sherritt

2020
Climate Report

We believe that climate change is real and that it is directly influenced by human activity. We recognize that we have a role to play in helping to address the global climate challenge, which includes working to reduce our carbon footprint as well as supporting the transition to a circular and low-carbon economy. At Sherritt, we are responsibly producing and supplying the commodities that advance everyday life. Our minerals and technology are also enabling the transition to global decarbonisation.

This is Sherritt's first Climate Report. We have been developing innovative solutions for a low-carbon world, have been engaged in climate change–related risks mitigation activities, and have had suitable governance structures in place for some time. However, we recently developed a comprehensive climate strategy and targets and have determined to align our disclosures with the recommendations of the **Task Force on Climate-related Financial Disclosures (TCFD)**. These are the first steps in an ambitious journey to do our part to tackle climate change and position the enterprise for success in the low-carbon future.

"The world is facing the unprecedented challenge of radically reducing its carbon footprint and transitioning to a low-carbon future. Sherritt's Board of Directors is pleased to announce its ambition to achieve net-zero emissions by 2050. We plan to achieve this by understanding how climate change is expected to impact our operations and launching adaptation and resilience actions; reducing our total emissions through direct and indirect approaches; allocating resources to prioritize innovative technologies for the low-carbon economy, and that will help improve the environmental footprint of metals produced around the world; collaborating with our customers and supply chains; deploying technology to improve energy efficiency; and transparently communicating on our progress and performance. We believe that these commitments and the path outlined in this report demonstrate how we are part of the solution."
Leon Binedell – President and CEO, Sherritt International

Highlights

Our Targets

- Achieve net zero greenhouse gas (GHG) emissions by 2050;
- Reduce overall GHG emissions intensity from 2019 levels by 10% by 2030;
- Obtain 15% of total energy from renewable sources by 2030; and
- All operations independently verified to have achieved Level A in the Towards Sustainable Mining (TSM) **Climate Change Protocol** by 2024.

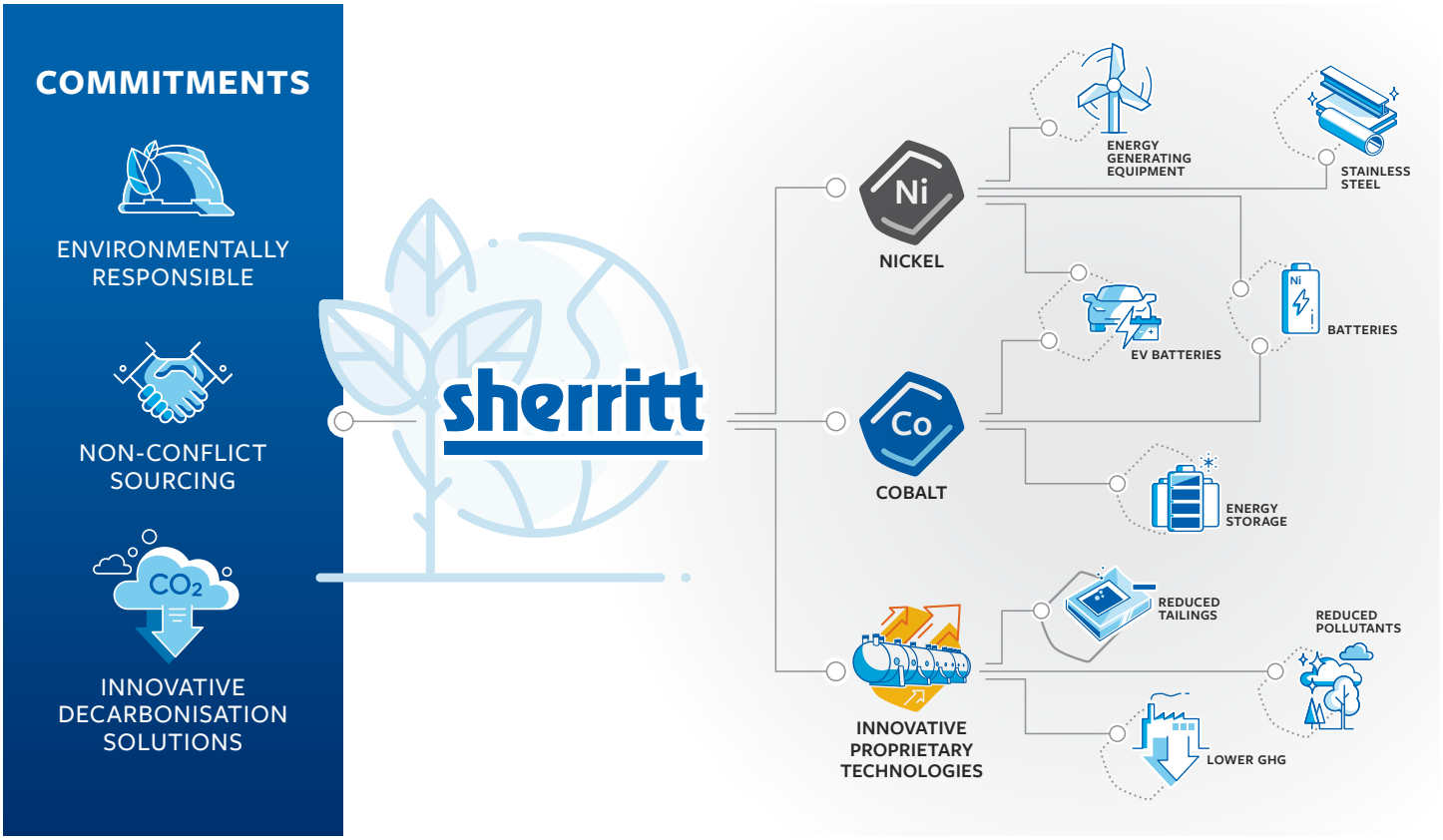
2020 Performance

- Sherritt experienced an overall decrease of 12% in Scope 1 GHG emissions compared to 2019, mainly due to a reduction in gas available for processing in the Oil, Gas & Power (OGP) Division;
- Conducted external benchmarking of climate strategies, plans and disclosures;
- Conducted internal workshops to develop a climate plan;
- Assessed disclosure recommendations related to the **TCFD** and started to develop a multi-year alignment plan; and
- Established aspirational and interim targets related to climate change.

How Our Products and Technologies Contribute to Global Decarbonisation

Canada's latest **climate plan** indicates that the Canadian mining sector will play a critical role in the clean growth economy. Canada and companies like Sherritt are key producers of many minerals such as nickel and cobalt that will be required for the global deployment of clean technologies.

Transitioning to a low-carbon future implies a significant uplift in demand for metals such as nickel and cobalt. These minerals are used in low-carbon and carbon neutral technologies such as electric vehicle batteries.



Governance TCFD

At Sherritt, we work to ensure that climate-related issues receive appropriate Board and management attention – our Board and senior management consider climate change–related risks and opportunities in the strategic planning process. Sherritt's climate-related disclosures are reviewed using internal governance processes and disclosure procedures that are similar to those used for financial disclosures.

Sherritt's **Board of Directors** (the Board) provides oversight on all strategic matters, including the risks and opportunities related to climate change. Sherritt's Board has an independent chairperson. The Board has established the Environment, Health, Safety and Sustainability (EHS&S) Committee, which is chaired by a member of the Board. Corporate officers and senior managers who establish priorities and plans for environmental, social and governance (ESG) programs provide this committee with quarterly updates on performance. The Committee meets and reports to the company's Board quarterly. Risk management and assurance activities associated with climate change are conducted through the Audit Committee of the Board. The mandate of the committees can be found on the Corporation's **website**. In 2021, changes to the committee structures are being proposed to consolidate several committees, to more clearly include review of climate-related issues and other ESG matters, and to address future assurance of climate-related disclosures.

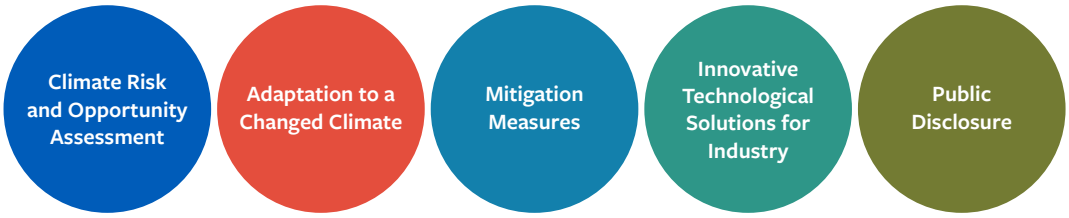
The Executive Vice President and Chief Operating Officer, who reports directly to the President and Chief Executive Officer, is accountable for climate change management. This position is also accountable for ensuring environmental, health, safety and sustainability performance meets corporate requirements, including implementation of the climate plan.

Management Approach

Sherritt supports the global climate change goals outlined in the **United Nations Framework Convention on Climate Change (UNFCCC)** and the **Paris Agreement**.

We recognize the important role we can play in the shift to a low-carbon economy and have established a climate plan with targets for reducing our carbon footprint and the mining industry's carbon footprint, with the ultimate goal of achieving net zero greenhouse gas emissions by 2050.

Figure 1. Sherritt's Approach to Climate Change



Assurance Related to Climate Change

Table 1 below indicates the types of internal and external assurance conducted on climate change disclosures. Following assurance, applicable management teams use the results to inform future actions and strategic plans. Beginning in 2022, we will report on our progress towards our climate goals on an annual basis in our Sustainability Report.

Table 1. Assurance Measures Related to Climate Change

Assurance Type	Organization	Items Reviewed
External	Mining Association of Canada: Towards Sustainable Mining assurance	• Energy use and GHG emissions management systems • Energy use and GHG emissions reporting systems • Energy use and GHG emissions performance targets
External	GHG Regulation Assurance (Alberta, Canada)	• Validation of GHG data reported and quantification of methodologies
Internal	Corporate internal audit	• Sustainability reporting systems

Strategy TCFD

The Executive Vice President and Chief Operating Officer is responsible for delivering our climate plan and overseeing the progress of related committees and task forces. In 2020, management established a new strategic initiative focused on building a sustainable organization. As part of this initiative, we initiated development of a climate plan. Management has also established aspirational and interim targets related to climate change.

Our plan to contribute to global climate action, to adapt to a low-carbon economy and to continue to responsibly produce the materials essential for society is built around five pillars:

1. Identify climate change–related risks and opportunities;
2. Adapt to a changing climate;
3. Mitigate impacts by reducing greenhouse gas emissions and improving energy efficiency;
4. Innovate with technological and operational solutions; and
5. Transparently disclose our progress.

Assessing climate change–related risks and opportunities is part of our risk management and strategy development processes. Effective and strategic management of climate change–related risks and opportunities across all aspects of our business is vital to our continued ability to operate.

Operational Implementation

When relevant, meetings chaired by the Executive Vice President and Chief Operating Officer include discussions on operational approaches to decarbonisation, including capital investments to improve energy efficiency and reduce GHG emissions, and strategies to incorporate more renewables into our energy mix. Our capital allocation processes prioritize the production of commodities essential to the transition to a low-carbon economy. Our **2020 Financial Results** details our approach to capital allocation.

We work with industry associations and partners to support predictable policy mechanisms aimed at achieving cost-efficient emissions reductions. We continue to strengthen our processes to incorporate changes in local regulations and carbon pricing sensitivities into our business planning for existing assets, innovation pipelines, new investments and as part of our marketing activities. Our ongoing work plan and the increasing requirements we place on our operations give substance to our corporate approach and commitments on climate change.

Other actions include utilizing technology to improve resource use and better manage our emissions. We are working to better understand the Scope 3 emissions of our products and suppliers through collaboration with our value chains.

All Sherritt operations are implementing the new Towards Sustainable Mining Climate Change Protocol. Plans are in place to complete gap analyses and develop implementation plans in 2021.

The Fort Site operates under a provincial GHG regulatory system. In 2019, the Fort Site created an Energy and Greenhouse Gas Improvement Plan. This plan evaluated several energy reduction projects to assess feasibility and value-add potential to the company.

In 2019, Sherritt joined a strategic energy management (SEM) program in partnership with **CLEAResult**, a leader in energy efficiency. The program is sponsored by Natural Resources Canada and supported by Energy Efficiency Alberta. The goal of the program is to develop and apply an energy management system to identify and implement energy improvement opportunities. In 2020, Sherritt worked with CLEAResult to create a list of energy initiatives, advance efficiency projects and develop a predictive model linking production and energy use. The SEM program is 24 months in duration and will wrap up in late 2021.

An initiative was launched in 2020 to increase the use of renewable energy at the Moa Nickel Site. To date, two electric vans have been delivered, with two more expected in 2021. Additional opportunities to electrify light vehicles are currently under review.

The Moa Nickel Site purchased electric forklifts and is exploring the use of electric buses for transporting personnel to and from work. Work has commenced on a feasibility study for the installation of a 20 MW solar panel power plant and of solar panels on the administration building. Solar panels are also being installed in remote camps to supply electrical power and lighting needs.

Innovation

Meetings chaired by the Executive Vice President and Chief Operating Officer include reviews of Sherritt's innovation pipeline and discussions on how our technologies can contribute to industrial decarbonisation efforts. Our **Technologies Division** is pursuing several promising innovations with a relatively low global warming potential for the mining and oil and gas industries, as described below.

1. Treatment of High-Arsenic Copper

   Arsenic is a poisonous element requiring costly treatment and handling. Current processing capabilities increase tailings and carbon emissions and render many copper mines uneconomic, while copper demand is expected to grow 28% in the next 10 years (Moncur, G., October 21, 2020, LME Forum Virtual Edition: Copper, Wood Mackenzie). When compared to traditional copper smelters, the benefits of Sherritt's hydrometallurgical process include extending the life of aging copper mines, making arsenic inert, zero direct carbon emissions, no atmospheric emissions of sulphur or arsenic, and facilitating employment and processing at the source, avoiding transportation emissions associated with exporting concentrates. We believe that this technology has the potential to enable the responsible exploitation of high-arsenic copper deposits, producing a key metal for global electrification – copper.

2. Bitumen Upgrading

   Bitumen is a heavy crude oil with limited uses. It requires pre-treatment, the addition of diluent, and post-delivery processing. The addition of diluent uses one-third of pipeline capacity, which costs the oil industry $13 billion per year. The benefits of Sherritt's full upgrading process include increasing pipeline capacity and eliminating diluent cost, reducing carbon emissions and slag waste, and allowing the introduction of clean hydrogen into the oil value chain. We believe that this technology has the potential to increase the value of oil in pipeline.

3. Other Initiatives

   Management is also exploring several shorter-term projects that have the potential to lower the carbon footprint of our products, such as the Moa Nickel economic cut-off grade project. Through improved resource modelling and mine planning at Moa Nickel, this project has the potential to maximize resource utilization and minimize the treatment of material with high acid consumption, thus managing our carbon footprint.

We are also investigating exciting green technologies such as green hydrogen. Stay tuned for more information.

Risk Management TCFD

The following table summarizes the risks and opportunities identified across the business, as well as the mitigating actions.

Table 2. Summary of Climate Change–Related Risks and Opportunities and Mitigation Measures

Risk and Opportunities	Mitigation
Regulatory developments Government regulatory developments in support of emissions reductions has the potential to affect operations due to restrictions in operating permits, energy regulations, or emissions caps.	We play an active and constructive role in public policy development on carbon and energy issues, both directly and through industry organizations such as the Mining Association of Canada, the Nickel Institute and the Cobalt Institute.
Carbon pricing Pricing carbon through direct taxes may create additional costs through the value chain, as well as providing opportunities to promote lower-carbon products. In addition, increasing demand for our mineral commodities is likely to drive higher prices, in turn offsetting increases to processing costs arising from the implementation of carbon pricing instruments.	We believe that, overall, our business remains resilient in the face of increasing carbon prices in Canada. We consider local regulations as part of our ongoing business planning for existing assets. We incorporate carbon price sensitivities into our operating plans and plan to incorporate carbon price sensitivities into capital investments, potential growth, and innovation decision-making processes. We are working with relevant industry organizations on developing life cycle analysis to calculate our commodities' carbon footprint and assess opportunities for reductions.
Changing climate patterns Extreme weather events, such as floods, hurricanes and droughts, as well as changes in precipitation patterns, temperature, sea levels, and storm frequency, can affect our sites' operating processes, related infrastructure and the local communities.	We monitor changing weather conditions and modify our operating processes and emergency preparedness as appropriate. The integrity of our assets is externally reviewed regularly, including operating facilities and tailings storage facilities, against the potential impact of extreme weather events. We plan to incorporate scenario-specific climate risk and adaptation measures into our business plans.
Access to capital Performance against climate objectives may impact our access to capital or insurance, increase the cost of financing or lead to divestment of our shares as investors migrate away from companies with lower ESG performance.	We launched a climate plan to enable us to meet our climate-related objectives and have also launched an ESG improvement task force to ensure that our disclosures and systems align with industry expectations. We maintain strong relationships with our lenders and continue to actively engage on ESG-related issues. We have a number of initiatives and specific targets underway to improve our ESG performance and remain relevant and attractive for investors. Furthermore, we are developing technologies to help the metals industry improve its ESG performance. Not only are our metals going to get greener, we are helping others produce greener metals too.
Product demand Variations in commodity use from emerging technologies, the move towards renewable energy generation, a circular economy, and policy changes may affect demand for our products, both positively and negatively.	We track and respond to downstream regulatory and technology developments. We believe that there are opportunities to continue to positively position our products and technologies to enable global decarbonisation. We work with customers to understand our current and planned ESG performance to remain relevant and participate in ever-improving ESG value chains.

Metrics and Targets TCFD

We are in the process of developing climate and energy management systems that will improve how we manage climate change–related risks and opportunities.

We are committed to reporting transparently on our progress in meeting our climate change objectives and to providing our Scope 1 and 2 emissions data in our Sustainability Reports. Details on our historical performance can be found in the **Performance Data Tables** of the 2020 Sustainability Report and in the Data Tables below.

We are considering how our climate change commitments can be further reflected in our governance and assurance structures, disclosure plans, and potentially the design of the relevant remuneration schemes for executive management.

GHG Emissions and Energy Consumption

Table 3 presents our Scope 1 and 2 emissions from our three operations. Multi-year data are provided in the Data Tables at the end of this report.

Table 3. GHG Emissions and Energy Consumption

2020	Year	Fort Site	Moa Nickel Site	OGP	Total
Scope 1 GHG emissions (kt CO_2e)	2020	334	602	1,062	1,998
	2019	335	556	1,402	2,293
Scope 2 GHG emissions (kt CO_2e)	2020	79	61	7	147
	2019	59	60	0	119

Scope 1 or direct emissions arise from sources owned or controlled by the organization.

Scope 2 emissions refer to indirect emissions generated from the purchase of electricity.

In 2020, Sherritt reported an overall decrease of 12% in Scope 1 GHG emissions compared to 2019, mainly due to the 24% decrease in emissions at OGP.

The **Technology Innovation and Emissions Reduction Regulation (TIER)** came into force in Alberta on January 1, 2020. Under TIER, Sherritt was given a facility-specific benchmark and assigned a 10% reduction target for 2020 emissions. The reduction target will increase by 1% each year starting in 2021. There are separate facility-specific benchmarks for ammonia production as well as for nickel and cobalt production. In 2020, Sherritt complied with TIER by purchasing technology fund credits paid to the province, supporting further reductions in Alberta.

In 2020, the Fort Site reported GHG emissions of 334 kilotonnes (kt) of CO_2 equivalent, which is comparable to 2019 emissions. Additionally, the Fort Site purchased 43 kt of technology fund credits (>10% of total emissions), paid to the province of Alberta, for its 2020 emissions. The Fort Site recorded a total energy consumption (including purchased electricity, fossil fuel and waste fuel consumption) of 5,033 terajoules (TJ) in 2020, which is a slight decrease from the previous year.

The amount of diesel used in 2020 at the Fort Site decreased by 75%, after seeing an anomaly in 2019. The increased use of diesel in 2019 was largely due to the use of rental air compressors while the electric compressor was being repaired.

The Moa Nickel Site produced 602 kt of CO_2 equivalent during 2020; this amount is comparable to the previous year. Moa Nickel consumed a total of 6,500 TJ of energy in 2020, including generated and purchased electricity as well as fossil fuel consumption (crude oil, diesel and natural gas). This represents a 6% increase over the previous year.

OGP reported the production of 1,062 kt of CO_2 equivalent during 2020 from its Boca de Jaruco, Puerto Escondido and Varadero facilities. This represents a 24% decrease from the previous year, due to a reduction in available gas for processing. The OGP operations reported a decrease in energy usage of 6% compared to 2019. OGP also flared 75 million m^3 of hydrocarbons associated with its oil production processes during the year, representing an increase of 14% from 2019.

OGP's preventive maintenance program ensures optimal operation of our equipment, and we conduct quarterly monitoring of emissions from our key sources to verify proper combustion. Our Oil & Gas operations have additional reporting metrics under the Global Reporting Initiative; please refer to the **Performance Data Tables** for this information.

Since 2007, Energas has generated well over one million **Clean Development Mechanism (CDM)** credits at the Varadero combined cycle power generation facility in recognition of its low GHG emissions relative to other sources of electricity in Cuba. While there are many benefits to the program, the relative administrative costs are significant and, due to Sherritt's financial constraints, our participation has diminished in recent years.

Sherritt's Scope 2 emissions are relatively low due to the significant generation of electricity at host sites in Cuba. Therefore, our Scope 2 emissions are of a lower order than our Scope 1 emissions.

2021 Plans

The following actions are already underway to continue progress in 2021:

- Begin work on operational climate risk and opportunity assessments;
- Continue to develop Corporate climate- and energy-related policies, management systems, and metrics;
- Assess opportunities to access clean technology funding; and
- All operations to complete gap analyses against the new Towards Sustainable Mining Climate Change Protocol and develop implementation plans.

Data Tables

The following tables, as well as additional information on key performance indicators, can be found in the 2020 Sustainability Report, within the **Performance Data Tables** section.

Table 4: Energy Consumption within the Organization

Disclosure Components	Year	Fort Site	Moa Nickel Site	OGP
Total fossil fuel consumption (TJ)	2020	4,302	6,251	29,031
	2019	4,362	5,873	28,714
Percentage of total fossil fuel consumption (%)	2020	85%	96%	97%
	2019	85%	96%	97%
Total electricity consumption (TJ)	2020	557	240	752
	2019	573	239	815
Percentage of total electricity consumption (%)	2020	11%	4%	3%
	2019	11%	4%	3%
Total waste fuel consumption (TJ)	2020	174	0	0
	2019	196	0	0
Total energy usage (TJ)	2020	5,033	6,491	29,783
	2019	5,131	6,112	29,529
Other sources of energy consumption				
Total coal consumption (TJ)	2020	0	0	0
	2019	0	0	0
Total fuel consumption from renewable fuel sources (solar, wind, etc.)	2020	Not applicable	Not applicable	Not applicable
	2019	Not applicable	Not applicable	Not applicable
Heating consumption	2020	0	0	0
	2019	0	0	0
Cooling consumption	2020	Not applicable	0	0
	2019	Not applicable	0	0
Steam consumption (tonnes)[1]	2020	0	4,602,000	0
	2019	0	4,383,666	0

1 The steam at the Moa Nickel Site is generated by burning fossil fuels and sulphur on site. The steam is consumed internally on site in the process and used to generate electricity.

Disclosure Components	Year	Fort Site	Moa Nickel Site	OGP
Energy sold				
Electricity sold (TJ)	2020	0	0	6,759
	2019	0	0	8,166
Heating sold (TJ)	2020	0	Not applicable	Not applicable
	2019	0	Not applicable	Not applicable
Cooling sold (TJ)	2020	Not applicable	Not applicable	Not applicable
	2019	Not applicable	Not applicable	Not applicable
Steam sold (TJ)[1]	2020	60	Not applicable	Not applicable
	2019	76	Not applicable	Not applicable

1 The steam at the Moa Nickel Site is generated by burning fossil fuels and sulphur on site. The steam is consumed internally on site in the process and used to generate electricity.

Table 5: Types of Fuel Use

Disclosure Components	Year	Fort Site	Moa Nickel Site	OGP
Fuel use of coal/lignite (metric tonnes)	2020	0	0	0
	2019	0	0	0
Fuel use of natural gas (m^3)	2020	112,158,000	9,473	708,798,600[2]
	2019	111,923,000	9,042	770,666,000
Fuel use of crude oil/diesel (m^3) (includes crude oil, fuel oil, jet fuel, heavy fuel oil, kerosene, etc.)	2020	580[3]	135,076	1,731[4]
	2019	2,397	122,935	3,119
Alternative fuel use (%)	2020	0%	0%	0%
	2019	0%	0%	0%
Biomass fuel use (%)	2020	0%	0%	0%
	2019	0%	0%	0%

2 The decrease in the use of natural gas at OGP in 2020 was due to a lack of available gas.

3 The amount of diesel used in 2020 at the Fort Site decreased by 75%, after seeing an anomaly in 2019. The increased use of diesel seen in 2019 was largely due to the use of rental air compressors while the normal electric compressor was being repaired.

4 The decrease in diesel consumption at OGP in 2020 was due to a reduction of staff and liquidity; diesel usage is linked to production.