emissions, and realizing savings. Likewise, companies that are developing mines are aware of the need for energy efficiency; especially when faced with carbon taxation and the North's high-cost operating environment.

This approach extends beyond diamond mining. For example, during the exploration stage, Avalon Advanced Materials incorporated innovative renewables at its Nechalacho Project in the Northwest Territories. Avalon installed and operated a renewable energy system integrating diesel generator, battery bank, inverter system and solar panels. The initial motivation was to reduce diesel consumption and associated costs. The battery bank also enabled the use of safer, high efficiency tent heaters, leading to even greater savings in diesel consumption. The project reduced energy use and lowered greenhouse gas emissions. For the initiative, in 2016, the company received the Best Use of Renewables for Mine Exploration Award at the Energy and Mines' Renewables in Mining Awards event, co-sponsored by Carbon War Room and Canada Clean Fuels. This event was part of the World Congress of Energy and Mines conference.

Canadian Zinc, which released its feasibility study in 2017 for the Prairie Creek Mine, could begin production as early as 2020 and, with the proposed all-season road access, greener energy like liquefied natural gas (LNG), becomes an option. Canadian Zinc the Northwest Power Corporation have signed an MOU to investigate further. Fortune Minerals' proposed Nico Mine would also have the option to use LNG fuel once all-season road access is completed.

Nationally, the Mining Association of Canada (MAC) and its members are committed to ongoing improvement and are continually innovating to protect the environment, improve their energy use, and reduce greenhouse gas emissions. Over the past two decades, MAC's member companies have improved energy efficiency and reduced emissions at their operations through measures such as MAC's mandatory Towards Sustainable Mining initiative and through mine site innovations. Beyond energy, fuel, and process efficiency, member companies are also engaged with local communities on numerous climate change projects.

In today's operating environment, mining has a clear role to play when it comes to clean technology. The industry produces raw materials for renewable energy products, like wind turbines, solar panels, and electric cars. For example, lithium batteries, which are increasing substantially in demand, require cobalt. The NICO project contains significant amounts of cobalt in addition to its gold, bismuth, and copper and would become an NWT source of this raw material the world needs to transition to a low carbon future. Measuring mining's future success will include how innovatively and responsibly it produces many similar metals and minerals to fuel the green economy and incorporates the resulting technologies at its respective resource developments and operating mine sites.

## Conclusion

The 20-plus year history of the diamond mining industry in the Northwest Territories has been a positive one. It has come through direct actions by mining companies, from investments by government and Indigenous groups, and from partnerships.

In less than a generation, diamond mining has seen thousands of NWT residents trained with skills for long and productive careers in mining or other industries. Billions of dollars have been spent with northern and northern Indigenous companies, enabling them to build a strong foundation for the future

The actions of the GNWT to launch a variety of strategies is encouraging, including the *Mineral Development Strategy* and other economic and infrastructure strategies, as well as the *NWT Anti-Poverty Strategy*, and a new *Mineral Resources Act*, and the *Mining Incentive Program* which provides funding to prospectors and exploration companies propose new exploration projects or are already carrying out NWT mineral exploration work.

Government's focus on infrastructure is also encouraging. Adding infrastructure benefits many, not just exploration and mining companies, and assists in the building of the nation.

Such initiatives and, just as importantly, the partnership approach that governments and industry are embracing, will help ensure that we grow our minerals industry and that we help prepare our communities and residents to take full advantage of the opportunities that a strong and healthy minerals industry and economy can provide. The mission driving industry's work is responsible and sustainable mineral exploration and development. This generates wealth for investors, and attracts future investment. Equally importantly, it creates wealth for training, employment and business benefits, and community wellness. Finally, it creates wealth for governments to deliver services and programs required by society.

In closing, in 2016 diamond exploration and mining celebrated 25 years of success in the Northwest Territories.

Congratulations to the countless individuals who helped make this industry the foundation of the territory's economy.

The wealth generated from diamond mining resource developments over the past quarter century has created enormous benefits adding to the quality of life in the North.



*The 187.7 carat Diavik Foxfire rough diamond, the largest reported rough diamond ever found in Canada.*

## Produced by the NWT & Nunavut Chamber of Mines

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