
GREEN ACCOUNTING
ENVIRONMENT
COMMUNITY
20
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NORÐURÁL

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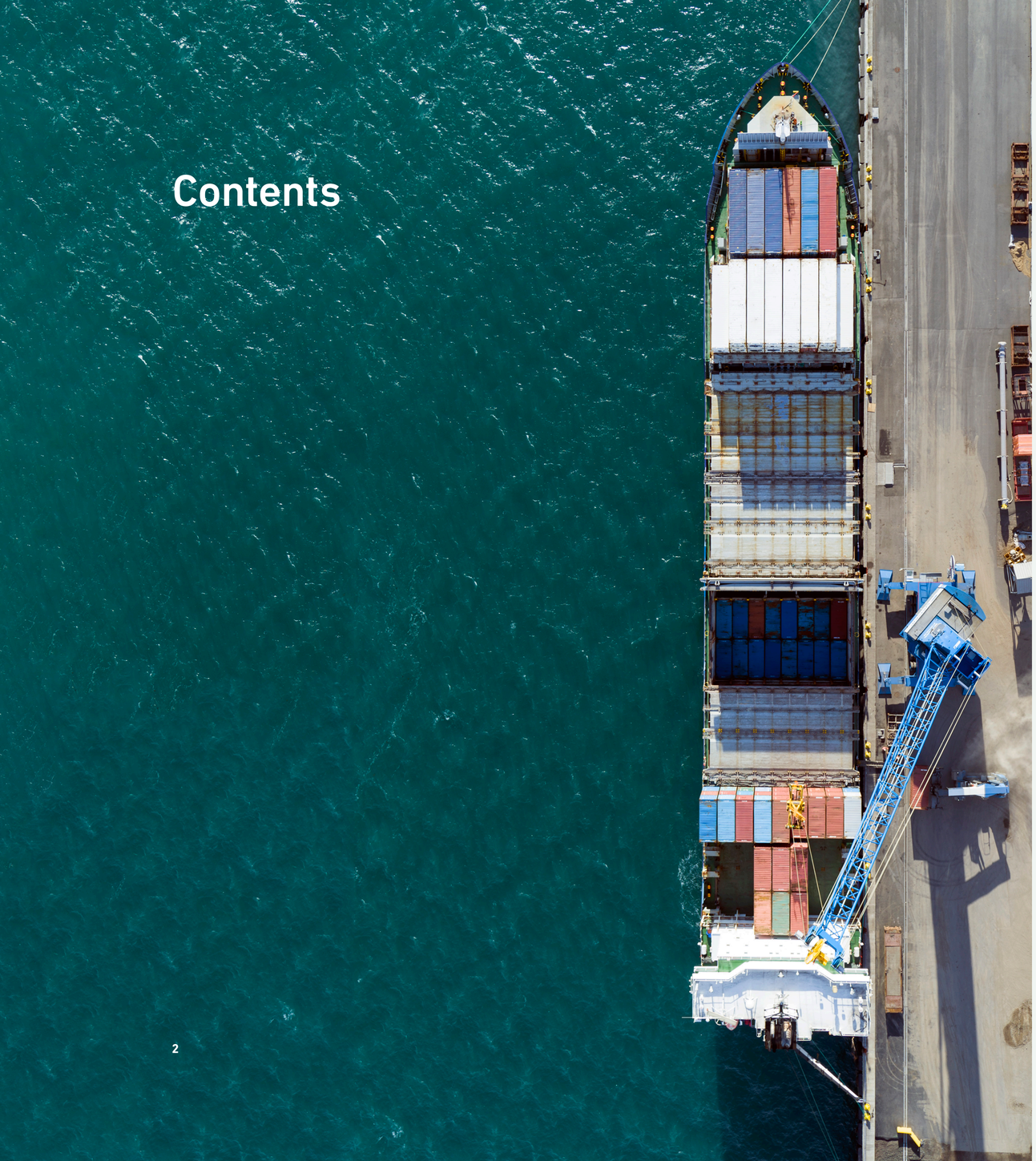
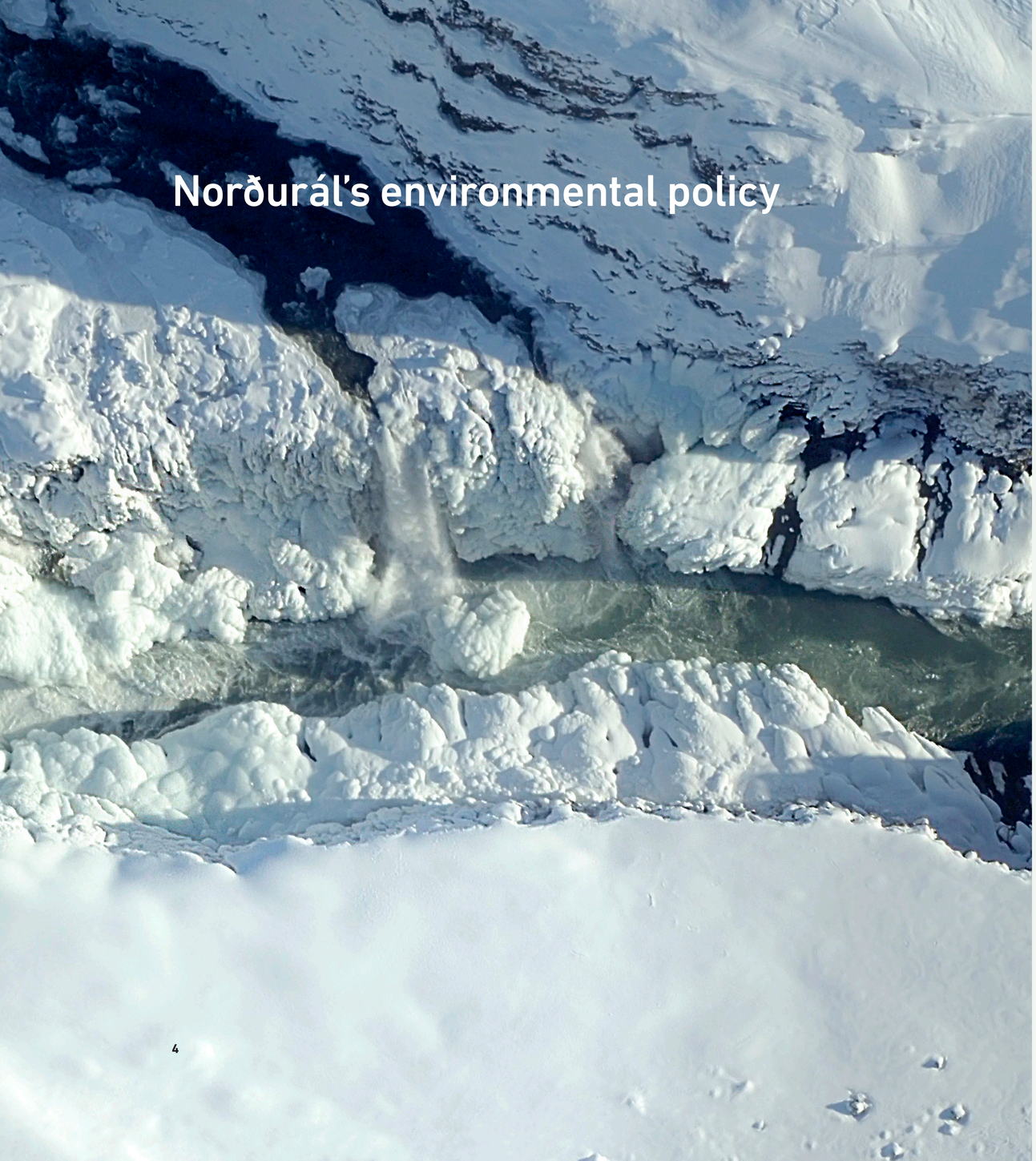


A clear environmental awareness and ambition delivers results

Norðurál has been successful in limiting greenhouse gas emissions, reducing wastefulness and improving the efficient use of raw materials. These results can be achieved with great employees and stability as well as by using environmentally friendly sources of energy. A clear environmental awareness is of key importance in all stages of the production, from the acquisition of supplies in faraway countries to the optimum use and recycling of all raw materials.

Green Accounting is an important tool for obtaining and maintaining these results.



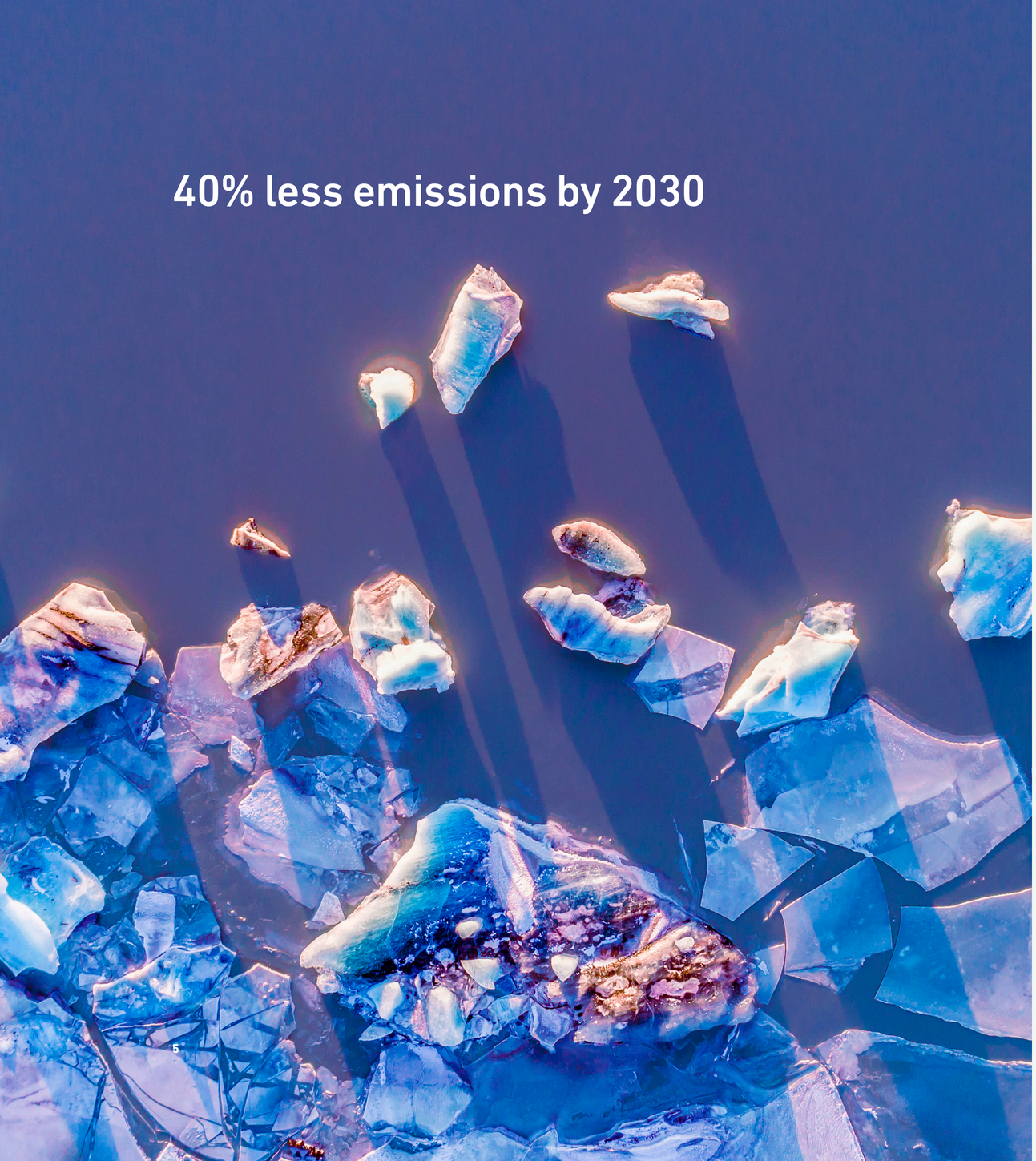
Norðurál's environmental policy

It is of importance for Norðurál that its activities be in harmony with the environment. The company constantly strives towards minimizing the environmental impact and a responsible use of energy and raw materials. Greater environmental awareness among the employees and their participation in making improvements is encouraged. The company meets the environmental requirements set out in the operational license, laws and regulations.

These are our environmental goals:

- **Minimizing emissions**
- **Employee awareness of the operations environmental impact**
- **Responsible recycling and disposal**

40% less emissions by 2030



We have set ourselves an ambitious goal regarding greenhouse gas emissions. By 2030 we plan to have reduced emissions outside of the ETS by at least 40% compared to 2015. At the same time we aim to reduce the burial of mixed waste by at least 40%.

We created an action plan and have already achieved great results. Greenhouse gas emissions have dropped 29% and waste volume by 2%. These results are an incentive for Norðurál's employees to continue to work on reducing the environmental impact of the operation.

See further here >

Green accounting 2020

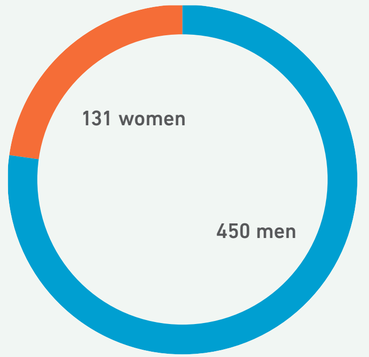
Green accounting is a detailed list of all materials reaching the aluminum smelter and departing from it. Our aim is to utilize all raw materials as efficiently as possible and to fully account for what happens to all hazardous materials.

Green accounting directly and indirectly improves corporate environmental culture. It encourages more careful handling of hazardous materials and makes it easier for the employees to seek new ways to reduce emissions and waste as well as to reduce the occurrence of incidents that could negatively impact the environment.

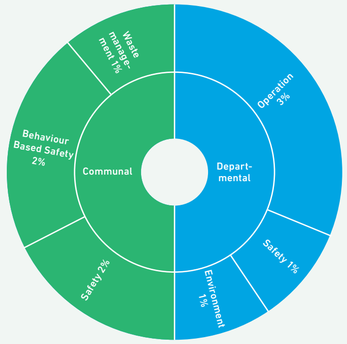
Employees, raw materials and resource consumption

Quantity	2018	2019	2020	Unit
Employees	598	570	581	
Electricity	4,639,000	4,654,000	4,626,000	Mwh
Oil	565,413	479,456	466,822	litres
Gas	89	62	33	tonnes
Fresh water	173,958	185,277	180,611	m3
Sea water	7,884,000	7,884,000	7,884,000	m3
Total raw materials used	2.38	2.37	2.37	t/t Al
Imported raw material	2.38	2.37	2.37	t/t Al
Hazardous substances (solid)	616,553	611,646	605,101	tonnes
Hazardous substances (liquid)	591,594	503,839	493,990	litres
Misc. packaging	< 400	< 400	< 400	tonnes

We have set ourselves the goal to increase the ratio of women within the company. In 2017 women were 13.3% of Norðurál's workforce while in 2020 the ratio was 22.5%. This development will continue.



Emissions and Waste management

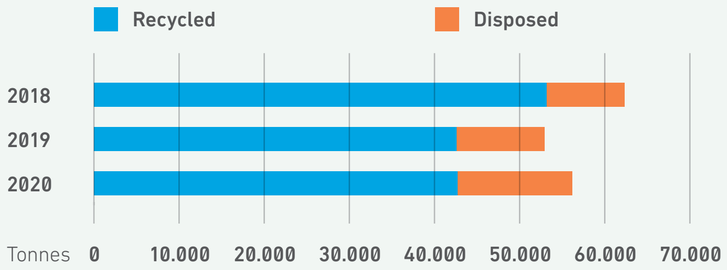


All Norðurál's employees receive bonuses linked e.g. to the company's environmental performance. We believe that through alertness and awareness of our impact on the environment we can constantly improve ourselves in big as well as small ways. The bonus amounts to 10% of the salary, 50% of which is department-related results and 50% our joint achievements.

Quantity	2018	2019	2020	Unit
Atmospheric emissions				
Fluoride (gaseous and particles)	0.38	0.38	0.38	kg/t Al
Sulphur dioxide SO_2	9.37	10.83	8.64	kg/t Al
Dust	0.73	0.74	0.70	kg/t Al
Carbon Dioxide CO_2	1.49	1.49	1.50	t/t Al
Fluorocarbons, PFC CO_2 equivalents	0.12	0.14	0.14	t CO2 íg. /t Al
Polyaromatic hydrocarbons PAH_{16}	0.000024	0.000024	0.000058	kg/t Al
Release into surface water/groundwater/sea				
Sludge	0.06	0.04	0.07	kg/t Al
Oils/fats in cooling agents from potroom and rectifiers	< 0.5	< 0.5	< 0.5	ppm
Release into municipal sewage system				
From septic tanks	7.3	7.5	8.4	tonn
Waste disposal				
Compactable waste	0.45	0.50	0.50	kg/t Al
Dumping to seashore repository	28	32	36	kg/t Al
Recyclable waste				
Anode waste and coal dust	137	108	109	kg/t Al
Aluminum slag	9.0	8.1	8.8	kg/t Al
Wood	0.9	1.1	1.0	kg/t Al
Scrap metal	2.2	2.3	2.1	kg/t Al
Cardboard	0.09	0.12	0.12	kg/t Al
Plastic	0.02	0.03	0.04	kg/t Al
Waste material for disposal				
Total waste	0.03	0.01	0.02	kg/t Al

Waste management

Responsible waste management



Quantity	2018	2019	2020	Unit
Material from the sewer				
Sludge	20.0	13.3	21.2	tonnes
Other waste (from septic tanks)	7.3	7.5	8.4	tonnes
Recyclable waste				
Anode butts	41,978	32,670	32,769	tonnes
Carbon dust	1,352	1,300	1,266	tonnes
Bath material	2,220	2,648	2,888	tonnes
Aluminum dross	2,846	2,568	2,762	tonnes
Busbarstonnes	3,050	1,928	1,986	tonnes
Anode stub metal	637	98	-	tonnes
Scrap iron	700	721	645	tonnes
Timber		333	307	tonnes
Cardboard	30	38	38	tonnes
Plastic	7	11	13	tonnes
Waste oil	17	16	29	tonnes
Rubber tires	3.8	4.9	1.7	tonnes
Batteries and electronics	4.7	4.2	5.1	tonnes
Textile	1.2	1.1	4.1	tonnes
Light bulbs	0.02	0.19	0.20	tonnes
Oil contaminated waste	7	7	9	tonnes
Asphalt	5	217	-	tonnes

Mixed waste increased in volume by 3% year on year. This is attributed to infection prevention and the use of personal protective gear against Covid-19. We will continue our efforts to reduce waste in this category which now is 2% down compared to 2015. Our aim is to reduce mixed waste by 40% by 2030.

Waste management

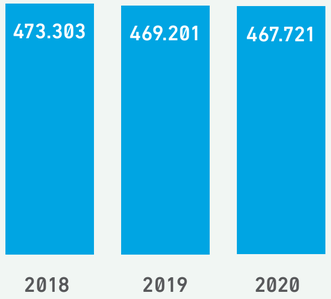
Quantity	2018	2019	2020	Unit
Toxic waste				
Electronics – toxic waste	0.4	0.04	0.00	tonnes
Toxic waste	7	4	4	tonnes
Paint	0.7	0.5	0.8	tonnes
Substances in flood pits				
Spent potlining	5,522	7,449	8,289	tonnes
Carbon from rodding shop	1,277	1,156	1,275	tonnes
Carbon from pot rooms	1,480	1,110	1,224	tonnes
Dust from sweeper	6	-	-	tonnes
Residual refractory material	537	412	498	tonnes
Spent refractory material	41	58	121	tonnes
Earth materials	161	43	-	tonnes
Solid waste				
Waste for compacting		158	157	tonnes
Organic waste	6	7	8	tonnes

A flood pit is used to dispose of solid unusable materials such as spent potlining and carbon. Sea water flows through the pit due to tides, the flood pit is demarcated by a rock wall that prevents solids from reaching the sea. Shell sand is used to neutralize fluoride and dilute other materials.

Emissions into the air

Quantity	2018	2019	2020	Unit
Substances				
CO_2	473,303	469,201	467,721	tonnes
CF_4/C_2F_6	39,101	45,530	43,137	t CO_2 equivalents
SO_2	2,973	3,421	2,700	tonnes
Polyaromatic hydrocarbons	7,6	7,5	18,1	Kg
Fluorides in total	120	121	120	tonnes
Dust (PM10)	233	235	218	tonnes

CO_2 emissions in tonnes



CO_2 emissions directly attributable to Norðurál's production processes are subject to the EU's Emissions Trading System (ETS) whose regulations and goals of decreasing greenhouse gas emissions must be observed. During phase three of the ETS (2013 – 2020) Norðurál has purchased CO_2 quotas for ca ISK 1.8 billion.

The use of toxic and hazardous substances (Xn, T, Tx, C, Xi, E, Fx, F, O, N)

Quantity	2018	2019	2020	Eining
DAG 2671 (O, T, N)	-	-	-	litres
DAG 554/20 (C, N, Xn)		16,875	19,540	litres
Plicast strong mix	115	128	152	tonnes
Ramming paste (T)	576	708	758	tonnes
Flange paste (T)	1,643	1,616	1,452	tonnes
Propane (Fx, F, E)	89	62	33	tonnes
Diesel oil (Xn, O)	565,413	479,456	466,822	litres
Hydraulic oil	6,797	7,508	7,628	litres
Sodium hydroxide (Xi	159	196	249	tonnes
Aluminum fluoride (Xn)	4,573	5,104	4,551	tonnes
Aluminum oxide (Xn)	609,380	603,805	597,881	tonnes
Ferromanganese (Xn)	10	11	10	tonnes
Ferrophosphorus (Xn)	8	16	15	tonnes

We have invested in the energy conversion of heavy machinery at our production site in order to reduce oil consumption. In the period 2015 to 2020 the oil consumption of heavy machinery dropped 77,600 litres resulting in a 14.3% decrease in the emission of CO_2 equivalents.

Production and raw materials consumption

Efforts to reduce sulphur dioxide emissions have been effective. In the period 2019 to 2020 these emissions dropped 8% while compared to 2012 sulphur dioxide emissions have decreased by 22%.

Quantity	2018	2019	2020	Unit
Aluminum production				
Primary aluminum production	317,386	315,867	312,629	tonnes
Aluminum oxide	609,380	603,805	597,881	tonnes
Aluminum fluoride	4,573	5,104	4,551	tonnes
Prebaked anodes (net weight)	132,434	132,142	130,604	tonnes
Propane	89	62	33	tonnes
Diesel oil	565,413	479,456	466,822	litres
Sodium hydroxide	159	196	249	tonnes
Flange paste	1,643	1,616	1,452	tonnes
Cast iron	1,278	979	871	tonnes
Anode rods	782	747	513	tonnes
Electricity	4,639,000	4,654,000	4,626,000	MWh
Industrial water	104,375	111,166	108,367	m^3
Drinking water	69,583	74,111	72,244	m^3
Sea water	7,884,000	7,884,000	7,884,000	m^3
Silicon	5113	3771	3239	tonnes
Magnesium	204	151	126	tonnes
Titanium	76	56	46	tonnes
Strontium	25	19	16	tonnes
Hydraulic oil	6,797	7,508	7,628	litres
Oil for cooling	5,347	5,024	2,804	litres
Oil removing chemicals	892	1,720	1,970	litres
Lubricating oil	5,327	6,231	6,997	litres
Ferrosilicon	23	23	23	tonnes
Ferromanganese	10	11	10	tonnes
Ferrophosphorus	8	16	15	tonnes
Carbon		52	66	tonnes
Steel pellets	71	81	78	tonnes
Wood sticks	9,900	13,600	17,200	pcs.
Batteries	67	60	72	pcs.

Auditor's statement

I have reviewed and audited the information presented in Norðurál's green accounting for 2020. The books have been reviewed with regard to whether the information stipulated in articles 6, 7 and 8 of Regulation No. 851/2002 and whether the numerical information presented complies with data from the financial records and the company's monitoring of key figures in environmental matters.

After having conducted a review of the data, my opinion is that the green accounting meets the conditions of Regulation No. 851/2002 and gives a thorough account of the company's environmental impact in the year of 2020.

Elín Vignisdóttir

Elín Vignisdóttir
Geographer

Board's statement

All information in the company's green accounting for the year 2020 is provided according to the best knowledge. Emission control equipment is state of the art and is efficiently maintained. The findings of internal measurements are used for making improvements aiming to minimize environmental impact.

Proper handling of the environment is a cornerstone in the company's responsible operation and a constant monitoring of environmental factors aims to ensure that the set goals are achieved. The company's environmental activities were generally successful during the year, with active monitoring carried out in accordance with the monitoring schedule and the requirements of the license.

Gunnar Guðlaugsson
Managing Director

Sigrún Helgadóttir
Plant Manager

Norðurál keeps green accounting in accordance with regulation no. 851/2002 and delivers its audited green accounts to the Environment Agency of Iceland before May 1 every year. Emissions accounting is kept in accordance with regulation no. 990/2008.

Please send any questions and comments to umhverfi@nordural.is and we shall reply to the best of our ability.

NORÐURÁL

Jafnlaunaúttekt PwC 2019