Energy Management and GHG Emissions

Greenhouse gas (GHG) emissions have become a focus for Equinox Gold, the mining industry and society at large. Investors want to understand the risks to their portfolios from climate change, both 'physical risks', such as sea-level rise impacting sites close to the coast, and 'transition risks', such as increased cost of energy driven by carbon taxes or emissions-limiting regulations. Governments, investors and society are demanding industries become more energy efficient and move toward decarbonizing their operations by reducing their reliance on hydrocarbon fuels.

Government signatories to the 2015 Paris Agreement reached a landmark agreement to combat climate change and to accelerate and intensify the actions and investments needed for a sustainable low carbon future. According to the Intergovernmental Panel on Climate Change, global temperature increase must not exceed 1.5 degrees Celsius this century to avoid catastrophic impacts from climate change. To achieve this, global GHG emissions must be cut in half by 2030 and reach net-zero by 2050. All industries are expected to contribute positively to global efforts to both combat and adapt to climate change. At Equinox Gold we recognize that we have a role to play and we are developing short-, medium- and long-term energy and GHG targets.

Since 2020, the Company has been taking steps toward establishing a climate change strategy with the objective of reducing our energy consumption and GHG emissions. As a first step we are focused on maximizing energy efficiency at the site level, as this is also an important part of cost management. We use a systematic approach to identify the main sources of energy use and consequent GHG emissions at our mine sites, and use these data to set reduction targets and review and report on progress. Concurrently, we are investigating potential alternate energy sources for each site.

Equinox Gold is committed to sourcing power from renewable sources whenever feasible. All of our operations with the exception of Castle Mountain are on grid power. Power for Phase 1 of Castle Mountain operations is generated through diesel generators. We will switch to grid power for Phase 2 operations. At sites where grid power is not sourced from renewable energy sources such as hydro or solar, we are reviewing the potential to install our own clean energy power source, for example installing solar power plants at Castle Mountain and at some of our Brazil sites. We are also upgrading to energy-efficient trucks at some sites and implementing systems to monitor and more efficiently manage fuel consumption, and use a biodiesel blend (diesel blended with vegetable oil derived from soybeans) at our Brazil sites, which provides a 10% reduction in scope 1 emissions compared to diesel fuel.

2021 Performance

Establishing a management approach to GHG emissions and energy performance management was a focus for Equinox Gold in 2021. We defined governance policies, collected base line data, assessed risks, set short-term targets and enhanced internal and external reporting. We also formed the Energy and GHG Management Committee, comprising senior management from both our corporate and operations teams. Its mandate is to ensure we progress toward our objectives related to energy efficiency and GHG emission reduction.

In addition, we hired a third party to review the physical climate-related risks at all of our sites. The study looked at a 30-year time horizon and considered several parameters including drought, flood, increased risk of wildfires, sea level rise and temperature extremes. Our sites were considered at low risk for almost all these parameters, although higher risk of drought and wildfires were identified for Castle Mountain and Mercedes. We are working to ensure those sites understand these risks and have the necessary controls and resources in place.

A notable improvement in GHG efficiency occurred at Mesquite, where replacing the majority of the truck fleet with larger and more fuel-efficient trucks resulted in a GHG emissions reduction of 35% compared to the previous fleet.

Surpassing GHG Emissions Reduction Targets at Mesquite Mine

Equinox Gold set GHG reduction targets for the first time during 2021. Achieving these targets was part of the senior management compensation strategy. We believe setting – and achieving – annual GHG targets for improved energy efficiencies will provide the foundation for the processes and technical expertise required to achieve our long-term decarbonization goals.

Our initial short-term target was a GHG reduction of 11,412 tCO2e (tonnes of carbon dioxide equivalent), equivalent to 4.5% of the total 2020 tCO2e. Data analysis showed that more than 90% of Equinox Gold's potential GHG reduction could be achieved by replacing the truck fleet at Mesquite.

During late 2020 and throughout 2021, Mesquite replaced its fleet of 16 haul trucks, which were manufactured in 2007-2010 and powered by Tier 2 engines, with 10 new 2019 trucks with Tier 4 engines. Tier 4 diesel engine standards meet the strictest U.S. Environmental Protection Agency emissions requirement for off-highway diesel engines. They are designed to decrease emissions by essentially bringing off-highway equipment up to the same standards as highway trucks and buses. The new trucks are also larger than the previous fleet; because they can carry more rock per load, fewer haul trips are required.

The combination of fewer trips and trucks with cleaner burning engines provided a significant reduction in air emissions. The replacement achieved tailpipe emission reductions of 93% of particulate matter, 65% of nitrogen oxides, 90% of volatile organic compounds, 35% of sulfur dioxide and 35% of carbon dioxide equivalents.

These changes resulted in a total GHG emissions reduction of 35% compared to the previous trucks, a decrease of 12,457 tCO2e during 2021. This single project exceeded the companies GHG reduction target set in early 2021. The company's total GHG saving was almost 13,000 tCO2e, more than 10% better than the reduction target.

During the year, we made progress on plans to use solar and wind power at several of our Brazil sites, which would reduce GHG emissions and result in cost savings. We also advanced studies reviewing the potential to use solar power at Castle Mountain.

In 2021, we also created a new energy and GHG emissions dashboard that allows our teams to observe and track trends over time, and reported our GHG emissions data for the first time to the Carbon Disclosure Project (CDP). The report is available in the Our Environment section of our website.

What's Next

Our 2022 target is to achieve TSM Level A rating for 75% of the indicators of the Climate Change protocol across all operations. We will continue to advance studies and projects to achieve efficiencies in energy use with the intention of improving the GHG emissions intensity of our operations. We will also develop energy management standards to help our sites improve their energy efficiency and promote a culture of energy awareness.

We have initiated work to understand the costs associated with a range of percentage GHG emission reductions by 2030 compared to "business as usual" across the Company's portfolio of assets. We will develop a cross-company GHG abatement plan and expect to set short-, medium- and long-term reduction targets in 2022. We have also initiated scoping studies to determine abatement potential and costs, and will run GHG emissions workshops at our sites as first steps to achieve this goal.

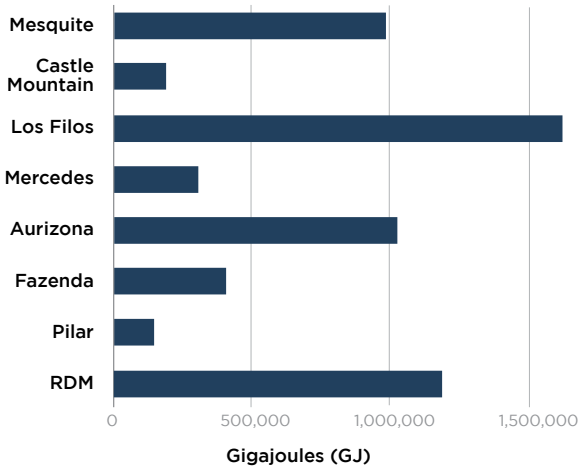
A detailed discussion of the risks and opportunities identified through a third-party risk review and the short-term GHG targets we have established will be available in our first Task Force on Climate-Related Disclosures (TCFD) report, to be published in 2022.

Energy Consumption

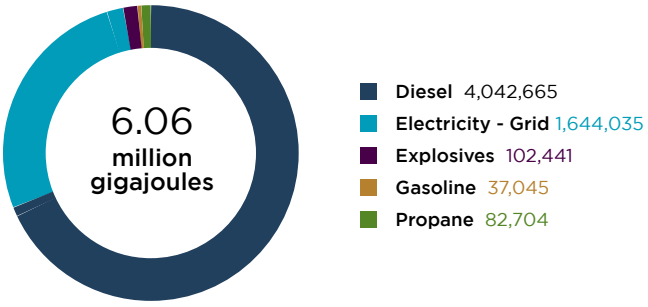
In 2021, our total energy use was 6.06 million gigajoules (GJ), as summarized below by both source and site. These data include energy consumption from operations activities and exclude energy consumption related to construction activities at Santa Luz and Greenstone. Diesel used in haul trucks for open-pit mining is the largest energy consumer at our sites.

Electricity is used at our heap leach operations to pump barren solution to the heap leach pads, and is used in milling operations to crush and grind rock to liberate gold. RDM had the highest energy intensity in 2021 due to a significant stripping campaign to provide better access to the ore zone, which increased the amount of energy used to remove waste rock compared to gold produced.

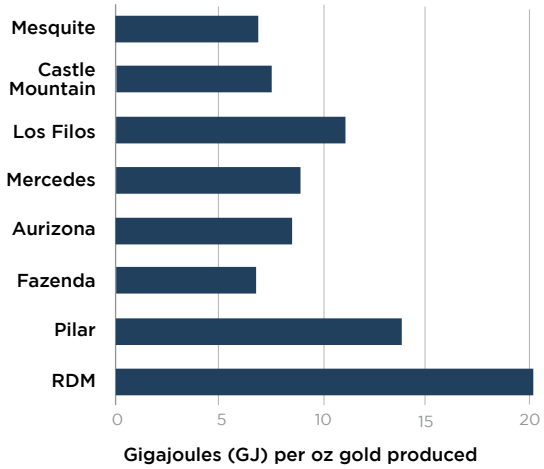
2021 Energy Consumption by Site (GJ)



2021 Energy Consumption by Source (GJ)



2021 Energy Intensity by Site* (GJ per oz gold produced)

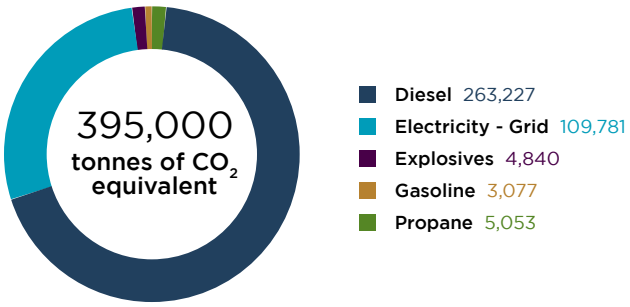


* Energy consumption (GJ) by sites that were in production in 2021.

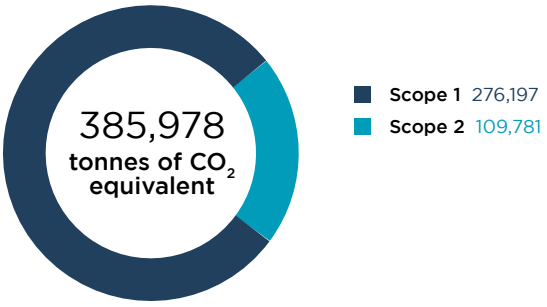
GHG Emissions

Our GHG emissions in 2021 were 395,000 tCO2e (tonnes of carbon dioxide equivalent), as summarized below by both source and site. These data are calculated by multiplying the energy consumption by the current emission factors that are specific to each fuel source. We have used the factors available in the TSM Energy and Greenhouse Gas Emissions Management Reference Guide. Fuel composition and associated emission factors vary between countries, most significantly in Brazil where using a 10% biodiesel blend results in a reduction in Scope 1 emissions. With respect to electricity, our Brazil sites and Mesquite Mine benefit from receiving power from a relatively clean grid source (greater portion of renewable power sources), although a drought in Brazil in 2021 led to a decrease in hydroelectric generation, which was replaced by natural gas fired power plants.

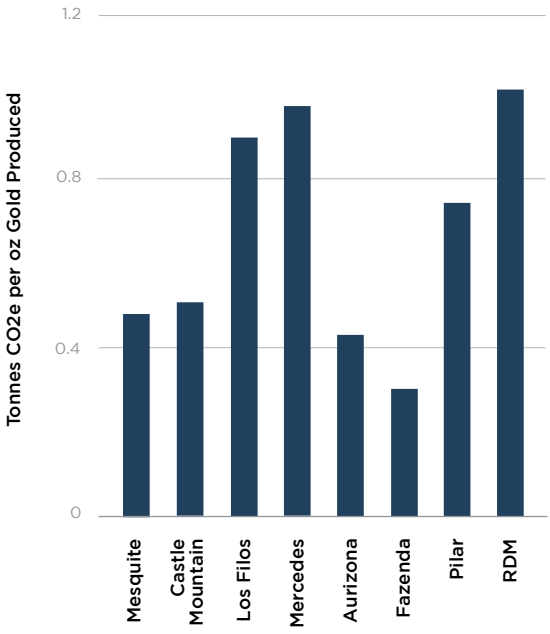
2021 GHG Emissions by Source (tCO2e)



2021 Scope 1 and Scope 2 Emissions (tCO2e)



2021 GHG Emissions Intensity by Site* (tCO2e per oz gold produced)



* GHG emissions from sites that were in production in 2021.

2021 Scope 1 and Scope 2 Emissions by Site (tCO2e)