Our Progress towards Decarbonisation

GRI 3-3

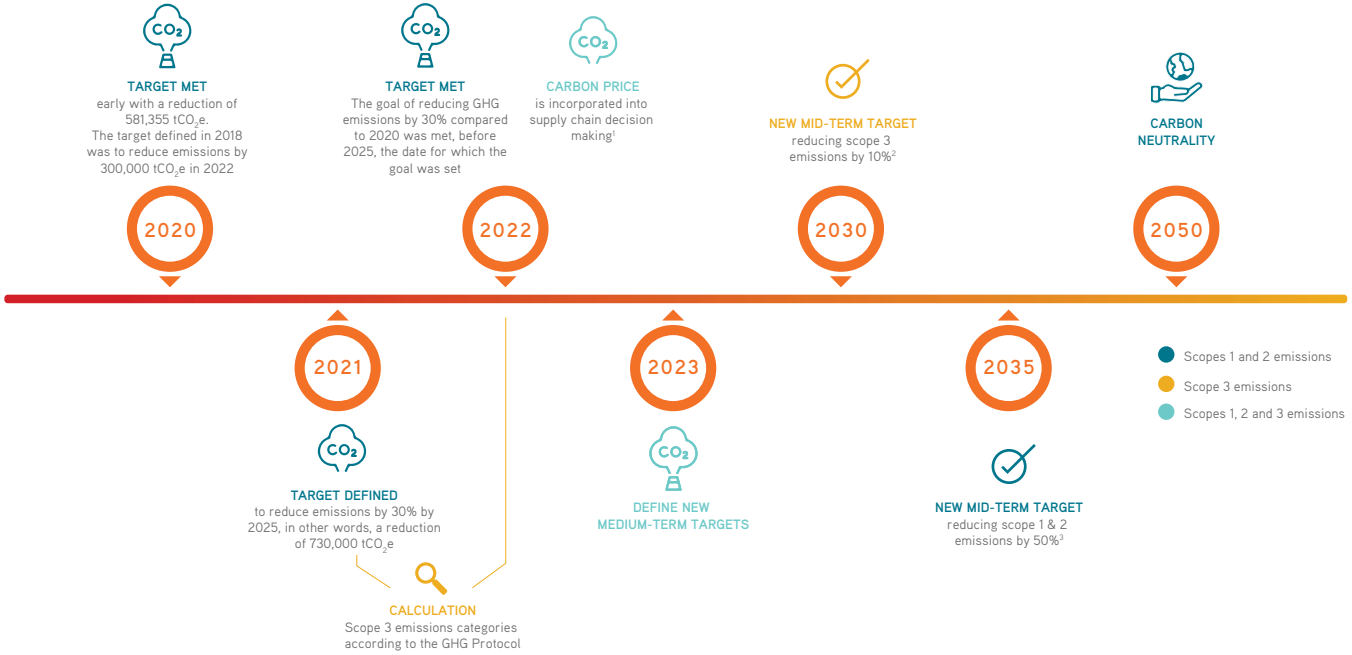
At Antofagasta we have the ambition to reduce our Greenhouse Gas (GHG) emissions in the short and medium term, and to achieving carbon neutrality by 2050, or sooner if technology allows. Our comprehensive approach to decarbonisation involves our mining site operational teams, our corporate teams and our suppliers.

Scope 1 & Scope 2[1] 2035 goal	Scope 3[2] 2030 goal
50%	10%
emissions reduction with 2020 as baseline	emissions reduction with a projection baseline using 2022 emissions criteria

Concurrently, we are aligning our technological needs with the operational requirements of our mine plan. This includes strategic procurement and replacement of extraction trucks in synchrony with our plan's requirements, with a 2027-2035 horizon.

The integration of the fleet renewal and the decarbonisation plan presents an opportunity where renewing equipment enables a gradual and cost-efficient transition into electrification. With a lens focused on long-term viability, we assessed emerging technologies' availability that allows us to solve the challenge of charging the equipment, with a substitute for diesel or a battery without generating stoppages or impacts on the availability of that equipment. Among those solutions, we particularly focused on dynamic charging, which would allow us to electrically charge the truck while moving. Another key factor to consider when choosing technologies is their potential to deliver economic benefits today, as well as considering their potential to enable other technologies such fully electric vehicles

1. Scope 1 includes direct CO_2 emissions from diesel or petroleum consumption across our operations. 90% of our Scope 1 emissions come from our mining equipment. Scope 2 concerns indirect emissions from electric energy consumption across our productive processes. All our mining operations have renewable energy contracts.
2. Scope 3 refers to other indirect emissions from our value chain. In 2022, Scope 3 represents around 75% of the Group's carbon footprint. This percentage encompasses location-based emissions.



1. See our Second Climate Change Report on our website for further details.
2. Against 2022 no action scenario projection.
3. Against 2020 baseline.

in the future. This process allows us to select technological solutions that meet immediate needs and are scalable for future enhancements. We have defined clear design principles for the transition, such as introducing dynamic charging from 2027 onwards and potential upgrades to batteries in vehicles requiring engine rebuild from that date forward.

To accomplish our goals, we have developed specific partnerships. Our agreement with key Equipment Manufacturers (OEMs) allows us to collaborate in low-carbon technology trials and jointly build transition plans for critical equipment. During 2023, we updated the decarbonisation plans for our main pits, where these technologies have the potential to add value to the business. In this way, we are able to establish a new medium-term target for the year 2035.

For further information, please visit our Climate Action Plan.

In 2023, we continued our work to incorporate carbon emission indicators into our large project decisions, integrating the entire organisation into our decarbonisation plan. We conduct thorough analyses to establish whether a large purchase or investment may have a positive or negative impact on our path to decarbonisation.

Decarbonisation initiatives are becoming an increasingly relevant aspect of financial evaluation packages.

We strive to reduce our carbon footprint. As part of these efforts, we have worked with:

1. Equipment manufacturers to incorporate technology solutions, targeting a reduction in our direct emissions.
2. Since April 2022, all our mining operations have had renewable energy contracts (Scope 2), and
3. Our suppliers within Scope 3 to include sustainability and carbon footprint reduction into their processes

For further information on suppliers, please refer to the Responsible Supply section in Chapter 4 of this Report.

A Pioneer Joint Effort to Measure Scope 3 Emissions

In August 2023, Antofagasta Minerals, together with other major mining companies operating in Chile, formed the first Scope 3 Emissions Traceability Roundtable. This is a pioneering initiative in the mining industry and seeks to unify efforts concerning the measurement of emissions within the value chain. One of the expected results will be a Scope 3 Measurement Guide for the copper sector.

This initiative is directed by Alta Ley Corporation, an organisation that seeks to promote and foster the development of the mining sector, and to improve the competitiveness and sustainability of the mining businesses. One of the main objectives is to advance in the homologation of existing standards and methodologies, and to promote capacity building through a process of collaborative work between mining companies and their suppliers.

Antofagasta, Working Together with ICMM

In December, ICMM published guidance to support mining and metals companies in setting relevant short-, medium-, and long-term targets to reduce their Scope 3 emissions; we were part of the initiative. The Scope 3 Emissions Target Setting Guidance highlights the importance of transparency and engagement with suppliers, customers, investors and regulators in setting targets, with the purpose of accelerating emissions reduction throughout the value chain.

According to ICMM, the Guidance establishes a robust framework for companies to enhance their targets as their capabilities mature over time. It sets out leading practices across four maturity stages, with each stage outlining minimum expectations across five key dimensions: accounting and reporting, identification of emissions 'hotspots', business integration and alignment, assessment of decarbonisation pathways, and organisational governance.

For further information on climate change, please refer to the Collaborative Solutions to Shared Challenges section in Chapter 2 of this Report.

Workers at Los Pelambres

Operational CO_2e Emissions (tCO_2e)[1]

	Los Pelambres	Centinela	Zaldívar	Antucoya	Corporate Offices (Santiago and London)	Mining division
Scope 1 – Direct emissions						
2023	**271,281**	**551,766**	**132,813**	**232,316**	**210**	**1,188,386**
2022	250,545	529,075	128,440	205,332	189	1,113,581
2021	226,199	439,484	156,500	165,641	124	987,948
2020	257,801	492,496	152,340	152,577	108	1,055,322
Scope 2 – Indirect emissions (market based)						
2023	**0**	**0**	**0**	**0**	**16**	**16**
2022	93,142	1,634	0	0	460	95,236
2021	286,848	556,616	0	124,467	894	968,825
2020	334,376	542,020	86,563	120,087	603	1,083,649
Scope 2 – Indirect emissions (location based)						
2023	**276,215**	**349,926**	**90,703**	**75,592**	**1,011**	**793,447**
2022	306,056	438,788	121,063	94,283	460	960,650
2021	466,381	556,616	163,530	124,467	894	1,311,888
2020	464,492	542,020	162,688	120,087	603	1,289,890
Total emissions (Scope 1 and 2)						
Market based						
2023	**271,281**	**551,766**	**132,813**	**232,316**	**226**	**1,188,402**
2022	343,687	530,709	128,440	205,332	649	1,208,817
2021	513,047	996,100	156,500	290,108	1,018	1,956,773
2020	592,177	1,034,516	238,903	272,664	711	2,138,971
Location based						
2023	**547,496**	**901,692**	**223,516**	**307,908**	**1,221**	**1,981,833**
2022	556,601	967,863	249,503	299,615	649	2,074,231
2021	692,580	996,100	320,030	290,108	1,018	2,299,836
2020	722,293	1,034,516	315,028	272,664	711	2,345,212
Emissions intensity CO_2 tCO_2e/tCu[2]						
Market based						
2023	**0.90**	**2.28**	**1.64**	**2.99**	**–**	**1.69**
2022	1.25	2.14	1.44	2.59	–	1.75
2021	1.58	3.63	1.78	3.69	–	2.56
2020	1.65	4.19	1.79	3.44	–	2.79
Location based						
2023	**1.82**	**3.73**	**2.76**	**3.96**	**–**	**2.83**
2022	2.02	3.91	2.81	3.78	–	3.21
2021	2.13	3.63	3.64	3.69	–	3.00
2020	2.01	4.19	3.27	3.44	–	3.00

1. Tonnes of carbon dioxide equivalent.
2. Tonnes of CO_2 equivalent per tonne of copper produced.

For further information on GHC emissions and GRI 305-1 to 305-5, please refer to our 2023 Sustainability Databook.

Electromobility for Decarbonisation

We began developing our decarbonisation plan with a detailed analysis to determine the best technological alternatives to begin the journey towards the decarbonisation of our operations, with a specific focus on replacing diesel fuel in mining haulage trucks and in our ancillary equipment. We studied different low carbon emissions technologies among which are: dynamic charging solutions, electric batteries, green hydrogen and e-fuels. We also integrated collaborative projects in which Antofagasta Minerals has participated, such as Charge On and the Hydra Consortium; we concluded that electrification is currently the best solution for our operations. Although it currently prioritises electrification, our Company is open to integrating adjustments or other compatible technologies available in the future. The Climate Action Plan has been designed to be flexible as we expect that the industry will evolve quickly presenting different solutions for all operational processes.

To achieve our decarbonisation targets, we must develop our knowledge of critical enabling elements that will be required for safe and sustainable energy transition. During 2023, aiming to deepening our knowledge of battery powered equipment, we developed and implemented agreements that included electric vehicles into our current services, such as, the largest battery pickup fleet in Chilean mining industry. We also purchased eight electric ancillary equipment for material movement contracts which will help us develop and experience the operation, charging and maintenance of battery equipment in real mining conditions.

In June, Centinela put the largest fleet of electric pickup trucks in Chile into operation. A total of 50 vehicles began work on the site using energy from 100% renewable sources. This initiative helps Antofagasta Minerals build the foundation to accelerate the transition of all pickup trucks, sharing operational performance and developing critical knowledge for the Group.

As we continue to develop electric technologies into our process, we have identified electrical infrastructure as being a critical enabler that will be required to support this transition, hence Antofagasta Minerals has been reviewing the suitability of our four companies' energy nodes for electrification of all vehicles and distribution centres in an attempt to establish whether the network and distribution points in northern Chile are prepared for this simultaneous demand. At the national level, infrastructure development and timely availability is critical to enable the industry´s energy transition.

In 2023, following the threefold drop in the cost of green energy over the past decade, and with Board approval, we began the manufacturing and pilot implementation of dynamic charging solutions, and will commence testing a trolley system for haul trucks at Los Pelambres.

Testing the operational impacts of electric powered trolleys will give us the information required to evaluate different designs of our mine plans. Integrating trolley technologies with battery powered drive trains could potentially be the answer for reducing Scope 1 emissions, as well as lowering operational costs. Currently, we believe electrification shows the biggest potential to deliver cost-effective solutions in the next few years, therefore, Antofagasta Minerals has developed an extensive programme of trials to support our decarbonisation plan.

For further information, please visit our Climate Action Plan.

Centinela´s electric front loader