

Sustainability Report 2019



Content

About	3	Products	26
This is Höganäs	3	Solutions that create value	26
Highlights 2019	4	Product vision	26
Governance	6	Life-cycle assessments and product footprints	27
From our CEO	6	Material use and circularity	28
What really matters	7	Zero waste – turning process residuals into products ..	29
Stakeholder dialogue	7	Non-process waste	31
Most important topics	7	Environment	32
Materiality assessment	9	Process safety	32
Sustainability strategy	9	Emergency preparedness	33
Developments since 2016	9	Crisis management and communication	33
Our strategic focus areas	10	Managing hazards	33
Driving change	11	The importance of maintenance	33
The highest governing body	11	Water use	34
Sustainability management	12	Emissions to air and water	35
Workplace	13	Air emissions	35
Our people	13	Water discharge	35
Values and principles	14	Climate	37
Code of Conduct implementation	14	Climate Roadmap 2045	37
Equal treatment, diversity and no discrimination	14	The kick-off project	38
People's opinion matters	15	Our footprint	38
Health and safety	16	Direct carbon dioxide emissions, Scope 1	38
Risk assessments and a proactive approach	17	Indirect carbon dioxide emissions, Scope 2	39
Safety culture is key	17	Upstream reductions	39
Healthy workplaces	18	Transport	40
People development	20	Turning renewable	40
Society	21	Energy use	41
Responsible sourcing	21	Energy management and efficiency	41
Developing methods and tools	22	Appendix	44
Value creation in the supply chain	22	About this report	44
Human rights and business ethics	23	Sustainable development goals reference	45
Reported incidents in 2019	23	GRI index	48
Creating value for society	24		
Community engagement	24		
Communication	24		
Grievance mechanisms	25		
Contributing locally	25		

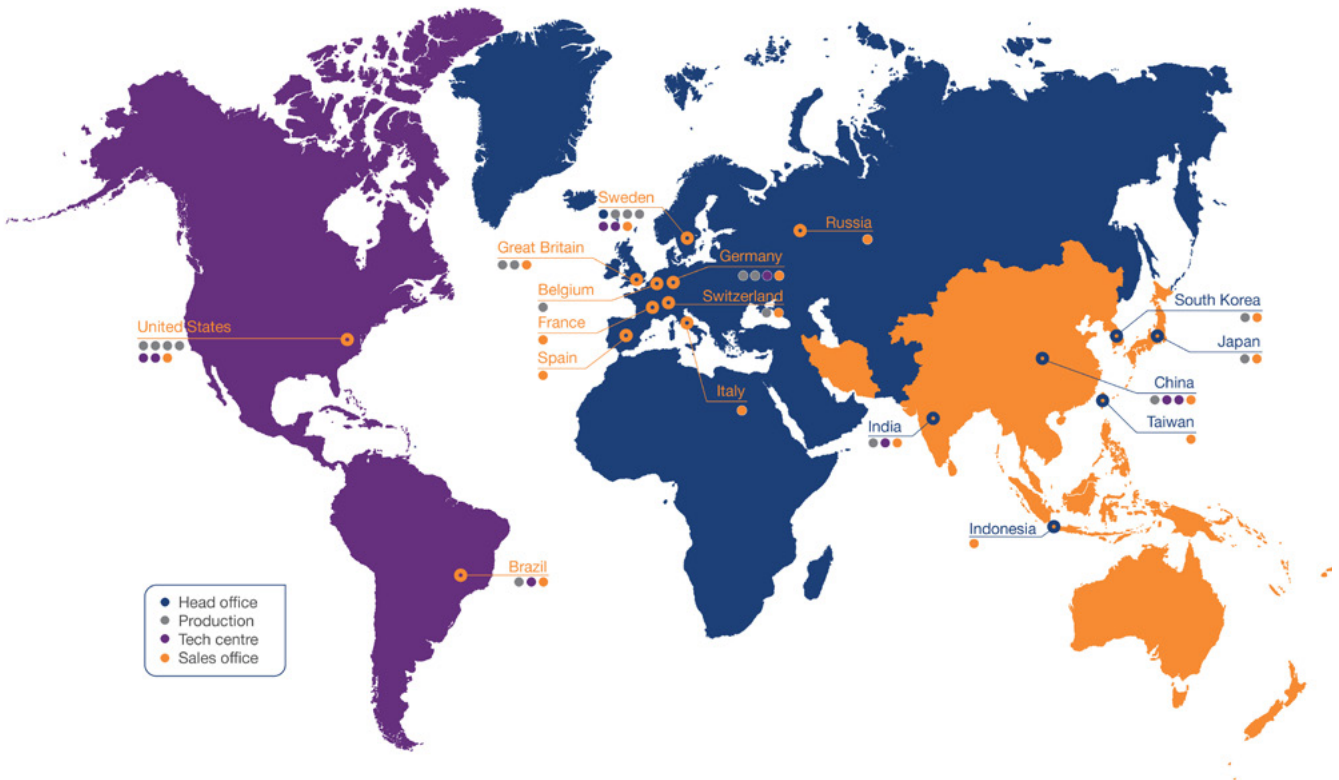
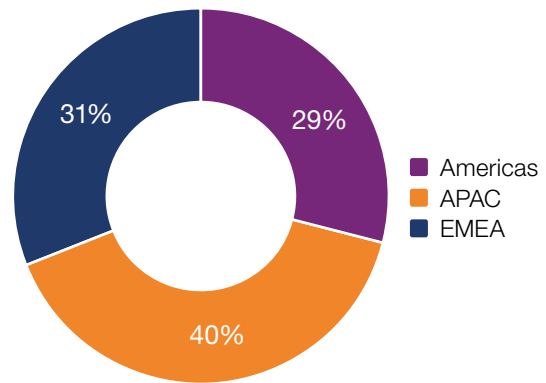
About

This is Höganäs

Höganäs is one of the leading global providers of metal powder solutions with an annual production capacity of over 500,000 tonnes. We have 18 strategically located production facilities in 11 countries and are represented by tech-centres and sales offices close to our customers in all three regions: Americas, APAC and EMEA.

Höganäs' vision is to **inspire industry to make more with less**. In our opinion, metal powder technology provides endless opportunities; not only can it enable our customers to reduce their material and energy consumption, but it can also enable them to use new and better techniques that make final products more efficient, less expensive, and with lower lifecycle impact.

Sales per region



Our view is that metal powders can facilitate more sustainable consumption and production by contributing to solutions to many of society's pressing challenges, such as resource scarcity, shortage of clean water and the need for renewable energy.

Read more about the industries we serve, our products and our know-how at www.hoganas.com.

Even though we are large within our niche market of metal powder producers, Höganäs is a relatively small player looking at the steel industry as a whole. This means that we must take every opportunity in our sphere of influence to inspire the industry to make progress towards a better world, and lead by example whenever possible.

Our position in the value chain – several steps upstream from the end user – means that it is vital that we proactively listen to the signals coming from our customers' customers and further downstream, so that we are prepared for future demands.

Highlights 2019

We were granted a permit to start construction of a new atomizing plant at the production site in Laufenburg, Germany. On 16 September 2019, the Freiburg Regional Council issued the permit for the construction and operation of the plant under the strict conditions of the German Federal Emissions Control Act. Extensive investigations and validations with regard to noise, emissions, fire protection and occupational safety have been carried out as part of the application process.

Immediately after receiving permission to start construction, work began to adapt the existing building and the completion

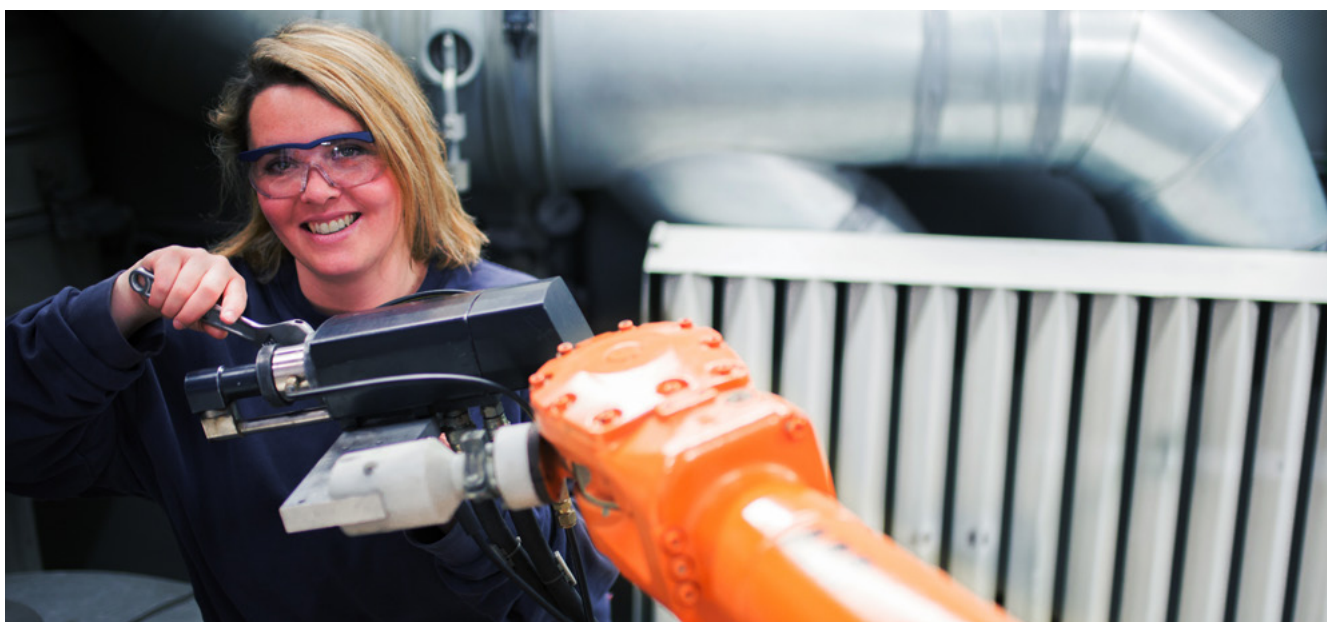
Short facts

- Annual production capacity: 500,000 tonnes
- 3,000 customers in 75 countries
- More than 3,500 products from 18 production facilities in 11 countries
- 2,500 co-workers in 16 countries
- Turnover: 10,343 (10,361) MSEK
- Equity: 9,806 (9,046) MSEK
- Net debt: 5,300 (6,235) MSEK
- Around 1,000 granted patents
- Höganäs is privately owned by FAM and Lindégruppen
- Our headquarters is located in the municipality of Höganäs, Sweden.

of the atomizing plant is planned for the third quarter in 2020. It will produce high-purity special alloys. These powders are used in the additive manufacturing (3D printing) of highly complex components such as turbine blades or implants.

First soil remediation contract in Oakley, California for remediation of Tetrachloroethylene (PCE) and Trichloroethylene (TCE). This is the first commercial soil injection reference in California and includes approximately 150 acres of valuable land that will be able to be reclaimed.

The former chemical manufacturing facility, where operations ceased in 1998, produced chlorofluorocarbons (CFCs), fuel-additive anti-knock tetraethyl lead (TEL) compounds and titanium dioxide (TiO₂).



Höganäs received the Industry Gender Equality

Prize 2019 for our work for greater gender equality both at the company and in the industry as a whole. The prize was presented by the Swedish Minister for Gender Equality during the Industry Day event in Sandviken, Sweden, where more than 500 people participated.

The jury's reasoning: "Höganäs is working with concrete activities towards measurable goals. Their work includes initiatives such as a review of recruitment processes, making women visible in the company and facilitating the balance between work and private life."

ISO 45001 certification. Health and safety and the Zero Accident goal are top priorities for Höganäs. As part of our progress, we are happy to state that two of our production sites: Mogi das Cruzes, Brazil and Abril, UK, received their ISO 45001 certificate during 2019. Our plan is that all sites in Sweden, India and US will receive their certificates during 2020, and all production sites will have their certificates by 2022.



Höganäs was awarded the Industry's gender Equality Prize for 2019. An award that the Swedish Industrial Council presents to companies that have undertaken important initiatives to promote gender equality.

Governance

From our CEO

The year 2019 was a year of uncertainty. In the world economy we witnessed trade wars, the beginning of a recession and – finally – a decision on Brexit. We also saw increased consumer uncertainty; due to the economic downturn many private investments were postponed, for instance purchasing a new car. At the same time, demand for electric or hybrid vehicles surged. These uncertainties and contradicting forces affect our customers and result in fluctuating demand for metal powder. For Höganäs, it was as important as ever to maintain close and trusting customer relations, and support the market in any way we can.

Our work to improve our sustainability performance continued during 2019 and our updated sustainability strategy will help us even further to set concrete targets that will move us in the right direction. Our present performance is commented on in each chapter of this report.

In terms of health and safety, we have made progress but see the need to improve even more and faster. We have added resources and expect to see positive development in the coming years. One important improvement area is leadership; to engrain “safety first” in our cultural DNA and never accept unsafe behaviour.

From a climate point of view, we took great strides during 2019. The Board of Directors approved our Climate Roadmap and our goal to become climate neutral by 2045. This is however an ambitious target, which demands not only investment from our side, but also outside investment in new technology. As a steel company, 60 per cent of our carbon dioxide emissions come from the use of fossil coal in the reduction of iron ore. The second largest emission source is due to our use of natural gas in production. One important building block of the Climate Roadmap is to establish bio-coke and green energy gas as fuel sources. We also aim to develop technology to remedy the root cause of our environmental impact, and not only solve the symptoms. One example is to develop methods of using bio-coke, not only as a renewable fuel but also as an alternative to anthracite, as a carbon addition to steel melts.

We are convinced that metal powders can improve many industries and society at large. Hence it is vital for us to integrate sustainability in our strategy and business planning. We strive to not only reduce our own negative impact, but also offer sustainable products and solutions. One example is to develop metal powder solutions for tomorrow’s electric and hybrid cars. Other areas we are prioritizing are surface coating, additive manufacturing and environmental solutions, all of which contribute to environmental efficiency and reduced material and energy consumption in society.

One step in this development is our efforts to systematically assess our products’ lifecycles and their climate impact. Through this work, we can meet our customers’ expectations and promote products’ sustainability advantages with a knowledge-based approach.

In the years to come, we are committed to continuing our sustainability work according to our strategy and to show our support for the UN Global Compact as well as the Sustainable Development Goals.

We acknowledge the fact that sustainability is a complex field with many challenges. We are committed to taking our responsibility to drive the industry forward and in this report, we aim to give a transparent and honest description of our performance and challenges ahead.

Best regards,

Fredrik Emilson

President and CEO, Höganäs Group



What really matters

The steel and metals industry provides the necessary materials for basic needs like infrastructure, buildings, machinery as well as countless other technical, medical and scientific needs and is thus essential to the global economy and societal development. Standing at the beginning of most value chains, mining and metals are connected to almost all other industries.

Our industry, as any other industry, faces significant demands and expectations from across the value chain and from stakeholder groups to transition to a more sustainable and equitable way of doing business. Drivers for change have been identified in several areas such as geopolitical, technological, environmental and societal, where increased concern for climate change stands out.

In order to work effectively to accomplish sustainability improvements, we must identify what is really important to our business and to our stakeholders, and decide on direction and ambition. We need to know what we have to change and where to start. This calls for a relevant sustainability strategy that can point out where we should be and guide our way forward.

Our strategy was updated in 2019 based on a renewed stakeholder dialogue and materiality assessment. The parts describing our focus areas elaborate further the activities following our conclusions on impacts, risks and opportunities.

Stakeholder dialogue

Höganäs' key stakeholders are customers, co-workers, owners and society. Society in this context comprises different facets of the community, such as competent authorities,

non-governmental organizations, academia and neighbours. By "customers" we include our customers and their customers, as well as other kinds of business partners.

During 2019 we have renewed our stakeholder dialogue. We have gathered both qualitative and quantitative input from our prioritized stakeholder groups through interviews, workshops and questionnaires. Customer and supplier representatives, board members and owners, employee representatives, neighbours as well as representatives from other groups such as academia and the finance sector, have all been included as stakeholders. We have also utilised existing channels and procedures for communication to gather information and deepen our understanding about our stakeholders' expectations of Höganäs.

Most important topics

Our stakeholder groups have many prioritized areas of interest in common, for example topics related to health and safety, climate change and ethical business behaviour. But as expected there are differences as well, depending on how the stakeholder is affected by Höganäs' activities.

We can see that among customers, and especially further downstream among our customers' customers, the importance of climate related topics is ever increasing, explained by the high ambitions of climate adaption that these companies themselves communicate to the market. Other topics that rank high among customers are related to process stability, safety, customer relations, sustainable products and ethical business behaviour.

Our neighbours, i.e. people living close to our operations, understandably rank the local effects of our business higher,



where health and safety, emissions, use of chemicals and exposures, as well as how we act towards people and society are among the highest rated topics.

Suppliers want a reliable customer and rank process stability, ethical business behaviour and responsible sourcing among the most important topics.

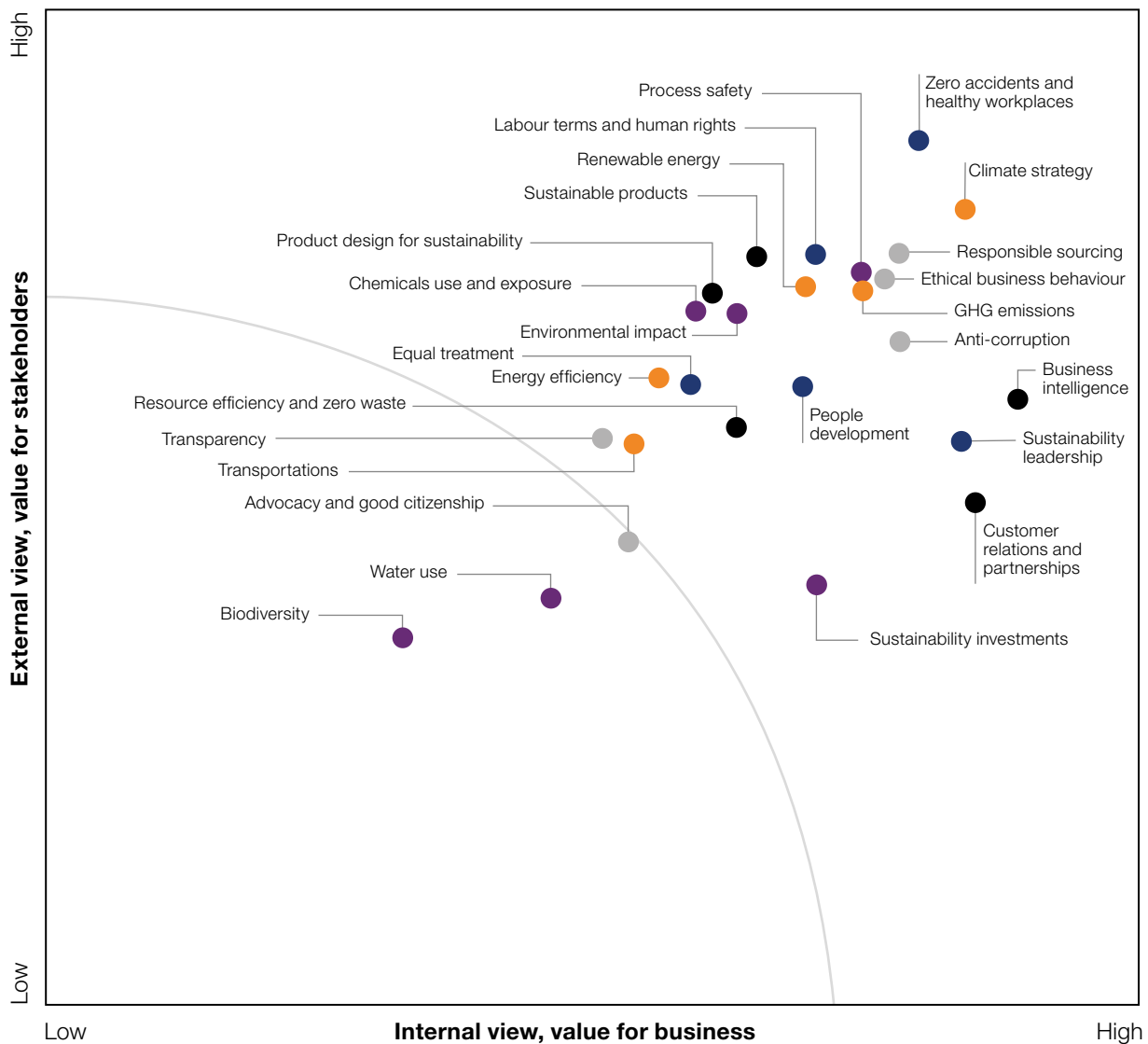
The Board of Directors expressed health and safety management with the objective zero accidents, climate strategy and business adaptation to a low carbon society as the top priorities. But it also pointed out the importance of sustainability being an integrated part of the business strategy.

Echoes from industry organizations

“Climate change is in focus, finding new materials and new ways of working to lower the footprint. The future of the industry is at stake.”

“Recruitment and employer brand is crucial.”

Materiality analysis chart



-  Workplace
-  Society
-  Climate
-  Environment
-  Products

Materiality assessment

The insights from our stakeholder dialogue have been valuable input to our renewed materiality assessment, which was carried out in 2019. As an introductory part of the materiality assessment, each member of the Höganäs Group management, and a number of selected co-workers, carried out an individual assessment of the topics relevant to Höganäs. The assessment covered aspects like the topics' impact on business stability, long-term profitability and reputation, as well as present performance and the perception of external stakeholders' prioritization of the topics.

The results from the stakeholder dialogue and the materiality analysis have been thoroughly discussed and the outcome has formed our updated sustainability strategy.

Reflections from the Board of Directors

“Time has passed from when one could do a strategy and later think about sustainability. But, on the other hand, we are not helped by some sustainability experts that says ‘this is something you have to stop at once’.”

“Safety is a priority, but we are not progressing towards our goal at a desired pace.”

Sustainability strategy

In 2016, we launched our first sustainability strategy based on stakeholder dialogue and materiality assessment. It was visualised as “Mount Sustainability”, consisting of five paths, each with six stations that illustrated the climb towards being a sustainability leader.

In 2019, we have reviewed our strategy and are happy to present the outlines of the updated version in this report.

Developments since 2016

Since 2016, Mount Sustainability has served us well not only by raising awareness, pointing out the right direction and communicating our ambitions, but also by raising questions and clarifying in which areas our toughest challenges lie. This has helped us identify where to deepen our knowledge and understanding to be able to act decisively.

For example, it has become even clearer that the path “Climate neutral operations” is a huge challenge, not only for us as a company but for the whole industry due to our

carbon intensive production processes. We knew already in 2016 where we wanted to be, but not how to get there. This resulted in our “Climate Roadmap 2045”, which was launched in 2019. This roadmap is a big step forward in formulating our priorities and the concrete actions needed ahead to substantially decrease our climate impact. [Read more here.](#)

Another example is the path “Sustainable offerings and long-term profitability”. We realized early on that we needed to adapt to the market changes caused by electrification, digitalisation and other technical developments, changes in legislation, increased environmental awareness and other trends driven by climate change and increased environmental and social demands. In order to stay competitive and to create long-term value, our product portfolio must be seen as part of the solution to our customers' and their customers' sustainability challenges. Again, we knew where we wanted to be, but we needed more in-depth knowledge about how to move forward. This has resulted in a product vision that will support the different product development teams around the world to make the right choices and priorities. [Read more here.](#)






There are areas where we have made progress, for example concerning zero waste and energy efficiency. But there are other areas where we need to rethink how we can progress faster, for example concerning zero accidents and gender diversity.

Mount Sustainability, through both its visionary and ambitious expression, has created awareness and a sense of urgency in the organization that we needed in order to move on to the next level of maturity and commitment.



Höganäs' new sustainability strategy with focus on five areas; workplace, society, climate, environment and products.

Our strategic focus areas

Focus area	Description
 <p>Workplace</p> <p>SDGs 5.1, 8.5, 8.8, 10.2, 12.6, 12.8, 13.3</p>	<p>This focus area is all about people, good working conditions, zero accidents and healthy workplaces.</p> <p>It is about our workplace and being attractive as an employer, finding and developing the right competence and skills, making people thrive, living our values and respecting human rights. Read more</p>
 <p>Society</p> <p>SDGs 8.7, 8.8, 12.4, 12.6, 16.4, 16.5, 16.6</p>	<p>This focus area is about how we act responsibly as member of society, upholding our ethical standards in everything we do. This includes our sourcing, our financial reporting and tax payments, our transparency and compliance towards legislation.</p> <p>It is also about our responsibility towards external parties in the local community that depend on our business. Read more</p>
 <p>Climate</p> <p>SDGs 7.2, 7.3, 13.2</p>	<p>This focus area is all about climate impact; the GHG emissions from our own processes, our transition from non-renewables to renewables, energy efficiency and the choices we make concerning upstream materials that have climate impact.</p> <p>Our climate strategy is formulated in the Climate Roadmap 2045. Read more</p>
 <p>Environment</p> <p>SDGs 6.4, 9.4, 12.4</p>	<p>This focus area addresses the environmental impact from our activities and from the materials and chemicals that we use. It is also about the technology we invest in, how well we maintain it and our ability to prevent spills, leakages and other unplanned events with environmental consequences. Read more</p>
 <p>Products</p> <p>SDGs 8.4, 9.5, 12.2, 12.4, 12.5, 12.6, 13.2</p>	<p>This area focuses on our product portfolio and how to best solve our customers' challenges – a portfolio that is circular, resource and energy efficient as well as adapted to a low carbon society.</p> <p>It is also about partnerships and customer relations, and in-depth knowledge of trends, markets and new technology. Read more</p>

Driving change

Sustainability leadership is an absolute necessity to accomplish the profound change that is needed to become and remain a sustainable business. We acknowledge the importance of the individual engagement that our co-workers show in their everyday work. Without their efforts and commitment, we would not see the pace forward that we do.

Only if the sustainability strategy is integrated in the business strategy and planning process, can we truly say that we apply sustainability leadership internally. And only if we have that leadership internally can we inspire progress beyond our own ranks.

Sustainability governance at Höganäs is based on internationally agreed principles and goals such as the Sustainable Development Goals and the ten principles of the UN Global Compact. Our vision and our management philosophy, More Höganäs, as well as our Code of Conduct, serve as guidance.

Our sustainability strategy points out the direction we must take and our governance structure enables our co-workers to align their decisions and plans with that direction, so that our goals can be reached.

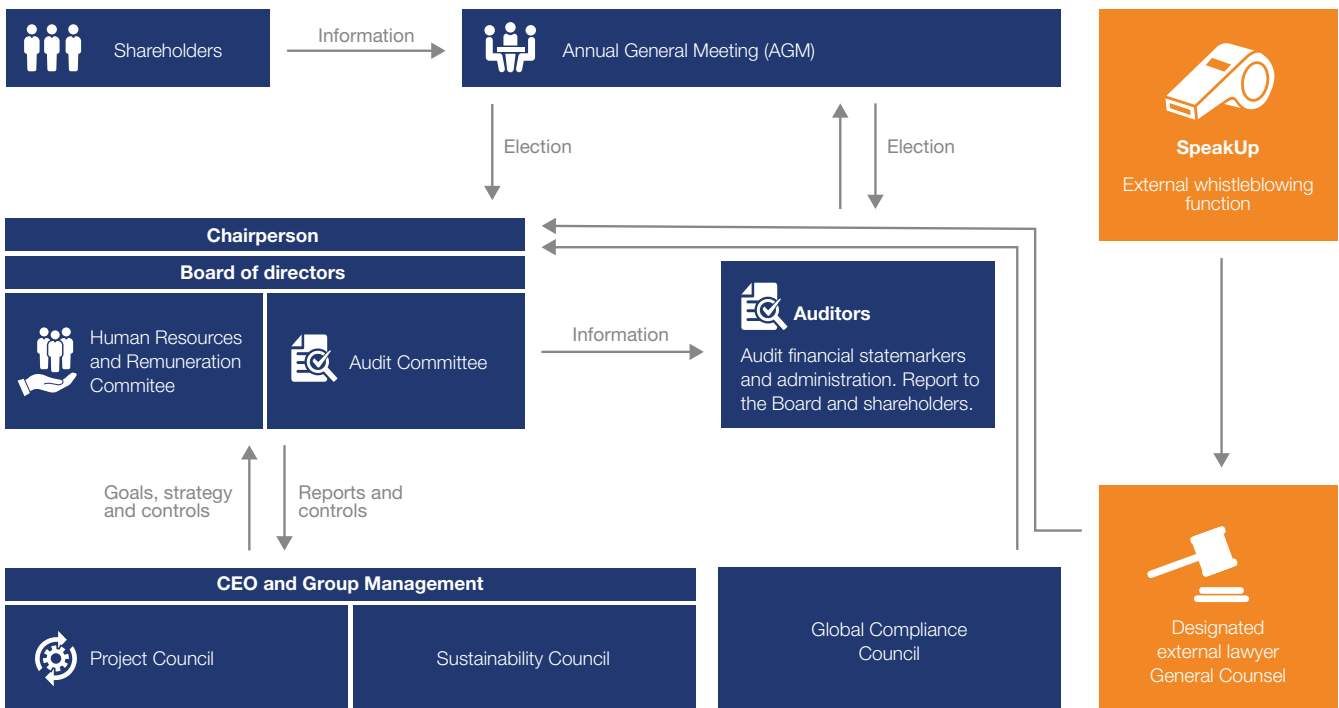
The highest governing body

Corporate governance at Höganäs is based on applicable legislation and internal policies and procedures. The ultimate responsibility and decision-making authority for Höganäs' sustainability performance and compliance with statutory and regulatory requirements lies with the Board.

A risk matrix, including sustainability risks, is prepared by the Group management each year and reviewed by the Audit Committee and the Board. Closer follow-up for specific risks is decided on a needs basis.

All board meetings include a review of Höganäs' operations and performance, which includes sustainability performance. The Board received updates on Höganäs' fulfilment of sustainability goals at board meetings five times during 2019. In addition, we report quarterly and annually to our owners according to a Sustainability Framework; a set of minimum sustainability related requirements.

Governance



Sustainability management

The General Counsel and Senior Vice President Sustainability, who is a member of the Group management team and reports to the CEO, is responsible for developing the sustainability strategy, whereas each Group management team member owns the implementation within their respective area.

A corporate sustainability team, consisting of sustainability specialists, works globally with programmes and projects targeting identified improvement areas. The corporate sustainability team serves as a support function to the organization in sustainability related matters and monitors progress to ensure it is made according to plan.

In 2019 a Sustainability Council chaired by SVP Sustainability was formed. The Council consists of six dedicated

members of the Group management team representing different parts of the company such as product areas, R&D and regions. The purpose of the Council is to build direct links between sustainability targets and business development activities, to take decisions on business-related sustainability matters as well as to participate in preparing other sustainability related matters for decisions within the Group management team.

Höganäs' internal governance and risk management instruments are the management system, which covers all operations. It is to a large extent certified and third-party audited.

Relevant policies, certifications and legal statements are available at www.hoganas.com.

Workplace



Our ambition is to create a great and meaningful place to work for all co-workers. We want to attract competent, skilled people and make sure they can develop to their full potential and thrive within Höganäs.

Health and safety is the number one priority, where our objective to reach zero accidents is a great challenge.

Read here about our work, setbacks and success stories – to give our co-workers the best possible working environment, to attract more women to an industry that has a long tradition of male dominance, and to really live our principles and values.

Our people

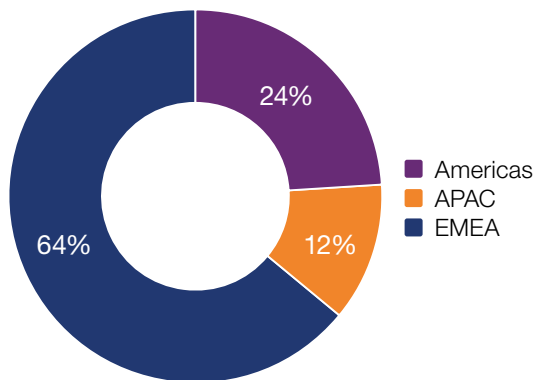
In 2019 Höganäs had 2,454 (2018: 2,402) co-workers in 16 (16) countries, as average full-time employees (FTE).

The total co-worker turnover during 2019 was 4.5 (4.1) per cent (calculated on total headcount) which is an increase of 0.4 percentage points compared to 2018.

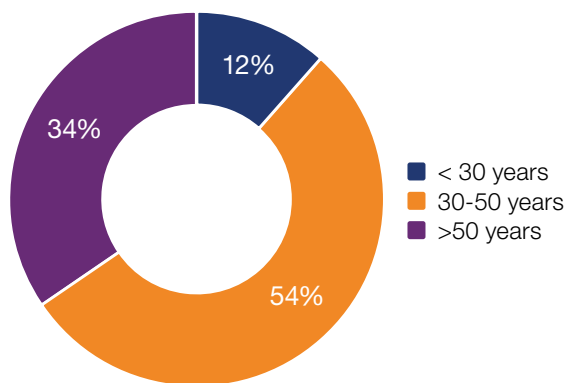
Number of employees as headcount per gender, employment type (permanent/temporary and full-time/part-time) and region

Gender	Americas	APAC	EMEA
Men	521	231	1,318
Women	72	68	263
Full-time	593	299	1,497
Part-time	0	0	84
Permanent	593	298	1,503
Temporary	0	1	78

Employees per region



Age groups



Values and principles

We want to apply sound values and principles in all situations – how we meet, lead, develop and reward our people. To guide us, we have our management philosophy, **More Höganäs**, and our **Code of Conduct**. These values and principles give us a common platform on how to act and serve as a compass when facing crossroads.

We realize that there is always room for improvement and that we constantly need to evaluate how we work in order to be a better employer, manager and co-worker.

Code of Conduct implementation

In November 2019 a new version of our Code of Conduct was published together with an extensive launch pack consisting of an introductory film from the CEO, a knowledge assessment, and workshop materials, such as interactive films, scenario cards and a worksheet to be used as a basis for discussion.

The new version is more comprehensive and covers additional areas that have been brought to our attention since the previous version was launched in 2011. The code includes, for

example, our stance on anti-corruption, human rights and environmental accountability. This new content calls for thorough implementation, which will be done over the next 1-2 years.

All managers are tasked with carrying out a workshop with their team, where different aspects of the code will be highlighted through scenario-based discussions. The first to work with the new code and the launch pack was the Group Management team, and the concept will be cascaded through the organization. All co-workers will go through the mandatory knowledge assessment during 2020, making sure that everyone has read, understood and is willing to comply with the code. This assessment will also be integrated as part of the mandatory induction training.

As part of the update, an improved system for reporting breaches of the Code of Conduct has been implemented, and an extensive internal information campaign has been carried out to encourage everyone to speak up when needed.

Equal treatment, diversity and no discrimination

We foster a culture that welcomes new co-workers from all backgrounds to quickly become a part of our global organization, with common employment standards and ways of working that promote diversity and inclusion.

We also realize that respect, equal treatment and equal opportunity are fundamental to being an attractive employer and we view diversity as a long-term success factor.

The global steel industry has traditionally recruited more men than women, which is something we want to change. At Höganäs, we see the potential in encouraging women to discover the opportunities within our industry. This helps us to access a larger pool of talent, and to become a more modern and attractive company to work for. One action is to establish the principle of 50/50 women and men on the long list of candidates in recruitment.

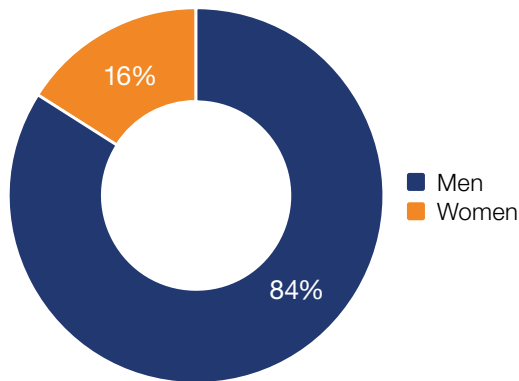
Höganäs' target to increase the number of female co-workers to 25 per cent by 2021 is a great challenge. The results in 2019 show that we are at 16 per cent, which is the same level as 2018. However, 26 per cent of managers at

Mens' salaries in average

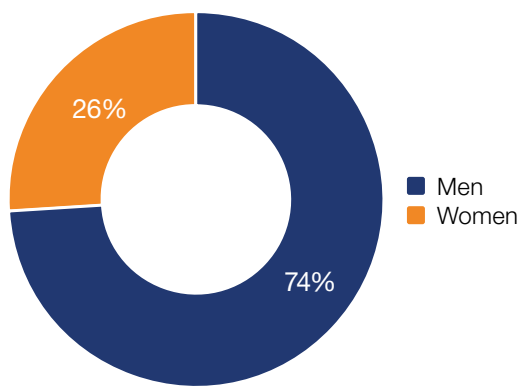
6 per cent

higher than womens' salaries

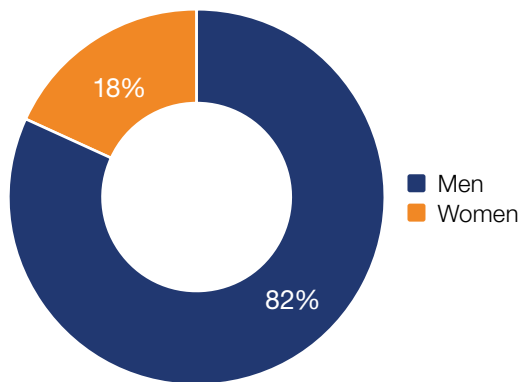
Gender distribution, all



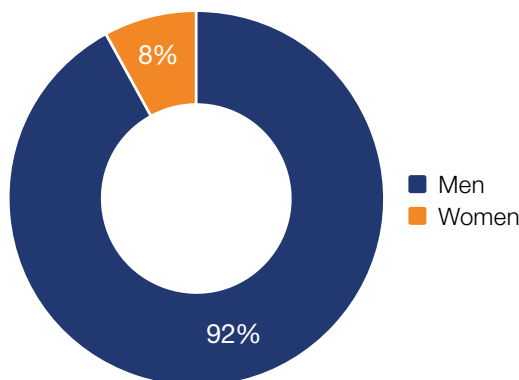
Gender distribution, managers



Gender distribution, Board of Directors



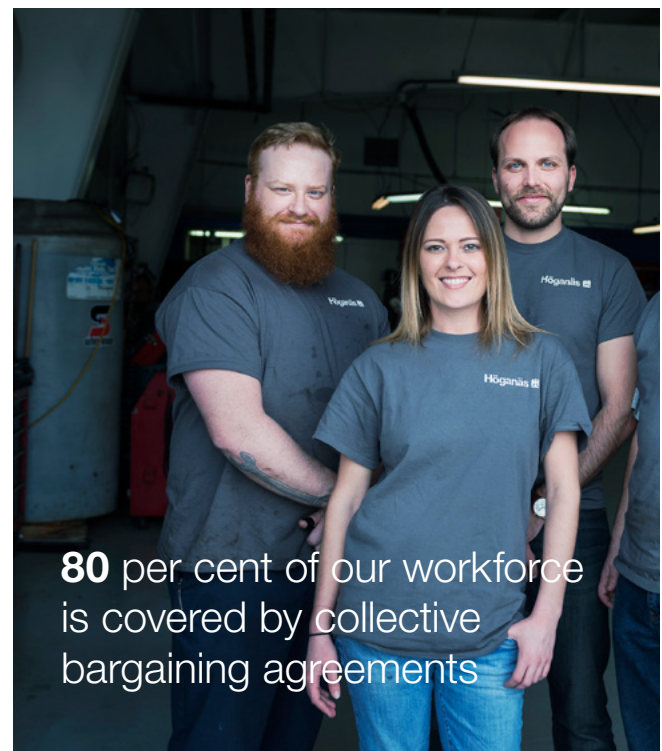
Gender distribution, Group management team



level 1 and 2 are women, and we see potential to recruit more women at all levels within the organization.

One initiative during 2019 was our co-operation with the Swedish steel producers' association to bring forth a roadmap that describes the challenges of the mining and steel industry when it comes to finding employees with the right skills.

The "Competence Roadmap - The Way Forward for the Mining and Steel Nation Sweden" was launched 25 September 2019, in the presence of industry representatives and politicians. The plan describes what the industry, government and academia need to do to meet the demand for competence within the industry.



People's opinion matters

We use our People Satisfaction Survey to detect problem areas and gather people's opinions. The results serve as an important indicator of where we are and what we need to improve.

The results from the latest survey, carried out in December 2019, show high levels of accountability, high motivation and strong willingness to work hard across the organization.

However, our co-workers are telling us that we have to do more to revert the declining trend of being the best employer (2019: 5.2, 2018: 5.4 and 2017: 5.5) and recommend us as employer (2019: 5.4, 2018: 5.7 and 2017: 5.7).

We need to make sure that the benefits from the organizational changes carried out in 2017 and 2018 are fully utilized,

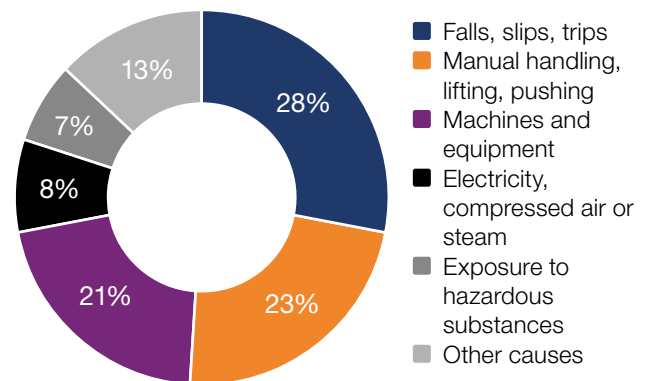
as how we are organized is seen as one of the biggest obstacles for efficiency at work. We also need to act on the levels of perceived stress in parts of the organization. Group Management is taking on concrete actions to support the many local management teams in their specific needs. Actions are being discussed and will be implemented in 2020.

Health and safety

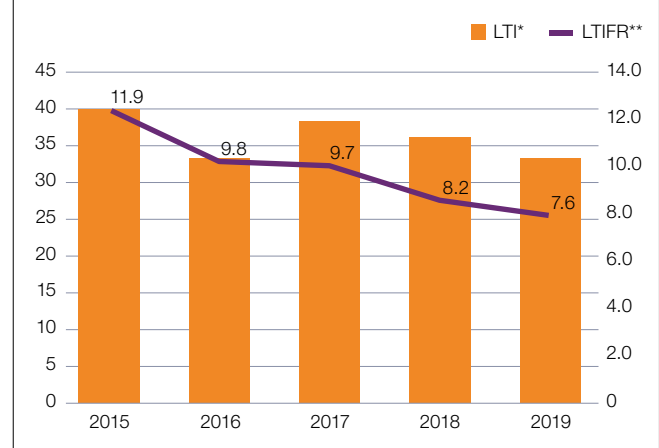
Safety is a top priority and we have a zero accident vision. We also strive to create a healthy work environment to prevent work related ill-health. Höganäs deploys a preventive and systematic approach to health and safety. The technical and physical aspects of managing risks in our operations are paired with a zero accident culture where behavioural change is key to success.



Causes of injuries



Safety performance development



*LTI: Number of lost time injuries

**LTIFR: Lost time injury frequency per 1 million hours

Health and safety, co-workers	2019	2018	2017	2016	2015
Number of recordable injuries*	221	164	201	165	167
Number of lost time injuries**	34	37	39	34	41
Number of high-consequence work-related injuries	0	1	0	2	0
Number of fatalities	0	0	0	0	0
Lost time injury frequency per million hours worked	7.6	8.2	9.7	9.8	11.9
Recordable injury frequency per million hours worked	49.3	36.5	49.8	47.5	48.4
Incident reporting frequency***	63.1	53.0	52.8	53.8	23.2
Sick leave rate	3.7 %	3.8 %			

* Including all reported injuries with or without absence from work and commuting accidents.

** Including injuries and commuting accidents leading to absence from work.

*** Reported risk observations, near misses and accidents per lost time accident.

Global safety workshop creates awareness of risks in operations involving molten steel

During 2019, safety workshops were held at Höganäs' sites in Stony Creek, USA; Mogi das Cruzes, Brazil; Halmstad, Sweden and Ahmednagar, India focusing on hot metal safety in electric arc melting and water atomizing processes.

"Operations involving molten steel pose one of the biggest risks in the manufacturing process for the Höganäs Group," says Håkan Persson, Global Safety Manager, who has promoted the initiative.

The Safety Workshops follow the same format in all units with two segments:

1. Identify and discuss types of incidents, direct causes and contributing factors that can occur in every step of the melting and atomizing process.
2. Review current procedures, remaining hazards and decide on actions to further minimize risks.

The main objective is to leverage our co-workers' practical knowledge about processes to clarify the risks and discuss appropriate measures to prevent accidents with hot metal. The workshops cover topics relating to unsafe reactions, spillages and explosions in the electric arc and ladle furnaces.

"We realized that our team members together should know more about this than any expert from outside.

So, we decided to make this an interactive workshop," says Håkan. "Since it was very successful, it made sense to replicate the format in other units."

"Now we are analysing the outcome of the group discussions from each site to identify common risks and promote sharing between the sites. We will follow up by having conference calls with representatives from all four sites to discuss how to define common best practice safety standards for hot metal operations," he continues.

"This outcome will also serve as content for developing an e-learning on the topic in our learning platform, which can be used by the team to remind themselves about risks and for the on-boarding of new colleagues," Håkan concludes.



During 2019 safety workshops were held at Höganäs' sites in Halmstad Sweden, Stony Creek USA, Mogi das Cruzes, Brazil and Ahmednagar India.

Risk assessments and a proactive approach

In order to work systematically to reduce risks and prevent accidents, our operations have health and safety management systems that cover all activities and co-workers. Our target is to certify our systems with ISO 45001 by 2022.

The sites in Mogi das Cruzes, Brazil and Abril, Wales were certified during 2019. US, India, Sweden and Germany plan to get certified in 2020.

Our health and safety committees meet on a regular basis up to four times a year and include all levels of the organization, from shop floor to management. All co-workers are covered by the work of the health and safety committees. The purpose of the committees is to create a formalized way of collecting knowledge from all levels in the organization, open a dialogue and create a forum where improvements can be discussed and decided upon.

Health and safety training that is adapted to the individual work-related risk exposure is mandatory for all co-workers and general safety training is part of our induction process

for new employees. Even though we want to become the benchmark for the steel industry concerning safety performance, our track record shows that we still have a long way to go and that "safety first" must remain our priority.

Safety culture is key

"Safety first" sums up our aim to create a solid safety culture where dialogue and risk-elimination are key, and where the rule is to never compromise on safety. Our long-term objective is zero accidents and some of our production units are approaching that level of safety.

Even though we have worked systematically to improve our safety performance and have made progress, it has been too slow. To speed up and increase our efforts, we appointed a Global Safety Manager for operations in January 2019.

During the year, many activities and improvements have been carried out, especially concerning competence development, improved reporting procedures and communication around best practice and lessons learned.

Five years without injuries in Busan, South Korea

At the mixing station in Busan, South Korea, the team has developed a firm structure for recognizing potential safety hazards and keeping the focus on safety.

This includes:

- An annual safety plan with thematic activities
- Monthly safety inspections and risk reduction activities carried out by operators
- Daily shift meetings with basic safety rules, potential risks and one-point-lessons

Their structured approach is paying off – five consecutive years without a single accident leading to absence from work.

Seung Joo Kim, plant manager, emphasizes the importance of creating a bottom-up movement:

“Include all co-workers deeply, make safety thinking a habit and run continuous safety training. There are no specific safety experts in the Busan plant, we are all safety experts and we are all responsible.”



Our interim target for 2019 was a lost time injury frequency (LTIFR) of less than 3 per million hours worked. In 2019 the LTIFR was 7.6 (8.2), which was a decrease compared to last year's result of 0.6 points.

From now on we will introduce the KPI “Total Recordable Injuries” (TRI) and TRI frequency, which also includes injuries that do not result in absence from work. Furthermore, we will follow a severity index and a reporting culture index. These KPIs will give us a more complete picture that will improve our ability to focus our preventive measures effectively.

In 2020 we will increase our focus on safety leadership, awareness and attitudes even further to develop a strong safety culture. Activities will include increased interaction and communication between sites and the introduction of “Best Practice Groups” for high risk areas. We will strengthen the use of effective tools for dialogue and improvements, as well as hands-on risk mitigation methods, such as “Take 5”, a pre-start safety checklist.

We must work persistently to foster the attitude that zero accidents is achievable. We also need buy-in from all our co-workers around the globe to fully embrace the “safety first” mentality and let it permeate all actions and everyday behaviour.

Healthy workplaces

Health is fundamental for each individual's quality of life and happiness. We want to make sure that our workplaces do not have a negative effect on the health status of our co-workers and we want to promote good standards and best practice to mitigate adverse health effects within our industry and within our supply chain.

During 2019 the sick leave rate for all employees was 3.7 (3.8) per cent.

Occupational health services are provided locally and according to national legislation. Medical health checks are carried out as part of our induction programmes and then on a regular basis based on the type of work and its potential exposure to risk. Occupational health services can also include vaccinations, as well as on-site access to a physician, psychologist or a nutritionist. In some cases, health examinations such as CT scans or other advanced examinations are provided as part of ill-health prevention.

We work continuously to minimize exposure to hazardous substances at work, where nickel and cobalt serve as targeted indicators (see [Exposure to substances at work](#)). A limited number of co-workers are exposed to thermosetting resins, which pose a risk of allergy and asthma. To prevent incidents, co-workers undergo special training and their exposure is monitored.

Exposure to substances at work

We work to minimize exposure to dust and hazardous substances in the workplace. In our industry, cobalt and nickel serve as targeted indicators as they are representative of the total exposure to substances of concern in the workplace. We currently work with our target to reduce the inhalable fraction of cobalt to less than 0.02 mg/m³ and the respiratory fraction of nickel to less than 0.005 mg/m³ (both as time weighted average) before the end of 2020.

During 2019 many mitigating actions, targeting the release of dust in production areas, have been undertaken. Currently we are working through source by source and for that reason we use simplified measurements “before and after” to verify the effects. Target levels are very low – so low that normal air drag can change the dust release. In the picture a draft control is made to assess the possible need to steer the air flow in a room. Work with technical improvements will continue



A co-worker is using fume to assess the effect of the airflow.

during 2020 and parallel to that, we will work to raise awareness of risks with dust exposure and with improving our agreed ways of working to maintain dust free workplaces.

Many technical improvements have been made, such as new dust filters and vacuum cleaners, and more enclosed and automated operations to successfully mitigate exposure. However, securing clean factories also includes raising risk awareness, improved ways of working and training. LEAN and 5S (Sort, Set in order, Shine, Standardize and Sustain – and an extra S for Safety) are important tools to achieve and maintain clean and safe ways of working.

Prevention is most important for rooting out the causes of ill-health. Once an illness has occurred it is much more complicated to remedy. But our health is not only affected by what happens at work. Today life-style factors, such as being overweight, smoking and lack of physical activity, are more common reasons for ill-health. Therefore, we engage in health promotion activities based on local needs ranging from rewards for taking the bike to work, step counting competitions, weight-loss and stop smoking groups, contributions to wellness programmes and gym cards, healthier lunch alternatives, to name a few.

We encourage the reporting of any suspected ill-health case into our health and safety reporting system, but at present the cases we receive might not give the full picture as some co-workers may choose to report their cases only to external health care providers. However, in 2019 there were five cases (of which three cases lead to sick leave) reported to the company from our Swedish sites. These cases were mainly repetitive strain injuries and are handled according to established procedures.

We will continue to improve the working processes to identify root causes and to prevent ill-health, as well as to promote and encourage individual responsibility for adapting to a healthier way of living, both at work and outside to improve quality of life and well-being.

Technical upgrade in Goslar plant

The installation of a new wet grinding plant at the Goslar production site in Germany has increased the annual production capacity of boron carbide by 150 per cent. Boron carbide is used, among other things, in industry as wear protection.

In addition to the increased capacity, safety, air-conditioning and ergonomic improvements were also achieved. Another focus was on the automation of the boron carbide production. The plant was equipped with an automatic grinding bead dosing system, eliminating the need for manual addition.

The heart, however, is the new control system with which all relevant process parameters are monitored, adjusted and archived. This means that it is now even possible to monitor the highly automated plant remotely via the control system of the boron plant. The plant runs almost completely automatically – only the suspension must be prepared manually and the process has to be checked regularly.



People development

Our industry is highly technical and demands know-how that is specialised and constantly developed to respond to the rapid and continuous change that characterises our times and our industry.

Through the annual People and Competence Review, we identify competence gaps based on business needs to ensure that the right competence is available at the right time and place. Our Competence Development Forum gathers twice a year to follow up on the competence plan derived from the review, and to align our ways of working.

During 2019 we created the foundation for the Höganäs Academy: practical tools and learning resources to support our co-workers in improving and growing. The concept is based on four principles to establish a lifelong learning mind set across Höganäs:

1. **Accessibility.** Learning is available anytime through our digital platform.
2. **Relevance.** Learning is an integrated part of our work, where content is constantly being refined to be relevant.
3. **Engagement.** Learning is provided in different forms and with different pedagogic approaches to suit everyone and create engagement.
4. **Process.** Learning occurs in stages where theory, practice, feedback and reflection together form our learning process.

A special focus during 2019 has been training within Powder Metallurgy, leadership and content used in the induction process. Everyone can follow their own development and managers can agree on development goals for co-workers on an individual basis, based on the results from the performance and development talks.

It is still too early to benefit from all the advantages of the concept, but in a year's time the system will be fully in use and we will also have statistics to be able to follow-up on our performance in the system.

On average Höganäs Group provided on average 10 (13) hours of formalized training per co-worker in 2019. In total, 25,240 (25,800) hours were reported from our sites world-wide.

Our target for 2019 was that all our co-workers should have an individual performance and development talk. We did not reach 100 per cent, as not all countries where we operate apply individual performance and development talks for all employees. The outcome for 2019 was 66 per cent globally, and 94 per cent for the Swedish sites.

Society

Höganäs aims to be a company with a positive impact on society and to act responsibly in all our activities, whether within the global industry or in our role as producer, employer, business partner or sponsor within local communities. Our ethical standards and clear stance against corruption in all forms must always permeate how we act as individuals and as a company.

Responsible sourcing is very important to us, as a large part of our social impact takes place in our supply chain. We need to choose our suppliers with discernment, as they can either work together with us to improve our mutual sustainability performance, or otherwise they can pose a risk that will prevent us from achieving our goals.

Our responsibility towards society is also noticeable in our transparency and our compliance with legislation, including our financial and non-financial reporting, our tax payments and our attitude towards external parties dependent on our business.

Responsible sourcing

Our supply chain is global which means that the geopolitical changes we see today affect material flows and costs. Sudden changes due to new tariffs, and the unintended

consequences and volatility connected to them, create uncertainty and complicate purchasing. However, by closely monitoring market dynamics, diversifying the supply chain and being fast and flexible, these challenges can be turned into advantages.

More than half of our raw materials are sourced locally within the country of operation. Maintenance, consultancy and entrepreneur services are also sourced within the country of operation, with only a few exceptions.

In 2019 Höganäs Group counted 472 (535) suppliers of direct materials and approximately 6,500 suppliers of indirect materials, transportation and other services. Direct materials consist of raw materials, process consumables and packaging materials.

Compliance with internationally agreed principles concerning business ethics, anti-corruption, and respect for human rights and fair labour standards, as well as environmental precautions, is fundamental. Because of the type of raw material we purchase, we have some risks concerning artisanal mining (see [Artisanal mining](#)) and conflict minerals (see [Conflict minerals](#)) that we need to manage carefully. Ethical business behaviour that is rooted in common values builds mutual trust that enables smooth and uninterrupted supply.



Conflict minerals

Conflict minerals are natural resources extracted in a conflict zone where armies or rebel groups sell the minerals to finance continued armed conflict. The four most commonly mined conflict minerals are **tin**, **wolframite** (for tungsten), **coltan** (for tantalum) and **gold ore**. These minerals are essential in the manufacture of a variety of devices, including consumer electronics such as mobile phones, laptops and MP3 players. The most prominent contemporary example has been the eastern provinces of the Democratic Republic of the Congo (DRC), where various armies, rebel groups and outside actors have profited from mining while contributing to violence and exploitation in the region's wars.

Artisanal mining

Artisanal mining is small-scale mining of metals, minerals or stones carried out independently by enterprises or individuals that employ workers for mining. Generally they use manually-intensive methods, work with hand tools and without the necessary safety precautions and social responsibility. Our risk exposure is due to our use of cobalt as a raw material.

Artisanal mining is typically associated with human rights risks as well as substandard and unsafe working conditions. Child labour and a large number of fatal accidents have been reported in artisanal mines.

Our objective is to communicate our Supplier Code of Conduct to all new suppliers, and to existing suppliers in conjunction with renewed agreements. In 2019 we on-boarded 14 (8) new suppliers of direct materials and 166 new suppliers of indirect materials and services. During 2019 we have communicated our Supplier Code of Conduct, which includes our anti-corruption policies, to 20 suppliers of direct materials and 416 suppliers of indirect materials and services. To date we have communicated our Supplier Code of Conduct to approximately 230 of our direct material suppliers, which is 49 (16) per cent.

Developing methods and tools

We are refining and developing our Responsible Sourcing programme, which consists of working methods for evaluation, selection and development of suppliers. The tools and principles in the programme address the challenges and risks that we have identified in our supply chain and help us to build strong relations with suppliers that we trust. Examples of identified risk areas are conflict minerals, rare earths, artisanal mining, palm oil, upstream GHG emissions and human rights infringements. With our current working methods and tools, we believe that we can both identify and mitigate risks in our supply chain.

Besides the requirement for new suppliers to fill out a standardized questionnaire covering their governance and performance within sustainability and quality related issues before on-boarding, we also evaluate several existing suppliers every year.

The objective is that all our suppliers of direct materials should be evaluated according to our Responsible Sourcing programme by 2021. We also put extra focus on evaluating suppliers of other goods or services that are critical to production. In 2019, 48 (50) suppliers were evaluated which makes 98 evaluated suppliers to date, or 20 per cent of our direct suppliers.

Incidents, non-compliances and identified increased risks concerning, for example, child labour, forced labour or freedom of association are reported through the group-wide reporting system. During 2019, no such cases were reported.

Four cases of insufficient responsiveness during 2019 called for in-depth dialogue with the supplier. After obtaining additional responses from each supplier, these cases could be closed without leading to further action. During 2019 there were 34 supplier audits including social criteria carried out and 8 audits including environmental criteria.

Value creation in the supply chain

We source raw materials globally and coordinate our purchases when this is practical and beneficial, from both a financial and environmental perspective. To minimize transportation, we prioritize local or regional suppliers and try to avoid transcontinental sourcing whenever possible. Our largest direct material spends are iron scrap, nickel and iron ore.

In 2019 we have identified possibilities for shifting from centralized purchasing to local when it comes to both metallic and non-metallic additives for our mixes. This could reduce transportation, improve cash flow and increase the value creation for the local market.

Less waste with plastic pallets in a loop

We work to lower our environmental impact in our supply chain, which includes using less material and creating less waste. And even though we strive to use renewable materials, we need to see the whole picture to find the best solution.

Because of the high amount of wasted 42" x 42" wooden pallets when shipping to internal North American customers, a trial project was initiated to find a more durable alternative.

In the search for a reusable pallet, several options of composite, metal and plastic pallets were considered. After receiving several samples and listening to feedback

from co-workers, yellow plastic pallets were chosen.

The pallets are being tracked by individual barcodes that are scanned and entered into a system which allows us to collect valuable data about usage and cost savings.

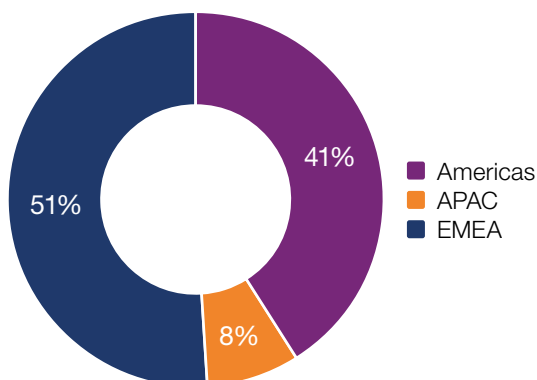
In September 2019 we had used 600 pallets 5,818 times, while the most used pallet had been used 22 times. We were on track to use these 600 pallets 7,300 times by the end of 2019, which will save around 4,500 trees (based on information from wooden pallet supplier).

As the plastic pallets become damaged or unusable, they will be returned to the vendor who will reuse the material for new pallets. Since the start of the trial we have only discarded two pallets due to fork-lift damage.

Most external services are purchased locally or within the country of operation. Höganäs is a large and stable business partner to many small and medium sized companies close to our operations around the globe.

Our total spend on external suppliers in 2019 was 8,177 (7,753) MSEK of which 51 (52) per cent was spent in EMEA, 41 (41) per cent in the Americas and 8 (7) per cent in APAC. Approximately 15 per cent of our raw material in spend are sourced through distribution channels or traders.

Spend per region



Human rights and business ethics

Our respect for human rights principles is expressed in our Code of Conduct, which includes commitments to local society, our own operations and our business partners. Höganäs has throughout its history been committed to high ethical standards in all business relations – a strong tradition that we need to protect carefully. Our Code of Conduct

expresses our stance against all forms of corruption and unethical business behaviour.

A new Code of Conduct was communicated to all co-workers in 2019, and implementation with training and workshops will be carried out during 2020 and 2021. [Read more.](#)

During the last five years, we signed contracts with 14 agents in 21 countries. In order to minimize risks, an audit of integrity is conducted with all agents exposed to bribery or other corruption risks before any contract is signed. The audit is expanded if circumstances come to light giving rise to questions about an agent's reputation or capacity to comply with anti-corruption laws. Besides the requirement to comply with applicable anti-bribery laws and Höganäs' policy, agreements with agents also include permission for us to request an audit of the agent's books and accounting records by an independent auditor to verify compliance.

Reported incidents in 2019

At year-end 2018, one case remained open that was closed during 2019. In addition, the forensic investigation in relation to the monitoring and handling of credits within Höganäs was closed.

During 2019, five new cases have been filed through our whistleblowing system that concerned I) harassment, discrimination and improper expense reimbursement claims, II) violation of safety regulations, III) potential sexual harassment, (iv) improper behaviour and (v) questioned leadership ability and conflict of interest. All cases have been followed up and investigated with certain actions/improvements implemented. All cases have been handled according to procedures and are now closed.

Two cases that were connected to our principles for behaviour as established in our Code of Conduct were investigated and handled by local HR departments and are now closed.

In addition, two cases of wire transfer fraud by targeted email phishing were reported. New training, new procedures and system support are now in place as preventive measures.

There have been no reported claims or incidents concerning corruption nor concerning product health and safety, labelling or marketing, loss of customer data or other non-compliances in the social and economic area.

Creating value for society

Being an international company with almost 2,500 co-workers, comes with a responsibility to contribute to the society in which we operate. We create value and contribute to society in the form of taxes such as corporate income taxes, energy taxes, employer taxes, indirect taxes as well as employee taxes.

Our obligation is to pay the amount of tax required by law in any country where we operate, in accordance with rules set by the relevant governments and with due consideration to the ethical aspects of tax management. Consequently, we always strive to ensure compliance with transparency requirements, and we do our utmost to avoid transactions or arrangements that may be considered aggressive tax planning. Neither do we, in any circumstance, engage in transactions or structures considered as tax evasion. In 2019 we paid 210 MSEK in taxes globally.

Our salaries and social security expenses amounted to 1,934 SEK during 2019. For key leaders and specialists, we offer a variable pay programme. This programme was reviewed in 2019. The bonus programme for 2019 is based on two parameters – financial performance on a country level and individual performance, where the major part (in most cases 70 per cent) is based on the financial performance of the company. Safety performance is part of the bonus requirements for the management team.

Community engagement

In all locations where we operate, we have a responsibility to maintain an active and transparent dialogue where we inform the community about our activities and listen to their opinions. We also welcome spontaneous feedback from our neighbours and all sites have channels for communication and grievance mechanisms.

Communication

Höganäs aims to engage in two-way communication with its neighbours in the communities where we operate. The social media channels Facebook and LinkedIn have proven efficient tools for spreading messages and receiving comments. On Facebook and LinkedIn, we inform about how our production facilities develop, what our plans are and how they affect the surrounding society.

In Höganäs and Halmstad, both in Sweden, where we have our largest production sites, we also distribute a printed newsletter *Insikt* (Insight), 2-3 times per year. In between the printed issues, we continuously update our blog. In the newsletter and on the blog, we invite open dialogue and encourage our neighbours to share their opinions or questions with us. Good results from open dialogues with neighbours and the local municipality have been achieved in several projects involving local infrastructure.

During 2019, a printed newsletter was also established in Mogi das Cruzes, Brazil, where Höganäs' facility is located close to housing areas. During 2020, we aim to launch a similar concept in Laufenburg, Germany.

In Ath, Belgium, the local management team invites a board of citizens and companies twice a year. The goal is to answer questions and concerns from neighbours and present Höganäs' plans and actions.

Value created, MSEK	2019	2018
Supply chain	8,177	7,753
Tax payments	210	175
Salaries, other benefits and social security expenses	1,934	1,810
Investments excluding acquisitions	701	671

Grievance mechanisms

In all locations where we operate, we have a responsibility to maintain an active and transparent dialogue where we inform the community about our activities and listen to their opinions.

We also welcome spontaneous feedback from our neighbours and all sites have channels for communication and grievance mechanisms.

In 2019 we received six grievance reports from our neighbours. Two were concerning smell, three were related to noise and one was related to dust. We have investigated the causes and handled each case to find the best possible solution and remediation.

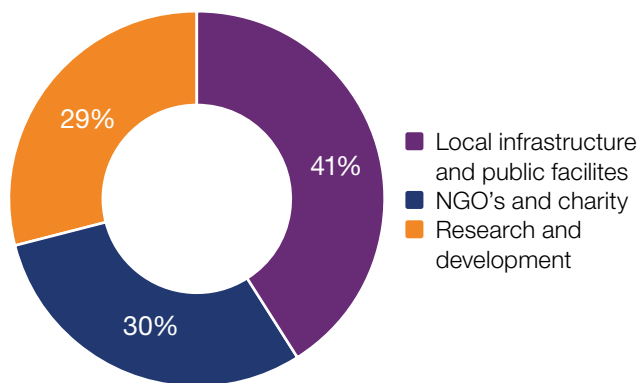
Contributing locally

In line with our global commitment, we have developed a Group framework for community engagement and donations. Companies within Höganäs Group have the freedom to decide what to sponsor and support locally within the framework of our policy.

Companies within Höganäs Group contributed 3.46 (1.97) MSEK to local communities during 2018.

Areas that received substantial contributions are aid to vulnerable groups in society, local sports clubs and social programmes motivating young people to adopt a healthy lifestyle, fighting drugs and promoting physical activities. The most substantial individual contributions were for scholarships and other initiatives to promote education.

Voluntary contributions



Memberships and engagements

Below is a list of the main memberships of industry or other associations of importance for our business.

Höganäs holds a position on the governance body for:

- European Powder Metallurgy Association (EPMA)
- Metal Powder Industries Federation (MPIF)
- Powder Metallurgy Association of India (PMAI)

Höganäs participates in projects and committees in:

- Japan Powder Metallurgy Association (JPMA)
- Jernkontoret (Swedish steel producers' association)
- Eurofer (European steel association), represented by Jernkontoret
- Korean Powder Metallurgy Institute (KPMI)
- American Water Works Association
- China Powder Metallurgy Alliance (CPMA)

Höganäs is a signatory of the UN Global Compact since 2017.

Products

Our business approach is to offer products that create value for our customers and for society, and contribute to a more sustainable future. We want to preserve natural resources as much as possible by increasing the use of secondary raw materials, aiming for closed loops and zero waste in our production processes.

By continuously working with product design for circularity and by working to improve our own, as well as our suppliers' and customers' environmental performance, we aim to minimize the life cycle footprint from our products.



Solutions that create value

Metal powders enable efficient production and prolonged product life in many different markets ranging from automotive, construction and mining, consumer goods and processing industries to agriculture, food fortification, water and soil treatment and the energy sector. Today, our product portfolio contains more than 3,500 products, and we serve about 3,000 customers in 75 countries.

Our metal powders are used in a wide range of applications, including:

- Powder metallurgy components
- Additive manufacturing
- Electromagnetic applications
- Water and soil treatment
- Surface coating

Höganäs is also a strong partner in offering application development capabilities, technical support and logistics solutions. Our tech centres round the world offer hubs where we co-operate with customers to innovate and drive metal powder opportunities forward. Our services range from straightforward prototyping or mechanical testing, to complete application development. [Read more about our products and services here.](#)

Product vision

We want to consider and address society's global sustainability challenges when creating business opportunities and developing our products. Central to this ambition, and at the core of our corporate agenda for sustainable business, is our vision for sustainable metal powders.

Our product vision, which was launched in 2019, is a result of a cross-functional project that was carried out during 2018 and 2019. It will serve as a compass for technology development and future direction for our product portfolio.

The product vision is founded on a set of clear, science-based principles of sustainability and a full life cycle perspective. It rests on four pillars that describe sustainable metal powders:



1. Climate neutral

Towards net climate neutrality and beyond



2. Fit for circularity

Enabling circular material flows



3. Resource productive solutions

Effective and efficient solutions for industry and society



4. Safe and ethical

Causing no harm to people and the environment throughout the value chain

Each of these pillars are extensively described based on a thorough analysis of present challenges for our business, identified areas where to make the changes, the desired achievements and example indicators for how to track performance.

Achieving this vision requires mastering a set of key enablers, or skills, that need to be fostered. Three key enablers have been identified that represent the capabilities needed for making the sustainability product vision a reality:

- The insight to make conscious material selection from a full life cycle perspective
- The foresight into future sustainability-driven market transformation
- The skill of re-imagining partnerships and working together to influence the value chain

The content of the product vision intertwines with other areas of our sustainability agenda such as the Climate Roadmap 2045, our Responsible Sourcing programme, sustainable production processes and minimized environmental impact.

Our different product areas will now break down the principles from the product vision and apply them on their product portfolio to increase knowledge, identify business opportunities and to clarify the direction for development of new products, as well as for further improvements of existing products.

Life-cycle assessments and product footprints

To accomplish sustainable industrial development, all stages of a product's life cycle must be considered. One challenge is that detailed, reliable and transparent data is available only for some environmental aspects in parts of the lifecycle. For environmental areas with good data availability

Innovative pastes for cleaner brazing launched

Höganäs' newly developed BrazeLet® 9007/9017 – water-based pastes for dispensing – are flux free, contain low polymer content and prevent oxidation of the filler metal. They enable brazing with lower emissions and provide a healthier workplace.

Typical applications are in the automotive, heating and ventilation industries for components such as brazed plate heat exchangers, exhaust gas recirculation (EGR) coolers and oil coolers.



(e.g. greenhouse gases), quantification of the product footprint is necessary to channel activities towards sustainable development. This data can give useful input for making qualified decisions on changes and improvements in production or supply, as well as new product developments.

However, where complete data is missing, both for parts of the lifecycle and for some entire footprint areas (e.g. social footprint and recyclability), traditional life cycle assessment do not give us the whole picture.

We therefore use two parallel methods with the goal of mapping metal powders' environmental performance:

LCA Life cycle assessments (LCA) focusing on cradle-to-gate analysis covering the parts of our products' life cycle that we can directly influence. Moreover, we have started an industry-wide initiative on life cycle assessments within the European Powder Metallurgy Association (EPMA), starting with a lighthouse project to quantify the complete life cycle impact of a specific powder metal part.

SLCA Sustainability Life Cycle Assessments (SLCA) which is a qualitative analysis of a product's footprint based on the four sustainability principles. This method is used in pre-studies to assure that all sustainability aspects are covered in the forthcoming development work.

The four principles of a sustainable society

In a sustainable society, nature is not subject to systematically increasing...



concentrations of substances extracted from the earth's crust



concentrations of substances produced by society



degradation by physical means

And, in that society



people are not subject to structural obstacles to health, influence, competence, impartiality and meaning making

These principles are often referred to as "System Conditions for a Sustainable Society" by The Natural Step, the international non-profit organization promoting their development and application world-wide since 1989. The principles are part of a Framework for Strategic Sustainable Development that is openly published in peer-reviewed journals.

Material use and circularity

Material use is one of our focus areas at Höganäs for several reasons beyond resource efficiency. What type of material we use, affects our carbon dioxide emissions, our environmental footprint from our production processes and the life-cycle footprint of our products.

In 2019 we handled a total of 611,000 (719,000) tonnes of direct materials to produce around 500,000 tonnes of products and 46,000 (59,000) tonnes of side stream products. Our largest raw material volumes are non-renewable in the sense that they are extracted from the earth's crust. These materials are mainly iron ore, limestone and fossil process coal or coke.

We also buy non-ferrous metals like copper, chrome, nickel, molybdenum, tungsten, manganese and cobalt. A significant part of non-ferrous metals are secondary materials.

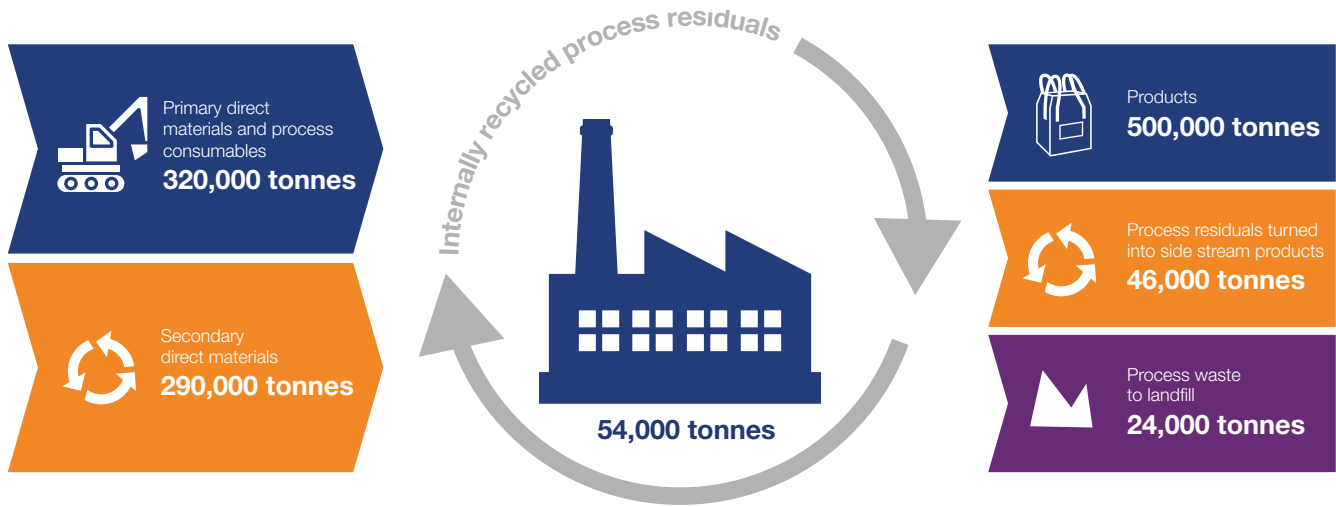
Approximately 50 per cent of our raw materials base consists of secondary, or recycled materials. Secondary materials include both pre- and post-consumer scrap. Our largest secondary material type by weight is iron-based scrap, which amounted to more than 290,000 (350,000) purchased tonnes in 2019. Our ambition is to increase the percentage of secondary materials.

The packaging material amounted to 2,160 (2,340) tonnes, of which 6 (7) per cent was renewable material. In some cases, non-renewable materials, like plastics, can be a more sustainable alternative as it has a longer life-span and is fully recyclable. [Read more.](#)

Packaging materials, tonnes	2019	2018
Cardboard and paper	130	170
Metal and fiber	190	220
Plastic	1,840	1,950
Total	2,160	2,340

Raw materials, tonnes	2019	2018	2017
Secondary materials, metal scrap	294,100	360,900	360,300
Ferrous and ferroalloys	221,600	248,500	215,500
Graphites, coke and anthracites	53,100	57,700	55,500
Slagforming agents and minerals	28,800	36,200	32,500
Non Ferrous metals	10,800	12,600	13,700
Organic	3,100	3,700	4,900
Total	611,500	719,600	682,400

Material flow and efficiency



Zero waste – turning process residuals into products

Our objective of zero waste is to find ways to make process-related residual materials useful somewhere else in order to prevent them from going to landfill. There are plenty of opportunities when it comes to finding new uses for these materials and making them valuable again, although it takes knowledge, creativeness and co-operation.

We divide our process residuals into three categories depending on their final destination or use:

1. Process residuals as side stream products that are recycled, reclaimed or reused by a third party.
2. Process residuals that are internally recycled, reused or reclaimed within the site of origin.
3. Process residuals as waste for internal or external landfill.

Our target is that 85 per cent of our process residual materials should be turned into useful products by 2020. In 2019 we reached 80 per cent.

Two of our most useful REACH registered product developments are Petrit®E and Petrit®T, which are both made from slag. Petrit E can be used to replace gravel in road construction, as an aggregate in asphalt, as a construction material and as a raw material for producing stone wool. Research tests using Petrit E for water treatment by reducing phosphorus and other metals, show promising results. We continue to examine if this could be a future usage for this material.

Petrit T functions as a lime replacement and can, for example, serve as a lime additive for structure liming in clay soils, which improves the quality of the soil for agriculture. It can also be used for soil stabilisation.

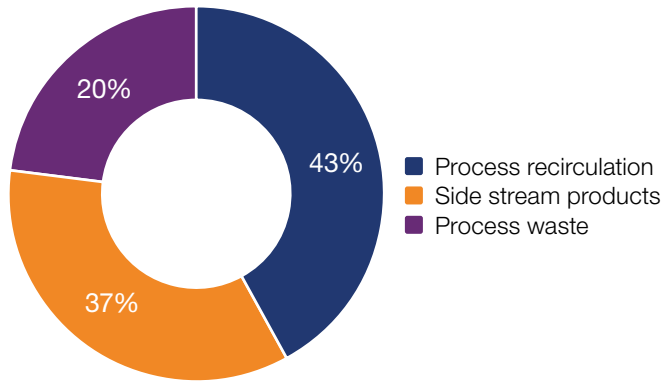
Melting furnace dust is sent for zinc recovery and other forms of dust are processed for iron recovery. Filter materials can be reused as slag formers in metal production.

Resource efficiency, environmental performance and a need for circular models all point in the same direction: Do not produce waste. To a large extent, we have managed to avoid creating waste by turning residual materials into side stream products in closed material loops.

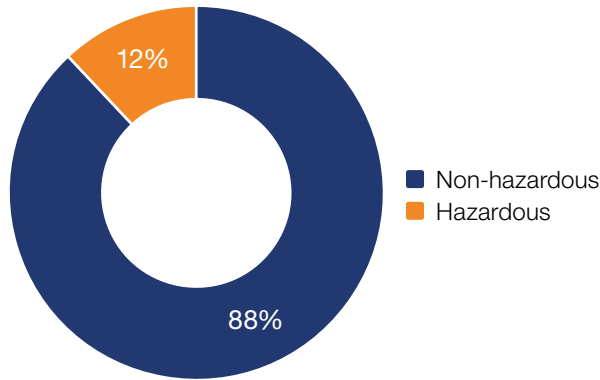
Process residual materials use



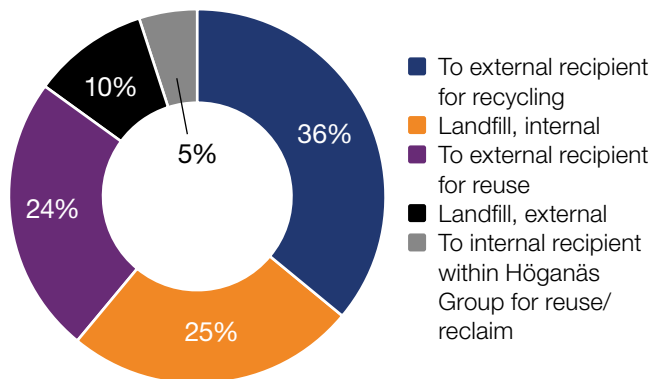
Process residuals use



Classification of side stream products



Destinations of process residual materials



Educating future experts in circular economy

Together with other actors, Höganäs participates in a project to create a curriculum on materials' recyclability and creating a circular economy. The participants are doctoral students in both technology, manufacturing, materials knowledge and economics.

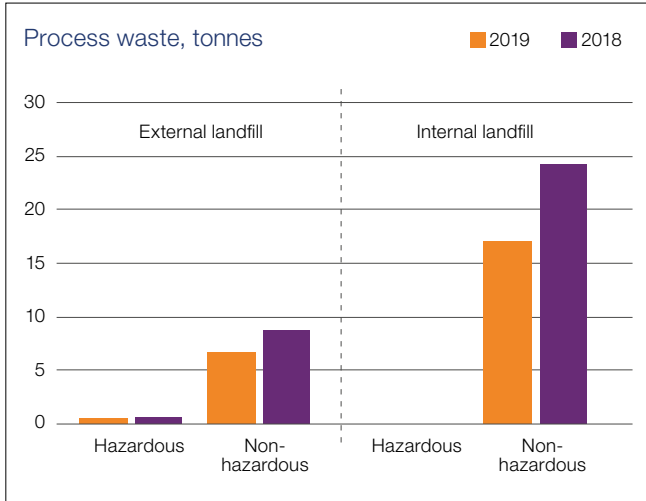
The course will consist of both a practical part and a theoretical part. The practical part will include study visits at participating companies, and the theoretical part will be a web-based module, accessible to students all over Europe.

In September, sixteen doctoral students from Germany, Estonia and Sweden visited Höganäs as part of the pilot phase. Rose-Marie Yttergren, who works at R&D and Björn Haase, who works with Höganäs' side stream products, have put together the course material from Höganäs and hosted the visit. "We are now testing the concept and then evaluating and correcting for a final version," says Rose-Marie Yttergren.



The project is financed by EIT Raw Materials and in addition to Höganäs, other participating companies and organizations include Rise, Swerea, KTH, Mälardalen Industrial Technology Center, Talinn University, Boliden and ArcelorMittal Eisenhüenstadt.

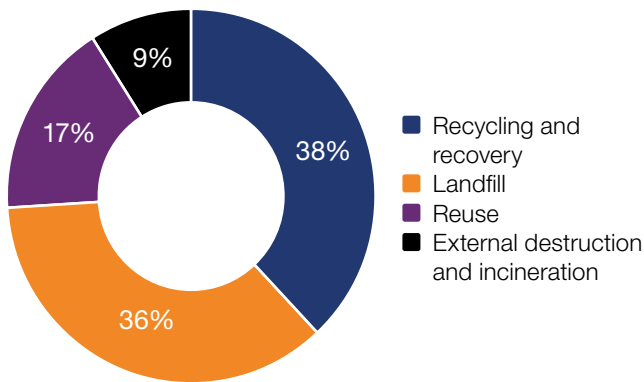
EIT stands for the European Institute of Innovation and Technology, whose mission is to increase Europe's competitiveness by bringing industry and academic research closer together. EIT hosts a number of networks or communities, of which EIT RawMaterials is one. You can find more information here at EIT RawMaterials



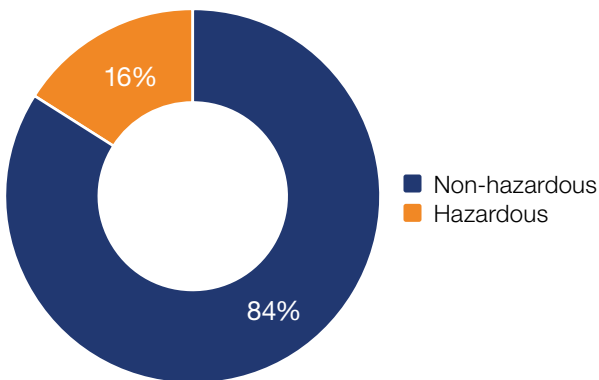
Non-process waste

Non-process related waste amounts to 6,400 (5,100) tonnes, or less than 8 per cent of the sum of all waste and side streams. It contains general plant waste, domestic waste and waste from packaging materials.

Destinations of non-process waste



Classification of non-process waste



Successful reduction of waste to landfill at Abril

We work to minimize all waste sent to landfill – not only process waste – even though the volumes are much smaller. Every tonne counts.

Abril Industrial Waxes – a subsidiary of the Höganäs Group based in Wales – has reduced the amount of waste it sends to landfill by 93 per cent and improved the overall sustainability of its plant.

“We receive a lot of raw material in 25 kg paper and plastic bags which, until recently, were going straight to landfill,” explains Hugh McAulay, who heads up Abril Industrial Waxes. “Because there are traces of chemicals in them, no waste collector was willing to recycle them – even though the chemicals were in the form of non-hazardous, non-soluble wax.”

Undeterred, Abril kept searching for a willing waste collector and eventually found a partner. A new compactor was provided, where all paper and cardboard – including the paper bags – could be compacted into bales and taken away for recycling. The same compactor is also used to bale plastic bags and flexible film waste. A second compactor was then installed for the remaining non-recyclable waste to decrease the volume of waste and the number of skips needed on site. Abril then looked to reduce waste from its offices and kitchen by installing recycling bins for paper, plastic and food waste.

“Before we were sending 12 tonnes of waste to landfill every week,” says Darren Jones, who works with purchasing and was instrumental in finding the new waste collectors. “That has now been reduced to three tonnes a month.”



Hugh McAuley heads up Abril Industrial Waxes.

Environment

Our production processes, as well as our activities connected to those processes, impact the environment through emissions, water discharge and use of land and water. Our approach is to avoid having a negative impact as much as we can by applying the precautionary principle, using best available technology and creating stability in our processes.

We apply a systematic approach concerning precaution and preventative measures to minimize environmental impact, improve our performance and to avoid environmental non-compliance.

All our production sites have environmental management systems, and all production units are certified according ISO 14001, except the small mixing station in Korea and Digital Metal, which only recently started up a production line.

During 2019 we had no reported breaches of environmental permits and no spills or other environmental accidents with significant environmental impact were reported from our operational sites. An air filter fire took place at the Höganäs production site in Sweden in October. There were no personal injuries and the environmental impact was considered to be low. The incident was reported to the authorities and measures to prevent re-occurrence have been carried out.

Process safety

Process safety is high on our agenda as the consequences could be catastrophic for people, the environment and our business if not managed properly. Process safety is necessary to creating stability and avoiding unplanned production disruptions and full stops with increased emission levels, spills, leakages and other events that could cause harm.

To uphold the stability in our production processes and facilities we have a well-managed loss prevention and risk management system in place. This system exists under the umbrella of our risk policy and contains procedures for contingency planning, emergency responses, loss prevention practices and minimum requirements on equipment and systems of high importance for the contingency of operations. The system also provides instructions, templates and methods for consistent actions according best practice at all operational sites.

All operational sites are required to have organizational responsibilities clarified as well as their own procedures and instructions adapted to local risks and circumstances.

Our insurance solution includes extensive and regular on-site auditing by external specialists. The results from the audits in the form of action plans, together with the fact that our performance directly affects the cost of insurance, give us the motivation to work diligently with continual improvements.



Emergency preparedness

Emergency preparedness is part of our loss prevention management. Emergency evacuation drills are carried out at all sites on a regular basis where results are documented, and improvements are made.

Inspections of emergency exits, as well as active fire equipment like extinguishers, explosion dampers and alarms, and passive protection like the integrity of fire walls and evacuation paths are made both separately on a regular basis and as part of weekly and monthly safety walks.

Emergency evacuation procedures

Emergency evacuation drills are carried out regularly at all sites within the Group according to our common procedures and requirements. Training is essential to be sure that the emergency plans work effectively in reality, as the following example shows.

In 2019 our office in North Carolina did a test run of their emergency fire evacuation procedure and met their goal of evacuating the office building in under one minute. This is five times faster than the initial drill that was performed after the building was opened, which clearly proves the importance of having regular drills. These saved minutes could make a huge difference in the case of a real fire!

They achieved this by dividing the building into smaller areas for the “Evacuation Wardens” to clear before exiting the building themselves. The whole group congregates in a labelled, designated area away from the building. Once there, designated team members are responsible for making sure their team has made it out safely.

Crisis management and communication

Höganäs has well-established emergency response teams at all production units. They are responsible for handling local accidents or incidents that may occur, both the immediate events and the following root cause analysis and updating of routines.

During 2019, Höganäs established a central crisis team with the purpose of supporting the local teams if an accident, incident or a threat occurs that may develop into a crisis, either locally or globally. The central crisis team has put directives, routines, reporting tools and templates in place. They aim to support the local teams in how and when to escalate local events to a global level.

Managing hazards

Our entire operation is thoroughly analysed from a risk perspective down to the level of each individual chemical and piece of equipment used, and task that is carried out. When hazards are identified, these are documented, risk analysed, mitigated if necessary and handled in our management system.

Reporting potential risks is a deeply rooted part of our way of working and our culture. During 2019 as many as 1,924 risks or near miss reports were filed and handled in our reporting system, where actions for mitigating risk were recorded.

Our KPI for risk reduction, RRN (Risk Reduction Number), measures the decrease of risk level per person based on the difference between identified risk level and remaining risk level after risk mitigating actions. This KPI has been monitored over several years and shows steady and successful progress in risk mitigation. During 2019 the RRN was 4.2 (3.3) points of risk reduction per person.

The greatest hazards are found in production that handles molten metal and reactive chemicals. Special attention has been paid to molten metal hazards during 2019 in the form of workshops and production of training materials.

Read more here.

Chemicals are used on site only after being approved following a risk assessment by expert functions in the environmental and health teams. Product safety data sheets are available to all that either use or may come in contact with the chemical in the workplace. Regular inventory of the use of on-boarded (and, if discovered, non-approved) chemicals are made as part of the internal audit programme. The procurement department logs the volumes used at each site.

There are procedures for substitution of used chemicals to less harmful alternatives. To aid this work Höganäs uses several data bases to monitor ‘priority lists’, ‘sunset lists’ etc. to find alternatives as they become available.

The importance of maintenance

Another area connected to hazards is maintenance, both from an individual as well as a process safety perspective. Well-managed maintenance is key to preventing failures and risks. Mechanical, electrical as well as instrumentation maintenance work is carried out by local maintenance teams. The maintenance work is administered and reported in main-

tenance systems that in most cases are integrated with the ERP system. The systems are largely “fail-safe”, that is, the maintenance system notifies the user that planned maintenance has not been performed or reported according to established routines.

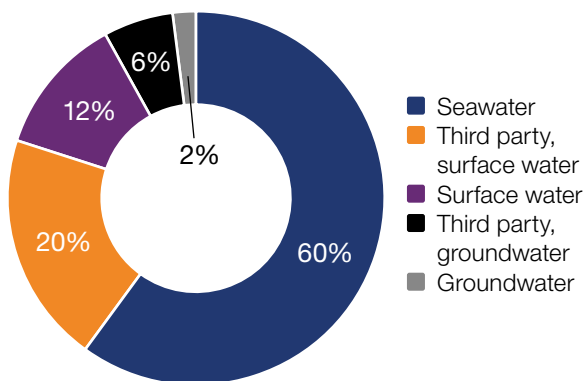
Around 150 people work in the maintenance organization during the daytime, in continuous two-three shifts depending on local needs. Often, there is also an on-call function for critical processes and equipment.

Höganäs buys external services for inspections and repairs that require special expertise, of which some are carried out by externally hired certified inspectors in accordance with current regulations. This applies, for example, to inspections of pressurised system equipment.

Operators carry out daily routine maintenance and use checklists before start-up and shutdown of critical equipment to ensure that adequate functional checks are carried out and documented. Any deficiencies or errors detected are recorded via a work order in the maintenance system. The need for planned maintenance and spare parts are identified by Failure Mode and Effects Analysis (FMEA).

Managing hazards and reducing risks is a task that is constantly ongoing and needs our full attention. Building reliable and effective systems with procedures, tools and instructions is one thing, but the awareness, competence and decisiveness of our co-workers is what makes it successful.

Water withdrawal by source



Water use

Water is a natural resource that must be used responsibly and with good judgement. We monitor our water use in relation to water access in all locations where we operate to identify and mitigate potential risks of negative impact at an early stage.

The largest quantity of water that we use is seawater for cooling in closed systems. In 2019 we used 4,140 (4,160) thousand cubic metres. In Sweden, much of the heat produced in these systems is used for district heating. Our use of seawater, even in large quantities, does not have significant environmental impact, as the same quantity is returned to the ocean in the same state as it was taken.

In Halmstad we use drinking water for cooling. In 2020 a project will investigate the possibility and technical solutions for using other water sources such as rivers or seawater in order to minimize the use of drinking water.

Water is also used in the atomizing process where molten steel is atomized into the desired particle sizes in a controlled ‘water jet’ process. The water is treated, cooled and largely recycled within the atomizing process. Water for dust binding and slag quenching is evaporated, treated on site or sent off to external water treatment plants.

Our production sites are generally located in areas where freshwater supply is still plentiful. The exception is our Indian site in Ahmednagar, where seasonal fluctuations cause water stress either in the form of flooding or drought. Measures are being taken to economize the use of water and store water for usage during dry periods.

Water intensity is

1.4

m³ per produced tonne

Water use, cubic meters	2019	2018
Total volume of water withdrawn	6,866,000	6,260,000
of which seawater	4,140,000	4,160,000
of which freshwater	2,726,000	2,100,000
Total water discharges	6,232,000	5,587,000
Total water consumption	634,000	673,000

Emissions to air and water

Water discharges and air emissions are calculated based on local monitoring carried out to cover the needs for function control and compliance with environmental permit limits. As a result, not all sites report on all substances and the consolidated figures may therefore not cover all actual discharges.

Air emissions

Our production processes generate air emissions both via stack and as fugitive emissions. Stable production processes and preventive maintenance of process equipment is key in avoiding both fugitive and stack dust releases.

To minimize stack emissions, all large point sources are equipped with filters. Local environmental control programmes typically include monitoring emissions such as nitric oxides (NO_x), sulphur oxides (SO_x), metals to air, and other substances of concern, depending on the nature of the process.

To prevent fugitive emissions, raw materials and products (metal powders) are handled in closed processes whenever possible. In-house storages and sealed transport containers of materials are used to prevent particles from spreading. However, the site in Höganäs, Sweden, bulk transports by ship where unloading must be done in the open.

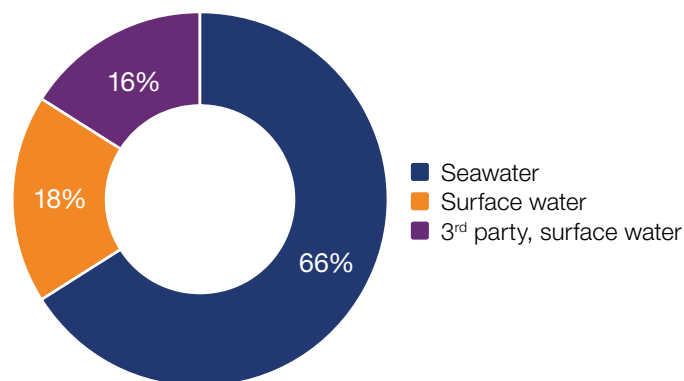
Slag handling, including sorting and transporting to internal landfill, is generally carried out in open air at all slag production sites. Special procedures including watering, road sweeping, landfill covers, etc, are used to minimize emissions from the open handling. A combination of paved roads and working areas, and a programme for keeping the sites clean at all times, minimises secondary dust emissions. Read more about our GHG emissions [here](#).

Air emissions, tonnes	2019	2018
Nitrogen Oxides (NO _x)	120	120
Sulphur Oxides (SO _x)	40	40
Carbon Monoxide (CO)	120	140
Non-Methane Volatile Organic Compounds (NMVOC)	8	9

Water discharge

We need to continuously assess our water footprint and make sure we do not contribute to negative developments. We monitor our discharges of metals to water and measure other substances of concern. Terms for water discharges are stipulated through environmental permits according to national legislation where our operational sites are located.

Water discharge by destination



Metal and dust emissions to air	2019	2018
Iron (Fe), kg	9,800	11,600
Chromium (Cr), kg	7,610	9,000
Zinc (Zn), kg	1,050	1,500
Nickel (Ni), kg	580	110
Copper (Cu), kg	80	60
Lead (Pb), kg	70	70
Cadmium (Cd), kg	10	10
Mercury (Hg), kg	2	2
Total dust, including metals to air, tonnes	60	80
PM10, tonnes	40	45



Discharges of substances to water, kg	2019	2018
COD (Chemical Oxygen Demand)	10,770	9,230
O&G (Oil and grease)	700	170*
N-tot (Nitric nutrients)	390	380
TS (Total Solids (TSS+TDS))	4,630	5,370*

* Values for 2018 are updated due to detected reporting errors

Discharges of substances to water, kg	2019	2018
Iron (Fe)	460	600*
Zinc (Zn)	130	290*
Nickel (Ni)	50	90*
Copper (Cu)	20	20*
Chromium (Cr)	20	20*
Lead (Pb)	10	2*
Cobalt (Co)	20	1
Arsenic (As)	2	< 1
Cadmium (Cd)	< 1	< 1

* Values for 2018 are updated due to detected reporting errors

Water discharges are calculated based on local monitoring carried out to cover the needs for function control and compliance to environmental permit limits. As a result, not all sites report on all substances and the consolidated figures may therefore not cover all actual discharges.

Climate

Our objective is to become a climate neutral operation by 2045. This is a huge challenge, but it is necessary. To minimize our climate footprint, we need to utilize both established and newly developed methods. We also need to invest in research and innovation to make improvements beyond what is possible today. At present we focus on improving energy efficiency, transitioning to use renewable energy in production and transport, replacing fossil process coals and rethinking our materials supply.

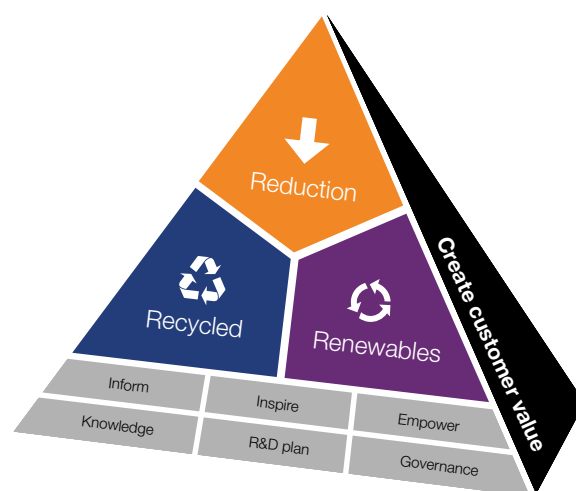
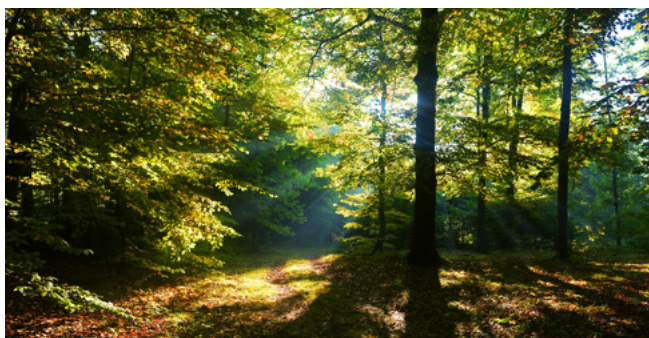
Climate Roadmap 2045

Our Climate Roadmap 2045 was approved by Group management and launched in 2019. It is based on our objective to become net climate neutral by 2045 and aims at decoupling earnings from climate impact emissions. The scope is both our direct and indirect emissions and includes our material and energy supply, our production processes, research and development plans and business models.

The Roadmap will be our guide to the strategy and business planning processes, where our three main strategic areas for reducing climate impact will be:



1. Reducing emissions by increasing energy efficiency
2. Using more recycled materials to decrease upstream emissions
3. Increasing the use of renewable energy and fuels



A key success factor for reaching our long-term goal is to fully integrate climate related targets in our internal business plan process. The integration of the Climate Roadmap 2045 into our ways of working in the product areas and in long term R&D, as well as in capital investment plans, is crucial to creating value. Governance and consistency are necessary to empower the organization to move forward and take decisions.

We are acutely aware that our success is highly dependent on external factors such as:

- Co-operation with suppliers, customers and other business partners in our value chain.
- New or improved technical solutions in areas ranging from process technology, schemes for reclaiming material and material separation, supply of energy from renewable sources at commercially viable costs, transport possibilities and more.
- Business models that support decoupling of earnings from climate impact both for us and for our customers.
- Intergovernmental incentives and agreements as well as local and regional regulation that support service and industry sectors as well as individual companies under transformation with possibilities for an intact or improved competitive edge.

The Climate Roadmap does not supply detailed instructions for the entire journey towards climate neutrality, but it gives a point of departure, a clear direction, the required speed of progress and the tools for each part of the organization to find ways to do their part. Even though we have a challenging journey ahead, we feel confident that we are on the right track.

The kick-off project

During 2020 we will run a Climate Roadmap Project to give us a kick-start. It will focus on identifying and creating capabilities within the company to achieve our long-term goal of being climate neutral by 2045. This project will establish the internal platform for implementing Höganäs Climate Roadmap 2045 by:

- Creating awareness and buy-in
- Acquiring reliable climate data in all scopes
- Planning long term for R&D and investments
- Making the organization decisive by providing clear direction and tools
- Identifying competence gaps and establishing efficient methodologies

The outcome of this project that will be available in late 2020, and will likely lead to our internal short-term goals and action plans being revised. Based on the early stages of this development work, we choose therefor not to communicate any detailed short-term goals in this report.

The findings will enable prioritizations concerning development of new and/or improved products and process technologies, investments in process equipment, community development and access to renewable raw materials. This in turn will secure our ability to create value for our stakeholders and to remain profitable long-term.

Our footprint

Our climate impact consists mainly of emissions of carbon dioxide (CO₂) where the largest part takes place upstream (belonging to scope 3), i.e. when our input raw materials, machines, equipment and vehicles are produced, and trans-

ported, as well as activities related to energy production (that are not included in scope 1 or 2).

We are currently working on mapping our upstream scope 3 emissions to get a clearer picture of where we can make a difference. We have already identified electricity produced from renewable sources and secondary raw materials as possibilities where our sourcing plays a key role, but we hope to get more insights for further improvements.

Direct carbon dioxide emissions, Scope 1

The use of fossil process coals and fuels in our own production is the largest source of direct carbon dioxide emissions (scope 1). In 2019, our total direct emissions were 256,200 (270,800) tonnes.

The decrease of almost 14,600 tonnes is due to lower production volumes, a number of investments that together have saved about 8,000 tonnes, and continuous energy efficiency improvements.

Natural gas accounts for 96 per cent of our emissions from non-renewable fuels, while the remaining 4 per cent are distributed through LPG, diesel and petrol.

Carbon dioxide emissions from fuels and materials, tonnes CO ₂ e	2019	2018
Emissions from fuels	81,700	89,400
Carbon in raw materials	186,300	196,100
- Carbon in waste	-10,500	-12,900
- Carbon in sidestream	-1,200	-1,700
- Carbon in products	-100	-100
Total	256,200	270,800

The emissions from fuels are calculated based on local or alternatively, default emission factors from the EU-ETS framework. Emissions from raw materials in production processes are calculated based on carbon content and mass balance where the remaining carbon content in outgoing materials such as waste, side streams and products is deducted from the carbon content in incoming materials.

Cradle to gate

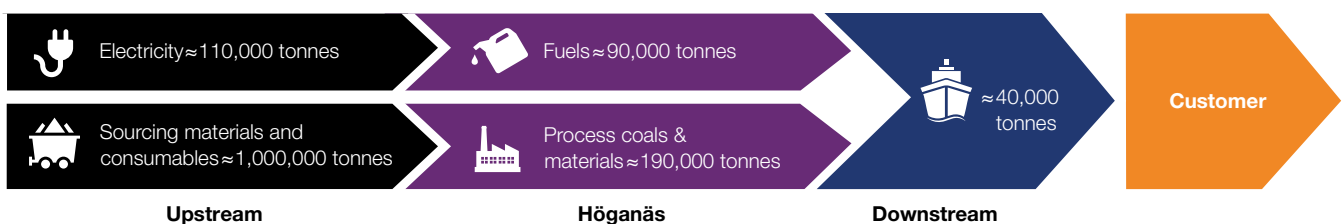


Illustration of the 'cradle to gate' scope for Höganäs climate initiative and roadmap. As indicated by the data, materials sourcing is the largest contribution of emissions of carbon dioxide.

Purchased energy, tonnes CO ₂ e	2019	2018
Market based	83,400	109,400
Location based	118,800	124,400
Avoided CO ₂ emissions by choosing renewable energy	35,400	15,000
Total CO₂ emissions (Scope 1 and Scope 2)	339,600	380,200

Sources: IEA reported emission factors for residual mix electricity production, except for: Pennsylvania and New York State. "EPA Center for Corporate Climate Leadership regional data. Brazil "Ministry of Science, Technology, Innovation and Communication (MCTIC) and Belgium "Accord de Branche –CO₂ mapping", Vattenfall (Sweden), Endesa Energía, S.A.U. (Spain), GSE (Italia) and Carbonfootprint.org.

Indirect carbon dioxide emissions, Scope 2

Our indirect emissions (scope 2) are from purchased electricity. Where available, the indirect emissions are calculated on location-based emission factors provided locally by owners of distribution nets or energy suppliers. As a comparison, we have also used a market-based calculation based on national residual grid mix factors.

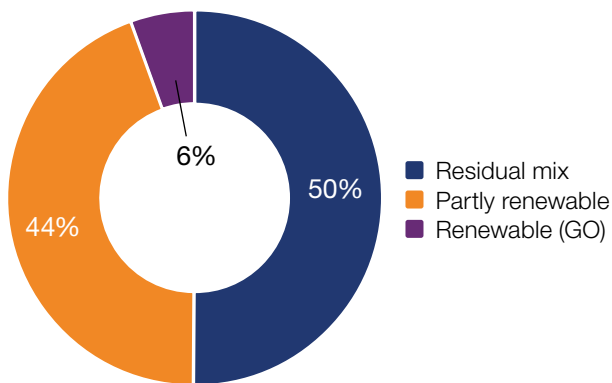
Even though the individual companies within Höganäs have been free to choose electricity with a higher percentage from renewable sources, focus on alternative means of sourcing and producing renewable electricity will increase as part of our Climate Roadmap 2045. In 2019, we avoided emitting 35,400 (14,980) tonnes of carbon dioxide by actively choosing electricity from renewable sources. This is an increase from the previous year by 136 per cent.

Upstream reductions

We estimate that the main part of our total carbon footprint occurs upstream from our own operations in the production and transportation of the material that we use. If we can replace material with a large carbon footprint with material with lower carbon footprint, it could significantly change our overall total carbon footprint.

We are now mapping the footprint of our different materials to see where we can make changes. Virgin metals have a much higher carbon footprint than secondary metals of similar quality and composition. By increasing the use of recycled materials as raw materials in our production, we adapt to a circular economy and lower our total carbon footprint.

Purchased electricity



Our work to replace fossil fuels with non-fossil alternatives based on renewable sources is ongoing.

Transport

Over the last couple of years, we have worked to find a systematic and continuous approach to quantifying and minimizing the environmental impact of transport, including carbon dioxide emissions, in order to be able to see the effects of actions and changes over time. This is a challenge due to the number of different parameters to consider in every calculation.

However, in 2019 we have developed and trialled an upgraded system tool for calculating transport emissions. The results are promising and the methodology, data quality and usability will be evaluated during 2020. We are optimistic that we will be able to show progress and disclose results in the near future.

Turning renewable

Our use of natural gas is a big source of carbon dioxide emissions. Our ambition to replace fossil fuels with non-fossil alternatives based on renewable sources is ongoing. There have been few realistic alternatives for replacing fossil fuels for Höganäs, due to the need for precise process control, high temperature and purity. To initiate a change where we can replace fossil natural gas with a renewable alternative, we started a collaboration with Cortus Energy and other companies and stakeholders to utilise the Woodroll® process invented by Cortus Energy.

After several lab studies demonstrating the possibilities of the Woodroll process – the gasification and restructuring of biomass to synthesis gas – Cortus Energy built at pilot

Ath’s forklift fleet will run on sunshine

The new factory roof in Ath, Belgium, has been covered with enough solar panels to harvest energy to run 65 average households. The plan is to power all forklifts with sunshine, thus securing climate neutral internal transport for the entire site.

“The new roof structure was designed to withstand the weight of the panels from the start,” explains Dirk Legrand, who has overseen the project. “All in all, we now have a solar panel farm of 2,500 m², where we expect to harvest 235 MWh of electricity per year. We will use the solar energy to power office buildings and forklifts.”



Reducing carbon footprint through transport

By seeking alternative means of transport, namely rail and sea, Höganäs in Spain has been able to reduce its use of road transport and lower its carbon dioxide emissions. Each day, Höganäs’ sales office in Madrid, coordinates customer orders and arranges shipment from Höganäs’ warehouses in Sweden, to customers located all over the Iberian Peninsula. Until recently, around half of these deliveries were sent via heavy-duty trucks.

“After doing some research, we could see that rail and boat were much cleaner than road, so we started using these modes of transport as much as possible,” explains Ana Peñas, who coordinates the deliveries and logistics from Madrid. “Now road transport accounts for only 15 per cent of our deliveries. The other 85 per cent go by boat or train.”

The one drawback has been slower transit times. A journey that will typically take 4-5 days for a truck, will take around 6-7 days by train and 13-16 days by boat.

“Obviously we need to keep customers’ delivery times so sometimes it is not possible to use boat or train,” she explains. “But most customers accept the need to reduce carbon dioxide emissions, so if we explain to them that if they give us more time, we can use cleaner transport, then they are receptive.”

Most customers accept the need to reduce carbon dioxide emissions, so if we explain to them that if they give us more time, we can use cleaner transport, then they are receptive,” says Ana Peñas.



Large scale trial to replace fossil coal with bio-coke

During 2019 we conducted a large-scale trial to replace fossil coal with bio-coke. The test took place at the Atomizing plant in Halmstad, Sweden. We have previously conducted several small-scale test campaigns to verify the feasibility of bio-coke as carbon addition to iron melts at the Pilot Centre in Höganäs. The positive results from these tests have opened the door to trials on a larger scale.

A test campaign of six melts was conducted. The fossil coal charge was partly replaced with bio-coke in three melts and the other three melts were reference melts, produced with standard fossil coal charges. This made it possible to compare and evaluate the effects of bio-coke charge against standard coal charge.

“Once all the charge material has melted in the furnace, a sample of the melt is taken to check that the chemistry is correct before further processing. These first sample results are positive and show no difference between using renewable or fossil coal. We are waiting for further results concerning product quality of the different melts, and then together we will discuss the next step,” says Ryan Robinson, process engineer at Höganäs.



plant at our site in Höganäs, Sweden, to perform tests on an industrial scale. The plant was completed in December 2019, and during 2020 it will deliver gas to Höganäs' manufacturing process and serve as a replacement for natural gas.

Electricity generated from fossil fuels is another source of carbon dioxide emissions. There we have taken initiatives to generate electricity from renewable sources such as solar panels. During 2019 several new installations were made, for example, at our sites in Belgium, India and China. We also landed a contract for supplying the Tonbridge site with renewably sourced electricity, reducing the company's emissions of carbon dioxide by approximately 1,400 tonnes per year.

Energy use

Höganäs' energy use consists of fuel consumption and purchased energy. Fuels are mainly natural gas used in the production process, and to a small part LPG, diesel and petrol used for vehicles and other engines. We also use a small amount of biogas for production of hydrogen gas. In 2019, our fuel use from renewable sources was 1.2 (0.6) per cent of our total fuel use.

Surplus energy from our processes is converted into residual heat which we can deliver to external parties. In 2019, we delivered 51,000 (57,700) MWh in the form of surplus heat to district heating and municipal treatment plants in the Swedish cities of Höganäs and Halmstad. The export from Höganäs saved community emissions corresponding to an estimation of 11,000 tonnes of carbon dioxide, compared to the normal production of heat by natural gas incineration.

In 2019, we purchased 486,200 (527,100) MWh of electricity of which 50 (53) per cent was from renewable or partly renewable sources. We produced 190 (80) MWh of renewable electricity at our own facilities.

Energy management and efficiency

Our target is that the most energy intensive units within the Group, those with melting operations, should be ISO 50001 (energy management) certified by the end of 2021. It is part of our resolve to be even more energy efficient. Our major Swedish production sites are already certified, and other production sites are on their way towards compliance and will be certified during the years to come.

Our energy efficiency initiative, the “Energy Challenge”, has been successful, seeing a steady decline in energy use. The target is a 10 per cent reduction per produced tonne of metal powder between 2010 and 2020. The result for 2019 was a 7.1 (8.2) per cent decrease in energy use per produced tonne compared to 2010.

In 2019 further steps were taken to increase the total energy efficiency. One example is installation of variable-frequency drives that reduce power demand for electric motor-driven systems such as ventilation, fans, pumps and compressors. In Sweden we commissioned a new state-of-the-art annealing furnace, thereby replacing older furnaces. The energy savings, primarily through the use of natural gas, result in an average reduction of 2,000 tonnes of carbon dioxide per year.

Also in Sweden, the electric arc furnace was fitted with oxy fuel burners that give the possibility for optimizing the scrap melting process for energy efficiency. Early results are promising.

Energy use within the organization in MWh	2019	2018
Non-renewable fuels	412,000	456,100
Renewable fuels	5,100	2,700
Total energy use from fuels in MWh	417,100	458,800
Purchased electricity	235,000	249,000
Purchased electricity from renewable or partly renewable sources	234,000	277,000
Purchased heat, steam or cooling	17,200	2,100
Total purchased energy in MWh	486,200	528,100
Self generated energy from renewable sources**	190	80
Total energy use	903,490	986,980

* Corrections made on reporting of Non-renewable fuels: 10 400 MWh added to the result for 2018

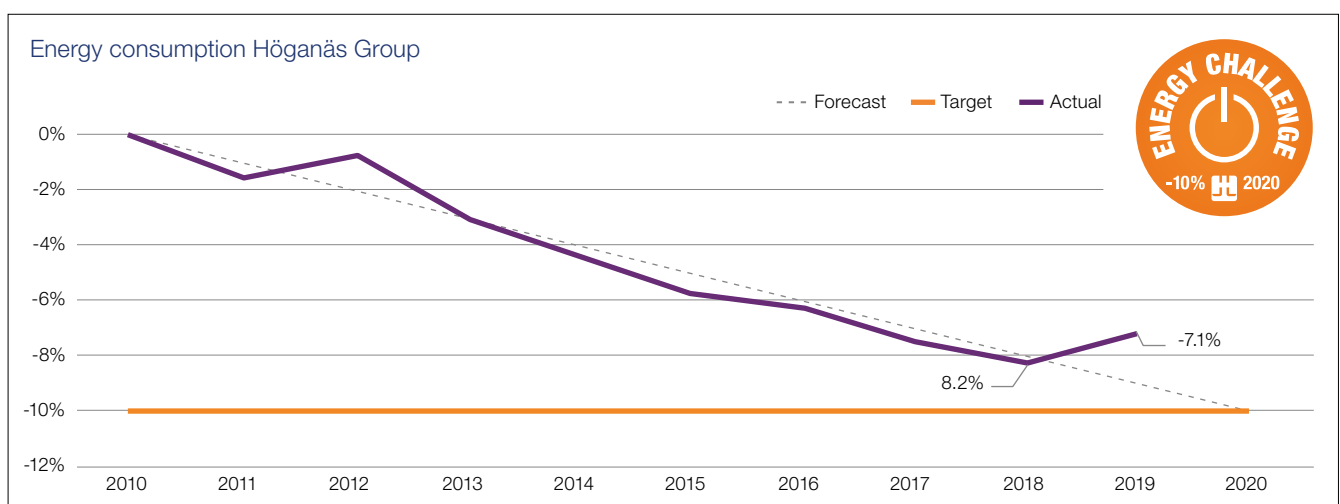
** Only energy from renewable sources. Energy generated from surplus process heat is excluded (produced and sold)

The Energy Challenge target has developed nicely over the years, but in 2019 we did not achieve the expected level. The reasons for that are two-fold:

1. Lower production output had a negative impact on the Group’s energy consumption per produced tonne, as Höganäs operates high temperature processes, where activities like cooling, heating and idling, as well as energy base load, do not go down in proportion to production volumes.

2. Our biggest energy-saving investments – the state-of-the-art annealing furnace and the installation of the oxy-fuel burners – were in operation late in the year thus not providing enough energy savings to compensate.

The production volumes during 2019 are comparable with the volumes from the target base year of 2010. Interestingly, the result shows clearly that we are more than 7 per cent more energy efficient and that it is not an effect of volume.



Finding new ways to being energy efficient

What if a different method could minimize energy waste? The atomizing plant in Halmstad, Sweden started to improve ways of working by learning from others, and they decided to test a method commonly used for other kinds of melts. In short, when coke is added to the slag, bubbles of carbon dioxide make the slag rise and create a thick cover over the furnace. The cover becomes a lid, keeping the energy in the furnace and minimizing waste.

Thanks to thorough analyses leading to new working methods, the number of melt batches increased by 23 per cent during the most energy efficient day ever.

“Melting is a matter of craftsmanship,” says Tommy Svensson, who works as a technician in the melting area. “When changing the process, it’s not enough to update some instructions and expect a different outcome – you need time to discuss and understand why a new behaviour gives a new result.”

“What if we find an even more consistent way of loading? We’re building a mind-set where we become conscious of the next step in the process and try to deliver as ‘right from me’ as possible,” Tommy concludes.



Re-use of flue gases reduces electricity consumption and climate impact in India

In May 2019, Höganäs in India installed a newly developed technical solution where flue gases from the company’s annealing furnaces are used to dry metal powder slurry from atomization.

To remove the water from the wet raw atomized powder, Höganäs has traditionally used a rotary dryer with electrical elements. Electricity in India is often produced with coal or oil, which has a negative climate impact.

At the same time, just 200 metres from the rotary dryer, we have belt furnaces with flue gases with temperatures of 900 degrees Celsius. What if we could use these flue gases to dry the wet powder instead of using high carbon electricity?

Now we can dry the metal powder in atomization in India without any electrical heating, which reduces energy consumption and carbon dioxide emissions by 1,400 tonnes per year.

Pontus Hydén and Shirish Deore are two of the innovators behind this new technical solution.



Appendix

About this report

This report presents the sustainability performance of Höganäs Holding AB, also called Höganäs Group, for the full year of 2019. As the operational responsibility for the Höganäs Group is delegated to Höganäs AB's Board of Directors, the sustainability report focuses on Höganäs AB and its subsidiaries. The owners of the Höganäs Group are represented in Höganäs AB's Board of Directors.

The report has been prepared in accordance with the GRI Standards: Core option and in accordance with Swedish regulation (Årsredovisningslag) regarding disclosure of non-financial information. This report also serves as our annual Communication on Progress report following our commitment towards the UN Global Compact.

The report consists of a descriptive part and a GRI index with references. The web page on hoganas.com/sustainabilityreport2019 is the main publication. A PDF file with the same content is produced as the official appendix to the Annual Report. That PDF file is also available on the web page for downloading and printing.

Data presented includes in general all companies within the Group, i.e. Höganäs AB and its subsidiaries. Where exceptions are made, this is commented on. Management approach, boundaries, omissions and additional explanations are found in connection to each topic.

No significant changes to the organization nor the supply chain have been made during the reporting period.

The report has been approved by the Höganäs Board of Directors. The report has not been subject to external assurance.

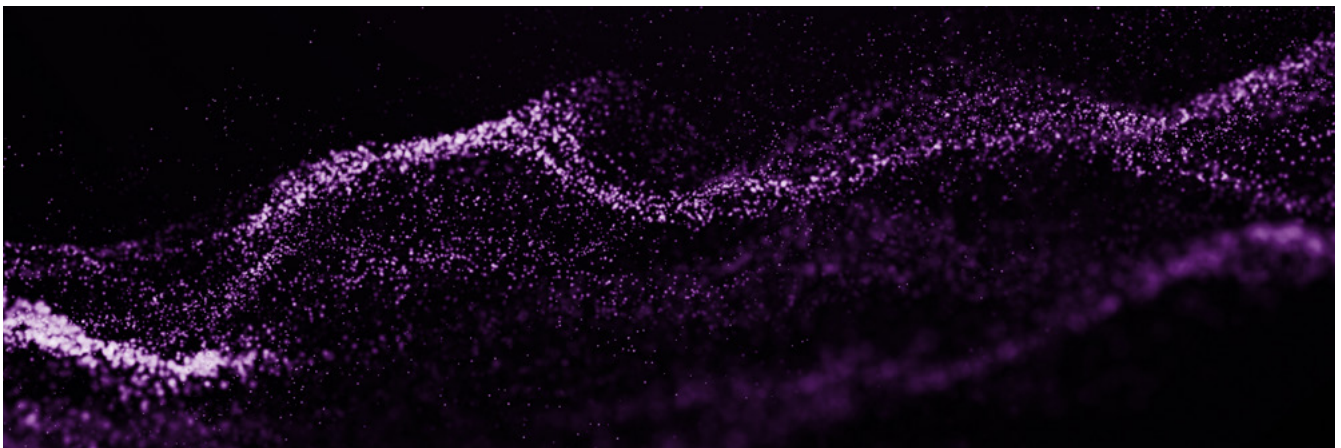
The previous report was published in April 17, 2019. The reporting cycle is annual.









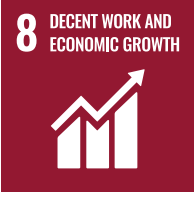
The list of entities included in the consolidated financial statements is found in the Höganäs Holding AB's Annual Report 2019. Where exceptions are made, this is commented on.









There are some restatements in the reported figures for 2018 depending on reporting errors and changes in criteria for calculation basis. Where updates occur, a note is made in connection to the change.








There are no significant changes in reporting content other than the updated materiality analysis and strategy as described in the governance chapter.

You are welcome to address questions and feedback regarding the report to Senior Vice President Sustainability Nicklas Lång nicklas.lang@hoganas.com



		 Workplace	 Society	 Climate	 Environment	 Products	Our working areas
	5.1 End all forms of discrimination against all women and girls everywhere	X					Equal treatment
	6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity, and substantially reduce the number of people suffering from water scarcity				X		Water use
	7.2 Increase substantially the share of renewable energy in the global energy mix by 2030			X			Renewable energy Transportation
	7.3 double the global rate of improvement in energy efficiency by 2030			X			Energy efficiency
	8.4 Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead					X	Sustainable products Product design for sustainability
	8.5 By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value	X					Labour terms and human rights Equal treatment People development
	8.7 Take immediate and effective measures to eradicate forced labour, end modern slavery and human trafficking and secure the prohibition and elimination of the worst forms of child labour, including recruitment and use of child soldiers, and by 2025 end child labour in all its forms			X			Responsible sourcing
	8.8 Protect labor rights and promote safe and secure working environments of all workers, including migrant workers, particularly women migrants, and those in precarious employment	X	X				Zero accidents and healthy workplaces Labour terms and human rights Equal treatment Responsible sourcing

							
		Workplace	Society	Climate	Environment	Products	Our working areas
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE 	9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, all countries taking action in accordance with their respective capabilities				X		Process Safety Sustainable investments
	9.5 Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, particularly developing countries, including by 2030 encouraging innovation and increasing the number of R&D workers per one million people by x% and public and private R&D spending					X	
10 REDUCED INEQUALITIES 	10.2 By 2030, empower and promote the social, economic and political inclusion of all irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status	X					Equal treatment
12 RESPONSIBLE CONSUMPTION AND PRODUCTION 	12.2 By 2030, achieve sustainable management and efficient use of natural resources					X	Resource efficiency and zero waste
	12.4 By 2020, achieve environmentally sound management of chemicals and all wastes throughout their life cycle in accordance with agreed international frameworks and significantly reduce their release to air, water and soil to minimize their adverse impacts on human health and the environment		X		X	X	Responsible sourcing Sustainable products Process safety Environmental impact Chemicals use and exposure
	12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling, and reuse					X	Resource efficiency and zero waste
	12.6 Encourage companies, especially large and trans-national companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle	X	X			X	Sustainability leadership Ethical business behaviour Transparency Business intelligence Customer relations and partnerships Product design for sustainability
	12.8 By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature	X					Sustainability leadership People development

							
		Workplace	Society	Climate	Environment	Products	Our working areas
 <p>13 CLIMATE ACTION</p>	<p>13.2 Integrate climate change measures into national policies, strategies, and planning</p>			X		X	Sustainable products Climate Strategy GHG emissions Renewable energy
	<p>13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning</p>	X					Sustainability leadership
 <p>16 PEACE, JUSTICE AND STRONG INSTITUTIONS</p>	<p>16.4 By 2030, significantly reduce illicit financial and arms flows, strengthen the recovery and return of stolen assets and combat all forms of organized crime</p>		X				Responsible Sourcing
	<p>16.5 Substantially reduce corruption and bribery in all their forms</p>		X				Anti-corruption
	<p>16.6 Develop effective, accountable and transparent institutions at all levels</p>		X				Ethical Business Behaviour

Core	GRI indicator	Chapter	Fulfillment
★	102-1 Name of the organization	About this report	●
★	102-2 Activities, brands, products, and services	This is Höganäs, Solutions that create value	●
★	102-3 Location of headquarters	This is Höganäs	●
★	102-4 Location of operations	This is Höganäs	●
★	102-5 Ownership and legal form	Short facts	●
★	102-6 Markets served	This is Höganäs	●
★	102-7 Scale of the organization	This is Höganäs, Creating value for society	●
★	102-7 Scale of the organization	Our people	●
★	102-8 Information on co-workers and other workers	Our people	●
★	102-9 Supply chain	Responsible sourcing	●
★	102-10 Significant changes to the organization and its supply chain	About this report	●
★	102-12 External initiatives	Memberships and engagement	●
★	102-13 Membership of associations	Memberships and engagement	●
★	102-14 Statement from senior decision-maker	From our CEO	●
★	102-15 Key impacts, risks and opportunities	This is Höganäs, From our CEO, What really matters	◐
★	102-16 Values, principles, standards and norms of behaviour	Values and principles	●
★	102-18 Governance	Driving change	●
★	102-40 List of stakeholder groups	Stakeholder dialogue	●
★	102-41 Collective bargaining agreements	Equal treatment, diversity and no discrimination	●
★	102-42 Identifying and selecting stakeholders	Stakeholder dialogue	●
★	102-43 Approach to stakeholder engagement	Stakeholder dialogue	●
★	102-44 Key topics and concerns raised	Most important topics	●
★	102-45 Entities included in the consolidated financial statements	About this report	●
★	102-46 Defining report content and topic boundaries	Our focus areas	●
★	102-47 List of material topics	Most important topics	●
★	102-48 Restatements of information	About this report	●
★	102-49 Changes in reporting	About this report	●
★	102-50 Reporting period	About this report	●
★	102-51 Date of most recent report	About this report	●
★	102-52 Reporting cycle	About this report	●
★	102-53 Contact point for questions regarding the report	About this report	●
★	102-54 Claims of reporting in accordance with the GRI Standards	About this report	●
★	102-55 GRI content index	GRI index	●
★	102-56 External assurance	About this report	●
★	103-1 Explanation of the material topic and its Boundary	About this report	●
	201-1 Direct economic value generated and distributed	Creating value for society	●
	205-2 Anti-corruption communication, training	Omitted due to insufficient data	○
	205-3 Confirmed incidents of corruption and actions taken	Reported incidents 2019	●
	301 Materials	Circularity, resource efficiency and materials use	●
	302-1 Energy consumption within the organization	Energy use	●
	302-3 Energy intensity	Omitted due to commercial sensitivity	○
	303 Water	Water use	●
	305-1 Direct (Scope 1) GHG emissions	Direct carbon dioxide emissions, Scope 1	●
	305-2 Energy indirect (Scope 2) GHG emissions	Indirect carbon dioxide emissions, Scope 2	●

Core	GRI indicator	Chapter	Fulfillment
	305-4 GHG emissions intensity	Omitted due to commercial sensitivity	○
	305-7 Nitrogen oxides (NOX), sulfur oxides (SOX), and other significant air emissions	Air emissions	●
	306-2 Waste	Zero waste – turning process residuals into products	●
	307-1 Non-compliance with environmental laws and regulations	Environment	●
	308 Supplier environmental assessment	Responsible sourcing	●
	401-1 New employee hires and employee turnover	Our people	●
	403-1 H&S management system	Risk assessments and a proactive approach	●
	403-2 Hazard identification, risk assessment and incident investigation	Safety culture is key; Höganäs' co-workers in India engaging in the global Safety Workshop	●
	403-4 Worker participation, consultation and communication on occupational health and safety	Risk assessments and a proactive approach; Global safety workshop creates awareness of risks in operations involving molten steel	●
	403-5 Worker training on occupational health and safety	Risk assessments and a proactive approach; Global safety workshop creates awareness of risks in operations involving molten steel	●
	403-7 Prevention and mitigation of occupational health and safety impacts	Risk assessments and a proactive approach; Exposure to substances at work	●
	403-8 Workers covered by an occupational health and safety management system	Risk assessments and a proactive approach	●
	403-9 Work-related injuries	Health and safety	◐
	404-1 Average hours of training per year per co-worker	People development	●
	404-2 Programmes for upgrading employee skills and transition assistance programs	People development	●
	404-3 Percentage of co-workers receiving regular performance and development reviews	People development	●
	405-1 Diversity of governance bodies and co-workers	Equal treatment, diversity and no discrimination	●
	405-2 Ratio of basic salary and remuneration of women to men	Equal treatment, diversity and no discrimination	●
	406-1 Incidents of discrimination and corrective actions taken	Equal treatment, diversity and no discrimination	●
	414 Supplier social assessment	Responsible sourcing	●
	416-2 Incidents of non-compliance concerning the health and safety impacts of products and services	Reported incidents 2019	●
	417-2 Incidents of non-compliance concerning product and service information and labeling	Reported incidents 2019	●
	417-3 Incidents of non-compliance concerning marketing communications	Reported incidents 2019	●
	418-1 Substantiated complaints concerning breaches of customer privacy and losses of customer data	Reported incidents 2019	●
	419-1 Non-compliance with laws and regulations in the social and economic area	Reported incidents 2019	●

● Fully
◐ Partly
○ Omitted