The sprawling Vaderstad manufacturing plant at Langbank

Vaderstad looking for workers as it expands

BY KEVIN WEEDMARK

Nigel Jones, CEO of Vaderstad Industries Inc., says the company is looking for more workers as it continues to expand production at its sprawling Langbank manufacturing plant.

"We started out as Seedhawk in Langbank in 1992. This year will be our 30th year for Seedhawk," Jones said in an interview.

"It started out as a very small operation, built up around the Seedhawk opener. On the back of that were the development of the seeder, the toolbar, and then the tank. From those humble beginnings it grew fairly steadily for the next few years.

"The product development was on site as well, so the business wasn't only about manufacturing, it also had some development capability on site at the same time. Then, around 2006 is when Vaderstad first got involved, Vaderstad being a Swedish privately owned company. They were looking at expansion into North America and Seedhawk was exploring with opportunities for expansion maybe into Europe even. There was a good fit and good synergies between the companies in terms of their objectives.

"At that time Vaderstad took a 49 per cent position in the company. Over the next few years it continued with a steady growth, nothing spectacular, just steady. It grew to somewhere north of just about a hundred employees.

"Then around 2014 is when Vaderstad finally bought all of the company, and at that point it became a part of the Vaderstad company.

"Then in 2015 was the launch of the iCon, which was the new product development. At that time it was more technological in terms of the equipment.

"Since 2015 we have seen much more rapid growth in terms of the growth trajectory. In 2017 was when the brand actually changed, the colours changed and the Vaderstad name was on the product. It was a big year in terms of product transition, marketing of branding. Since then, we have had steady growth trajectory, we have increased from the 100 employees to just about 250 now, so that is a significant increase and the sales revenue has grown substantially as well along with that.

"In 2015, we made about $50 million and this year we will be somewhere closer to $160 million."

He said a combination of factors have led to higher sales.

"We have made a lot of efficiency improvements over the last five years. We have gone down the LEAN manufacturing path, we are working towards world class manufacturing."

A year ago, a second shift was added. "We have done a lot of improvements in terms of efficiency but obviously the addition of the second shift just gives you that extra boost," said Jones. "The second shift is a half shift, it only needs to operate on the toolbar line. The cart line is still effectively one shift."

Employees needed

Jones says many new employees have been hired by Vaderstad as it ramped up the second shift, and more are still needed.

"We could hire 40 people tomorrow," he said. "That would be 20 to fill the vacant spaces and 20 would be to fill contract labour. We are still relying on contract labour which basically flies in from the East Coast."

He said Vaderstad is looking for a number of skills.

"We are looking for a combination of skills," Jones said, "from assembly work to welding, and we are now seeking people who can manage and operate robots."

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600-700 contractors at peak this fall:
Nutrien Rocanville continues refurb project

BY KEVIN WEEDMARK

Work continues on a multi-year refurbishment of the original mill at the Nutrien Rocanville potash mine site. A second mill was added to the site as part of an earlier expansion and the current refurbishment project is to bring the original mill up to the same standard as the new mill.

Following are questions and answers with Nutrien Rocanville GM Shannon Rhynold regarding the work taking place this year. Rhynold says the number of contractors on site will peak at 600 to 700 during turnaround this fall.

How many contractors there will be in the area at the peak this year?

Rocanville expects to have between 600-700 contractors on site during its peak construction this fall.

It was originally planned as a three-year project. Is the refurb on the original mill wrapping up this year?

Ongoing sustaining projects will continue and we will be finishing Mill 1 refurb this year. We are currently reviewing potential investment projects for future execution.

Is the generating plant online now or close to it?

The project has been delayed due to global supply chain issues but is scheduled to be operational late this year or Q1 2023.

Has there been any discussion or planning about possible expansion or moving up the schedule for the next new shaft sinking, due to the international market conditions?

There are currently no plans on expansion to date.

Our network is leveraging its other potash mines and bringing on idle capacity (hiring resources and adding equipment) to meet some of the current market demands.

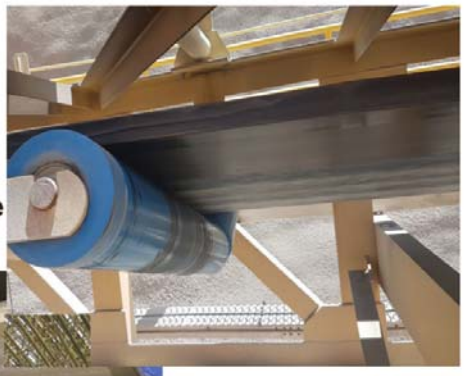
Nutrien announced earlier this year it would be adding positions to ramp up production. Will any of those be added at Nutrien Rocanville or what is the state of that ramp up project?

We are currently at full capacity and based on the production increase announcement we made earlier this year, no additional resources will be added to the Rocanville site at this time.

The state of the project will be ongoing throughout the year with our focus to safely produce 15 mmt from our network of six low-cost mines here in Saskatchewan.

ULMA

Conveyor Components



ULMA Conveyor Components designs, manufactures and supplies rollers, idler frames and garlands for the bulk material handling industries throughout the world.

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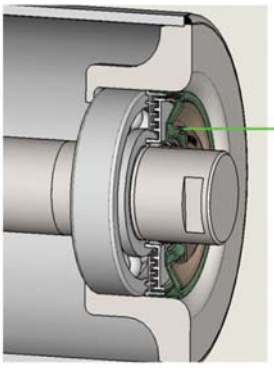
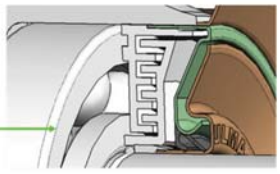




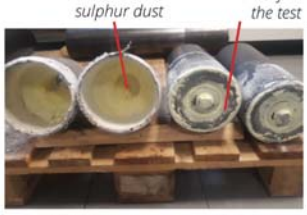
Patented sealing system protects the bearings from fine dust, corrosion and humidity

Approved and passed the following tests:

- DIN 22112-3 Waterproof test
- DIN 22112-3 Dustproof test
- 45º position Dustproof test (required in North African phosphate mines to be validated)
- DIN 22112-3 Running Resistance test

Waterproof test

45º position Dustproof test



Rollers appearance after the test with sulphur

No trace of sulphur dust on the bearing after the test

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Staff on site at Mosaic's K3 megaproject.

Mosaic K3—the future is here

Each year, Mosaic—one of the world's largest producers of potash and phosphate fertilizer—mines, produces and distributes millions of tonnes of high-quality potash and phosphates products. Without fertilizers, the world's crop yields would be cut in half, and farmers around the world look to Mosaic to help keep their soils healthy, to nourish their crops and to maximize their yields.

In February 2017, Business Elite Canada wrote about Mosaic when the company's facility in Esterhazy, Saskatchewan hit a significant project milestone in the Esterhazy K3 project, touted to be the largest, most competitive underground potash mine in the world. Nearly five years later, and the K3 project's newly completed south shaft headframe is operating at full hoisting capacity; production officially began November 8 following successful commissioning of the headframe and ore handling system in October, 2021.

As planned, hoisting capacity of the south shaft headframe started at 10,000 tons per day and increased to 40,000 tons per day in December.

Combined with the north shaft headframe, which has been in operation since 2018, this will bring K3's hoisting capacity to more than 80,000 tons per day.

K3—The future of potash

The K3 mega-project includes Saskatchewan's first new underground potash mine in over a half-century. This $3 billion-dollar project, which kicked off in 2009, is an investment in the long-term sustainability of Mosaic's operations, Esterhazy, the Province and the vision they have for Mosaic's North America Business. It also brought significant capital investment and contract work to the area.

"Potash has a rich history in Esterhazy, and this project represents Mosaic's commitment to continuing that success for decades to come," says Dustin Maksymchuk, General Manager, Esterhazy. "We're proud of the future we're building for Mosaic, for our employees and for the communities we live in."

The importance of potash

According to United Nations estimates, the world needs to grow 70 per cent more food by 2050. Canadian potash is helping make that possible and currently leading the world in global potash production.

Continued on Page B24 ☞

Mosaic K3—the future is here

☞ *Continued from Page B23*

Potash is the second most valuable metal/mineral product in Canada—trailing only gold. "The industry contributes more than $5.5 billion annually to Canada's Gross Domestic Product and more than $500 million in federal, provincial and local taxes," says Maksymchuk. "There are more than 5,000 jobs in the potash mining industry and for every one of those jobs, there are at least two in the mining supply and service sector. These jobs provide more than one billion in wages annually. Mosaic and other potash producers also invest millions of dollars annually in local communities."The K3 project required in excess of 12.5 million person-hours to execute, and there were up to 500 people on site per day during peak construction periods, says Bernie Boutin, Director of Capital Projects –K3. "With a project of this magnitude and duration, safety is always top of mind. Thousands of contractors and Mosaic employees have worked on different aspects of the project, and we are truly grateful for their hard work and dedication. The focus has always been on safe project execution so everyone can return home safely to family and friends."

So how did Mosaic manage to sink shafts 20-foot in diameter 3,500 feet into the ground? A combination of sinking winches and hoists located at surface, and the respective hoist ropes operated through the permanent north headframe, and the temporary south sinking headframe, is the answer.

"A five-level galloway structure was utilized in both the north and south shafts, and it functioned as a working stage for both personnel and equipment," Boutin explains. "The conventional drilling and blasting method was used to sink the 20 ft diameter shafts through the bare earth. An excavator suspended below both galloways and was used to load the blasted muck into buckets that were hoisted to surface. When the shaft wall was exposed, a shaft wall liner was constructed as the shaft sinking advanced."

Esterhazy K3's North shaft headframe began production in January 2019. It is used to move potash ore to the surface and transport people and equipment, says Boutin. The K3 South shaft headframe, which is used solely to move potash ore to the surface, began production in November 2021. As of the end of March 2022, there are a total of nine mining machines cutting underground at K3 that can provide an average of 50,000 ore tons per day. Another mining machine is nearing production, and three more mining machines and more underground conveyors will be added over the next couple years.

"A fully operational Esterhazy K3 is improving the profitability and competitiveness of our business—solidifying our position as an industry leader and allowing us to find new, innovative ways to deliver on Mosaic's commitments to our customers, communities, employees and other stakeholders," says Maksymchuk.

Mosaic is among the most reliable, sustainable producers of potash fertilizer in the world, and completion of the K3 project will allow Mosaic to fully leverage existing assets and make the best possible use of Esterhazy's rich potash ore reserves.

Sunset at the Red Lily Wind Farm

The Red Lily Wind Farm is just west of Moosomin and produces 26 megawatts of power.

The wind farm is owned by Concord Pacific group and managed by Algonquin Power and Utilities Corp. There are 16 turbines in total, and each blade is 82 metres long.

Mosaic Esterhazy surpasses one million tons mined in first-pass automation

After years of collaboration, development, testing—learning from trial and error along the way—the Esterhazy team is now successfully running K3's mining machines autonomously in all three "passes" they make to mine an area. The team began testing first-pass automation in April 2021 at K3, and they surpassed an impressive milestone in March— mining one million tons in first-pass automation. Six of the ten machines in K3's fleet can operate autonomously on the first pass, and all have been operating autonomously on the second and third "side" passes.

Running these machines with minimal human intervention reduces risk for our employees and eliminates downtime, as they can safely operate 24/7. Automation allows employees who previously worked in close proximity with mining machines to operate and monitor them from a distance—providing better, safer working conditions for employees, while also providing an opportunity to increase production.

"Two of our main goals when we formed Esterhazy's automation team in 2015 were to automate the steering of our mining machines in first pass and build the conveyor belt automatically," explains Anthony Sparvier, K3 Automation Superintendent. "We've accomplished both those goals, but there were significant challenges to overcome along the way."

Esterhazy's automation team worked closely with third-party experts throughout design and development—performing extensive tests to confirm the accuracy and reliability of various systems. They also worked with Esterhazy's geologist to confirm autonomous mining would not have any geological impacts.

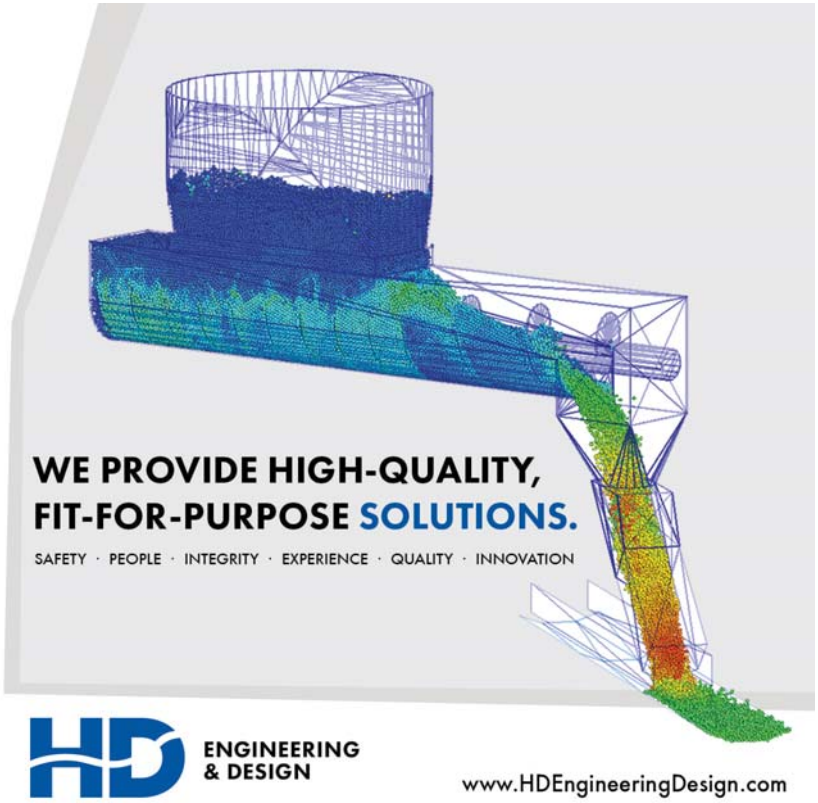
Building operators' confidence and trust in autonomous operations took some time. "The same control aspects were in place, but the newer mining machines and the Human-Machine Interface (HMI) screens were quite a bit different than what our people were used to," explains Sparvier. "All our operators mine differently but our mining algorithm mines the same regardless of who is at the machine, so there was also some confusion and misunderstanding about how the machine steers."

Sparvier says the key to building that trust and confidence was involving the operators, transparently sharing about success and challenges along the way, and providing training. "We developed a training presentation with all of the operators from each crew who were at the mining machine when we were initially testing first-pass automation," says Sparvier. "The training goes over the method, algorithm and what to expect with cutting in automation. It also provided answers to some of the typical questions we were getting about steering."

There are still some challenges to overcome, but the Esterhazy team is excited about the progress they are making. "We couldn't have accomplished all we have without support from all levels of our organization—from our operators to senior leaders," says Sparvier. "It truly has been a team effort, and we're not done yet. We still have more training to do, and more projects are on the way to make our automation program more robust, reliable and intuitive."

Mining machines make three "passes" when mining an area. On the first pass, they set the direction and forge a new path through rock while another automated machine follows behind them installing hardware to build a conveyer belt. During the second and third passes, the machines follow the path of the conveyer belt to mine ore—first on one side of the belt, then the other.

The control center on the surface being designed as Esterhazy's Integrated Operations Center is equipped with communications and cameras that employees use to monitor progress of the machines from the surface. They can stop and start the mining machines to manage ore flow and schedule in-person checks as needed to ensure safe operation and support the mine plan.



Sask aims to attract hydrogen investment

The Government of Saskatchewan is ramping up development work on a potential hydrogen hub in the Regina-Moose Jaw region.

The Ministry of Energy and Resources, Whitecap Resources, and Federated Co-operatives Limited (FCL) will support a foundation report study, developed by the Transition Accelerator and the Saskatchewan Research Council (SRC), to provide investors with a thorough analysis of commercial-scale hydrogen opportunities and synergies with carbon capture utilization and storage (CCUS) infrastructure in Saskatchewan.

"We're a world leader in CCUS and enhanced oil recovery, which have natural connections to blue hydrogen," Energy and Resources Minister Bronwyn Eyre said. "We expect this report to accelerate the private sector's interest in Saskatchewan's emerging hydrogen economy."

The hydrogen market is expanding globally, with increasing use in power generation, transportation fuel, and feedstock in the chemical industry. 'Blue hydrogen' projects are enabled using CCUS technology.

In September 2021, the Government of Saskatchewan announced several new policy commitments to advance CCUS projects, including advancing opportunities for an infrastructure hub in the Regina-Moose Jaw industrial corridor. A hydrogen/CCUS hub in this region could allow for the development of an entire, commercial scale hydrogen supply and demand chain in Saskatchewan.

In October 2021, Whitecap Resources and FCL signed a memorandum of understanding to explore opportunities around CCUS, enhanced oil recovery and CO2 transportation infrastructure.

"Saskatchewan has played a prominent role in establishing CCUS as an industry and we expect it will leverage this expertise to take a leadership role in the new hydrogen economy," Whitecap Resources President and CEO Grant Fagerheim said. "Whitecap and FCL have the opportunity to accelerate the transition to a lower carbon economy through our proposed CCUS infrastructure, which will enable blue hydrogen production at a commercial scale. We are excited to advance this study to support further expansion across the private sector."

"The potential for a Hydrogen and CCUS Hub in Saskatchewan is exciting as it would create new opportunities for local industry right here in Saskatchewan," Federated Co-operatives Limited CEO Heather Ryan said. "We know that CCUS will play a prominent role in the future of transportation fuels. The research we are investing in will identify the role that hydrogen production will play in the transition to the low carbon economy. We are excited and proud to partner with the Government of Saskatchewan and Whitecap Resources on this important research project."

The Transition Accelerator (TA) is a pan-Canadian charity that creates positive, transformational system changes that solve societal challenges while moving Canada to reach net-zero greenhouse gas emissions by 2050. TA launched Canada's first two hydrogen hubs in the Edmonton's Industrial Heartland Region and in the southeast Alberta Region.

The Ministry of Energy and Resources will support the Transition Accelerator with a grant of $100,000 to complete a Foundation Report. An additional $50,000 in funding will be provided by Whitecap Resources and FCL.

North American Energy Choices leading to disaster

There are geopolitical effects of obstructing and penalizing the North American production and supply systems

Ian Madsen

A few weeks ago, there was a violent First Nations-climate extremist attack on a Coastal GasLink natural gas pipeline construction site in British Columbia.

In a seemingly unrelated development, German leaders decided last year to rapidly phase out nuclear energy with nothing to replace it.

Also last year, the United States chose not to approve two pipelines.

These three major events in energy politics were propelled by the global warming crusade, which seeks to end the production and use of fossil fuels.

A powerful green campaign against resource extraction and transportation has left Canada and the United States with very limited energy options, options that are getting fewer as time passes.

In addition, the world is becoming increasingly dependent on unsavoury regimes—such as Russia, Azerbaijan, Kazakhstan, Turkmenistan, Saudi Arabia, Iran and Iraq – for natural gas and oil.

While climate activists and their allies in militant First Nations may cheer when oil or natural gas assets in North America remain undeveloped, the world demand for energy remains high and is satisfied by sales from antidemocratic regimes. Of course, the low production in North America aids them in selling their resources.

No matter what happens in the U.S. and Canada, fuel is still produced and consumed, with limited influence from those governments that only indulge the 'net-zero' fantasies of virtue-signalling crusaders in North America and other Western countries.

Also, increasingly these products are transported by trucks and trains because fewer pipelines are being constructed, greatly increasing environmental and safety risks.

The result is that Western nations are increasingly dependent on unstable, unreliable, and despotic nations and regions for these resources. All of the autocratic states producing large quantities of oil and gas are undemocratic and repressive, with less reliable rule of law or environmental protection than Canada, the U.S. and European nations with the potential to produce oil and gas.

Clearly, human rights are less important to the crusader activists than their goal of 'climate justice' in the consuming nations.

In 2020, the United States was net energy independent and supplied other countries with refined oil and natural gas. Hydraulic fracturing and other techniques that unlock the potential of shale and other 'tight' formations produce prodigious quantities of natural gas and oil. But since 2020, production has declined rapidly as permits expired. More wells need to be drilled, but the U.S. government of President Joe Biden is opposed to this.

The moratorium imposed by the Biden administration on drilling lease sales on federal lands has drastically reduced potential U.S. output. Also, the cancellation of the Keystone XL pipeline and the court challenges facing the Dakota Access line limit exports from Canada, so more Canadian oil can't enter the U.S.

Meanwhile, in Germany, the panicky decision to end nuclear power meant increasing reliance on wind and solar power and, ironically, on coal and natural gas when wind and solar energy fail to satisfy demand. As well, German dependence on the mercies of Russian President Vladimir Putin previously led Germany to approve the Nord Stream 2 pipeline, a decision it recently rescinded, reversing its reliance on Russia.

The recent spike in oil and natural gas prices in North America has resulted from the restrictions on production in the U.S. and Canada. This has, unfortunately, filled Russia's coffers with massive foreign currency reserves because the cost of oil and gas has increased internationally, giving Putin the resources he needed to invade his neighbour.

This was foreseeable, as similar energy price increases preceded the Russian invasion of Georgia in 2008 and the invasion of Crimea and the Donbas in 2014.

These are the geopolitical effects of obstructing and penalizing the North American energy production and supply systems. Climate fanatics wish for global net-zero use of fossil fuels, but dictators like Putin seek to satisfy the energy needs of many nations while boosting their cash, and thus fund their militaries.

The future doesn't look promising for Canada and the U.S. unless they change their attitudes and strategy quickly.

Ian Madsen is the senior policy analyst at the Frontier Centre for Public Policy.

See all the World-Spectator's special features online at www.world-spectator.com

Carbon capture an opportunity for Canada to lead the world

Deborah Jaremko

Canada's largest oil sands producers are "in full-scale development mode" on a major joint project designed to significantly reduce greenhouse gas emissions and propel the sector down the path to net-zero.

The companies have planned one of the world's largest carbon capture and storage (CCS) projects. It's a key piece of what could become a new large-scale industry for Canada that reduces the environmental footprint of multiple sectors, including oil and gas, fertilizer, steel and cement.

"[CCS] could be a major source of employment and I think position us to be leaders in the world," said Jackie Forrest, executive director of ARC Energy Research Institute, on a recent ARC podcast.

Canada is already a leader in what could be seen as the first generation of global CCS development, where carbon emissions are captured from industrial processes and stored deep underground.

There are 26 commercial-scale CCS projects in the world, and four are in Canada – including the largest CO_2 pipeline on the planet, the Alberta Carbon Trunk Line.

Since 2000, CCS projects in Canada have safely stored more than 44 million tonnes of CO_2, or the equivalent of taking more than 9.4 million cars off the road.

The first phase of the Oil Sands Pathways to Net Zero project, expected to be operational by 2030, would add capacity to store an additional 8.5 million tonnes or 1.8 million cars worth of CO_2 per year, safely removing the emissions from the atmosphere.

The Oil Sands Pathways to Net Zero foundational project is a major carbon capture and storage system in northern Alberta.

Before giving the final go-ahead, the six companies in the project will require additional clarity on factors including the federal government's new CCS investment tax credit, future carbon taxes and access rights to deep underground pore space for storage. But they're proceeding with the work to make it happen.

"We are in full-scale development mode right now at Pathways," Cenovus Energy CEO Alex Pourbaix told a recent call with investment analysts.

He said the companies have started preliminary engineering on the project, which would capture CO_2 emissions from eight oil sands facilities and transport it to a storage hub in northern Alberta.

"We are in the process of making the application to the Alberta government for pore space, and we have kicked off significant environmental work and other studies that are required for the application for the permits to ultimately develop and construct that project," Pourbaix said.

"There is actually a huge amount of work going on. The Pathways partners have seconded literally dozens of people into the organization, with more to come."

CCS in Canada has already influenced major projects globally, such as Northern Lights in Norway. The 1.5-million-tonne-per-year project is owned partly by Shell, which since 2015 has operated the Quest CCS project near Edmonton.

"Northern Lights has incorporated lessons from Quest, which has been sharing knowledge and lessons learned over the last five years to encourage more widespread implementation of CCS," the company said in a statement.

Working together to advance new technology is in the DNA of Canadian companies, says Joy Romero, executive adviser for innovation with Canadian Natural Resources.

"We can learn from each other, building on what others know rather than doing it in parallel," she says.

"That is how we can, in fact, accelerate and deliver these projects in these very ambitious time periods."

Deborah Jaremko is director of content for the Canadian Energy Centre, an Alberta government corporation funded in part by taxes paid by industry on carbon emissions.

Sask releases latest oil and gas emissions report

Provincial oil and gas sector has reduced green house gas emissions by 60 per cent since 2015

On May 18, the Ministry of Energy and Resources published its second Oil and Gas Emissions Management Regulations (OGEMR) Annual Emissions Report.

In 2021, greenhouse gas (GHG) emissions from vented and flared gas at upstream oil facilities in Saskatchewan totalled 4.4 million tonnes (Mt) of carbon dioxide equivalent (CO_2e).

This represents a 6.5 Mt CO_2e, or 60 per cent, reduction from 2015 levels and a 0.8 Mt or 15 per cent reduction from 2020 levels.

"A 60 per cent reduction is a significant achievement and clearly demonstrates that Saskatchewan is a jurisdictional leader in methane reduction and its energy sector is one of the most environmentally responsible in the world," Energy and Resources Minister Bronwyn Eyre said. "Saskatchewan's comprehensive regulations target both methane from venting and carbon dioxide from flaring. This is more comprehensive than the federal approach, which targets only methane emissions."

Multiple factors contributed to the provincial emissions reduction in 2021- primarily, the Saskatchewan oil and gas sector's investments in new equipment and/or infrastructure at key locations, which resulted in reducing company-level emissions.

Several of these infrastructure efforts were supported through the Saskatchewan Petroleum Innovation Incentive (SPII), administered by the Ministry of Energy and Resources. SPII offers transferable royalty/production tax credits for innovative, made-in-Saskatchewan projects at a rate of 25 per cent of eligible costs, including capital and operating expenditures, up to a maximum of $5 million in credits.

In 2019, the Government of Saskatchewan released its Methane Action Plan (MAP) and OGEMR's goal to reduce GHG emissions by 40 to 45 per cent from 2015 levels by 2025. The latest results demonstrate Saskatchewan's continued regulatory leadership and ongoing innovation of the upstream oil and gas sector.

Emission reductions outlined in Prairie Resilience: A Made-in-Saskatchewan Climate Change Strategy have been achieved and will likely be exceeded in 2025.

OGEMR is part of an equivalency agreement on methane emissions signed in 2020 with the federal government. The agreement established a five-year timeframe and expires on December 31, 2024.

OGEMR provides flexible, results-based regulations that allow industry to achieve greater emissions reduction at a significantly lower cost than the federal equivalent.

Vaderstad looking for workers as it expands

☞ *Continued from Page B20*

"We need people who can work with robot welders in particular at the moment, but we are looking at more developments and more automation in the plan," said Jones. "We need people who can program and maintain robots and automation. We are looking for a range of skills."

He said there are benefits and challenges to operating a manufacturing plant in a rural area.

"The benefits are we are close to the community," he said. "Our equipment is used in rural locations. It is a good place to be in terms of being close to the people who use it, the farmers. We do develop quite large equipment so it is good we do have a large facility and a large site to be able to be close to the conditions, the actual areas where the machines are used. Those are advantages.

"One of the challenges is that it's difficult to attract people to the area. We realize we have a lot of small communities around us as opposed to being in a larger center such as Regina or Saskatoon, but it's still a challenge to find all the staff we need. That is the downside for us in terms of managing the growth."

How is Vaderstad trying to overcome that challenge?

"We are aiming to be an employer of choice," says Jones. "We work a lot on our benefits and our work environment. Safety is first in terms of our values. We focus a lot on the employer branding side of things. We want to be attractive to employees, we want employees to join, and we want them to stay. We spend an awful lot of time on the employer branding and work environment side of things. We invest a lot in the local communities, so we can build the brand so people know who we are, and so they understand what it is they would be walking into if they did come to work at the facility."

Vaderstad now has an operation in Wahpeton, North Dakota in addition to the Langbank site. "In Langbank we are Vaderstad Canada now and in Wahpeton they are Vaderstad U.S.," says Jones. "We do have our own independence in terms of legal entities, but we do share some resources as well. For instance if we look at HR, finance and IT, we share resources in those areas so we can have some consistency. On the operational side we collaborate a lot and work together and learn from each other, and share lots of ideas."

Need for further growth

There is still a need to further grow the operation in Langbank.

"We have a five to ten year plan which is continued growth," said Jones. "The challenge in the Langbank facility will be there is only so much dollars to invest before you need to hire more people again, and that's where there is a challenge. The challenge for us at the moment is to create that pipeline now so we have enough workers later. If we can attract the right people with the right skills and qualities, then we can spend some dollars on investments. There is definitely potential for it and plans to try and exploit those opportunities for growth."

Working with communities

Jones said Vaderstad is working with local communities to ensure everything is in place to attract more workers.

"We're working closely with the communities in terms of how can we attract workers to the area. In Moosomin and Whitewood in particular, we have had some good conversations in terms of opportunities, housing projects, schooling, health care, training and daycare. Those are the main things. Those are kind of our challenging criteria. If we can work with communities on those issues, there's room for further growth."

The sprawling Vaderstad manufacturing plant at Langbank

A wake-up call to the free world on energy security

US Senator Manchin says North America best positioned to help the world with energy security and lower emissions

Deborah Jaremko

U.S. Democratic Senator Joe Manchin wants to build a North American energy alliance with Canada and Alberta.

The former governor of West Virginia and chair of the Senate Committee on Energy and Natural Resources ended an April visit to the Alberta oil sands with a commitment to raise the profile of Canada's resources in Washington, D.C.

"There shouldn't be a barrier because we have a border. That border should be invisible when it comes to energy and the climate and the responsibilities we have as citizens on this Earth," Manchin told reporters in Calgary.

"This horrific war in Ukraine is a wake-up call for the free world. … The free world should be relying on the United States and Canada to provide the products and the resources that they're going to need, and to be able to help Mother Earth and climate."

North American energy producers are uniquely committed to reducing emissions, he said.

"If you take the United States of America and you take Canada out of the fossil business, we're the only ones that will spend the money that will make the effort to develop the new technologies that will clean up the climate, because the rest of the world will use the same products we're using, just a lot dirtier," he said.

"You take us out and Mother Earth is going to be in trouble and the climate will go to heck in a handbasket. I believe that with all my heart."

Manchin has invited representatives from the Alberta government to present to the Senate energy committee about co-operation on continental energy security.

Many Americans may not know how important Canada already is to them in terms of energy resources or how much they are reliant on Organization of Petroleum Exporting Countries-plus (OPEC+) nations, he said. Manchin said he didn't realize the volume of oil products from Russia being purchased by U.S. refiners until the invasion of Ukraine.

More than 98 per cent of U.S. natural gas imports and more than 50 per cent of oil imports come from Canada, according to the U.S. Energy Information Administration. But refiners still buy a lot of crude from OPEC+ nations like Saudi Arabia and Russia – 1.6 million barrels per day in 2021 compared to 4.3 million barrels per day from Canada.

That includes about 670,000 barrels per day from Russia that's now banned, leaving a hole for other suppliers to fill that's contributing to soaring gasoline prices across the U.S.

"We need this product. You all have a product that we have to have in order for us to meet the demand of our country, but your country too, and the world," Manchin said.

He said that the Keystone XL pipeline that would have connected Alberta oil with refineries on the U.S. Gulf Coast should never have been abandoned.

"Now we wish we had it; 800,000 barrels of oil coming a day down into our refineries to make the products that all of us use in both countries."

Manchin advocates an "all of the above" approach to energy that includes oil, natural gas, coal, wind, solar, geothermal, nuclear and more. And it all can be produced responsibly in North America.

"North America could be the energy leaders of the world [with] the cleanest energy production in the world," he said.

"We have to be stronger. We have to be committed and resilient enough to be able to say we're going to produce the energy that the world needs."

Deborah Jaremko is director of content for the Canadian Energy Centre, an Alberta government corporation funded in part by taxes paid by industry on carbon emissions.

April oil and gas public offering raises $19.3 million

Offering exceeds total provincial oil and gas rights sales for entire 2021-22 fiscal year

Saskatchewan's April public offering of Crown petroleum and natural gas rights, held on Tuesday, April 5, has generated $19,307,203.94 in revenue for the province, more than ten times the revenue generated by the April 2021 offering.

The April sale is the first of six oil and gas public offerings scheduled for the 2022-23 fiscal year. The previous five sales raised $6.1 million in February 2022, $1.4 million in December, $1.9 million in October, $3.1 million in August, and $0.5 million in June 2021. With this result, public offerings for the 2022-23 fiscal year have already exceeded 2021-22's total of $14,988,127.34.

Of the 208 parcels offered, 169 parcels received acceptable bids, representing over 23,000 total hectares. Four parcels received bids that were rejected as unacceptable after a technical review, and no bids were submitted for the remaining 35 parcels. The average bonus bid was $816.80 per hectare with the highest acceptable bid at $24,318.44 per hectare.

The Estevan area produced the highest interest, bringing in $17,111,929.83 for 142 parcels totalling 11,890.306 hectares. Seventeen of those parcels alone received total bonus bids of $12,193,442.53.

The next sale of the current 2022-23 fiscal year is scheduled for Tuesday, June 7, 2022.

SRC looking into micro-reactors for Saskatchewan

The Saskatchewan Research Council (SRC) and Westinghouse Electric Canada have signed a Memorandum of Understanding (MOU) to advance very small modular reactors (vSMRs), also known as micro-reactors, in Saskatchewan.

Westinghouse and SRC will jointly develop a project to locate an eVincitm micro-reactor in Saskatchewan for the development and testing of industrial, research, and energy use applications. The eVinci micro-reactor is safe and easy to transport creating a customized solution for Saskatchewan's unique reliable clean energy needs.

"For 38 years, SRC was the licensed owner and operator of a SLOWPOKE-2 nuclear reactor, and we look forward to building on that experience with Westinghouse," Minister Responsible for SRC Jeremy Harrison said.

"The hands-on experience SRC gained can be applied to emerging nuclear technology, such as SMRs as we consider how to best power our future."

"Modern nuclear reactors have the ability to provide the safe, clean, and baseload power that Saskatchewan people rely on for their everyday needs," Minister Responsible for SaskPower Don Morgan said.

"The advancement of nuclear power in our province will not only modernize our power grid, but result in billions of dollars in additional economic activity."

"We are proud to work with SRC to provide customized solutions to Saskatchewan's clean energy needs with our eVinci micro-reactor technology," Westinghouse Electric Canada President Edouard Saab said.

"Building on decades of innovation, the eVinci micro-reactor brings carbon-free, transportable, safe and scalable energy, while creating jobs in local communities and advancing Canada's Net Zero goals."

The eVinci micro-reactor and surrounding infrastructure is approximately half the size of a hockey rink. It is classified as a micro-reactor capable of producing five megawatts of electricity, over 13 megawatts of high temperature heat, or operating in combined heat and power mode.

The eVinci micro-reactor nuclear battery provides power solutions at a different scale than centrally generated utility-scale power. It can support various applications including remote mining operations, remote communities, individual industrial heat and power scenarios, distributed hydrogen generation and integrated energy solutions.

About Westinghouse Electric Canada

Westinghouse Electric Canada is shaping the future of carbon-free energy by providing safe, innovative nuclear technologies to utilities globally. Westinghouse supplied the world's first commercial pressurized water reactor in 1957 and the company's technology is the basis for nearly one-half of the world's operating nuclear plants. For over 130 years, innovation makes Westinghouse is the preferred partner for technologies covering the complete nuclear energy life cycle. For more information, visit www.westinghousenuclear.com.

About Saskatchewan Research Council (SRC)

SRC is Canada's second largest research and technology organization. With nearly 300 employees, $137 million in annual revenue and 75 years of experience, SRC provides services and products to its 1,500 clients in 27 countries around the world. SRC was the owner and operator of a SLOWPOKE-2 nuclear reactor that was operated safely for 38 years before being decommissioned. SRC also has extensive expertise in the nuclear and uranium sectors. Additional details are available on SRC's website at www.src.sk.ca.

Final step in Line 3 project underway

Decommissioning work begins in southeast Saskatchewan

Along a 1,097-km corridor—stretching underground across the Prairies from Hardisty, Alberta to the U.S. border at Gretna, Manitoba—is a new, 36-inch pipeline placed into service by Enbridge in October 2019.

With the above-ground pipeline right-of-way returned to its pre-construction condition, work to decommission the 'legacy' Line 3 continues in 2022.

"This is the final step toward completing the entire Line 3 Replacement Program in Canada," said Construction Manager Allen Sawatzky.

"We're done in most of Manitoba and this year we're focused on the remaining segments of Line 3 from Hardisty and throughout Saskatchewan to west of Cromer (Manitoba)."

The remaining decommissioning project will focus on three segments, beginning with the 255-km leg from Regina to Cromer, under general contractor Maxx North America Services Ltd.

Work in each segment will have a peak workforce of about 60, including crews of between seven and 10 construction and contract personnel.

"Decommissioning is a logistically challenging job," said Sawatzky.

"It's different than building a pipeline—you don't just work from kilometre zero to kilometre 100 in a straight line. You go back-and-forth, from site-to-site, and the particular job in Manitoba involved 31 different locations for segmentation, valve isolation and for installing engineered material in the pipe beneath railway and road crossings."

Between Regina and Cromer, there are 40 locations for segmentation, valve isolation and railway fill.

Once again, the toown of Moosomin will play a role in the decommissioning process.

"Moosomin is an important community for our work given its proximity to the Enbridge Mainline pipeline system," says Jon Harding, communication specialist with Enbridge. "Our crews will utilize goods and services in the town and district during the course of decommissioning but on a much smaller scale and duration than what was seen during Line 3 construction."

Contractors and Enbridge personnel remove a valve during Line 3 decommissioning near Morden, Manitoba. Small construction crews will be visible to the public doing similar work along the pipeline's right-of-way in southern Saskatchewan beginning in early June.

Decommissioning 101

A decommissioned pipeline is defined by the Canada Energy Regulator (CER) as one that is taken out of service safely and permanently while other existing or new pipelines in the same right-of-way continue to provide service to end users.

Enbridge has approval from the CER (formerly the National Energy Board) to decommission Line 3 in place, a standard practice which minimizes the potential effects on communities and the stability issues that surround soil disturbance.

"Leaving Line 3 in place avoids the added disturbance and significant construction activities that excavation and removal would bring," said Brett Fixsen, Supervisor, Maintenance Projects, at Enbridge.

"Leaving the line in the ground also reduces the risk of soil and slope instability as well as settlement and compaction issues that could compromise the safety of active pipelines sharing that right-of-way."

Line 3 decommissioning will involve cleaning, disconnecting, segmenting, filling the pipeline at strategic points and ongoing monitoring, even after decommissioning is complete.

Here is a look at the five steps involved in decommissioning:

1. Clean the pipeline: A combination of cleaning instruments (often referred to as 'pigs') and cleaning solution are used to wipe and clean the pipeline.

2. Disconnect the pipeline: The pipeline is physically disconnected and sealed off from active operational facilities, like pump stations, to prevent oil from re-entering the system.

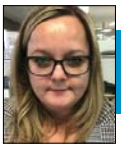
3. Segment the pipeline: Permanent physical barriers are created inside the pipeline to prevent the pipeline from acting as a conduit. This includes valves and permanent segmentation installations. Valves are closed and permanently disabled, and small pieces of the pipeline are removed so it can be sealed at select locations.

4. Strategically fill the pipeline: The line will be filled with an engineered material at railway crossings, which can also provide protection against water conduits.

5. Monitor the pipeline: Cathodic protection will continue to be applied to the decommissioned pipeline. It will be monitored with regular pipeline patrols, pipeline signs indicating exact location, and depth-of-cover surveys, and it will remain on Click Before You Dig program databases.

Why Canada will have the world's cleanest LNG

Canadian LNG exports are expected to replace coal power, primarily for growing markets in Asia, particularly China and India



Deborah Jaremko

In the world's race for cleaner energy to reduce greenhouse gas emissions, liquefied natural gas (LNG) from Canada has an advantage.

To start with, it comes with a smaller footprint – the lowest emissions intensity of LNG projects in the world. But why?

Canada leads among countries able to export natural gas to displace coal, with LNG that has a demonstrably cleaner environmental footprint.

This was affirmed by regulators in Washington state in 2019 when the permit for the new Tacoma LNG project included the requirement for it to source natural gas from B.C. or Alberta.

The Puget Sound Clean Air Authority found natural gas from Canada to have a cleaner footprint than natural gas produced in the United States, stating that methane emissions in the U.S. "may be as much as five times higher than those from Canada."

The Tacoma LNG project will enable container ships that transport goods between Washington and Anchorage, Alaska, to switch fuel from diesel to natural gas, and displace diesel used in the Puget Sound area electrical grid during periods of high demand.

Globally, Canadian LNG exports are expected to replace coal power, primarily for growing markets in Asia, particularly China and India.

Switching from coal to natural gas for electricity generation reduces emissions by half on average, according to the International Energy Agency. LNG from Canada can deliver an even bigger decrease, reducing emissions by up to 62 per cent, according to a June 2020 study published in the Journal for Cleaner Production.

"Not all LNG is created equal," researchers from the University of Calgary and the University of Toronto wrote in a report presented at the industry event GeoConvention 2021.

They compared the emissions intensity – or emissions per unit of LNG – of the LNG Canada terminal under construction at Kitimat, B.C., with American competitors, finding a lower footprint for the Canadian project.

According to Oxford Energy Institute, the global average emissions intensity for LNG is 0.35 per cent CO_2 per tonne. Once operating after 2025, LNG Canada is expected to have emissions intensity of less than half that, at 0.15 per cent CO_2 per tonne.

The proposed Indigenous-led project Cedar LNG would have emissions intensity of 0.08 per cent. Woodfibre LNG, which recently received the go-ahead, would have emissions intensity of 0.03 per cent.

There are four key reasons why Canada has the advantage: shorter shipping distances to customers, a colder climate, the use of hydroelectricity and methane emissions reduction.

Colder climate

Creating LNG from natural gas in cold climates is comparably easier than in warmer regions, saving energy and reducing emissions, the University of Calgary and University of Toronto researchers noted.

For example, the average temperature in Kitimat is much cooler (7C) than the U.S. Gulf Coast (22C in Corpus Christi, Texas), they wrote.

Shorter shipping distances

According to Natural Resources Canada, West Coast LNG projects in Canada are about 10 shipping days from Asia, compared to 20 days for shipments from the U.S. Gulf Coast that transit the Panama Canal.

Proposed projects in Eastern Canada are six to eight shipping days from Europe, the shortest distance of any North American LNG projects, Natural Resources Canada says.

Less time for LNG tankers in the water means less fuel use and lower greenhouse gas emissions.

Use of hydroelectricity

More than half of Canada's electricity comes from hydropower, helping reduce greenhouse gas emissions from the country's power grid, according to the Canada Energy Regulator.

LNG projects are expected to connect to the grid to use hydroelectricity to fuel either part or all of their operations, particularly as the new Site C project in B.C. comes online and makes more hydropower available.

Methane emissions reduction

Canada's oil and gas producers are leaders globally when it comes to reducing methane emissions.

Canadian Energy Centre research found that between 2000 and 2018, methane emissions from Canada's oil and gas sector fell by 16 per cent. Compare that to China and Russia, where methane emissions increased by 133 per cent and 47 per cent, respectively, at the same time.

The government of Canada expects oil and gas producers to meet the target of reducing methane emissions by 45 per cent in 2025 compared to levels in 2012.

A reduction of 34 per cent compared to 2014 has already been achieved in Alberta.

Canada's LNG could be preferred in the world, says Greg Owen, vice-president of Calgary-based GLJ Ltd.

"With our environmental and regulatory standards, I think we have a great LNG product. So let's get it done."

Deborah Jaremko is director of content for the Canadian Energy Centre, an Alberta government corporation funded in part by taxes paid by industry on carbon emissions.

Indigenous-owned Canadian LNG project advances

BY DEBORAH JAREMKO

There's been a big step forward for a major proposed Canadian liquefied natural gas (LNG) project that's seen as an opportunity for economic reconciliation with Indigenous communities and help to reduce global greenhouse gas emissions.

Partners in the Ksi Lisims LNG project, including the Nisga'a Nation, have applied for a 40-year LNG export licence and filed a detailed project description with regulators.

"The project has the potential to support the Nisga'a Nation and other Indigenous nations' goals of responding to climate change while allowing for economic development," the project description says.

Ksi Lisims would be a floating LNG project on B.C.'s northern coast, about two km from the Alaska border.

Its partners also include a consortium of British Columbia and Alberta natural gas producers called Rockies LNG and a subsidiary of Houston-based LNG developer Western LNG.

The project includes a natural gas pipeline originating in northeastern B.C. At full capacity, it would produce 12 million tonnes of LNG per year for exports primarily to Asian countries like China, Japan and South Korea.

That makes it only slightly smaller than the LNG Canada project under construction at Kitimat, B.C., which will have capacity of 14 million tonnes per year in its first phase.

The Nisga'a Nation has been working since 2014 to develop an LNG project in its treaty territory, it says.

"The Nisga'a Nation, like most rural Indigenous communities, struggles with consistently lower employment and labour force participation rates. Currently, a number of employment barriers exist for Nisga'a citizens living on Nisga'a lands including geography, low population density, and jobs which are typically lower-income, lower-skilled, and more vulnerable to economic downturns," the project description says.

"The direct and indirect economic benefits provided by the project will reduce social and economic disparities, improve the quality of life for all Nisga'a citizens, and enable the Nisga'a Nation to pursue economic self-determination."

Initial estimates are that across Canada the project will provide 21,000 employment opportunities, $890 million in annual provincial and federal tax revenues, and approximately $2.5 billion in annual gross domestic product.

The Ksi Lisims LNG project will be designed to operate with net-zero greenhouse gas emissions, which is important to the Nisga'a Nation, it says. This will be achieved by using renewable hydropower from B.C.'s electrical grid, using low-carbon Canadian natural gas that's subject to strong methane emissions regulations as LNG feedstock, and the short shipping time to Asian markets.

Global LNG demand is expected to nearly double in the next two decades, crossing 700 million tonnes in 2040 compared to 380 million tonnes in 2021, according to Shell's most recent outlook.

Startup for Ksi Lisims LNG is targeted by the end of 2027. The project is expected to require federal and provincial review, as well as an assessment under the Nisga'a Treaty.

Deborah Jaremko is director of content for the Canadian Energy Centre, an Alberta government corporation funded in part by taxes paid by industry on carbon emissions.

Saskatchewan potash mining facts

Saskatchewan potash is a critical mineral used worldwide as a replenishing agricultural fertilizer to feed the growing global population that is soaring towards an estimated 9.7 billion by 2050.

The potash industry contributes $8.3 billion to the GDP and pays $526 million in federal, provincial and local taxes.

For every direct job in the Saskatchewan mining industry, there are at least two jobs in the mining supply and service sector.

The industry directly employs 6,000 people in Saskatchewan with a total payroll of $800 million in salaries. The 2019 national average salary of employees in the Canadian mining industry was $123,000.

Saskatchewan potash companies invest in community initiatives, programs, and causes that enhance quality of life across the province.

$10.5 million has been invested in various communities and Indigenous partnerships.

Potash is a valuable resource that has a significant positive impact on the economy of Saskatchewan and its communities.

Saskatchewan has the largest and richest potash resources in the world, and could supply the needs of farmers worldwide for several hundred years. Saskatchewan has approximately half of the world's potash reserves.

Not only does potash nourish the Earth, it's also used to make industrial products and pharmaceuticals.

Three producing companies—K+S Potash Canada, The Mosaic Company and Nutrien Ltd.—operate 10 mines in the province. Seven mines are underground and three are solution operations.

21.8 million tonnes of potash were mined in 2020.

Mining is one of the safest industries in Saskatchewan, and in Canada. Total Recordable Injury Rate for Saskatchewan potash sector are 1.9.

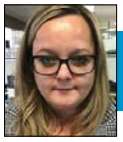
Saskatchewan potash is made with 50 per cent lower GHG intensity than potash produced by global competitors.

$1.4 Billion in goods and services is procured from Saskatchewan businesses, and $160 Million in goods and services is procured from Saskatchewan Indigenous businesses.

Saskatchewan did $5.5 billion in sales in potash in 2020, making it the number one potash producer in the world.

Surging global coal use highlights opportunity for Canadian LNG

There are 2,449 coal-fired plants operating around the world, 189 are under construction and a further 292 are planned for the near future



Deborah Jaremko

Coal use around the world is rising in what the head of the International Energy Agency (IEA) calls "a sobering reality check" for targets to reduce emissions.

Against that backdrop, global demand for liquefied natural gas (LNG) is soaring, in part because it can help displace coal power and reduce emissions by half – or more, if the LNG comes from Canada.

"Global electricity generation from coal this year will be the highest ever in history," IEA executive director Fatih Birol said at the virtual launch of the agency's latest report on the state of global coal in December 2021.

"The numbers are really worrying when you look at it from a climate change point of view," he said.

Total global coal consumption is now well above where it was before the Covid-19 pandemic, reaching a record 7.9 billion tonnes in 2021 compared to 7.8 billion tonnes in 2019, the IEA reports.

The growth is expected to continue, with consumption reaching a new high of eight billion tonnes in 2024.

IEA says it will be driven by India and China, where coal power is expected to increase despite the roll out of "impressive amounts" of solar and wind capacity to generate power.

There are 2,449 coal-fired power plants operating around the world, according to Global Energy Monitor. Another 189 are under construction, and a further 292 are in "pre-construction" or planned for the near future.

"This is a major challenge," Birol said. "In particular from the perspective of emerging and developing countries, where you see coal might be playing a critical role in providing electricity and keeping the affordability of electricity prices."

A solution is LNG or the global trade of natural gas by ocean tanker.

According to Shell's latest report, even with COVID lockdowns, world LNG demand rose to 380 million tonnes in 2021 from 360 million tonnes in 2020. That's expected to nearly double and cross 700 million tonnes by 2040.

Using natural gas instead of coal to fuel power plants reduces emissions by about 50 per cent on average, IEA says.

LNG from Canada can deliver an even more significant decrease, reducing emissions by up to 62 per cent, according to a 2020 study published in the Journal of Cleaner Production.

That's partly because Canada's LNG projects are expected to have the lowest emissions intensity – or emissions per unit of LNG—in the world.

The LNG Canada project under construction, for example, is expected to have emissions of 0.15 per cent CO2 per tonne of LNG, less than half the global average of 0.35 per cent, according to Oxford Energy Institute.

Proposed LNG projects in British Columbia that would use more hydroelectricity from the province's power grid are expected to have even lower emissions intensity: 0.08 per cent for Indigenous-led Cedar LNG and 0.03 per cent for Woodfibre LNG.

"We do have cheap, plentiful supplies of natural gas both in northeast B.C. and throughout Alberta, and we do have shorter shipping distances to Asia," says Ian Archer, associate director of gas, power and climate solutions with S&P Global.

"But what we have is very limited infrastructure to connect those two points."

Deborah Jaremko is director of content for the Canadian Energy Centre, an Alberta government corporation funded in part by taxes paid by industry on carbon emissions.