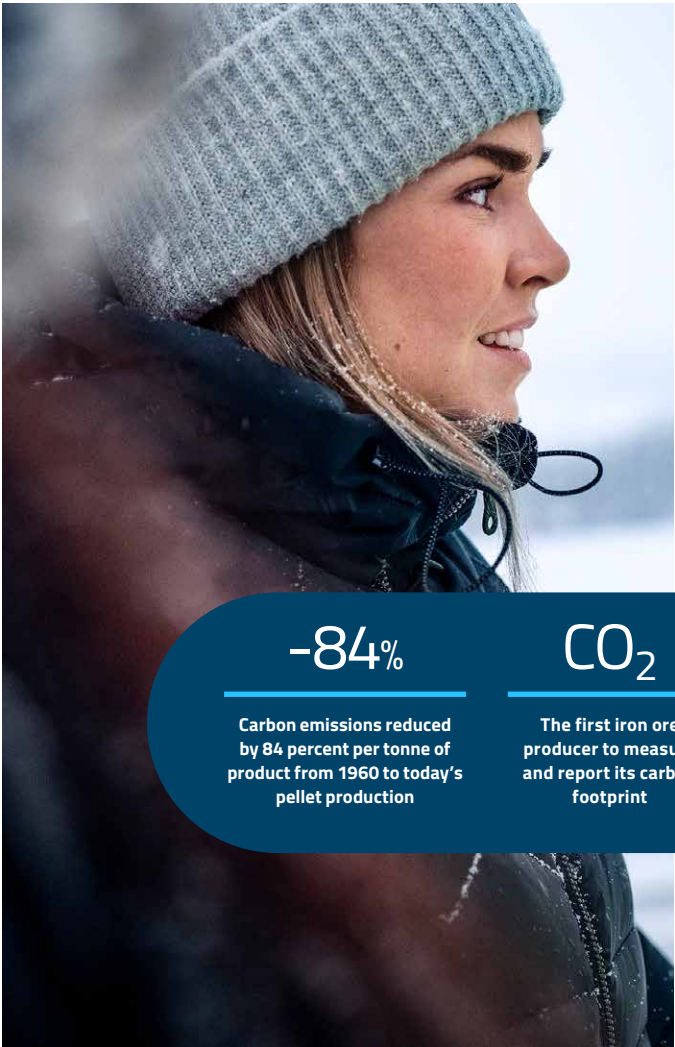




# 2021 In Brief

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Annual and Sustainability Report



-84%

Carbon emissions reduced by 84 percent per tonne of product from 1960 to today's pellet production

CO<sub>2</sub>

The first iron ore producer to measure and report its carbon footprint

-14%

Steel produced with LKAB's pellets contributes to 14 percent lower carbon emissions than the European average

2020

LKAB adopts a new strategy to achieve carbon-free processes and products

2026

HYBRIT plant for production of sponge iron

2027

Industrial park for extracting critical minerals from mine waste

2030

First industrialised sponge iron plant in production

Europe's leading mining and minerals group

MSEK 48,812

Net sales

MSEK 26,898

Operating profit

>90%

Iron ore products account for over 90 percent of sales

approx. 4,500

Average number of employees

MSEK 3,359

Investments in carbon-free processes and products





## 2035

New global standard for  
mining operations  
– carbon-free, digitalised  
and autonomous

## 2045

Our processes  
and products  
are carbon-free



## Towards a new iron age.

The world is facing a great challenge caused by emissions that are impacting the climate. Globally, the iron and steel industry currently accounts for as much as a quarter of total carbon emissions from industry.

# Comments by the President and CEO

2021 was a historically strong year in terms of profits. At the same time, we made important progress on the transformation that is crucial for the future.

The vital issue facing our generation – climate change – has been high on the global agenda for some time now. Yet I feel that something significant happened in 2021. Most companies have now realised that it is not about their own primary emissions. A lorry consists of 70 percent steel, for example, and each tonne of steel gives rise to two tonnes of carbon emissions. People have started to properly understand that the end product is only sustainable if its entire value chain is sustainable. The transformation to a climate-neutral global economy demands that the energy supply and the raw materials on which our society is built are carbon-free. And to an increasing extent it is industry, particularly primary industry, that is driving this green transformation.

At the same time, 2022 has started with a changed situation in the world. We have a war in Europe and we must come together to manage the evident humanitarian crisis that this brings. It is also clear that in the longer term the situation in Ukraine will impact what for LKAB are key areas, such as energy, commodities markets and supply chains.

## Vision

**We are leading the transformation of our industry toward a sustainable future**

## Mission

**The innovative and competitive mining and processing of iron ore and minerals to produce climate-efficient quality products**

## Strong earnings in a favourable market

Although the world around us remains turbulent, we have delivered a very strong result for 2021. This enhances our ability to implement the extensive structural investments required for our transformation to carbon-free processes and products, while also securing our long-term competitiveness.

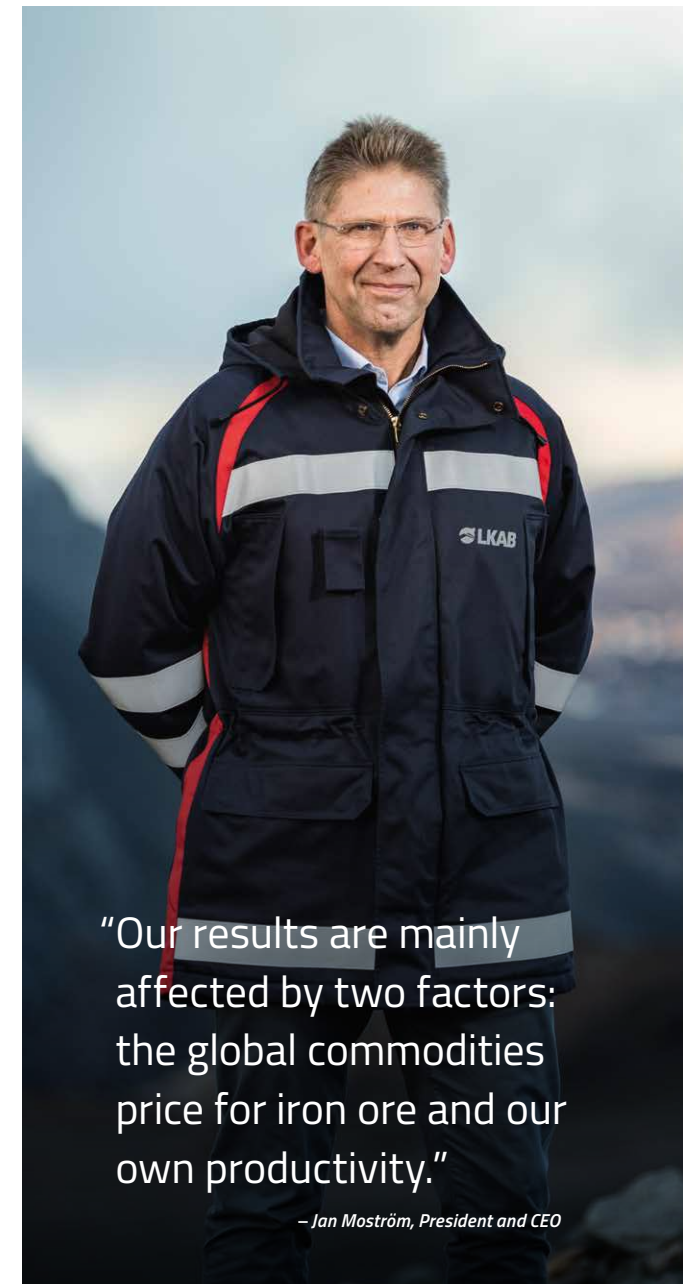
Conditions in the iron ore market were very good, with an average global iron ore price of USD 160 per tonne and peaks of over USD 220 per tonne. Quoted pellet premiums were twice as high as last year.

Our deliveries of iron ore products amounted to 27.0 Mt and production to 26.7 Mt. Measures to minimise the spread of coronavirus affected volumes again in 2021. For instance, planned maintenance shutdowns were replaced by a larger number of smaller shutdown. We succeeded in protecting our employees well, with a lower infection rate within the company than in society as a whole.

We are monitoring developments in Ukraine carefully. The direct impact on the company is limited, but it is difficult to assess exactly what the longer term consequences may be.

## Technology shift and increased value added

A key part of our transformation plan is to increase the value added to our products by processing. We will do this through a gradual transition from the production of iron ore pellets to sponge iron, in which the reduction process uses hydrogen produced with electricity from Swedish fossil-free sources. Offering the market a carbon-free raw material makes us more competitive and increases our ability to bear the cost of the investments needed to secure



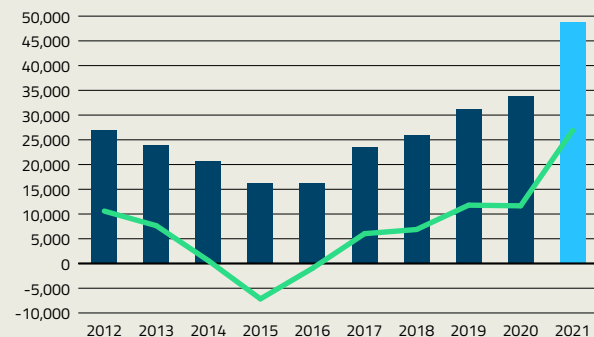
**“Our results are mainly affected by two factors: the global commodities price for iron ore and our own productivity.”**

*– Jan Moström, President and CEO*

## 2021 results

### Net sales and operating profit

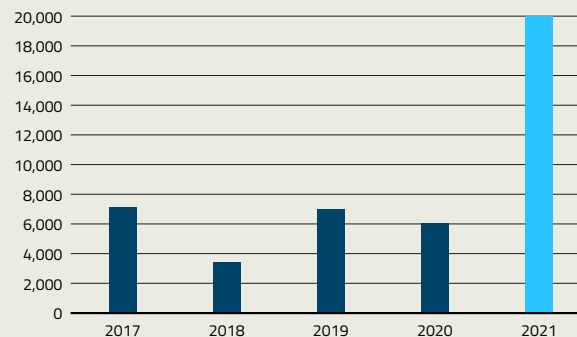
(MSEK)



● Net sales ● Net sales 2021 — Operating profit

### Operating cash flow

(MSEK)



● Cash flow ● Cash flow 2021

### Overview and key financial ratios

	2021	2020
Net sales, MSEK	48,812	33,914
Operating profit, MSEK	26,898	11,654
Costs for urban transformation provisions, MSEK	-372	-1,396
Net financial income/expense, MSEK	1,484	797
Profit/loss before tax, MSEK	28,382	12,452
Profit/loss for the year, MSEK	22,604	9,757
Capital expenditure on property, plant and equipment, MSEK	3,359	2,763
Operating cash flow, MSEK	19,988	6,038
Return on equity, %	39.0	20.8
Net debt/equity ratio, %	-24.5	-3.0
Dividend to owner <sup>1)</sup> , MSEK	12,430	5,850

1) The dividend proposed by the Board of Directors is subject to approval by the Annual General Meeting on 28 April 2022.

### Non-financial key ratios

	2021	2020
Carbon emissions, kg per tonne of product	25	25
Energy intensity, kWh per tonne of product	165	159
Accident rate	8.2	6.3
Number of permanent employees at year-end	4,825	4,555
Percentage of women among permanent employees, %	25	25

93%

Iron Ore business area's  
share of Group sales

7%

Special Products business  
area's share of Group sales

our own future and that of our operating locations once the current main haulage levels have been mined out.

Through the HYBRIT initiative that we have been conducting along with SSAB and Vattenfall since 2016, we are driving technological development towards a fossil-free value chain from mine to steel. In 2021 we showed that it is technically possible to produce sponge iron using hydrogen technology. In the summer the first 100 tonnes of sponge iron from the pilot plant in Luleå were delivered to SSAB, which was then able to supply fossil-free steel to Volvo. In October Volvo presented the world's first vehicle – a loader – made of fossil-free steel.

In 2021 we also developed our plans to scale up the production of sponge iron industrially. In stages, two large plants are soon to be built next to our existing pelletising plant in Gällivare/Malmberget, where the first HYBRIT plant will be ready in 2026.

In parallel, and in partnership with Epiroc, ABB, Combitech and Sandvik, we are making progress on developing a new world standard for mining that is digitalised, autonomous and carbon-free. Among other things, we have introduced more self-driving and battery-powered machinery and solutions and have also developed a new method of mining known as raise caving.

### Minerals business grows by processing residual products

Industrial minerals is a growing business for us, and more than a third of the portfolio is already based on processing waste streams along the value chain. One of our major strategic initiatives is to extract critical minerals from mine waste. In a first step apatite concentrate is being extracted and processed into phosphorus, rare earth elements and fluorine, and during the year we made concrete our plans for the apatite plants in Kiruna and Gällivare/Malmberget. We have also signed an agreement with Boliden to investigate the possibility of extracting pyrite concentrate from waste arising at Boliden's mine in Aitik. The concentrate can be processed into sulphuric acid, which is used in the processes for extracting critical minerals from our mine waste.

Provided the environmental permit process takes place efficiently, the production of apatite concentrate and the establishment of a new fossil-free industrial park for further processing could begin in 2027. This would enable us to cover 30 percent of current raw materials imports for the production of rare earth elements, as well as Sweden's entire requirement of phosphorus mineral fertiliser and gypsum.

## Competitiveness here and now

Since we mainly expect to finance the transformation over the coming decades using our own cash flow, our ability to do so is boosted by high iron ore prices. At the same time the market is very sensitive to economic fluctuations, and decisions on investments in new infrastructure above and below ground give rise to commitments for many years to come. To succeed, therefore, we need to make our current production structure more efficient.

Using our plants to full capacity and maintaining consistently high production are also key to achieving our sustainability goals, particularly as regards energy efficiency.

Another area where we are falling well short of our goal is accidents. In 2021 there were 8.2 accidents per million hours worked compared with 6.3 in the previous year. This may be partly due to our having to adjust procedures as a result of measures to control infection, and restrictions on physical meetings, which are such an important part of our safety work. We have established, however, that there are shortcomings in how our health and safety work is implemented in the operations. This is a failure and we are now concentrating efforts on finding new approaches to turn around this trend. The development of leadership and employeeship form the foundation for a strong safety culture. This culture is built on personal meetings, which the pandemic has made difficult in recent years. We are working on the safety culture across the Group, involving all employees within all functions and at all levels in the company.

## Requirements for the future

In just over 20 years' time, when our transition to carbon-free processes and products is complete, we will have reduced our steel customers' emissions by at least 35 Mt a year. That is equivalent to two thirds of Sweden's total carbon emissions. For this to become a reality, we are dependent on a number of conditions in the outside world and decisions over which we have little influence.

Industrial production of carbon-free sponge iron based on hydrogen requires huge quantities of renewable electricity. In five years' time we will start producing on a large scale at a first demo plant, after which more plants will be built. For now, we are relatively confident that we can secure access to electricity sufficient for the first two plants, but thereafter our need will increase.

What we are mainly evaluating – along with Vattenfall, among others – is an expansion of wind power. The idea is to balance volatile wind power with hydrogen production and hydrogen storage; in other words, we produce more hydrogen when there is plenty of electricity and use stored hydrogen when the electricity system is stretched.

In our modelling we have established that it is technically and commercially possible to develop the just over 50 TWh we need by 2040. This is a third of the whole of Sweden's current consumption, which puts the requirement into perspective. Sweden, and particularly northern Sweden, has some of the best conditions in the world for expanding renewable energy at a reasonable cost. But such an investment requires a clear political will and social acceptance.

## Values



### Committed

Our customers' results are the focus of everything we do



### Innovative

We emphasise creative thinking to drive improvements forward



### Responsible

We think long-term, are respectful and put safety first

## Key events in 2021

- Very good market conditions have enabled LKAB to deliver historically strong earnings for 2021. The average global spot price for iron ore products was USD 160 (109) per tonne.
- Production volumes – which were affected by more extensive maintenance shutdowns for adjustments to limit the spread of Covid-19 – amounted to 26.7 Mt compared with 27.1 Mt in the previous year.
- Lower production volumes affected delivery volumes, which amounted to 27.0 Mt compared with 28.5 Mt in 2020.
- In partnership with Vattenfall and SSAB, LKAB produced the world's first hydrogen-reduced sponge iron for fossil-free steelmaking within the framework of the HYBRIT initiative.
- LKAB acquired 75 percent of the shares in Bergteamet AB. The acquisition strengthens our expertise and resources for future mining at great depths.
- In October the Land and Environment Court rejected LKAB's permit application for the existing operations in Kiruna in its entirety. The decision has been appealed.

Another of our challenges concerns the Ore Railway – one of Europe's most heavily used lines. In Sweden we account for nearly half of all rail freight each year. But it is not just us that depend on the capacity provided by the Ore Railway. Ore is transported along the track from Kaunis Iron and Boliden, as are other goods being carried between Sweden and Norway. The trains are also important for passenger traffic, not least for the tourism industry. The significance of the Ore Railway cannot be overstated and it is crucial for the implementation of the industrial initiatives planned in Norrbotten.

### Environmental permits remain a challenge

The processing of environmental permits continues to be the greatest challenge. Today's processes are both inefficient and unpredictable, and the regulations are designed for a time when changes took place slowly and in stages. These days our operations take up relatively little land, but to make the investments required for the transformation we need access to land not just for ourselves but above all for electricity lines and new power production. Here I cannot emphasise enough the importance of a greater focus on environmental and climate aspects in the processes, rather than on the formalities.

### Investing in skills availability

With the construction of our new levels in the mines and the new processing structure, we expect to need to recruit 3,000 people a year over the coming two decades. At the same time we are introducing new processes and new technology that requires us to develop the skills of our existing colleagues. Along with innovation and sustainability, skills availability is a focus area of our Group strategy.

Attracting new employees to Norrbotten is a challenge we share with other companies in the region. Various industrial initiatives are



## Our strategy enables reduced emissions and increased sales

A crucial part of our strategy is to increase the value added by processing through a gradual transition to the production of carbon-free sponge iron. Once fully implemented, our transformation will eliminate our own carbon emissions while lowering total carbon emissions from our customers' steelmaking by 35 Mt per year. That is three times the effect of taking all the cars in Sweden off the road for good.

35 Mt

Contributes to reducing our  
global customers' emissions  
by at least 35 Mt

2/3

Equivalent to 2/3 of Sweden's  
carbon emissions

> 2x

Sales will be more  
than doubled



taking place in parallel and we are actively working together across companies and with the municipalities in the region.

It is essential that our operating locations are attractive, so that new people will want to come and work here and existing colleagues will want to stay here. We invest in our local communities, and in cooperation with municipalities and other operators we are working to ensure that good homes and schools are available and that a wealth of commercial and leisure activities are offered.

The ongoing urban transformations – in which parts of Kiruna and Malmberget are being moved as the mining extends further – are complex projects in which many different interests must be satisfied. At the same time, this gives us a unique opportunity to develop our operating locations.

### A positive footprint – today and tomorrow

By taking a step forward in the value chain we make a difference to the climate and while securing our future business as well as jobs and prosperity in the communities where we operate. We already we have the world's most climate-efficient pellet production and we have long worked to set an example internationally in ethics and corporate social responsibility.

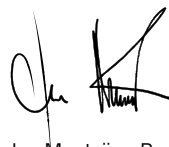
We have been a signatory to the UN Global Compact since 2019 and work according to its principles for corporate sustainability. We have also mapped our activities against the UN Sustainable Development Goals set out in Agenda 2030. In 2021 we raised our ambitions in a number of areas, as is reflected in our new strategic goals for sustainable value creation.

### An exciting time for us

We have long been a driver of economic growth and development and having operated for more than 130 years, we are one of Sweden's oldest industrial companies. Yet we are also open and inclined to change, with a long history of innovation and bold technology shifts.

Even so, I would venture to say that our time is now. This is an incredibly exciting time to be part of LKAB – an opinion I think I share with our more than 4,500 colleagues. For although our goals are long-term and the transformation will take many years, it is now that we are taking action.

Luleå, 29 March 2022



Jan Moström, President and CEO

During the year we updated our strategic goals for sustainable value creation – see page 18 for a presentation of the goals.



## Technology for producing fossil-free sponge iron proven

In June 2021, in partnership with Vattenfall and SSAB, LKAB was able to present the world's first hydrogen-reduced sponge iron produced in the HYBRIT pilot plant in Luleå. This first sponge iron was then used to produce the first fossil-free steel.

This is a crucial milestone towards creating an entirely fossil-free value chain from mine to finished steel. The next step is to industrialise the technology, with a first HYBRIT plant for industrial-scale production ready in Malmberget in 2026.



# We contribute to development and prosperity

LKAB has a strong tradition of taking responsibility and being a positive force for development – as a supplier to a global industry, but also as an employer, a collaborative partner and as a part of the community. From exploration to steel recycling and the utilisation of residual products along the value chain, value is created for many different stakeholders.

## Customers

Our upgraded iron ore products contribute to increasing steelmakers' productivity, profitability and sustainability. LKAB's products reduce customers' fuel consumption and thereby contribute to lowering carbon emissions per tonne of steel produced when compared with competing products. Industrial minerals complement the offering and create value for various customer segments outside of the steel industry.

## Employees

Our technological development and innovativeness allow us to offer many interesting career and development opportunities. Our ambition as an employer is to enable work/life balance and a secure and inclusive work environment characterised by diversity. Strong employeeship and leadership contribute to engagement and motivation.

## Suppliers

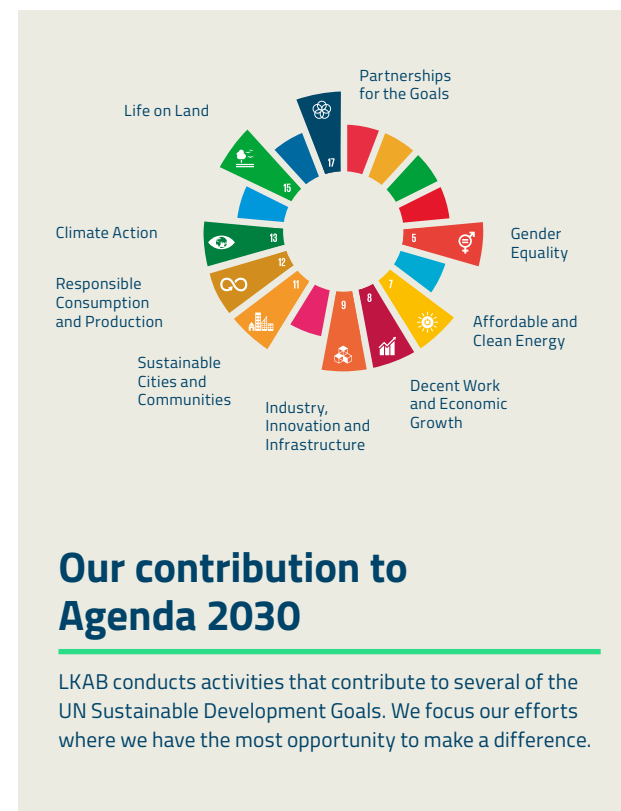
LKAB is a significant purchaser, contributing to jobs and revenue at our suppliers. We conduct extensive strategic development projects in close partnership with a number of suppliers. We monitor our suppliers from a sustainability perspective and influence how our suppliers develop through the requirements we set.

## Communities

Access to metals and minerals is essential for manufacturing everything from mobile phones and computers to wind turbines and solar panels. LKAB accounts for around 90 percent of Europe's iron ore production and is a growing supplier of industrial minerals. We are significant as an export company for Sweden and as an employer in our operating locations and contribute actively to creating attractive communities with good residential environments, schools and social functions. Our work also contributes to the UN Sustainable Development Goals.

## Owner

Our ambition is to be one of the most responsible and sustainable mining and minerals companies in the world. Innovative and resource-efficient production combined with effective risk management help produce a good return for our owner, the Swedish state. By collaborating on fossil-free steelmaking and the transition to carbon-free processes and products we seek to contribute to Sweden's climate goal of net zero emissions by 2045.



approx. 4,500

Average number  
of employees

MSEK 4,475

Paid in wages, salaries and  
employee benefit expenses

4,800

Suppliers

MSEK 14,249

Payments to suppliers

MSEK 5,480

Taxes

MSEK 12,430

Proposed dividend to owner,  
the Swedish state

# Goal progress

In 2015 LKAB's Board of Directors established goals for the Group, for which we are now reporting the results. During autumn 2021 the Board of Directors adopted updated strategic goals for sustainable value creation and these are presented on page 18.

## Economic sustainability

	Goal for 2021	Result in 2020	Result in 2021
<b>Profitability</b> Return on equity shall exceed 12 percent over an economic cycle.	>12% <sup>1)</sup>	21	39
<b>Capital Structure</b> Net debt/equity ratio of 0–30 percent.	0–30% <sup>1)</sup>	–3	–24
<b>Dividend to the owner, the Swedish state</b> The ordinary dividend shall amount to 40–60 percent of profit for the year.	40–60%	60	55

## Social sustainability

	Goal for 2021	Result in 2020	Result in 2021
<b>Safety</b> Reduce accidents leading to absence from work to a rate of 3.5 per million hours worked by 2021.	3.5	6.3	8.2
<b>Diversity and equal opportunity</b> The proportion of women/female managers in the company shall reach at least 25 percent by 2021.	Percentage of women	>25%	25
	Percentage of women managers	>25%	27
<b>Social responsibility and cooperation</b> Compliance with LKAB's Code of Conduct and well-functioning dialogue with stakeholders.	Percentage that have completed training	n/a <sup>2)</sup>	87%
	Dialogue according to plan	n/a <sup>2)</sup>	Yes

## Environmental sustainability

	Goal for 2021 <sup>3)</sup>	Result in 2020	Result in 2021
<b>Emissions</b> Reduce carbon emissions by at least 12 percent per tonne of finished product by 2021 and at the same time reduce emissions of nitrogen to air (NOx).	Carbon emissions	24 kg/t	25
	Nitrogen to air	<158 g/t	140
Reduce emissions of nitrogen to water by at least 20 percent per tonne of finished product by 2021.	21 g/t	20	22
Reduce emissions of dust into the air from treatment facilities by at least 40 percent by 2021.	10 mg/m <sup>3</sup> ntg	29	18
<b>Energy intensity</b> Reduce energy intensity (kWh per tonne of finished product) by at least 17 percent by 2021.	138 kWh/tonne	159	165

1) The goals for return and net debt / equity ratio were updated at an Extraordinary General Meeting in October 2021. The updated goals are presented on page 18.

2) The goal is monitored as the percentage of employees that completed training in the Code of Conduct, and monitoring that dialogue is taking place with stakeholders according to plan.

3) The goal is expressed as a reduction by 2021 with 2015 as the base year.

The accident rate increased compared with the previous year and was 8.2 (6.3). Safe, healthy workplaces are of the highest priority and there is a major focus on measures to turn around the negative trend.

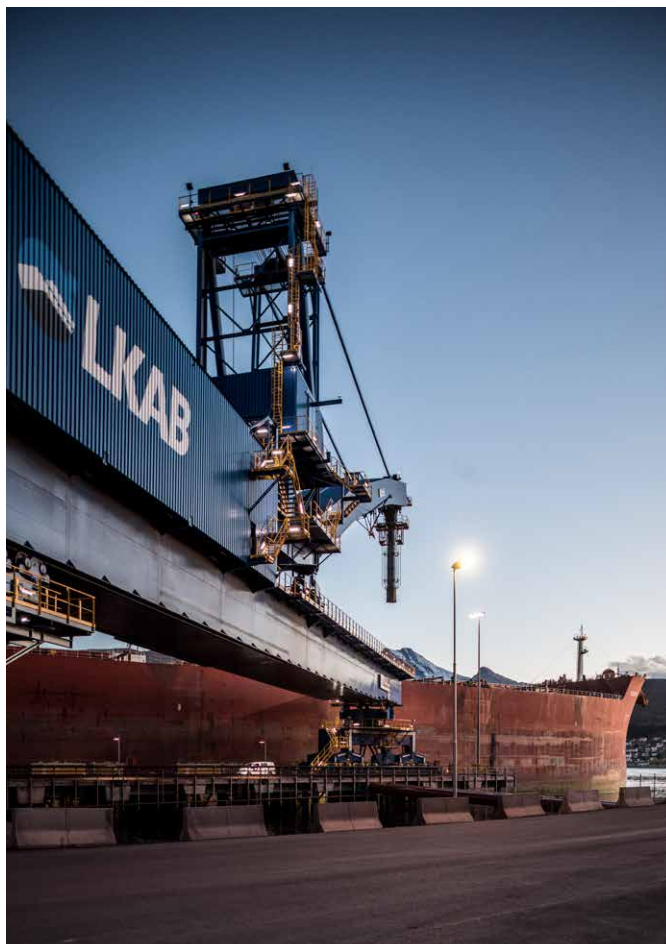
The percentage of women was 25 percent, which is in line with the goal for 2021, and the percentage of women managers exceeded the goal at 27 percent.

Total carbon emissions decreased, which is a positive effect of ongoing trials to replace fuel oil with tall oil at one of the pelletising plants in Malmberget. For the transition to carbon-free processes and products, read more about our strategy on pages 15–19.

The increased emissions of nitrogen to air are largely due to the trials involving tall oil at the pelletising plant in Malmberget. Tall oil is efficient and has a positive impact on emissions except for nitrogen, which tall oil generates more of than fuel oil. Methods to reduce the generation of nitrogen oxides are being developed.

At the end of the year dust emissions were at an increased level in Kiruna and Narvik, with measures planned during subsequent maintenance shutdowns. Continued work to improve systematic maintenance of the plants has the potential to reduce levels further.

The energy intensity has increased compared with the previous year, which among other things is a result of an increased number of unplanned shutdowns and lower production volumes. Volumes were particularly affected by extended maintenance shutdowns associated with measures to prevent the spread of Covid-19.



# Iron ore for the steel industry

The Iron Ore business area mines and upgrades iron ore to produce climate-efficient products that are supplied to customers in the steel industry. The operations include mines and processing plants in Kiruna, Svappavaara and Malmberget, as well as rail freight services and ports in Luleå and Narvik.

## Market and position

On the global iron ore market LKAB is a relatively small operator, but has a strong niche position as a quality and technology leader. It is a position that we have established through our access to magnetite ore with a consistently high iron content that is upgraded into iron ore products for steel customers with high requirements of quality and sustainability. We are the world's second-largest supplier of highly upgraded iron ore pellets on the seaborne market. Europe and the Middle East/North Africa (MENA) are our largest markets.

## Market development in 2021

Market conditions during the year were good, with stable demand and at times historically high prices. Customers' steel production picked up speed when Covid-19 restrictions were eased and industries opened up. Increased demand for steel resulted in rising prices. Despite good demand and historically high steel prices, customers' margins were squeezed – initially partly by the high iron ore prices, and thereafter by increased freight costs and energy prices.

Halfway through the year restrictions were imposed on steel production in China as a result of the Chinese government's directive to reduce the environmental impact of the industry. Challenges in global supply chains as a result of the pandemic also meant that some production was temporarily halted within manufacturing industry. As a result of these restrictions the underlying spot price for iron ore fell.

Continued high production in pellet-based steel markets in Europe and MENA, combined with a limited supply of highly upgraded pellets on the seaborne market, contributed to premiums remaining high.

The average global spot price for iron ore products was USD 160 per tonne, which was USD 51 higher than in the previous year. China's decision to regulate its steel production caused iron ore prices to

decrease from July onwards. At the end of the year the price level was USD 119 per tonne. Quoted pellet premiums during the year were at levels that were more than twice as high as in the previous year. The outlook for long-term demand for LKAB's iron ore products remains good and we still have a situation in which demand for our products exceeds production capacity.

## Deliveries and production

LKAB delivered 27.0 (28.5) Mt of iron ore products in 2021, 83 (84) percent of which were pellets. Volumes were affected mainly by lower production volumes and lower inventory levels compared with the previous year.

The production volume decreased somewhat and was particularly affected by extended maintenance shutdowns associated with measures to curb the spread of infection, which resulted in a lower average level of capacity utilisation in the processing plants. Despite this, production of 26.7 (27.1) Mt was achieved. Production of crushed ore continued to be affected by the substantial seismic event in the Kiruna mine in spring 2020. The supply of crushed ore to the processing plants was secured by redirecting crushed ore between production sites, but this increased costs.

Operational excellence, focusing on production stability and continuous improvement, is key for the business.

## Urban transformation

The extensive changes in the communities in recent years as a result of the mining in Kiruna and Malmberget have taken place gradually and the majority of residents have been affected in some way. While changes can be demanding of those involved, future mining operations are the best way to ensure that the communities remain attractive and vibrant. Read more at [samhallsomvandling.lkab.com/en/](https://samhallsomvandling.lkab.com/en/).

26.7 Mt

Iron ore products  
produced

2021	26.7
2020	27.1
2019	27.2

27.0 Mt

Iron ore products  
delivered

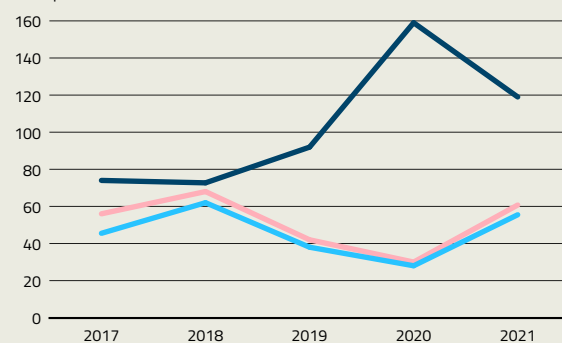
2021	27.0
2020	28.5
2019	24.9

## Operations summary

MSEK	2021	2020	2019
Net sales	46,135	31,727	28,725
Operating profit/loss	28,432	12,756	12,439

## Development of iron ore price and pellet premium

(USD per tonne)



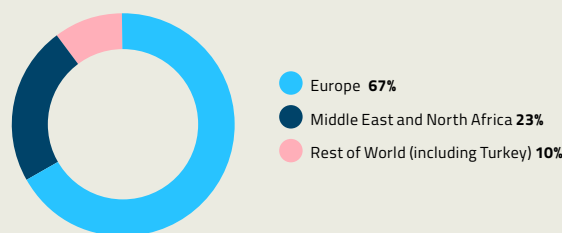
— Spotpris fines 62% Fe — Premium for blast furnace pellets  
— Premium for DR pellets

Source: PLATTS

Based on prevailing market conditions and demand for iron ore fines on the spot market, price indexes and estimates are published for iron ore products of different grades based on iron content, upgrading, freight costs and various premiums or penalties. For LKAB, which has a consistently high iron content and higher processing costs, it is essential that the products are sold at a premium.

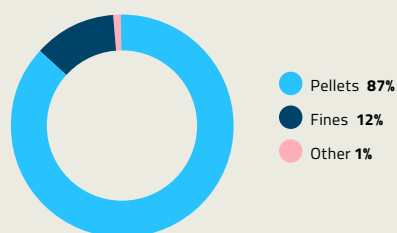
## Sales by region

Percentage of sales (MSEK)



## Sales by product area

Percentage of sales of iron ore products (MSEK)



## Facts

- The Iron Ore business area mines and processes iron ore products in Kiruna, Svappavaara and Malmberget.
- In Kiruna, mining takes place in an underground mine with a current main haulage level 1,365 metres below ground. The ore is processed above ground in three concentrating and pelletising plants.
- In Svappavaara ore is mined in the Leveäniemi open-pit mine. The ore is processed in a concentrating and pelletising plant in Svappavaara.
- Malmberget's underground mine consists of around 20 orebodies, of which around 10 are currently mined. The ore is processed above ground in a concentrating plant and two pelletising plants.
- The business area produces both blast furnace pellets and pellets for steelmaking via direct reduction (DR pellets), as well as fines.
- The iron ore products are transported along the Malmbanan and Ofotbanen ore railway to the ports of Luleå and Narvik for shipment to steel customers around the world.







# Industrial minerals and strategic products and services

The Special Products business area develops and supplies products and services that either make our iron ore operations more competitive or create value in other markets.

The business area accounts for around seven percent of the Group's sales, but has a clear mandate to grow. The operations are run mainly through wholly owned subsidiaries and consist of four divisions within the areas: industrial minerals; products and services for the mining and construction industries; and a development division which brings together business involving critical minerals.

## Market and position

LKAB has a leading position in certain segments of the industrial minerals market, particularly in Europe. Today the portfolio includes around 30 industrial minerals, but the business is to concentrate on a smaller number of significant minerals and will increasingly be based on our own mineral resources that are developed or acquired. Our industrial minerals business is aimed primarily at the following market segments:

- Agriculture: mineral fertilisers, soil improvers, feedstuffs
- Cleantech: batteries, generators and renewable energy production
- Construction and engineering: cement, concrete, floor screed and roads
- Manufacturing industry: water treatment, sponge iron, plastics and coatings

Subsidiaries that develop and sell services and products for the mining and construction industries are strategic suppliers to LKAB's iron ore operations and have a key role in both the existing business and in the transformation, as well as selling on an external market.

LKAB Berg & Betong is one of the world's largest producers of sprayed concrete. LKAB Wassara sells water-powered drilling technology that it has developed itself to customers globally that need long, straight holes or are seeking a sustainable alternative that can also be used in sensitive environments. The Wassara hammer is being used in the major redevelopment of Slussen in central Stockholm, for example. The external sales improve resource utilisation as well as generating revenue.

## Market development in 2021

The largest business is magnetite, for which LKAB has its own mineral resources in the mines in Kiruna and Malmberget. In 2021 magnetite accounted for 33 (29) percent of sales. Demand is driven by several industries including the production of iron powder, heavy concrete and water treatment.

The magnetite sold to the industrial minerals market consists of both primary products and by-products which are processed and adapted to the requirements in each market. Iron ore prices were high during the year, which affects competitiveness relative to alternative materials with lower price levels. LKAB has been able to keep its customers despite a period of high prices, although margins have been affected somewhat.

Lower than planned steel production at British Steel meant lower volumes of blast furnace slag to process into the cement substitute GGBS, which was compensated for by increased imports into the UK. The minerals huntite and mica continued to develop well. A concentration of the minerals business in the UK took place, with many low-margin products for refractory applications being phased out.

1/3

More than a third of the value of mineral sales derives from secondary materials that LKAB Minerals has developed into valuable products

30%

LKAB has the potential to supply the EU with up to 30 percent of its current imports of rare earth elements

## Growth and business development

Potential and plans exist for growth throughout the business area. The focus is on developing and acquiring our own mineral reserves and the areas of use for these. We will also continue to develop sales of the minerals that we already extract while simultaneously evaluating opportunities for new circular business models based on increased resource utilisation along the value chain. The cement substitute GGBS, which is made of blast furnace slag from steel-

making, is an example of an important product based on secondary material flows.

The subsidiaries that provide rockwork and engineering services as well as water-based drilling technology will secure access to expertise and sufficient resources in important areas for building up the future LKAB. This is to be done both through organic growth and via acquisitions.

The need for resources and expertise within rockwork contracting, for example, increases as we develop the mining at greater depths. During the year the subsidiary LKAB Berg & Betong reinforced the organisation, while market presence towards external customers was broadened through the acquisition of Bergteamet AB.

## Operations summary

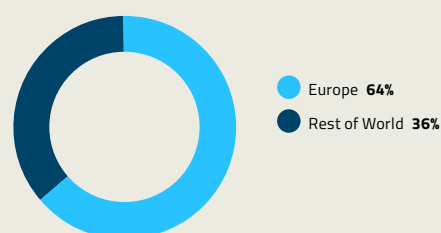
MSEK	2021	2020	2019
Net sales	5,633	4,362	4,732
Operating profit/loss	380	261	343

MSEK 5,633

Net sales for the Special Products business area during the year, of which MSEK 3,750 (2,818) were external sales

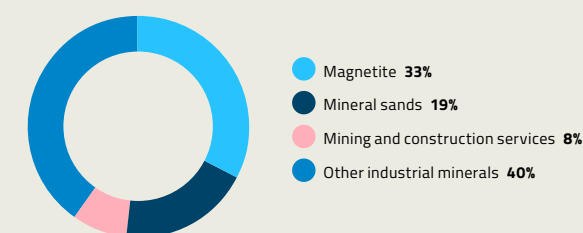
## Sales by region

Percentage of external sales (MSEK)



## Sales by product area and service area

Percentage of external sales (MSEK)



## Facts

The Special Products business area covers the subsidiaries LKAB Minerals, LKAB Wassara, LKAB Berg & Betong, LKAB Kimit, LKAB Mekaniska, Bergteamet AB and LKAB Trading Shanghai.

- LKAB Minerals develops and sells our own minerals such as magnetite, recycled products from e.g. blast furnace slag and other industries, as well as traded and processed minerals. The business has sales offices and production units in Europe, the US and Asia.
- LKAB Wassara develops and manufactures water-powered precision drilling systems for mining, construction and exploration drilling as well as dam building and geothermal energy. Customers are located throughout the world.
- LKAB Berg & Betong and Bergteamet AB are leaders within full service solutions for the mining and construction industries. Berg & Betong is the world's largest producer of sprayed concrete.
- LKAB Kimit supplies explosives to the mining and construction industries.
- LKAB Mekaniska provides engineering services for plant and machinery, from product development and design to servicing and maintenance.
- LKAB Trading in Shanghai conducts purchasing operations in Asia and helps to secure a sustainable supplier base and value chain through audits and supplier development.

# Strategy for the LKAB of the future

Our strategy sets out the path we are taking to reach zero carbon emissions from our own processes and products by 2045 and secures our competitiveness in the long term. As we move forward in the value chain and create increased growth, we are at the same time building Norrbotten into an innovation cluster for the fossil-free mining and minerals industry of the future. Three important areas will lead the transformation.

## New world standard for mining operations

Mining iron ore profitably and safely at greater depths, and moreover by carbon-free processes, demands new mining methods. Extensive work is therefore under way to develop a new world standard for mining through digitalisation, automation, electrification and new ways of working. In so doing we are building a foundation for our new value chain with further processing into sponge iron.

### Activities and progress in 2021

- We have taken further steps towards a machinery fleet powered by renewable fuels, with new ways of working being developed. The aim is to increase both safety and productivity and to enable the carbon-free LKAB of the future to become a reality.
- A new mining method has been tested in the mine in Kiruna. In contrast to the current method of sub-level caving, the new method – raise caving – makes it possible to mine the ore by working up from below, rather than from above downwards. The mining sequence is therefore reversed and this technology shift brings several gains, not least in terms of safety.

## Carbon-free sponge iron

Production capacity for sponge iron is being built up in stages based on technology that uses hydrogen produced with fossil-free electricity. This strengthens our position in the value chain, increases the value of our products and enables carbon emissions to be significantly lowered, which creates value both for the steel industry and its customers and for the end-user of the products.

### Activities and progress in 2021

- The world's first hydrogen-reduced sponge iron was produced on a pilot scale – a technological breakthrough that reduces emissions by around 90 percent in conjunction with steelmaking.
- The world's first fossil-free steel made with sponge iron was rolled and delivered, providing confirmation that the technology for a fossil-free value chain works.
- The location for industrialisation of the technology developed within the HYBRIT initiative was decided: a plant for fossil-free sponge iron will be built next to LKAB's existing operations in Malmberget/Gällivare.
- Construction began on a hydrogen storage facility connected to the HYBRIT plant in Luleå, where the technology for storing hydrogen will be developed.

## Critical minerals

Strategically valuable earth elements and phosphorus are to be extracted from our existing raw materials flows. This means we are moving into new markets for minerals use. The earth elements are used within technically advanced applications such as permanent magnets. Phosphorus is needed in mineral fertiliser within agriculture.

### Activities and progress in 2021

- Exploration results confirmed the potential for production of phosphorus mineral fertiliser and rare earth elements. So long as we carry on producing iron ore there will be opportunity to produce phosphorus from ongoing production.
- A cooperation agreement was signed with Boliden to investigate the possibility of extracting pyrite concentrate from waste at the Aitik mine, which LKAB will then process into fossil-free sulphuric acid. The sulphuric acid will be used in the processes for extracting rare earth elements and phosphorus, among other things, from LKAB's mine waste.

## Our greatest challenges

### Permit issues

The current permit processes are unpredictable and protracted. There is inherent inefficiency and an absence of a holistic perspective, which means that environmental and climate performance are overshadowed by the administrative process. This is making it difficult for the industry to plan for and transform operations to reduce climate impact in time.

### Supply of renewable energy

Hydrogen production through electrolysis is energy-intensive. The electrification of society will require substantial and continual expansion of power transmission and electricity production.

### Lack of capacity on the Ore Railway

Passenger trains, freight trains and ore trains from LKAB all run on the 500 kilometre long section between Luleå and Riksgränsen and on to Narvik. The Ore Railway is one of Sweden's most heavily trafficked lines. Maintenance deficits result in frequent disruption, and at the same time its capacity needs to be expanded to cope with the greater volumes that will result from our own initiatives and those of other industrial actors.

### Skills availability

Skills availability is particularly important as the skills needs change in the course of our transformation. The skills of our employees need to be developed and new employees with different skills need to be recruited. Alongside our own initiatives, other companies are establishing operations at and around the operating locations. This is expected to lead to increased demand and competition for skilled labour.



## Competitiveness today is crucial for the future

Implementing our strategy fully will require extensive investments spread across a long period of transformation. This transformation will take place gradually and will primarily be financed by our own cash flow and at times by increased debt, in which each step must contribute to strengthening our financial capacity to build further. In addition, investments in the expansion of renewable electricity and hydrogen will be needed to enable the transformation.

For the foreseeable future we will be dependent on the existing market for iron ore and iron ore pellets, and we need to continue improving the existing operations in parallel in order to maintain our competitiveness. The focus therefore remains on exploration, on increased productivity and on work to ensure that we are a safe workplace where people can develop.

“Once the transformation is complete we will have eliminated not just our own 700,000 tonnes of carbon emissions per year, but also our customers’ carbon emissions – corresponding to at least 35 Mt globally. That is equivalent to two thirds of all Sweden’s carbon emissions.”

### Basic plan

#### Optimise existing operations

- Exploration: secure sufficient mineral resources and mineral reserves at existing mines
- Production increase: secure profitability by fully utilising capacity

### Transformation plan

#### LKAB in 2045: Carbon-free processes and products

- Productivity increase of 40–50 percent with a new world standard for mining operations
- More than double sales with switch to carbon-free sponge iron
- Business broadened through extraction of critical minerals from mining waste

Extensive investments over a period of 15–20 years.

## Focus areas



Three cornerstones for succeeding in our strategy are: sustainability, innovation and skills. These are key factors individually, but also a requirement for each other. Our future business, including our profitability and financial sustainability, our licence to operate and our efforts to minimise negative impact on people and the environment, require ambitious sustainability work. Innovation is essential for establishing a sustainable business and attracting the right skills. And the right skills – both existing skills and new ones – are essential if we are to succeed with our journey into the future.

# New strategic goals

During the year the Board of Directors set out new strategic goals for sustainable value creation over the period 2022–2030 in support of our vision to lead the transformation of our industry toward a sustainable future. The financial goals were determined by our owner, the Swedish state, at an extraordinary general meeting in October 2021.

## Stable and efficient operations

We shall have the financial strength required to support our strategy and increase flexibility in our transformation.

	Current status in 2021	Updated goal
<b>Capital structure</b>	<ul style="list-style-type: none"> <li>The transformation will involve periods of increased debt</li> <li>The previous goal was a net debt/equity ratio<sup>1</sup> of 0–30 percent</li> </ul>	<ul style="list-style-type: none"> <li>Net debt/equity ratio<sup>1</sup> &lt;60 percent</li> </ul>
<b>Profitability</b>	<ul style="list-style-type: none"> <li>The transformation will involve increased investments over the coming 15–20 years</li> <li>The previous goal was for the return on equity<sup>2</sup> to exceed 12 percent</li> </ul>	<ul style="list-style-type: none"> <li>Return on equity<sup>2</sup> shall exceed 9 percent</li> </ul>
<b>Dividend</b>	<ul style="list-style-type: none"> <li>Ordinary dividend shall amount to 40–60 percent of profit for the year</li> </ul>	<ul style="list-style-type: none"> <li>Ordinary dividend shall amount to 40–60 percent of profit for the year (unchanged)</li> </ul>

## Safe, healthy and stimulating workplace

We shall be the best workplace for recruiting, retaining and developing the skills we need, thereby contributing to future prosperity and communities that are good places to live and work in.

	Current status in 2021	Goal for 2030
<b>Health and safety</b>	<ul style="list-style-type: none"> <li>8.2 lost time accidents per million hours worked</li> <li>Long-term sickness absence 0.63 percent<sup>3</sup></li> </ul>	<ul style="list-style-type: none"> <li>Fewer than 2 lost time accidents per million hours worked (interim goal for 2026: fewer than 4)</li> <li>Long-term sickness absence of max 0.8 percent<sup>3</sup> (interim goal for 2026: max. 0.8 percent)</li> </ul>
<b>Diversity and equal opportunity</b>	<ul style="list-style-type: none"> <li>Women make up at least 25 percent of the workforce, representing an increase from 2015 of 5 percentage points</li> <li>27 percent of managers are women, representing an increase of 9 percentage points compared with 2015</li> </ul>	<ul style="list-style-type: none"> <li>60/40 gender balance in management teams (interim goal for 2026: 30 percent women in workforce and 30 percent women managers)</li> </ul>

## Climate-efficient, sustainable transformation

We shall lead the transformation of the iron and steel industry for a better climate and sustainable development.

	Current status in 2021	Goal for 2030
<b>Carbon emissions</b>	<ul style="list-style-type: none"> <li>Since 2015 we have increased our total carbon emissions by 1.5 percent</li> <li>At the same time, carbon intensity has decreased by 7.4 percent compared with 2015 and amounts to 25 kg carbon dioxide per tonne of finished product</li> </ul>	<ul style="list-style-type: none"> <li>Decrease carbon emissions by 25 percent in our own operations (scope 1–2) compared with 2020, in line with the Paris Agreement of well below two degrees (interim goal for 2026: decrease of 15 percent)</li> </ul>
<b>Energy use</b>	<ul style="list-style-type: none"> <li>Total energy consumption has increased by 8.4 percent since 2015</li> <li>Energy consumption per tonne of finished product amounted to 165 kWh, which represents a decrease of 1 percent compared with 2015</li> </ul>	<ul style="list-style-type: none"> <li>Decrease energy use by 10 percent (kWh per tonne of finished product) in current production structure (interim goal for 2026: decrease of 5 percent)</li> </ul>
<b>Biodiversity</b>	<ul style="list-style-type: none"> <li>We have guidelines for land use with the ambition that the operations shall not cause any net loss of biodiversity; this ambition is not currently being achieved</li> <li>Work is in progress on planning for and restoring the environment after operations have ended and creating attractive industrial areas, and biodiversity is a part of this</li> </ul>	<ul style="list-style-type: none"> <li>LKAB shall contribute to increased biodiversity in the regions where we operate (interim goal for 2026: implemented methods and monitoring)</li> </ul>

<sup>1</sup> Defined as financial net indebtedness/equity

<sup>2</sup> Defined as profit for the year/average equity

<sup>3</sup> Defined as percentage of the workforce per quarter

# The pace of transformation

We have already come some way, but the journey to a carbon-free future is a long one and our transformation is taking place step by step.

**2030**

Our new strategic goals for 2030 are milestones along the way to our long-term goal of carbon-free processes and products by 2045.

To achieve our long-term goals we must take a decision on going deeper in the mines in time – which, among other things, requires the necessary permits to be in place.

**Products crucial for a carbon-free future**

Highly upgraded iron ore products, industrial minerals and special products



Sponge iron, industrial minerals, including critical minerals, and special products

**Decrease carbon footprint of our operations**

Carbon emissions reduced by 84 percent from 1960 to today's pellet production



Improvements in existing operations – phasing out of fossil fuels



Technology shift – transition to carbon-free processes

**Increase resource efficiency and circularity in the value chain**

Focus on business development based on increased recycling and reuse along the value chain



Established industrial park for extraction of critical minerals

**Collaboration to decrease carbon emissions throughout the value chain**

History of innovation and technical progress with a focus on the customer



– Vattenfall and SSAB within the HYBRIT initiative  
– Sandvik, Epiroc, Combitech and ABB

**Carbon-free processes and products in 2045**

**Fossil-free value chain for steel**

2020

2025

2030

2035

2040





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