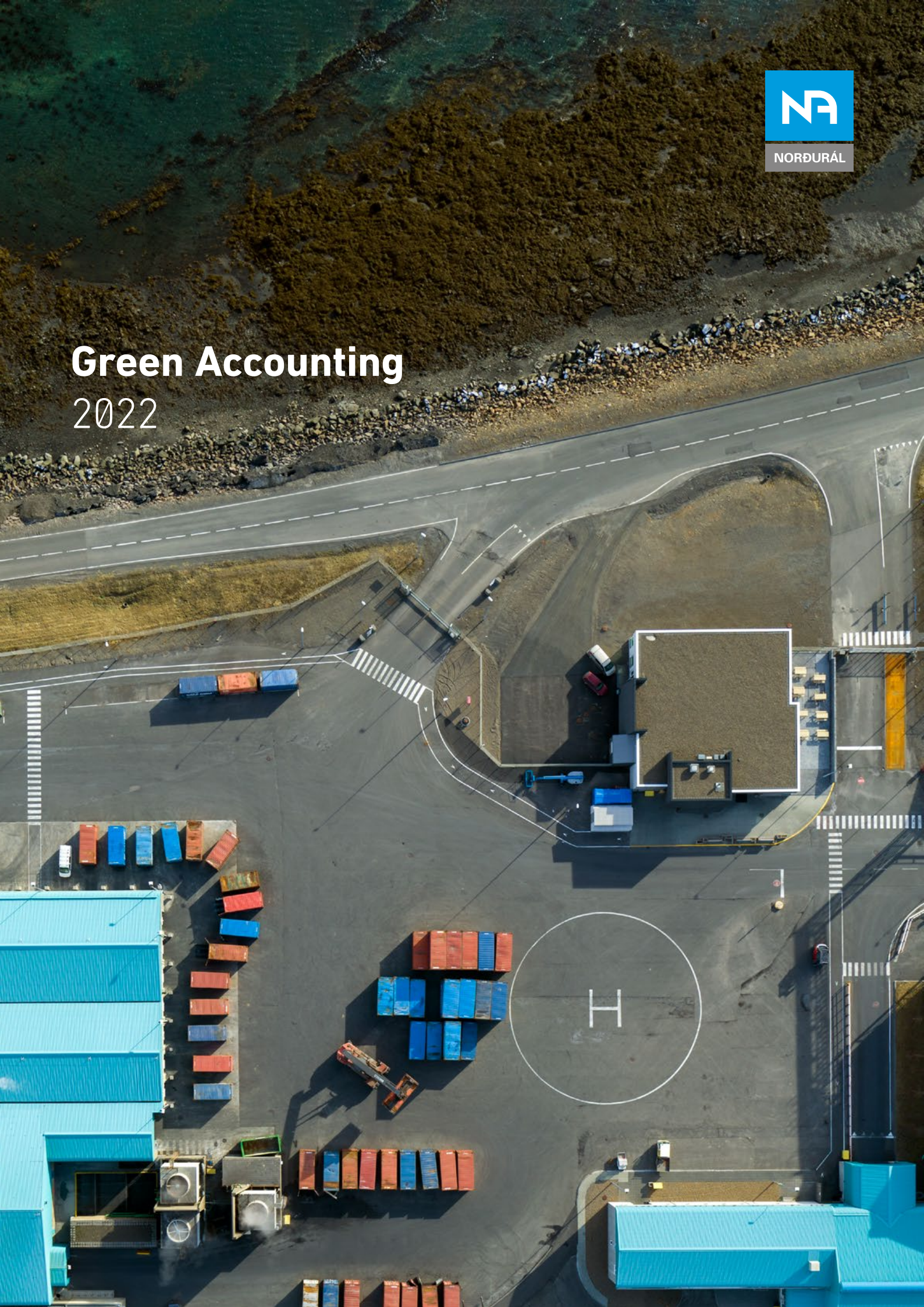
NORÐURÁL

Green Accounting
2022



Contents

Employees, raw materials and resource consumption

Quantity	2020	2021	2022	Unit
Employees	581	601	631	
Electricity	4,626,000	4,669,000	4,566,844	MWh
Oil	466,822	440,690	387,619	litres
Gas	33	32	22	tonnes
Fresh water	180,611	177,116	163,733	m^3
Sea water	7,884,000	7,884,000	7,884,000	m^3
Total raw materials used	2.37	2.39	2.38	t/t Al
Imported raw material	2.37	2.39	2.38	t/t Al
Hazardous substances (solid)	605,101	614,410	592,526	tonnes
Hazardous substances (liquid)	493,990	466,947	417,715	litres
Misc. packaging	< 400	< 400	< 400	tonnes

Emissions and waste management

Quantity	2020	2021	2022	Unit
Atmospheric emissions				
Fluoride (gaseous and particles)	0.38	0.38	0.40	kg/t Al
Sulphur dioxide SO_2	8.64	10.62	11.69	kg/t Al
Dust	0.70	0.71	0.71	kg/t Al
Carbon Dioxide CO_2	1.50	1.53	1.55	t/t Al
Fluorocarbons, PFC CO_2 equivalents	0.14	0.15	0.13	t CO_2 eq. /t Al
Polyaromatic hydrocarbons PAH_{16}	0.000058	0.000056	0.000079	kg/t Al
Release into surface water/groundwater/sea				
Sludge	0.07	0.05	0.05	kg/t Al
Oil/fat in cooling agents from potroom and rectifiers	< 0.5	< 0.5	< 0.5	ppm
Release into municipal sewage system				
From septic tanks	0.07	0.05	0.05	kg/t Al
Waste disposal				
Compactable waste	0.50	0.40	0.45	kg/t Al
Seashore repository	36	33	28	kg/t Al
Recyclable waste				
Anode waste and coal dust	109	111	114	kg/t Al
Aluminum slag	8.8	9.2	8.5	kg/t Al
Wood	1.0	1.1	0.9	kg/t Al
Scrap metal	2.1	2.6	2.1	kg/t Al
Cardboard	0.12	0.12	0.12	kg/t Al
Plastic	0.04	0.03	0.05	kg/t Al
Hazardous waste for disposal				
Total waste	0.02	0.01	0.03	kg/t Al

Waste

Quantity	2020	2021	2022	Unit
Material from the sewer				
Sludge	21.2	16.4	14.9	tonnes
Other waste (from septic tanks)	8.4	6.6	3.2	tonnes
Recyclable waste				
Anode butts	32,769	33,750	33,429	tonnes
Carbon dust	1,266	1,302	1,409	tonnes
Bath material	2,888	1,823	2,982	tonnes
Aluminum dross	2,762	2,890	2,603	tonnes
Busbars	1,986	1,714	1,341	tonnes
Anode stub metal	-	-	-	tonnes
Scrap iron	645	830	640	tonnes
Timber	307	362	273	tonnes
Cardboard	38	37	36	tonnes
Plastic	13	10	14	tonnes
Waste oil	29	4	7	tonnes
Rubber tires	1.7	9.8	9.4	tonnes
Batteries and electronics	5.1	3.9	5.7	tonnes
Textile	4.1	2.9	1.9	tonnes
Light bulbs	0.20	0.17	0.26	tonnes
Oil contaminated waste	9	8	9	tonnes
Asphalt	-	-	-	tonnes
Hazardous waste				
Electronics – hazardous waste	0.00	0.4	-	tonnes
Hazardous waste	4	2	7	tonnes
Paint	0.8	0.4	0.8	tonnes
Substances in flood pits				
Spent potlining	8,289	7,008	5,793	tonnes
Carbon from rodding shop	1,275	1,409	1,221	tonnes
Carbon from pot rooms	1,224	1,242	1,110	tonnes
Dust from sweeper	-	-	-	tonnes
Residual refractory material	498	413	274	tonnes
Spent refractory material	121	127	51	tonnes
Earth materials	-	75	-	tonnes
Solid waste				
Waste for compacting	157	125	138	tonnes
Organic waste	8	10	13	tonnes

Emissions to air

Quantity	2020	2021	2022	Unit
Substances				
CO_2	467,721	481,595	474,498	tonnes
CF_4/C_2F_6	43,137	46,860	38,753	t CO_2 eq.
SO_2	2,700	3,348	3,580	tonnes
Polyaromatic hydrocarbons	18.1	17.6	24.2	Kg
Total fluoride	120	121	122	tonnes
Dust (PM10)	218	222	216	tonnes

Use of hazardous chemicals (Xn, T, Tx, C, Xi, E, Fx, F, O, N)

Quantity	2020	2021	2022	Unit
DAG 2671 (O, T, N)	-	-	-	litres
DAG 554/20 (C, N, Xn)	19,540	18,937	20,027	litres
Plicast strong mix	152	-	97	tonnes
Ramming paste (T)	758	660	535	tonnes
Flange paste (T)	1,452	1,219	1,417	tonnes
Propane (Fx, F, E)	33	32	22	tonnes
Diesel oil (Xn, O)	466,822	440,690	387,619	litres
Hydraulic oil	7,628	7,320	10,069	litres
Sodium hydroxide (Xi)	249	227	297	tonnes
Aluminum fluoride (Xn)	4,551	4,233	4,306	tonnes
Aluminum oxide (Xn)	597,881	608,015	585,833	tonnes
Ferromanganese (Xn)	10	10	10	tonnes
Ferrophosphorus (Xn)	15	13	9	tonnes

Production and raw material consumption

Quantity	2020	2021	2022	Unit
Aluminum production				
Primary aluminum production	312,629	315,182	306,267	tonnes
Aluminum oxide	597,881	608,015	585,833	tonnes
Aluminum fluoride	4,551	4,233	4,306	tonnes
Prebaked anodes (net consumption)	130,604	133,658	131,222	tonnes
Propane	33	32	22	tonnes
Diesel oil	466,822	440,690	387,619	litres
Sodium hydroxide	249	227	297	tonnes
Flange paste	1,452	1,219	1,417	tonnes
Cast iron	871	836	581	tonnes
Anode rods	513	596	509	tonnes
Electricity	4,626,000	4,669,000	4,566,844	MWh
Industrial water	108,367	106,269	98,240	m^3
Drinking water	72,244	70,847	65,493	m^3
Sea water	7,884,000	7,884,000	7,884,000	m^3
Silicon	3,239	4,199	4,656	tonnes
Magnesium	126	153	176	tonnes
Titanium	46	65	73	tonnes
Strontium	16	18	21	tonnes
Hydraulic oil	7,628	7,320	10,069	litres
Oil for cooling	2,804	3,057	1,709	litres
Oil removing chemicals	1,970	2,035	1,800	litres
Lubricating oil	6,997	2,820	5,899	litres
Ferrosilicon	23	20	17	tonnes
Ferromanganese	10	10	10	tonnes
Ferrophosphorus	15	13	9	tonnes
Carbon	66	53	48	tonnes
Steel pellets	78	86	34	tonnes
Wood sticks	17,200	12,250	12,250	pcs.
Batteries	72	67	58	pcs.

Statements

Auditor's Statement

I have reviewed and audited the information presented in Norðurál's green accounting for 2022. 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 2022.

Katrín Blöndal
Chemical Engineer

Board's Statement

All information in the company's green accounting for the year 2022 is provided according to the best knowledge. Emission control equipment is of best available technology 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. Norðurál's operations fall under company category 2.01 - Aluminum production according to regulation no. 851/2002 on green accounting. Norðurál operates under a license from The Environment Agency of Iceland. The current operating license was issued in 2015 and is valid until December 16, 2031.

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

NORÐURÁL

UMHVERFISVERÐLAUN ATVINNULÍFSINS 2022

Jafnlaunaúttekt PwC 2020