Lenzing

Innovative by nature

www.lenzing.com

Stand up!

Against business as usual

Naturally positive

Sustainability Report 2019 | **Lenzing Group**

Non-Financial Statement

Highlights of the year

Strategic milestones

Construction start of a carbon-positive pulp site in Brazil

Construction start of a carbon-neutral lyocell production site in Thailand

Ambitious climate change target set

Breakthrough: REFIBRA™ technology now with post-consumer garments

Expansion of pulp production at the Lenzing site – further reduction of carbon intensity per ton of product

Investment in a new air purification and sulfur recovery plant at the Lenzing site

Successful placement of a sustainable bonded loan for over EUR 500 mn

Achievements

On track with all committed sustainability targets

Once again number 1 wood-based cellulosic fiber producer in Canopy's Hot Button Report

Textile Exchange Report: LENZING™ fibers listed as "Preferred Fibers"

Kick-off of afforestation and conservation project in Albania

Support of replanting of 22,000 trees in the California forests (Earth Month Campaign)

Lenzing Group: About 30 percent reduction of sulfur emissions over the last five years

Ratings

EcoVadis: Gold status

MSCI: A rating

ISS-oekom: Prime status

VÖNIX

Awards

"Digital Corona" in Gold for the introduction of blockchain technology for fiber identification along the textile value chain[1]

"Standort-Corona" (Corona for business location) for Lenzing's achievements as a leading Upper Austrian company

IDEA®19 Award in the "Best new fiber/raw material introduction" category[2] for Lenzing's VEOCEL™ Lyocell fibers with Eco Cycle technology

Upper Austrian State Prize for Innovation for LENZING™ Web Technology[3]

TRIGOS 2019: Lenzing awarded for "Climate Protection"

ITMA honors Lenzing's successful circular economy business case[4]

Sustainable Apparel Coalition: Lenzing recognized as "Leading Contributor"

VÖNIX Award from Vienna Stock Exchange for Lenzing

Austrian Sustainability Reporting Award ASRA[5] – third place in the "Large companies" category

Lenzing's Indonesian production site achieved Blue rating in PROPER 2019

Lenzing Group: Sustainability key performance indicators

Lenzing Group: sustainability key performance indicators **Table 01**

Key performance indicator		2017	2018	2019
Economic value creation[a]	Value creation	EUR 725.7 mn	EUR 587.6 mn	EUR 575.7 mn
	Distribution of value creation			
	Employees[b]	EUR 343.6 mn	EUR 368.2 mn	EUR 389.2 mn
	Shareholders (dividends)[c]	EUR 132.8 mn	EUR 132.8 mn	EUR 26.6 mn
	Public sector[d]	EUR 86.6 mn	EUR 62.3 mn	EUR 60.4 mn
	Retained earnings	EUR 149.0 mn	EUR 15.5 mn	EUR 88.4 mn
	Lenders[e]	EUR 13.8 mn	EUR 8.8 mn	EUR 11.2 mn
	ROCE (return on capital employed)[f]	18.6 %	10.3 %	5.3 %
	Adjusted equity ratio[f]	61.2 %	59 %	50 %
	Revenue	EUR 2,259.4 mn	EUR 2,176.0 mn	EUR 2,105.2 mn
	EBITDA (earnings before interest, tax, depreciation and amortization)	EUR 502.5 mn	EUR 382.0 mn	EUR 326.9 mn
	Sales volume fibers [t]	942,000 t	915,000 t	899,000 t
Raw material security	Proportion of wood source certified or controlled by forest certification	>99 %	>99 %	>99 %
	Proportion of suppliers with EcoVadis rating [%]	-	63 %	89 %
	Share of own pulp	60 %	60 %	62 %
Sustainable innovations	R&D expenditure, calculated according to the Frascati method [EUR]	EUR 55.4 mn	EUR 42.8 mn	EUR 53.2 mn
	Specialty fiber share based on revenue[g]	41.8 %	45.5 %	51.6 %
Decarbonization	Specific[h] energy consumption [GJ/t, 2014 = 100 %]	100 %	99 %	98.1 %
	Specific greenhouse gas emissions[i] [tons of CO_2 eq./t, 2014 = 100 %]	100 %	98 %	92 %
	Specific sulfur emissions [kg/t, 2014 = 100 %]	80 %	71 %	67 %
Water stewardship	Specific water intake [m^3/t, 2014 = 100 %]	95 %	96 %	93 %
	Specific water emissions after wastewater treatment [kg COD/t, 2014 = 100 %]	103 %	93 %	86 %
Employees	Number of employees[j]	6,488	6,839	7,036
Occupational safety	Lost workday cases [LWC, per 1,000 employees]	5.6	5.7	4.4
	Lost Time Injury Frequency Rate[k] (LTIFR based on 200,000 worked man-hours) for employees incl. supervised workers and contractors			0.51

a) Value creation within the Lenzing Group is calculated as the company's business performance minus the cost of materials, other expenses as well as depreciation and amortization. The distribution of value creation shows the extent to which it is distributed among stakeholders such as employees, the public sector, and lenders.
b) Personnel expenses less municipal taxes
c) Based on the proposed distribution of profits
d) Income tax expenses plus asset taxes and similar taxes plus municipal taxes
e) Financing costs less net foreign currency gain/losses from financial liabilities
f) The financial indicators are derived primarily from the IFRS consolidated financial statements of the Lenzing Group. Additional details are provided in the section "Notes on financial performance indicators of the Lenzing Group", in the glossary of the Annual Report and in the consolidated financial statements of the Lenzing Group.
g) Lenzing's specialty fibers are net-benefit products that offer positive impacts and benefits to environment, society, and value chain partners, which are better than most competing alternatives in the market.
h) Specific indicators are reported per unit of production by the Lenzing Group (i.e. pulp and fiber production volumes).
i) Includes both scope 1 and 2 emissions of all greenhouse gases, expressed as CO_2 equivalents. It was observed that the system boundaries of different wood-based fiber producers differ from the Lenzing Group's boundaries. In particular, upstream production of chemicals that are consumed in Lenzing's facilities belongs to scope 3, according to the GHG protocol, so they should not be included here. However, some sites in the Lenzing Group produce chemicals themselves, namely H_2SO_4 and CS_2, leading to a higher energy demand and scope 1+2 CO_2 emissions of the Lenzing Group. This is relevant for all indicators. Scope 1 emissions are calculated from emission factors from EU ETS and scope 2 emissions are calculated according to a market-based method.
j) Employees (excluding apprentices, and supervised workers) in Austria, the Czech Republic, United Kingdom, USA, China, Indonesia, India, Taiwan, Thailand, Turkey, Korea, Singapore, and Brazil.
k) The 200,000 figure in the formula represents the number of hours worked if 100 employees work 40 hours per week, 50 weeks per year, and provides the standard base for calculating incidence rate for an entire year.

Against business as usual

Humanity faces challenges too complex to be solved by business as usual. At Lenzing, we have decided to take another tack: We are standing up for our planet's resources and the fight against climate change. We are standing up for doing things differently and have already gotten started. We are standing up for phasing out fossil fuels – an ambitious goal for which we have already worked out a specific, science-based plan. And because we have chosen to stand up, we have already made good progress towards these goals.

We have countered the wastefulness of business as usual with circular economy models. For example, we have shown how our environmentally responsible technology turns discarded garments into new sources of raw material for high-quality fibers.

How do we plan to accomplish all this? First, by being transparent towards our partners, investors and creditors. Second, by vigorously executing and refining our business model. That is why we are standing up as a technology leader in finding entirely new approaches that are societally, environmentally and economically feasible.

At Lenzing, we look beyond fibers and take responsibility for our children and grandchildren by standing up resolutely against the shortcomings of our time.

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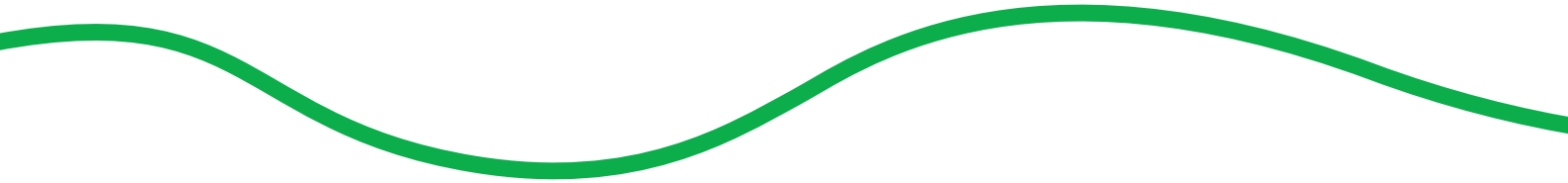
As a technology leader we stand up for entirely new and feasible approaches that benefit society, the environment, and the economy.

The Lenzing Group



About this report

This report is the combined, consolidated, non-financial report for the Lenzing Group[6] (according to §267a UGB) and for Lenzing Aktiengesellschaft (according to §243b UGB).

Since Lenzing operates on a global level with Group-wide approaches in various areas of operation, all descriptions of management approaches and concepts concerning the material topics identified, apply to both Lenzing Group and Lenzing Aktiengesellschaft. For those indicators where meaningful figures can be provided, separate data for Lenzing Aktiengesellschaft can be found in the annex (in accordance with the legal requirements stipulated by the Austrian Sustainability and Diversity Improvement Act – NaDiVeG[7] – and the AFRAC recommendation).

The description of non-financial risks has been integrated into the 2019 Annual Report, while compliance is covered by of the Corporate Governance Report. Additional information concerning certain topics is provided on the Lenzing Group website. References can be found under the respective headlines.

This report covers all the fully consolidated legal entities of the Lenzing Group[8]. The subsidiaries Lenzing Taiwan Fibers Ltd., Taipei, Taiwan, and Lenzing E-commerce (Shanghai) Co., Ltd., Shanghai, China, were founded in 2019.

The contents of this report reflect the topics that are relevant and material to sustainable development at the Lenzing Group. The management approaches for each material topic can be found in the relevant sections. Data relating to human resources covers the whole Lenzing Group. Specific environmental indicators are calculated using data from all the production sites of the Lenzing Group. They account for 100 percent of the company's worldwide production volume. 2014 was chosen as the base year for the presented data because Lenzing's first GRI report including the Lenzing Group sustainability targets was issued in 2017 with data covering 2016, 2015 and 2014.

This Sustainability Report is the follow-up to the Sustainability Report published in 2019, which contained data from 2018. Ten restatements of information provided in previous reports have been made. For details see chapters "Water stewardship", "Empowering people", and "Annex".

This report mainly covers data from 2019, wherever possible also presenting a series of data over three years (2017, 2018 and 2019)[9] to make the information transparent, relevant, and comparable.

Restatements

The tables 12, 19 and 20 have been restated from the previous report due to recalculation decisions.

This report has been prepared in accordance with the Global Reporting Initiative (GRI) standards: Core option. A detailed GRI content index can be found in the annex of this report. In line with GRI standards requirements, the reporting cycle for Lenzing's sustainability performance is annual.

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Letter from the CEO

Dear Ladies and Gentlemen,

At Lenzing, we look beyond fibers and take responsibility for our children and grandchildren by standing up against the troubles of our time. This attitude is part of our strategic principles. In 2019, we succeeded in bringing key projects in our sCore TEN corporate strategy to the final decision stage. This accomplishment makes us proud and reassures us in continuing along our path towards a provider of environmentally responsible specialty fibers.

Our ambitious climate target represents an important component of our strategy and our responsibility to future generations. In the 2019 financial year, we became the world's first producer of wood-based cellulosic fibers to make a strategic commitment to dramatically reducing our carbon footprint and cutting our emissions per ton of product by 50 percent by 2030. We intend to achieve our vision of climate-neutral production without net-carbon emissions by 2050. The most highly regarded organization for climate targets, the Science Based Targets initiative, has confirmed that the Lenzing Group's climate target is indeed science-based. That kind of credibility matters greatly to us – for ourselves and for our customers.

We will continue to implement our strategy with the focus on organic growth in the specialty fiber segment. This will make us even more resistant to fluctuations in the long term and strengthen our position as a leading supplier of specialty fibers.

Climate change is the most daunting challenge humanity faces. By making the strategic commitment to be climate-neutral by 2050, we will contribute to reducing the speed of global warming and to accomplishing the targets of the Paris climate agreement of 2016. Despite the substantial investment that is necessary, we are convinced that this is not only a very responsible step but that it will also be a value-generating action.

The big challenges of our day demand new answers. Lenzing is at the forefront in being part of the solution. That also includes stricter transparency requirements that investors and other stakeholders have laid down. We are working hard to communicate our ESG performance more clearly and have set up a working group to implement the recommendations of the Task Force on Climate-Related Financial Disclosure (TCFD) in order to present credible proof of our economic resilience as a leading company.

Our decision to start building the largest and most competitive dissolving pulp plant of its kind with a capacity of 500,000 tons in the state of Minas Gerais, Brazil, strengthens the Lenzing Group's backward integration and thus the growth of our specialty fibers operations as detailed in the sCore TEN strategy. The technology used in the dissolving pulp plant will be state-of-the-art and thus highly efficient. The Brazilian plant will be Lenzing's first net carbon-positive production facility. This large investment will be environmentally sustainable since it will use energy in an optimized approach and make the best possible use of wood harvested from responsibly operated plantations.

Another major milestone of this reporting year is the construction of a state-of-the-art lyocell fiber production plant in Prachinburi, Thailand. The plant, which is expected to be finished by the end of 2021, will be the Lenzing Group's first lyocell production facility that is carbon-neutral. This expansion shows that sustainability and ambitious growth need not be mutually exclusive. On the contrary, our lyocell fibers – produced in a cutting-edge, highly eco-responsible closed-cycle process – improve the global supply of fibers and play a substantial role in shrinking our industry's environmental footprint.

These strategic investments help strengthen our business model further and also reflect our commitment as a leading company to participate in the fight against climate change. It is thus only logical that we successfully placed a bonded loan linked to our sustainability performance to finance the above major milestones, raising over EUR 500 mn in the process.

One of our most important process research projects in 2019 aimed to improve the REFIBRA™ technology, which helps conserve resources by using post-consumer garments as a raw material and provides a solution to the enormous problem of millions of tons of discarded textiles. As the industry's first company to successfully produce TENCEL™ Lyocell fibers from post-consumer garments, we will continue to consistently follow this path and make a significant contribution to promoting the circular economy in the textile industry. It is worth emphasizing that this is not a small pilot project. Lenzing can supply these fibers at an industrial scale on demand.

The Lenzing Group's commitment to transparency along the entire value chain, from tree to garment, is an integral part of our self-image. In specialty fibers, we are relying more and more on a special Lenzing identification system and are working closely with TextileGenesis™ to commercially provide and implement a blockchain-based "digital tracer" in the textile value chain starting in 2021.

The Lenzing Group's innovation power in the service of sustainability is unwavering and, in the year under review, we won numerous prizes that we are proud of. They prove that Lenzing is perceived as an industry leader. For example, we were recently named the number one company for responsible wood and pulp procurement practices in the "Hot Button Report", a closely watched ranking of viscose producers published by Canopy, a Canadian non-profit organization. The highly regarded TRIGOS Award in the "Climate Protection" category went to Lenzing, as did the Digital Corona for our work in employing blockchain technology to improve value chain transparency.

All the awards that Lenzing has received also speak to the passion with which our employees embrace our sustainable business principles at every level. I would like to express my warmest thanks to them for showing such dedication and for working closely with all our stakeholders.

Sincerely yours,

Stefan Doboczky

Stand up for future generations

What we do.

Lenzing is committed to taking responsibility towards future generations by standing up against the shortcomings of our time.

Lenzing Group: a brief portrait

Based in Austria, the Lenzing Group (Lenzing Aktiengesellschaft and its subsidiaries) is one of the world's leading producers of wood-based pulp and cellulosic fibers, with production sites in major markets and a global network of sales and marketing offices.

Lenzing Group **Table 02**

	2017	2018	2019
Employees	6,315	6,657	7,036*
Revenue	EUR 2,259.4 mn	EUR 2,176.0 mn	EUR 2,105.2 mn
EBITDA	EUR 502.5 mn	EUR 382.0 mn	EUR 326.9 mn
Total assets	EUR 2,497.3 mn	EUR 2,630.9 mn	EUR 3,121.1 mn
Equity	EUR 1,507.9 mn	EUR 1,533.9 mn	EUR 1,537.9 mn
Liabilities	EUR 989.4 mn	EUR 1,097.0 mn	EUR 1,583.2 mn
Total number of operations	16	17	17
thereof production sites	7	7	7
Sales and marketing offices	9	10	11
Sales volume fibers	942,000 tons	915,000 tons	899,000 tons

* Employees (excluding apprentices, and supervised workers) in Austria, the Czech Republic, United Kingdom, USA, China, Indonesia, India, Taiwan, Thailand, Turkey, Korea, Singapore, and Brazil.

Processes and technologies in the Lenzing Group

Lenzing's product portfolio extends from dissolving wood pulp as the basic raw material to standard fibers and innovative specialty fibers as well as energy, biobased biorefinery products and co-products. Lenzing's own pulp production at its sites in Lenzing (Austria) and Paskov (Czech Republic) is based on a biorefinery concept, completely utilizing the raw material wood.

The Lenzing Group combines comprehensive expertise in operating pulp and biorefinery processes with decades of experience in three major fiber process technologies:

- Viscose (rayon)
- Modal
- Lyocell

Based on the lyocell process, three new process technologies have been developed in recent years: REFIBRA™ technology, Eco Filament technology and LENZING™ Web technology. For more information, see "Net-benefit concept" chapter or the "Responsible Production" focus paper at www.lenzing.com/responsible-production. Lenzing's high-quality fibers are supplied to the textile and nonwovens industry as well as for industrial applications.

Nature of ownership

Lenzing Aktiengesellschaft is a publicly traded company and its shares are quoted on the Vienna Stock Exchange. In 2019, the ownership structure was as following: B&C Group held 50 percent plus two shares and Bank of Montreal held 4.1 percent. The free float at balance sheet date accounted for 45.9 percent.

Value creation in the Lenzing Group

The Lenzing Group is committed to the ecologically responsible production of fibers made from the renewable raw material wood grown in responsibly managed forests and plantations. As an innovation leader, Lenzing partners with global textile and nonwoven manufacturers and drives many new technological developments.

Value chain for Lenzing's products

Figure 01

* All standard fibers from Lenzing are compostable and biodegradable in freshwater, marine and soil conditions. The compostability and biodegradability of final consumer textile and nonwoven products depend on the material composition (fiber blend) and processing in the value chain steps.

Value creation in the Lenzing Group

The Lenzing Group's high-quality fibers form the basis for a variety of textile applications ranging from elegant ladies clothing to versatile denims and high-performance sports apparel. Due to their consistently high quality, biodegradability and compostability, Lenzing fibers are also highly suitable for hygiene products and agricultural applications.

The Lenzing Group strives for the efficient utilization and processing of all raw materials and offers solutions to help redirect the textile sector towards a circular economy. The Lenzing Group's business model goes far beyond that of a pure raw material producer. Together with its customers and partners, Lenzing develops innovative products along the value chain, creating added value for consumers.

Value chain

Lenzing stands at the beginning of a long value chain in the textile and nonwovens industry that comprises several processing steps. The Lenzing Group's business model is based on intensive collaboration and innovation support across all stages of this value chain. As a raw material producer, the company is exposed to largely the same risks and opportunities as the value chain as whole.

Supply and sourcing

The principal raw materials for producing LENZING™ fibers are wood and chemicals. Lenzing uses dissolving wood pulp from its own production operations as well as from external suppliers.

Dissolving wood pulp and cellulosic fiber production

Production takes place in two stages: first, the production of dissolving wood pulp and, second, the production of fibers based on dissolving wood pulp. Lenzing's own dissolving wood pulp is produced in two biorefineries at sites in Lenzing (Austria) and Paskov (Czech Republic). Lenzing strives for state-of-the-art sustainable production technology. That entails high recovery rates and, where possible, closed loops for chemicals, water and energy in pulp and fiber. Bioenergy and biobased biorefinery products are generated as well.

The Lenzing Group combines comprehensive expertise in operating pulp and biorefinery processes with decades of experience in three major fiber process technologies:

- Viscose
- Modal
- Lyocell

Manufacturing

As shown in figure 01 under "Manufacturing steps", the customers in Lenzing's downstream value chain use the fibers to manufacture textile, nonwoven, or industrial products.

Both in the textile and in the nonwovens sector as well as for industrial use, Lenzing works closely with value chain partners from direct customers to retail level to provide expertise in processing as well as in developing innovative applications.

Distribution and use phase

After manufacturing, the finished products are distributed and enter the consumer use phase.

End of life

All LENZING™ standard fibers are compostable and biodegradable in freshwater, marine and soil conditions. However, the compostability and biodegradability of final consumer textile and nonwoven products depend on material composition (fiber blend) and processing in the value chain.

Resilience of the business model: well prepared for the future

Global challenges such as climate change, circular economy, water scarcity, microplastic pollution, deforestation and transparency provide opportunities to the companies that are best prepared to manage them. Consequently, investors request more disclosures about how companies manage these aspects and would consider this in their portfolio assessment and decision-making. This section mainly focuses on resilience to climate change; however, other challenges are interrelated such as water and circular economy.

The technologies developed by Lenzing aim to optimally utilize all the raw materials and to recover chemicals, water and energy, preferably by using closed production cycles. The Lenzing business model is generally based on the use of wood as a renewable raw material. Lenzing is therefore almost predestined to pioneer the circular economy as a concept of the future in industry. The Lenzing biorefinery concept has proven to be a commercially successful trend-setter for decades. Based on these facts, it can currently be assumed that Lenzing's business model thus appears to offer more opportunities than risks in an environment challenged by global climate change.

The company is currently developing different scenarios that describe the expected future impacts of climate change on the business. A preliminary assessment of the risks is described below.

Preliminary assessment of physical and transition risks of climate change for the Lenzing Group

Our society's response to climate change will decide what type of risks and opportunities companies may face. If we collectively agree on rapid reductions, then all companies need to transition towards a low carbon economy. This means companies will face transition risks such as stricter regulations, more demand for low carbon products and investor activity driving economic allocations to cleaner business models and products. Similarly, if decision-makers and wider public delay concrete action in a business-as-usual scenario, then the world will become much hotter, surpassing 3 °C temperature increase. This leads to physical risks such as extreme weather events, disruption to operations and supply chains. The following section presents a preliminary analysis of different risks[10] and how Lenzing intends to mitigate such risks.

Value creation in the Lenzing Group

Transition risks

Transition risks are risks to the company that arise from the transition to a low-carbon and climate-resilient economy

Lenzing has set a science-based target (SBT) for 2030 to reduce its CO_2 emissions by 50 percent per ton of pulp and fibers sold. Its vision for the Group is to no longer generate any net CO_2 emissions by the year 2050. Lenzing's corporate strategy sCore TEN has also recently been updated with a climate change target for the year 2024. This strategic focus prepares the company for potential risks and opportunities of a low-carbon transition. The following section explains these points more concretely.

Policy risks

For example, as a result of energy efficiency requirements, carbon-pricing mechanisms which increase the price of fossil fuels, or policies to encourage sustainable land use

In line with its science-based target, Lenzing will develop a roadmap to implement its greenhouse gas (GHG) emissions reduction target in the coming decade. With the implementation of this roadmap, Lenzing intends to reduce Lenzing's exposure to carbon taxes, fossil fuel price increases and other relevant policy risks. Please refer to the "Decarbonization" chapter.

Legal risks

For example, the risk of litigation for failing to avoid or minimize adverse impacts on the climate, or failing to adapt to climate change

Austria and other EU countries have introduced mandatory energy efficiency improvements for the industry. Due to its target commitment, Lenzing has minimal exposure to legal risks from missing any targets set by individual member states. It is not clear how the legal frameworks in developing countries are evolving. However, Lenzing has a Group-wide target that will be divided into site level contributions and roadmaps. Therefore, the legal risks from strict regulation in producing countries will be low or minor.

Technology risks

For example, if a technology with a less damaging impact on the climate replaces a technology that is more damaging to the climate

Lenzing has been developing technologies with smaller environmental impacts for the last three decades, such as its biorefinery, closed-loop lyocell technology, REFIBRA™ technology and forward solutions (spun-dyeing, filament production, LENZING™ Web technology, upcycling) that avoid downstream value chain impacts. Lenzing underscores this thinking for strategic investments and expansions. For example, the lyocell investment in Thailand is based on state-of-art closed-loop technology and predominantly uses bioenergy. Similarly, the pulp investment in Brazil aims to be energy self-sufficient and will provide surplus bioenergy to the local grid. These two investments would further improve the footprint of Lenzing products and are part of Lenzing's climate-resilient thinking.

Market risks

For example, if the choices of consumers and business customers shift towards products and services that are less damaging to the climate

Lenzing supplies products with smaller environmental impacts than most conventional fiber products, especially with regard to climate change. It has achieved this by increasing its renewable energy use in some facilities and developing new products that avoid and reduce downstream value chain impacts. Several premium products with sustainability and climate change claims are discussed in the "Net-benefit concept" section. These products provide more opportunities for Lenzing rather than pose any risks.

Lenzing assesses product footprints with life-cycle assessment (LCA) methodology to understand where impacts arise as well as to get more transparency and to identify potential risks and opportunities.

Reputational risks

For example, the difficulty of attracting and retaining customers, employees, business partners and investors if a company has reputation for damaging the climate

Lenzing is considered to be a leading company in its industry and is the first wood-based cellulose fiber producer to have an approved science-based target. Apart from this, Lenzing is a founding member of the Sustainable Apparel Coalition and a member of the UN Fashion Charter among other initiatives. Lenzing's Chief Executive Officer is a member of the Alliance of CEO Climate Leaders of the World Economic Forum. Due to these forward-looking commitments and its sustainability approach, Lenzing has fewer reputational risks and more opportunities in this area.

Physical risks

Physical risks are risks to the company that arise from the physical effects of climate change

Acute risks

Risks, which arise from particular events, especially weather-related events such as storms, floods, fires or heatwaves, that may damage production facilities and disrupt value chains

The Lenzing Group has set very high technological and safety standards for the construction, operation and maintenance of its production sites. However, disruptions can be caused by external factors over which Lenzing has no control. It is impossible to provide direct protection from certain natural hazards resulting from climate change like extreme weather events.

Chronic risks

Risks, which arise from longer-term changes in the climate, such as temperature changes, rising sea levels, reduced water availability, biodiversity loss and changes in land and soil productivity

The production of pulp and wood-based fibers is energy-intensive. Despite efficient energy use, some waste heat is released to the environment within the framework of official requirements. These regulatory requirements could potentially change as a result of climate change and could restrict production. For example, the availability of sufficient process and cooling water is necessary for pulp and fiber production. Although the Lenzing facilities optimally reuse process and cooling water through closed production cycles and are located in water-abundant areas, climate change could potentially lead to water shortages that could have an unfavorable impact on production and supply chains.

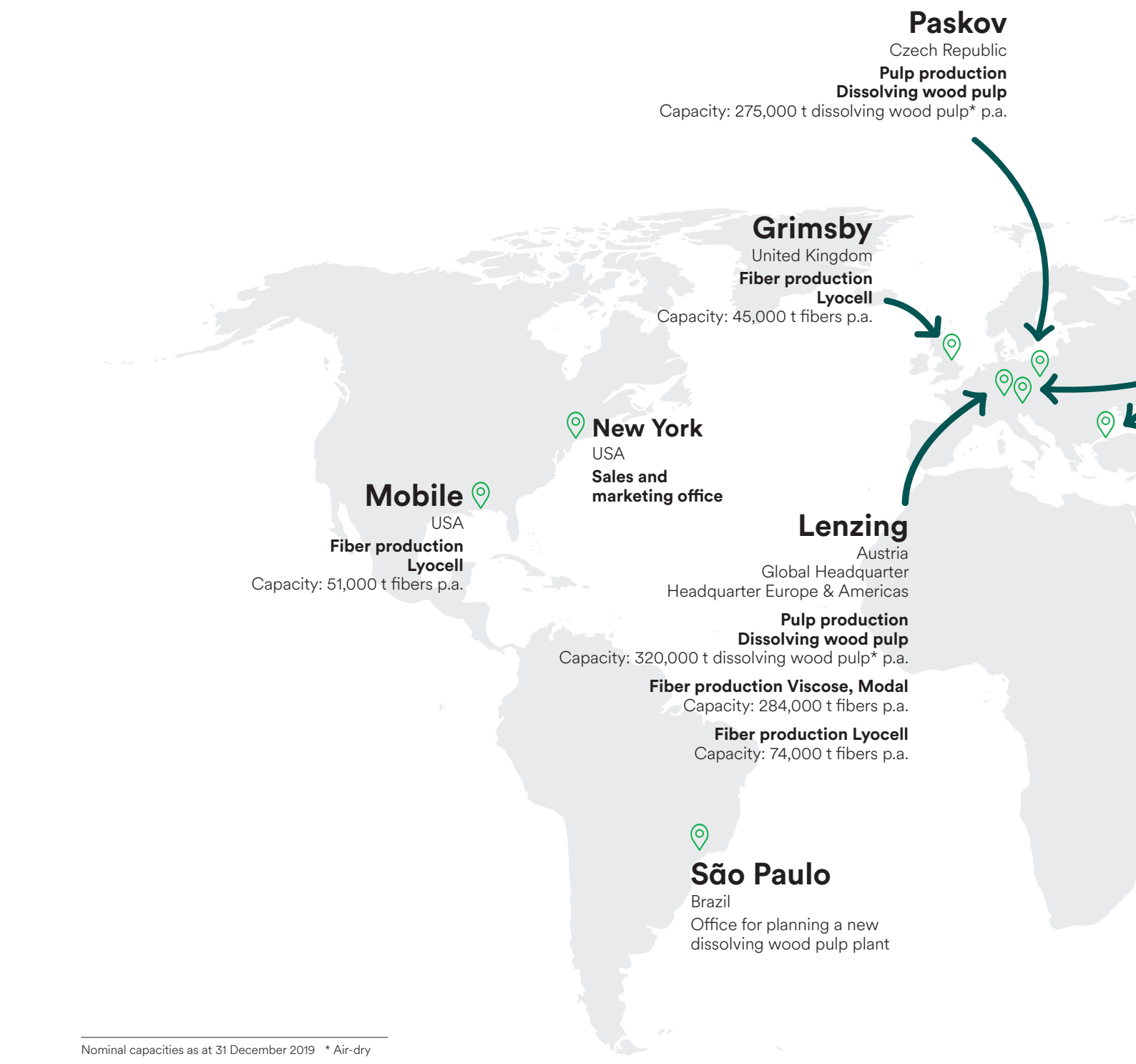
Future scenarios and time horizon for strategic planning

Lenzing uses long-term thinking for strategic planning of different issues. A decision was made to start implementing the recommendations made by the Task Force on Climate-related Financial Disclosures (TCFD) in 2020. The TCFD implementation in the years ahead will bring further clarity in this regard.

Financial effects

Depending on its effects, climate change could potentially increase procurement costs for wood, pulp, and chemicals. However, demand for Lenzing's premium products also is expected to increase in the future due to their sustainability credentials. This can be expected based on the commitments and sustainability targets set by many brands and retailers, which regard Lenzing as ambitious solution provider for sustainability challenges.

Sites of the Lenzing Group



Paskov
Czech Republic
Pulp production
Dissolving wood pulp
Capacity: 275,000 t dissolving wood pulp* p.a.

Grimsby
United Kingdom
Fiber production
Lyocell
Capacity: 45,000 t fibers p.a.

New York
USA
Sales and marketing office

Mobile
USA
Fiber production
Lyocell
Capacity: 51,000 t fibers p.a.

Lenzing
Austria
Global Headquarter
Headquarter Europe & Americas

Pulp production
Dissolving wood pulp
Capacity: 320,000 t dissolving wood pulp* p.a.

Fiber production Viscose, Modal
Capacity: 284,000 t fibers p.a.

Fiber production Lyocell
Capacity: 74,000 t fibers p.a.

São Paulo
Brazil
Office for planning a new dissolving wood pulp plant

Nominal capacities as at 31 December 2019 * Air-dry


Heiligenkreuz
Austria
Fiber production
Lyocell
Capacity: 90,000 t fibers p.a.
Nanjing
China
Fiber production
Viscose
Capacity: 178,000 t fibers p.a.
Istanbul
Turkey
Sales and marketing office
Seoul
Korea
Sales and marketing office
Hong Kong
China
Headquarter North Asia
Sales and marketing office
Shanghai
China
Sales and marketing office
Taipei
Taiwan
Sales and marketing office
Coimbatore
India
Sales and marketing office
Singapore
Headquarter AMEA
(Asia, Middle East and Africa)
Sales and marketing office
Jakarta
Indonesia
Sales and marketing office
Purwakarta
Indonesia
Fiber production
Viscose
Capacity: 323,000 t fibers p.a.
Bangkok
Thailand
Office for planning a new fiber production plant

The "Naturally positive" sustainability strategy focuses on those sustainability areas where Lenzing has the greatest impact in creating a more sustainable world.

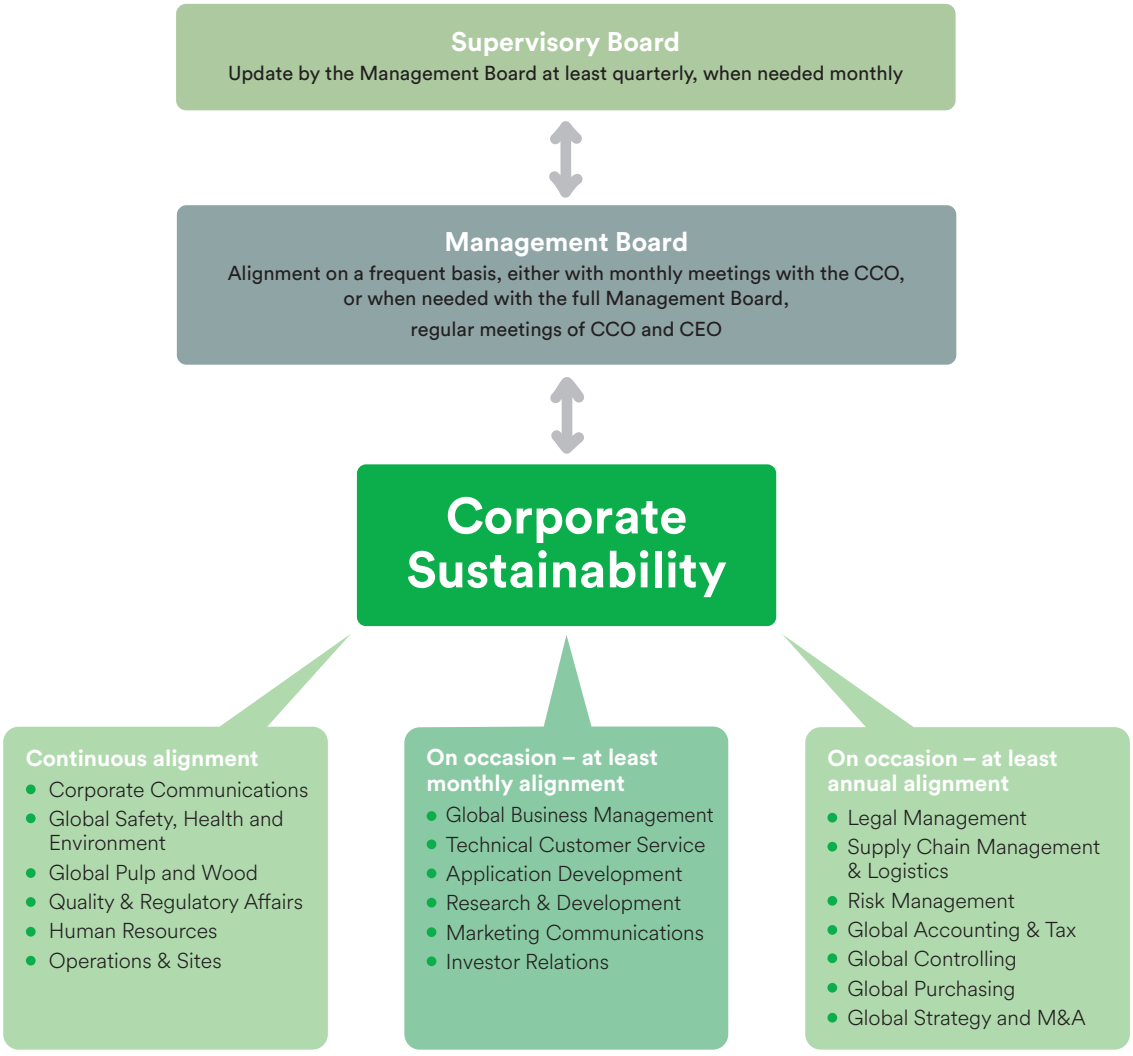
Managing sustainability

Governance structure for sustainability

Corporate Sustainability reports directly to the Chief Commercial Officer on the Management Board.

Sustainability organization

Figure 02



For information on the governance structure of the Lenzing Group, please refer to the 2019 Lenzing Group Annual Report (Corporate Governance Report, page 70).

Risk management

Dissolving wood pulp and fiber production require highly complex chemical and technical processes that pose risks to people, including internal staff, visitors, neighboring communities, and all those in the value chain dealing with Lenzing's products. Furthermore, these processes constitute risks for the environment at and around the production sites as well as potential negative impacts for value chain partners processing Lenzing fibers, such as water contamination or foul odors. Any potential impacts could negatively affect the success of the Lenzing Group and its reputation. For detailed information, please refer to the Risk Report in the 2019 Lenzing Group Annual Report.

Compliance

For a detailed description of compliance management, please refer to the 2019 Lenzing Group Annual Report (Corporate Governance Report, page 70).

Basis: Materiality analysis

Lenzing's "Naturally positive" sustainability strategy is based on a comprehensive materiality analysis, which was reviewed in 2019.

Several informal discussions were held with many external stakeholders, such as customers, investors, NGOs, academics, local community and internal stakeholders. No change in the importance of topics, nor new topics have been identified. The Lenzing Group plans to review its materiality assessment with wider stakeholder groups in 2020. For a detailed description of Lenzing's materiality assessment, refer to "Materiality Analysis" focus paper[11].

Materiality matrix

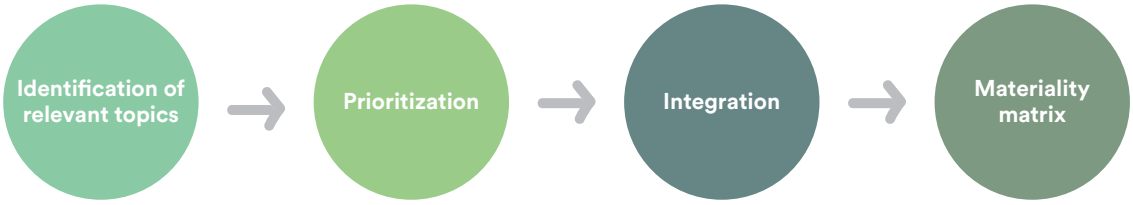
Figure 03

Material topics

1 Wood sourcing
2 Sustainable innovations
3 Energy use
4 Air emissions
5 Climate change
6 Water use & pollution
7 Chemicals/toxicity
8 Product responsibility
9 Sustainable materials (LCA)
10 Waste and circular economy

Development of materiality matrix

Figure 04



Sustainability Context

- Global trends
- Stakeholder topics
- Employee topics
- Lifecycle considerations

Needs and expectations

- Management survey
- Customer survey
- Regular customer queries

- Integration of Lenzing management and stakeholder responses
- Materiality matrix (draft)

- Internal validation
- Final materiality matrix

United Nations Sustainable Development Goals (SDGs)

Adopted by world leaders in September 2015 at a historic UN summit, the 17 SDGs came into force on January 1, 2016. The Goals are unique in that they call for action by all countries – poor, rich and middle-income – to promote prosperity while protecting the planet. The Goals are meant to serve as a framework for businesses to help create a more eco-responsible future by addressing such global challenges as poverty, inequality and climate change[12].

The Lenzing Group recognizes its responsibility and sees its pioneering role in the textile and nonwovens industries as an opportunity to contribute to the achievement of sustainable development goals. As a participant in the Climate Summit at the UN General Assembly in 2019, Lenzing's core efforts focus on the following SDGs:

Priority Goals

SDG	Goal	Lenzing's action
	To ensure access to affordable, reliable, sustainable and modern energy for all.	Pulp and fiber production are energy-intensive processes. Lenzing contributes to SDG 7 by improving energy efficiency, using energy conversion technologies for heat and electricity, employing renewable fuels, switching from coal to natural gas and implementing its biorefinery concept. Dissolving wood pulp production in Lenzing's biorefineries at the Lenzing and Paskov sites is not only self-sufficient in terms of meeting its own energy needs, it actually produces surplus energy. This surplus energy (steam and electricity) is used on-site for purposes such as fiber production or export to the local grid. Within the framework of the science-based target Lenzing relies on renewable green energy in its contracts for new investments.
	To build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.	Innovation and sustainability are at the heart of Lenzing's sCore TEN strategy. Every innovation, whether it be process-, product-, or application-related, is evaluated from the very beginning in terms of sustainability. At Lenzing, innovation is driven by sustainable thinking and paying due regard to both the life-cycle perspective and the net-benefit principle. Sustainable innovations include continuous improvement of Lenzing's existing technologies and processes as well as the driving of systemic change through forward-looking solutions and business models on a large scale. Limited resources are driving solutions to a circular economy. Lenzing is continuously innovating to contribute to a resilient and circular industry.
	To ensure sustainable consumption and production patterns.	Lenzing aims for sustainable production patterns through sustainable sourcing, efficient use of wood as a raw material and efficient and sustainable production, e.g. through the implementation of its biorefinery concept at the Lenzing and Paskov sites. Upcycling techniques are included in the production process (REFIBRA™). Life-cycle based thinking and partnerships with stakeholders along the value chain contribute to more sustainable consumption patterns.
	Taking urgent action to tackle climate change and its impacts.	By setting a science-based target, Lenzing takes action to tackle climate change-related problems. Lenzing has committed itself to reducing greenhouse gas emissions per ton of product by 50 percent by 2030 compared to a 2017 baseline. The Science Based Targets initiative has scientifically validated Lenzing's climate target and confirms that the target is in line with the Paris Agreement's central aim to limit global temperature rise this century to 2 degrees Celsius. Furthermore, the Lenzing Group is a member of the CEO Climate Leaders Group of the World Economic Forum and a signatory to the United Nations Fashion Industry Charter for Climate Action.
	To sustainably manage forests, combat desertification, halt and reverse land degradation, and halt biodiversity loss.	The company contributes towards SDG 15 with its longstanding practice of responsible sourcing, in particular with regard to its main raw material, wood. Lenzing strictly complies with its Wood and Pulp policy and sources only from sustainably managed forests and plantations. Since all Lenzing fibers are compostable and biodegradable in soil, Lenzing is not contributing to plastic litter issues. Furthermore, Lenzing initiated an afforestation and conservation project in Albania. Being co-financed by the Austrian Development Agency (ADA), this social impact project brings together Albanian and Austrian forest experts to increase forest management skills amongst communities, enable know-how exchange between vocational schools and, last, but not least, afforest 20 ha of degraded communal land in rural Albania.
	To revitalize the global partnership for sustainable development.	Guided by the United Nations Sustainable Development Goal SDG 17 and having implemented "Partnering for systemic change" as a focus area, Lenzing acknowledges that complex global challenges call for a collaborative approach. Therefore, the Lenzing Group regularly engages with a wide range of stakeholders and business partners along the value chain in order to help raise the bar as regards sustainability in the textile and nonwovens industries.

United Nations Sustainable Development Goals (SDGs)

Further important Goals

SDG	Goal	Lenzing's action
	To end poverty in all its forms everywhere by 2030.	One example for Lenzing's contribution to SDG 1 is a social impact project in Albania in cooperation with the Austrian Development Agency (ADA). This project aims at supporting the development of certain rural areas by using natural resources in a sustainable manner as well as fostering alternative income opportunities for the communities. Part of the project is the afforestation of 20 ha of degraded land. This area surrounds an Eco-Social Farm, an institution for people with disabilities. As part of the project, a collaboration with the Eco-Social Farm will be set up to employ people who would not stand a chance of getting a job in the normal labor market.
	To ensure healthy lives and promote well-being for all at all ages.	Lenzing provides employees at all production sites with an in-house primary care system that complements the existing local health systems. Furthermore, the company uses medical partners in the regions around the sites to offer its employees a diagnosis and therapy service tailored to the site's size and local needs. In addition to numerous regular activities, programs to motivate and support our employees in pursuing a healthy lifestyle both in and outside of the workplace were implemented in 2019.
	To ensure access to safe water sources and sanitation for all.	The production of dissolving wood pulp and fiber entails water consumption and emissions to water. Therefore, water stewardship is one of the focus areas of Lenzing's sustainability strategy. Lenzing considers water-related issues in the upstream and downstream value chain of its products. The Lenzing Group aims to contribute to sustainable use of water wherever it can influence matters either directly or indirectly. For 2022, the Lenzing Group set itself the target of improving its specific wastewater emissions by 20 percent (baseline 2014). In order to reach this target, it will invest in upgrading its wastewater treatment infrastructure.
	To promote inclusive and sustainable economic growth, employment and decent work for all.	The Lenzing Group makes a major contribution to strengthening the economy in the regions where it operates. This was confirmed by a study conducted by Johannes Kepler University (Linz, Austria) and Gesellschaft für Angewandte Wirtschaftsforschung (Innsbruck, Austria) for 2019. The study concluded that the business operations of the Group have measurable socio-economic effects that extend far beyond purely economic aspects. Overall, the Lenzing Group creates 18,379 jobs worldwide. Every job within the Lenzing Group creates more than two additional jobs in another branch of the economy. Furthermore, the public sector benefits in the form of tax revenues and social security contributions. One of Lenzing's priorities is to ensure sustainable production patterns (SDG 12) in order to promote sustainable economic growth.
	To conserve and sustainably use the world's oceans, seas and marine resources.	Microplastics are a major pollution problem in freshwater bodies and the sea. With its fibers based on wood and a responsible production process, Lenzing ensures that its fibers are compostable and biodegradable in marine and freshwater environment and therefore are not contributing to plastic litter issues.

Sustainability strategy

Our sustainability vision

Our passion is to make sustainable fibers available to the growing world. This creates more positive impacts and benefits for people and the planet. It also ensures our economic success.

Our sustainability mission

We are change agents and collaborate with our suppliers and value chain partners to catalyze change for the better. We actively contribute towards improving environmental performance throughout the value chain and, consequently in final products. We promote social wellbeing. Creation of more positive impacts and benefits is the guiding light for our innovation and business practices.

The sustainability strategy of the Lenzing Group "Naturally positive"

"Naturally positive", the Lenzing Group's sustainability strategy, was developed on the basis of the result of the materiality analysis[11] and is firmly based on the Lenzing Group sCore TEN strategy. It focuses on those sustainability areas where Lenzing has the greatest impact in creating a more sustainable world. It is the basis for Lenzing's approach to contributing to the Sustainable Development Goals (SDGs) of the United Nations.

Naturally positive

Sustainability strategy

Three strategic principles

1

Partnering for change

Complex global challenges call for a collaborative approach to design systemic solutions, involving many stakeholder groups. As one of the leaders in wood-based cellulosic fibers, Lenzing has a particular responsibility and an ambition to help raise the bar as regards sustainability in the textile and nonwovens industries. Transparency is a prerequisite for fostering trust and long-term relationships. With its contributions to developing industry-wide methods, tools and approaches, Lenzing helps the industry to progress on its sustainability roadmap by overcoming critical challenges.

2

Advancing circularity

The company unites the cellulosic fiber cycle of its wood-based products (biological cycle) with its innovative technologies that focus on closing loops in the production and the recovery of raw materials and chemicals (technical cycles).

The biological cycle starts from the renewable resource wood, which is converted into dissolving wood pulp and subsequently into fibers. Lenzing's biorefinery concept ensures 100 percent utilization of the renewable raw material wood. Wood material that is not used for the production of dissolving wood pulp and fibers provides the basis for valuable biobased products and energy. Subsequently, Lenzing's customers use the fibers in different applications. This biological cycle is closed when the fibers biodegrade or are composted at their end of life.

In the technical cycle, Lenzing aims to minimize the environmental footprint and to improve resource efficiency by closing the loops of fiber production technologies with state-of-the-art recovery and reuse systems. Following the net-benefit principle, Lenzing also considers the downstream value chain steps and develops new applications.

Lenzing will advance its circular economy ambitions in limiting climate change to 2 °C global temperature increase as outlined in the Paris Climate Agreement.

3

Greening the value chain

Lenzing's responsible practices and innovative products enable its customers and value chain partners to improve their environmental performance and achieve their sustainability targets and commitments. Responsible sourcing practices, water stewardship, decarbonization and sustainable innovations are the basis for Lenzing's efforts in greening the value chain. The sustainability targets for air emissions, water emissions, pollution and climate protection are a cornerstone for Lenzing's responsible entrepreneurship and act as a driver of innovation. With its contributions to developing methods and tools, Lenzing helps the industry to progress on its sustainability roadmap.

Naturally positive

Strategic focus areas

Within the three principles described above, Lenzing identified seven focus areas where the Lenzing Group substantially contributes to creating positive impacts and benefits:

- Raw material security
- Decarbonization
- Water stewardship
- Sustainable innovations
- Partnering for systemic change
- Empowering people
- Enhancing community wellbeing

In order to credibly implement the sustainability strategy, supply chain transparency is a prerequisite.

Lenzing sets targets in these areas to further advance its performance and positive impact. These focus areas contribute directly to Sustainable Development Goals (SDGs) described on page 25 and 26. Management approaches for all material topics are listed in each chapter of the corresponding focus area.

For a detailed description of Lenzing's Sustainability Strategy, its strategic principles and focus areas, please refer to "Sustainability Strategy" focus paper[13].

Net-benefit concept

Lenzing's net-benefit concept brings all the three strategic principles together. It guides and shapes all major decisions.

Lenzing's net-benefit products offer positive impacts and benefits to environment, society, and value chain partners that exceed those of most competing alternatives in the market. Net-benefit products take a life-cycle perspective and thus include both upstream and downstream value chain processes. Customers can replace resource-intensive and polluting products with Lenzing's alternatives, thus improving their product footprint and reducing supply chain risks.

Products and technologies with a net benefit

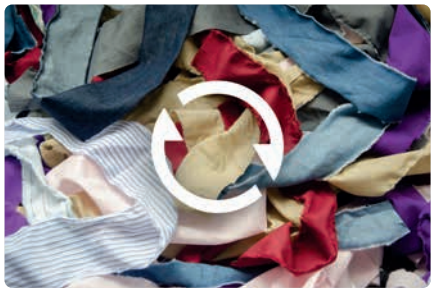
Pulp

Dissolving wood pulp is the raw material for Lenzing's fibers, produced in the company's own biorefineries[14]. Lenzing's biorefinery process ensures that 100 percent of wood constituents are used to produce dissolving wood pulp for fiber production, biobased products, and bioenergy. All pulp produced at Lenzing pulp production sites, including the future pulp production in Brazil, is totally chlorine free. The biorefineries at the sites of Lenzing and Paskov contribute to the Group's carbon footprint reduction and consequently also enable Lenzing's customers to obtain low-carbon products. For more information, please refer to chapter "Raw material security".

Lyocell

Lyocell fibers from Lenzing are derived from the renewable resource wood and produced in a closed-loop process, which transforms wood pulp into cellulosic fibers with high resource efficiency and low ecological impact. This solvent-spinning process recycles process water and reuses the solvent at a recovery rate of more than 99 percent. Lenzing's lyocell fibers show around 50 percent less greenhouse gas emissions than generic lyocell (according to Higg MSI scores).

For further information, please refer to "Decarbonization" chapter.



Lenzing fibers with recycled content

These fibers use pre-consumer cotton scraps, post-consumer garments and wood from sustainably managed forests as a raw material. The cotton material is recycled into pulp which is blended (up to 30 percent) with wood pulp to produce a high-quality lyocell fiber. This technology diverts tons of cotton scraps and post-consumer garments from entering landfills or incineration. Based on Lenzing's own calculations, TENCEL™ Lyocell fibers with REFIBRA™ technology require 95 percent less water to produce than conventional cotton. They are produced with high resource efficiency and avoid CO_2. Therefore these fibers have a low environmental impact.

Modal

Modal fibers from Lenzing are produced using an integrated production process in which the raw material pulp is manufactured at the same site as the fiber itself. 100 percent of the raw material beechwood is converted into cellulose and other biobased biorefinery products. Beech forests grow naturally without the use of chemical fertilizers or artificial irrigation. The pulp production is self-sufficient in terms of energy while supplying a significant amount of bioenergy for the entire fiber production at the production site. Therefore TENCEL™ Modal production causes around 80 percent less greenhouse gas emissions than generic modal (according to Higg MSI scores).

TENCEL™ Luxe

TENCEL™ Luxe branded filaments produced with Eco Filament technology avoid conventional yarn spinning, which is energy-intensive and predominantly based in regions with very high share of fossil-based electricity. For example, at industry level, spinning processes contribute to 28 percent of the total CO_2 emissions of the textile value chain (excluding use phase)[15].

LENZING™ Web technology

The LENZING™ Web technology is an innovative R&D development technology platform that allows producing a wide range of novel sustainable nonwoven materials from the raw material wood. The patented nonwoven web formation process – Lenzing holds more than 25 patent applications - starts with dissolving wood pulp and produces a directly formed cellulosic nonwoven fabric made of 100 percent continuous lyocell filament. This technology enables fiber and nonwoven production in only one step and sets new standards in the field of cellulose nonwoven fabrics with respect to efficiency, circularity and ecological sustainability. The flexibility of this technology and possible integration with other nonwoven technologies will enable the development of a wider range of new cellulosic materials and composite structures for highly engineered end use applications.

Net-benefit concept

Modal Eco Color technology

Fibers with this technology incorporate pigment during fiber production and thus help avoiding energy-intensive conventional dyeing steps. A fabric made from this product has 60 percent lower CO_2 emissions than conventionally dyed fabrics[16].

LENZING™ ECOVERO™ viscose and LENZING™ Viscose Eco

LENZING™ ECOVERO™ branded viscose (for textiles) and LENZING™ Viscose Eco (nonwovens) have 50 percent less greenhouse gas emissions than generic viscose (according to Higg MSI scores).

LENZING™ Acetic Acid Biobased

Lenzing's biorefinery technology converts wood into pulp, biobased biorefinery products and energy. One of the biobased biorefinery products is LENZING™ Acetic Acid Biobased which has an 85 percent lower carbon footprint than conventional fossil-based acetic acid on the market. LENZING™ Acetic Acid Biobased causes significantly lower greenhouse gas emissions than average global, and also EU production. This was the conclusion of a recent study conducted by an independent Life Cycle Assessment (LCA) consultant.

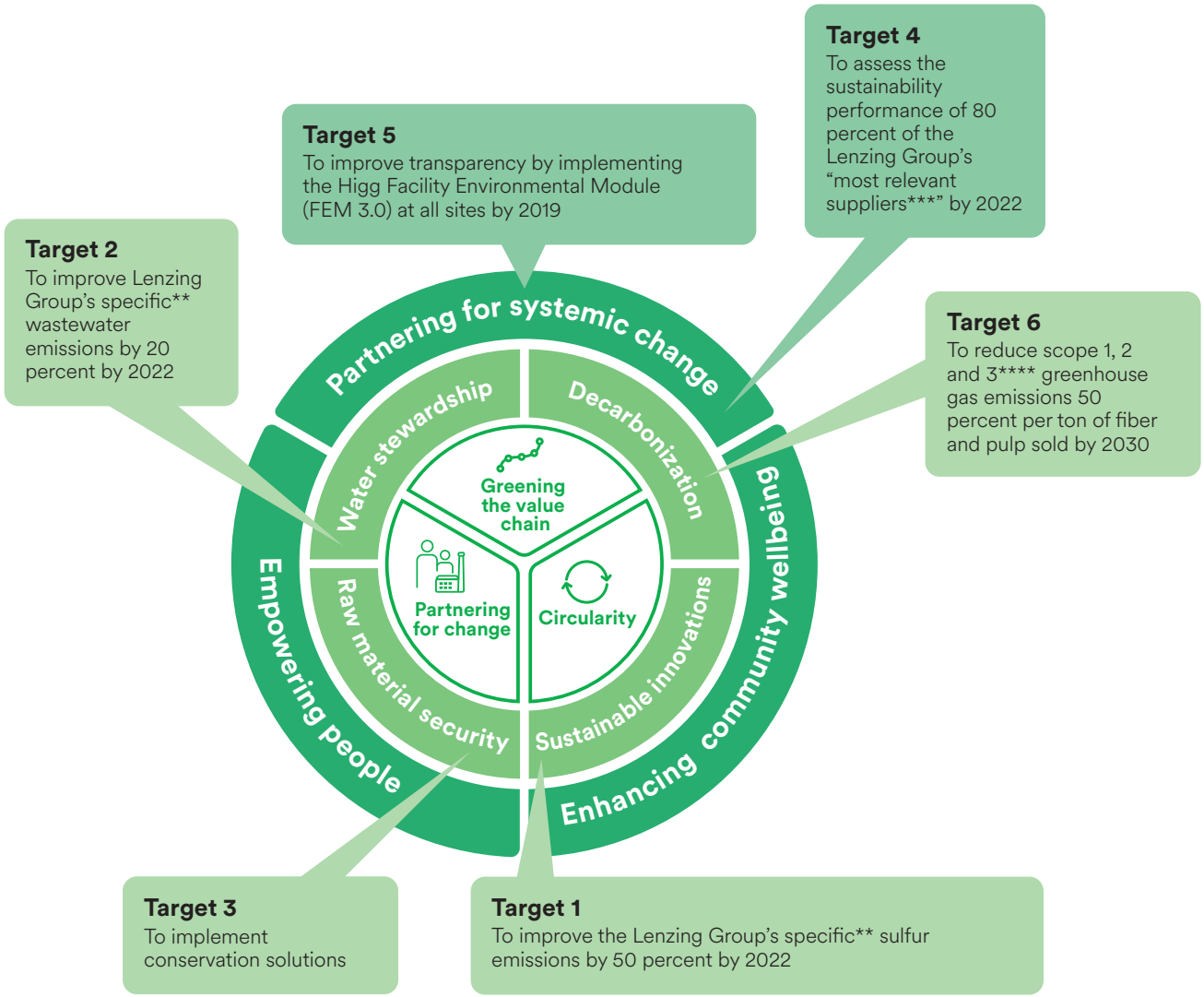
For further information on the calculation of Higg MSI scores please refer to endnote 50.

Targets: Fully on track

Lenzing set Group sustainability targets for the most important challenges in each of its strategic focus areas. The company is fully on track with all defined targets and has set a new ambitious science-based target for carbon reduction.

Lenzing Group strategic focus areas and sustainability targets*

Figure 05



* Baseline for target 1, 2, 4 is 2014, baseline for target 6 is 2017
** Specific emissons are defined as emissions per unit of production by the Lenzing Group (i.e. pulp and fiber production volumes).
*** Most relevant suppliers comprise 80 percent of the Lenzing Group's purchasing spend.
**** Scope 1, 2 und 3 comprise purchased goods and services, upstream and downstream transport, and fuels and energy related activities.

Targets: Fully on track

Sustainable innovations

Target 1

To improve the Lenzing Group's specific[17] sulfur emissions by 50 percent by 2022; baseline 2014

Progress

To achieve its overall sulfur reduction target by 2022, Lenzing looked into different measures, including investing in an additional Carbon Disulfide Adsorption Plant (CAP). The conceptual design for this plant has been completed.

Water stewardship

Target 2[18]

To improve Lenzing Group's specific[17] wastewater emissions by 20 percent by 2022; baseline 2014

Progress

Efforts in 2019 focused on the production sites in Purwakarta, Indonesia and Grimsby, UK. Extensive improvement measures and investment preparations were made at both sites to bring chemical oxygen demand (COD)[19] values to the targeted levels by 2022.

Grimsby, UK

Planning for the construction of a wastewater treatment plant began in 2018.

Purwakarta, Indonesia

Lenzing's site in Purwakarta, Indonesia, is making good progress in improving its wastewater after a project was launched in 2018. The project aims to debottleneck the capacity of one of the two existing wastewater treatment plants by 2022. The sewage collection and treatment system is planned to be upgraded and to ensure compliance with future requirements. In addition, a utility water treatment system will be built, and existing storm-water drainage systems will be improved. Dedicated teams are currently working on the basic engineering of the project, which is expected to be implemented by the target deadline in 2022.

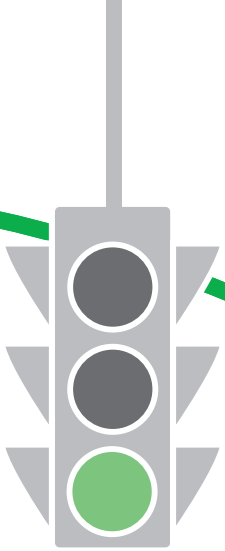
Raw material security

Target 3

To implement conservation solutions

Progress

After an extensive preparation phase in 2018, the afforestation of degraded land in Albania (Southern Europe) started in the reporting year. This forest conservation project aims to support the development of rural areas in Albania with a special focus on the broader region of Shkoder (Ana e Malit) and Diber (Peshkopi) by sustainably using natural resources and fostering alternative income source for the communities. For detailed information, please refer to "Raw material security", page 52.



Partnering for systemic change

Target 4

To assess the sustainability performance of 80 percent of the Lenzing Group's "most relevant suppliers[20]" by 2022

Progress

The Lenzing Group uses EcoVadis as an assessment platform. The target has been fulfilled ahead of schedule. 89 percent of the most relevant suppliers were assessed by the end of 2019. For details, see "Partnering for systemic change" chapter, page 83.

Target 5

To improve transparency by implementing the Higg Facility Environmental Module (FEM 3.0) at all sites by 2019

Progress

In 2019, all Lenzing Group's fiber production sites successfully implemented self-assessments using the HIGG Facility Environmental Module (FEM) 3.0. The Higg Facility Tool measures how well facilities are managed with respect to seven categories (e.g. air emissions). As FEM was initially created with the intention to measure textile facilities such as wet processing, fiber production aspects are not fully considered in the current FEM 3.0. Lenzing will work with the multi-stakeholder initiatives Zero Discharge of Hazardous Chemicals (ZDHC) and Sustainable Apparel Coalition (SAC) to consider these aspects in the next update of FEM to make the tool more relevant to the fiber industry.

Decarbonization

Target 6

To reduce scope 1, 2 and 3 (purchased goods and services, upstream and downstream transport, and fuels and energy related activities) greenhouse gas emissions 50 percent per ton of fiber and pulp sold by 2030; baseline 2017

Vision: Lenzing aims to achieve net-zero CO_2 emissions by 2050 (Scope 1 and 2).

Progress

The Science Based Target initiative has approved the Lenzing Group's target as science-based. The company has established an organizational governance structure and a project charter to implement the roadmap and strategic actions. Lenzing will initiate the implementation of the recommendations made by the Task Force on Climate-related Financial Disclosures (TCFD) in 2020. A decision was taken to replace coal-based energy by natural gas at the Chinese production site. At the Lenzing site in Austria a new air purification and sulfur recovery plant will be installed, which will reduce scope 3 emissions.

Empowering people and community wellbeing

A dedicated project to create an enterprise-wide program and relevant targets for the "people pillar" of sustainability in 2020 has been initiated. A diverse project team under the leadership of Global Human Resources Department will consider all Lenzing entities globally and bring their current projects and programs under one umbrella. For more information on social projects see "Social Responsibility" focus paper[21].

Our planet has finite resources. Thus, resources need to be used and preserved so that future generations can enjoy them, too.

Circular economy

What we do.

Sustainable fibers are our passion. Together with our partners, we want to create added value for people and the environment. This idea is at the heart of our sustainability strategy and the ambitious targets associated with it.

What is the circular economy?

Management approach

Material topic: Waste and circular economy

Importance for Lenzing

Improvement of resource efficiency in order to stay competitive in terms of upcoming legal requirements and cost

Providing new business opportunities

Preparedness for the upcoming challenges (climate change, textile recycling etc.)

Opportunities

Lowering product footprint

Lowering emissions due to closing the loops

Valorizing biorefinery products

Risks

Transitional risks due to changing legislation and stakeholder expectations (NGOs, customers)

Increasing footprint due to new and inefficient production steps and waste streams

Guiding principles

sCore TEN's specialty strategy is guiding light for innovation related to circular economy.

Sustainability strategy "Naturally positive" with "Circularity" as one of its three major principles and focus area "Partnering for systemic change"

Group Environmental Standards

Lenzing Waste Management Guideline

Due diligence processes and (ongoing) measures

Environmental management system according to ISO 14001:2015 (incl. risk assessment and internal audits to ensure effectiveness of the measures implemented)

Objectives

Advancing circularity in the Lenzing Group

Vision to grow with REFIBRA™ technology

Increasing Lenzing's specialty and forward-solution portfolio (net-benefit products)

All sites need to comply with the Group Environmental Standards

Establishing best practices to improve waste management and reduce the risks related to waste management

Developing new biobased biorefinery products

Enhancing sustainability performance of biobased biorefinery product portfolio (e.g. carbon neutral LENZING™ Acetic Acid Biobased)

Support and implement EU Green Deal policies and measures

Achievements/activities in the reporting year

Strategic investments in pulp and fiber projects

REFIBRA™ with post-consumer textile waste

Lenzing contributing to leading multi-stakeholder initiatives

Contribution to supply chain transparency to facilitate circular economy projects

Responsible

Regional Senior Vice Presidents

Supporting

Corporate Sustainability

Global Business Management

Global Pulp and Wood

Global Research & Development

Global Safety, Health and Environment

Site Managers

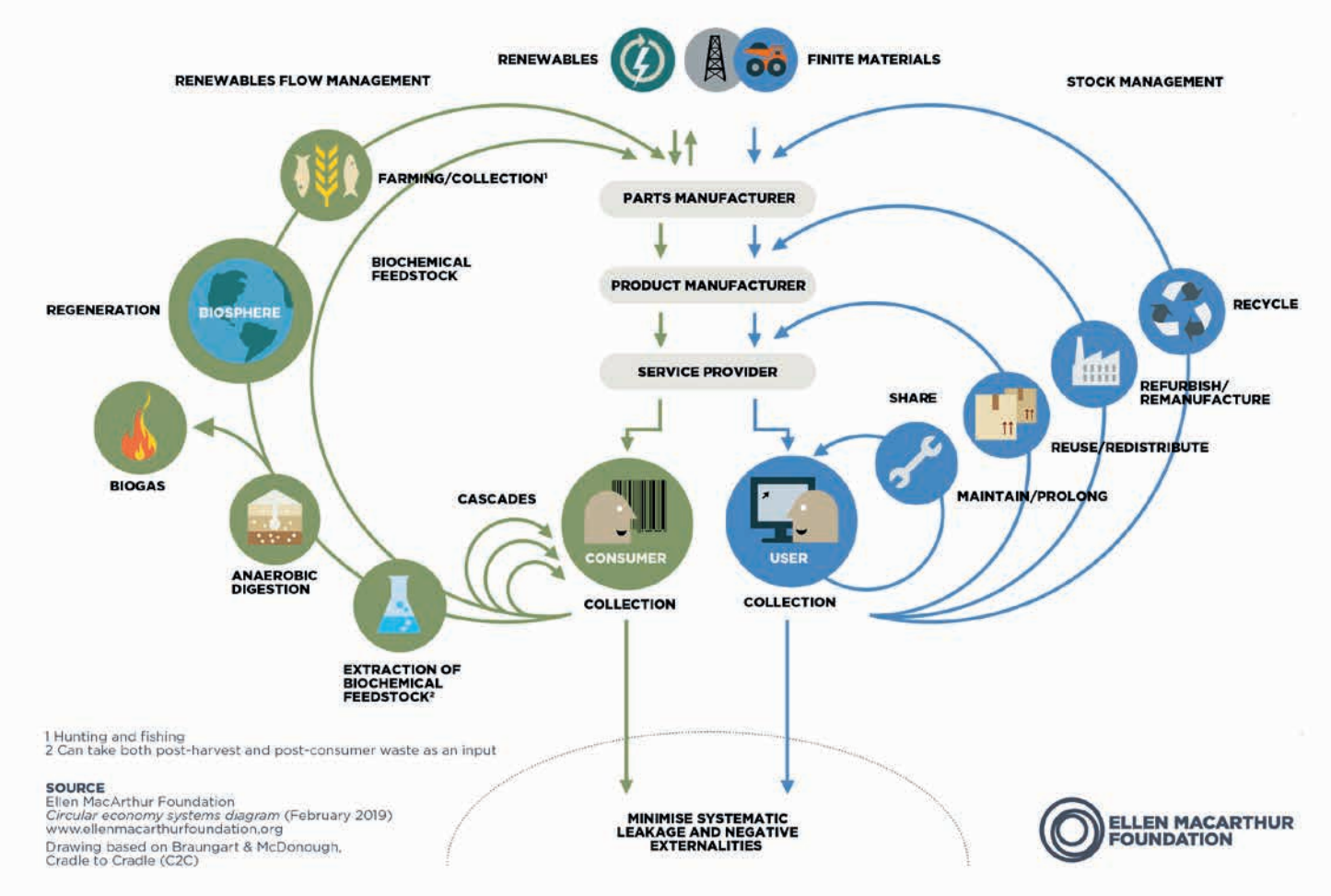
Our planet has finite resources. Thus, resources need to be used and preserved so that future generations can enjoy them, too. The circular economy is built on the idea that closed loops allow maximum value to be extracted from resources. Products last longer, and waste from one process can be used as a raw material in another process, which reduces the need for virgin resources, avoids waste, increases resource efficiency and thereby minimizes environmental impacts. Circular economy broadly covers two areas: biological materials and technical materials.

Biological materials are based on natural and renewable resources available in nature, such as wood from forests. Growing forests enrich and restore soils and improve the ecosystem by providing fresh water, food and flood protection. Biochemicals and materials can be extracted from wood. At the end of their life, biomaterials can be composted, returning them to nature, and thus closing the natural cycle.

Technical materials are manufactured products. They should be produced in a responsible way. Auxiliary production chemicals should be used in closed loops to maintain an ecological balance and protect human health. Products should be designed for longevity and be easy to repair and maintain. Product lifetimes should be extended through reuse and through refurbishment of the damaged parts. If a product can no longer be refurbished, recycling of its basic materials continues the material loop and avoids extraction of virgin resources.

Circular economy: the butterfly diagram

Figure 06

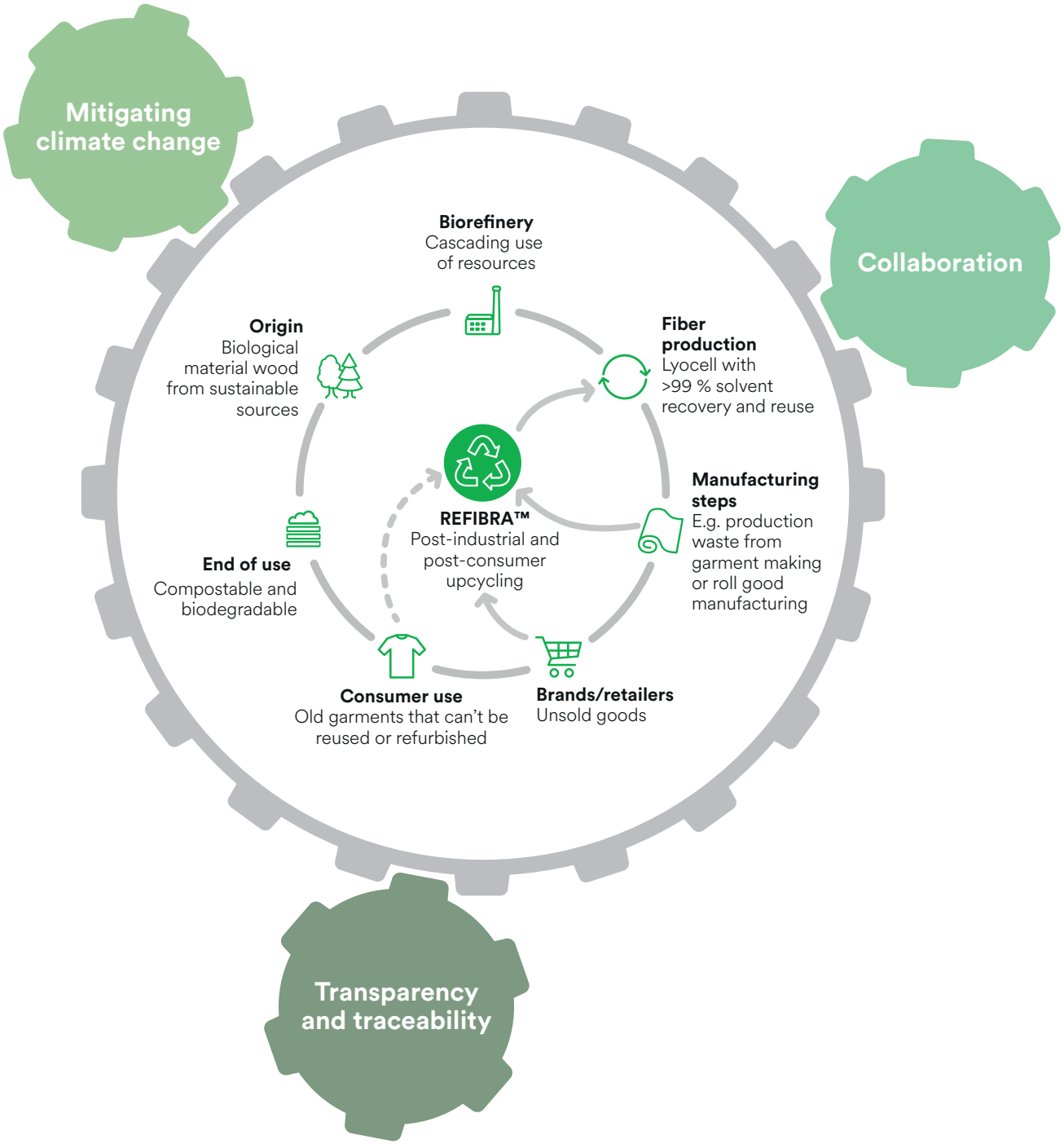


Source: Ellen MacArthur Foundation (https://www.ellenmacarthurfoundation.org)

What is the circular economy?

The Lenzing Group's circular economy model

Figure 07



Lenzing's practice of circular economy

Lenzing embeds different elements of the circular economy in its business model, practices and innovation. They are covered under these areas:

- Natural circularity
- Resource-efficient technologies and products
- Transparency and traceability of supply chains
- Climate change and circular economy nexus
- Collaboration for systemic change

Natural circularity

Natural circularity covers the biological cycle as shown on the left wing of the "Butterfly Diagram", figure 06. It is based on two aspects: renewable origins and biodegradability/compostability of natural materials. Lenzing's products are made from the renewable raw material wood, which is sourced from sustainably managed forests and plantations as described in the "Raw material security" section. Lenzing's fibers are compostable and biodegrade at the end of their use. Thus, the material loop closes and aligns with the biological cycle.

Resource-efficient technologies and products

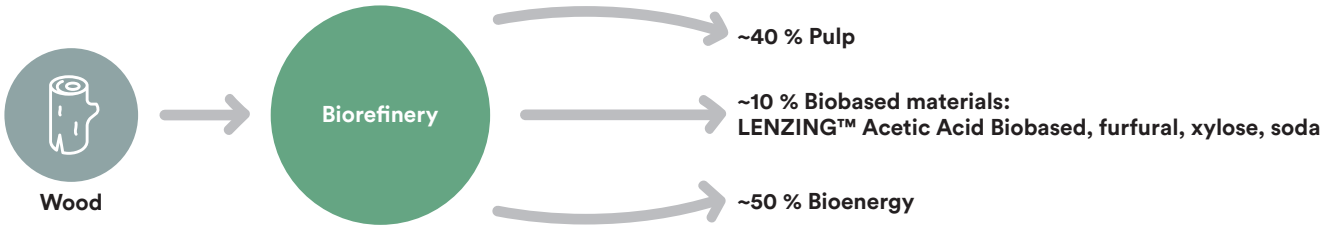
Cascading use of biomass

Lenzing biorefinery technology converts wood into pulp, biobased co-products and energy. The Lenzing Group operates two biorefineries: one at the Lenzing site (Austria) and one in Paskov (Czech Republic). These sites are not only energy self-sufficient; they also produce surplus energy (steam and electricity) that is used on site, for instance for fiber production, or exported to the local grid. This is a prime example of the cascading use of biomass and 100 percent utilization of wood without creating any waste.

Highly efficient use of the raw material wood at the Lenzing Group's biorefineries

Wood and biorefinery products are calculated as "absolute dry", and pulp as "air-dry"

Figure 08



Lenzing's practice of circular economy

Closed-loop production

Lenzing's lyocell process is closed-loop and thus recovers and recycles more than 99 percent of the solvent. This avoids waste, ensures high resource utilization and results in less water consumption as well as fewer emissions.

In viscose and modal fiber production Lenzing sets standards in further closing the loops. The chemicals carbon disulfide and hydrogen sulfide from the process are recovered, converted and returned to the production process as raw materials.

Management of production waste

As a manufacturing company, there are several contexts where waste is generated in the facilities, such as from the packaging of procured goods, from production processes etc. Lenzing follows a waste hierarchy and avoids waste wherever possible. For information on the management of waste, see "Waste management", page 46.

Developing commercial-scale upcycling technologies

To address the enormous textile waste challenges of industry and society, Lenzing has developed a unique upcycling technology branded REFIBRA™. This technology utilizes pre-consumer cotton scraps and post-consumer garments from the textile value chain as raw materials. Along with wood pulp, these materials are used for the closed-loop production of lyocell fiber at a commercial scale. This creates high-quality fibers with the same properties as fibers from virgin wood pulp. Furthermore, Lenzing runs an active research and development project to further improve the utilization of post-consumer textile waste for the production of fully biobased and biodegradable fibers. It has already completed the first successful production of fibers including a pre- and post-consumer mix in addition to wood pulp.

Lenzing is developing new applications to support circularity not only for apparel but also for other industries such as agriculture and packaging. For example, biodegradable vegetable nets for packaging can substitute similar non-biodegradable plastic-based products. For further information, see chapter "Sustainable Innovations" section, page 75.

Lenzing's vision for textile recycling

It is Lenzing's vision to make textile waste recycling a common standard process like paper recycling. Fibers from Lenzing produced with REFIBRA™ technology have up to 50 percent recycled content from post-consumer waste and are available on a commercial scale by 2024.

Current industry context

From 53 mn tons of fibers produced annually for garments, 12 percent are lost during production and more than 70 percent end up in landfills as post-consumer waste[22]. Unknown blends (more than 10 material streams in the waste, such as cotton, polyester, polyamide, elasthane) heterogeneous wastes length of use, washing behavior and nearly 5,000 chemicals used in the textile industry present great challenges for any textile recycling project. In addition, there are no unified sorting standards. The current standards are mainly for reuse and not for chemical recycling. Automated sorting based on fiber composition is in development.

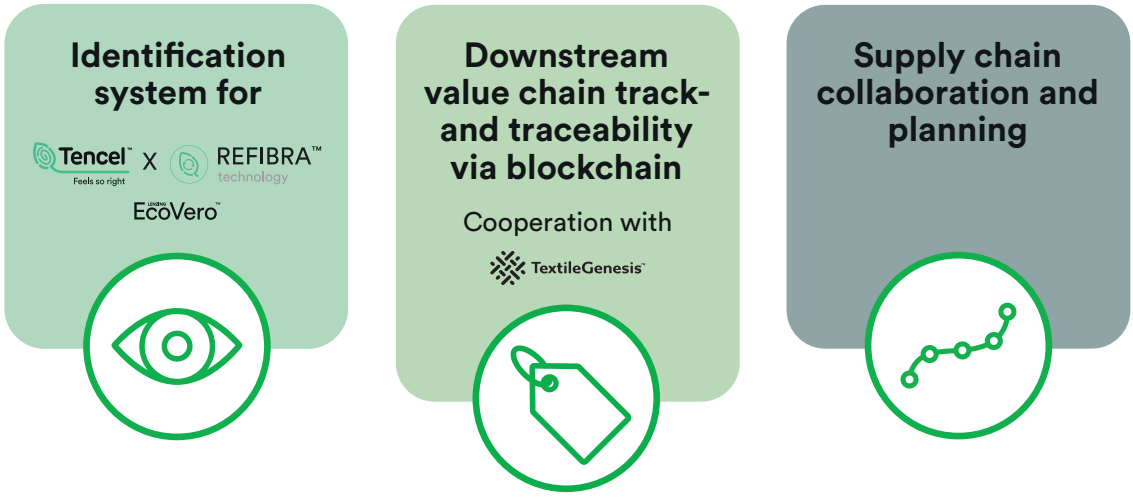
Traceability and transparency solutions

Value chain partners need to share data and information in order to efficiently and holistically close the loops. Traceability also gives customers and consumers confidence. Digitalization is an enabler for making the transition from a linear to a circular supply chain.

Lenzing follows a three-pillar approach to a more sustainable and more transparent supply chain: fiber identification system, blockchain and supply chain collaboration and planning. Combining these different approaches assures a high degree of transparency and verifies the origin of Lenzing fibers throughout the supply chain up to the final garment. In addition, Lenzing offers a branding platform for fabric certification, including fabric testing, identification numbers and hangtags.

Lenzing Group building blocks of transparency

Figure 09



Lenzing has developed a technology for fiber identification. It relies on the physical identification of fiber origin at different stages of the product such as the yarn, fabric and garment level. This enables the full traceability of fiber origin and protection from counterfeiting. It thus protects the brands and retailers by providing assurance that their products do not contain fibers made out of wood from controversial sources as well as guarantees that the fibers are produced in state-of-the-art-production facilities that meet high standards for resource efficiency and environmental and social responsibility. The system was successfully implemented for Lenzing's flagship brands – LENZING™ ECOVERO™ and TENCEL™ x REFIBRA™.

According to a survey[23], 80 percent of consumers want brands to disclose their supply chain. In order to meet these expectations, Lenzing successfully co-developed a beta version of a blockchain-based tracking system with its partner TextileGenesis™ and intends to offer brands and retailers an integral supply chain transparency solution based on this unique platform as of 2021.

The blockchain technology enables brands and consumers to identify these fibers from Lenzing across each production and distribution step from fiber-to-retail of the finished garment or home textiles. The technology will allow consumers to verify the garment composition

Lenzing's practice of circular economy

and the underlying textile supply chain at the point of sale, simply by scanning the barcode with a mobile device.

Lenzing's supply chain collaboration and planning project creates a digital twin of its extended supply chain, enabling end-to-end planning, agility and responsiveness with the objective to reduce material and environmental impacts.

Climate change and circular economy

Lenzing has an approved science-based target (SBT) and will reduce the CO_2 emissions from its operations and supply chain in line with the Paris Climate Agreement. Circularity and climate change are two sides of the same coin. Lenzing strives to find synergistic solutions similar to the successful Lenzing biorefinery concept so that innovations and solutions to circular economy challenges would mitigate climate change simultaneously. With the REFIBRA™ technology, for example, fibers are produced with 10 percent less CO_2 emissions than Lyocell standard fibers from Lenzing.

Collaboration for systemic change

Collaboration is a key prerequisite for the transformation to a circular economy. Partnering for systemic change is one of the basic principles of Lenzing's "Naturally positive" sustainability strategy for jointly achieving targets with Lenzing's major stakeholders.

Regarding the circular economy, the Ellen MacArthur Foundation is one of Lenzing's key stakeholders. Further collaborations in 2019 included projects such as "Jeans Redesign" or the "#WearNext"-campaign.

The "Jeans Redesign" project, which aims to provide a framework for the industry to design clothing for a circular economy was launched by the Ellen MacArthur Foundation. Working together with a group of leading brands and manufacturers, guidelines were developed in order to provide minimum requirements for jeans on durability, material health, recyclability, and traceability. Lenzing contributed to developing these guidelines with its experience in sustainable fiber manufacturing and recycling. Jeans that meet the guidelines will be collectively produced at scale by May 2021.

The Make Fashion Circular initiative joined forces with the New York City Department of Sanitation and the New York City Economic Development Corporation, along with collectors, recyclers, such as Lenzing, and resellers to launch the #WearNext campaign as an effort to encourage all New Yorkers to keep clothes in use and out of landfills. An online map was created marking more than 1,100 collection points across the city where people can return clothes they no longer wear.

Other collaborative activities are described in the "Partnering for systemic change" chapter, page 83.

Waste management

Circular economy means that today's waste is tomorrow's raw material. What is left over from one process is used as a raw material for another process, thus reducing the need for virgin resources, avoiding waste, increasing resource efficiency and minimizing environmental impacts.

Waste management is described in Lenzing's Internal Waste Management Guideline, which was launched in 2018. The guideline was further developed in the reporting year and resulted in a full consolidation of Group waste data. It is an integral part of Lenzing's environmental management system. Activities relating to waste management, e.g. collection, separation, storage, transportation, and treatment of waste, are planned and performed based on possible utilization as well as an understanding of their environmental impact and risks.

Waste management is addressed through the individual site waste management systems. They also concern external service providers. The company's approach to waste management uses a management hierarchy as its guiding principle. This means that Lenzing plans and prioritizes waste management as follows:

1
Prevention and reduction

2
Reuse and recycling

3
Energy recovery

4
Landfill

Recyclable fractions of waste are separated. Unrecyclable fractions are disposed of in accordance with local legislation. Wherever possible, Lenzing uses unrecyclable fractions to produce energy in facilities such as incinerators with energy recovery. Landfilling of non-hazardous waste is subject to strict national regulations. Hazardous waste is either treated or disposed of according to the applicable regulations. Lenzing uses licensed contractors to dispose of waste. Audits of these service providers are conducted on site-defined intervals. If non-compliance issues are discovered at any contractor, the contract is terminated. In 2019, there were no such cases.

Waste is categorized according to national legislation. In Europe, the end-of-waste criteria defined under the Waste Framework Directive may be applied to certain waste streams resulting in the de-classification of those waste streams when criteria are met. Furthermore, when an external party, such as an authorized waste management company, determines the management option of a waste stream, long delays in obtaining the related data and information may occur. All these may result in significant fluctuations in waste reporting from year to year.

Waste generated by the Lenzing Group
In metric tons

Table 03

	2017	2018	2019
Total waste*	140,149	152,254	194,360
Hazardous waste	40,052	55,166	75,314
Recycling	2,419	3,552	2,910
Incineration**	34,254	49,499	69,454
Landfill	3,219	2,014	2,724
Others***	160	101	226
Non-hazardous waste	100,097	97,088	119,045
Recycling	76,863	71,785	75,455
Incineration**	9,621	9,435	29,392
Landfill	13,372	14,870	13,882
Others***	241	997	316

* Classification of waste into hazardous and non-hazardous waste according to local regulations

** In 2019, the production site in Indonesia was not able to incinerate its sludge from the wastewater treatment onsite due to a technical reason. Also since December 2018, the production site in China has become the responsible operator of the wastewater treatment plant near the site, and the sludge from the wastewater treatment is added to the waste reporting. Both sources of sludge are sent to an external incinerator for disposal.

*** Waste sent for further processing or storage whose treatment option will not be known prior to publication of this report. In most cases, however, these wastes are processed and recycled.

Lenzing's practice of circular economy

Safe end of life: biodegradability of LENZING™ fibers

Cellulose is a major component of plant biomass and the most abundant polysaccharide material produced in nature. Natural recycling by biodegradation is therefore indispensable for the carbon cycle.

The biodegradability of LENZING™ standard fibers was tested at the laboratory of Organic Waste Systems (OWS) in Belgium – one of the world's leading biodegradability and compostability testing companies – according to existing international standards (figure 10). In addition to earlier findings, studies by OWS conducted in the reporting year confirm that LENZING™ Viscose and LENZING™ Lyocell fibers also biodegrade in freshwater and under anaerobic conditions.

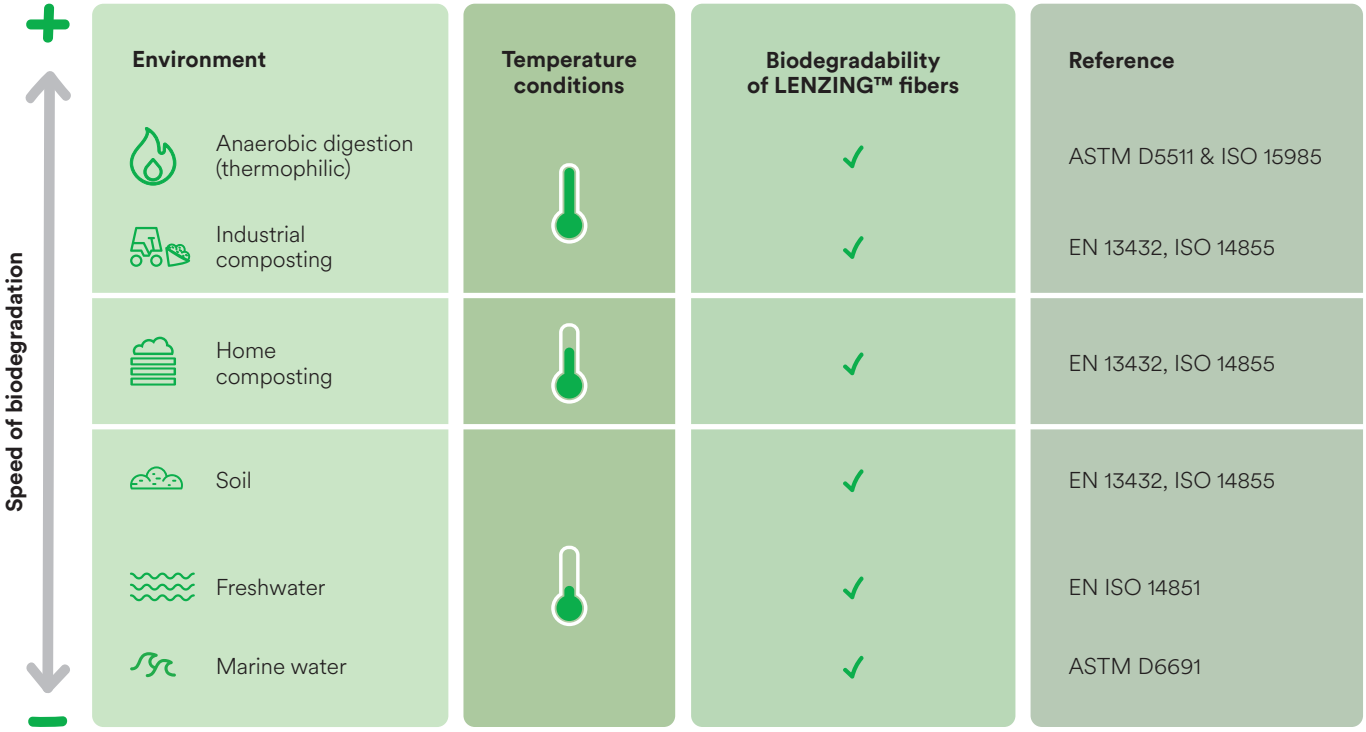
Certificates by international certification organization TÜV Austria Belgium indicate that LENZING™ standard fibers quickly biodegrade within the standards' time limits in all tested environments (soil, industrial compost, home compost, fresh water, and marine environment)[24].

For making materials and user goods, e.g. textiles and garments, from wood-based cellulosic fibers viscose, modal and lyocell, the same processes are used as for natural fibers like cotton. Especially the dyeing and finishing steps follow the same processes and use the same chemicals. Therefore, the products show very similar properties as the ones from other natural fibers in the use phase and after use, especially regarding biodegradability.

Biodegradation of LENZING™ fibers in various environments*

Valid for all standard fibers from Lenzing

Figure 10



* Modified from Ellen MacArthur Foundation (2017). The New Plastics Economy: Rethinking the future of plastics and De Wilde B., Mortier, N., Verstichel, S., Briassoulis, D., Babou, M., Mistriotis, A. and Hiskakis, M. (2013). Report on current relevant biodegradation and ecotoxicity standards, In: KBBPPS Knowledge Based Bio-based Products' Pre-Standardization, Work package 6 Biodegradability.

Microplastics

Small plastic particles of 5 mm or less in size – known as "microplastics" – are perceived as a major pollution problem in freshwater bodies and the sea. While recent industry initiatives and legislation intend to promote the development of less polluting alternatives, Lenzing as a producer of wood-based cellulosic fibers laid the foundations for biodegradable products more than 80 years ago.

The Lenzing Group collaborates in industry and multi-stakeholder initiatives, including the Microfiber Consortium of the European Outdoor Group and the Cross Industry Agreement of the textile and detergent industries, as well as in the "Textile Mission" project within the German research program on plastics in the environment (Plastik in der Umwelt), by providing fiber and textile intermediate materials for testing and the development of new textile constructions.

European Union plastics regulations

Regarding the EU's recently published Single-use plastics Directive[25], aiming to reduce the impact of plastic products on the environment. LENZING™ fibers are not covered by this directive, as they consist of unmodified natural polymer cellulose, and are therefore not classified as plastics.

Study

Release of fibers during washing and biodegradation

North Carolina State University and Cotton Incorporated published a study concerning the release of fibers during washing of various fabrics materials and their biodegradation. The release of fibers was quantified when knitted fabrics of cotton, polyester, and viscose (rayon) were washed. Cellulosic materials shed more fibers. In aquatic (fresh water) biodegradation experiments, cotton and viscose degraded, but polyester did not. The authors conclude that cotton and viscose fibers degrade in the environment, whereas polyester fibers persist for a long time[26].

Study

Biodegradation of fibers in the ocean

The results of the working group of Dimitri Deheyn (Scripps Institution of Oceanography of the UC San Diego) were presented at the 2019 Global Fiber Congress in Dornbirn. Deheyn's group is doing novel research on the (bio)degradation of different natural, wood-based, biobased and synthetic materials in real conditions in the ocean. The research findings showed at the end of the test after 77 days all natural and wood-based materials are completely degraded.

How to avoid plastic waste

#ItsInOurHands campaign for biodegradable wet wipes

Since November 2019, Lenzing, in cooperation with eco-pioneers such as Plastic Free World, has taken on a pioneering role for sustainable solutions and responsibility in the nonwovens industry: the initiation of the environmental initiative #ItsInOurHands addresses the current high proportion of plastic in wet wipes.

At www.ItsInOurHands.com facts and figures are presented, experts present their opinion and solutions are introduced: wood-based VEOCEL ™ fibers pave the way for a new generation of sustainable and biodegradable wet wipes. The VEOCEL ™ brand offers consumers a clear orientation even before the EU Single Use Plastics Directive comes into force. Since mid-2019, retailers and manufacturers have only been allowed to display the VEOCEL™ logo in connection with products that contain 100 percent biodegradable cellulose fibers. There are already some pioneers - such as dm Austria, Sweeps, Dotties or Kindoh - who enable consumers to choose the right product. The trend towards more transparency will help to establish VEOCEL ™ step by step as a "Label of Trust".

Lenzing identified seven focus areas where the Group substantially contributes to creating positive impacts and benefits.

Strategic focus areas

Raw material security

Management approach

Material topic: Wood[27] sourcing

Importance for Lenzing

Wood is the most important raw material for Lenzing.

Opportunities

Wood as a natural and renewable raw material offers expanded business perspectives

- as a replacement for fossil-based products
- due to its low global warming impact

Wood is an alternative to agricultural products (e.g. cotton).

Using wood from sustainably managed forest supports biodiversity.

Risks

Sourcing environmentally and socially of controversial wood and pulp

Can be linked to deforestation

Loss of biodiversity in forest ecosystems

Reputation loss endangers business

Sourcing can be affected by climate change-related impacts.

Climate and market related impact on wood and pulp availability, price and quality

Guiding principles

Centrally managed wood and pulp procurement

Strict Wood and Pulp Policy

CanopyStyle initiative

Global Lenzing Supplier Code of Conduct

Preference for long-term contracts and direct contacts

EcoVadis supplier assessment

Due diligence processes and (ongoing) measures

Regular audits on wood certification standards (FSC®, PEFC™)[28]

Internal audit management system

Wood and pulp certification according to FSC® and PEFC™ standards

Additional third-party verification as part of the CanopyStyle initiative and internal supplier audits

Objectives

Ensure compliance with customer sourcing policies

Assessment of sustainability performance of the Lenzing Group's most relevant suppliers

Cooperation with pulp suppliers on sustainability

Achievements/activities in the reporting year

100 percent of wood suppliers assessed

Afforestation and social impact project in Albania

Ranked first in Canopy's Hot Button Report

Responsible

SVP Global Pulp and Wood

Supporting

Corporate Sustainability

Global Quality Management & Technical Customer Service

Procurement management

Within the Lenzing Group organization, wood purchasing, pulp purchasing and chemicals purchasing are handled by different groups (wood procurement, Pulp Trading GmbH, and Global Purchasing). Through reliable, long-term supply relationships and active supplier management, Lenzing aims to minimize purchasing-specific risks, such as major price fluctuations and supply bottlenecks.

Apart from taking account of economic criteria, the selection and evaluation of suppliers is also based on environmental, social, and governance standards (ESG).

The most important materials procured are (in order of annual procurement volume): wood, dissolving wood pulp and the chemicals caustic soda, sulfuric acid, sulfur, carbon disulfide, sulfur dioxide and magnesium oxide.

All of the Lenzing Group's suppliers must comply with the Lenzing Global Supplier Code of Conduct. Wood and pulp suppliers additionally have to comply with FSC®[28] or PEFC™ standards.

Supplier assessment

All suppliers are evaluated with regard to sustainability in the production chain. In addition to regular audits, Lenzing conducts specific evaluations of both new and established suppliers with regard to sustainability and compliance with environmental and safety standards. Suppliers are interviewed on a regular basis and evaluated with regard to environmental and safety aspects with the support of external experts. A final assessment is then conducted. It affects the overall supplier assessment and constitutes a major criterion for sustainable cooperation with suppliers. Past supplier assessments found no violations of environmental, social, or ethical standards that could have led to the cancellation of existing supplier contracts.

For Lenzing, the most relevant suppliers are those with an increased risk due to their size and volume. They represent 80 percent of global purchasing volume including dissolving wood pulp, but excluding wood. The EcoVadis online tool is used to evaluate these non-wood suppliers.

Wood and pulp suppliers are evaluated using a system that follows the FSC® controlled wood criteria.

All wood suppliers – about 700, many of them private owners – in all sourcing countries are assessed once a year by a scoring system utilizing FSC® Controlled Wood criteria. Strategic dissolving wood pulp suppliers are evaluated periodically.

In the reporting year, the supplier evaluations found no violations of environmental, social or ethical standards that could have led to the termination of existing supply contracts.

Sustainable sourcing of wood and dissolving wood pulp

Wood and dissolving wood pulp are the most important raw materials for Lenzing. The Lenzing Group assumes responsibility by focusing on sustainable sourcing covered by certifications, responsible consumption, and highly efficient use of these valuable resources. Lenzing sources wood and dissolving wood pulp from semi-natural forests and plantations (as defined by Food and Agriculture Organization of the United Nations[29]), not from natural or ancient and endangered forests.

Precise figures for the absolute amount of wood purchased and market dissolving wood pulp sourced are not provided for confidentiality reasons. As an indicative estimate, total fiber sales of nearly 1 million tons require a pulp input of about the same amount. The amount of wood required to produce this dissolving wood pulp cannot be stated exactly, especially with all the different processes and sources used by our suppliers. Assuming a dissolving wood pulp yield from wood of 40 percent, a rough estimate for the total wood input would be 2.5 million tons (dry matter) for both Lenzing's own production and purchased dissolving wood pulp.

Wood and Pulp Policy of the Lenzing Group

In its Wood and Pulp Policy[30], Lenzing is committed to procuring wood and dissolving wood pulp exclusively from non-controversial sources.

Controversial sources include wood which has been harvested

- illegally,
- from forests of high conservation value, including ancient and endangered forests, and endangered species habitats,
- from plantations established after 1994 through significant conversion of natural forests or converted to non-forest use,
- from forests or plantations growing genetically modified trees,
- in violation of traditional, community, and/or civil rights, or
- in violation of any of the ILO[31] Core Conventions as defined in the ILO Declaration on Fundamental Principles and Rights at Work.

Regular risk-assessments, audits, on-site visits, and independent third-party certification of sustainable forest management programs ensure compliance with the policy.

If Lenzing discovers that it has sourced wood or dissolving wood pulp from controversial sources, it will first engage the supplier to encourage practices consistent with Lenzing's Wood and Pulp Policy. If the response is unsatisfactory, the supplier will be delisted with a reasonable lead time. Very few such cases have occurred in recent years and none occurred in 2018 and 2019.

Raw material security

Societal aspects, especially human rights

Lenzing's Wood and Pulp Policy refers to societal aspects, especially human rights, in wood sourcing covered by the wood certification systems used by Lenzing, FSC® and PEFC™. They ensure that traditional, community, and civil rights are observed, and that labor conditions meet or exceed ILO Core Conventions[32].

Wood and dissolving wood pulp certifications

Lenzing's wood procurement management system ensures that all wood is sourced from legal and sustainably managed sources. In order to demonstrate that wood sourcing complies with Lenzing's high standards, the company relies on FSC® and PEFC™ certification systems for verification purposes. More than 99 percent[33] of wood and dissolving wood pulp used by the Lenzing Group is either certified by FSC® and PEFC™ or inspected in line with these standards. Furthermore the additional CanopyStyle verification audit was renewed in 2019.

The certification status of all wood input into Lenzing's production – directly through own procurement for in-house dissolving wood pulp mills and indirectly through dissolving wood pulp suppliers – is shown in the figure below. All Lenzing Group production sites are FSC® CoC (chain of custody) certified.

For wood sourced from Central Europe, PEFC™ is used based on strict and strictly enforced national forestry laws, whereas FSC® certification of forests is not widespread in this region. Therefore, for the time being, the majority of wood sourced is procured with a PEFC™ certificate and receives FSC® Controlled Wood status at Lenzing sites after a due diligence process. The Lenzing site has held the PEFC™ Chain of Custody certification as its main certificate for more than a decade. This is now complemented with an FSC® CoC (chain of custody) certificate, which covers all Lenzing production sites.

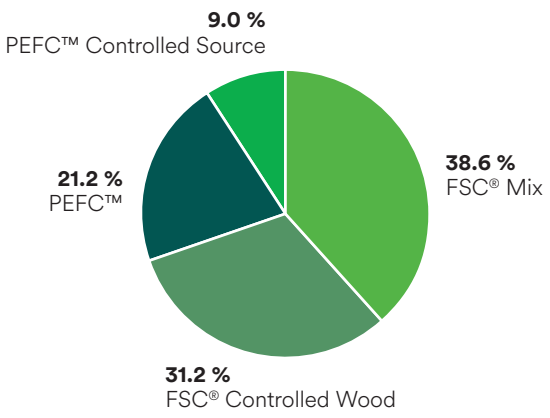
For detailed explanations of the certificates and Controlled Wood, see the 2017 Lenzing Sustainability Report[34] and the "Wood and Pulp" focus paper.

Since forestry operations in Central Europe are generally small scale, many small forest owners harvest wood for additional income and do not participate in a certification process. Therefore, Lenzing needs to procure wood other than that certified to FSC® or PEFC™. This proportion of wood is inspected in line with these standards

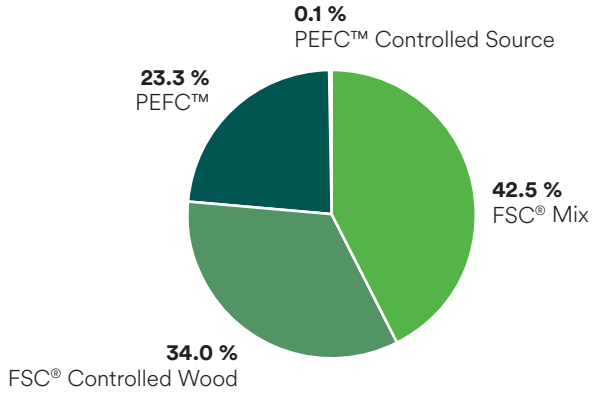
Certification status in the Lenzing Group

Certification status of total wood input at Lenzing fiber production sites via own and purchased dissolving wood pulp.
Basis: dissolving wood pulp by weight. All PEFC™ certified or controlled sources are also FSC® controlled.

2015-2017 average



2018



and is shown in figure 11 “Certification status” as “FSC® Controlled Wood” or “PEFC™ Controlled Source”.

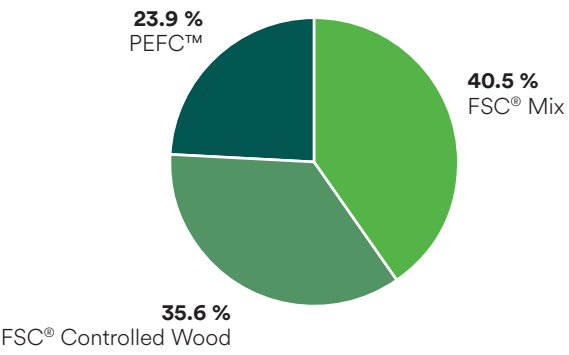
Regular formal audits are conducted; however, ongoing, day-to-day, informal, personal contact between Lenzing’s procurement team and suppliers is even more important. In case of severe findings regarding sustainability aspects, a contract with a supplier can be terminated. This was necessary in the past in some cases where the issues were not remedied by the supplier. No such cases occurred in 2019.

In addition, strict forestry laws and enforcement in Central Europe ensure that forest owners must pursue sustainable management. Lenzing’s Wood and Pulp Policy forms part of all contracts. Consequently, Lenzing also purchases reliable but limited quantities of wood from owners of small forests resulting in Controlled Wood or Controlled Source Wood after application of the required inspection regime.

With FSC® certification of the Lenzing site, Austria, starting in 2016, this proportion of purchased wood previously reported as PEFC™ Controlled Source is now also FSC® Controlled Wood.

Figure 11

2019



Regional wood supply in Europe

The Lenzing site uses mainly beech wood plus small amounts of other hardwoods and spruce, whereas the Paskov plant (Czech Republic) utilizes spruce. Lenzing is committed to the cascading use of wood, and primarily makes use of timber generated from small trees by thinning and from those parts of large trees which are unsuitable for high-grade products, such as furniture or construction.

In wood-sourcing countries, the percentage of broadleaf forest, especially beech, is increasing[35] as forests are being returned to a more natural mix of tree species. The area devoted to spruce cultivation is decreasing, although stocks are still increasing in all sourcing countries due to low felling rates. Utilization of beech wood to manufacture fibers provides relatively high value creation as compared to wood use for energy generation, so it is an important economic factor for the regeneration of forests with more deciduous species. This transition is also crucial for adapting forest ecosystems in Central Europe to climate change[36].

Sustainability criteria have long been crucial for the selection of suppliers. The state forests of Austria, Germany, Czech Republic, and Slovakia are important wood sources for Lenzing sites and supply about 40 percent of the wood procured. These countries have strong political commitments to sustainable management of their forests. Lenzing’s sourcing policy has been agreed upon by all suppliers in personal communication.

In order to ensure short transport distances and short delivery times, almost all the wood required originates either from the country where the pulp is produced or neighboring countries. The proportion of regional[37] wood supply was 98 percent for the Lenzing site from 2015 to 2017. Due to sourcing problems caused by updated FSC® risk assessments in some Central European countries, the regional supply decreased to 92.5 in 2018 and 91.5 percent in 2019.

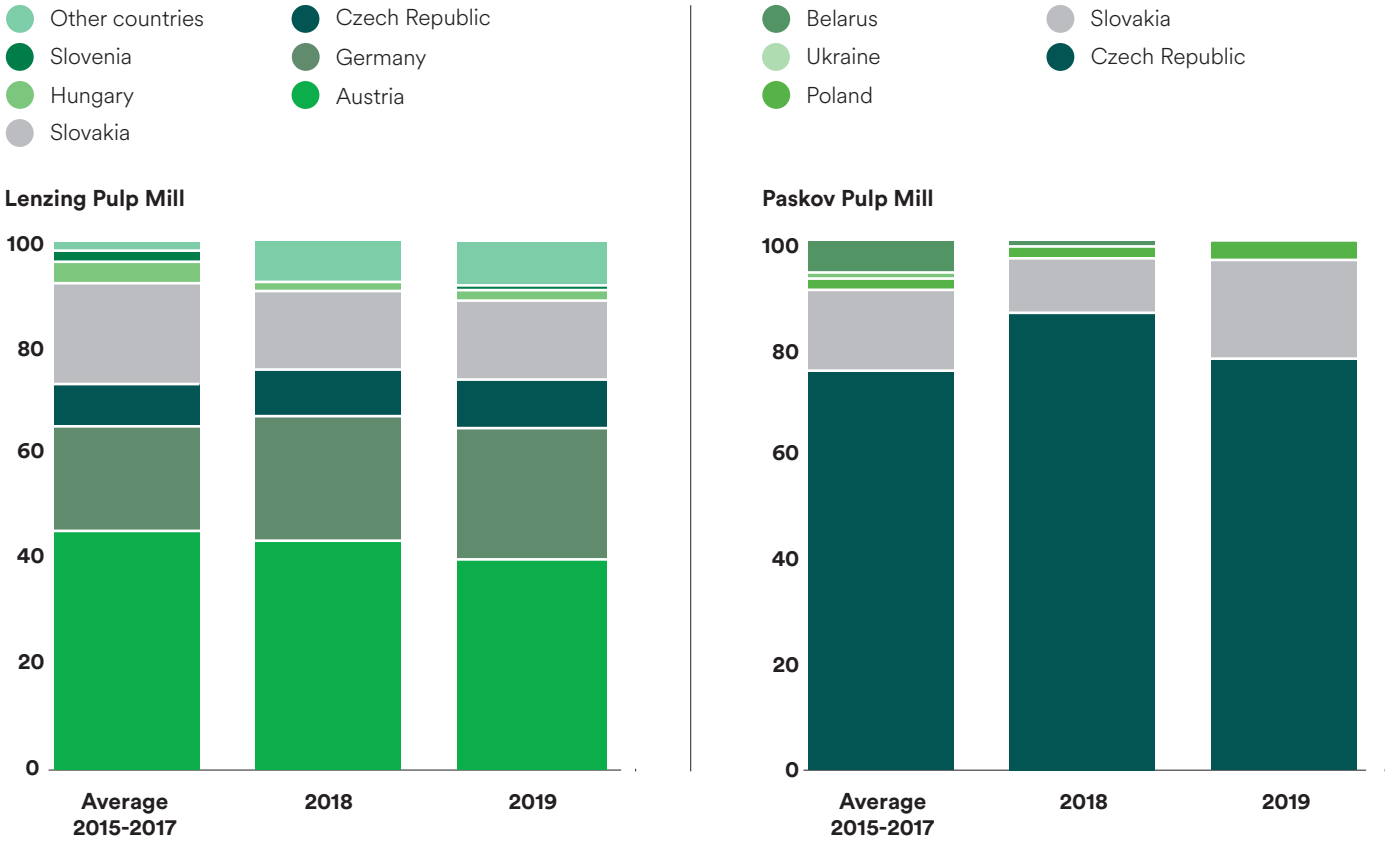
For the Paskov site, the regional supply increased from 93 percent (2015-2017 average) to 99 percent in 2018 and to 100 percent in 2019, mainly due to direct supply from the Czech Republic.

Raw material security

Wood sourcing for Lenzing Group's own pulp mills in Lenzing, Austria, and Paskov, Czech Republic

Beech and spruce, by country, average 2015-2017, 2018 and 2019. "Other countries" for Lenzing site for 2015 until 2018 are Estonia, France, Switzerland, Poland, Romania, Russia and Ukraine (until mid-2018) and for 2019 France, Switzerland, Poland, Romania and Russia.

Figure 12



Wood from Belarus, Estonia, Poland, Romania, Russia, and Ukraine was exclusively sourced with FSC® certificates. Wood supplies from Ukraine to the Paskov site ceased in 2016. For underlying figures, see Annex page 107.

In the past, the Lenzing Group purchased timber in Ukraine exclusively on the basis of FSC® criteria and the European Timber Regulation. A report released by the UK-based NGO Earthsight in July 2018 raised concerns about Lenzing receiving wood associated with illegal timber brokering from Ukraine. These uncertainties arose due to the use of different customs numbers in Ukraine and the European Union. The specific customs declaration problem was clarified by the exporting supplier. This confirmed that Lenzing has not received any illegal timber from Ukraine. Nevertheless, Lenzing stopped purchasing wood from Ukraine from mid-2018. Furthermore, a statement from an independent lawyer on this matter was requested, which provides the following key conclusions:

- Since the Ukrainian Act on Export Prohibition has come into force, Lenzing AG has not received any wood with the ID No. 4403 UKTWED.
- Firewood is not covered by the Ukrainian law on wood export prohibition. All firewood deliveries to Lenzing AG have had the required certificates of origin and delivery notes attached since the Ukrainian Act on Export Prohibition has come into force.

- Lenzing AG has adopted various measures and met its obligations as a market participant who places wood and wood products on the market.

- Lenzing AG has implemented a due diligence system which makes sure – in addition to the individual certification procedures – that the company does not support illegal logging or purchase illegally logged wood.

Lenzing's wood logistics system moves large quantities of material and is therefore highly optimized for cost reasons. Continuous improvement in this area also leads to minimized emissions from logistics by preferring train transports whenever possible. The share of wood delivered to the Lenzing site by train ranges from 75 to 80 percent.

Dissolving wood pulp in the Lenzing Group

Processing wood into fibers requires a special quality of pulp, as intermediate step, referred to as dissolving wood pulp. In 2019, the Lenzing Group's own dissolving wood pulp production at its sites in Lenzing (Austria) and Paskov (Czech Republic) was 62 percent (2018: 60 percent, 2017: 62 percent) of the total dissolving wood pulp volume required for the fiber production capacity. In addition to its own dissolving wood pulp production, Lenzing procures dissolving wood pulp on the global market, mostly under long-term supply contracts.

The Lenzing Group's long-term strategy is to increase its own dissolving wood pulp capacities from the current level to supply 75 percent of its requirements. In order to achieve this target, the debottlenecking at the Lenzing site, which was finished in 2019 with a capacity increase from 300,000 tons to 320,000 tons p.a., was a first important step. The capacity increase of about 35,000 tons at the Paskov site shall be finalized in the first half of 2020.

By far the biggest step in its strategic approach to strengthen its dissolving wood pulp position was taken in December 2019, when Lenzing announced plans to build a 500,000-ton dissolving wood pulp plant in the state of Minas Gerais (Brazil). This investment will be done in a joint venture with the Brazilian Duratex group. Lenzing holds a 51 percent stake, Duratex 49 percent. In the joint venture, the expected industrial capital expenditure (CAPEX) will be approx. USD 1.3 bn (based on exchange rates at year-end 2019 and customary tax refunds).

In planning the new production facility, particular attention was paid to sustainability. The joint venture secured FSC®-certified plantations[38] covering over 44,000 hectares to provide the necessary biomass. These plantations operate completely in accordance with the guidelines and high standards of the Lenzing Group for sourcing wood and pulp. The plant will be among the highest productive and energy-efficient facilities in the world and will feed the 40 percent of excess bioelectricity generated on site as "green energy" into the public grid. The produced pulp will be totally chlorine free (TCF). The start-up of this site is planned for the first half of 2022.

The main dissolving wood pulp production regions for the global market are Europe, North America, South America, China, and South Africa. For further information about the Lenzing Group's current own production and purchased dissolving wood pulp, see table 04. Lenzing's purchased dissolving wood pulp is mainly produced from eucalyptus, but also acacia, aspen, birch, maple, and southern pine. The actual tree species vary depending on the region. Lenzing ensures that the bleaching process of all purchased pulp is at least elemental chlorine free (ECF).

Biodiversity in sustainably managed forests and plantations

An intensified utilization of wood resources can lead to unwanted negative effects on biodiversity. On the other hand, plantations can reduce the deforestation pressure on natural (primary) forest areas by providing wood at very high yields per unit area as an alternative to sourcing it from natural forests. FSC® certification entails management criteria to protect biodiversity[39]. The management practices include a certain percentage of set-aside conservation areas. In South Africa, some 80 percent of the land reserved for plantation forestry is certified to the standards of the FSC®. The focus here is on two natural ecosystems: grasslands and wetlands. Both are included in conservation and regeneration programs run by plantation operators on their own and/or managed land. Approximately 25 percent of this land is not planted with trees, but conserved for biodiversity[40].

In the new joint venture project with Duratex in Brazil, wood will be sourced from FSC®-certified plantations of over 44,000 hectares. The managed land contains a share of conservation area dedicated to biodiversity protection, which goes beyond legal requirements and FSC® standards. Biodiversity research projects are undertaken in these areas through partnerships with universities[41].

For considerations relating to biodiversity in European semi-natural forests, and other environmental sustainability aspects of wood sourcing, including climate protection and water resources, see the 2017 Lenzing Sustainability Report, pages 45-46.

For more details on biodiversity, please see the "Wood and Pulp" focus paper.

Raw material security

Wood and dissolving wood pulp supply in the Lenzing Group
Dissolving wood pulp supply, from own production and dissolving wood pulp market (2016-2019) **Table 04**

Wood sourcing region	Central Europe	Europe	South Africa	North America
Wood sourcing countries	See figure 12	Mainly Scandinavia and Baltic states, Russia	South Africa	USA
Forest type according to FAO*	Semi-natural forest	Semi-natural forest	Plantation	Semi-natural forest
Wood species (most important)	Beech, spruce, birch	Birch, aspen, beech	Eucalyptus sp., Acacia sp.	Southern pine, maple, aspen
Forest certificates	PEFC™, FSC®	PEFC™, FSC®	FSC®	FSC®, PEFC™, SFI
Verification audit	NEPCon**			
Wood procurement by	Lenzing Group Wood Procurement	Dissolving wood pulp suppliers		
Dissolving wood pulp produced by	Lenzing Group dissolving wood pulp mills (Paskov and Lenzing)	**Dissolving wood pulp suppliers:** GP Cellulose GmbH (USA), Rayonier Advanced Materials (USA), Sappi Ltd. (South Africa, USA), Södra Skogsägarna ek för (Sweden)		
Pulping process	Sulfite	Sulfite/Kraft		
Bleaching process	Totally chlorine free (TCF)	Elemental chlorine free (ECF)		

* Carle, J., and Holmgren, P. (2003). Working paper 79. Definitions Related to Planted Forests. In: Food and Agriculture Organization of the United Nations (2003). Forest Resources Assessment Program Working paper series.
** NEPCon audit report 2019

Stakeholder activities in wood procurement

Forest Europe and national forest strategies

To promote sustainable forest management in Europe, the Forest Europe political process was initiated in 1990 by the Ministerial Conference on the Protection of Forests in Europe, which includes 46 states. A set of indicators grouped into six different criteria was developed to measure the sustainability performance of European forests, and to set targets for improvement[42]. As a major buyer of wood in Europe, the Lenzing Group is supportive of these targets, which aim to ensure the continued and improved function of forests in their ecosystems, while maintaining the long-term availability of wood as a raw material.

The Austrian bioeconomy strategy

The Austrian bioeconomy strategy was published in 2019. The next phase is to develop an action plan. Lenzing is represented in the bioeconomy platform and provided input into the strategy and the development of the action plan in 2019 in several workshops were different stakeholders came together.

Canopy

Lenzing cooperates with the Canadian NGO Canopy and maintains a continuous dialog with members of the CanopyStyle initiative to ensure responsible wood sourcing and protect the world's ancient and endangered forests from ending up in textiles.

Canopy annually publishes the Hot Button Report, a ranking of all wood-based cellulosic fiber manufacturers according to their wood and pulp sourcing performance, transparency and innovation. In recent years, Lenzing has shown continuous improvement in all of these criteria: Lenzing's Wood and Pulp Policy has been aligned with the CanopyStyle Initiative for years and, in 2019, the company publicly disclosed its list of suppliers for dissolving wood pulp. Regarding alternative cellulose sources, Lenzing is the first company to produce and market lyocell fibers on a commercial scale using pre-consumer cotton scraps and post-consumer garments (details see "Sustainable innovations" chapter). Furthermore, Lenzing proactively advances track- and traceability of its fibers within the value chain.

In Canopy's latest Hot Button Report[43], published in December 2019, Lenzing was once again rated the number one producer of wood-based cellulosic fibers.

In addition to activities related to its own supply chain, Lenzing supports conservation solutions in other regions, such as afforestation in Albania and support for the protection of ancient and endangered forests in Canada (Broadback Forest Quebec, Vancouver Island) and Indonesia (Leuser Ecosystem).

Wood K plus

Many Austrian companies, including Lenzing, and scientific bodies have joined forces in the "Kompetenzzentrum Holz". It is a leading research institute in wood and wood-related renewable resources in Europe.

A strategic dissertation supported by Lenzing Group aims to achieve deeper societal perceptions of sustainability in the global sourcing of wood. Sustainable forest management as a concept appears to be contested in the debate on environmental and social governance. The project systematically analyzes perceptions of this concept in scientific literature, sustainability reports of large corporations, and NGO communications. For more information, see the "Wood and Pulp" focus paper, and the resulting publications[44, 45, 46, 47].

Complex global challenges call for a collaborative approach to design systemic solutions by involving many stakeholder groups.

Afforestation and conservation project in Albania

Albania's forest areas are among the European regions with the greatest need for improvement. Forest management in Albania (Southern Europe) is in a state of transition. New approaches to manage forests are necessary in order to deal with environmental problems and fulfil the current needs of society with respect to the sustainable use of natural resources.

In 2018, the Lenzing Group initiated a forest conservation project in Albania. It aims to support the development of rural areas in Albania with a special focus on the broader region of Shkoder (Ana e Malit) and Diber (Peshkopi) by using natural resources in a sustainable manner as well as fostering alternative income possibilities for the communities. The following three project pillars have been defined:

1. Afforestation of 20 ha degraded area in Ana e Malit
2. Modular pilot training in forest management for communities
3. Interdisciplinary vocational training in forestry

50 percent of Ana e Malit's reported forest area is actually without forest vegetation. Annual floods make life difficult for the population, which primarily earns its living from agriculture. The relevant area will now be re-cultivated with forest and fruit trees. To start, 3,660 trees, were planted in the Ana e Malit region in the western part of Shkodra Municipality in 2019. The planting of fruit and broadleaved trees as well as conifers together with erosion control measurements like stone walls and double fences will have a positive long-term impact on annual flooding and help to reduce it.

Cooperation with local community and NGOs

The project is co-financed by the Austrian Development Agency. It brings together Albanian and Austrian forest experts to increase forest management skills amongst communities, enables know-how exchange between vocational schools and, last but not least, afforest 20 ha of degraded communal land in rural Albania. The project also actively integrates the local community. Students at the forestry school in Shkodra will participate in the entire process in order to learn more about afforestation. Employees of the Eco-Social Farm, an institution for people with disabilities that is located directly below the afforestation area, will take care of watering the seedlings. Two people have been hired part-time for the duration of the project.

Modular pilot training in forest management for municipalities

A local training center for forest management will develop modular training courses on forestry knowledge and specific issues such as safety and fire protection in collaboration with Austrian experts and Lenzing employees. Three modules will be offered in the beginning: introduction to forest management for forest-dependent families and municipalities, safety in forestry, and forest fire prevention.

Raw material security

Management approach

Material topic: Chemicals and toxicity

Importance for Lenzing

Chemicals are among the most important raw materials for pulp and fiber production.

Minimizing usage by good operational practices

Control of environmental impact

Safe use of chemicals/safe chemical processes

Occupational and community safety and health

Product liability

Opportunities

Compliance with stakeholder expectations (e.g. Zero Discharge of Hazardous Chemicals)

Opportunity to reduce impact on Lenzing scope 3 CO_2 footprint by good supplier motivation efforts

Risks

Negative health and environmental impacts

Regulatory changes and changing classification of chemicals

Negative environmental and social impacts can lead to reputational damage.

Guiding principles

Heartbeat for Safety and Health initiative

SHE Policy

Higg FEM 3.0

Group Environmental Standard

Due diligence processes and (ongoing) measures

Environmental management system according to ISO 14001:2015 (including risk assessment and internal audits to ensure effectiveness of the measures implemented)

EcoVadis supplier assessment

Regular Global SHE meetings with management review

Integral part of internal communication SHE topics prioritized

Objectives

Ensuring One Lenzing Environmental Standard

Assessment of sustainability performance of the Lenzing Group's most relevant suppliers

Continuous improvement of recovery rates

Group sustainability targets

Achievements/activities in the reporting year

Safety & Health KPIs

Emission KPIs

Lenzing contributing to leading multi-stakeholder initiatives (ZDHC, SAC, EU-BAT)

Responsible

VP Global Purchasing

Global Safety, Health and Environment

Site Managers

Sustainable chemicals sourcing

The most important chemicals used – amounting to approximately 85 percent of the overall purchase volume – are caustic soda (NaOH), carbon disulfide (CS_2), sulfuric acid (H_2SO_4), sulfur (S), sulfur dioxide (SO_2), softening agents, flame retardants, modifiers, N-methylmorpholine N-oxide (NMMO), titanium dioxide (TiO_2), and zinc sulfate ($ZnSO_4$). Figures for chemical sourcing are not provided for confidentiality reasons.

Supplier assessments using sustainability criteria by EcoVadis tool are described on page 52.

80 percent of all purchased chemicals are sourced from fewer than 40 suppliers. Relationships with these suppliers are highly stable. Around 90 percent of the chemicals are sourced regionally[48] for the Lenzing Group as a whole (table 05).

Regionality* of purchased chemicals **Table 05**

	regionally*	non-regionally
2017	92 %	8 %
2018	93 %	7 %
2019	91 %	9 %

* regionally: same country and neighboring countries

Caustic soda purchasing

Since mid-2018, all Lenzing Group sites have procured caustic soda produced exclusively using mercury-free technology. The shift to membrane technology for caustic soda also leads to better energy efficiency and therefore to a smaller carbon footprint for this important chemical raw material.

Decarbonization

Management approach

Material topic: Climate change

Importance for Lenzing

Global warming presents risks to society and material risks to companies all over the world.

Being a role model and innovation driver secures Lenzing's business success.

Combating global warming is important for Lenzing to secure its raw material supply.

Opportunities

Driving the transition to a fossil-free production through circular business model and innovation along the whole value chain

Offering end consumers a truly sustainable option: textiles and nonwovens made from wood-based cellulosic fibers

Future-proofing Lenzing's growth: implementation of carbon neutral technologies and low-carbon products

Becoming more resilient to the changing regulatory (e.g. tax) and business environment

Strengthening credible sustainability leadership among all stakeholders, securing product differentiation and price premiums

Collaborating with stakeholders and supply chain partners

Attracting impact investors

Risks

Risks of forest degradation due to diseases, pests etc. as a direct consequence to higher average temperature

Potential regulatory, technology, market and corporate reputational risks

Lenzing customers cannot achieve their own scope 3 CO_2 targets.

Lenzing's fibers no longer meet customer's definition of sustainable raw materials.

Unavailability of wood due to climate change

Any climate-related disruption in one of the production sites will influence the business model and its success.

Guiding principles

"Naturally positive" sustainability strategy with "Decarbonization" and "Partnering for systemic change" as focus areas

Implementation of science-based target (SBT)

Commitment to UN Fashion Charter

ISO 9001:2015, ISO 14001:2015, and OHSAS 18001:2007 system certifications for the Lenzing Group

Group Environmental Standard

Due diligence processes and (ongoing) measures

Environmental management system according to ISO 14001:2015 (including risk assessment and internal audits to ensure effectiveness of the measures implemented)

Upcoming TCFD reporting

Objectives

Reduction of specific CO_2 emissions by 50 percent per ton of product by 2030

Net-zero CO_2 emissions by 2050

Achievements/activities in the reporting year

Approved science-based target

Organizational governance in place

Responsible

Chief Executive Officer

Supporting

Corporate Communications and Investor Relations

Corporate Sustainability

Global Controlling

Global Purchasing

Global Risk Management

Global Safety, Health and Environment

Global Strategy and M&A

Global Technology

Site Managers

Lenzing's decarbonization strategy is based on reduction of its emissions rather than offsetting them.

Decarbo-nization

Management approach

Material topic: Energy use

Importance for Lenzing

Fiber and dissolving wood pulp production are energy-intensive processes, part of the carbon strategy and a cost factor.

Opportunities

The biorefinery concept enables Lenzing to produce surplus renewable energy.

Reducing primary energy consumption by increasing energy efficiency

Substituting fossil-based energy sources

Risks

Fossil-based energy and energy-intensive technologies carry potential regulatory, technology, market and corporate reputational risks,

Implementation of regional and national emission trading schemes

Shortage of energy could compromise Lenzing's operations.

Financial impacts of potential cost increases in energy prices

Inefficient energy conversion technologies have a potential impact on CO_2 emissions.

Guiding principles

"Naturally positive" sustainability strategy with "Decarbonization" focus area

Lenzing Group sustainability targets

Due diligence processes and (ongoing) measures

Environmental management system according to ISO 14001:2015 (including risk assessment and internal audits to ensure effectiveness of the measures implemented)

Upcoming TCFD reporting

Objectives

Switching from fossil-based to renewable energy sources

Energy consumption reduction

Energy mix optimization

New technology development

Achievements/activities in the reporting year

Commitment approved by Science Based Targets initiative

Production site in Nanjing, China – investment to switch from coal to natural gas

Responsible

Regional Senior Vice Presidents

Supporting

Global Engineering – Utility and Infrastructure

Global Purchasing

Global Safety, Health and Environment

Global Technology

Site Managers

You have announced the ambitious vision of net-zero CO_2 emission by 2050 for the Lenzing Group. Why is climate change an important issue for you?

There is no doubt whatsoever that climate change is the global number one theme and I am personally deeply concerned. It seems that mankind is losing the race against an ever-accelerating climate change and the destruction of our planet. It is critical that industry leaders and policy makers do everything to at least meet the Paris commitments. During the past two World Economic Forum meetings in Davos I had the chance to listen and talk to scientists, policy makers, opinion leaders and representatives of indigenous communities already heavily affected by climate change. Although the recent launch of the "Green Deal" by the European Union is a first step in the right direction, global political governance is still weak, so industry leaders must take more prominent leadership.

How can we stop climate change and what do we have to do?

We need much greater commitment from decision-makers in companies and in politics as well as commitment from investment funds. And we need to continue to create a much higher level of awareness that climate change is the one critical issue that our world needs to address. Greta Thunberg has done a great job in alerting people to the issue. I think it is great to have interested young people who are committed to their and planet's future. Apart from all the emotionalizing and mobilizing, however, it is important that business, science and politics do things that really have impact. After all, we need to change our course one purchasing decision at a time, one investment decision at a time and one consumption decision at a time. In all cases we need some form of impactful CO_2 pricing whilst retaining a level playing field. There are many possible ways, but CO_2 has to be priced in a way that makes a difference, creates real action and mobilizes capital.

Interview with Stefan Doboczky, CEO of the Lenzing Group

What does setting a science-based target mean for the Lenzing Group?

Fighting climate change is the single biggest business opportunity. Lenzing is one of the very few companies with an approved science-based target. Climate change mitigation and sustainability are at the core of our value generation strategy to secure our sustainable growth strategy in an environment with growing demand for sustainable raw materials.

Implementing the target of reducing our emissions by 50 percent per ton of product until 2030 means that we must step up our efforts further and define a comprehensive approach. I want Lenzing to be a role model for our industry. Lenzing is increasingly seen as a very ambitious player and our business model, advocacy and competence is noticed and appreciated by the industry.

Lenzing wants to halve CO_2 emissions per ton in only 10 years. How much can you save and how much fossil energy can you replace with renewable energy?

To this end, we have launched a detailed package of measures for which we will invest around EUR 100 million initially. It contains broadly three main measures: energy mix and substitution, product mix and energy efficiency. First, the substitution of environmentally harmful energy with alternative energy and thus a change in the energy mix. Second, we are gradually phasing out products that are very CO_2 intensive. Growth is to be generated with products that require less energy and can be produced at locations with a better CO_2 balance. Third, we have a group-wide program that focuses on reducing the energy intensity of processes. All of this together will certainly bring us to the target we have set ourselves by 2030. It will certainly take a few more technological milestones before we achieve absolute climate neutrality, but we need to push for it with high intensity.

1
Climate-neutral growth is the Lenzing Group's focus

2
Lenzing is the first wood-based cellulosic fiber producer with an approved science-based target (SBT)

3
Governance has been set for implementing the SBT under the Chief Executive Officer's leadership

4
Roadmap development has been initiated

In 2018, an IPCC[49] special report on the impacts of global warming of 1.5 °C above pre-industrial levels have described the dire consequences humanity will face in the absence of swift, concrete action to reduce greenhouse gas emissions. The Lenzing Group takes responsibility to reduce its CO_2 emissions in line with the Paris agreement to address this enormous challenge. Lenzing strongly believes multi-stakeholder-based collaborative approaches with the appropriate policy instruments are needed to bring about the necessary transition in time.

Lenzing's business model, based on the renewable raw material wood, is naturally poised to address climate change. It has the intrinsic advantage that no additional carbon is released into the environment, contrary to fossil fuel-based industries. Business models that are based on sustainably sourced wood form a key pillar of the society's transition to a low-carbon future, and to replace fossil fuel-intensive industries. This offers more opportunities for Lenzing's growth to satisfy the world's fiber needs within climate change boundaries.

Decarbonization

Lenzing's responsibility and science-based target

In line with the Paris agreement and the UN SDG 13, in 2019, the Lenzing Group set an ambitious science-based target (SBT) of 50 percent reduction of CO_2-emissions (Scope 1, 2 and 3) per ton of product by 2030 compared to a 2017 baseline. Further, Lenzing strives to reach net-zero CO_2 emissions by 2050.

This target has been scientifically verified and approved by the Science Based Targets initiative and thus makes Lenzing the first wood-based cellulosic fiber producer to have an approved SBT. The fact that the target is science-based guarantees that Lenzing's approach towards combating climate change is in line with the Paris agreement. Therefore, Lenzing's decarbonization strategy is based on reduction of its emissions rather than offsetting them, i.e. compensating for CO_2 emissions elsewhere.

Science Based Targets initiative

In 2015, the Paris Agreement was adopted by consensus at the 21st United Nations Climate Change Conference (COP21) in Paris. The agreement's aim is to combat climate change by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius.

In 2018, the Intergovernmental Panel on Climate Change (IPCC) published its new Special Report giving more clarity on the carbon reductions required to keep the increase below 1.5 °C. According to this report, global carbon emissions need to reach net zero by 2050.

The Science Based Targets initiative (SBTi) is a collaboration between CDP, the United Nations Global Compact, World Resources Institute (WRI) and the World Wide Fund for Nature (WWF). The SBTi defines and promotes best practices in science-based target setting and independently assesses companies' targets regarding their consistency with the level of decarbonization required according to science/ required to keep the global temperature increase below 2 degrees Celsius compared to pre-industrial temperatures.

Leadership, governance and decision-making

First, an organizational governance structure was created. A cross-functional steering committee to make necessary decisions was formed under the leadership of Lenzing Group's CEO, the project owner. Further, a discussion process was initiated on the design of Lenzing's carbon neutral growth roadmap and the corresponding strategic actions outlining the way forward.

Individual facility-level CO_2-reduction roadmaps and corresponding actions as well as targets will be tailor-made according to the reduction potential of the different production sites. In general, Lenzing's CO_2 abatement activities will be a series of measures reducing carbon emissions both inside its operational boundaries and in its supply chain.

In order to implement the science-based target and to integrate climate into the organization's decision-making, future projects will be evaluated regarding their CO_2-impact. This evaluation will be part of the decision-criteria for Lenzing's strategic investment planning. Lenzing is also currently evaluating internal CO_2-pricing to better manage CO_2-impacts.

The future implementation of the Task Force for Climate-Related Financial Disclosure (TCFD) reporting will provide deeper disclosure on climate change and consequently will help Lenzing to mitigate potential risks and create opportunities. This helps Lenzing's stakeholders to better assess Lenzing's performance and progress periodically. It will also contribute to strengthen Lenzing's preparedness for the effective management of the potential consequences of climate change in different scenarios.

Current status

Dissolving wood pulp and fiber production are energy-intensive processes. Energy sources used in the Group are fossil and biogenic fuels. Table 06 shows the fuels used in different facilities. Due to the integration of pulp and fiber production, the energy setup at the Lenzing site in Austria is unique, already using around 80 percent renewable energy. The pulp plant in Paskov uses 100 percent renewable fuels. The Heiligenkreuz, Grimsby and Mobile facilities are coal-free. Compared to global energy sources, the Lenzing Group has already achieved a very high share of renewable energy (especially biomass) in in its energy sources (see figure 14). Consequently, Lenzing fibers have a substantially lower footprint than the generic industry average. For example, TENCEL™ Lyocell fibers have 60 percent lower CO_2 emissions[50] than generic lyocell fibers based on coal.

Torchbearers of change: a behind-the-scenes story

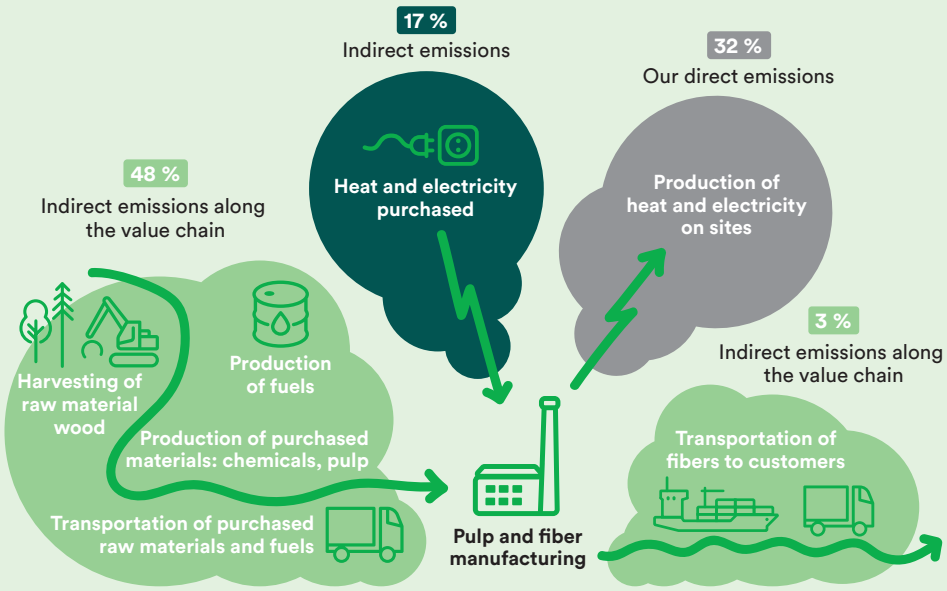
A complex topic such as climate change can only be implemented with a strong tone from the top. Lenzing's Chief Executive Officer (CEO) and Chief Commercial Officer (CCO) raised the importance of the topic internally and guided the company with their clear vision. At the World Economic Forum in January 2018, Lenzing's CEO joined the "Alliance of CEO Climate Leaders" and signed Lenzing's commitment to be in line with the Paris agreement. This paved the way for the Group to be more concrete about its ambitions. Consequently, Lenzing also signed the UN Fashion Charter on climate change. In line with the Board's vision, the Corporate Sustainability team engaged the whole management of the Lenzing Group comprising business unit leaders, region leaders, and functional leaders at different management levels. The aim was to improve awareness of climate change and its impacts on the organization so that this tremendous challenge can be addressed with concerted efforts at different levels. This engagement also helped the organization to understand different perspectives and potential solutions. This has resulted in a broad engagement, comprising around 40 meetings, involving more than 50 decision-makers at different levels. It is believed that this kind of engagement is crucial to create a common ground and bring about necessary collaboration. This elaborate process resulted in achieving an approved SBT. Lenzing is now already developing roadmaps to implement this target, which is communicated as a priority project of the Management Board.

Lenzing's scope 1, 2 and 3 emissions

According to the GHG-Protocol, emissions are classified to 3 scopes: Scope 1 emissions cover all direct emissions from a company's activities or activities under their control, including fuel combustion on site, e.g. from burning coal and own vehicles. Scope 2 emissions cover indirect emissions from electricity and heat purchased and used by the company. Scope 3 emissions are defined as all other indirect emissions from activities of the organization, occurring from sources that they do not own or control and covering emissions along the value chain[51], for example purchased goods and services such as chemicals and logistics.

Lenzing Group's carbon footprint*

Figure 13



Scope 1: Direct emissions from Lenzing's pulp and fiber production facilities

Scope 2: Emissions from energy purchased for Lenzing's pulp and fiber production facilities

Scope 3: Other emissions along the value chain

* 2017 figures

Decarbonization

Fuel sources used in the Lenzing Group Table 06

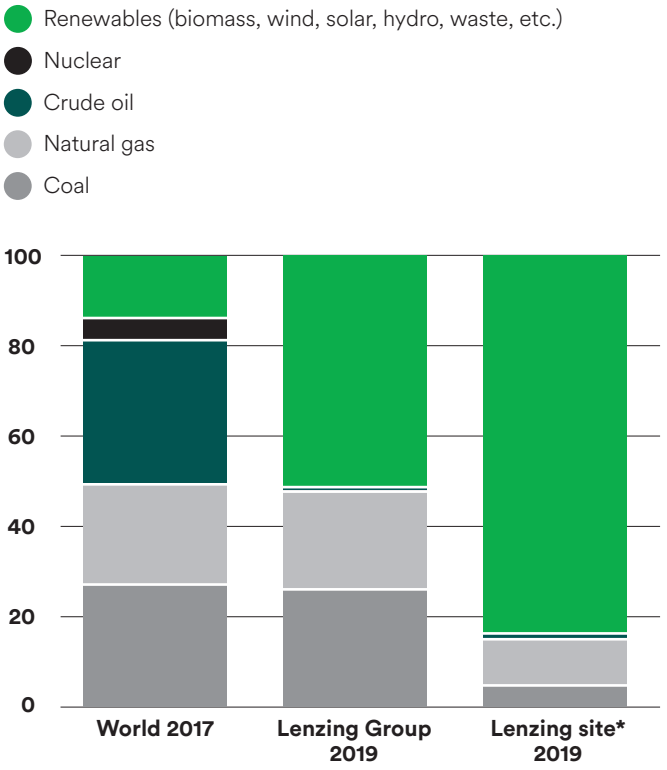
Facility	Main fuels used
Lenzing, Austria	Biomass and waste, natural gas, coal
Heiligenkreuz, Austria	Natural gas and biomass
Paskov, Czech Republic	Biomass and biogas
Grimsby, UK	Natural gas
Mobile, US	Natural gas
Nanjing, China	Coal, natural gas
Purwakarta, Indonesia	Coal, natural gas

Despite Lenzing's business model, which is firmly rooted in the use of renewable raw material wood from sustainable forests and plantations that sequester carbon, we don't think this itself is enough from current climate science. By offsetting its carbon emissions, a company can claim carbon neutrality while continuing its own high-carbon activities. Thus, Lenzing goes beyond this by reducing its current fossil emissions from own production and supply chain drastically and innovates new technologies for further decarbonization to pave the way towards carbon neutral 2050. We advocate this bold approach to our industry rather than being complacent about the inherent climate advantage of wood-based fibers business model.

Robert van de Kerkhof,
Chief Commercial Officer of the Lenzing Group

Energy sources of the world, Lenzing Group and Lenzing site

Figure 14



* incl. RVL

Sources: World Energy Outlook 2017, Lenzing AG
Includes own energy consumption and energy from providers, excluding grid power, which is a minor fraction of total scope 1 and 2 energy consumption in the Lenzing Group. The production sites in Paskov, Grimsby, Mobile, and Heiligenkreuz do not use coal as a fuel source in their own operations, whereas the Asian sites, i.e. Nanjing and Purwakarta, predominantly use coal.

In 2019, Lenzing achieved 1.9 percent savings in specific primary energy consumption (table 07) and 8.0 percent reduction in specific greenhouse gas emissions in the Lenzing Group compared to 2014 (table 08).

Primary energy consumption of the Lenzing Group **Table 07**

	2014	2017	2018	2019
Primary energy consumption* (million GJ)	43.10	42.84	42.62	42.26
Fossil primary energy (million GJ)	23.43	23.20	22.44	22.21
Renewable primary energy (million GJ)	19.67	19.64	20.18	20.05
Specific** primary energy consumption (index in percentage based on GJ/t, 2014 = 100 %)	100.0 %	99.6 %	98.8 %	98.1 %

* Lenzing reports both direct and indirect energy use. According to the GHG protocol, scope 1 covers direct energy consumed within the Lenzing Group and scope 2 covers the energy bought from energy suppliers and national grids. Primary energy here includes all forms of energy such as electricity and steam. All energy sources such as fossil (coal, oil, natural gas) and renewable (biomass, waste fuels, water, wind etc.) are included.

** Specific indicators are reported per unit of production by the Lenzing Group (i.e. pulp and fiber production volumes).

Greenhouse gas emissions of the Lenzing Group **Table 08**

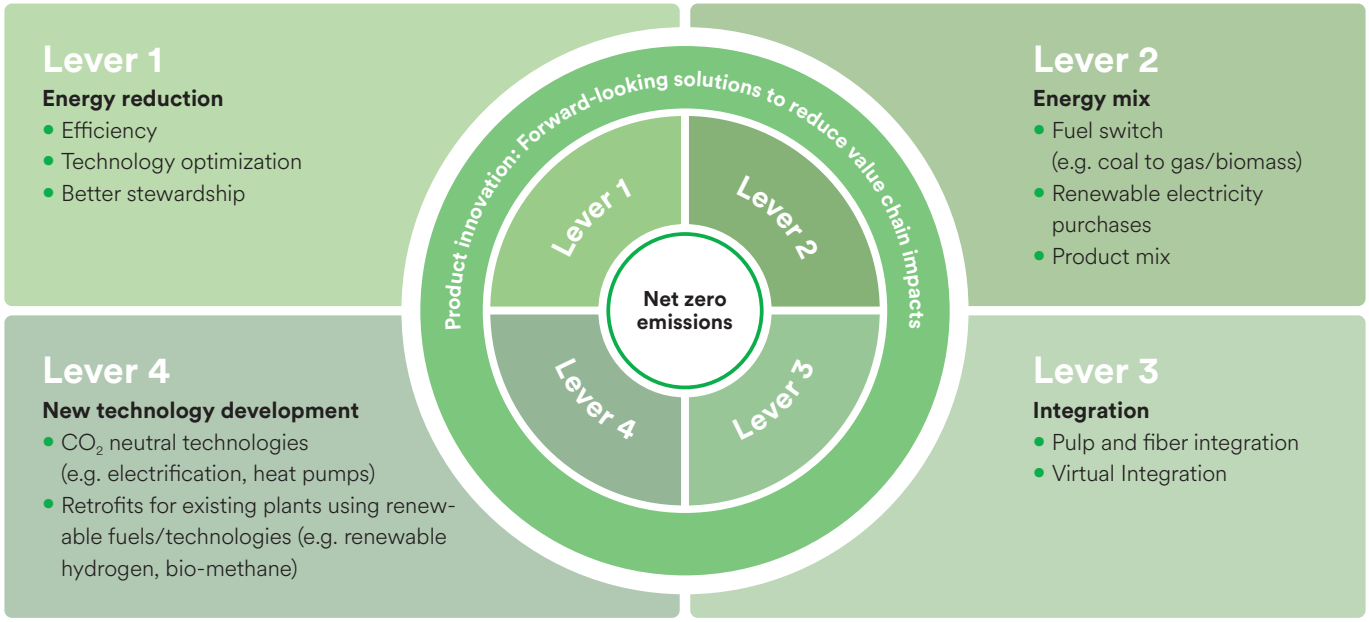
	2014	2017	2018	2019
Total greenhouse gas emissions, CO_2 eq. (million t)	1.80	1.78	1.75	1.64
Direct emission i.e. scope 1 (million t)	1.14	1.16	1.15	1.10
Indirect emission i.e. scope 2 (million t)	0.66	0.63	0.60	0.53
Specific* greenhouse gas emissions** (index in percentage based on tons of CO_2 eq./t, 2014 = 100 %)	100.0 %	99.1 %	97.1 %	92.0 %

* Specific indicators are reported per unit of production by the Lenzing Group (i.e. pulp and fiber production volumes).

** Includes both scope 1 and 2 emissions of all greenhouse gases, expressed as CO_2 equivalents. It was observed that the system boundaries of different wood-based fiber producers differ from the Lenzing Group's boundaries. In particular, upstream production of chemicals that are consumed in Lenzing's facilities belongs to scope 3, according to the GHG protocol, so it should not be included here. However, some sites in the Lenzing Group produce chemicals themselves, namely H_2SO_4 and CS_2, leading to a higher energy demand and scope 1 and scope 2 emissions of the Lenzing Group. Scope 1 emissions are calculated based on emission factors from EU Emission Trading System and scope 2 emissions are calculated according to a market-based method. Scope-2 emissions according to the location-based approach are 0.63 million tons.

Levers to meet science-based target

Figure 15



Decarbonization

For scope 1 and 2 emissions, Lenzing will deploy different levers based on technical feasibility. Broadly, they can be grouped under four categories (see figure 15). Innovation is the Lenzing Group's core competence and brings new products to market that reduce climate-related downstream value chain impacts. Those avoided emissions are currently outside the scope of the science-based target methodology, so Lenzing will not claim them as part of the company's target achievement. However, the following levers are key to achieving the committed target:

- The first lever addresses energy efficiency. Relevant measures include replacing inefficient pumps, optimizing current technologies, efficient planning and further reduction of losses that save energy. Better stewardship ensures efficient running of equipment with strict maintenance scheduling and addressing malfunctions and leakages immediately. Additionally, improvement of energy efficiency will be supported by cross-learning and taking advantage of synergies among the Lenzing sites and industry peers.

- The second lever concerns fuel. Reducing and avoiding the use of fossil fuels by switching from high-carbon fuels to low-carbon or carbon-neutral fuels (Scope 1) as well as scaling up the procurement of renewable grid electricity (Scope 2) will make a major contribution towards target fulfillment.

- Third, Lenzing seeks future growth with integrated pulp and fiber production facilities. "Integrated" means that pulp and fiber production are combined at one and the same site. This has two effects: it provides renewable bioenergy to fiber production and saves energy by avoiding pulp drying and pulp transportation. This will ensure economic growth while reducing Group CO_2 emissions. Other opportunities will be explored, including virtual integration, i.e. using surplus renewable electricity produced at one production site at another site in a different location.

- The fourth lever focuses on developing technologies to decarbonize heat generation. As most of the energy for fiber production must be supplied in the form of steam, the decarbonization of heating is most challenging for Lenzing. Therefore, electrification-based solutions will play an important part. For example, a heat pump based on renewable electricity can partially convert heating demand from fuels to electricity. Similarly, alternative fuels need to be developed, such as hydrogen produced with renewable electricity or bio-methane generated from organic waste.

For scope-3 emissions reduction, Lenzing is engaging its suppliers, such as pulp and chemicals producers and transportation service providers. Following a collaborative approach, Lenzing intensifies its dialog with suppliers. This dialog is part of the EcoVadis-based supplier sustainability assessment tool, which helps to understand the targets and progress made by suppliers annually. In addition, Lenzing periodically conducts conversations with key suppliers to find different options and approaches.

Avoided emissions: forward-looking solutions and value chain contributions

In addition to CO_2-abatement activities to reduce direct and supplier emissions, Lenzing would contribute to the decarbonization of its customers by actively developing products that reduce their value chain emissions. For product innovation examples please refer to "Net-benefit concept" chapter.

The Lenzing Group is also committed to reducing emissions all along the value chain. Table 09 shows in detail how Lenzing is contributing to climate protection along the value chain.

Lenzing's contribution to reducing the impact of climate change/decarbonizing the value chain **Table 09**

Position in the value chain	Topic relevant to climate change	Details	Lenzing Group Contribution
Sourcing of wood and pulp	CO_2 sequestration in sustainably managed forests and plantations	Sustainably managed forests absorb more carbon, thus acting as a net sink. In Europe, forest areas and growing stock are increasing.	Wood sourcing from sustainably managed forests and active engagement with pulp suppliers for improvements and other stakeholder activities (e.g. Wood K plus studies)
	Adaption of forests to climate change	Share of beech increases in Europe, but uses are limited	Economic valorization of beech wood for dissolving wood pulp production by Lenzing (higher value added than fuel wood use)
	CO_2 emissions from deforestation	Make sure that no deforestation occurs in the supply chain.	Lenzing's Wood and Pulp Policy, forest certificates (FSC®, PEFC™), implementing Canopy pathway and ranked as a leader of Canopy Style Initiative
Pulp production	Renewable energy use	100 percent utilization of wood components to produce pulp, coproducts and energy. No wasting of wood	Lenzing pulp mills are self-sufficient and use bioenergy from the biomass (black liquor) remaining after pulp production. Moreover, excess energy is used for fiber production or to feed the national grid.
Fiber production	Avoiding fossil fuel use	Energy use and chemicals	High and increasing use of bioenergy and renewable electric power. Energy efficiency improvements, shifting from coal to natural gas. Integrated pulp and fiber production
Textile manufacturing	CO_2 emissions in textile manufacturing	Fossil fuel use	Avoiding resource-intensive conventional dyeing process with the use of LENZING™ Modal Eco Color (a dope-dyed fiber). This reduces energy use and lowers CO_2 emissions in the value chain. LENZING™ Modal Eco Color is a net-benefit product*.
Product use	CO_2 emissions from textile care	Fossil fuel use for power generation	Fast drying products (TENCEL™ Lyocell/PES, TENCEL™/wool blends) and products which need less frequent washing help reduce power consumption in the use phase.
End of use	Recycling	Avoiding waste and virgin materials	TENCEL™ Lyocell fibers with REFIBRA™ technology are made by partly using textile scraps, thereby avoiding textile waste and virgin resource consumption
	Waste incineration with energy use	Biobased CO_2	Incineration of LENZING™ fibers leads to release of biobased CO_2 emissions which are considered to be CO_2 neutral.
	Anaerobic digestion with energy recovery	Biogas production	For example, workwear made from LENZING™ fibers that are digested, producing biogas that can be used for energy purposes. This shows potential of biodegradability and energy recovery.
Indirect contributions avoiding climate change impacts			
Production of natural fibers	Use of fossil fuels	For production of agrochemicals and fuels for machinery	The climate change impacts of the final products can be reduced by blending with wood-based fibers.
	Agricultural emissions	N_2O from fertilizers, methane from animals	
Production of synthetic fibers	Use of fossil fuels	For energy and as a material basis	The climate change impacts of the final products can be reduced by replacing synthetic fibers with wood-based ones.
Production of chemicals	Use of fossil fuels	For energy and as a material basis	Biobased biorefinery products from Lenzing pulp mills replace products from fossil sources: LENZING™ Acetic Acid Biobased, furfural, etc.
Driving industry through stakeholder initiatives			Lenzing participates and contributes to projects that address climate change: 1. Apparel guidance for science-based targets (SBT), organized by WRI 2. UNFCCC Climate Action in Fashion

* Terinte et al. 2014

Decarbonization

Stakeholder engagement and policy interventions

Lenzing strongly believes that its own efforts should be complemented by engagement with industry stakeholders and civil society because the climate crisis needs collaboration to bring about systemic change. Lenzing signed the UN Fashion Charter in 2018 and is an active member of its working groups to develop solutions to industry challenges. Lenzing also supports World Resource Institute (WRI) and Apparel Impact Institute (AII) efforts to develop a high-level roadmap for the apparel and footwear industry.

A supportive policy framework and incentives are needed to realize some measures such as fuel switching. Currently, natural gas is more expensive than coal in many parts of the world. Sustainable biomass fuels are not sufficiently available at the required scale. Similarly, renewable grid-based electricity is not widely and economically available in many parts of Asia. To advance low-carbon solutions, a level playing field is needed, such as global carbon pricing and elimination of fossil fuel subsidies. Industry and local governments should ramp up efforts to generate more renewable electricity to supply current facilities and to cater for future growth.

Water stewardship

Management approach

Material topic: Water use and pollution

Importance for Lenzing

Water is a precious resource and its increasing scarcity in many parts of the world constitutes a threat to people as well as to economic development.

Dissolving wood pulp and fiber manufacturing require a large amount of water.

Lenzing is committed to minimize any environmental harmful impacts

Opportunities

Better product water footprint through increased share of Lenzing pulp

Lenzing's products with improved water footprint also support value chain partners to fulfill their water targets

Risks

Physical risk of water scarcity affecting operations

Water pollution can affect the health of employees and community residents as well as the surrounding environment

Guiding principles

Sustainability strategy "Naturally positive" with focus area "Water Stewardship"

Lenzing Group Sustainability targets

Lenzing Group ISO 14001:2015 certification

Group Policy for Safety, Health and Environment

Group Environmental Standard

Global Code of Business Conduct

Global Supplier Code of Conduct

Lenzing Group Wood and Pulp Policy

Due diligence processes and (ongoing) measures

Environmental management system according to ISO 14001:2015 (incl. risk assessment and internal audits to ensure effectiveness of the measures implemented)

Regular Global SHE meetings with management review

Objectives

Minimizing environmental impacts through continuous improvement

All sites must comply with the Group Environmental standards.

As part of the Group sustainability targets, Group COD emissions must be reduced by 20 percent by 2022 (baseline 2014)

Achievements/activities in the reporting year

Update of life-cycle methodology to assess water footprint of products and technologies

Lenzing contributing to leading multi-stakeholder initiatives (ZDHC, EU-BAT)

Responsible

Regional Senior Vice Presidents

Supporting

VP Global Safety, Health and Environment

VP Global Technology

Site Managers

Water is a precious resource and its increasing scarcity in many parts of the world constitutes a threat to people, the environment as well as to economic development. Poorly managed wood plantations can cause pressure on the regional water balance. Lenzing procures certified wood from sustainably managed forests and therefore mitigates water stress-related impacts. On the other hand, some materials used in the textile supply chains occasionally create high water impacts through both water consumption and pollution. Key topics for water stewardship are the efficient use of water in production and the use of state-of-the-art wastewater treatment technologies.

Lenzing provides fibers with a low water impact compared to other cellulosic fibers for the growing fiber demand in the future and innovates products that omit downstream value chain steps. This substantially reduces water use and impacts. At the end of life, Lenzing's fibers are biodegradable and compostable in marine and freshwater environments and therefore do not contribute to microfiber pollution as fossil raw material-based fibers do.

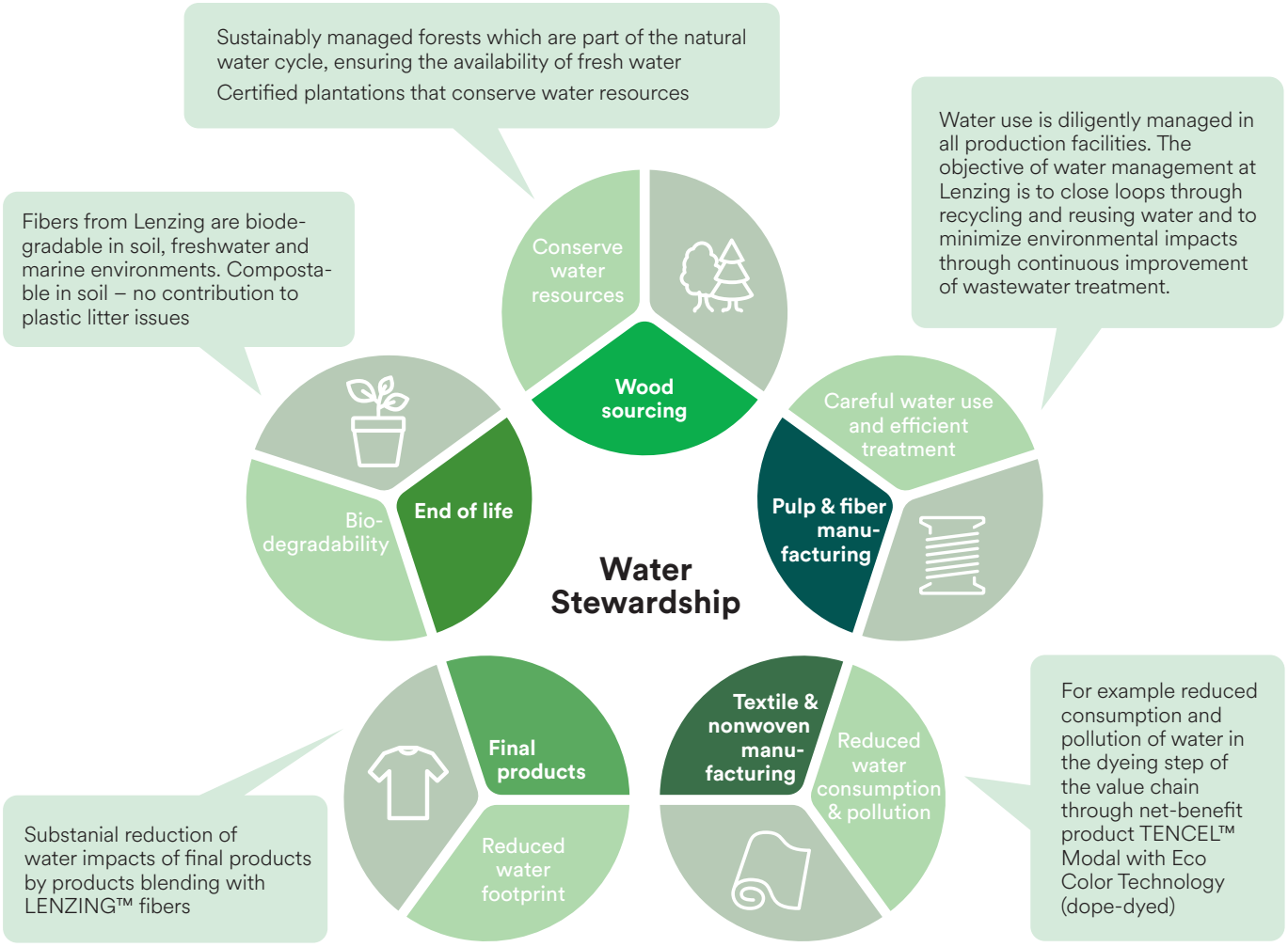
The Lenzing Group considers water-related issues in the upstream and downstream value chain of its products. Lenzing aims to contribute to sustainable use of water wherever it can influence matters either directly or indirectly. Figure 16 illustrates Lenzing's contribution in this context at different stages of the value chain. Lenzing helps its customers to reduce their water-related impacts by providing solutions with LENZING™ fibers to replace water-intensive fibers, and/or to avoid the most polluting steps in the value chain.

Integrated pulp and fiber production saves water by leaving out drying and re-moisturing of market pulp. All Lenzing production units are located in regions with high availability of water.

Water is a precious resource and its increasing scarcity in many parts of the world constitutes a threat to people, the environment as well as to economic development.

Water stewardship

Lenzing's water stewardship **Figure 16**



Water consumption

The objective of water management at Lenzing is to recycle and reuse as much water as possible. For example, the Paskov pulp plant (Czech Republic) has a closed-loop cooling water system and therefore requires little make-up water to compensate for losses. The lyocell process uses around one third less of the water required by the viscose process[52]. Consequently, further expansion of lyocell fiber capacities will reduce the Lenzing Group's specific water consumption in the long term.

Specific water use decreased from 2018 to 2019, whereas no significant changes to total water intake occurred during the reporting period in the Lenzing Group, as shown in tables 10 and 11.

Wastewater (water effluents)

Process water is treated by biological wastewater treatment plants (WWTPs). The Lenzing Group has wastewater treatment plants at all

Water use in the Lenzing Group
million m^3

Table 10

	2014	2017	2018	2019
Water intake/extracted	117	111	112	109
Surface water	103	98	97	95
Ground water	14	13	15	14
Water returned*	108	105	100	99
Wastewater effluent	64	62	59	60
Cooling water returned to rivers etc.	44	43	40	39

* Water is discharged/returned to the water bodies from where it was extracted, such as local rivers. The quality of water extracted and discharged/returned complies with local legislation in all cases. Cooling water data for the Purwakarta site (Indonesia) is not available for 2018.

Specific* water use in the Lenzing Group
Index in percentage based on m^3 /t, 2014 = 100 %

Table 11

	2014	2017	2018	2019
Specific water intake/extracted	100 %	95.4 %	95.7 %	92.9 %

* Specific indicators are reported per unit of production by the Lenzing Group (i.e. pulp and fiber production volumes).

its sites except Grimsby (United Kingdom). However, the wastewater situation at Grimsby complies with all local legal regulations as well as the EU Water Framework Directive. Planning for the construction of a wastewater treatment plant at the site in Grimsby has been initiated.

At the Lenzing site (Austria), organic chemicals from waste streams from the pulp production process are extracted early on in the biorefinery process, which significantly reduces the Chemical Oxygen Demand (COD) in effluent water. This is one example of best practices where potential waste streams are converted into useful products, thereby reducing the amount of waste to be treated at the wastewater treatment plant as well as avoiding pollution.

Since November 2019, the Chinese site in Nanjing has become the responsible operator of the wastewater treatment plant where the wastewater of the site has been treated. With improvements in optimization and data monitoring, the wastewater treatment plant complies with Lenzing's group environmental standard and the discharged emissions are reported in the group environmental data.

Sulfate emissions mainly originate from the viscose process; COD emissions originate from pulp and fiber production processes. Their reduction is part of the Lenzing Group's sustainability targets (for details, see page 33). The total as well as the specific emissions of COD, sulfates and amine emissions decreased in 2019 compared to those of 2017 (Table 12 and 13). Due to the total chlorine free (TCF) pulp bleaching process, using oxygen-based substances at both the Lenzing and Paskov pulp plants, the Lenzing pulp bleaching process is in line with the Best Available Technology standards of the European Union[53].

Absolute emissions to water*

Table 12

	2014	2017	2018	2019
COD after WWTP (t)	6,110	6,285	5,713	5,286
SO_4^{2-} after WWTP (t)	173,648	166,411	159,156	152,519
Amines after WWTP (t)	198	224	226	208

* Wastewater from Nanjing site (China) is treated by an external service provider, so Lenzing does not have operational control over wastewater treatment there. Consequently, emissions to water from this site are not reported here. In this report, 2018 SO_4^{2-} emissions are based on measurements, while the 2014-2017 data includes the figures from the production site in Purwakarta (Indonesia) which are reported based on calculations. (Re-statement)

Water stewardship

Specific* emissions to water
Index in percentage based on kg/t, 2014 = 100 %

Table 13

	2014	2017	2018	2019
COD after WWTP	100 %	103.1 %	93.4 %	86.2 %
SO_4 after WWTP	100 %	96 %	91.5 %	87.5 %
Amines after WWTP	100 %	113.1 %	113.8 %	104.4 %

* Specific indicators are reported per unit of production by the Lenzing Group (i.e. pulp and fiber production volumes).

Microplastics are perceived as a major pollution problem in freshwater bodies and in the sea. It has been recognized in various reports that increased use of biodegradable fibers would contribute to reducing emissions of microplastics. For more information please refer to “Circular economy” chapter, page 49.

Sustainable innovations

Management approach

Material topic: Sustainable innovations

Importance for Lenzing

Sustainable innovations are at the heart of Lenzing's sCore TEN strategy and ensure the future success of the company

Opportunities

Differentiating factor

Being prepared for unforeseen challenges

Meeting market and stakeholder expectations

Being a pioneering company

Risks

Loss of leadership in innovation carries potential regulatory, financial, market and corporate reputational risks.

Guiding principles

sCore TEN strategy

Sustainability strategy "Naturally positive" with focus area "Sustainable innovations"

Life-cycle thinking

Net-benefit concept

Due diligence processes and (ongoing) measures

Project management system PRO² (Product & Application Innovation and Process & Technology Innovation)

Management review (ISO 9001:2015)

Objectives

Leadership in technology, innovative net-benefit products and new business models

Securing economic growth

Differentiation from competitors

Networking and cooperation with relevant partners (academia, associations, companies and NGOs)

Achievements/activities in the reporting year

REFIBRA™ with post-consumer waste

LENZING™ Acetic Acid Biobased

1,302 patents and patent applications filed

Intensive cooperation between innovation centers and other internal departments

Numerous R&D partnerships with companies, universities and institutes (national and international)

Responsible

VP Global Research & Development

VP Global Technology

Supporting

Global Business Management

Global Strategy and M&A

Global Quality Management & Technical Customer Service

Sustainable innovations is one of the strategic focus areas of Lenzing's sustainability strategy "Naturally positive". At the same time it is a cross-cutting theme with links to most of the other strategic focus areas.

Sustainable innovations include substantial efficiency improvements of existing technologies and technological breakthroughs creating net-benefit products. Lenzing innovation includes also driving systemic change through forward solutions and business models as well as a multitude of collaborative activities.

The central hub and innovation center is the Global Research and Development (R&D) department at the company's headquarters in Lenzing, Austria with its extensive infrastructure. This includes pilot plants and laboratories using small-scale processes to better understand the landscape of the subsequent value chain.

The R&D expenditures, calculated according to the Frascati method (minus funding received) increased from 42.8 mn in 2018 to EUR 53.2 mn in 2019 (2017: EUR 55.4 million). These R&D expenditure figures underline Lenzing's commitment to drive sustainable innovations. At the end of the reporting year, 213 people carried out research in the Lenzing R&D department (2018: 204; 2017: 192). Another indicator for the innovative strength of the Lenzing Group are 1,302 patents and patent applications (from 216 patent families) which Lenzing possesses worldwide in 52 countries.

Sustainability drives innovation

Sustainability acts as guiding principle for innovation and product development. Every process-, product-, or application-related innovation is evaluated from the very beginning in terms of sustainability. At Lenzing, sustainable thinking drives innovation. The lifecycle perspective and the net-benefit principle are important factors to be considered. This is reflected in the company's use of project management tools including mandatory sustainability modules.

Outstanding examples based on Lenzing's innovation power include the TENCEL™ Luxe filament and Lenzing™ Web technology. For the latter, Lenzing was awarded the

Sustainable innovations

Management approach

Material topic: Sustainable materials and life cycle assessment (LCA)

Importance for Lenzing

Increasing number of inquiries from stakeholders regarding environmental performance of Lenzing products

Transparency is a prerequisite for fostering trust and long-term partnerships.

Integrating different perspectives, understanding global trends, and mitigating risks

Opportunities

Strengthening of market position for sustainable net-benefit products and specialty fibers

Communicating sustainability benefits of Lenzing's products

Involvement in creating future standards for environmental communication (Product environmental footprint, product category rules, etc.)

Gaining expertise in life-cycle thinking to proactively demonstrate sustainable development

Supporting current and future customers achieving their sustainability targets

Risks

Producing sustainable materials/products but not being able to communicate

Loss of reputation by not being transparent

Growing competition and loss of leadership

Potential regulatory, technology, market and corporate reputational risks

Guiding principles

sCore TEN strategy – customer intimacy

Partnering for systemic change as part of Lenzing Sustainability strategy

Sustainability Policy

Group Policy for Safety, Health and Environment

Group Environmental Standard

Wood and Pulp Sourcing Policy

Branding Strategy

Due diligence processes and (ongoing) measures

LCA update with independent party

Alignment with Material Sustainability Index (SAC)

Objectives

Commitment to systemic approaches by applying life-cycle thinking

Use of Life Cycle Assessment to support decision-making in the business

Fulfil sustainability vision to make sustainable fibers available to the growing world

Achievements/activities in the reporting year

Contribution to life cycle-based assessments, such as MSI

Lenzing's fibers listed as "Preferred fibers" in Textile Exchange's Preferred Fiber Report

Lenzing contributing to leading multi-stakeholder initiatives

Broad range of third-party certifications

Responsible

VP Global BM Nonwovens

VP Global BM Textiles

VP Global Purchasing

Supporting

Corporate Sustainability

Global Quality Management & Technical Customer Service

Global Research & Development

Upper Austrian State Prize for Innovations in the "Large Companies" category for LENZING™ Web technology. Both innovations can be employed to integrate production steps of the value chain in downstream fiber production. In both cases, the production process has been developed simultaneously with the product applications.

Following strong market response in the reporting year a second pilot plant for TENCEL™ Luxe was completed that allows for an improved scale-up process towards a large-scale production. The aim is to reduce resource consumption and environmental impact even further while also increasing the quality of the filaments[54]. The new pilot production line will build upon the knowledge gained from operating the predecessor facility and leverage completely new and innovative automation models. It is a Lenzing development and the know-how acquired during the construction phase will comprise the basis for the company's further expansion in the field of sustainable filament yarns.

For more information on innovative technologies and products see "Net-benefit concept" section.

Collaboration for innovation

No single company can solve all the pressing questions regarding pro-environmental and pro-sustainability innovation. Therefore, Lenzing is collaborating with various partners in several projects.

On the product side, Lenzing cooperates with various partners along the value chain in developing 100 percent cellulose wet wipes that are completely biodegradable without compromising quality and performance. For more information on the benefits of wood-based cellulosic wet wipes see "Circular economy" chapter, page 49.

Another example of this collaborative approach is Lenzing's solution for aquatic farming to reduce plastic in the sea. The Lenzing Group initiated a project in collaboration with two major partners, Sächsisches Textilforschungsinstitut e.V. (STFI) and FIUM GmbH & Co. KG – Institut für Fisch & Umwelt (FIUM) – in order to develop sustainable mussel nets for the marine industry and provide an aqua farming solution that reduces plastic in the sea. Wood-based LENZING™ Lyocell fibers are used to construct ropes and nets in order to support the cultivation of marine cultures such as mollusks,

mussels and edible seaweed. This has the advantage that any textile structure that is released into the environment due to accident, storm damage, negligence or any other cause will degrade.

Besides these ventures targeting specific topics, Lenzing is also active in various committees and networks on sustainability and related topics.

Alternative sources of raw materials for fiber production

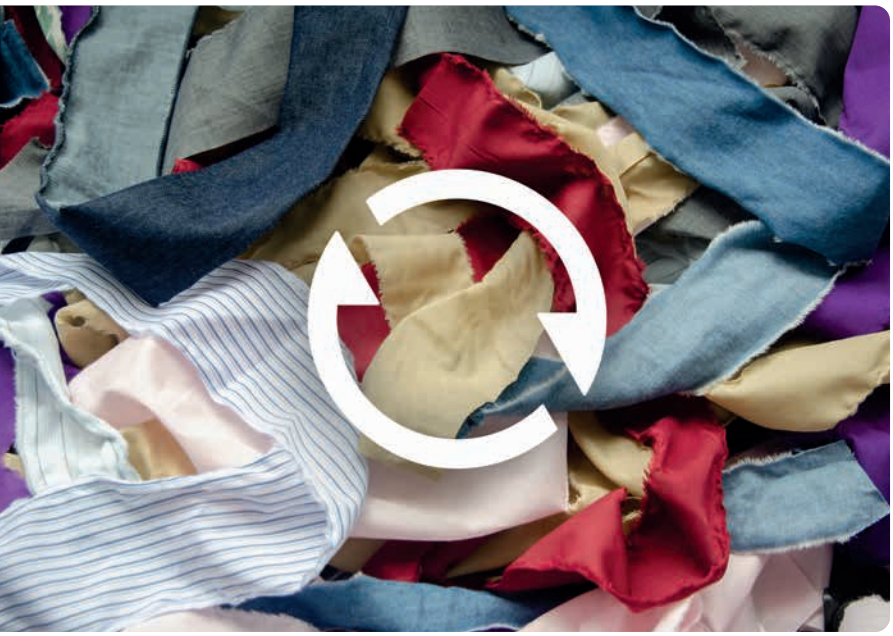
All plants contain cellulose. Therefore, any plant-derived material can theoretically serve as a source of cellulose and also for dissolving pulp to produce fibers from organic origin.

Lenzing continuously looks for potential alternative cellulose sources as new innovative technologies and concepts are emerging. Besides the technical feasibility, an assessment of ecological impacts is an important part of this work, as is the quality of the fibers produced from the material, which have to fulfill highest standards. Alternative sources might be algae, waste from food production, such as orange peels, or hemp that has been recultivated for use as a raw material for pulp.

In recent years, studies have been conducted on sources such as bamboo, annual plants, and by-products such as straw. The paper industry's experience with these sources is of limited use, as the requirements for quality and purity of dissolving pulp are very different. Compared to these alternatives, wood is the best source for the sustainable and renewable large-scale production of cellulose. Alternatives such as bamboo, straw, and various annual plants are not yet available in the quality and amounts that Lenzing requires. The environmental profile of large-scale bamboo cultivation appears to be in general unsatisfactory. Annual plants contain mineral components that have to be removed to produce high quality dissolving pulp. Typically, this purification requires the use of aggressive chemicals, and causes waste issues. In woody plants like trees, however, these mineral components are concentrated

Lenzing's solution for aquatic farming to reduce plastic in the sea: sustainable mussel nets

Sustainable innovations



in the bark, which is easily removed in the first stage of the process. Many sources from annual plants are only available in the harvesting season and are difficult to store for year-round supply. Cotton linters, as used in the viscose industry in some regions, also require a pulping process using substantial amounts of chemicals, and energy to make dissolving pulp. In short, the best way to source high-quality cellulose today is from sustainably managed forests.

One important exception is the use of recycled cellulose from cotton scraps and post-consumer garments, which is processed into TENCEL™ Lyocell fibers with REFIBRA™ technology.

REFIBRA™ technology

After extensive research and development work, Lenzing in 2019 achieved a breakthrough in the development of post-consumer textiles as a raw material for the production of high-quality cellulose fibers by using Lenzing's REFIBRA™ technology. Up to this point, its REFIBRA™ technology solely used cotton scraps from the garment making textile industry (post-industrial) to be converted into dissolving wood pulp, which partly replaces virgin pulp for use in the production of TENCEL™ Lyocell fibers.

REFIBRA™ technology enables the production of high quality lyocell fibers from upcycled material and wood pulp. The technology successfully combines lyocell technology, which is widely acknowledged to be the most environmentally responsible wood-based cellulosic fiber, with a closed-loop production process and the upcycling of cotton materials.

One of the challenges of processing post-consumer textiles is that they differ greatly in quality and composition from cotton scraps from garment making. To use these materials, new technologies had to be developed to separate fiber blends and remove textile auxiliaries and dyestuffs. Implications of the use phase of the textiles must also be taken into account.

REFIBRA™ technology milestones

2017

When it commercially launched the REFIBRA™ technology in 2017, Lenzing achieved an unprecedented milestone for the circular economy in textiles. It initially blended wood pulp with 20 percent of pulp produced from cotton scraps. These fibers are available under the Recycled Claim Standard (RCS) certifying that all the production processes in the supply chain have undergone sufficient steps to ensure the integrity of the final product. The fashion industry quickly adopted TENCEL™ fibers with REFIBRA™ technology.

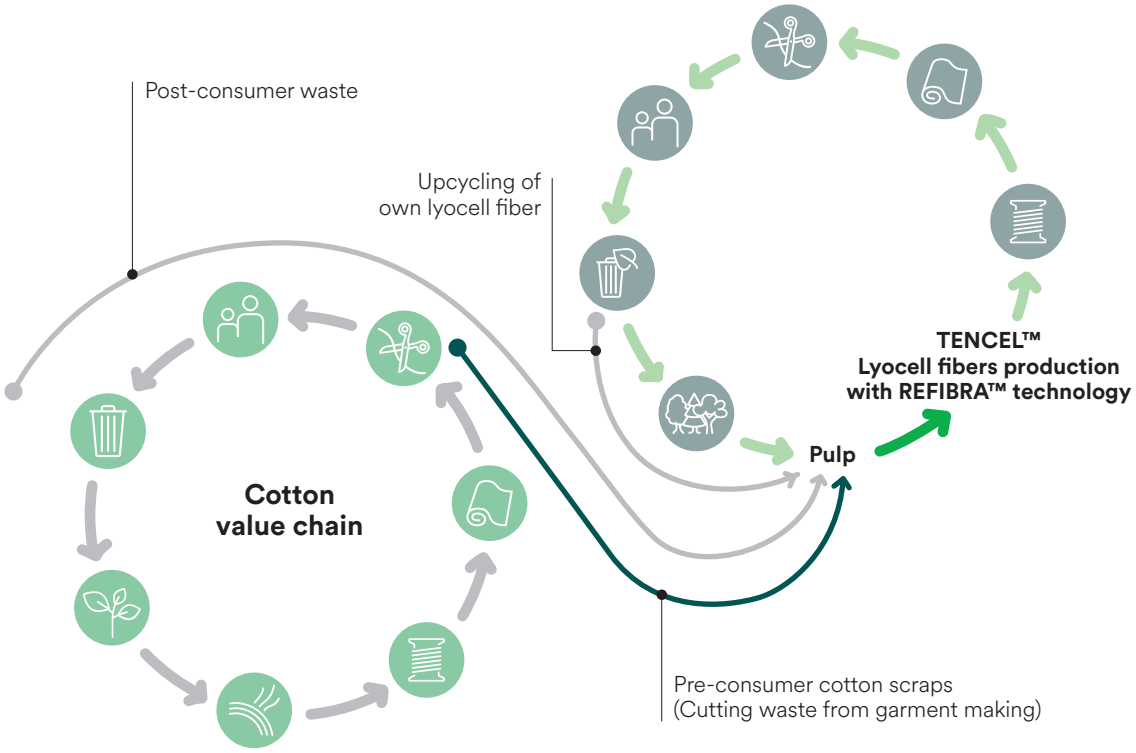
2019

The share of recycled content (pulp from cotton scraps) was increased from 20 to 30 percent. Vast progress has been made in using post-consumer waste as raw material. As lyocell is itself upcyclable, Lenzing has also filed a patent on the recycling of lyocell for use as a raw material for lyocell production. The lyocell fiber portfolio with REFIBRA™ technology was also enlarged allowing for further applications for home textiles and knitwear.

Lenzing's extensive promotional activities contributed to the education of many value chain partners, raising

REFIBRA™ technology

Figure 17



their awareness about the challenges the industry faces in implementing the circular economy.

The Lenzing Group received the coveted TRIGOS Award in the "Climate Protection" category for its REFIBRA™ technology.

Italian denim manufacturer Candiani SpA won the 2019 ITMA Sustainable Innovation Award for its Re-Gen: Creating Circular Denim project with Lenzing. This innovative product is a circular denim fabric created from regenerated and recycled raw materials.

Upcycling technology was also introduced for nonwoven products. VEOCEL™ with Eco Cycle technology enables the use of recycled content in sensitive applications that have the same fiber properties and fiber quality.

It is Lenzing's vision to make textile waste recycling a common standard process like paper upcycling. This includes recycling of fabrics and garments from Lenzing's own materials, Lenzing fibers produced with REFIBRA™ technology shall contain up to 50 percent recycled content (also see box on page 44).

Sustainable innovations

Management approach

Material topic: Air emissions

Importance for Lenzing

Managing air emissions to reduce potential risks to environment and society

Compliance with legislation and stakeholder needs

Opportunities

Further improvement and development of closed-loop processes and recovery technologies

Showing leadership in pulp and fiber production with a low environmental impact

Risks

Air emissions carry potential regulatory, technology, market and corporate reputational risks

Air emissions can affect the health of employees and community residents as well as the surrounding environment

Guiding principles

Sustainability strategy "Naturally positive" with focus area "Sustainable Innovations"

Sustainability targets for the Lenzing Group

Group Policy for Safety, Health and Environment

Lenzing Group ISO 14001:2015 certification

Group Environmental Standard

Global Code of Business Conduct

Global Supplier Code of Conduct

Due diligence processes and (ongoing) measures

Environmental management system according to ISO 14001:2015 (incl. risk assessment and internal audits to ensure effectiveness of the measures implemented)

Regular Global SHE meeting with management review

Objectives

All sites must comply with the Group Environmental Standard based on EU-BAT by 2022.

Group-wide EU Ecolabel certification

Achievements/activities in the reporting year

Lenzing contributing to leading multi-stakeholder initiatives (ZDHC, SAC, etc.)

Continuous improvement activities to further reduce air emissions

Responsible

VP Global Safety, Health and Environment

Regional Senior Vice Presidents

Process innovations to improve efficiency and sustainability

The process innovations focus on further improvement of the pulp and fiber production processes. Lenzing is constantly working on resource efficiency, occupational safety, process stability, and quality. Ongoing developments in the field of pulp production target further enhancement of the biorefinery concept, thereby optimizing material consumption of the renewable resource wood. Another issue is the reduction of sulfur emissions through technological improvements and aftertreatment systems.

Reduction of sulfur emissions

Sulfur and sulfur compounds are indispensable for the classic viscose fiber manufacturing process. In past decades, Lenzing has massively reduced sulfur emissions by closing loops and installing recovery systems. Although all of the Lenzing Group's viscose fiber producing sites (Lenzing, Austria; Nanjing, China; and Purwakarta, Indonesia) are equipped with waste gas purification and recovery technologies, there remain some carbon disulfide (CS_2), hydrogen sulfide (H_2S), and sulfur dioxide (SO_2) emissions from the process itself and from on-site energy production.

The sulfur emissions of the Lenzing Group were reduced about one third between 2014 and 2018 by installing an improved CS_2 recovery system at the Indonesian site and implementing a SO_2 reduction project at the local energy production facility.

As Lenzing's production site in Indonesia actually makes by far the largest contribution to the Group's sulfur emissions, additional improvement efforts in the reporting year focused on this site. To achieve the overall target by 2022, Lenzing is preparing to make a major investment in an additional carbon disulfide adsorption plant (CAP). For more information about important steps taken in 2019, see the "Targets: Fully on track" chapter.

Production of lyocell fibers generates emissions at only a trace level since the organic solvent NMMO remains in the water/solvent cycle throughout the entire process and is recovered at a rate of more than 99 percent.

Absolute emissions to air* **Table 14**

	2014	2017	2018	2019
Sulfur emissions (t) (CS_2, H_2S emissions expressed as sulfur)	34,787	27,853	24,559	23,280
SO_2 emissions (t)	3,908	3,671	2,996	2,684
NO_X emissions (t)**				619

* Sulfur emissions were calculated using mass balances. SO_2 emissions are based on measurements.

** NO_X data on a Group level is only available from 2019, excl. Indonesian production facility.

Specific* emissions to air
Index in percentage based on kg/t, 2014 = 100 % **Table 15**

	2014	2017	2018	2019
Sulfur emissions	100 %	80.2 %	70.5 %	66.7 %
SO_2 emissions	100 %	94.1 %	76.6 %	68.4 %

* Specific indicators are reported per unit of production by the Lenzing Group (i.e. pulp and fiber production volumes).

Sustainable innovations is one of the strategic focus areas of Lenzing's "Naturally positive" sustainability strategy.

Product quality and safety

Lenzing operates a quality management system as per ISO 9001:2015. It forms the basis for all work processes and reinforces our efforts to achieve complete customer satisfaction.

All fiber products from Lenzing undergo health and safety testing. However, the ultimate responsibility for consumer health is borne by the companies that manufacture finished products from Lenzing fibers.

The Product Safety and Regulatory Affairs group (part of Global Quality Management) ensures that raw materials incorporated into final products are thoroughly checked and are appropriate for the specific application. A particular focus during 2019 has been to transition all fiber finish components from animal to vegetable origin. This process should conclude early in the first quarter of 2020. Once this is done, customers will be able to use the Group's fiber products in applications that require vegan certification.

The Lenzing team of Product Safety and Regulatory Affairs ensures that Lenzing is up to date with changes to applicable standards and regulations. Topics in 2019 included the classification (Classification, Labelling and Packaging - CLP regulation) of titanium dioxide powder, which is used as a dulling agent in some Lenzing fibers.

Research and development projects serve to assess potential risks to human health and the environment in connection with the use of new materials. New chemicals are only permitted for large-scale technical use if it is ensured that they are safe and can be used in compliance with all relevant regulations.

Quality improvements

Lenzing achieved significant quality improvements in 2019 with most quality-related KPIs significantly better than in 2018 (improvements in 13 of 14 graded KPIs). An analysis of complaints shows that in 2019 the number across the Group is 15 percent better than 2018. This result is particularly noteworthy given the highly competitive market situation.

The Group-wide quality commitment ("Heartbeat for Quality"), especially focusing on systems developed by the newly-formed Technology group, has been highly effective. Special attention is being payed to on-line control, and several new devices have been developed to provide immediate information for the manufacturing teams to remotely control, monitor and steer the fiber making process.

Sustainable innovations

Management approach

Material topic: Product responsibility

Importance for Lenzing

Impact on safety and health of users along the value chain

Product responsibility and customer satisfaction are key for the long-term success and business growth of the Lenzing Group.

Opportunities

Leading the market in terms of best product consistency, application performance, and service

Achieving business and sustainability targets by monitoring and improving manufacturing processes

Risks

Impact on safety and health of users

Losing market position due to increasing competition or new technologies

Guiding principles

Lenzing's sCore TEN strategy

Group Policy for Safety, Health and Environment

Lenzing Group ISO 9001:2015, ISO 14001:2015, OHSAS 18001:2007 certification at all pulp and fiber production sites

Group Environmental Standard

Global Code of Business Conduct

Global Supplier Code of Conduct

Clean and Hygiene Guideline

Due diligence processes and (ongoing) measures

Environmental management system according to ISO 14001:2015 (incl. risk assessment and internal audits to ensure effectiveness of the measures implemented)

Product certifications such as OEKO-TEX Standard 100, EU Ecolabel, etc.

Application-specific certificates (e.g. food-contact, biodegradability) according to European and U.S. regulations

Monitoring of standards and regulations by Product Safety and Regulatory Affairs

Regular update of process chemicals and regulations

Assessment of risks for people and the environment associated with use of new materials

Approval process for legal compliance for new chemicals for large-scale technical deployment

Objectives

Quality leadership

Strengthening specialty/premium fiber sales, sales of pulp, biorefinery and co-products business

Achievements/activities in the reporting year

Collaboration along entire value chain to support costumers for clean processing of Lenzing fibers

Roll-out of the Clean and Hygiene guideline across all sites

Responsible

Global Quality Management & Technical Customer Service

Supporting

Global Business Management

Global Engineering

Global Safety, Health and Environment

Global Technology

Global Pulp and Wood

Global Research & Development

The vision of zero contamination in Lenzing's nonwoven products has been supported by the roll-out of the Clean and Hygiene Guideline across all sites. The rollout was strengthened by videos that highlight key aspects of cleanliness and hygiene for all operations employees. The initiative has been very well received. Initial reports indicate that improvements have been made in many production locations.

Third-party certifications for LENZING™ fibers

Lenzing uses STANDARD 100 by OEKO-TEX® (Annex 6), for assuring the safety of its products. The STANDARD 100 label guarantees that the fibers have been tested for harmful substances and that the article thus is harmless to humans.

By monitoring raw materials and production processes, Lenzing ensures that its fibers comply with all the relevant regulations, guidelines, and standards. LENZING™ standard fibers are certified for food-contact applications according to European and U.S. regulations.

Lenzing uses external third-party certifications to prove the compatibility of its products in their respective fields of application. Information on all Lenzing Group's product certifications are available at the following location: https://www.lenzing.com/sustainability/product-benefits/

Partnering for systemic change

The world today is more interconnected than ever before. Improving access to technology and knowledge is an important way to share ideas and foster innovation. Complex global sustainability challenges call for a collaborative approach to designing systemic solutions, involving many stakeholder groups.

Transparency is a prerequisite for fostering trust and long-term relationships. Guided by the United Nations Sustainable Development Goal SDG 17: Partnerships for the Goals, the Lenzing Group regularly engages with a wide range of stakeholders and business partners in order to integrate different perspectives, understand global trends, and mitigate risks. Lenzing strives to identify and develop cross-industry business cases to make progress in instituting circularity at Lenzing and throughout the industry. With its contributions to developing methods and tools, Lenzing helps the industry to progress on its path towards a more sustainable future.

Engaging in a dialog means respecting the stakeholders, contributing with Lenzing's expertise and knowledge, and the opportunity to learn from the partners' perspectives. Each dialog starts with providing transparent information, supporting stakeholders to form an educated opinion, to assess risks, and to avoid misunderstandings by building trust. Furthermore, continuous trustful stakeholder relationships contribute to solving existing tensions and avoiding potential conflicts.

The continuous stakeholder dialog in the reporting year included workshops and webinars with customers, one-on-one discussions, training sessions, interviews, surveys, education, joint product developments, web platforms, roadshows, regular media relations, trade shows and conferences, press interviews, risk assessments, and audits.

The various business functions are involved in the individual stakeholder dialogs. Apart from the Lenzing Sustainability team, the Management Board and managers of the different business functions as well as key account managers are important players who drive the company's proactive approach towards ongoing stakeholder dialog.

In its dialog with business partners and shareholders, Lenzing takes the opportunity to learn from different perspectives.

What we do.

We look beyond our fibers, to the needs of our customers and partners and to the needs of consumers worldwide. This is the only way we can continue to improve the quality of our products and develop new applications for our sustainably produced fibers.

Partnering for systemic change

Key stakeholders 2019

The key stakeholders for the Lenzing Group are those who are potentially affected by its operations, business conduct and strategic targets. Lenzing regards them as strategic partners who have significant interest in and impact on areas that matter the most to Lenzing. One very special stakeholder group is Lenzing's staff. Transparency, collaboration, and sharing of information make them a key testimonial to credible Lenzing Group sustainability performance. Figure 18 shows an overview of the most important stakeholder groups.

Key stakeholder groups

Figure 18

Main topics discussed in 2019:

- Climate change, CO_2 climate target (science-based target), see page 61
- Microplastics in the oceans, see page 49
- Responsible sourcing, in particular sustainable sourcing of wood and pulp, see page 52
- Circular economy, see page 40
- Waste, emissions and water management, see page 71
- Transparency and supply chain mapping, see page 45
- Raw material assessments (definition of sustainable raw materials), see page 77

Lenzing's most important stakeholder dialogs in 2019 were those with the following organizations

Canopy[55] and CanopyStyle initiative

Canopy is a nonprofit organization focusing on the conservation and protection of ancient and endangered forests. Initiated by Canopy, the CanopyStyle initiative is a group of around 175 global fashion, designer and retail brands which aim to protect the world's ancient and endangered forests from ending up in textiles. Lenzing maintains a continuous dialog with Canopy and the CanopyStyle initiative to constantly improve its sustainable sourcing practices and contributing to global forest conservation. For details on collaboration in the reporting year, see "Raw material security" chapter, page 58.

Changing Markets Foundation

Changing Markets Foundation is a non-profit organization that accelerates and scales up solutions to sustainability challenges by leveraging the power of markets. Lenzing is fully committed to addressing the issues of environmental and human health impacts raised by Changing Markets. In 2019, Lenzing continued its open exchange with the NGO. Numerous activities in safety, health, and environment that had been initiated at the Indonesian production site in 2017 were continued, such as improvements in measuring and reporting key environmental data, continuous improvement, waste management, and in safety.

In November 2019, an update of the Dirty Fashion Report was published by Changing Markets Foundation, entitled "Dirty Fashion Disrupted: Leaders and laggards revealed". The report highlighted promising developments on the part of some viscose producers, mentioning Lenzing's requirement that all of its manufacturing sites must comply with the Group Environmental Standard (which is aligned with EU BAT) by 2022.

Zero Discharge of Hazardous Chemicals (ZDHC)

The Zero Discharge of Hazardous Chemicals (ZDHC) multi-stakeholder collaboration initiates special focus and task teams on wastewater, sludge, solid waste, and air emissions from the textile industry. Since 2018, Lenzing has been part of the Cellulosic Fibers (MMCF[56]) Task Team on wastewater, sludge/solid waste, and air emissions. In 2019, Lenzing contributed to the development of guidelines for MMCF producers.

Textile Exchange

Textile Exchange is a global non-profit organization that works closely with the global textile supply chain, brands, and retailers to drive industry transformation in preferred fibers, integrity, standards and responsible supply networks.

Lenzing held an executive board seat for greater participation in Textile Exchange between 2011 and 2018 as well as an advisory board seat in 2019. Recent activities include:

- Input to the annual Preferred Fibers and Materials Report and Fiber Benchmark Report
- Sponsorship and agenda support for the Annual Textile Sustainability Conference and the MMC Fiber Round Table
- Sponsorship for the Preferential Tariffs Project
- Contributing to and speaking at seminars for industry education.

Sustainable Apparel Coalition (SAC)

Lenzing is a founding member of the SAC, which is the apparel, footwear and home textile industry's foremost alliance for sustainable production.

In 2019, Lenzing became a member of the policy-hub on the circular economy for the apparel and footwear industry and actively contributed to the understanding of the industry with regard to barriers and challenges to the circular economy in areas such as product design and recycling technology development.

Lenzing has also contributed to the refinement of methods used to assess environmental footprint of products via life-cycle assessments. In the reporting year, Lenzing was named a "Leading Contributor" by SAC.

Partnering for systemic change

Make Fashion Circular (an initiative of the Ellen MacArthur Foundation)

The Make Fashion Circular initiative was established by Ellen MacArthur Foundation in 2018 with the aim of accelerating the transition to the circular economy. Lenzing contributed to this ambitious initiative by providing an industrial perspective and insights and drawing on its experience in the textile industry and its pioneering TENCEL™ Lyocell fibers with REFIBRA™ technology. For more information on circular projects with Make Fashion Circular see “Circular economy” chapter, page 46.

World Resources Institute (WRI)

The Lenzing Group has initiated collaboration and supports WRI in developing the “Science Based Target initiative's Apparel Sector Guidance”. This guidance was launched in mid-2019 and will help all companies along the value chain to develop climate change targets based on up-to-date climate science.

World Economic Forum (WEF)

As a partner of the World Economic Forum, the Lenzing Group supports the CEO Climate Leaders Alliance’s ambition to minimize the effects of climate change. As one of the actions, Lenzing endorsed the Report of the High-Level Commission on Carbon Pricing and Competitiveness published in the course of the United Nations Climate Action Summit. The Commission is a group of business leaders and academics convened by the Carbon Pricing Leadership Coalition (CPLC), a World Bank Group initiative. As a member of the “Shaping the Future of Advanced Manufacturing and Production platform”, Lenzing promoted the blockchain project it initiated together with TextileGenesis™ to trace fibers from their origin to the final garment sold of fashion brands stores at various stakeholder meetings.

Value chain partnerships

Lenzing’s strategic focus area “Partnering for systemic change” not only comprises cooperation with NGOs and multistakeholder initiatives but also its long-standing practice of collaborating with customers and business partners along the downstream value chain. This approach has proven to be a particularly successful innovation driver for Lenzing’s innovation power in recent years.

Partnerships to develop REFIBRA™

Lenzing is collaborating with partners along the value chain to understand what is needed in order to design textiles and set up logistics for circularity. Numerous international brands are now making a large range of products available with TENCEL™ fibers with REFIBRA™ technology.

In the five to seven years it spent developing REFIBRA™ technology, Lenzing teamed up with many different brands, manufacturers and research partners. The company started to identify raw materials suitable for upcycling prior to garment-making. One of the challenges is to remove dyes and finishes from these scraps, since more than 5,000 different chemicals are currently used in dyeing and finishing.

Another technological challenge was ensuring the processability of pulp made from cotton scraps. Lenzing also had to develop reverse logistics with partners in the supply chain. After all, it could take dozen of garment-making factories to obtain a container of cotton scraps. To achieve that goal, Lenzing had to find new partners in the garment-making industry. One of its first partners was the Inditex Group, which not only served as a supplier of cotton scraps from its production sites, but was also the first industrial purchaser of the new TENCEL™ fibers with REFIBRA™ technology. Additional partnerships with other global brands such as Patagonia and Levi’s were built at a later stage to support use of the fiber.

The development of REFIBRA™ technology is thus an excellent, successful example of a partnership driving systemic change to establish the circular economy.

Competence centers and technical services

Lenzing runs competence centers and offers technical advice for partners along the value chain in order to deepen its relationships with them. Its services range from the joint development of new applications for Lenzing fibers to assistance with the correct use of spinning machines.

Purwakarta: Lenzing center of excellence

Lenzing's competence center in Purwakarta (Indonesia), which opened in 2018, focuses on primary customers. Its new energy-efficient state-of-the-art machine park (fiber opening, carding, draw frame and spinning machines) covers all commercially important spinning technologies for wood-based fibers along the entire textile production chain. The center can thus satisfy every customer requirement in the industry on a very small scale. This enables Lenzing to support large spinning mills in Indonesia and the wider textile environment in Asia with innovations ranging from fiber to yarn. In addition, the integrated showroom allows customers to experience the various processing steps in person.

Hong Kong: application innovation center

The competence center in Hong Kong specializes in knitting applications, particularly the production of textile fabrics by knitting, weaving and warp knitting. It focuses on seamless products in the circular knitting sector and on mesh flat knitting patterns in the sneaker and running shoe sector. It also features a laboratory-scale weaving machine.

Partnering for systemic change

Lenzing testing facilities

The company maintains a variety of testing facilities for partners at its site in Lenzing, Austria. Lenzing provides state-of-the-art facilities for spinning, weaving, knitting and dyeing. Partners and customers can test fibers at each stage of their production process. Equally sophisticated laboratory and testing facilities are available for nonwoven applications as well.

New applications and innovations are created through close, fruitful cooperation with partners. They range from clothing (denim, shirts, work clothing) and home textiles (carpets, bed linen) to hygiene products and wipes to industrial uses such as packaging or separator paper for batteries. The company improves existing and develops new fibers and applications in cooperation with its value-chain partners.

The Lenzing site is the home base for the Technical Customer Service (TCS) team, a group of experts offering advice and assistance to businesses around the world. Lenzing strives to help its partners to maximize the value of Lenzing fibers in their operations. The knowledge ranges from spinning, weaving and knitting to all stages of converting, processing and finishing. TCS shares this knowledge directly with global customers and partners.

Cooperation between Lenzing & Hof University of Applied Sciences

The Lenzing Group is continuously innovating sustainable solutions and new product qualities for cosmetics, hygiene and medical applications. In 2019, Lenzing and Hof University of Applied Sciences, Germany, decided to partner with one another. Hof University benefits from of Lenzing's experience as a leading provider of wood-based specialty fibers. Lenzing, for its part, gains access to the university's technology center for nonwoven applications with state-of-the-art machinery and technologies, which Lenzing's customers and partners also use to process LENZING™ fibers. By using the university's high-tech application facilities, Lenzing can carry out more extensive testing, develop new applications more quickly and therefore support partners in the hygiene, cosmetics and medical industries even more effectively. The initial collaboration period is five years.

Lenzing's strategic focus area "Partnering for systemic change" comprises a long-standing practice of collaborating with partners along the value chain.

Empowering people

Management approach

Material topic: Labor practices/human rights (NaDiVeG)

Importance for Lenzing

People are at the core of the company's business success

Lenzing is ethically and legally responsible for Occupational Health and Safety, which ensures the wellbeing of Lenzing's staff and of its neighbors

Opportunities

Good labor practices promote staff safety and wellbeing and ensure healthy and satisfied employees

Enabling personal success and contributing to the growth and success of the company

Lenzing is global fiber employer of first choice

Diversity promotes the quality of business decisions and contributes to the company's resilience

Competitive advantage through committed workforce

Development of a corporate culture which is characterized by openness and mindful interaction

Risks

Occupational safety risks for own employees, supervised workers and contractors

Negative effects on employee and contractor health, employee development, surrounding communities, up and downstream value chain partners

Risk of discrimination and other possible negative impact on human rights

Potential regulatory, technology, market and corporate reputational risks

Guiding principles

Local Labor Right laws

Policy on Human Rights and Labor Standards

Lenzing Global Code of Business Conduct (COBC)

Lenzing Global Supplier Code of Conduct (SCOC)

Wood and Pulp Policy

Policy for Safety, Health and Environment (SHE)

Sustainability Policy

Product Safety Policy

HR Strategy

sCore TEN culture and leadership model

Diversity concept

Personnel development measures and tailor-made training programs

Lenzing Group health management system ("House of Health")

Quality Policy

Due diligence processes and (ongoing) measures

SHEARS System

Regular meetings of health and safety committees at every production site

Safety Walks & Talks at all Lenzing sites

Regular Global SHE meeting with management review

Objectives

Global roll-out and implementation of guiding principles

Contribution to SDG 3, 5, 8 and 10

Commitment to a sustainable and healthy leadership style

Continuous development of corporate culture

Achievements/ activities in the reporting year

No cases of human rights abuses

Eye to eye partner for local unions, works councils and other representatives of workforce

No strikes at any Lenzing production facility

Annual performance reviews

Employees training programs

Regional social projects

Employee health programs

eMotion program with app "Moveeffect"

IOSH training (leading, managing and working safely)

Responsible

SVP Global Human Resources

VP Global Safety, Health and Environment

Regional Senior Vice Presidents

Supporting

Corporate Sustainability

Empowering people

The corporate culture of the Lenzing Group is characterized by long-term partnerships, close collaboration, and mutual respect based on open dialog and transparency. Sustainability has been integrated into the global human resources (HR) strategy, Lenzing's HR policy and HR-related processes as a company value.

The Lenzing Group is committed to conducting business in a manner that respects the rights and dignity of all people. Lenzing respects the internationally recognized human and labor rights of all employees and business partners.

Labor rights are subject to national laws. Employees at all Lenzing sites receive fair wages thanks to a highly regarded internal global grading system, collective bargaining, the activities of union representatives, and national protections for human rights. The EcoVadis supplier assessment tool includes fair labor rights in the upstream supply chain. The wood certification systems used by Lenzing ensure that labor conditions meet or exceed the requirements with ILO Core Conventions. The Lenzing Group's own labor practices also form part of the EcoVadis assessment.

Employees

International workforce

The Lenzing Group's workforce is becoming increasingly international. Despite the company's firm roots in Europe, an international corporate culture has evolved in the Lenzing Group due to strong collaboration between its sites in Asia, Europe, and the USA. The management team actively supports the internationalization of the workforce at all levels. At the same time, Lenzing remains a practice-oriented company characterized by flexibility and a high service level, while still preserving a familial atmosphere.

At the end of 2019, the Lenzing Group employed 7,036[57] people in thirteen countries, representing an increase of 2.9 percent compared to 2018 (2018: 6,839[58]; 2017: 6,315 employees). There were 457 supervised workers in 2019, versus 523 in 2018 (2017: 520). The Lenzing Group had 5,482 full-time positions, which represented 78 percent of the workforce (717 = 13 percent thereof women and 4,765 = 87 percent men). Consequently, the number of part-time posts amounted to 1,554, or 22 percent[59] (of the total 293 = 19 percent thereof women and 1,261 = 81 percent men). The Lenzing Group employed 190 apprentices, with 95 percent of them working at Lenzing's sites in Austria and 5 percent in the United Kingdom.

Diversity

Respect, diversity, and inclusion are fundamental pillars of the sCore TEN corporate strategy and integral, indispensable elements of the Lenzing culture. A diversity program was adopted on February 19, 2018. These rules are taken into consideration in staffing positions on the Supervisory and Management Boards. Apart from technical and personal qualifications, staffing decisions are based on aspects such as age structure, origin, gender, training, and background experience.

In the Lenzing Group's Policy on Human Rights and Labor Standards, Lenzing undertakes to respect and support fundamental labor principles including protection from discrimination, harassment and inhumane treatment. This encompasses protection against employment decisions based on personal characteristics or beliefs that are not related to the ability to do one´s job, including gender, age, race, color, national origin,

ethnicity, social background, sexual orientation, family responsibility (including pregnancy), disabilities, political opinion, sensitive medical conditions, discrimination in working conditions, marital status, and others.

Employees are mainly locally recruited and thus the proportion of employees, with a nationality other than from the country of the respective employing subsidiary, is 3.7 percent. The proportion of female employees has grown from 13.5 percent in 2017 to 13.8 percent in 2018[60] and 14.4 percent in 2019.

The proportion of over-50s in the workforce has grown in recent years from 21.7 percent in 2017 and 22.3 percent in 2018[61] to 23 percent in 2019.

The employee turnover rate (i.e., the number of people leaving the company) stood at 4.2 percent in 2017, 5.0 percent in 2018[62] and 5.8 percent in 2019.

Diversity: information by country, 2019
(headcount, proportion of women, proportion of over-50s, employee turnover rate)

Table 16

	Headcounts	Female in %	Age > 50 in %	Turnover in %
Group	7,036	14.4	23.0	5.8
Austria	3,513	17.0	25.8	4.8
Indonesia	1,735	3.5	15.1	3.9
China	838	19.9	6.1	11.9
Czech Republic	416	17.5	50.5	3.8
USA	209	18.7	42.1	12.4
United Kingdom	200	10.0	42.5	4.5
Other*	125	43.2	10.4	16.8

* India, Thailand, Turkey, Taiwan, Korea, Singapore and Brazil

Empowering people

Lenzing complies with the local labor standards in all countries of operation. Collective agreements cover 81.9 percent (2018[63]: 82.2 percent, 2017[64]: 81.6 percent) of the Lenzing Group's global workforce. 98.9 percent (2018: 97.9 percent, 2017: 98.4 percent[65]) of employees are subject to notice periods governed by labor law or collective agreements.

No cases of discrimination, or human rights abuses were reported in the management system in 2019.

The Lenzing Group employed 104 people with disabilities in 2019 (2018: 102; 2017: 97). Most of these were employed in Austria (88), followed by the Czech Republic (11), the USA (3) and Indonesia (2). No formal recording of numbers of employees with disabilities is conducted at the site in Grimsby (United Kingdom), as there is no definition provided by local legislation.

Lenzing actively sponsors local social amenities and programs.

Works council

The management of the Lenzing Group is committed to a transparent information policy towards the employees' official representatives. There are local works councils at the facilities in Lenzing and Heiligenkreuz[66]. In accordance with the Austrian Labor Constitution Act, representatives of the Lenzing AG works council at the Lenzing site have seats and voting rights on the Supervisory Board. The Lenzing AG works council represents the interests of employees at the sites in Lenzing and Heiligenkreuz (Austria). In addition to these sites, trade union representatives of different fractions and interest groups are active at the sites in Paskov, Purwakarta, Nanjing, Grimsby, and Mobile.

Consequently, 100 percent of the total active workforce of Lenzing production sites is represented by local unions or works councils. No strikes took place at any Lenzing site in 2019.

Lifelong learning and training

Lenzing fosters the potential and skills of its employees with a wide range of personnel development measures and tailor-made training programs. The annual performance reviews where joint targets and development plans are agreed between employees and their line managers were continued in the reporting year. Targets can be either financial, qualitative or quantitative.

Total expenditure on lifelong learning and personnel development increased from EUR 5.1 mn in 2017 to EUR 5.9 mn in 2018 and EUR 6.1 mn in 2019.

New training programs

In 2019, Lenzing intensified its training programs and launched new training modules. "Leaders of Tomorrow" is a global tailor-made development program for skilled workers, early in their careers. The program includes international job rotation within the Lenzing sites. The Austrian pilot group was successfully completed in March 2019 and the first global group started in Lenzing in December 2019.

The "sCore TEN fit" training program was continued in 2019 with two groups. It comprises psychological training elements combined with outdoor activities to train managers and specialists in leadership skills.

Several programs were conducted in 2019 to establish a better understanding of Lenzing's business and help achieve the corporate goal of "ONE LENZING". In 2019 the two Management Focus training courses, "Deliver with Power" and" Collaboration with Speed" were rolled out to support and ensure our corporate goals.

Global rollout of several training programs

Some well-established training programs at the Lenzing site were globalized in 2019:

- Fiber Academy (program for new employees to gain a better understanding of Lenzing's value chain from wood to final product)
- Commercial Academy (technical expertise, legal knowledge, and negotiation techniques)
- Learn@Lenzing Poweruser training (enable Learn@Lenzing Powerusers to develop engaging digital learning content and teach them how to use the Learn@Lenzing platform)

- Deliver with Power (program for employees to improve their presentation skills and learn to feel confident about making truly impactful presentations)
- Collaboration with Speed (program for employees to gain awareness for their own cultural identity, develop tolerance for other cultures, and improve their skills in leading international teams)

"Springboard III" global junior leadership program

As part of the push to "Think & Act Global", 31 highly motivated employees were selected in autumn 2019 to be trained and prepared for future leadership within the Lenzing Group. The third round of this program started in December 2019.

All training is based on Lenzing's sCore TEN strategy and especially supports Lenzing's Culture Focus and Leadership Model.

Health and safety

The Lenzing Group's health management system ("House of Health") is based on the concept of salutogenesis, which is tailored to the individual health care and social systems of the countries where Lenzing operates. It provides a conceptual framework for targeted investments in the health of Lenzing's employees. Global Health Care Management works closely with the employees in the regions responsible for health issues as well as the occupational health and safety department (Safety, Health and Environment/SHE).

Health care at Lenzing production facilities

Lenzing provides employees at all production sites with an in-house primary care system that complements the existing health systems of the individual countries.

Lenzing uses medical partners in the regions around the sites to offer its employees a diagnosis and therapy service tailored to local needs. The range of medical services extends from several medical examinations and therapy sessions per week at the sites in Mobile (United States) and Grimsby (United Kingdom) through to healthcare services for family members at a clinic in the vicinity of the production site Purwakarta (Indonesia).

The large fiber production plants in Lenzing and Purwakarta also have their own outpatient clinics with qualified medical staff for quick, competent treatment of acute conditions and injuries on site as well as their own ambulances to ensure prompt follow-up treatment at special medical facilities.

First aiders trained in certified basic and regular refresher courses are available at every Lenzing facility. A Group-wide initiative entitled "SAVING LIVES – At Work and At Home" was launched in 2018 to increase the preparedness and competence of all employees to provide first aid directly on the spot in cases of life-threatening health problems.

Health promotion

In addition to numerous regular activities at the company's individual sites, the subject of exercise became a focal point of the group's health promotion policy in 2019 (eMotion programs). These programs are designed to motivate and support our employees in pursuing a healthy lifestyle both in and outside of the workplace.

A healthy living app that is specifically tailored for companies (Moveeffect®) was adapted to meet the needs of the company and the various countries in which Lenzing operates. It was then distributed to all employees for use on a voluntary basis as part of the first major corporate exercise challenge entitled "All around the Lenzing world". The app aims to encourage the employees to become more active via features such as feedback tools on the user's own exercise habits, personal and group targets, ranking options, and small-scale competitions. It also offers a platform for communicating about personal fitness activities and initiating group activities.

Occupational medical care

Since 2019, Lenzing has been working on the gradual development of a coordinated network for occupational

Empowering people

medical care that exceeds the minimum standards required by the individual countries. By enhancing competence in occupational medical care, Lenzing will ensure that employees and managers have the best resources available to protect themselves from and deal with risks in the workplace.

Healthy management approach

A company's management style is a fundamental influence on the health of its workforce. This is a topic that is gaining increasing importance in management education and training.

In the reporting year, a fundamental decision was made to conduct an annual indicator survey of all employees at all locations from 2020 onwards. In these 10-15 questions, the topic of leadership style will play an important role in various aspects that influence the health of employees. On the one hand, the results of the survey are intended to enable tracking of development, but on the other hand, they should also provide a guideline that management and employees can use to determine which specific interpersonal behaviors correspond to the sCore TEN values and leadership model.

Occupational health and safety

Lenzing's Group Policy for Safety, Health, and Environment (SHE) aspires to have no accidents, no harm to people, and no damage to the environment, underpinned by its vision, LEAVE HOME HEALTHY, COME HOME HEALTHY. The central task is to minimize the risk of harm and foster a Lenzing community where risk is properly appreciated, understood, and managed.

Since the introduction of the "Heartbeat for Safety" program in 2016, which revitalized the Group health and safety strategy, the Lenzing Group has continued to implement programs to improve its safety culture in 2019, maintaining a focus on "operational discipline" following the five-year implementation strategy plan.

The "Heartbeat for Health" program started in 2018 in order to increase awareness of the safe handling of chemicals, giving a special focus to high volume process chemicals like sulfur dioxide in pulp production, carbon disulfide in viscose fiber production and N-methylmorpholine oxide in lyocell production.

Further details regarding Lenzing's SHE policies are available on the Lenzing website (https://www.lenzing.com/en/sustainability/people/health-and-safety/).

Safety walks & talks

Senior management team members at Lenzing conduct regular weekly safety walks and talks as part of their informal health and safety engagement with staff. They are fundamental to implementing the heartbeat strategy, managing safety and improving the Group's safety culture.

The safety walks and talks help to raise awareness of dangers at work – even in everyday routines – and, by involving management and workers, put team members in a unique position to improve workplace controls, provide information and advice, and, more importantly, provide two-way feedback on day-to-day issues.

While the "walk" aspect typically focuses on the main physical hazards and risks, the "talk" element has allowed Lenzing managers to focus on the unseen elements of psychological and cultural hazards and risks, within the organization.

Following baseline training to all identified team managers in 2016, 20,435 reports have been completed in total, including 7,993 that were completed in 2019. The actions from these observations have predominately identified improvements to raise the health and safety standards we operate to.

Life Saving Rules

In 2019, the Lenzing Group remained diligent about safety management on a day-to-day basis and remained relentless in its implementation of the eight Life Saving Rules. The eight Life Saving Rules focus on the areas that have the greatest potential for serious injury. They also set minimum benchmark standards across the Lenzing Group. Lenzing also introduced additional reporting requirements for "potential serious injury" or "fatality events". A breach of the Life Saving Rules automatically falls into this event categorization and triggers an investigation process and escalation routine for

presenting the information to members of the executive committee and the board.

In 2019, independent site inspections were also conducted specifically on Life Saving Rules with a focus evaluation of measures and status of implementation.

Safety committees

Safety committees bring together workers and employers through regularly scheduled meetings where safety issues are addressed. The goal of Lenzing's safety committees is to help create and nurture a culture of safety. Regular meetings were carried out throughout 2019 at all sites to help make health and safety activities an integral part of the operating procedures, culture and programs.

Contractor management

Contractors and their employees represent a significant proportion of serious accidents within the Group. The contractor management process ensures that a robust pre-qualification system for the use of contractors is in place at each site, that it is consistent across the divisions and that it fulfils minimum standards.

Potentially hazardous areas

The Lenzing Group strives to ensure that the materials that it uses are safe. However, some materials are inherently hazardous. As part of the management efforts, Lenzing ensures to the best of its ability that the risks involved in sourcing, transportation, storage and use are minimized with robust occupational health and safety and environment management. The phased introduction of harmonized processes continued in 2019. When the classification of hazard chemical substances changes, as is currently happening with titanium dioxide, appropriate risk management measures are established, prioritizing technical measures over organizational ones; personal protective equipment is seen as a last resort for exposure reduction.

Process and machinery safety

The Lenzing Group is continuously developing process and machinery safety measures to provide further protection and mitigation to known and potential risks that may arise from the use of hazardous materials or from the machinery that uses those materials. The Group's aim is to provide an extended level of protection to both the personnel that operates such machinery and the related environment.

In this regard, "we empower all employees to stop any task or activity if it cannot be carried out in a safe manner". This statement is part of the Global SHE policy, which is also transferred into local site policies. It is brought to life through guidelines and principles outlined in the General Safety Rules, SHE Reporting Requirements, Assurance of SHE protection and Safety Moments, all available on the internal Lenzing connect pages, and lived through the corresponding local guidelines and procedures. The principles conveyed in these documents and processes involved in reporting and investigation encourage reporting and rectification rather than reprisal. In addition there is a Group-wide Whistleblower system and the Whistleblower Directive.

IOSH training (leading, managing and working safely)

The Institute of Occupational Safety & Health has developed the syllabus for some very well-known health and safety courses. The Lenzing Group has worked closely with IOSH to tailor these courses to the respective site languages globally and to develop the course material to allow delivery in any country. Following course material and syllabus approval in 2017 these safety courses now help to promote a safety-conscious culture throughout the Lenzing workforce and educate managers who have a responsibility for implementing and delivering the health and safety strategy.

Total trained in the year 2019: 1,292 employees (31 in Managing Safely and 1,261 in Working Safely). In total 1,382 employees were trained 2018 and 2019.

Safety performance

The Lenzing Group achieved a marked improvement in injury rates (accidents involving less than one day's absence from work) in the reporting year. Overall in the Group, the average rate of 22.2 injuries per 1,000 employees in 2019 was an improved performance to that recorded in 2018 (24.9) and 2017 (25.3). Also lost workday cases performance in 2019 (4.4), (1,000-person rate, number of lost workday case accidents involving more than one day lost per 1,000 employees) was a distinct enhancement to 2018 (5.7), 2017 (5.6) and 2016 (6.2)[67].

Lenzing Group Safety* **Table 17**

	2017	2018	2019
Lost workday cases (Rate of employees & supervised workers per 1,000 employees)	5.6	5.7	4.4
Injury rate of employees and supervised workers per 1,000 employees	25.3	24.9	22.2
Work related fatalities	-	-	-

*All occupational safety key figures are reported excluding MINTS

Empowering people

In 2019 the Group moved towards reporting a Lost Time Injury Frequency Rate (LTIFR based on 200,000 worked man-hours) for employees and contractors, which resulted in a combined frequency rate for 2019 of 0.51.

Lenzing encourages employees to report all events regardless of whether or not they lead to injury or equipment/property damage. This pool of data enables identification of potential trends, leading to improvements in safety. Lenzing monitors safety performance using industry standardized metrics and works to continuously improve personal and process safety throughout the Group.

Furthermore, "we empower all employees to stop any task or activity if it cannot be carried out in a safe manner". This statement is part of the Global SHE policy, which is also transferred into local site policies. It is brought to life through guidelines and principles outlined in the General Safety Rules, SHE Reporting Requirements, Assurance of SHE protection and Safety Moments, all available on the internal Lenzing connect pages, and lived through the corresponding local guidelines and procedures. The principles conveyed in these documents and processes involved in reporting and investigation encourage reporting and rectification rather than reprisal. In addition there is a Group-wide Whistleblower system and the Whistleblower Directive.

Following the Group-wide implementation of a standardized reporting system, 65,612 reports have been entered into the system to date from 2015 to 2019 (excluding audits).

The top five types of injuries that resulted in lost workday cases (LWCs) for the Group in 2019:

- Cuts and lacerations
- Strains
- Bruising
- Chemical burns
- Hot burns

The injury types for all injuries (including LWCs) in the Group:

- Cuts & lacerations
- Abrasions
- Chemical burns
- Hot burns
- Bruises

The injury type analysis does not include "travelling to work" or "minor injury, no treatment given" adverse events.

Work fatalities

No fatal injuries were registered in the Group in the reporting year.

Enhancing community wellbeing

Corporate citizenship

The Lenzing Group's various production sites operate in their respective ecological, social and economic environments. The Lenzing operations and their regional partners are mutually dependent, sharing opportunities, as well as challenges. Community wellbeing is therefore necessary for the company's license to operate. As a good corporate citizen, the Lenzing Group promotes the beneficial development of the communities and regions where it operates. This is achieved through safe and eco-friendly operations, fair employment practices and contribution to local economic development and community life.

Both locally and globally, the Lenzing Group takes its social responsibility as a corporate citizen seriously and makes a major contribution to strengthening the economy in the regions where it operates. This was confirmed yet again by a study into the socio-economic and regional economic importance of the Lenzing Group, conducted by Johannes Kepler University (Linz, Austria) and Gesellschaft für Angewandte Wirtschaftsforschung (Innsbruck, Austria) for 2019[68]. The study concluded that the business operations of the Group have measurable socioeconomic effects that extend far beyond purely economic aspects.

Overall, the study concluded that the Lenzing Group creates 18,379 jobs worldwide. Every job within the Lenzing Group creates more than two additional jobs in another branch of the economy. Furthermore, the public sector benefits in the form of tax revenues and social security contributions. The study also investigated how many jobs in each region were secured or created indirectly and induced as a result of the company's activities. The number of these jobs significantly exceeds the number of staff directly employed by the company.

The socio-economic effects of the activities of the Lenzing Group in 2019 are summarized in the table below.

Regional and economic effects of Lenzing´s activities: summary **Table 18**

	Number of employees*	Additional gross domestic product	Additional compensation of employees	Created employment*
Lenzing AG (Austria)	2,653	EUR 787.5 mn	EUR 393.4 mn	6,209
Heiligenkreuz (Austria)	293	EUR 132.2 mn	EUR 67.0 mn	1,223
Paskov (Czech Republic)	414	EUR 196.8 mn	EUR 87.6 mn	3,544
Grimsby (United Kingdom)	196	EUR 62.6 mn	EUR 31.3 mn	494
Purwakarta (Indonesia)	1,735	EUR 185.8 mn	EUR 82.7 mn	3,344
Nanjing (China)	751	EUR 134.6 mn	EUR 59.9 mn	2,425
Mobile (USA)	207	EUR 71.8 mn	EUR 35.9 mn	566
Bangkok (Thailand)**	46	EUR 25.1 mn	EUR 12.9 mn	303
Sao Paulo (Brazil) **	30	EUR 22.5 mn	EUR 11.6 mn	272
Total	**6,325**			**18,379**
Including non-producing sales offices (Lenzing Group, total)	**6,685**			

Source: Jenewein, S., Wakolbinger, F., and Schneider, F. (2019). Volks- und regionalwirtschaftliche Bedeutung der Lenzing Gruppe (Macroeconomic and Regional Economic Importance of the Lenzing Group), Johannes Kepler University Linz, commissioned by Lenzing AG. Unpublished (2019).

* Yearly full-time equivalents.

** No sales in 2019. Therefore, the investments have been taken as input for the calculation of the economic effects. The effects also do include effects of the year 2020 onwards, as the activities of the Lenzing Group in 2019 do not only provoke economic effects in 2019 but in following years as well.

Maintaining relations with local communities

Promoting the wellbeing of society is a key cornerstone of Lenzing's "Naturally positive" sustainability strategy and more than just a question of ensuring society's acceptance of Lenzing's activities. The Lenzing Group takes its responsibility as a large industrial company and reliable corporate citizen very seriously, also beyond its direct business operations. The company strives to contribute towards improving the living conditions of its neighbors. Lenzing relies on them just as much as they rely on Lenzing.

In addition to conducting safe and environmentally responsible operations with fair business practices, Lenzing provides support provided to numerous social and environmental protection projects, frequently over many years. It also promotes local activities, from educational initiatives to healthcare and infrastructure measures. The individual production sites of the Lenzing Group act autonomously for the most part in selecting the specific projects and measures contributing to local development and a positive social environment.

Conflicts of interest and production-related circumstances, such as noise, unpleasant odors, and environmental pollution, can nevertheless result in disputes with local residents. Procedures are in place at all sites to ensure that complaints are handled fairly and impartially. All complaints are reviewed monthly and reported directly to the senior management teams of the Group.

Complaints were registered at the sites in Lenzing, Purwakarta, Paskov, Nanjing and Mobile in 2019, and appropriate measures were implemented to deal with them following the investigation and review process. As of December 31, 2019, there were no pending legal disputes relating to conflicts between local community and Lenzing companies/subsidiaries.

Social projects and environmental initiatives

The Lenzing Group has been supporting numerous social projects and local environmental initiatives for many years now. Taking account of local requirements, the management teams at Lenzing sites decide which projects and initiatives to support. For further information please see the "Responsibility for people" focus paper[21].

Chief Technology Officer Stephan Sielaff (as at March 1, 2020, CTO), Chief Commercial Officer Robert van de Kerkhof (CCO), Chief Executive Officer Stefan Doboczky (CEO) and Chief Financial Officer Thomas Obendrauf (CFO)

Lenzing Aktiengesellschaft
Lenzing, March 3, 2020

The Management Board

Stefan Doboczky
Chief Executive Officer
Chairman of the
Management Board

Robert van de Kerkhof
Chief Commercial Officer
Member of the
Management Board

Thomas Obendrauf
Chief Financial Officer
Member of the
Management Board

Stephan Sielaff
Chief Technology Officer
Member of the
Management Board

Stand up for empowerment

What we do.

Lenzing promotes the development of societies and regions in which it operates. We are proud of our contributions to economic development and social life. The change towards a more sustainable society and economy is driven by people who take responsibility, think and act positively. Therefore, we promote and empower our employees, and we motivate our partners to also commit themselves to change and sustainability.

We stand up for protecting our planet's resources and combating climate change.

Annex

Supplementary information pursuant to §243b UGB

Lenzing Aktiengesellschaft safety

Lenzing Aktiengesellschaft safety* **Table 19**

	2017	2018	2019
Lenzing AG: number of injury cases	81	95	85
Lenzing AG: injury rate of employees and supervised workers (per 1,000 employees)	25.3	29.2	25.4
Lenzing AG: lost workday cases (LWCs)	27.0	26.0	27.0
Lenzing AG: lost workday cases (LWCs) Rate of employees & supervised workers (per 1,000 employees)	8.3	8.0	8.1

* Changed figures for 2018 due to an adjustment of the database.

Work-related fatalities

No fatal injuries were registered in Lenzing Aktiengesellschaft in the reporting year

Lenzing Aktiengesellschaft workforce

Lenzing Aktiengesellschaft workforce
Lenzing Aktiengesellschaft: Human Resource Indicators
Headcounts as of 31.12.; employees
(including apprentices, no supervised workers) **Table 20**

	2017	2018	2019
Total headcounts as of 31.12.	2,646	2,831	2,958
Proportion of women	17.7 %	17.8 %	18.3 %
Proportion of age >50	26.1 %	26.0 %	25.9 %
Proportion of non-Austrians	5.1 %	5.6 %	6.0 %
Apprentices	113	120	130
Supervised workers	231	215	171
Proportion of employees with full-time contract	65 %	54 %	55 %
thereof female	15.4 %	17.4 %	17.4 %
thereof male	84.6 %	82.6 %	82.6 %
Proportion of employees with part-time contract	35 %*	46 %*	45 %*
thereof female	22.1 %	18.2 %	19.2 %
thereof male	77.9 %	82.6 %	80.8 %
Proportion of employees for whom collective bargaining agreements exist	100 %	100 %	100 %
Employees with disabilities	72	74	79
Turnover rate	4.1 %	3.4 %	3.7 %

* Due to the transition to a 5-shift-system, these employees (= 90 % employment level) are also treated as part-time employees.

Restatement: The data basis for Lenzing Aktiengesellschaft figures was adjusted to those of the Lenzing Group (incl. apprentices), which also results in changed data for previous years.

As regards potential corruption offenses or breaches of antitrust law, no official measures were undertaken or legal claims made against Lenzing Aktiengesellschaft in 2019.

Figures concerning environmental matters will not be reported separately for competitive reasons and because these matters are managed and measured on a Group-wide basis. The omission of this information does not prevent a fair and balanced understanding of its development, performance, position, and impact of its activity.

Additional information on chapters

Wood procurement

Wood sourcing for Lenzing Group's own pulp mills in Lenzing, Austria, and Paskov, Czech Republic

Beech and spruce, by country, average 2015-2017, 2018 and 2019. "Other countries" for Lenzing site for 2015 until 2018 are Estonia, France, Switzerland, Poland, Romania, Russia and Ukraine (until mid-2018) and for 2019 France, Switzerland, Poland, Romania and Russia. "Other countries" for Paskov site for 2015 until 2017 are Ukraine and Belarus and for 2018 only Belarus.

Lenzing — **Table 21**

Country	Average 2015-2017	2018	2019
Austria	45.3 %	43.2 %	39.8 %
Germany	19.7 %	23.7 %	24.9 %
Czech Republic	8.0 %	8.9 %	9.3 %
Slovakia	19.0 %	14.8 %	14.9 %
Hungary	4.0 %	1.7 %	2.2 %
Slovenia	2.3 %	0.1 %	0.5 %
Total regional	**98.3 %**	**92.3 %**	**91.5 %**
Poland	1.0 %	2.7 %	3.0 %
Ukraine	0.7 %	0.2 %	0.0 %
France	0.0 %	1.2 %	2.6 %
Estonia	0.0 %	0.3 %	0.0 %
Russia	0.0 %	1.4 %	0.3 %
Switzerland	0.0 %	1.6 %	1.8 %
Romania	0.0 %	0.3 %	0.9 %
Total other countries	**1.7 %**	**7.7 %**	**8.6 %**
Grand total	**100 %**	**100 %**	**100 %**

Paskov — **Table 22**

Country	Average 2015-2017	2018	2019
Czech Republic	75.7 %	86.5 %	77.9 %
Slovakia	15.3 %	10.3 %	18.7 %
Poland	2.3 %	2.4 %	3.4 %
Total regional	**93.3 %**	**99.2 %**	**100.0 %**
Ukraine	1.0 %	0.0 %	0.0 %
Belarus	6.0 %	0.8 %	0.0 %
Total other countries	**7.0 %**	**0.8 %**	**0.0 %**
Grand total	**100 %**	**100 %**	**100 %**

Additional information on chapters

Information on employees and other workers, new employee hires and employee turnover, diversity of governance bodies and employees **Table 23**

Number of employees	2017	2018	2019
Under 30	1,300	1,360	1,304
Between 30 and 50	3,779	3,952	4,116
Over 50	1,409	1,527	1,616
Female	874	946	1,010
Full-time	641	681	717
Part-time	233	265	293
Male	5,614	5,893	6,026
Full-time	4,759	4,663	4,765
Part-time	855	1,230	1,261
Austria	2,646	3,387	3,513
Indonesia	1,749	1,763	1,735
China	707	823	838
Czech Republic	389	406	416
USA	203	205	209
United Kingdom	179	190	200
Number of supervised workers	520	523	457
Others (India, Thailand, Turkey, Korea, Singapore, Taiwan and Brazil)	102	65	125

Number of newly hired employees	2017	2018	2019
Male	-	535	494
Female	-	87	111
Under 30	-	132	44
Between 30 and 50	-	255	324
Over 30	-	235	237
Austria	-	354	294
Indonesia	-	74	40
China	-	105	115
Czech Republic	-	47	26
USA	-	24	30
United Kingdom	-	18	19
Others (India, Thailand, Turkey, Korea, Singapore, Taiwan and Brazil)	-	0	81

Employee turnover – number of employees that left the company	2017	2018	2019
Male	-	285	361
Female	-	59	47
Under 30	-	80	100
Between 30 and 50	-	140	160
Over 50	-	124	148
Austria	-	126	168
Indonesia	-	60	68
China	-	88	100
Czech Republic	-	30	16
USA	-	22	26
United Kingdom	-	7	9
Others (India, Thailand, Turkey, Korea, Singapore, Taiwan and Brazil)	-	11	21

NaDiVeG compliance table

NaDiVeG compliance table

Issue	Concept description	Risks for external stakeholders and environment
Respect for human rights	• Policy on human rights and labor standards • Code of Conduct • FSC® certification • sCore TEN (Culture Focus) • Sustainability Policy	• Legal and compliance risk • Risks of non-compliance with human rights might affect employees of suppliers – especially in forestry
Combating of corruption and bribery	• Code of Conduct • Whistleblowing Directive	• Legal and compliance risk • Supply chain risk for Lenzing customers • Risks concerning corruption and bribery may affect the societies of countries where Lenzing operates in a negative way.
Diversity	• sCore TEN (Culture focus) • Corporate Governance Report (Diversity concept) • Policy on human rights and labor standards • Code of Conduct	• Discrimination of gender, cultural background, age and further diversity aspects
Social (employees)	• sCore TEN (values, culture focus, leadership model) • Sustainability Strategy • Sustainability Policy • Works council / trade union at all sites • Policy for Safety, Health and Environment • Life-long learning program • Whistleblowing Directive	• Safety and health risks for employees and other persons working for Lenzing
Social (society)	• Compliance with applicable laws • Sustainability Strategy (Focus area community wellbeing) • Sustainability Policy • Whistleblowing Directive	• Health and safety risks for local communities • Environmental risks • Supply chain risks for Lenzing's downstream customers
Environment	• Sustainability Strategy • Sustainability Policy • Policy for Safety, Health and Environment • Wood & Pulp Sourcing Policy • Group Sustainability Targets • ISO management systems • Enterprise Excellence (EPEX)	• Risks of negative effects on the ecological systems of forests of suppliers and water bodies • Risks of high contribution to climate change through own emissions
Any other issues		For 2019, the analysis has shown that in net terms there are no material risks according to §267a UGB.

Table 24

	Risks for Lenzing	Due diligence/measures for handling the risks	Results
	• Legal and compliance risk • Fines • Lawsuits • Reputation loss	• Whistleblowing System • Works council • Supplier assessment to mitigate supply chain risks	• No cases of human rights abuses 100 % of the total workforce is represented by local unions or works councils. No strikes at any Lenzing production facility in 2019. → **"Empowering people" and "Raw material security" chapter**
	• Legal and compliance risk • Business damage • Reputation loss	• Whistleblowing System • Compliance trainings • Enforcement • Reporting to the audit committee of the supervisory board twice a year • Supplier assessment to mitigate supply chain risks	• No cases of corruption • No significant fines or non-monetary sanctions were imposed as a result of legal infringements or breaches of regulations in 2019. → **"Empowering people" chapter**
	• Compliance risk • Reputation loss	• Grievance mechanism through works council	→ **"Empowering people" chapter** (gender, age, employed people with disabilities)
	• Reputation loss • Negative impact on employer branding • Difficult recruitment • High employee turnover • Loss of know-how and lack of competence • Lawsuits	• Whistleblowing System • Heartbeat for Safety Heartbeat for Health • Life Saving Rules • SHEARS platform • Safety trainings • Health infrastructure at all sites • Specific regional events for employees • Work Councils/ Trade Unions • Total expenditure on lifelong learning and personnel development increased more than 40 %	• Improvement of lost workday cases and injury rate over the last years → **"Empowering people" chapter** → **Annex**
	• Reputation loss • Lawsuits • Business damage	• Whistleblowing System • Community activities at production sites	• No significant fines or non-monetary sanctions were imposed as a result of legal infringements or breaches of regulations in 2019. • Dirty Fashion Report → **"Empowering people" chapter** → **Annex** → **KPIs report cover**
	• Lack of availability of wood due to climate change • Any climate-related disruption in one of the production sites will influence the business model and its success • Reputation loss • Lawsuits • Business damage • Regulatory risks (increased costs for CO_2-emissions, stronger regulations concerning environmental laws)	**Targets:** • 50 % improvement of specific sulfur emissions by 2022 • 20 % improvement of specific water emissions by 2022 • Afforestation project starting in 2018 • FEM 3.0 • Supplier assessment to mitigate supply chain risks • Lenzing Enterprise Excellence Program for continuous improvement (EPEX), • Applying voluntary benchmarks, such as the EU Ecolabel	• On track with targets • Ranked first in Canopy's Hot Button Report • Environmental management system according to ISO 14001:2015 • Certificates: ISO 14001:2015, ISO 9001:2015 and OHSAS 18001:2007 • EcoVadis Gold Status • SAC Higg MSI: better scores for Lenzing's products compared to industry average (e.g. TENCEL™ Lyocell, see page 30) • Lenzing contributing to leading multi-stakeholder initiatives (SAC, ZDHC, EU-BAT) → **"Raw material security" and "Sustainable innovations" chapter**

GRI Content Index

GRI 101: Foundation 2016

General disclosures

Organizational profile

GRI standard	GRI disclosure	Chapter	Page	Remarks and omissions
GRI 102: General Disclosures 2016	102-1 Name of the organization	About this report	7	
	102-2 Activities, brands, products, and services	Value creation in the Lenzing Group	13, 14	
	102-3: Location of headquarters	Sites of the Lenzing Group	18	
	102-4: Location of operations	Lenzing Group: a brief portrait; Sites of the Lenzing Group	12; 18, 19	
	102-5: Ownership and legal form	Lenzing Group: a brief portrait; Nature of Ownership	12	
	102-6: Markets served	Value creation in the Lenzing Group; Sites of the Lenzing Group	14; 18, 19	
	102-7: Scale of the organization	Lenzing Group: Sustainability key performance indicators	Cover; 12	
	102-8: Information on employees and other workers	Employees: International workforce; Annex: Lenzing Aktiengesellschaft Workforce; Annex: Additional information on chapters	92; 106; 108	Temporary contracts are only concluded on an exceptional basis and account for less than 1 percent of the contracts in the Lenzing Group (employees and apprentices). New hires usually are provided with contracts limited to a probation period which are changed into permanent contracts after this trial period has expired.
	102-9: Supply chain	Value creation in the Lenzing Group	13, 14	
	102-10: Significant changes to the organization and its supply chain	Highlights of the year; About this report	4; 7	Despite the new production facilities in Brazil and Thailand, there are no significant changes to the size, structure, ownership, or supply chain of the Lenzing Group in 2019.
	102-11: Precautionary Principle or approach	United Nations Sustainable Development Goals (SDGs); The sustainability strategy	25-27	
	102-12: External initiatives	United Nations Sustainable Development Goals (SDGs); Lenzing's practice of circular economy; Partnering for systemic change	25, 26; 46; 86-90	
	102-13: Membership of associations	Decarbonization; Partnering for systemic change	70; 87, 88	

Strategy

GRI standard	GRI disclosure	Chapter	Page	Remarks and omissions
GRI 102: General Disclosures 2016	102-14: Statement from senior decision-maker	Letter from the CEO	8, 9	
	102-15: Key impacts, risks, and opportunities	Value creation in the Lenzing Group: Resilience of the business model: well prepared for the future; Risk Management; Annex: NaDiVeG compliance table	15-17; 23; 110, 111	

Ethics and integrity

GRI standard	GRI disclosure	Chapter	Page	Remarks and omissions
GRI 102: General Disclosures 2016	102-16: Values, principles, standards, and norms of behavior	The sustainability strategy; Lenzing Group Annual Report: Corporate Governance Report	27, 28 69	

Governance

GRI standard	GRI disclosure	Chapter	Page	Remarks and omissions
GRI 102: General Disclosures 2016	102-18: Governance structure	Governance structure for sustainability Lenzing Group Annual Report: Corporate Governance Report	22 69	

Stakeholder engagement

GRI standard	GRI disclosure	Chapter	Page	Remarks and omissions
GRI 102: General Disclosures 2016	102-40: List of stakeholder groups	Partnering for systemic change: Key stakeholders 2019	86	
	102-41: Collective bargaining agreements	Empowering people: Employees	94	
	102-42: Identifying and selecting stakeholders	Partnering for systemic change: Key stakeholders 2019	86	
	102-43: Approach to stakeholder engagement	Partnering for systemic change: Key stakeholders 2019	86-88	
	102-44: Key topics and concerns raised	Basis: Materiality analysis; Partnering for systemic change: Key stakeholders 2019	24; 86	

GRI Content Index

Reporting practice

GRI standard	GRI disclosure	Chapter	Page	Remarks and omissions
GRI 102: General Disclosures 2016	102-45: Entities included in the consolidated financial statements	About this report; Lenzing Group Annual Report	7 156	
	102-46: Defining report content and topic Boundaries	Basis: Materiality analysis; focus paper "Materiality Analysis";	24; www.lenzing.com/materiality-analysis	
	102-47: List of material topics	Basis: Materiality analysis; Strategic focus areas; focus paper "Materiality Analysis".	24; www.lenzing.com/materiality-analysis	
	102-48: Restatements of information	About this report; Annex: Endnotes	7; 130-132	
	102-49: Changes in reporting	Basis: Materiality analysis	24	
	102-50: Reporting period	About this report	7	
	102-51: Date of most recent report	About this report	7	
	102-52: Reporting cycle	About this report	7	
	102-53: Contact point for questions regarding the report	About this report	7	
	102-54: Claims of reporting in accordance with the GRI Standards	About this report	7	
	102-55: GRI Content Index	Annex: GRI Content Index	112-121	
	102-56: External assurance	Annex: Independent Assurance Report on the Combined Consolidated Nonfinancial Report 2019	122	

Material topics:

Wood sourcing

GRI standard	GRI disclosure	Chapter	Page	Remarks and omissions
GRI 103: Management Approach 2016	103-1: Explanation of the material topic and its boundaries	Basis: Materiality analysis; focus paper "Materiality Analysis"; Raw Material security	24; www.lenzing.com/materiality-analysis, 43, 44	
	103-2: Management approach and its components	The sustainability strategy: Strategic focus areas; Targets: Fully on track; Raw Material security	29; 33, 34; 52	
	103-3: Evaluation of the management approach	Raw Material security	52, 53	
GRI 204: Procurement Practices 2016	204-1: Proportion of spending on local suppliers	Raw material security: Sustainable sourcing of wood and dissolving wood pulp; Sustainable chemicals sourcing; Sustainable chemicals sourcing	55, 56; 60	
GRI 304: Biodiversity 2016	304-2: Significant impacts of activities, products, and services on biodiversity	Raw material security: Sustainable sourcing of wood and dissolving wood pulp; focus paper "Wood and Pulp"	57, 58	
	304-3: Habitats protected or restored	Raw material security: Sustainable sourcing of wood and dissolving wood pulp;	57, 58	
GRI 308: Supplier environmental assessment 2016	308-1: New suppliers that were screened using environmental criteria	Raw material security: Sustainable sourcing of wood and dissolving wood pulp;	54, 55	
	308-2: Negative environmental impacts in the supply chain and actions taken	Raw material security: Procurement management and supplier	52, 53	Number of suppliers identified as having significant actual and potential negative environmental impacts: 0
	Own indicator: Proportion of suppliers with EcoVadis rating [%]	Lenzing Group: Sustainability key performance indicators; Targets: Fully on track	Cover; 35	

Sustainable Innovations

GRI standard	GRI disclosure	Chapter	Page	Remarks and omissions
GRI 103: Management Approach 2016	103-1: Explanation of the material topic and its boundaries	Materiality analysis; focus paper "Materiality Analysis"; Sustainable innovations: Sustainability drives innovation	24; www.lenzing.com/materiality-analysis; 75	
	103-2: Management approach and its components	The sustainability strategy: Strategic focus areas; Targets: Fully on track; Sustainable innovations: Sustainability drives innovation	29; 33-34; 75	
	103-3: Evaluation of the management approach	Sustainable innovations: Sustainability drives innovation	75	
	Own indicator: Proportion of suppliers with EcoVadis rating [%]	Lenzing Group: Sustainability key performance indicators; Targets: Fully on track	Cover; 35	
	Own indicator: R&D expenditure, calculated acc. to Frascati	Lenzing Group: Sustainability key performance indicators; Sustainable innovations	Cover, 75	
	Own indicator: Specialty fiber share [%]	Lenzing Group: Sustainability key performance indicators	Cover	

GRI Content Index

Energy use

GRI standard	GRI disclosure	Chapter	Page	Remarks and omissions
GRI 103: Management Approach 2016	103-1: Explanation of the material topic and its boundaries	Basis: Materiality analysis; focus paper "Materiality Analysis"; Decarbonization	24; www.lenzing.com/materiality-analysis; 62	
	103-2: Management approach and its components	The sustainability strategy: Strategic focus areas; Targets: Fully on track; Decarbonization	29; 33; 35; 62	
	103-3: Evaluation of the management approach	Decarbonization	62	
GRI 302: Energy 2016	302-1: Energy consumption within the organization	Decarbonization	66, 67	The disclosure of the detailed energy consumption is not possible for reasons of competition.
	302-3: Energy intensity	Lenzing Group: Sustainability key performance indicators; Decarbonization	Cover, 67	

Air Emissions

GRI standard	GRI disclosure	Chapter	Page	Remarks and omissions
GRI 103: Management Approach 2016	103-1: Explanation of the material topic and its boundaries	Basis: Materiality analysis; focus paper "Materiality Analysis"; Sustainable innovations: Process innovation to improve efficiency and sustainability	24; www.lenzing.com/materiality-analysis; 80	
	103-2: Management approach and its components	The sustainability strategy: Strategic focus areas; Targets: Fully on track; Sustainable innovations: Process innovation to improve efficiency and sustainability	29; 33, 34; 80	
	103-3. Evaluation of the management approach	Sustainable innovations: Process innovation to improve efficiency and sustainability	80	
GRI 305: Emissions 2016	305-7: Nitrogen oxides (NOX), sulfur oxides (SOX), and other significant air emissions	Process innovations to improve efficiency and sustainability	81	

Climate change

GRI standard	GRI disclosure	Chapter	Page	Remarks and omissions
GRI 103: Management Approach 2016	103-1: Explanation of the material topic and its boundaries	Value creation in the Lenzing Group: Resilience of the business model: well prepared for the future; Basis: Materiality analysis; focus paper "Materiality Analysis"; Decarbonization	15; 24; www.lenzing.com/materiality-analysis; 61, 68, 69	
	103-2: Management approach and its components	The sustainability strategy: Strategic focus areas; Targets: Fully on track; Decarbonization	29; 33, 35; 61	
	103-3: Evaluation of the management approach	Decarbonization	61	
GRI 201: Economic Performance 2016	201-2: Financial implications and other risks and opportunities due to climate change	Value creation in the Lenzing Group: Resilience of the business model: well prepared for the future	15-17	Further reporting regarding the specific impacts and financial implications of the respective opportunities and risks (according to TCFD) is planned for the coming years.
GRI 305: Emissions 2016	305-1: Energy direct (Scope 1) GHG emissions	Decarbonization	67	
	305-2: Energy indirect (Scope 2) GHG emissions	Decarbonization	67	
	305-4: GHG emissions intensity	Lenzing Group: Sustainability key performance indicators; Decarbonization	Cover; 67	

Water use and pollution

GRI standard	GRI disclosure	Chapter	Page	Remarks and omissions
GRI 103: Management Approach 2016	103-1: Explanation of the material topic and its boundaries	Basis: Materiality analysis; focus paper "Materiality Analysis"; Water Stewardship	24; www.lenzing.com/materiality-analysis; 71, 72	
	103-2: Management approach and its components	The sustainability strategy: Strategic focus areas; Targets: Fully on track; Water Stewardship; Water consumption	29; 33, 34; 71, 72	
	103-3: Evaluation of the management approach	Water Stewardship	71	
GRI 303: Water 2016	GRI 303-1: Water withdrawal by source	Water Stewardship: Water consumption	72, 73	303-1 iii.-v and b not applicable
GRI 306: Effluents and Waste 2016	GRI 306-1: Water discharge by quality and destination	Water Stewardship: Waste water (water effluents)	72-74	
	Own indicator: Specific water use [m³/t, 2014 = 100 %]	Water Stewardship: Water consumption	73	
	Own indicator: Specific water emissions after waste water treatment [kg/t, 2014 = 100 %]	Lenzing Group: Sustainability key performance indicators; Water Stewardship: Waste water (water effluents)	Cover; 74	

GRI Content Index

Chemicals and toxicity

GRI standard	GRI disclosure	Chapter	Page	Remarks and omissions
GRI 103: Management Approach 2016	103-1: Explanation of the material topic and its boundaries	Basis: Materiality analysis; focus paper "Materiality Analysis"; Raw material security: Sustainable chemicals sourcing;	24; www.lenzing.com/materiality-analysis; 60	
	103-2: Management approach and its components	Raw material security: Sustainable chemicals sourcing;	60	
	103-3: Evaluation of the management approach	Raw material security: Sustainable chemicals sourcing	60	
	Own indicator: Proportion of suppliers with EcoVadis rating [%]	Lenzing Group: Sustainability key performance indicators; Targets: Fully on track	Cover; 35	
	Own indicator: Specific water emissions after waste water treatment [kg/t, 2014 = 100 %]	Lenzing Group: Sustainability key performance indicators; Waste water (water effluents)	Cover; 74	

Product responsibility

GRI standard	GRI disclosure	Chapter	Page	Remarks and omissions
GRI 103: Management Approach 2016	103-1: Explanation of the material topic and its boundaries	Basis: Materiality analysis; focus paper "Materiality Analysis"; Sustainable Innovation: Product quality and safety	24; www.lenzing.com/materiality-analysis; 81, 82	
	103-2: Management approach and its components	Raw material security: Sustainable sourcing of wood and dissolving wood pulp; Sustainable Innovation: Product quality and safety	53-55; 81, 82	
	103-3: Evaluation of the management approach	Raw material security: Sustainable sourcing of wood and dissolving wood pulp; Sustainable Innovation: Product quality and safety	53-55; 81, 82	
GRI 416: Customer Health & Safety 2016	416-1: Assessment of the health and safety impacts of product and service categories	Sustainable Innovation: Product quality and safety	81	
	416-2: Incidents of non-compliance concerning the health and safety impacts of products and services	Sustainable Innovation: Product quality and safety	-	There were no incidents of non-compliance concerning the health and safety impacts of products and services in the reporting period.
GRI 417: Marketing & Labeling 2016	417-2: Incidents of non-compliance concerning product and service information and labeling	Sustainable sourcing of wood and dissolving wood pulp; Product quality and safety	-	There were no incidents of non-compliance with regulations and voluntary codes concerning product and service information and labeling in the reporting period.

Sustainable materials (LCA)

GRI standard	GRI disclosure	Chapter	Page	Remarks and omissions
GRI 103: Management Approach 2016	103-1: Explanation of the material topic and its boundaries	Basis: Materiality analysis; focus paper "Materiality Analysis"; Sustainable innovations: Sustainability drives innovation	24; www.lenzing.com/materiality-analysis; 76	
	103-2: Management approach and its components	Sustainable innovations: Sustainability drives innovation	76	
	103-3: Evaluation of the management approach	Sustainable innovations: Sustainability drives innovation	76	
	Own indicator: Specialty fiber share [%]	Lenzing Group: Sustainability key performance indicators	Cover	

Waste and circular economy

GRI standard	GRI disclosure	Chapter	Page	Remarks and omissions
GRI 103: Management Approach 2016	103-1: Explanation of the material topic and its boundaries	Value creation in the Lenzing Group: Resilience of the business model: well prepared for the future; Basis: Materiality analysis; The sustainability strategy: Three strategic principles; focus paper "Materiality Analysis"; Circular economy	15; 24; 28; www.lenzing.com/materiality-analysis; 40	
	103-2: Management approach and its components	The sustainability strategy: Strategic focus areas; Circular economy	29; 40-45	
	103-3: Evaluation of the management approach	Circular economy	40	
GRI 306: Effluents & Waste 2016	306-2: Waste by type and disposal method	Lenzing's practice of circular economy: Waste management	46, 47	

Other important topics:

Compliance

GRI standard	GRI disclosure	Chapter	Page	Remarks and omissions
GRI 103: Management Approach 2016	103-1: Explanation of the material topic and its boundaries	Group Annual Report: Compliance	69	
	103-2: Management approach and its components	Group Annual Report: Compliance	69	
	103-3: Evaluation of the management approach	Group Annual Report: Compliance	69	
	205-3: Confirmed incidents of corruption and actions taken	Lenzing AG workforce; Group Annual Report: Compliance	106; 80	
GRI 206: Anti-competitive behavior 2016	206-1: Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	Lenzing AG workforce	106	

GRI Content Index

Labor practices/human rights (NaDiVeG)

GRI standard	GRI disclosure	Chapter	Page	Remarks and omissions
GRI 103: Management Approach 2016	103-1: Explanation of the material topic and its boundaries	Empowering people	91	
	103-2: Management approach and its components	Empowering people	91	
	103-3: Evaluation of the management approach	Empowering people	91	
GRI 401: Employment 2016	401-1: New employee hires and employee turnover	Empowering people: Diversity; Appendix: Additional information on chapters	92; 108	
GRI 403: Occupational health and safety 2018	403-1 Occupational health and safety management system	Empowering people: Health and Safety	95, 96	
	403-2 Hazard identification, risk assessment, and incident investigation	Empowering people: Health and Safety	95-97	
	403-3 Occupational health services	Empowering people: Health and Safety	95	
	403-4 Worker participation, consultation, and communication on occupational health and safety	Empowering people: Health and Safety	96, 97	
	403-5 Worker training on occupational health and safety	Empowering people: Health and Safety	97	
	403-6 Promotion of worker health	Empowering people: Health and Safety	95, 96	
	403-7 Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	Empowering people: Health and Safety	97	

Labor practices/human rights (NaDiVeG)

GRI standard	GRI disclosure	Chapter	Page	Remarks and omissions
	403-9 Work-related injuries	Annex: Supplementary information pursuant to §243b UGB / Lenzing Aktiengesellschaft safety	106	**For employees:** No high-consequence work-related injuries with an expected recovery time greater than 6 months; Number of hours worked: 14,104,975; 0 fatalities for 2019; **For contractors:** No high-consequence work-related injuries with an expected recovery time greater than 6 months; Number of hours worked: 5,160,620; 0 fatalities for 2019; **Main injury types:** • Cuts & Lacerations • Chemical Burn • Bruise • Abrasions • Dislocation **Work-related hazards that pose a risk of high-consequence injuries (from industry standard guidance):** • Biological hazards • Chemical hazards • Physical hazards • Safety hazards • Ergonomic hazards • Psychosocial hazards Lenzing performs continuous risk assessments "Hazop & Hazid", and incident investigation to eliminate any potential hazards.
GRI 404: Training and education 2016	404-2: Programs for upgrading employee skills and transition assistance programs	Empowering people: Employees	94, 95	
GRI 406: Non-discrimination 2016	406-1: Incidents of discrimination and corrective actions taken	Diversity	94	
GRI 413: Local communities 2016	413-1: Operations with local community engagement, impact assessments, and development programs	Raw material security: Sustainable sourcing of wood and dissolving wood pulp; Empowering people: Enhancing community wellbeing	58, 59; 98, 99	
	413-2: Operations with significant actual and potential negative impacts on local communities	Water stewardship; Empowering people: Enhancing community wellbeing	71, 98, 99	

Independent Assurance Report on the Non-Financial Report

To the Board of Directors of Lenzing Aktiengesellschaft.

Our engagement applied to the German version of the NFI-Report 2019. This text is a translation of the Independent Assurance Report issued in German, whereas the German text is authoritative.

We have performed an independent limited assurance engagement on the combined consolidated non-financial report" ("NFI-report") for the financial year 2019 of

Lenzing Aktiengesellschaft,
("the Company").

Management's responsibility

The Company's management is responsible for the proper preparation of the NFI-Report in accordance with the reporting criteria. The Company applies the legal requirements of the Austrian Sustainability and Diversity Improvement Act (§§ 243b and 267a UGB) and the sustainability reporting guidelines of the Global Reporting Initiative (GRI Standards, Option "Core") as reporting criteria and publishes the NFI-report as "Sustainability Report 2019 Lenzing Group".

The responsibility of the legal representatives of the company includes the selection and application of reasonable methods for non-financial reporting (especially the selection of material topics) as well as the use of assumptions and estimates for individual non-financial disclosures that are reasonable under the circumstances. Furthermore, the responsibility includes the design, implementation and maintenance of systems, processes and internal controls relevant for the preparation of the sustainability reporting in a way that is free of – intended or unintended – material misstatements.

Auditors' responsibility and scope of the engagement

Our responsibility is to state whether, based on our procedures performed, anything has come to our attention that causes us to believe that the NFI-Report of the Company is not in accordance with the legal requirements of the Austrian Sustainability and Diversity Improvement Act (§§ 243b and 267a UGB) and the sustainability reporting guidelines of the Global Reporting Initiative (GRI Standards), Option "Core", in all material respects.

Our engagement was conducted in conformity with the International Standard on Assurance Engagements (ISAE 3000) applicable to such engagements. These standards require us to comply with our professional requirements including independence requirements, and to plan and perform the engagement to enable us to express a conclusion with limited assurance, taking into account materiality.

An independent assurance engagement with the purpose of expressing a conclusion with limited assurance is substantially less in scope than an independent assurance engagement with the purpose of expressing a conclusion with reasonable assurance, thus providing reduced assurance. In spite of conscientious planning and execution of the engagement it cannot be ruled out that material mistakes, unlawful acts or irregularities within the non-financial reporting will remain undetected.

The procedures selected depend on the auditor's judgment and included the following procedures in particular:

- Inquiries of personnel on corporate level, which are responsible for the materiality analysis, in order to gain an understanding of the processes for determining material sustainability topics and respective reporting boundaries of the Company;
- A risk assessment, including a media analysis, on relevant information concerning the sustainability performance of the Company in the reporting period;

- Evaluation of the design and implementation of the systems and processes for the collection, processing and control of the disclosures on environmental, social and employee matters, respect for human rights and anti-corruption and bribery, including the consolidation of the data;

- Inquiries of personnel on corporate level responsible for providing and consolidating and for carrying out internal control procedures concerning the disclosures on concepts, risks, due diligence processes, results and performance indicators;

- Inspection of selected internal and external documents in order to determine whether qualitative and quantitative information is supported by sufficient evidence and presented in an accurate and balanced manner;

- Assessment of local data collection and reporting processes and reliability of reported data via a sampling survey at the site in Nanjing (China);

- Analytical evaluation of the data and trend explanations of quantitative disclosures regarding the GRI Standards listed in the GRI-Index, submitted by all sites for consolidation at corporate level;

- Evaluation of the consistency of the for the Company applicable requirements of the Austrian Sustainability and Diversity Improvement Act (§§ 243b and 267a UGB) and the GRI Standards, Option "Core" with disclosures and indicators of the NFI-report;

- Evaluation of the overall presentation of the disclosures by critical reading of the NFI-report.

The procedures that we performed do not constitute an audit or a review in accordance with Austrian professional guidelines, International Standards on Auditing (ISA) or International Standards on Review Engagements (ISRE). Our engagement did not focus on revealing and clarifying of illegal acts such as fraud, nor did it focus on assessing the efficiency of management. Furthermore, it is not part of our engagement to review future-related disclosures, figures from previous periods and statements from external information sources and expert opinions and references to additional external reporting sources of the Company. Disclosures which were audited within the scope of the Annual Financial Statement were assessed for correct presentation (no substantial testing).

This assurance report is issued based on the assurance agreement concluded with the Company. Our responsibility and liability towards the Company and any third party is subject to paragraph 7 of the General Conditions of Contract for the Public Accounting Professions. The respective latest version of the AAB is accessible at http://www.kpmg.at/aab.

Conclusion

Based on the procedures performed, nothing has come to our attention that causes us to believe that the NFI-Report of the Company is not in accordance with the legal requirements of the Austrian Sustainability and Diversity Improvement Act (§§ 243b and 267a UGB) and the GRI Standards, Option "Core" in all material respects.

Linz, 03 March 2020

KPMG Austria GmbH
Wirtschaftsprüfungs- und Steuerberatungsgesellschaft

Gabriele Lehner
Austrian Chartered Accountant

Glossary

Austrian Sustainability and Diversity Improvement Act

The "Nachhaltigkeits-und Diversitätsverbesserungsgesetz" (NaDiVeG) implements the European "NFI Directive" (2014/95/EU) in Austria. It expands the reporting obligations in the area of non-financial information for large companies of public interest, with an average of more than 500 employees.

Best available techniques (BATs)

Best available techniques means the most effective and advanced stage in the development of activities and their methods of operations. The techniques should indicate the practical suitability of particular techniques for providing, in principle, the basis for emission limit values designed to prevent, and, where this is not practicable, generally to reduce emissions and the impact on the environment as a whole.

Biobased

Biobased products are those that originate partially or completely from renewable resources. These products can be either biodegradable or non-biodegradable.

Biobased chemicals

Chemicals from the biorefinery, originating from renewable resources and also referred to in this report as biorefinery products

Biodegradable

The ability of a substance to be broken down by micro-organisms (bacteria, fungi, etc.) into carbon dioxide (CO_2) and water, so that it can be consumed by the environment. Test methods describe a certain time, conditions of temperature, oxygen availability, and humidity, and set a certain percentage of breakdown.

Biodiversity

This is the variability among living organisms from all sources including, among others, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part. This includes diversity within species, between species and of ecosystems.

Bioenergy

Bioenergy is energy derived from biomass. The term refers to various forms of energy, including heat and electricity. Also the biomass that contains this energy can be referred to as bioenergy. The main sources of bioenergy are renewable resources.

Biorefinery

A biorefinery is a facility for sustainable processing of biomass into a spectrum of marketable biobased biorefinery products and bioenergy.

Blockchain

Blockchains are forgery-proof, distributed data structures in which transactions are recorded in the time sequence, traceable, unchangeable and without a central instance linked in a peer-to-peer network.

The blockchain technology enables digital traceability of TENCEL™ branded fibers and the corresponding wood sources across each production and distribution step. The technology also allows consumers to verify the garment composition and the underlying textile supply chain.

Canopy Planet Society

The Canopy Planet Society is a Canadian nonprofit organization that focuses on the conservation and protection of ancient and endangered forests.

Carbon footprint

A carbon footprint is the sum of greenhouse gas emissions and greenhouse gas removals of a product system or an organization, expressed as a carbon dioxide equivalent.

Cellulose

The raw material for pulp production. Cellulose is a component of all plants. The cellulose content of wood is about 40 percent.

Chain of custody

The chain of custody documents the flow of materials and raw materials through various stages right up to the final product. It is important for the certification of raw materials and their traceability. In order to ensure that final products really meet the requirements of the standard, initiatives trace the flow of materials throughout the chain of custody.

COD

Chemical oxygen demand. A further method for assessing the organic load of waste water (besides BOD biological oxygen demand). It measures the degree to which the waste water can undergo chemical oxidation.

Compliance
In general, compliance means conforming to a rule, such as a specification, policy, standard or law. Regulatory compliance describes the goal that organizations aspire to achieve in their efforts to ensure that they are aware of and take steps to comply with relevant laws, policies, and regulations.

Co-product
By-products recovered during fiber production.

Debottlenecking
Increasing the production capacity of existing plants by eliminating bottlenecks.

Decarbonization
Decarbonization denotes the declining average carbon intensity (CO_2 emission per unit of a product) over time. Products can be e.g. (primary) energy, gross domestic product, or any units produced by a company.

Dissolving pulp
A special kind of pulp with special characteristics used to manufacture viscose, modal and lyocell fibers and other cellulose-based products. This grade of pulp is characterized by higher alpha cellulose content and by a high degree of purity.

ECF
Elemental chlorine free – a bleaching process without using elemental chlorine

EcoVadis
EcoVadis aims to promote the environmental and social practices of companies through CSR performance monitoring within the supply chain and to support companies in improving sustainability. EcoVadis operates the first collaborative platform to deliver CSR ratings from suppliers to global supply chains.

Environmental, social and governance standards (ESG).
Environmental, social and governance (ESG) refers to the three central factors in measuring the sustainability and ethical impact of an investment in a company or business.

Eutrophication
A process of pollution that occurs when a lake or stream becomes over-rich in plant nutrient; as a consequence it becomes overgrown in algae and other aquatic plants.

FAO – Food and Agricultural Organization of the United Nations
The Food and Agriculture Organization of the United Nations (FAO) is a specialized agency of the United Nations that leads international efforts to defeat hunger. It is based in Rome.

FSC®
The Forest Stewardship Council® (FSC) is an international non-profit organization for wood certification.

Furfural
A clear yellowish liquid with a characteristic scent of almonds. During viscose fiber production, beech wood is cooked and furfural is released in a double distillation process.

Global Reporting Initiative (GRI)
The Global Reporting Initiative (known as GRI) is an international independent standards organization that helps businesses, governments and other organizations understand and communicate their impacts on issues such as climate change, human rights and corruption. The purpose of GRI is to develop globally applicable guidelines for sustainability reporting.

Greenhouse gas (GHG) emissions
Emissions of gases which contribute to global warming by absorbing infrared radiation, thereby heating the atmosphere. The main contributors are carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O).

Growing stock
Volume over bark of all living trees more than a certain diameter (e.g. 10 cm) at breast height.

Hemicellulose
The designation for carbohydrates that are contained in wood but that are not cellulose. They can have the widest variety of compositions depending on the type of wood involved, e.g. xylan (in beech wood).

Glossary

Higg Index
The Higg Index is the core driver of the Sustainable Apparel Coalition (SAC), an association of leading companies in the textile and chemical industry, non-profit organizations as well as research and educational experts aiming to create a more sustainable international textile industry. This suite of self-assessment tools empowers brands, retailers and facilities of all sizes, at every stage in their sustainability journey, to measure their environmental and social and labor impacts and identify areas for improvement. The Higg index provides a holistic overview of the sustainability performance of a product or company – a big-picture perspective that is essential for progress to be made.

Integration
All stages of fiber production are concentrated at one and the same site, from wood, the raw material, to pulp and fiber production.

International Labor Organization (ILO)
The International Labor Organization (ILO) is a United Nations agency that sets international labor standards and promotes social protection and work opportunities for all. The ILO has 187 member states: 186 of the 193 UN member states plus the Cook Islands are members of the ILO.

IOSH – Institute of Occupational Safety and Health
IOSH is the only Chartered body for safety and health professionals. Their members follow a strict Code of Conduct and a formal professional development program.

ISO 14001:2015
An international standard for the certification of environmental management systems.

ISO 9001:2015
An international standard for the certification of quality management systems.

KPI
The term key performance indicator describes indicators in business economics, which are used to measure progress or achievements related to important targets or critical success factors within an organization.

LCA
Life Cycle Assessment is a systematic analysis of the environmental impacts of products throughout their life cycle ("from cradle to grave").

Lignin
A polyaromatic component of wood that cannot be used for fiber production. It is used for generating power and to recover co-products.

Lignosulfonate
The decomposition products of lignin from wood after pulping.

Lyocell fibers
Lyocell fiber is the latest generation of wood-based cellulosic fiber. The generic fiber name is Lyocell, the branded products from Lenzing are marketed as TENCEL™ and VEOCEL™ fibers.

MINT
Minor Injury No Treatment. Cases, such as mosquito bites.

Modal
Modal is a viscose fiber refined under modified viscose production conditions and spinning conditions. It is characterized by a particular softness and is the preferred fiber for high-quality underwear and similar products. The fibers have improved use characteristics such as tenacity, dimensional stability, and so forth. Lenzing markets these fibers under TENCEL™ Modal.

MSI
Materials Sustainability Index. The quantitative part of the Higg Index, scoring materials according to their environmental impacts in the categories global warming, eutrophication, water scarcity, and abiotic resource depletion (fossil fuels), and according to chemistry applied.

Net-benefit thinking
Lenzing's net-benefit products offer positive impacts and benefits to environment, society, and value chain partners, which are better than most competing alternatives in the market. Net-benefit products take a life-cycle perspective and thus include both upstream and downstream value chain processes. Net-benefit thinking de-

scribes the performance of our specialties and forward solutions that form part of the sCore TEN strategy.

NMMO
N-Methylmorpholine N-oxide is an aqueous, biodegradable, organic solvent.

Nonwovens
Nonwoven materials, fleece. Nonwovens made from Lenzing fibers are used for sanitary, medical, and cosmetics applications.

Offsetting
Reducing the damage caused by releasing carbon dioxide into the environment by doing other things that remove carbon dioxide from the atmosphere, e.g. through climate protection projects.

OHSAS 18001:2007
Occupational Health and Safety Assessment Series (OHSAS) is a certification system for management systems pertaining to work safety.

PEFC™
The Program for the Endorsement of Forest Certification Schemes™ (PEFC) is an international non-profit organization for wood certification.

Plantation
Forests of exotic species that have been planted or seeded by human intervention and that are under intensive stand management, fast growing, short rotation. Examples: poplar, acacia or eucalyptus plantations.

Pre-consumer
Pre-consumer upcycling is the reclamation of waste materials that were created during the manufacturing process prior to their delivery to a consumer (such as cotton scraps from garment making).

Post-consumer
A product made from post-consumer material is made from waste that has been used and disposed of by a consumer (such as used clothing).

Salutogenesis
Developed by Aaron Antonovsky († July 7, 1994), an Israeli-American professor of sociology. In contrast to pathogenesis, the salutogenic approach does not focus on the question “What makes a human being ill?” but rather “What keeps a human being healthy?”

Science-based targets
Targets adopted by companies to reduce greenhouse gas (GHG) emissions are considered “science-based” if they are in line with the level of decarbonization required to keep global temperature increase below 2 °C compared to pre-industrial temperatures, as described in the Assessment Report of the Intergovernmental Panel on Climate Change (IPCC). [Applies to the 4th or 5th AR of IPCC as well as modeling of the IEA.]

Scope 1, 2 and 3 emissions
Scope 1 emissions are direct emissions from owned or controlled sources. Scope 2 emissions are indirect emissions from the generation of purchased energy. Scope 3 emissions are all indirect emissions (not included in scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions.

sCore TEN
The name of the Lenzing Group’s corporate strategy stands for a steady focus on performance (scoring) and the strengthening of the core business (core) as well as for long-term growth with specialty fibers like TENCEL™ and VEOCEL™.

SHEARS
Safety, Health and Environment Action Reporting System of the Lenzing Group

Semi-natural forest
Forests of native species, established either through assisted or natural regeneration, or a mix of these under intensive stand management (includes forests in which assisted regeneration carried out with same species and similar species composition as in the natural forests in the area). Examples: many production forests in Europe, some teak plantations.

SFI
Sustainable Forestry initiative

Glossary

Stakeholders
All internal and external persons or groups affected directly or indirectly by business activities currently or in the future.

Standard fibers
Standard LENZING™ fibers for textile applications (viscose, modal, lyocell) and standard LENZING™ fibers for nonwoven applications (viscose, lyocell) are fibers that are not designated as specialties

Sustainable Apparel Coalition (SAC)
An association of leading companies, non-profit organizations as well as research and educational experts aiming to create a more sustainable international apparel, footwear and textile industry. The SAC is the developer of the Higg Index.

TCF
Totally chlorine free (bleaching process)

Textile Exchange (TE)
Founded in 2002, Textile Exchange is a global nonprofit organization that works closely with all sectors of the textile supply chain to find the best ways to minimize and even reverse the negative impacts on water, soil, air, animals, and the human population.

VBV Austrian Sustainability Index VÖNIX
VÖNIX is Austria's first sustainability index. It was created by the VBV Austrian pension fund and is comprised of listed Austrian companies that are leaders in terms of social and environmental performance.

Viscose fibers
Regenerated cellulose fibers produced from raw materials of plant origin (e.g. wood) using the viscose process.

Wood-based cellulose fiber
A fiber industrially produced from raw materials of plant origin (e.g. wood), known in the industry as man-made cellulose fiber.

World Economic Forum (WEF)
The World Economic Forum (WEF) is a foundation which is primarily known for its annual meeting of the same name that takes place annually in Davos in the canton of Grisons.

Xylose
Wood sugar, component of thick liquor and base material for xylitol (sweetener that inhibits tooth decay)

ZDHC – Zero discharge of hazardous chemicals
The ZDHC Foundation is a global center of excellence in responsible chemical management which works towards zero discharge of hazardous chemicals in the textile, leather, and footwear value chain to improve the environment and people's wellbeing.

List of figures and tables

Endnotes

1. https://www.wirerzeugenzukunft.at/#corona [Accessed 21 January 2019]

2. https://www.nonwovens-industry.com/contents/view_live-from-shows/2019-03-27/idea19-award-winners-unveiled/ [Accessed 21 January 2019]

3. https://www.land-oberoesterreich.gv.at/226276.htm [Accessed 21 January 2019]

4. https://www.itma.com/media/the-itma-blog/blog-posts/blog/2019/06/20/itma-2019-is-open-for-sustainable-innovation [Accessed 21 January 2019]

5. https://www.ksw.or.at/PortalData/1/Resources/services-umwelt/asra/PA_ASRA_Verleihung_12.11.2019_V3_Final.pdf [Accessed 21 January 2019]

6. "The Group" (for better readability occasionally referred to as "Lenzing") comprises Lenzing Aktiengesellschaft and its subsidiaries.

7. Nachhaltigkeits- und Diversitätsverbesserungsgesetz (§§243b, 267a UGB)

8. A list of the Group companies as of December 31, 2019 is provided in Note 42 of the Annual Report.

9. The financial year of the Lenzing Group is the calendar year (January 1 to December 31).

10. Based on the European Commission guidelines on non-financial reporting: Supplement on reporting climate-related information (2019/C 209/01). Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.C_.2019.209.01.0001.01.ENG&toc=OJ:C:2019:209:FULL [Accessed 21 January 2019]

11. www.lenzing.com/materiality-analysis

12. https://www.un.org/sustainabledevelopment/development-agenda [Accessed 21 January 2019]

13. www.lenzing.com/sustainability-strategy

14. In addition to its own dissolving wood pulp production, Lenzing procures dissolving wood pulp in the global market.

15. 2018 Quantis Report "Measuring Fashion"

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18. This target will allow Lenzing's stringent internal Group standard to be met at all Lenzing production sites.

19. COD figures are indicators of water quality.

20. Most relevant suppliers comprise 80 percent of the Lenzing Group's purchasing spend.

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54. Calculated on basis of the Higg MSI

55. Canopy Planet Society

56. MMCF: man-made cellulosic fibers

57. Employees including apprentices (excluding supervised workers) in Austria, the Czech Republic, United Kingdom, United States, China, Taiwan, Indonesia, India, Thailand, Turkey, Korea, Singapore and Brazil.

58. Restatement: Employee total including apprentices; the 2018 figure has been changed accordingly (was excluding apprentices).

59. Due to the transition to a 5-shift system, these employees (=0.9 FTE) are treated as part-time employees.

60. Restatement: Employee total including apprentices; therefore the 2018 female quota was recalculated and has changed slightly (2018 was excluding apprentices).

61. Restatement: Employee total including apprentices; therefore the 2017 and 2018 proportion over-50s was recalculated and has changed slightly (employees were excluding apprentices before).

62. Restatement: 2018 turnover rate was based on FTE; change of the calculation system to heads in 2019; the 2018 rate was recalculated and changed accordingly.

63. Restatement: Employee total including apprentices; therefore the 2017 and 2018 percentage was recalculated and has changed slightly (employees were excluding apprentices before).

64. In 2017 PT. South Pacific Viscose and Lenzing Biocel Paskov a.s. concluded collective bargaining agreements.

65. Restatement: Employee total including apprentices; therefore the 2018 percentage was recalculated and has changed slightly (employees were excluding apprentices before).

66. Restatement of the 2017 Lenzing Group Sustainability Report. There is no works council at the facility in Paskov.

67. Maternity leaves are included in all calculations.

68. Jenewein, S., Wakolbinger, F., and Schneider, F. (2019). Volks- und regionalwirtschaftliche Bedeutung der Lenzing Gruppe (Macroeconomic and Regional Economic Importance of the Lenzing Group), Johannes Kepler University Linz, commissioned by Lenzing AG. Unpublished (2019).

Lenzing
Innovative by nature

www.lenzing.com

Imprint

Copyright and published by
Lenzing Aktiengesellschaft
4860 Lenzing, Austria
www.lenzing.com

Concept and edited by
Peter Bartsch, Angelika Guldt, Kerstin Zimmermann
(Lenzing Group)

Layout and graphic design
ElectricArts Werbeagentur GmbH

Photographs by
Aila Images
Christian Herzenberger
Diora Kong
ElectricArts Werbeagentur GmbH
Eugenia Chui
Franz Neumayr
Gettyimages.com/Maskot
Karen Kao
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