

**Lenzing**

Innovative by nature

[www.lenzing.com](http://www.lenzing.com)

Partner  
for change

Naturally  
positive 

**Lenzing Group  
Sustainability Report 2018**

Non-Financial Statement

# Lenzing Group: sustainability key performance indicators

Lenzing Group: sustainability key performance indicators

Table 0/1

Key performance indicator		2016	2017	2018
<b>Finance</b>	Value creation	EUR 637.9 mn	EUR 725.7 mn	EUR 587.6 mn
	ROCE (return on capital employed)*	15.1 %	18.6 %	10.3 %
	Adjusted equity ratio*	53.0 %	61.2 %	59.0 %
	Revenue	EUR 2,134.1 mn	EUR 2,259.4 mn	EUR 2,176.0 mn
	EBITDA (earnings before interest, tax, depreciation, and amortization)	EUR 428.3 mn	EUR 502.5 mn	EUR 382.0 mn
<b>Supplier sustainability</b>	Proportion of fibers with forest certificate	58 %	62 %	66 %
	Proportion of wood source certified or controlled by forest certification	>99 %	>99 %	>99 %
	Proportion of suppliers with EcoVadis rating [%]	-	-	63 %
<b>Sustainable innovations</b>	R&D expenditure, calculated according to the Frascati method [EUR]	EUR 46.4 mn	EUR 55.4 mn	EUR 42.8 mn
<b>Environment</b>	Specific** energy consumption (GJ/t, 2014 = 100 %)	99 %	100 %	99 %
	Specific GHG emissions*** (tons of CO <sub>2</sub> eq./t, 2014 = 100 %)	98 %	100 %	98 %
	Specific sulfur emissions [kg/t, 2014 = 100 %]	90 %	80 %	71 %
	Specific water intake [m <sup>3</sup> /t, 2014 = 100 %]	94 %	95 %	96 %
	Specific water emissions after waste water treatment [kg COD/t, 2014 = 100 %]	103 %	103 %	93 %
<b>Product</b>	Specialty fiber share based on revenue****	42.0 %	41.8 %	45.5 %
<b>People</b>	Number of employees*****	6,043	6,315	6,657
	Lost workday cases (LWC, per 1,000 employees)	6.2	5.6	5.7

\* 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 the Annual Report and in the consolidated financial statements of the Lenzing Group.

\*\* 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<sub>2</sub> 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<sub>2</sub>SO<sub>4</sub> and CS<sub>2</sub>, leading to a higher energy demand and scope 1+2 CO<sub>2</sub> 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.

\*\*\*\* 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.

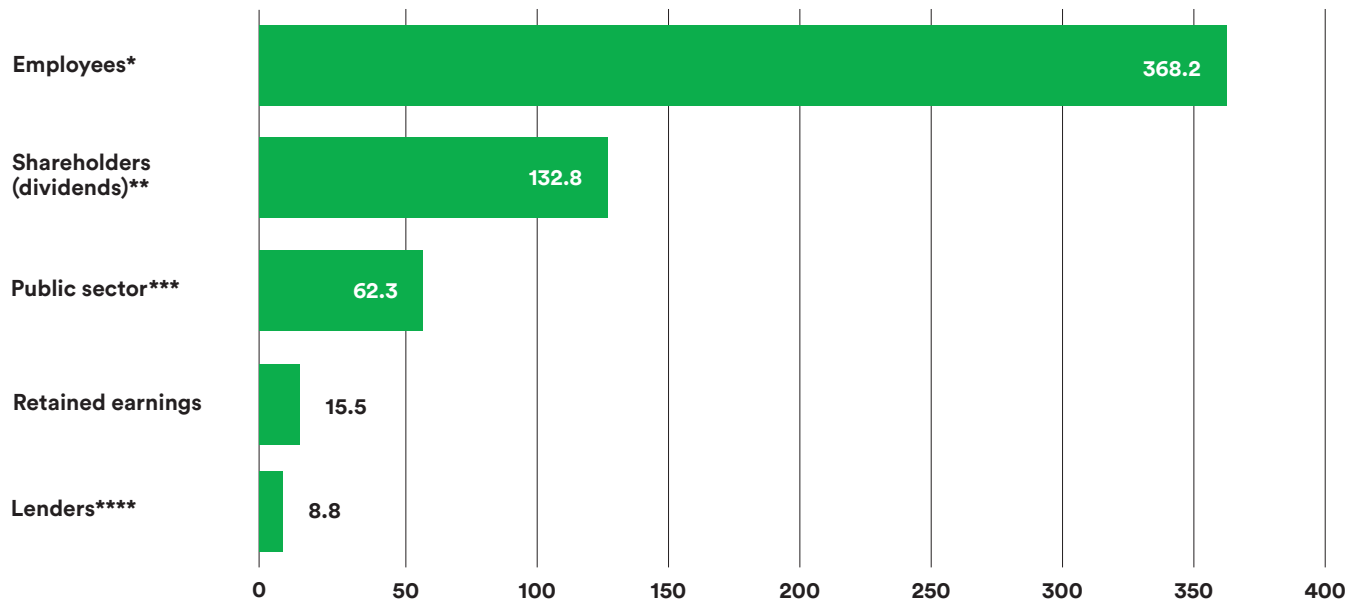
\*\*\*\*\* Employees (excluding apprentices, and contractors) in Austria, the Czech Republic, United Kingdom, USA, China, Indonesia, India, Thailand, Turkey, Korea, Singapore, and Brazil

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.

Lenzing Group employees benefited most from the industrial value creation of the company in 2018. Shareholders were ranked second, followed by the public sector to which Lenzing paid considerable taxes and duties as well as external providers of capital.

**Distribution of value creation**  
Lenzing Group in EUR mn, 2018

**Figure 0/1**



\* Personnel expenses less municipal taxes

\*\* Based on the proposed distribution of profits

\*\*\* Income tax expenses plus asset taxes and similar taxes plus municipal taxes

\*\*\*\* Financing costs less net foreign currency gain/losses from financial liabilities

For further details on value creation, see <https://www.lenzing.com/en/sustainability-reports>

# Highlights 2018



## Progress

On track with all committed sustainability targets

29 percent\* lower sulfur emissions from viscose production

The Lenzing Group signed the Fashion Industry Charter for Climate Action committing it to a reduction in aggregate greenhouse gas emissions of 30 percent by 2030\*\*

Investment of more than EUR 100 mn in sustainable production technology by 2022



## Sustainable Innovations

Investment of up to EUR 30 mn in a pilot plant producing TENCEL™ Luxe branded filaments

Nonwovens: market launch of pioneering LENZING™ Web technology

Raw material security: Together with a joint-venture partner Lenzing plans to build a dissolving wood pulp plant in Brazil with an annual capacity of 450,000 tons

# highlights 2018



## Achievements

Lenzing ranks 1<sup>st</sup> in Canopy's Hot Button Report

Lenzing improved its ESG ratings: MSCI (BBB to A)

VÖNIX: Lenzing best rated company in Austria

New branding concept supports long-term business success

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



## Awards

2018 Austrian State Prize for Smart Packaging awarded to Packnatur® reusable wood-based bag\*\*\*\*

ASRA award for Sustainability Report 2017\*\*\*\*\*

\* CS<sub>2</sub> and H<sub>2</sub>S, baseline 2014

\*\* Baseline 2017, in scope 1, 2 and 3; see <https://bit.ly/2LfaaKA>

\*\*\* <https://textileexchange.org/downloads/2018-preferred-fiber-and-materials-market-report/>

\*\*\*\* Awarded by Federal Ministry for Digitization and Business Location of Austria; Packnatur® reusable cellulose bags were developed together with VPZ Verpackungszentrum GmbH.

\*\*\*\*\* Awarded by the Chamber of Public Accountants and Tax Consultants

*Partner*  
**for change**



**Lenzing Group Sustainability Report 2018**

Non-Financial Statement



*Content*  
**Sustainability Report  
2018**

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# The Lenzing Group

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# About this report

This report is the combined, consolidated, non-financial report for the Lenzing Group<sup>1</sup> (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 AG. For those indicators where meaningful figures can be provided, separate data for Lenzing AG can be found in the annex (in accordance with the legal requirements stipulated by the Austrian Sustainability and Diversity Improvement Act – NaDiVeG<sup>2</sup> – and the AFRAC recommendation).

The description of non-financial risks has been integrated into the 2018 Annual Report, while the subject of compliance forms part of the Corporate Governance Report. Additional information concerning certain topics is provided on the Lenzing Group website. Links can be found under the respective headlines.

This report covers all the fully consolidated legal entities of the Lenzing Group<sup>3</sup>. In 2018 a new fully consolidated subsidiary was founded in Brazil. **[102-45, 102-10]**

The contents of this report reflect the relevant and material topics for sustainable development at the Lenzing Group. Data relating to human resources covers the whole Lenzing Group. Specific environmental indicators are calculated using data from all production sites of the Lenzing Group. These account for 100 percent of the company's worldwide production volume. **[102-49]**

This Sustainability Report is the follow-up to the Sustainability Report published in 2018, which contained data from 2017. Twelve re-statements of information provided in previous reports have been made. For details see chapters 3, 4 and 6. **[102-48, 102-51]**

This report mainly covers data from 2018, wherever possible also presenting a series of data over three years (2016, 2017, and 2018)<sup>4</sup> to make the information transparent, relevant, and comparable. **[102-50]**

This report has been prepared in accordance with the Global Reporting Initiative (GRI) standards: Core option. A detailed GRI content index can be found on the Lenzing website for cross-reference (<https://www.lenzing.com/en/sustainability-reports>). In line with GRI standards requirements, the reporting cycle for Lenzing's sustainability performance is annual. **[102-52, 102-54]**

## Contact **[102-53]**

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1) "The Group" (for better readability occasionally referred to as "Lenzing") comprises of Lenzing Aktiengesellschaft, and its subsidiaries

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

3) A list of the Group companies as at December 31, 2018 is provided in Note 43 of the Annual Report.

4) The financial year of the Lenzing Group corresponds to the calendar year (January 1 to December 31)



### Dear Ladies and Gentlemen,


Sustainability is the dominant issue of our times. Emissions of greenhouse gases, pollution of the oceans, and increasingly frequent erratic weather conditions are a consequence of every action we take. The textile industry has a particularly large impact on the economy and the environment. It makes a major contribution to global value creation, but it also leaves a very sizable ecological footprint.

In order to find solutions to these challenges, pioneers and role models are required. And Lenzing is one of them. Our business is based on the circular economy model. We use the renewable, entirely certified or controlled raw material wood to produce dissolving wood pulp in our biorefineries. Subsequently, all three generations of our fibers are manufactured either in a closed loop process or in processes with high recovery rates. These fibers not only feel good, but also preserve the environment, because they are biodegradable and compostable and, after use, become part of the natural cycle without leaving any harmful residues.

Our corporate strategy sCore TEN is based on sustainability as a value, as the driver of our business, and as a stimulus for innovations. This is evident in our investments in research and development and in developing resource-efficient processes, which result in technological and product innovations and numerous awards and certificates:

- By 2022 we will have invested more than EUR 100 million in sustainable manufacturing technologies and production facilities at several production sites.
- In the form of LENZING™ Web Technology, we have developed a sustainable nonwoven web formation process that begins with dissolving wood pulp and creates a nonwoven fabric consisting entirely of continuous lyocell filament. The technology for which 25 patents have been applied for includes a unique self-binding mechanism that joins the filaments during nonwoven formation.

“Our pioneering role in the textile and nonwoven industries expresses itself in an ambitious sustainability agenda based on the ‘Naturally Positive’ sustainability strategy.”

- 
- With our TENCEL™ Luxe branded lyocell filaments, we have opened the door to sustainability for the world of Haute Couture. The demand for this “silk from wood” is very high, which is why we decided in 2018 to build another production line for TENCEL™ Luxe filaments in Lenzing.
  - Our TENCEL™ lyocell fibers with REFIBRA™ Technology, introduced in 2016, are regarded as a groundbreaking circular economy concept.
  - Demand is also strong for the completely traceable LENZING™ ECOVERO™ viscose fibers which have additionally been produced in Nanjing (China) since 2018.

Our pioneering role in the textile and nonwoven industries expresses itself in an ambitious sustainability agenda based on the “Naturally Positive” sustainability strategy. We pursue its targets consistently. Whether it be through detailed measurement and improvements in the footprint of our production processes or through active participation in stakeholder processes, such as the World Economic Forum’s Alliance of CEO Climate Leaders, or through signing the United Nations’ “Fashion Industry Charter for Climate Action” at the successor summit to the Paris Climate Conference held in Katowice.

Our leadership responsibility also includes our commitment to global taxes on CO<sub>2</sub> emissions and the introduction of science-based targets. These are both initiatives that Lenzing will address in the coming months.

Achievement of these ambitious goals calls for the commitment of all Lenzing Group employees and our partners, as well as customers along the value chain. Awards such as the “Smart Packaging” state prize and the prize for sustainability reports are valuable pieces of evidence for this successful cooperation. My special thanks therefore go out to the entire Lenzing team, as well as to all our partners and customers.

Yours

**Stefan Doboczky**  
Chief Executive Officer of the Lenzing Group

Lenzing, February 2019

# Lenzing Group: 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. [102-1]

## Lenzing Group

Table 1/1 [102-7]

	2016	2017	2018
Employees	6,043	6,315	6,657*
Revenue	EUR 2,134.1 mn	EUR 2,259.4 mn	EUR 2,176.0 mn
EBITDA	EUR 428.3 mn	EUR 502.5 mn	EUR 382.0 mn
Total assets	EUR 2,625.3 mn	EUR 2,497.3 mn	EUR 2,630.9 mn
Equity	EUR 1,386.5 mn	EUR 1,507.9 mn	EUR 1,533.9 mn
Liabilities	EUR 1,256.8 mn	EUR 989.4 mn	EUR 1,097.0 mn
Total number of operations	15	16	17
thereof production sites	7	7	7
Sales and marketing offices	8	9	10
Sales volume fibers	978,000 tons	942,000 tons	915,000 tons

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

## Processes and technologies in the Lenzing Group [102-2]

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, 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:

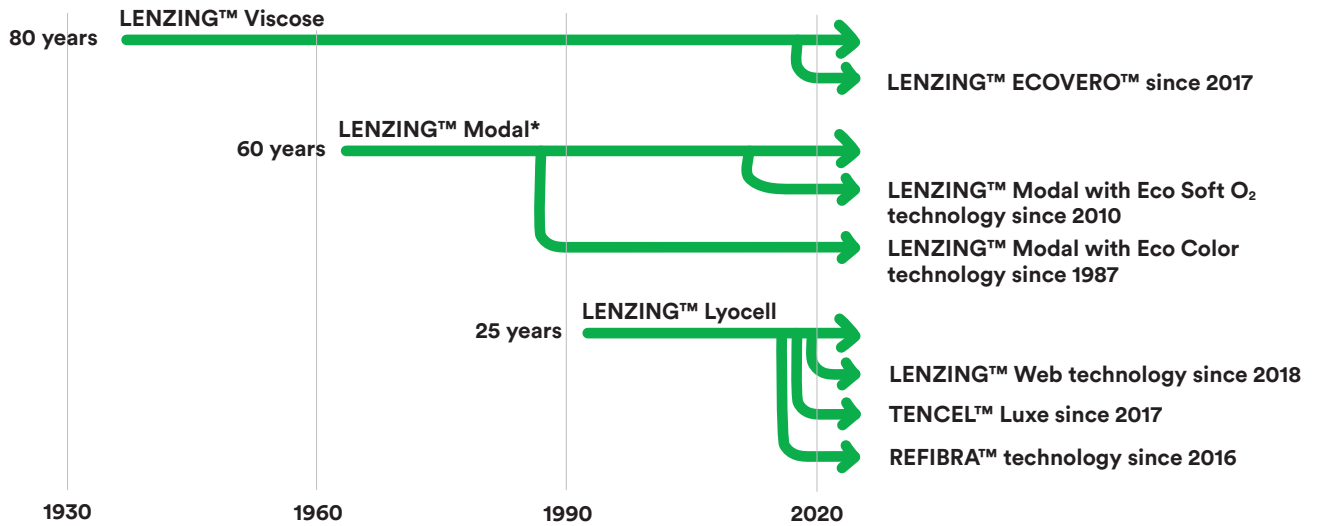
- Viscose (rayon)
- Modal
- Lyocell

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 chapter 5.

Lenzing's high-quality fibers are supplied to the textile and nonwoven industry as well as for industrial applications.

Lenzing Group: Selected fiber types, technologies and branded offers

Figure 1/1

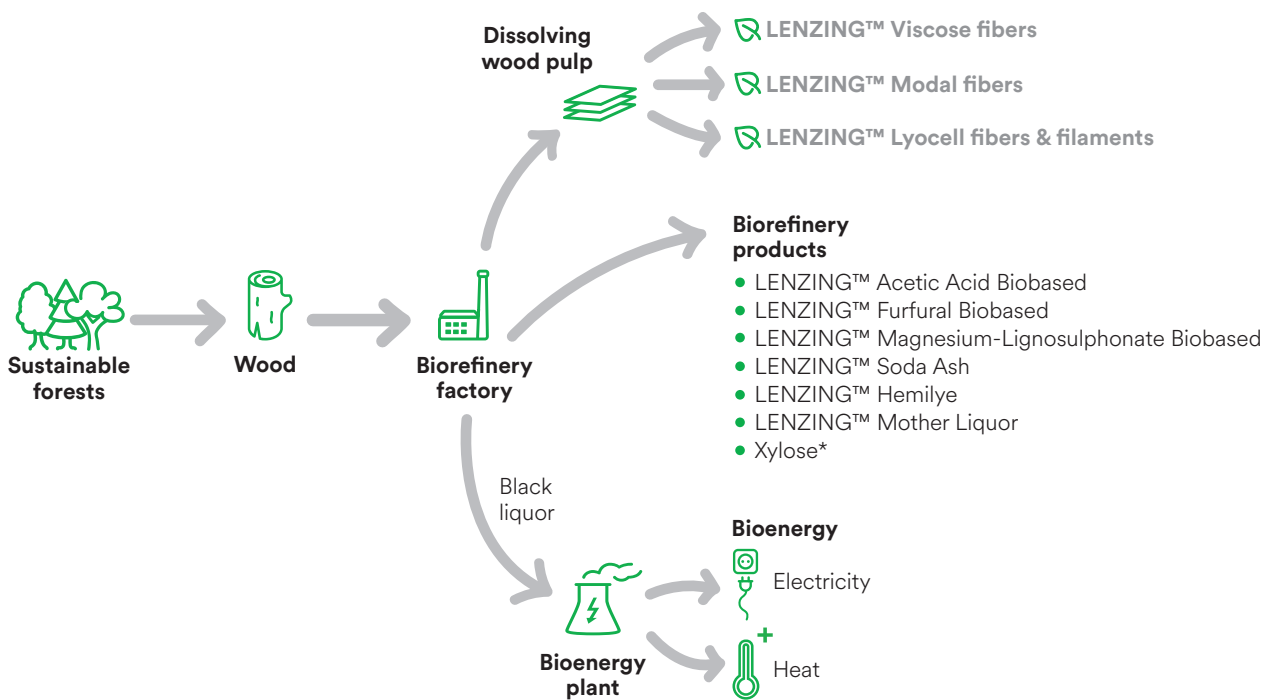


\* complete name: LENZING™ Modal with Eco Soft technology

Besides fiber production, another core area of competence of the Lenzing Group is dissolving wood pulp technology and biorefinery.

The biorefinery concept in Lenzing, Austria

Figure 1/2



\* purified/marketed by a partner company

# Lenzing Group: brief portrait

## Nature of ownership and legal form

Lenzing Aktiengesellschaft is a publicly traded company and its shares are quoted on the Vienna Stock Exchange. In 2018, there was no change in the ownership structure. Majority shareholder B&C Group held 50 percent plus two shares and Oberbank held 3.8 percent. The free float at balance sheet date accounted for 46.2 percent. [102-5]

## The sites of the Lenzing Group

[102-4, 102-6]

### Lenzing, Austria

Global Headquarters [102-3]

#### Fiber production (Viscose, Modal)

Capacity: 284,000 t fibers p.a.

#### Fiber production (Lyocell)

Capacity: 74,000 t fibers p.a.

#### Pulp production

Capacity: 300,000 t dissolving wood pulp\* p.a.

### Paskov, Czech Republic

#### Pulp production

Capacity: 275,000 t dissolving wood pulp\* p.a.

### Purwakarta, Indonesia

#### Fiber production (Viscose)

Capacity: 323,000 t fibers p.a.

### Nanjing, China

#### Fiber production (Viscose)

Capacity: 178,000 t fibers p.a.

### Mobile, USA

#### Fiber production (Lyocell)

Capacity: 54,000 t fibers p.a.

### Grimsby, United Kingdom

#### Fiber production (Lyocell)

Capacity: 45,000 t fibers p.a.

### Heiligenkreuz, Austria

#### Fiber production (Lyocell)

Capacity: 90,000 t fibers p.a.

## Sales and marketing offices:

Coimbatore, India

Singapore

Shanghai, China

Jakarta, Indonesia

New York, USA

Istanbul, Turkey

Seoul, Korea

Hong Kong, China

### Bangkok, Thailand

Office for planning a new fiber production plant

### Brazil

Office for planning a new dissolving wood pulp production plant

\* Air-dry



# Value chain [102-6, 102-9]

Lenzing is at the beginning of a long value creation chain in the textile industry, which comprises several processing steps. Value chains for the nonwoven segment and industrial applications are usually shorter.

The Lenzing Group's business model is based on intensive collaboration across all stages of the value chain.

## Supply and sourcing

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

## Dissolving wood pulp and fiber production

Production takes place in two stages: firstly, the production of dissolving wood pulp and, secondly, the production of fibers. Lenzing's own dissolving wood pulp is produced in two biorefineries at the sites in Lenzing (Austria) and Paskov (Czech Republic), along with energy and biorefinery products that are extracted, utilized, or sold. During subsequent fiber production, relevant chemicals are recovered, utilized, or sold as co-products.

## Fiber processing

As shown in figure 1/3 under "Manufacturing steps", the customers in Lenzing's downstream value chain use the fibers to manufacture textile, nonwoven, or industrial products.

## Distribution and use phase

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

## End of life

All LENZING™ standard fibers are compostable and biodegradable in marine and soil conditions. However, 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 chain for Lenzing's products

Figure 1/3



\* All standard fibers from Lenzing are compostable and biodegradable in 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.



# Managing sustainability

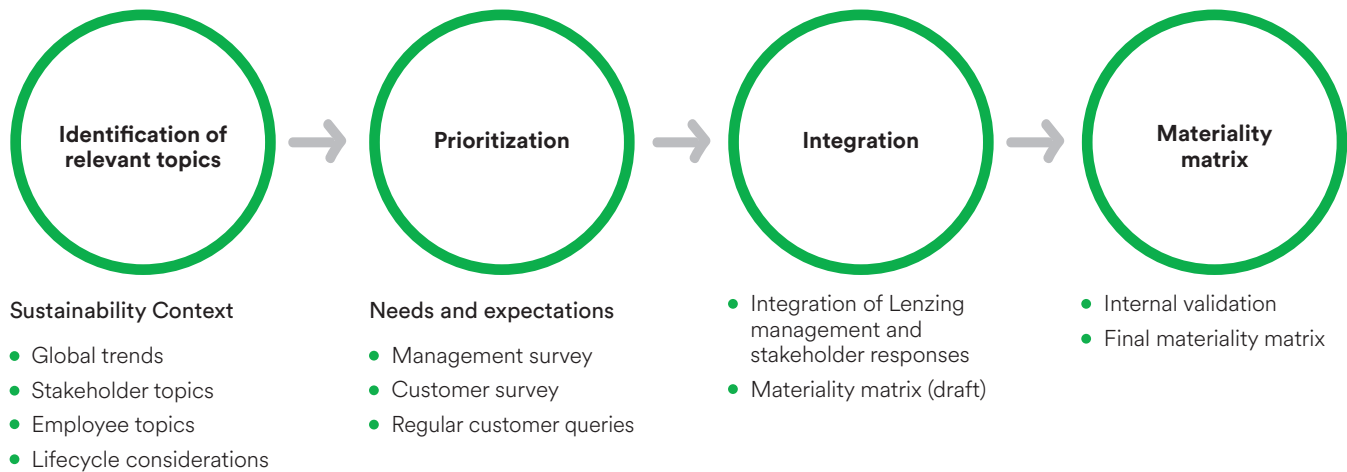
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# Materiality analysis

Lenzing's "Naturally positive" sustainability strategy, launched in 2017, was preceded by a comprehensive materiality analysis in 2015. The materiality matrix was reviewed in 2017 and 2018 in the course of strategy workshops at different production sites and with an internal survey. The results confirmed that all material topics remain unchanged. [102-44, 102-46, 102-49]

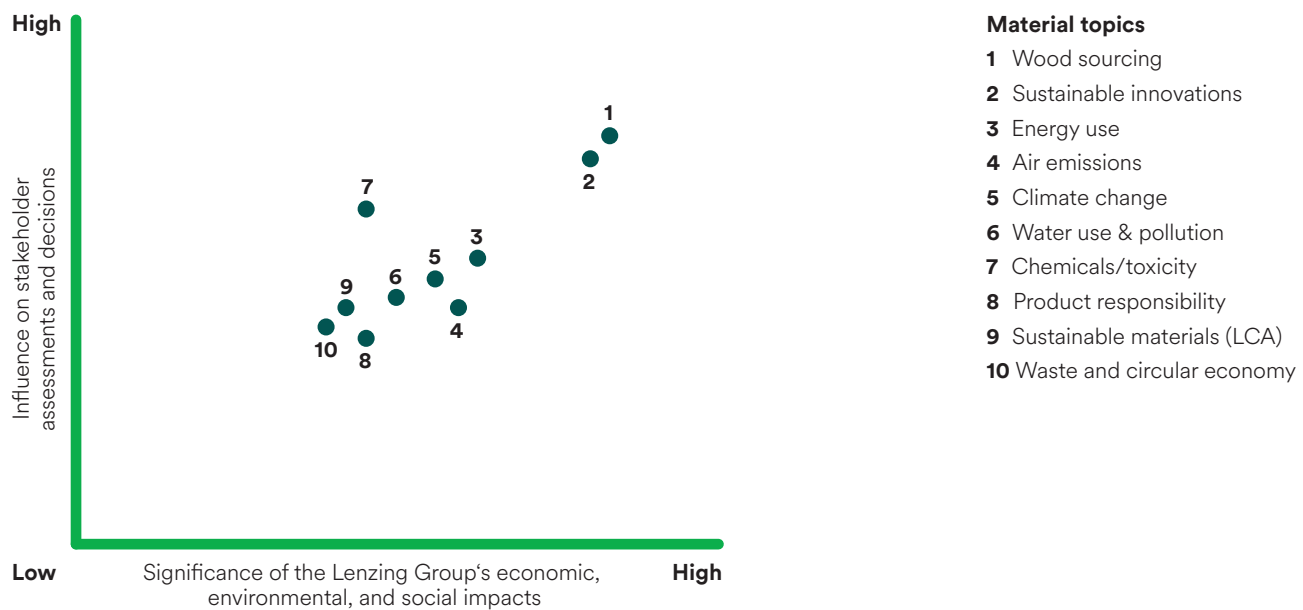
## Development of materiality matrix

Figure 2/1



## Materiality matrix

Figure 2/2 [102-47]



## Material topics in the Lenzing Group

1

### Wood sourcing

Wood is the main raw material for making LENZING™ fibers. Responsible wood sourcing is the prerequisite for minimizing risks for Lenzing's stakeholders, such as brands, retailers, and NGOs.

2

### Sustainable innovations

For Lenzing, sustainable innovations are net-benefit products that offer positive impacts and benefits to the environment, society, and value chain partners, which are better than most competing alternatives in the market.

In addition, sustainable innovations include continuous improvement of Lenzing's existing technologies and processes as well as driving systemic change through forward solutions and business models on a large scale.

3 4 5

### Energy use, air emissions, and climate change

Dissolving wood pulp and fiber production are energy-intensive processes. Therefore, energy use, climate change, and air emissions are a priority for the Lenzing Group and its customers due to their far-reaching impacts on society and ecosystems.

6

### Water use and pollution

These topics are highly relevant for the textile and nonwovens industries due to increasing water scarcity and pollution in many parts of the world.

7

### Chemicals and toxicity

There are increasing concerns about the use of hazardous chemicals in the textile industry and their disposal in the natural environment. Multi-stakeholder initiatives, in cooperation with fiber manufacturers, are developing guidelines for responsible production. Industry initiatives, such as Zero Discharge of Hazardous Chemicals (ZDHC), are developing tools and processes aimed at safer use of chemicals and reducing emissions.

8

### Product responsibility

Product responsibility and customer satisfaction are two integral aspects of utmost priority for the Lenzing Group's long-term success and business growth.

9

### Sustainable materials and Life Cycle Assessment (LCA)

Against the backdrop of the increasing global awareness for the importance of using sustainable materials, Lenzing's customers are increasingly looking for sustainable raw material solutions for their products. Lenzing lives up to this challenge with its strategic focus on sustainable innovations and life-cycle thinking. Leaders in the industry and multi-stakeholder initiatives are increasingly using metrics based on LCA, such as the Sustainable Apparel Coalition's Material Sustainability Index (MSI). LENZING™ fibers' life cycle impacts are available in the MSI (<https://msi.higg.org/page/msi-home>). Lenzing is committed to these systemic approaches and uses LCA to support decision-making in the business.

10

### Waste and circular economy

Lenzing addresses this challenge by developing sustainable technologies, such as the biorefinery concept and the closed-loop lyocell technology. On the product side, Lenzing contributes towards a solution for the global textile waste issue with its innovative TENCEL™ Lyocell fibers with REFIBRA™ technology that are partly based on recycled raw material.

Occupational safety and health as well as employee training and development are fundamental topics for a responsible company. Consequently, these topics are reported in addition to those identified in the materiality analysis. Compliance topics, such as anti-corruption and bribery, are covered in the Lenzing Group Corporate Governance Report.



# The essence of Naturally positive thinking [102-15, 102-16, 102-11]

## 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”, the Lenzing Group’s sustainability strategy, was developed based on the results of the materiality analysis and is firmly rooted in the Lenzing Group sCore TEN strategy (see Annual Report, page 14). It focuses on those sustainability areas where Lenzing has the greatest impact in creating a more sustainable world. “Naturally positive” is based on the “3-Ps”: People – Planet – Profit. Within these three dimensions, Lenzing’s sustainability strategy defines seven main challenges where the Lenzing Group substantially contributes to creating positive impacts and benefits:

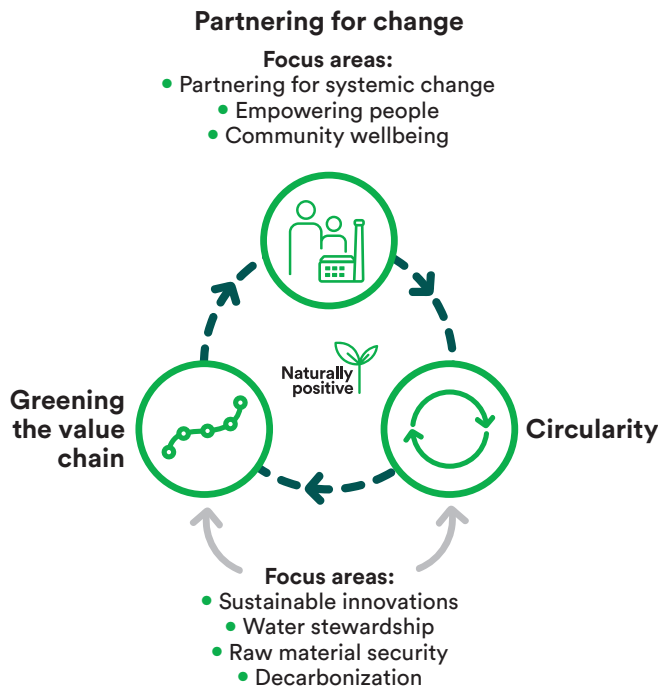
- Raw material security
- Water stewardship
- Decarbonization
- Sustainable innovations
- Empowering people
- Partnering for systemic change
- Enhancing community wellbeing

## 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 describes the performance of Lenzing’s specialities and forward solutions that form part of the sCore TEN strategy.

The Naturally positive sustainability strategy is rooted in net-benefit thinking and is the basis for Lenzing’s contribution to the Sustainable Development Goals (SDGs) of the United Nations.





## 1 Partnering for systemic change

Complex global challenges call for a collaborative approach to designing 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 raising the bar as regards sustainability in the textile and nonwovens industries. 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. Empowering its own employees and nurturing future leaders are key activities for driving sustainability improvement.

## 2 Circularity

Circularity is a pillar of Lenzing’s sustainability. The company unites the cellulosic fiber cycle of its wood-based products (biological cycle) with its innovative technologies that focus on closing loops and recovery (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 stands for 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<sup>5</sup>.

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 rates. Following the net-benefit principle, Lenzing also considers the downstream value chain steps. Lenzing’s REFIBRA™ technology recycles cellulosic waste from garment-making into dissolving wood pulp and feeds it back into the fiber production, without any loss of quality.

With its focus on partnering for systemic change, Lenzing strives to identify and develop cross-industry business cases to make progress on the circularity of Lenzing as well as of the industry.

## 3 Greening the value chain

Responsible sourcing practices are the basis for Lenzing’s efforts in greening the value chain. Sustainability targets for air emissions, water pollution, and climate protection will continuously improve the company’s sustainability performance. These targets are a cornerstone for Lenzing’s responsible entrepreneurship. They focus on developing innovative technologies and products that offer net benefits for its customers in the value chain. With its contributions to developing methods and tools, Lenzing helps the industry to progress on its sustainability roadmap.

5) 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.

# Strategic focus areas and progress on the 2017 Lenzing Group sustainability targets<sup>6</sup>

The following section describes the focus areas of Lenzing's "Naturally positive" sustainability strategy. In 2017, Lenzing set Group sustainability targets for the most important challenges arising in each of these focus areas – read about what progress has been made in the reporting year. Lenzing will invest more than EUR 100 mn in sustainable production technologies by 2022.

## Focus Area

### Raw material security

Wood, dissolving wood pulp and chemicals are the most important resources for the Lenzing Group. The company focuses on responsible sourcing practices through certification, responsible consumption, and highly efficient use of wood through biorefinery.

## Target

#### To implement conservation solutions – start an afforestation project in 2018

In 2018, the Lenzing Group initiated a forest conservation project in Albania (Southern Europe).

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 for forestry

Lenzing will start afforestation and education activities in 2019.

## Focus Area

### Water stewardship

Wood-based fiber production requires responsibility for several water impacts:

- The production of dissolving wood pulp and fiber entails water consumption and emissions to water.
- Wood plantations can cause pressure on the regional water balance.
- The textile and nonwoven industries may contribute to the marine litter issue.

## Target<sup>7</sup>

#### To improve Lenzing Group's specific<sup>8</sup> wastewater emissions by 20 percent by 2022

The Lenzing Group will invest in upgrading its wastewater treatment infrastructure to further reduce its wastewater emissions by 2022. This reduction will be expressed in kg COD<sup>9</sup>/per ton of pulp and fiber production.

#### Progress in 2018

Efforts focused on two production sites, namely in Purwakarta, Indonesia and in Grimsby, UK. At both sites, extensive improvement measures were taken and investment preparations made to bring COD values to target by 2022.

#### Grimsby, UK

Planning for the construction of a wastewater treatment plant was initiated. The facility is due to come on line in 2020.

#### Purwakarta, Indonesia

A project was launched in 2018 to improve the wastewater situation at the site. Operational improvements in the wastewater treatment plants on site were made. A further upgrade project for the first improvement stage was prepared in cooperation with an external consulting company. The project is scheduled for completion in time to meet the target date of 2022.

## Focus Area

### Decarbonization

Climate change is one of the most pressing challenges globally, calling for collaborative solutions involving a multitude of relevant stakeholders, from value chain partners to authorities.

Dissolving wood pulp and fiber production are energy-intensive processes and consequently Lenzing is committed to reducing its specific CO<sub>2</sub> emissions, as well as those of its energy providers, dissolving wood pulp suppliers, and the downstream value chain through sustainable innovations.

First steps towards developing concrete CO<sub>2</sub> reduction targets were taken in 2018:

#### The Lenzing Group signed the Fashion Industry Charter for Climate Action

The Charter was supported by 43 heads of the fashion industry, committing to a 30 percent reduction of aggregate greenhouse gas emissions in scope 1, 2 and 3 by 2030<sup>10</sup>. It was published in Katowice, Poland at the UN UNFCCC climate conference in December 2018.

A science-based target for the Lenzing Group is being prepared.

6) These targets and commitments are applicable to the organizational structure and ownership of the Lenzing Group as it existed in 2014, in particular with regard to the capacity of the owned operations. In case of any structural changes in ownership, such as the acquisition of a new plant, these targets will be reviewed and reformulated considering the new context of the Lenzing Group.

7) This target will allow Lenzing's stringent internal Group standard to be met at all Lenzing production sites. Baseline for the target is 2014.

8) Specific emissions are defined as emissions per unit of production by the Lenzing Group (i.e. pulp and fiber production volumes).

9) Chemical Oxygen Demand

10) Basis 2017



### Focus Area

## Sustainable innovations

For Lenzing, sustainable innovations are net-benefit products offering positive impacts and benefits to the environment, society, and value chain partners, which are better than most competing alternatives in the market.

In addition, sustainable innovations include continuous improvement measures for Lenzing's existing technologies and processes as well as driving systemic change through forward solutions and business models on a large scale.

### Target<sup>11</sup>

**To improve the Lenzing Group's specific<sup>12</sup> sulfur emissions by 50 percent by 2022**

### Progress in 2018

As Lenzing's production site in Indonesia makes by far the largest contribution to the Group's sulfur emissions, improvement efforts in the reporting year focused clearly on this site.

To achieve the overall target by 2022, Lenzing is preparing a major investment for an additional Carbon Disulfide Adsorption Plant (CAP). Important steps taken in 2018:

1. The conceptual planning of the new plant was completed
2. An external engineering company was selected

Extended basic engineering will be initiated in early 2019. Actual construction work is scheduled to commence in 2020.

Technical improvements have already produced initial reductions in sulfur emissions of 29 percent compared to the basis year 2014.

### Focus Area

## Empowering people

People are at the core of Lenzing's business success. People who take ownership and feel able to take positive action drive a successful transformation to a more sustainable society and economy. The Lenzing Group therefore empowers its employees and motivates partners along the value chain to be change-makers and drivers of sustainability (read more in chapter 6).

### Focus Area

## Partnering for systemic change

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. Consequently, 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.

### Target

**To assess the sustainability performance of 80 percent of the Lenzing Group's "most relevant suppliers"<sup>13</sup> by 2022**

The Lenzing Group uses EcoVadis as an assessment platform.

By the end of 2018, 63 percent of the most relevant suppliers were assessed.

For details, see chapter 3.

### Target

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

In 2018, Lenzing started to implement Higg FEM 3.0. A detailed implementation plan was developed, the production sites were informed, and a Higg readiness program in cooperation with an external partner is scheduled for early 2019.

Implementing Higg FEM 3.0 will improve transparency for the value chain partners.

### Focus Area

## Enhancing community wellbeing

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, but also challenges. Community wellbeing is therefore a prerequisite for the company's license to operate.

For further information, see chapter 6, page 61 and website (<https://www.lenzing.com/en/sustainability-reports>).

11) This target will allow Lenzing's stringent internal Group standard to be met at all Lenzing production sites. Baseline for the target is 2014.

12) Specific emissions are defined as emissions per unit of Lenzing Group production (i.e. pulp and fiber production volumes).

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

## Risk management [102-11, 102-15]

## Compliance [102-11]

Dissolving wood pulp and fiber production require highly complex chemical and technical processes that cause risks for 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 2018 Lenzing Group Annual Report.

For a detailed description of compliance management, please refer to the 2018 Lenzing Group Annual Report (Corporate Governance Report, page 56).

# Sustainability governance

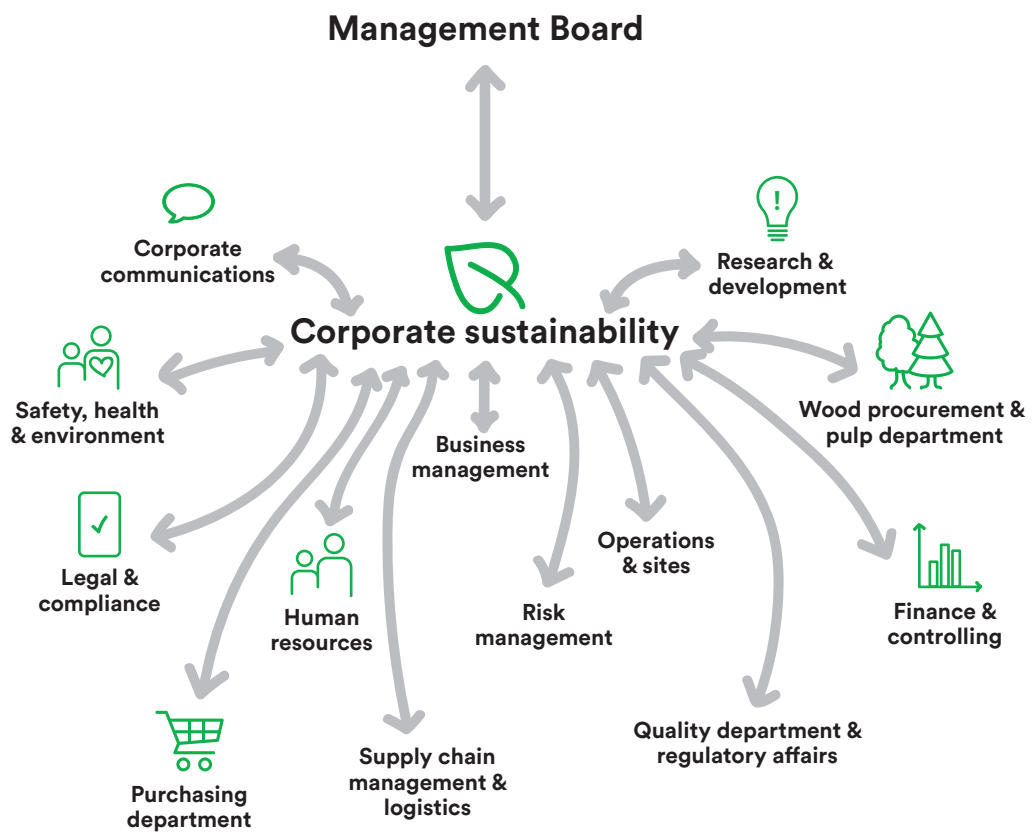
Corporate Sustainability reports directly to the Chief Commercial Officer on the Management Board. [102-18]

For information on the governance structure of the Lenzing Group, please refer to the 2018 Lenzing Group Annual Report (Corporate Governance Report, page 56).

## Sustainability organization

Organizational embedding of the corporate sustainability function

Figure 2/4



# Stakeholder dialog

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. This helps 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. [102-43]

The various business functions are integrated into 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. [102-43]

## Key stakeholders 2018

The key stakeholders for the Lenzing Group are those who are potentially affected by its operations, its business conduct and its strategic targets. Lenzing regards them as strategic partners who have significant interest in and impact on areas that are most material 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. Fig. 2/5 shows an overview of the most important stakeholder groups [102-42].

Key stakeholder groups

Figure 2/5



### Main topics discussed in 2018 were: [102-44]

- Responsible sourcing, in particular sustainable sourcing of wood and pulp
- Responsible fiber production
- Circular economy topics
- CO<sub>2</sub> climate target (science-based target)
- Environmental issues, such as microplastics in the oceans, climate change, waste, emissions, water management
- Transparency and supply chain mapping
- Raw material assessments (definition of sustainable raw materials)
- Life cycle assessment
- Health and safety
- Innovation
- Human rights
- Labor rights
- People and community

Lenzing's most important stakeholder dialogs in 2018 were those with the following organizations: [102-12, 102-13, 102-40, 102-42, 102-43]

1

### Canopy<sup>14</sup> and CanopyStyle Initiative

Lenzing maintains a continuous dialog with members of the CanopyStyle Initiative. As one of the leading global producers of wood-based fibers, Lenzing fully supports Canopy's roadmap by constantly improving its sustainable sourcing practices and strengthening the company's leadership by planning contributions to global forest conservation.

2

### Changing Markets Foundation

Lenzing is fully committed to addressing the issues of environmental and human health impacts raised by Changing Markets. In 2018, Lenzing continued its open exchange with the NGO. Numerous activities in the areas of safety, health, and environment that had been initiated at the Indonesian production site in 2017 were continued, such as improvements in the field of measuring and reporting key environmental data, waste management, and various improvements in safety. In order to contribute to improving the industry standard of viscose manufacturing Lenzing joined the Zero Discharge of Hazardous Chemicals (ZDHC) multi-stakeholder collaboration as a contributor.

3

### 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. In 2018, Lenzing contributed to the Cellulosic Fibers (MMCF<sup>15</sup>) Task Team on wastewater, sludge/solid waste, and air emissions.

4

### 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. With a focus on minimizing the harmful impacts of the global textile industry and maximizing its positive effects, Textile Exchange partners with organizations of all types and sizes who want to advance their sustainability efforts through learning centers, textile standards, and industry collaborations. Established in 2002, Textile Exchange has been one of the leading non-profit organizations to establish best practices and fair business models for the entire supply network, from raw materials to retail.

Between 2011 and 2018, Lenzing held a board seat for greater participation in Textile Exchange activities including:

- Input to the annual Preferred Fibers and Materials Report and Fiber Benchmark Report
- Sponsorship and agenda support for the Annual Textile Sustainability Conference.
- Contributing to and speaking at webinars and seminars for industry education

5

### Sustainable Apparel Coalition (SAC)

In 2018, Lenzing contributed to the development of methods used to assess products (footprint) and chemicals used in the value chain. The company also contributed and participated in the SAC sub-group on circular economy.

6

### Make Fashion Circular (an initiative of the Ellen MacArthur Foundation, former CFI)

Lenzing contributed to this ambitious initiative by providing an industrial perspective and insights, drawing on its experience in the textile industry and its pioneering TENCEL™ Lyocell fibers with REFIBRA™ technology.

7

### World Resources Institute (WRI)

The Lenzing Group has initiated collaboration and supports WRI in developing the "Science Based Targets' Apparel Sector Guidance". This guidance will help all companies along the value chain to develop climate change targets based on up-to-date climate science.

8

### World Economic Forum

As a member of the World Economic Forum's Alliance of CEO Climate Leaders, Lenzing Group CEO Stefan Doboczky signed the WEF's open letter to world government leaders urging greater collaboration to accelerate outcomes in the race against climate change. This letter was signed by the leaders of 50 major global businesses representing more than USD 1.5 trillion in total revenue.

14) Canopy Planet Society

15) MMCF: man-made cellulosic fibers



# Responsible sourcing

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# Procurement management

The Lenzing Group actively takes responsibility for nature and the socio-economic environment. Safety and sustainability are corporate values of Lenzing and form an integral part of the sCore TEN business strategy. Lenzing strives to cooperate with partners who take responsibility for their employees, use environmentally responsible production processes, and develop their business in a sustainable manner.

The Lenzing Purchasing department operates in accordance with the ethical, ecological, social, and economic principles described in the company's Global Code of Business Conduct (CoBC). 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 Lenzing Group puts a strong focus on its corporate values as part of its sCore TEN strategy. One guiding principle in this context is that the way business is done is as important as the business itself.

## Global Supplier Code of Conduct

Implementation of the Global Supplier Code of Conduct was completed in the reporting year.

In order to do business with Lenzing, suppliers are expected to abide by the Global Supplier Code of Conduct and all applicable laws. Suppliers must ensure that their organization is set up in compliance with this code.

The Global Supplier Code of Conduct outlines Lenzing's expectations for supplier conduct with regard to health and safety at work, labor and human rights, environmental protection, ethics, and management practices. Consequently, Lenzing's suppliers are required to provide safe working conditions, to treat employees with respect, to act fairly and ethically, and to use environmentally responsible practices wherever they manufacture products or perform services on behalf of the Lenzing Group. By setting strict requirements, the Global Supplier Code of Conduct helps promote an environmentally and socially conscious supply chain.

## Supplier assessment

For Lenzing, relevant suppliers are those with an increased risk due to their size and volume.

The online tool provided by EcoVadis is used to assess suppliers. The Lenzing Group was also subjected to this supplier assessment in 2017, with a result of "Gold status".

### Selection criteria for suppliers to be assessed:

- Country-related risks
- Key-chemical and dissolving wood pulp
- Energy providers
- Service providers/contractors
- Logistics providers

The most relevant suppliers were selected on this basis and represent 80 percent of global purchasing volume including dissolving wood pulp, but excluding wood.

## Targets

### Sustainability assessment of relevant suppliers by an external auditor:

2017	2018	2022
50 percent of relevant suppliers to Lenzing site (Austria)	50 percent of relevant suppliers to sites in Europe & USA	80 percent of relevant Lenzing Group suppliers
✓	✓	Status end 2018: 63 percent

Strategic dissolving wood pulp suppliers are evaluated periodically. Through cooperation with EcoVadis, Lenzing is seeking to standardize assessment and auditing of suppliers in the wood and dissolving wood pulp sector as well.

All wood suppliers, about 700, in all sourcing countries are assessed once a year by a scoring system utilizing FSC® Controlled Wood criteria.

The most important materials procured are, by annual volumes: wood, dissolving wood pulp, and the chemicals sodium hydroxide, sulfuric acid, sulfur, carbon disulfide, sulfur dioxide and magnesium oxide.



# Wood & 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 FAO<sup>16</sup>), not from natural forests.

Precise figures for the absolute amount of wood purchased and market dissolving wood pulp sourced will not be 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. [301-1]

## Wood and dissolving wood pulp supplier management

Lenzing strives to establish long-term partnerships with its wood and dissolving wood pulp suppliers, and seeks to do business personally and directly with forest owners and dissolving wood pulp mills.

In the case of wood and dissolving wood pulp procurement, Lenzing relies on the wood certification schemes Forest Stewardship Council® (FSC®) and Programme for the Endorsement of Forest Certification Schemes™ (PEFC™) for supplier sustainability management.

## Lenzing Group Wood and Pulp Policy

In its Wood and Pulp Policy (<https://www.lenzing.com/en/sustainability/resources/wood-and-pulp>), 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
- in violation of any of the ILO<sup>17</sup> Core Conventions as defined in the ILO Declaration on Fundamental Principles and Rights at Work.

Lenzing's first Wood and Pulp Policy was published and rolled out in 1990, with constant upgrading ahead of the trends ever since. In recent years, the policy has been aligned with the CanopyStyle Initiative (see below).

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

If Lenzing discovers that it sources 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 eliminated with a reasonable lead time. Very few such cases have occurred in recent years and none occurred in 2018.

## Stakeholder activities related to wood sourcing

### Forest Europe

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<sup>18</sup>. 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.

### CanopyStyle initiative

Lenzing maintains a continuous dialog with members of the CanopyStyle Initiative, a group of around 170 global fashion, designer, and retail brands which aims to protect the world's ancient and endangered forests from ending up in textiles. As one of the leading global producers of wood-based fibers, Lenzing fully supports Canopy's roadmap.

In Canopy's latest Hot Button Report<sup>19</sup>, published in December 2018, Lenzing achieved the best score of all assessed viscose manufacturers, with a "green shirt" ranking (23 buttons) proving that there is a low risk of sourcing wood from ancient and endangered forests when using fibers from Lenzing. The implementation of the CanopyStyle roadmap was verified by Rainforest Alliance /NEPCo in 2017.

<sup>16</sup> Carle and Holmgren, 2003 <sup>17</sup> International Labour Organization (ILO)

<sup>18</sup> Forest Europe, 2015 ([http://foresteurope.org/wp-content/uploads/2016/11/III.-ELM\\_7MC\\_2\\_2015\\_MinisterialDeclaration\\_adopted-2.pdf](http://foresteurope.org/wp-content/uploads/2016/11/III.-ELM_7MC_2_2015_MinisterialDeclaration_adopted-2.pdf))

<sup>19</sup> Canopy, 2018 (<https://hotbutton.canopyplanet.org/>)

# Wood & dissolving wood pulp

## Wood K plus

Austrian companies and academic institutions active in the forest products sector have bundled their R&D strengths in the “Wood K plus” competence center. A strategic dissertation supported by Lenzing Group aims to achieve a deeper understanding of the perception in society about 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 analyses the perception of this concept in scientific literature, in sustainability reports of large corporations, and in NGO communications. Different understandings about sustainability were identified, which are driven by basic concepts, and lead to different methodical assumptions. Examples for areas where consensus is yet to be found are biodiversity, land use, and water stewardship, but, even in climate change-related methodologies, areas of debate remain, e.g. on carbon sequestration assessment.

## Dissolving wood pulp in the Lenzing Group

Shaping of cellulosic pulp into fibers requires a special quality of pulp, referred to as dissolving wood pulp, which has to meet different requirements to those for paper pulp. In 2018, the Lenzing Group produced 60 percent (2017: 60 %, 2016: 58 %)²⁰ of the total dissolving wood pulp volume required at its sites in Lenzing (Austria) and Paskov (Czech Republic). Sufficient quantities of wood are purchased for this purpose. In addition to its own dis-

solving wood pulp production, Lenzing procures dissolving wood pulp on the global market, mostly within the framework of 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 up to 75 percent of its requirements. In order to achieve this target, de-bottlenecking at the Lenzing and Paskov sites was initiated in 2017 with investments of around EUR 100 million. This will lead to a total capacity increase of about 35,000 tons of dissolving wood pulp.

In June 2018, Lenzing announced a plan to build a dissolving wood pulp plant in Brazil with an annual capacity of 450,000 tons, together with Duratex, the largest producer of industrialized wood panels of the southern hemisphere and a recognized leader in sustainable forestry management. For the future operation, the two companies have secured a plantation of 43,000 hectares that will provide the FSC® certified biomass. The plantation is fully compliant with Lenzing’s wood and pulp sourcing policy. Lenzing cooperates with Canopy to ensure responsible wood sourcing. For further details, see Annual Report.

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 3/1. Lenzing’s purchased dissolving wood pulp is mainly produced from eucalyptus, but also acacia, aspen, birch, maple, and southern pine.

### Wood and dissolving wood pulp supply in the Lenzing Group

dissolving wood pulp supply, from own production and market dissolving wood pulp (2016-2018)

Table 3/1

Wood sourcing region	Central Europe	Europe	South Africa	North America
Wood sourcing countries	See figure 3/2	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	Rainforest Alliance**			
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		
Pulping process	Sulfite	Sulfite/Kraft		
Bleaching process	Totally chlorine free (TCF)	Elemental chlorine free (ECF)		

\* Carle and Holmgren 2003

\*\* Rainforest Alliance audit report 2017 ([https://www.rainforest-alliance.org/business/wp-content/uploads/2018/10/Lenzing-Canopy-Verification-Audit-Public-Report\\_sans-Russia\\_23May2017.pdf](https://www.rainforest-alliance.org/business/wp-content/uploads/2018/10/Lenzing-Canopy-Verification-Audit-Public-Report_sans-Russia_23May2017.pdf))

20) Restatement: in the 2017 Sustainability Report, the share of own pulp production was stated on a capacity basis. [102-48]

## Wood and dissolving wood pulp certification in the Lenzing Group [308-1]

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<sup>21</sup> 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 will be renewed in 2019.

The certification status of all wood input into Lenzing's production – directly through own procurement for the owned dissolving

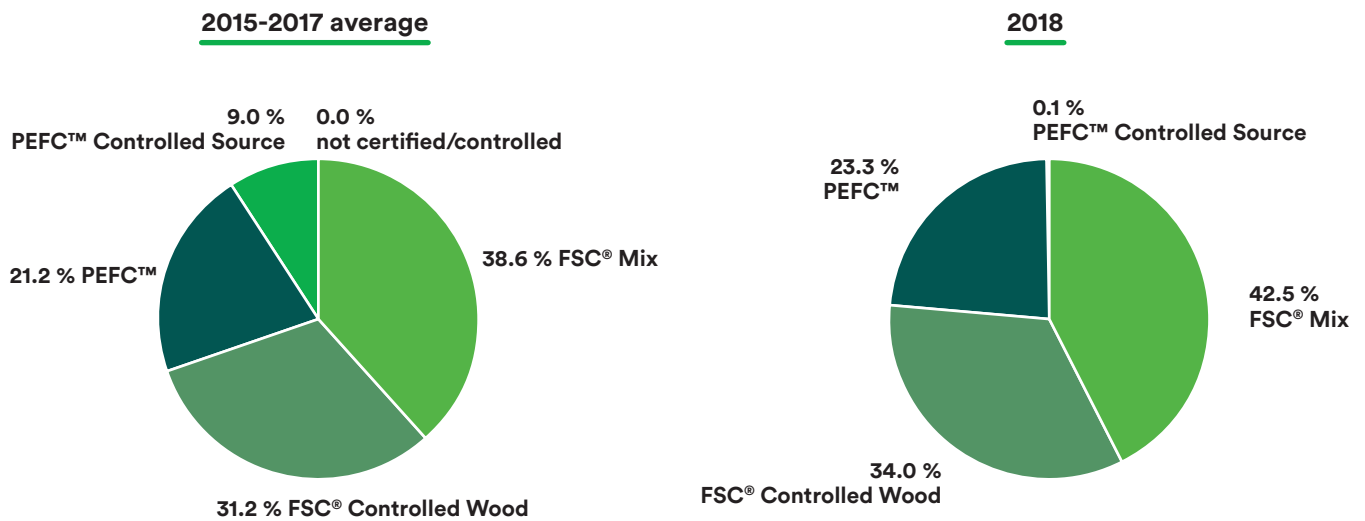
wood pulp mills, and indirectly through dissolving wood pulp suppliers – is shown in the figure below. All Lenzing Group production sites are FSC® CoC (chain of custody) certified.

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. 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. As the availability of FSC® wood in the region is still very low, for the time being the majority of wood sourced in Central Europe has both FSC® controlled wood status and the PEFC™ certificate.

### Certification status in the Lenzing Group

Certification status of total wood input at Lenzing fiber production sites via own and purchased dissolving wood pulp; Left: average 2015-2017, changes less than 3 percent in shares. Right: 2018. Basis: dissolving wood pulp by weight. All PEFC™ certified or controlled sources are also FSC® controlled.

Figure 3/1



21) Non-certified wood was used for R&D purposes and was submitted to a due-diligence process according to Lenzing's Wood and Pulp Policy.

# Wood & dissolving wood pulp

For detailed explanations of the certificates and Controlled Wood, see the 2017 Lenzing Sustainability Report (<https://www.lenzing.com/en/sustainability-reports>).

In Central Europe, the Lenzing Group needs to procure wood other than that certified to FSC® or PEFC™. This proportion of wood is inspected in line with these standards and is shown in figure 3/1 “Certification status” as “FSC® Controlled Wood” or “PEFC™ Controlled Source”. 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. However, experience shows that their ownership of the forest is for the long term with a very cautious harvesting behavior. 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. In very rare exceptional cases, suppliers who do not comply with these rules are delisted. Consequently, Lenzing also purchases reliable but limited quantities of wood from owners of small forests resulting in Controlled Source/Wood after application of the required inspection regime.

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

## Biodiversity in sustainably managed forests and plantations

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. Plantations with FSC® certification fulfill management criteria to protect biodiversity<sup>22</sup>. 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®. Approximately 25 percent of this land is not planted with trees, but conserved for biodiversity<sup>23</sup>. 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<sup>24,25</sup>. [304-2]

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.

## Societal aspects, especially human rights

Lenzing’s Wood and Pulp Policy<sup>26</sup> 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 comply at least with ILO Core Conventions<sup>27</sup>.

Lenzing’s Policy on Human Rights and Labor Standards<sup>28</sup> includes the commitment to hold suppliers to the same high standards as those observed internally. The EcoVadis supplier assessment tool

includes fair labor rights in the upstream supply chain. The Lenzing Group’s own labor practices also form part of the EcoVadis assessment.

## Responsible wood sourcing for Lenzing Group dissolving wood pulp mills

The wood processed in Lenzing (Austria) and Paskov (Czech Republic) is procured by a team of experts who are qualified, well-trained foresters, and have reliable long-term relationships with their suppliers.

The Lenzing site uses mainly beech wood plus small amounts of other hardwoods and spruce, whereas the Paskov plant utilizes spruce wood. Lenzing primarily makes use of timber generated by thinning, which is unsuitable for high-grade products, such as furniture.

In wood-sourcing countries, the percentage of broadleaf forest, especially beech, is increasing<sup>29</sup>, as forests are being returned to a more natural mix. The area devoted to spruce cultivation is decreasing, although growing stocks are still increasing in all countries due to low felling rates<sup>29</sup>. 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 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.<sup>30</sup>

Currently, about 700 suppliers deliver wood to Lenzing sites. A large number of them are private owners. The state forests of Austria, Germany, Czech Republic, and Slovakia are also important wood sources for Lenzing sites and supply about 40 percent of the wood procured; these have strong political commitments to sustainable management of their forests. Sustainability criteria have long since been crucial for the selection of suppliers. Lenzing’s sourcing policy has been agreed upon by all suppliers in personal communication. Regular formal audits are conducted, but ongoing, day-to-day, informal, personal contact between Lenzing’s procurement team and suppliers is even more important. In case of

22) FSC Global Development GmbH, 2014 (<https://ic.fsc.org/en/news-updates/id/1351>)

23) PAMSA, 2016 (<http://www.thepaperstory.co.za/celebrating-trees-wood-and-water-this-arbor-week-4-10-september/>)

24) PAMSA, 2016 (<http://www.thepaperstory.co.za/celebrating-trees-wood-and-water-this-arbor-week-4-10-september/>)

25) Sappi, 2017 (<https://cdn-s3.sappi.com/s3fs-public/Sappi-FAQs-Forests-and-wetlands.pdf>)

26) <http://www.lenzing.com/en/responsibility/ecological-responsibility/wood-and-pulp-policy.html>

27) ILO: International Labour Organization, 2010 ([https://www.ilo.org/asia/decentwork/dwcp/WCMS\\_143046/lang-en/index.htm](https://www.ilo.org/asia/decentwork/dwcp/WCMS_143046/lang-en/index.htm))

28) <https://www.lenzing.com/policy-human-rights>

29) Schwarzbauer and Wittmann, 2018

30) Niedermair et al., 2007

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 2018.

Strict European forest regulations and reliable enforcement of these regulations and laws also ensure the sustainability of Lenzing's supply partners.

The Lenzing Group has 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 insecurities 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.

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.

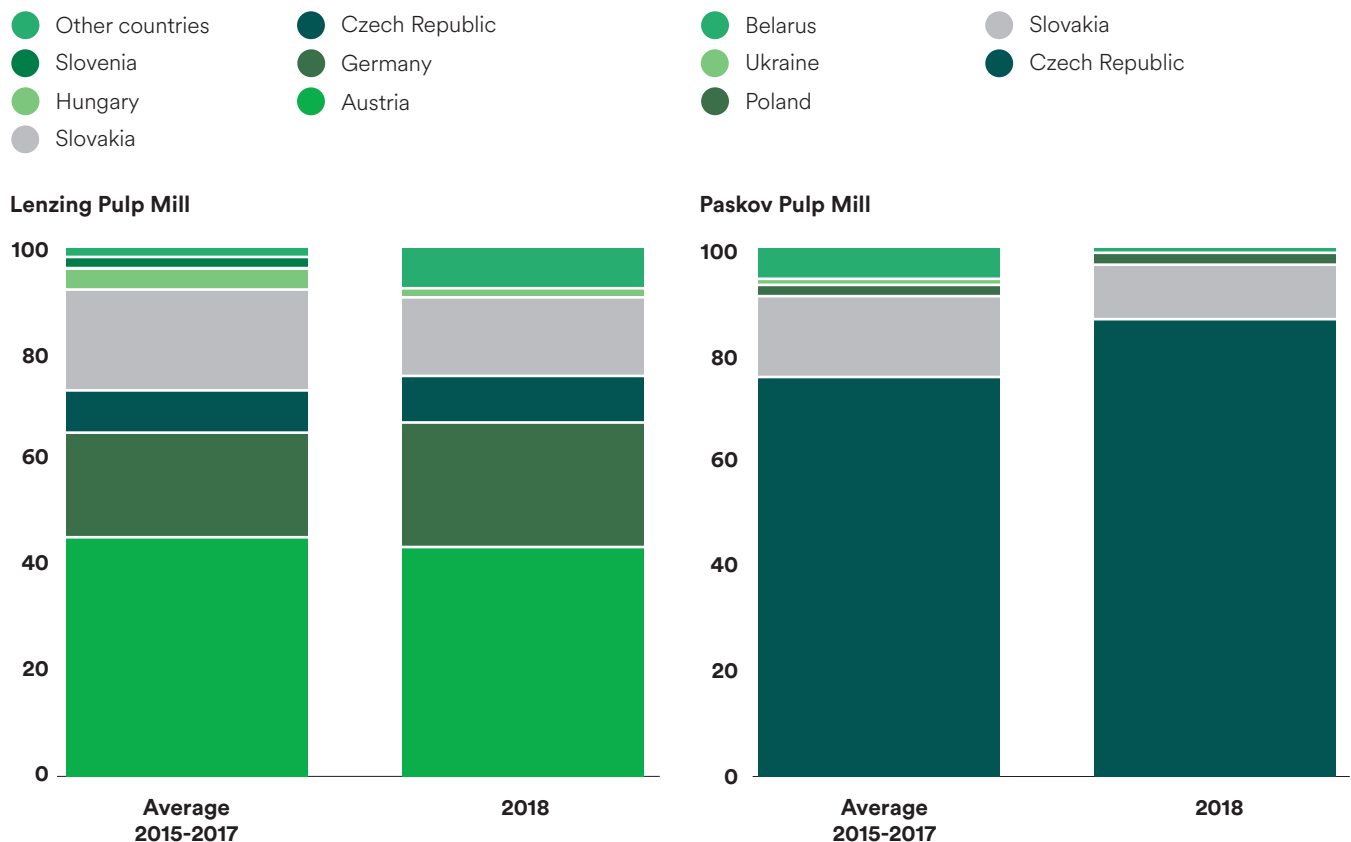
### Regional wood supply

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 wherever possible. The proportion of regional<sup>31</sup> wood supply was 98 percent for the Lenzing site in the last three years. Due to sourcing problems caused by updated FSC® risk assessments in some Central European countries, the regional supply decreased to 92.5 percent in 2018. Transport distances have increased as a consequence, as have greenhouse gas emissions by transport and transport costs.

For the Paskov site, the regional supply increased from 93 percent (2015-2017 average) to 99 percent, mainly due to direct supply from the Czech Republic. [204-1]

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

Beech and spruce, by country, average 2015-2017 and 2018. "Other countries" for Lenzing site are Estonia, France, Switzerland, Poland, Romania, Russia, and Ukraine (until mid-2018). "Other countries" for Paskov site are Ukraine and Belarus. **Figure 3/2**



Wood from Belarus, Estonia, Poland, Romania, Russia, and Ukraine is exclusively sourced with FSC® certificate. Wood supplies from Ukraine to the Paskov site ceased in 2016. Underlying figures see Annex page 69.

31) Regional wood supply originates from the country where the pulp mill is situated, and neighbouring countries from which wood can be transported directly without crossing a third country.

# Chemical sourcing

Around 90 percent of the chemicals are sourced regionally<sup>32</sup> on Group level (table 3/2). [204-1]

The most important chemicals used – amounting to approx. 85 percent of the overall purchase volume – are: caustic soda (NaOH), carbon disulfide (CS<sub>2</sub>), sulfuric acid (H<sub>2</sub>SO<sub>4</sub>), sulfur (S), sulfur dioxide (SO<sub>2</sub>), softening agents, flame retardants, modifiers, N-methylmorpholine N-oxide (NMMO), titanium dioxide (TiO<sub>2</sub>), and zinc sulfate (ZnSO<sub>4</sub>). Figures for chemical sourcing will not be provided for confidentiality reasons. [301-1]

In past supplier assessments, no violations of environmental, social, or ethical standards were found that could have led to cancellation of existing supplier contracts.

## 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.

**Regionality\* of purchased chemicals** **Table 3/2**

	Regionally purchased	Not regionally purchased
2016	91 %	9 %
2017	92 %	8 %
2018	93 %	7 %

\* regionally: same country and neighbouring countries

## Chemical suppliers

All of the Lenzing Group's suppliers must comply with the Lenzing Global Supplier Code of Conduct. This code was implemented in 2012 and has applied to every order since. A new Global Supplier Code of Conduct was developed in 2016 and implementation was completed in 2018. It will apply to all suppliers when their contracts are renewed in future. 80 percent of all purchased chemicals are sourced from fewer than 30 suppliers. The relationship with these suppliers is characterized by high stability. [102-10]

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. With the support of external experts, suppliers are interviewed on a regular basis and evaluated with regard to environmental and safety aspects. Subsequently, a final assessment is conducted, which influences the overall supplier assessment and constitutes a major criterion for sustainable cooperation with suppliers.

32) "Regionally": from the same country or from neighboring countries.

## Logistics in the supply chain [102-10]

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The Lenzing Group is working to improve the sustainability aspects and impacts of logistics by taking a continuous improvement approach, and by exploring innovative concepts, which can lead to major steps towards a lower environmental impact in the future.

In the course of the climate target setting project, current emissions from logistics are being assessed in detail as part of Scope 3 emissions. Some improvement was attained due to loading of the goods in fuel-efficient, ultra-large modern fleets.

In Europe/Americas, there are ongoing efforts to make a step change in terms of reducing CO<sub>2</sub> emissions from logistics, but the impact cannot yet be quantified.

The Lenzing Group continuously strives to switch from road to rail for long-haul routes in its logistics. **[308-2]**





# Efficient production

<b>Efficient production</b>	<b>36</b>
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# Biorefinery

Dissolving wood pulp is the most important raw material used in producing Lenzing's wood-based cellulosic fibers. The Lenzing Group operates two pulp production plants: one at the Lenzing site (Austria) and one in Paskov (Czech Republic). The biorefinery concept ensures that 100 percent of wood constituents are used to produce fibers, biobased chemicals, and bioenergy, thereby maximizing value creation from an economic and environmental perspective. Dissolving wood pulp production 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 instance for fiber production or for feeding to the local grid.

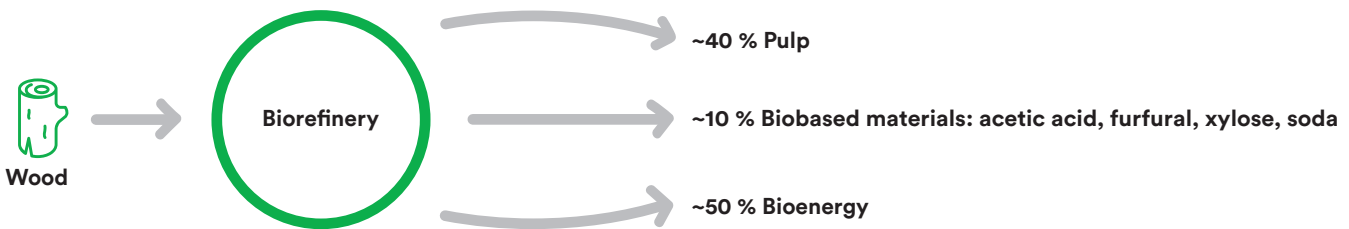
## Pulp bleaching

Bleaching is necessary to yield a dissolving pulp quality suitable for viscose, modal, and lyocell fiber production. Most dissolving wood pulp producers use elemental chlorine free (ECF) pulp bleaching processes. Lenzing's two biorefineries produce pulp without using any chemicals containing chlorine, but with oxygen-based substances instead. The totally chlorine free (TCF) pulp bleaching process under the use of oxygen-based substances at both plants satisfies the Best Available Technology standards of the European Union<sup>33</sup>.

### 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 4/1



33) Suhr et al., 2015

# Resources and emissions

## Management approach

The Lenzing Group is certified with the ISO 14001 environmental management system. In 2018 all Lenzing sites completed the transition to the new ISO 14001:2015. The management approach to Lenzing's environmental-related materiality topics meets the requirements of the ISO standards. These standards constitute the core of Lenzing's environmental management and they are integrated into the company's environment management system based on ISO 14001.

Implementation of ISO 14001 at Lenzing is intended to ensure a systematic and holistic approach to all of its environmental issues as well as effective and efficient fulfillment of the legal requirements and non-legal obligations that Lenzing takes upon itself as com-

mitments to various interested parties (stakeholders). The systematic approach places great emphasis on continuous improvement through an integrated management process, with comprehensive prioritization for the Group as a whole and at each production site.

Overall, policies and environmental standards are defined at Group level. Medium to long-term targets for key environmental performances aspects are set at Group level as part of the sustainability targets.

All fiber and dissolving wood pulp production sites are certified in accordance with ISO 9001, ISO 14001, and OHSAS 18001 system certifications.

The following table further illustrates this management approach.

Management approach in the Lenzing Group

Table 4/1

	Policies	Commitments	Goals and targets	Responsibilities	Resources
<b>Energy and CO<sub>2</sub> emissions</b>	<p>Lenzing is committed to improving energy efficiency and reducing CO<sub>2</sub> emissions to contribute to global climate protection.</p> <p>Lenzing considers emissions along the value chain. CO<sub>2</sub> emissions are reduced by utilizing efficient energy conversion technologies for heat and electricity generation, minimising energy consumption in production, and working together with all the energy providers to the Lenzing Group.</p>	<p>The Lenzing Group has signed the Fashion Industry Charter for Climate Action*.</p> <p>The Charter is supported by 43 heads of the fashion industry, who have committed to reducing their aggregated greenhouse gas emissions by 30 percent by 2030.</p>	<p>A science-based target for the Lenzing Group is in preparation.</p>	<p>Utilities and site service management</p>	<p>CAPEX and OPEX</p>
<b>Air emissions</b>	<p>Group Policy for Safety, Health and Environment:**</p> <p>“Our safety, health and environmental (SHE) ambitions are driven by a strong belief that protecting people from harm and preserving the environment are fundamental prerequisites for doing our business. Therefore safety, health, and environment are anchored as corporate values for the Lenzing Group.”</p>	<p>Group Policy for Safety, Health and Environment:**</p> <p>“We protect the environments we operate in by minimizing emissions, waste and by improving resource efficiency.”</p>	<ul style="list-style-type: none"> <li>All sites need to comply with the Group environmental standards by 2022.</li> <li>As part of the sustainability targets, specific sulfur emissions must be reduced by 50 percent by 2022 (baseline 2014).</li> </ul>	<p>Group and site SHE personnel</p>	<p>CAPEX</p>
<b>Water use and pollution</b>		<p>“We comply with all applicable legislation and regulations in countries where we operate and go beyond compliance to relevant industry standards.”</p> <p>“We train and involve all our employees in hazard identification, risk assessment and control.”</p>	<ul style="list-style-type: none"> <li>We aim to have the most efficient and state-of-the-art wastewater treatment plants at all sites.</li> <li>All sites need to comply with the Group environmental standards by 2022.</li> <li>As part of the sustainability targets, Group COD*** emissions must be reduced by 20 percent by 2022 (baseline 2014).</li> </ul>	<p>Group and site SHE personnel</p>	<p>CAPEX</p>
<b>Chemicals</b>			<ul style="list-style-type: none"> <li>As part of the Group sustainability targets, specific sulfur emissions must be reduced by 50 percent by 2022 (baseline 2014) mainly through the additional recovery of CS<sub>2</sub>.</li> </ul>	<p>Group and site SHE personnel</p>	<p>CAPEX</p>
<b>Waste</b>			<ul style="list-style-type: none"> <li>All sites need to comply with the Group environmental standards by 2022.</li> <li>We aim to establish best practices to improve waste management and reduce the risks related to waste management.</li> </ul>	<p>Group and site SHE personnel</p>	<p>CAPEX and OPEX</p>

\* Published in Katowice, Poland at the UN UNFCCC climate conference in December 2018.

\*\* [https://www.lenzing.com/fileadmin/content/PDF/04\\_Nachhaltigkeit/Richtlinien\\_u\\_Kodizen/EN/SHE\\_policy\\_EN.pdf](https://www.lenzing.com/fileadmin/content/PDF/04_Nachhaltigkeit/Richtlinien_u_Kodizen/EN/SHE_policy_EN.pdf)

\*\*\* Chemical Oxygen Demand

# Resources and emissions

## Restatements [102-48]

The key material topics of Lenzing are discussed in the following sections, using data from the 2014 – 2018 reporting period.

Compared to the previous report, tables 4/2, 4/3, 4/5, 4/6, 4/9, 4/10 for the years 2014, 2016 and 2017 have been restated due to recalculation decisions.

The system boundaries have been changed for the site at Lenzing, Austria. In the 2017 report, energy and emissions from facilities belonging to the Lenzing Group alone were reported. Energy sold to external parties in the industrial park was therefore excluded, as were the emissions associated with that energy.

In this report, the energy delivered to all facilities of the industrial park as well as associated emissions are included, in order to be consistent with the requirements of the Greenhouse Gas (GHG) Protocol.

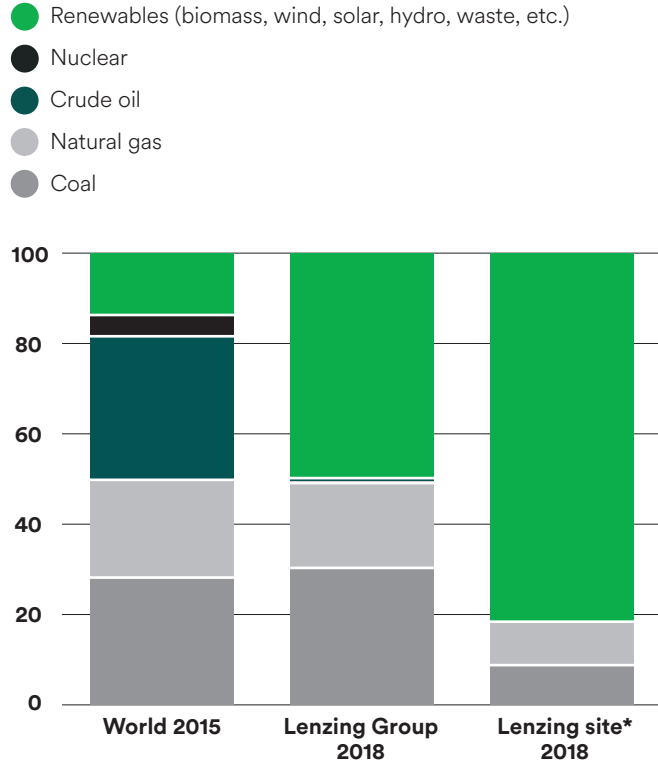
For the production site in Purwakarta (Indonesia), the CO<sub>2</sub> emissions calculation was revised to reflect the used coal quality and corresponding emission factors. For Lenzing Nanjing Fibers (China), the calculation of scope 2 emissions caused by the energy provider were used (market-based approach) to align with the GHG protocol.

## Energy use and climate change

Pulp and fiber production are energy-intensive processes. On the energy supply side, improvements in energy efficiency are being achieved through use of renewable fuels in power production. Risks relating to climate change are covered in the Risk Report of the 2018 Lenzing Group Annual Report.

## Energy sources of the world, Lenzing Group and Lenzing site\*

Figure 4/2



\* 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.

On the energy demand side, Lenzing is reducing process energy consumption through various projects addressing optimization, efficient planning, and reduction of losses.

All these efforts have helped to achieve around one percent savings in specific primary energy consumption and around two percent reduction in specific CO<sub>2</sub> emissions in the Lenzing Group during the reporting period.

## Primary energy consumption of the Lenzing Group

Table 4/2 [302-1, 302-3]

	2014	2016	2017	2018
Primary energy consumption* (million GJ)	43.10	43.11	42.84	42.62
Fossil primary energy (million GJ)	23.39	23.09	23.18	22.44
Renewable primary energy (million GJ)	19.71	20.02	19.67	20.18
Specific primary energy consumption** (Index in percentage based on GJ/t, 2014 = 100 %)	100 %	99.3 %	99.6 %	98.8 %

\* 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.

\*\* All specific indicators in this chapter are reported per unit of production.

## Greenhouse gas emissions of the Lenzing Group

Table 4/3 [305-2, 305-4]

	2014	2016	2017	2018
Total greenhouse gas emissions, CO <sub>2</sub> eq. (million metric tons)	1.79	1.76	1.78	1.75
Direct emission i.e. scope 1 (million metric tons)	1.12	1.17	1.15	1.15
Indirect emission i.e. scope 2 (million metric tons)	0.66	0.59	0.63	0.59
Specific GHG emissions* (index in percentage based on metric tons of CO <sub>2</sub> eq./t, 2014 = 100 %)	100 %	97.5 %	99.7 %	97.6 %

\* Includes both scope 1 and 2 emissions of all greenhouse gases, expressed as CO<sub>2</sub> 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<sub>2</sub>SO<sub>4</sub> and CS<sub>2</sub>, leading to a higher energy demand and scope 1+2 CO<sub>2</sub> 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.

# Resources and emissions

Furthermore, the Lenzing Group is committed to reducing emissions all along the value chain. Consequently, the company engages with its dissolving wood pulp and chemical suppliers to reduce their CO<sub>2</sub> emissions. Lenzing's innovative products reduce the footprint of downstream business partners (chapter 5). Table 4/4 shows in detail how Lenzing is contributing along the value chain.

**Lenzing's contribution to reducing the impact of climate change/to decarbonize along the value chain**

**Table 4/4**

Position in the value chain	Topic relevant to climate change	Details	Lenzing Group Contribution
Sourcing of wood and pulp	CO <sub>2</sub> 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 <sub>2</sub> 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, co-products 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 <sub>2</sub> 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 <sub>2</sub> emissions in the value chain. LENZING™ Modal Eco Color is a net-benefit product*.
Product use	CO <sub>2</sub> 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	Lyocell fibers with REFIBRA™ technology are made by partly using textile scraps, thereby avoiding textile waste and virgin fiber production
	Waste incineration with energy use	Biobased CO <sub>2</sub>	Incineration of LENZING™ fibers leads to release of biobased CO <sub>2</sub> emissions which are considered as CO <sub>2</sub> neutral.
	Anaerobic digestion with energy recovery	Biogas production	For example, workwear made from LENZING™ fibers that are digested and the resulting biogas can be used for energy purposes. This shows potential of biodegradability and energy recovery.

## Indirect contributions to avoid climate change impacts

Production of natural fibers	Use of fossil fuels	For production of agrochemicals and fuels for machinery	By blending with wood-based fibers, climate change impacts of the final products can be reduced.
	Agricultural emissions	N <sub>2</sub> O from fertilizers, methane from animals	
Production of synthetic fibers	Use of fossil fuels	For energy, and material basis	By replacing synthetic fibers with wood-based fibers, climate change impacts of the final products can be reduced.
Production of chemicals	Use of fossil fuels	For energy, and material basis	Biorefinery co-products from Lenzing pulp mills replace products from fossil sources: acetic acid, 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

## Air emissions

Lenzing Group sites producing viscose fiber, i.e., Lenzing (Austria), Nanjing (China), and Purwakarta (Indonesia), are equipped with several waste gas purification and recovery technologies.

Production of lyocell fibers generates only traces of emissions due to the fact that NMMO is retained in the water/solvent cycle throughout the entire process.

Sulfur emissions, i.e., carbon disulfide (CS<sub>2</sub>) and hydrogen sulfide (H<sub>2</sub>S), originate from the viscose process and sulfur dioxide (SO<sub>2</sub>) emissions both from the process and from own energy production. In 2018, the CS<sub>2</sub> recovery system at the Purwakarta site was improved and an SO<sub>2</sub> reduction project was implemented in the energy production facility. These two measures contributed to a significant decrease in emissions of sulfur and sulfur dioxide. [305-7]

### Absolute emissions to air\*

Table 4/5

	2014	2016	2017	2018
Sulfur emissions (t) (CS <sub>2</sub> , H <sub>2</sub> S emissions expressed as sulfur)	34,787	31,591	27,853	24,559
SO <sub>2</sub> emissions (t)	3,908	4,513	3,671	2,996

\* Sulfur emissions were calculated using mass balance, and SO<sub>2</sub> emissions are based on measurements. NO<sub>x</sub> data is not available on a Group level. Reporting is planned for the coming year.

### Specific emissions to air

Index in percentage based on kg/t, 2014 = 100 %

Table 4/6

	2014	2016	2017	2018
Sulfur emissions	100 %	90.2 %	80.2 %	70.5 %
SO <sub>2</sub> emissions	100 %	114.7 %	94.1 %	76.6 %

# Resources and emissions

## Water use and pollution

Lenzing uses water for processes and cooling purposes and is committed to improving the water-related impacts at its production plants and all along the value chain.

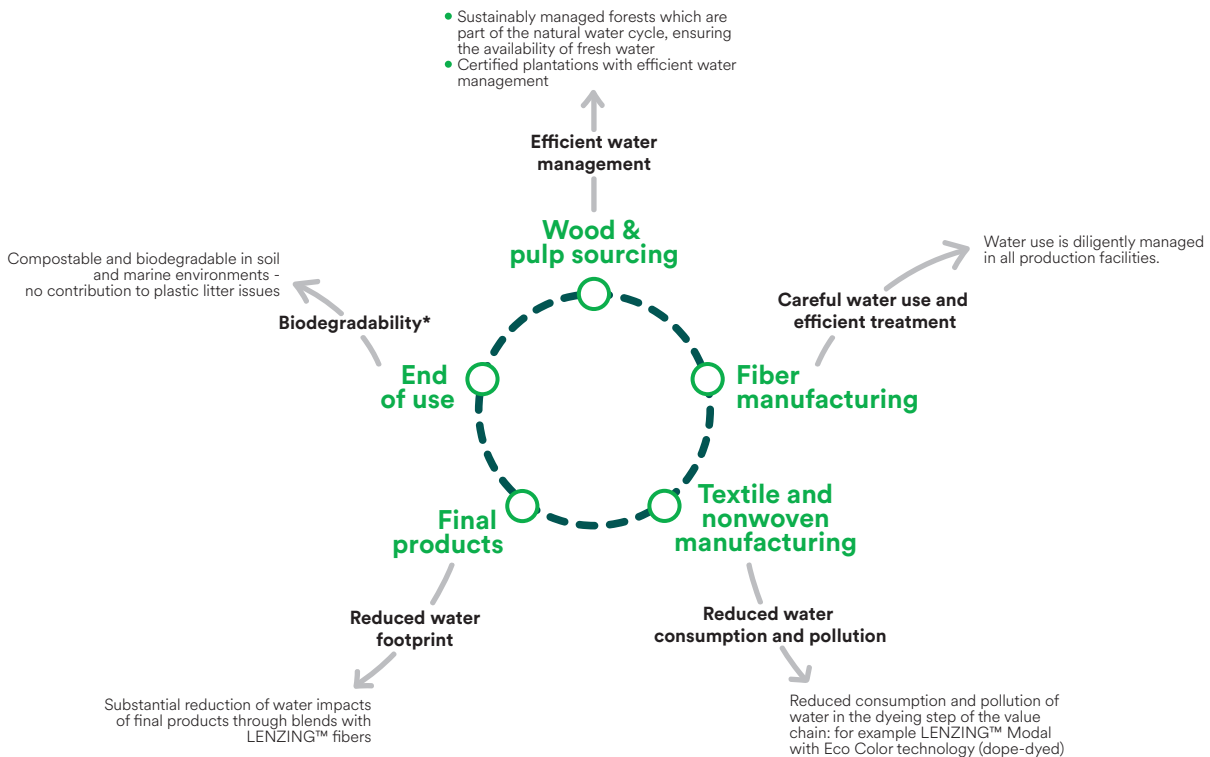
The objective of water management at Lenzing is to close loops through recycling and reusing water. For example, the Paskov pulp plant (Czech Republic) has a closed-loop cooling water system and therefore requires little make-up water to compensate for losses. The lyocell process uses around one third of the water required by the viscose process<sup>34</sup>. Consequently, further expansion of lyocell fiber capacities will reduce the Lenzing Group's specific water consumption in the long term.

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. Figure 4/3 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 more water-intensive fibers and/or to avoid the most polluting steps in the value chain, such as dyeing.

No significant changes to either the total water intake or specific water use occurred during the reporting period in the Lenzing Group, as shown in table 4/7 and 4/8.

### Lenzing's water stewardship

Figure 4/3



\* 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.

34) This refers to Lenzing's viscose process



## Water use in the Lenzing Group

million m<sup>3</sup>

Table 4/7 [303-1, 306-1]

	2014	2016	2017	2018
Water intake/extracted	117	111	111	112
Surface water	103	98	98	97
Ground water	14	13	13	15
Water returned*	108	103	105	100
Wastewater effluent	64	62	62	59
Cooling water returned to rivers etc.	44	42	43	40

\* 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. For 2018, cooling water data from Purwakarta site (Indonesia) is not available.

## Specific water use in the Lenzing Group

Table 4/8

	2014	2016	2017	2018
Specific water intake/extracted (index in percentage based on m <sup>3</sup> /t, 2014 = 100 %)	100 %	93.9 %	95.4 %	95.7 %

## Water effluents

Process water is treated by biological wastewater treatment plants (WWTPs). The Lenzing Group has wastewater treatment plants at all its sites except Grimsby (United Kingdom). However, the waste water situation at Grimsby complies with 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 are extracted early on in the biorefinery process, which reduces

the Chemical Oxygen Demand (COD) in the wastewater. This is one example of best practices where waste is converted into useful products, thereby reducing the amount of waste to be treated at the wastewater treatment plant or avoiding pollution. Sulfate emissions mainly originate from the viscose process; while lyocell has lower sulfate emissions in comparison. COD emissions originate from pulp and fiber production processes and their reduction is part of the Lenzing Group's sustainability targets (for details, see chapter 2, page 20). The total as well as the specific emissions of both COD and sulfates decreased in 2018, while amine emissions remained stable compared to those of 2017, and below 2016 levels.

## Absolute emissions to water\*

Table 4/9

	2014	2016	2017	2018
COD after WWTP (t)	6,110	6,311	6,285	5,713
SO <sub>4</sub> <sup>2-</sup> after WWTP (t)	173,648	168,728	166,411	159,156
Amines after WWTP (t)	198	239	224	226

\* Waste water from Nanjing site (China) is treated by an external service provider, so Lenzing does not have operational control over waste-water treatment there. Consequently, emissions to water from this site are not reported here. In this report, 2018 SO<sub>4</sub><sup>2-</sup> 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) [102-48]

## Specific emissions to water

Index in percentage based on kg/t, 2014 = 100 %

Table 4/10

	2014	2016	2017	2018
COD after WWTP	100 %	102.5 %	103.1 %	93.4 %
SO <sub>4</sub> after WWTP	100 %	96.5 %	96 %	91.5 %
Amines after WWTP	100 %	119.7 %	113.1 %	113.8 %

# Resources and emissions

## Remarks on water pollution by microplastics: Biodegradability after end of use

Microplastics – small plastic particles less than 5 mm in size – have become the focus of politicians, NGOs, and the media, as they are perceived as a major pollution problem in freshwater bodies and in the sea. While recent industry initiatives and legislation intend to promote the development of less polluting alternatives, Lenzing – in its capacity as a producer of wood-based fibers – laid the foundations for biodegradable products more than 80 years ago.

The Lenzing Group collaborates in industry initiatives, including the Microfibers Consortium of the European Outdoor Group and the cross-industry initiative of the textile and

detergent industries. Input to the political processes of the European Union (EU) concerning plastics regulations and circular economy was provided through public consultations. As regards the EU's recently developed "Single-use plastics Directive", 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.

A recent study by Organic Waste Systems (OWS) – one of the world's leading biodegradability and compostability testing companies – confirms that LENZING™ Viscose and Lyocell fibers also biodegrade in freshwater (this was demonstrated previously for marine conditions and for soil and compost). For more information see Sustainability Report 2017, page 78.

## Chemicals and toxicity

The local Safety, Health, and Environment (SHE) managers are responsible for ensuring that the list of process chemicals is kept up to date with impending regulations. Process chemicals include all substances required to manufacture Lenzing's products, and those with which products come into contact.

Research and development projects assess potential risks for people and the environment associated with use of new materials. New chemicals are only cleared for large-scale technical deployment when their safe use and compliance with all legal specifications is ensured.

During dissolving wood pulp, viscose, modal, and lyocell fiber production processes, important chemicals such as sulfuric acid, sodium sulfate, sulfur dioxide, carbon disulfide, zinc sulfate and NMMO are recovered or transformed. In some cases the recovery rate is very high, for example NMMO used in lyocell fiber production has a recovery rate higher than 99 percent.

## Waste

Waste management is an integral part of Lenzing's environmental management, and the activities relating to waste management, e.g., collection, separation, storage, transportation, and treatment of waste, are planned and performed based on an understanding of their environmental impact and risks.

The company's approach to waste management uses a management hierarchy as its guiding principle. This means that Lenzing plans and prioritizes waste management, considering:

1. prevention and reduction
2. reuse and recycling
3. energy recovery
4. landfill

Waste management is addressed through the site waste management system that enables the planning, implementation, and review of the activities and issues relevant to waste prevention, generation, transport, disposal, monitoring, reporting, as well as external service providers.

In 2018, Lenzing published its internal Waste Management Guideline, which has further consolidated the Group approach to waste data reporting.

## Waste generated by the Lenzing Group

In metric tons

Table 4/11

	2017	2018
Total waste*	140,149	152,254
Hazardous waste	40,052	55,166
Recycling	2,419	3,552
Incineration	34,254	49,499
Landfill	3,219	2,014
Others**	160	101
Non-hazardous waste	100,097	97,088
Recycling	76,863	71,785
Incineration	9,621	9,435
Landfill	13,372	14,870
Others**	241	997

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

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

Recyclable fractions of waste are separated and sent for recycling. Unrecyclable fractions are disposed of in accordance with local legislation. Wherever possible, Lenzing uses unrecyclable fractions to produce energy, for example in 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 from the production sites. Audits of these service providers are conducted periodically. If non-compliance issues are discovered at any contractor, the contract is terminated. **[306-2]**

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.





# Innovation for sustainable products

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# Innovation for sustainable products

Innovation and sustainability are at the heart of Lenzing's sCore TEN strategy. Every new development, whether it be process-, product-, or application-related, is evaluated from the very beginning in terms of sustainability. Thinking sustainably and paying due regard to both the life-cycle perspective and the net-benefit principle are decisive for innovations at Lenzing. Certain projects and development work focus primarily on sustainability aspects.

The central hub and innovation center for this is the Research and Development (R&D) department at the company's headquarters in Lenzing, Austria. It has an extensive infrastructure at its disposal for developments in the widest variety of fields. At the end of the reporting year, 204 people carried out research in the Lenzing R&D department (2017: 192; 2016: 176). Owing to the conclusion of important investment projects, the R&D expenditures, calculated according to the Frascati method (minus funding received) decreased from 55.4 mn in 2017 to EUR 42.8 mn in 2018 (2016: EUR 46.4 million). These R&D expenditure figures underline Lenzing's commitment to drive sustainable innovations. Another indicator for the innovative strength of the Lenzing Group are the 1,324 patents and patent applications (from 242 patent families) which Lenzing possesses worldwide in 49 countries.

## Developing processes and products hand in hand

Outstanding examples based on Lenzing's net-benefit principles include the recently presented innovations TENCEL™ Luxe filament and Lenzing™ Web technology. Both innovations can be employed to skip production steps in the value chain. In both cases, the production process, has been developed simultaneously with the product applications.

The new TENCEL™ Luxe branded cellulosic filament is based on the lyocell process and therefore meets Lenzing's strict environmental standards. Feedback from the group of first users in the luxury fashion segment was so positive that a second pilot plant for TENCEL™ Luxe continuous yarn is currently under construction in Lenzing.

LENZING™ Web is a new platform technology for making sustainable nonwoven products from cellulose in a single production step. Basis weights of the webs range from 15 g/m<sup>2</sup> to 80 g/m<sup>2</sup>, and a large selection of textures and drapeability properties are possible. The products can be certified as biodegradable. The technology offers 100 percent biobased and biodegradable market alternatives for the nonwovens market.

## Alternative sources of raw material for fiber production

Lenzing is also verifying the ecological and economic suitability of alternative sources of raw material for cellulosic fibers. The focus here lies in recycling and circular economy models. REFIBRA™ technology from Lenzing, for example, allows cotton scraps from the textile industry to be converted into dissolving wood pulp, partly replacing virgin pulp for use in the production of TENCEL™ lyocell fibers.

Latest research work is expanding the scope of the project by focusing on post-consumer waste. Post-consumer textiles differ greatly in terms of their quality and composition. This requires the development of new technologies to separate fiber blends and to remove textile auxiliaries and dyestuffs. Implications of the wearing phase of the textiles used must also be taken into account.

Lenzing continuously monitors potential alternative cellulose sources. Alternative cellulose sources can be using waste from food production, such as orange peel, or recultivation and using hemp as a raw material for pulp. Use of alternative raw materials entails major technology challenges. In the context of these projects, Lenzing carefully considers the availability and economic scalability as well as the overall ecological impact, which would arise from using such alternative cellulose sources.

## Process innovations to improve efficiency and sustainability

The process innovations focus on further improvement of the pulp and fiber production processes with regard to 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.

## Applications using fibers from Lenzing as a sustainable alternative

One example of the sustainable use of fibers from Lenzing are completely biodegradable wet wipes. Eco-disperse technology is also used to produce Lyocell short cut fibers, which – in combination with cellulose – are used for the production of flushable toilet towels. In line with current EU efforts to reduce plastic contamination, 100 percent cellulose wet wipes offer a sustainable alternative to disposable plastics.

The much discussed microplastics issue also affects the nonwoven and textile industry. In order to better understand the biodegradation of Lenzing's cellulosic fibers and other natural and wood-based fibers in various environments, particularly at sea, Lenzing is also collaborating with independent, external institutes. These activities are specifically addressing the problem of marine pollution caused by small fiber particles. Fibers from Lenzing can provide a solution.

## Cooperation

Lenzing R&D is also collaborating with external partners on several issues, as in the previously mentioned case of biodegradability. Another example is the Austrian Wood K plus competence center, which is a leading research institute in the area of wood and wood-related renewable resources in Europe and where Lenzing is the largest industrial partner. Basic research is being conducted within the framework of this competence center, which is related to Lenzing's areas of interest. See chapter 3 for further information.

Lenzing uses OEKO-TEX Standard 100 as the main certification for verifying the safety of its products. Monitoring of raw materials and production processes ensures that Lenzing fibers meet all the relevant regulations, guidelines, and standards. LENZING™ standard fibers are certified for food-contact applications according to European and U.S. regulations. **[416-2]**

The Lenzing team for Product Safety and Regulatory Affairs ensures that Lenzing is always up to date with any changes to the standards and regulations.

All fiber products from Lenzing are tested for health and safety aspects. However, the ultimate responsibility for the health of consumers is naturally borne by those companies that manufacture finished products from Lenzing fibers. **[416-1]**

Lenzing achieved significant quality improvements in 2018. Fibers with a higher purity and improved processing performance have been developed at all production facilities. Improvements have been achieved in terms of a cleaner spinning process and the moisture content of fibers. Regular in-depth testing of fiber properties and processing performance in subsequent value chain steps underline the consistency of production in the Lenzing Group.

In order to further improve customer intimacy, the third Lenzing Center of Excellence was opened in Indonesia in 2018. This investment adds to the competence centers in Austria and Hong Kong, and is targeted at improving pre-sales and post-sales services. Potential new applications, especially for textile customers, can now be developed worldwide.

2018 also saw the implementation of the “Heartbeat for Quality” initiative throughout the Group. The objectives of this are:

- Market leadership in terms of product consistency, application performance, and customer service
- Understanding customer requirements and adjusting the quality to meet them
- Using internal systems to expedite sustainable improvements in the production processes

Each production site now has concrete development plans for its systems, for employee involvement, and for improved technical solutions. Tailored to the specific circumstances at each of the production sites, quality-improving investments are planned, examples include a move to improved bale packaging, higher-capacity spinning jets, and online spinning-fault detection devices. The commitment of company management to quality and to funding important investments should provide a further improvement in product quality over the next 18 months.

Projects such as the development of secure packaging for fiber bales have been well received by customers. Implementation of this particular project throughout the Group commenced in the reporting year.

Endeavors to achieve zero-contamination nonwoven products were intensified through cooperation with major customers in 2018. The internal production auditing process for hygienic fibers and the drafting of a guideline for cleanliness and hygiene within the company increase employees’ awareness of the problem. These systems will be implemented throughout the Group in 2019.

Lenzing operates a quality management system as per ISO 9001. In 2018, Lenzing completed recertification in accordance with the new standard, ISO9001: 2015. This forms the basis for all work processes and reinforces our efforts to achieve comprehensive customer satisfaction.

Lenzing utilizes external third-party certifications to demonstrate the compatibility of its products in their appropriate area of use. The Lenzing Group’s product certifications are listed at the Lenzing website (<https://www.lenzing.com/en/sustainability/product-benefits/>). **[417-2]**





### Sustainable Development Goals in the Lenzing Group

At a United Nations (UN) summit in September 2015, all 193 member states adopted the “Agenda 2030 for Sustainable Development”. This plan addresses global challenges, including poverty, inequality and climate change. It focuses on the 17 Sustainable Development Goals (SDGs) that have emerged from a comprehensive process involving governments, business and civil society. Lenzing recognizes its responsibility and sees its pioneering role in the textile and nonwovens industries as an opportunity to contribute to achieving the sustainable development goals.\*

The “Naturally positive” sustainability strategy supports the following SDGs:

- **SDG 7:** Affordable and clean energy
- **SDG 9:** Industry, innovation and infrastructure
- **SDG 12:** Responsible consumption and production
- **SDG 13:** Climate change
- **SDG 15:** Life on land
- **SDG 17:** Partnerships for the goals

### Further goals for the Lenzing Group are:

- **SDG 1:** No poverty
- **SDG 3:** Good health and wellbeing for people
- **SDG 6:** Clean water and sanitation
- **SDG 8:** Decent work and economic growth
- **SDG 14:** Life below water

For the Lenzing Group, SDG 12, 13, 15 and 17 are particularly important, because their themes address those fields of the company’s activity where Lenzing can have the most positive impact. SDG 1, 3, 6, 8 and 14 are important goals, which Lenzing addresses by operating its business in a sustainable way. Owing to the nature of the company, the Lenzing Group has decided to focus its activities on specific regional challenges.

Sustainable sourcing, efficient use of raw materials, longstanding experience with biorefineries, life-cycle based thinking along the value chain and a long pipeline of innovative and sustainable products are some of the most important keywords for SDG 12, “Responsible consumption and production”.

The company contributes towards SDG 15, “Life on land”, with the longstanding

practice of responsible sourcing, particularly with regard to the main raw material, wood. Lenzing has set itself the target of engaging in the improvement of degraded land in Albania, a country where improvement in forestry and the training of forestry experts are a high priority.

With the commitment to the focus area of “Partnering for systemic change” and numerous activities in international multi-stakeholder dialogs, Lenzing contributes substantially towards SDG 17, “Partnerships for the goals”. For example, the Lenzing Group has signed the “Fashion Industry Charter for Climate Action” and committed itself to reducing aggregated greenhouse gas emissions by 30 percent by 2030. These efforts of the company contribute to SDG 13, “Measures for climate protection”.

Lenzing is contributing to SDG 7, “Affordable and clean energy”, 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.

Lenzing is contributing to the SDG 9, “Industry, innovation and infrastructure,” with innovative net benefit products, such as TENCEL™ Modal Eco Color and TENCEL™ Lyocell fibers with REFIBRA™ technology.

\* United Nations, 2018 (<https://www.un.org/sustainabledevelopment/development-agenda>)



# Responsibility for people

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# Employees

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

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

Lenzing's commitment to labor rights is described in detail in the following documents:

- Lenzing Global Code of Business Conduct (COBC)
- Lenzing Global Supplier Code of Conduct (SCOC)
- Policy on Human Rights and Labor Standards
- Wood and Pulp Policy
- Policy for Safety, Health and Environment (SHE)
- Sustainability Policy
- Product Safety Policy
- Quality Policy

Labor rights are subject to local laws. At all Lenzing sites, employees benefit from fair wages due to an acknowledged global grading system, which is used internally, collective bargaining or the activities of union representatives and national protection of 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 comply at least with ILO Core Conventions (read more in chapter 3). The Lenzing Group's own labor practices also form part of the EcoVadis assessment.

## Growing workforce

The Lenzing Group's workforce is growing, and the Group's activities are becoming increasingly international. At the end of 2018, the Lenzing Group employed 6,657<sup>35</sup> people in twelve countries, representing an increase of 5.4 percent compared to 2017 (6,315 employees). The number of contractors amounted to 523 in 2018, after 520 in 2017. The proportion of full-time posts in the Lenzing Group amounted to 5,162, i.e., 78 percent of the workforce (658 = 13 percent thereof women and 4,504 = 87 percent men). Consequently, the number of part-time posts amounted to 1,495, i.e., 22 percent<sup>36</sup> (265 = 18 percent thereof women and 1,230 = 82 percent men). The Lenzing Group employed 182 apprentices, with 94 percent of them working at Lenzing's sites in Austria and 6 percent in the United Kingdom. **[102-8, 401-1]**

## Diversity

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. Cultural diversity and respect for others constitute an integral part of Lenzing's corporate values. The management team actively supports internationalization of the workforce at all levels. At the same time, Lenzing is still a practice-oriented company characterized by flexibility and a high service level, within which a familial atmosphere has been preserved.

Respect, diversity, and inclusion are fundamental pillars of the sCore TEN corporate strategy and integral, indispensable elements of the Lenzing culture. A diversity concept in written form was resolved on February 19, 2018. These rules are taken into consideration in the staffing of positions on the Supervisory and Management boards. Apart from technical and personal qualifications, such aspects as age structure, origin, gender, training, and background experience are considered in this context.

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 recruited locally. For this reason the proportion of employees with a nationality other than that of the respective Lenzing subsidiary is 3.3 percent. The proportion of female employees is growing slowly from 13.0 percent in 2016 to 13.5 percent in 2017 and 13.9 percent in 2018.

The proportion of over-50s in the workforce has grown in recent years from 21.3 percent in 2016 and 22.3 percent in 2017 to 22.9 percent in 2018.

The employee turnover rate (i.e., the number of people leaving the company) stood at 5.8<sup>37</sup> percent in 2016, 4.2 percent in 2017, and 5.4 percent in 2018<sup>38</sup>. **[102-8, 401-1, 405-1]**

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

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

37) Restatement: This figure has been corrected and deviates from the figure in the 2016 report (7.1 percent). **[102-48]**

38) Restatement: 2017 turnover rate was based on heads; change of the calculation system to FTE in 2018 **[102-48]**

## Diversity: information by country, 2018

(headcount, proportion of women, proportion of over-50s, employee turnover rate)

Table 6/1 [102-8]

	Headcounts*	Female in %	Age > 50 in %	Turnover in %
Group	6,657	13.9	22.9	5.4
Austria	3,216	16.8	27.2	5.1
Indonesia	1,763	3.6	12.8	3.3
China	823	19.4	5.2	9.5
Czech Republic	406	17.7	49.0	7.2
USA	205	17.6	42.4	9.9
United Kingdom	179	12.3	49.7	1.5
Other**	65	44.6	10.8	12.5

\* Employees excluding apprentices and contractors

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

Lenzing complies with the local labor standards in all countries. 81.7 percent (2017<sup>39</sup>: 81.3 percent; 2016: 45.9 percent) of the Lenzing Group's global workforce are included in collective agreements. The proportion of employees to whom notice periods governed by labor law or collective agreement apply amounts to 97.8 percent (2017: 98.4 percent<sup>40</sup>). [102-41]

No cases of discrimination, or human rights abuses were reported in 2018. [406-1]

The Lenzing Group employed 102 people with disabilities in 2018 (2017: 97; 2016: 102). Most of these were employed in Austria (85), followed by the Czech Republic (13), Indonesia (2), China (1) and the USA (1). No formal recording of numbers of employees with disabilities is conducted at the site in Grimsby (United Kingdom) as there is no legal requirement. [405-1]

## 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<sup>41</sup>. 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 factions and interest groups are active at the sites in Paskov, Purwakarta, Nanjing, Grimsby, and Mobile. [403-1]

Consequently, 100 percent of the total workforce of Lenzing production sites is represented by local unions or works councils. No strikes took place at any Lenzing site in 2018.

## 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. [404-2]

Total expenditure on lifelong learning and personnel development increased once again from EUR 3.6 million in 2016 to 5.1 million in 2017<sup>42</sup> and 5.9 million in 2018.

## New training programs implemented

In 2018 Lenzing intensified its training programs and launched new training modules. "Leaders of Tomorrow" is a tailor-made development program for blue-collar workers and includes a 3-month international job rotation within the Lenzing sites in the U.K., Czech Republic, and/or Indonesia. This program was concluded in 2018 and will be continued and extended in 2019.

The "sCore TEN fit" training program commenced at the end of 2017 with three groups. It comprises psychological training elements combined with outdoor activities to train managers in leadership skills. This program will go on in 2019.

Several programs were initiated in 2018 to establish a better understanding of Lenzing's business and help achieve the corporate goal of "ONE LENZING". In 2018 the onboarding and Buddy System was implemented at the Lenzing site to assist new employees with integration into the Lenzing business environment. [404-2]

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

40) Restatement: This figure was corrected and deviates from the figure in the 2017 report (80.6 percent). [102-48]

41) Restatement of the 2017 Lenzing Group Sustainability Report. There is no works council at the facility in Paskov. [102-48]

42) Restatement of 2016 (3.3 mn) and 2017 (4.7 mn) totals due to better data source [102-48]

## Global rollout of several training programs [404-2]

Several well-established training programs at the Lenzing site were globalized in 2018:

- 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)
- Several intercultural awareness training programs
- Coaching skills program
- Leadership foundation training

## “Springboard II” global junior leadership program [404-2]

Within the framework of “Think & Act Global”, 26 highly motivated employees were trained and prepared for future leadership within the Lenzing Group. The second round of this program was successfully completed in July 2018.

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

The Lenzing Group's health management system (“House of Health”) is based on the concept of salutogenesis<sup>43</sup>, which is tailored to the individual health 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 on all health care and health promotion activities.

## Health management at Lenzing production facilities

Lenzing provides employees at all locations with an in-house primary care system that compensates for deficits in the health systems of the respective countries.

Lenzing uses medical partners in the regions around the production sites to offer its employees a diagnosis and therapy service tailored to local needs and the size of the respective production site. The range of medical services extends from several medical examinations and therapy sessions per week at the sites in Mobile (USA) 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 appropriately trained 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.

43) The concept was developed by Israeli-American sociology professor Aaron Antonovsky († July 7, 1994). In contrast to pathogenesis, salutogenesis focuses on the question of what keeps people healthy, rather than the question of what makes them ill.

# Safety

Lenzing's Group philosophy for safety, health, and the environment (SHE) aspires to no accidents, no harm to people, and no damage to the environment, underpinned by its vision LEAVE HOME HEALTHY, COME HOME HEALTHY. Lenzing identifies potential hazards and risks at every stage of its production processes. Lenzing designs facilities and implements plant and process changes according to appropriate industry standards. Further details regarding Lenzing's SHE policies are available on the Lenzing website (<https://www.lenzing.com/en/sustainability/people/health-and-safety/>).

Since the introduction of the "Heartbeat for Safety" program in 2016, the Lenzing Group has continued to implement the program requirements to improve its safety culture aspects in 2018, focusing on "operational discipline", and its environmental performance.

## Safety Walks & Talks

Safety walks observations, and conversations (talks) are fundamental to implementing the heartbeat strategy and managing safety in the Lenzing Group. Since the baseline training in 2016, 12,442 "Safety Walks and Talks" have been conducted. Whilst the safety walks aspect typically focuses on the main physical hazards and risks, the "talking" element has allowed Lenzing managers to focus on the "unseen" elements of psychological and cultural hazards and risks, within the organization. The "Safety Walks and Talks" help to raise awareness of dangers at work – even in everyday routines – and by involving the management and workers they increase the general acceptance of obeying Lenzing's safety rules.

## Life Saving Rules

In 2018, the Lenzing Group sites continued to integrate the Lenzing Life Saving Rule requirements into their respective systems and procedures.

## Safety committees

To reduce risks to the greatest possible extent, health and safety committees have been established at every production site. These meet on a regular basis to define common objectives, strategies, and specific programs.

## Contractor management

Contractor management is the management of outsourced work performed by an individual company. Contractor management implements a system that manages contractors' health and safety information, insurance information, training programs, and specific documents. Site audits across the Group were completed in 2018 and a harmonized Group Contractor Management Guideline based on the audit results and best practice will be implemented during the course of 2019.

## Potentially hazardous areas

Materials must be safe to use, safe for the environment and safe for humans. Ensuring this happens is a field of activity known as chemicals management. Chemicals management covers sourcing, transport, storage, use, production, and management of occupational health and environmental risks throughout a material's life cycle. The phased introduction of harmonized processes continued in 2018.

## Process and machinery safety

Process safety is a disciplined framework for managing the integrity of operating systems and processes handling hazardous substances. Machinery safety looks at the safeguards that are applied both to machines and to the operators who work with them.

The focus is to harmonize process safety management within the Lenzing Group.

## IOSH trainings (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 been working 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. Leading safely courses were conducted at various sites; the first managing and working safely courses were held in 2018.

## Group Environmental Standard

An update of the Group Environmental Standard was completed in 2018. This new standard is based on the best available technology (BAT) related emission limit values as proposed in the EU BAT reference document (EU BREF), as well as prominent ecolabel requirements, such as the EU Ecolabel. In 2018, in order to make systematic progress in accordance with circular economy principles, a Group Waste Management Guideline was approved and a Group-wide cross-learning program addressing better practices and focusing on major waste streams, such as plastic, was initiated. Transition of the ISO environment management system to the new ISO standard has now been successfully completed at all sites. To facilitate further implementation of the new ISO standard, Lenzing has started – and will continue in 2019 – to evaluate and harmonize various management processes, e.g. assessment of environmental aspects and impacts, environmental performance reporting, etc.

# Safety

## Safety performance [403-2]

Improving Safety, Health, and Environment in Lenzing operations is a high priority and the teams are continuously investigating safety incidents and near misses to identify any potential underlying issues. Leading indicators are used to monitor the strength of controls to prevent incidents.

Lenzing monitors safety performance using industry metrics and works to continuously improve personal and process safety throughout Lenzing.

Following Group-wide implementation of a standardized, computer-based reporting system known as SHEARS (Safety, Health, and Environmental Action and Reporting System), 47,872 reports have been entered into the system to date.

Compared to 2017 and 2016, Lenzing saw a plateau in injury rates (accidents involving less than one day's absence from work) in the reporting year. Compared to the previous years, performance in 2018 (5.7), "1,000-person rate" (number of lost workday case accidents involving more than one day lost per 1,000 employees) remained on a similar level to that achieved in 2017 (5.6) & 2016 (6.2).

### Lenzing Group: lost workday cases (LWC)

Rate of employees & supervised workers  
(per 1,000 employees)

Table 6/2

2016	2017	2018
6.2	5.6	5.7

The analysis shows that the top three types of injury for Lost Workday Cases (LWC) in the Group in 2018 are:

- cuts and lacerations
- strains
- bruising

For all injuries (including LWC) in the Group the injury types are:

- cuts & lacerations
- chemical burns
- hot burns affecting the fingers, arms, and feet

This does not include "travelling" to work or minor injury "no treatment given" (MINT) adverse events.

Overall in the Group, the average rate of 24.9 injuries per 1,000 employees in 2018 slightly improved performance to that recorded in 2017 (25.3).

### Lenzing Group: injury rate of employees and supervised workers

(per 1,000 employees)

Table 6/3

2016	2017	2018
24.1	25.3	24.9

### Work fatalities

No fatal injuries were registered in the Group in the reporting year. [403-2]



# Corporate citizenship

Both locally and internationally, 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 the Johannes Kepler University (Linz, Austria) and Gesellschaft für Angewandte Wirtschaftsforschung (Innsbruck, Austria) for the year 2018. 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 or secures 19,640 jobs worldwide. Every job within the Lenzing Group

creates or secures 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 2018 are summarized in the table below.

**Regional and economic effects of Lenzing Group's activities: summary**

**Table 6/4**

	Number of employees*	Additional gross domestic product	Additional income	Secured/created employment*
Lenzing AG (Austria)	2,547	EUR 805.6 mn	EUR 402.4 mn	6,351
Heiligenkreuz (Austria)	264	EUR 112.8 mn	EUR 57.1 mn	1,046
Paskov (Czech Republic)	403	EUR 195.9 mn	EUR 87.2 mn	3,526
Grimsby (United Kingdom)	187	EUR 62.1 mn	EUR 31.0 mn	489
Purwakarta (Indonesia)	1,763	EUR 282.8 mn	EUR 125.9 mn	5,090
Nanjing (China)	743	EUR 144.2 mn	EUR 64.2 mn	2,596
Mobile (USA)	203	EUR 68.5 mn	EUR 34.2 mn	540
<b>Total</b>	<b>6,110</b>			<b>19,640</b>
<b>Including non-producing sales offices (Lenzing Group, total)</b>	<b>6,506</b>			

Source: GAW, 2019.

\* Full-time equivalents. The effects also include effects of the year 2019 onwards, as the activities of the Lenzing Group in 2018 not only produce economic effects in 2018, but in following years as well.

# Corporate citizenship

## Maintaining relationships with local residents

At all sites, the leadership teams attach great importance to good relationships with their neighbors, and they are committed to dealing with all complaints fairly and impartially. Clear complaints procedures exist at all sites, and these include measures such as a dedicated community department at the Purwakarta site and regular information exchange meetings at all other sites, depending on the local circumstances. Site managers, senior managers, and local Safety, Health, and Environment managers are accessible to the local community as part of the complaints procedures. All complaints cases are registered and efforts to resolve the issues are undertaken in each case. They are also reviewed at the monthly Global SHE meetings (attended by representatives of all sites) and summarized in the executive summaries distributed to the Board.

Conflicts of interest and production-related circumstances, such as noise emissions, unpleasant odors, and environmental pollution, can nevertheless result in disputes with local residents.

Such complaints were registered at the sites in Lenzing, Paskov, and Purwakarta, in 2018. Appropriate measures were implemented to deal with them. As of December 31, 2018, there were no pending legal disputes relating to conflicts between local residents and Lenzing companies/subsidiaries. [413-2]

## Social projects and environmental initiatives<sup>44</sup>

One of Lenzing's objectives in the context of its "Naturally positive" sustainability strategy is to sustainably improve the living conditions of people living in communities close to Lenzing's facilities. The Lenzing Group has been supporting numerous social projects and local environmental initiatives for many years now. These projects include a longstanding microcredit program in Indonesia, sponsoring of various sports and social events, support for educational initiatives, as well as charitable projects at all locations. Taking account of local requirements, the management teams at Lenzing sites decide which projects and initiatives to support.

### Lenzing (Austria): Support for people with intellectual disabilities

The Lenzing site in Austria supports sports, cultural and music associations, fire brigade associations, educational institutions, and aid organizations, including the local Red Cross and Austrian Water Rescue. In addition, Lenzing supports selected projects over the long term. One such example is sponsorship of the international Special Olympics sports movement for people with intellectual disabilities since 2015. In June 2018, Lenzing was one of the main sponsors of the National Summer Games held in Upper Austria.

Another example is the company's 16-year collaboration with Lebenshilfe Oberösterreich (Upper Austrian counseling) association, which cares for around 1,700 people with intellectual disabilities. In a long-standing joint project at the Lebenshilfe workshop, four trained employees manually inspect Lenzing fibers for impurities. This offers highly valued occupation and supports Lenzing effectively in its efforts towards quality improvement.

### Purwakarta (Indonesia): Microcredit program and environmental education

The facility in Indonesia supports local communities in various ways: Free medical services are provided for villagers in the region and for many years the production facility has supported local schools, community programs, and families in need. Through a microcredit program, the company offers zero-interest soft loans to small businesses in cooperation with a women's rights organization in order to foster local business development. Another clear focus area in 2018 were environmental activities, such as revitalization of land and the planting of more than 1,000 trees alongside a river. Furthermore the "Eco Village" project was continued, where the aim is to raise awareness in the areas of waste separation, recycling, biomass utilization, and increasing water reserves in the ground.

44) For a detailed description of the activities at individual Lenzing sites, see: <https://www.lenzing.com/en/sustainability-reports>

### **Nanjing (China): Support for orphans**

The local company has supported orphaned children in the rural environment of Nanjing for many years. Lenzing Nanjing not only provides financial support, but also employee donations, such as second-hand and new stationery for the children. Together with the European Union Chamber of Commerce in China, employees of the local facility educated people in the field of sustainability, especially about water protection, future clean water solutions, and how to protect strategic natural resources in general.

### **Mobile (US), Grimsby (UK), and Heiligenkreuz (Austria): Support for children and families in need and local individual sponsorships**

The facility in Mobile (US) supports local community outreach programs directed at children and families in need and children's activities which promote growth in learning and social interaction. In 2018 the company and its employees again made donations to the non-profit organization "United Way", which provides people with a path out of poverty and supported such institutions as the St Mary's Home for Children.

The Lenzing site in Grimsby sponsored a local running race as well as a local football team's kit in 2018. Activities in the past year also included sponsorship of a local landmark, and a charitable donation was made to a local hospice.

In 2018 the Lenzing site in Heiligenkreuz sponsored cultural events in the district. Support was also given to youth sports activities.

### **Paskov (Czech Republic): Renewable resource wood**

The facility in Paskov continued its support of sustainable development in the Moravia region in 2018 with a focus on local development, education, and environmental projects. The company, for example, supported children's sports activities, professional education, and a national competition for young chemists. As one of the cofounders of the "Wood for Life Foundation", the company also promoted use of the renewable resource wood. The two new main projects initiated in 2018 were: the "Visiting the forest with a forestry worker" project, where children had the opportunity to experience forestry activities for themselves, and "Wooden building of the year", where new buildings made with wood were honored.



Chief Commercial Officer Robert van de Kerkhof (CCO), Chief Executive Officer Stefan Doboczky (CEO), Chief Technical Officer Heiko Arnold (CTO) and Chief Financial Officer Thomas Obendrauf (CFO)

Lenzing Aktiengesellschaft  
**Lenzing, March 5, 2019**

## 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

**Heiko Arnold**  
Chief Technology Officer  
Member of the  
Management Board







# Annex

## 2018

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Additional Lenzing Aktiengesellschaft data according to NaD-iVeG<sup>45</sup> requirements (§243b UGB)

## Lenzing AG safety\*

Table Annex 1

	2016	2017	2018
Lenzing AG: number of injury cases	74	67	91
Lenzing AG: injury rate of employees and supervised workers (per 1,000 employees)	30.1	25.3	29.8
Lenzing AG: lost workday cases (LWCs)	17	22	23
Lenzing AG: lost workday cases (LWCs) Rate of employees & supervised workers (per 1,000 employees)	6.9	8.3	7.5

\* Figures for Lenzing AG were calculated based on headcounts (FTE) at the balance sheet date (31.12.18). Annual averages are used at Group level.

## Work-related fatalities

No fatal injuries were registered in Lenzing AG in the reporting year.

## Lenzing AG workforce

Lenzing Aktiengesellschaft  
Headcounts as of 31.12.; employees only  
(no apprentices, no contractors)

Table Annex 2

	2016	2017	2018
Total headcounts as of 31.12.	2,339	2,533	2,711
Proportion of women	18.1 %	18.3 %	18.1 %
Proportion of age >50	27.7 %	27.3 %	27.1 %
Proportion of non-Austrians	4.6 %	5.3 %	5.9 %
Apprentices	121	113	120
Contractors	204	231	215
Proportion of employees with full-time contract	90 %	63 %	52 %
Thereof female	12 %	16 %	18 %
Thereof male	88 %	84 %	82 %
Proportion of employees with part-time contract	10 %	37 %*	48 %*
Thereof female	73 %	22 %	18 %
Thereof male	27 %	78 %	82 %
Proportion of employees for whom collective bargaining agreements exist	100 %	100 %	100 %
Employees with disabilities	70	72	74
Turnover rate	4.6 %	4.1 %	5.1 %

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

As regards potential corruption offenses or breaches of antitrust law, no official measures were undertaken or legal claims made against Lenzing Aktiengesellschaft in 2018.

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.

45) Nachhaltigkeits- und Diversitätsverbesserungsgesetz (Austrian Sustainability and Diversity Improvement Act)



# Additional information to chapters

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

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

**Table Annex 3**

### Lenzing

Country	Average 2015-2017	2018
Austria	45.3 %	43.2 %
Germany	19.7 %	23.7 %
Czech Republic	8 %	8.9 %
Slovakia	19 %	14.8 %
Hungary	4 %	1.7 %
Slovenia	2.3 %	0.1 %
<b>Sum regional</b>	<b>98.3 %</b>	<b>92.3 %</b>
Poland	1 %	2.7 %
Ukraine	0.7 %	0.2 %
France	0 %	1.2 %
Estonia	0 %	0.3 %
Russia	0 %	1.4 %
Swizerland	0 %	1.6 %
Romania	0 %	0.3 %
<b>Sum other countries</b>	<b>1.7 %</b>	<b>7.7 %</b>
<b>Sum total</b>	<b>100 %</b>	<b>100 %</b>

### Paskov

Country	Average 2015-2017	2018
Czech Republic	75.7 %	86.5 %
Slovakia	15.3 %	10.3 %
Poland	2.3 %	2.4 %
<b>Sum regional</b>	<b>93.3 %</b>	<b>99.2 %</b>
Ukraine	1 %	0 %
Belarus	6.0 %	0.8 %
<b>Sum distant</b>	<b>7 %</b>	<b>0.8 %</b>
<b>Sum total</b>	<b>100 %</b>	<b>100 %</b>

Underlying figures for table 3/2.

# Independent Assurance Report on the Non Financial Reporting for the Financial Year 2018 <sup>[102-56]</sup>

## To the Board of Directors of Lenzing AG.

We have performed an independent assurance on the combined consolidated non-financial report” (“NFI-report”) for the financial year 2018 of

### Lenzing AG,

(“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 under the title “Sustainability Report 2018 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 mate-

rial 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;
- Conduct of 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 employees 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;
- Inquiry of employees as part site visits at Heiligenkreuz and Paskov to assess local data collection and reporting processes and the reliability of the reported data;
- 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. 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, 05 March 2019



**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 technology (BAT)**

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<sub>2</sub>) 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 ener-

gy, 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 products and bioenergy.

## **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**

Chain of custody (CoC), in legal contexts, refers to the chronological documentation or paper trail that records the sequence of custody, control, transfer, analysis, and disposition of physical or electronic evidence.

## **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<sub>2</sub> 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 wood 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.

## **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<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O).

### **Growing stock**

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

### **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 Labour Organization (ILO)**

The International Labour Organization (ILO) is a United Nations agency that sets international labour 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.

### **ISO 14001**

An international standard for the certification of environmental management systems.

### **ISO 9001**

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.

### **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.

### **Microcredit program**

Microcredits are small loans of between one and several thousand euros to small businesses, mainly in developing countries. Apart from micro-insurance and micro-savings, they are an important micro-finance service. The loans are usually provided by specialist financial service providers and non-governmental organizations, mostly to promote development.

### **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 the brand name 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 describes 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

### **OHSAS 18001**

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.

### **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

# Glossary

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.

## 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

## 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 cellulosic fibers produced from raw materials of plant origin (e.g., wood) using the viscose process.

## Wood-based cellulosic fiber

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

## World Economic Forum (WEF)

The World Economic Forum (WEF) is a foundation based in Cologne in the Swiss canton of Geneva, 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.

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