



Innovative by nature

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Overview – Textile Exchange/ Lenzing Webinar

- **Lenzing Overview**
- **Fiber Innovation**
- **Sustainability**
- **Questions**

Key facts & figures 2017

Revenue: EUR 2.26 bn

Fiber sales volumes: 942,000 tons

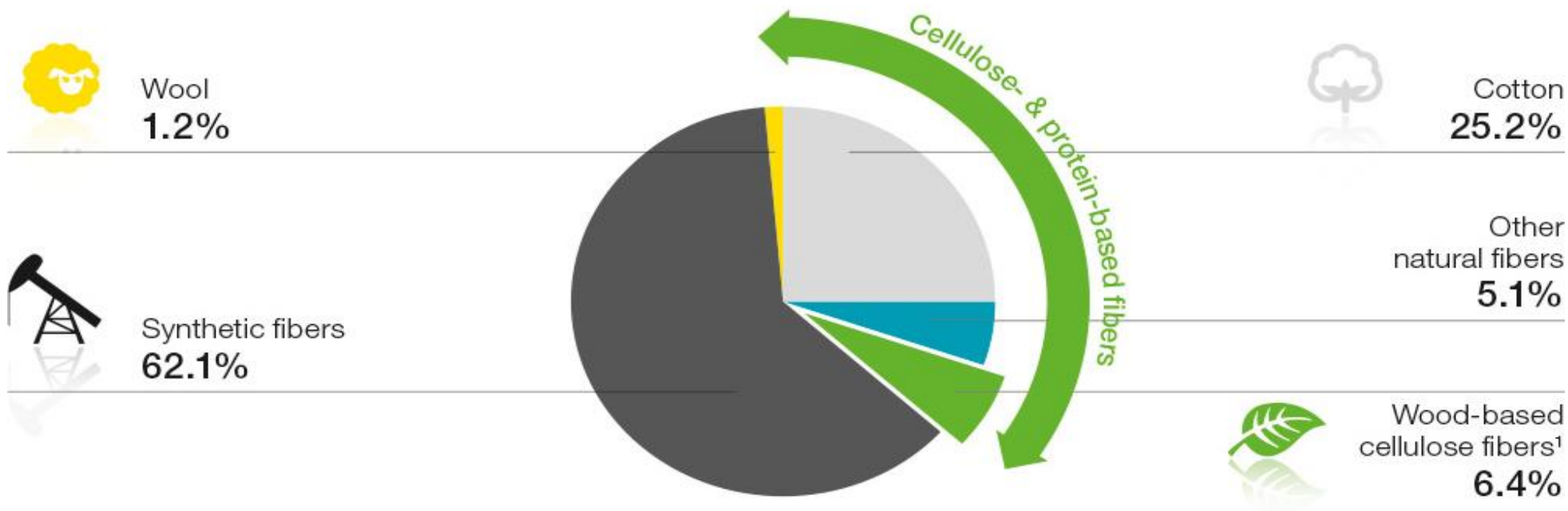
Employees: 6,488



Our core market: wood-based cellulose fibers



Global fiber market :Global fiber consumption 2017



¹⁾ Wood-based and cotton linter-based cellulose fibers

Source: ICAC, CIFRS, TFY, FEB, Lenzing estimates

Fiber production sites

Lenzing™ Viscose & Lenzing™ Modal fibers: 777,000 tons/year

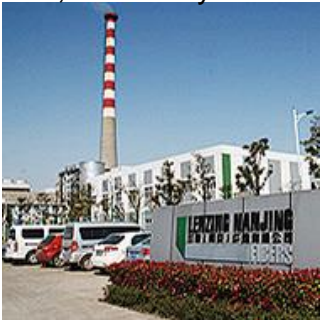
Lenzing (AT)
276,000 tons/year



Purwakarta (ID)
323,000 tons/year



Nanjing (CN)
178,000 tons/year



Lenzing™ Lyocell fibers: 232,000 tons/year

Mobile (USA)
51,000 tons/year



Grimsby (UK)
45,000 tons/year



Heiligenkreuz (AT)
65,000 tons/year



Lenzing (AT)
71.000 tons/ year



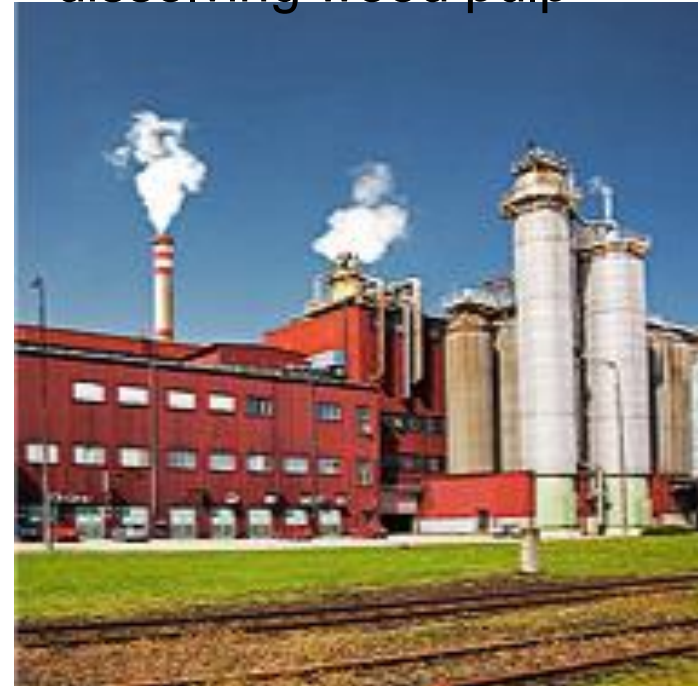
Dissolving wood pulp production sites

Dissolving wood pulp capacity: 570,000 tons/year

Lenzing (Austria)
300,000 tons/year
dissolving wood pulp



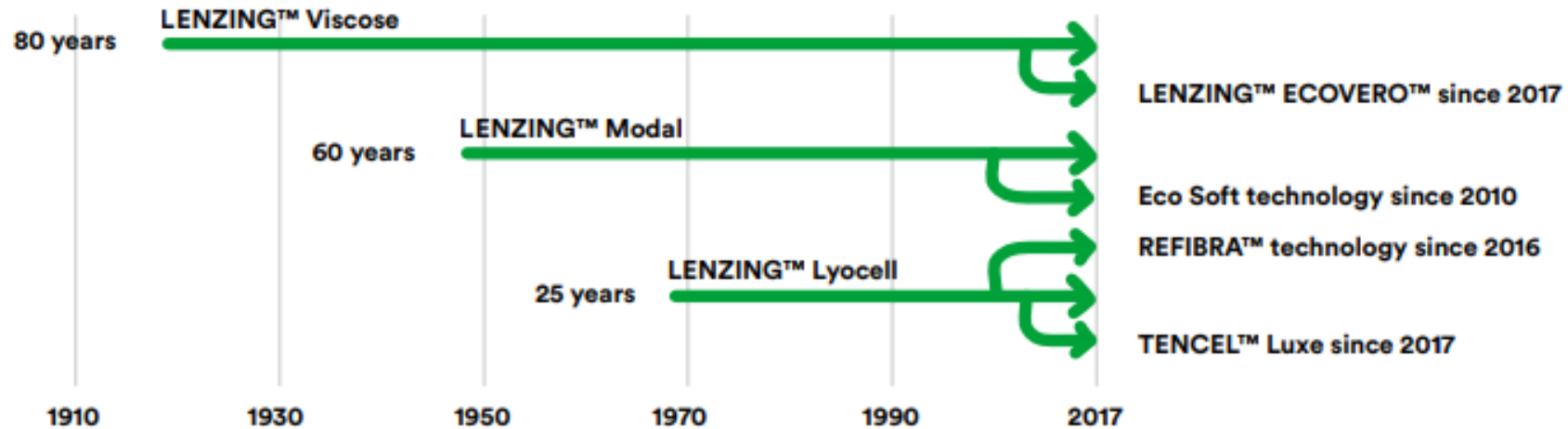
Paskov (Czech Republic)
270,000 tons/year
dissolving wood pulp



LENZING™ Fiber Portfolio

Overview of fiber technologies

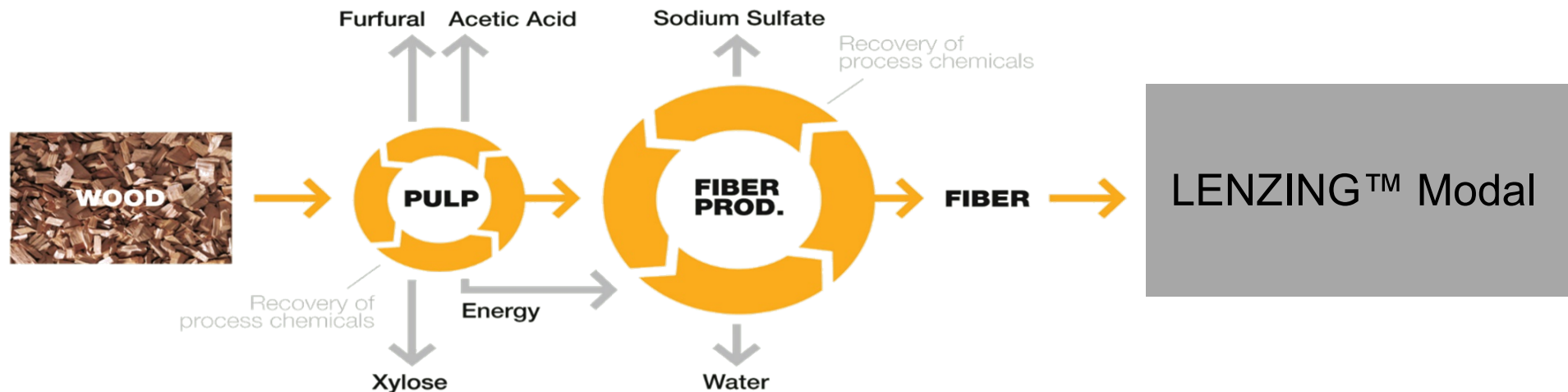
Lenzing Group: Technological competence in fiber production figure 4/4



Integrated pulp and fiber production plant **Unique in the World**



Integrated pulp and fiber production at one site (Lenzing, Austria) Unique in the world



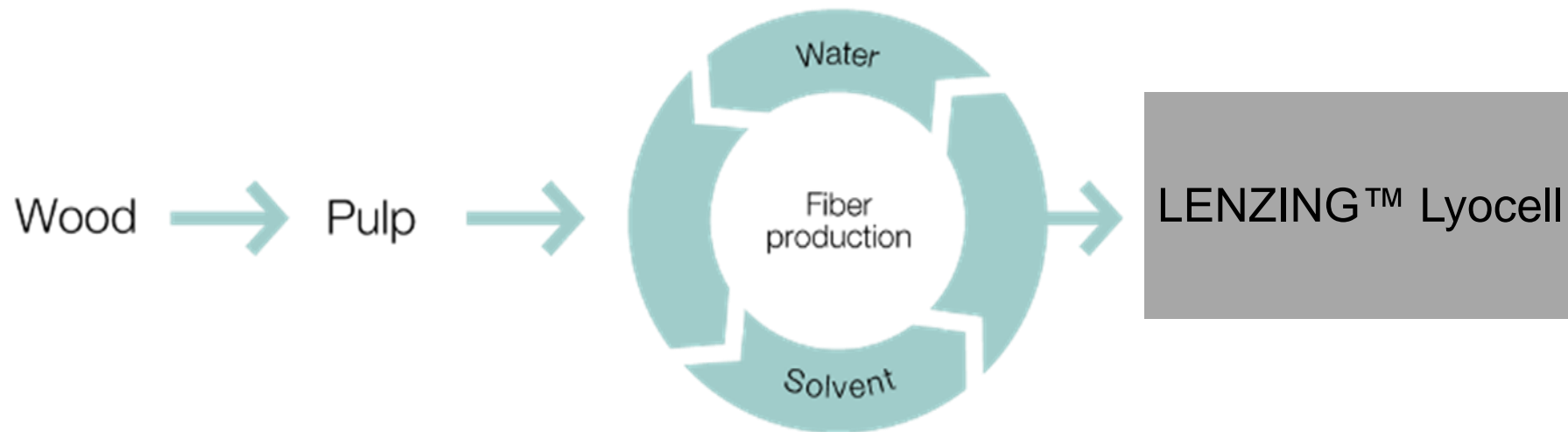
(Viscose / Modal fiber production is a chemical dissolution process of pulp)

LENZING™ Modal Black



LENZING™ Lyocell

- **Closed loop manufacturing process**
- Minimized consumption of water and energy
- Awarded with the „**European Award for the Environment**“



The LENZING™ Lyocell manufacturing process is revolutionary due to the **almost complete recovery of the solvent (> 99,5%)**.

This minimizes emissions to the environment and conserves the Earth's resources.

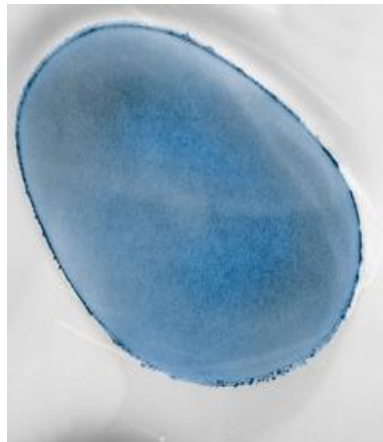
LENZING™ LYOCELL FIBER STRUCTURE

- Controlled and regular moisture absorption
- Nano-fibrils act as a network of canals
- The fiber surface remains dry

Cotton



LENZING™ Lyocell fiber



Polyester

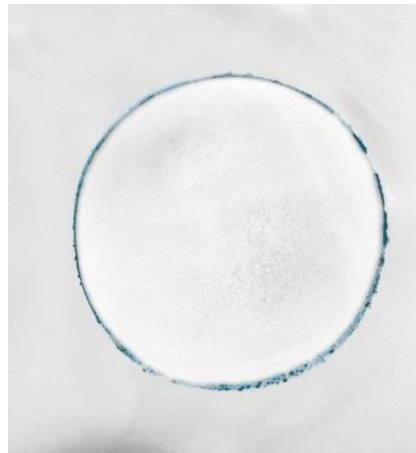


Photo : Lenzing.com

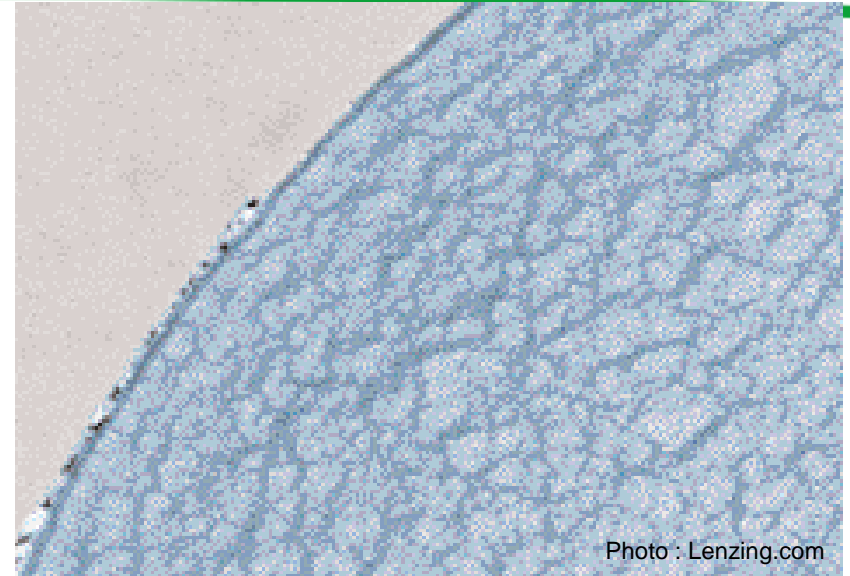
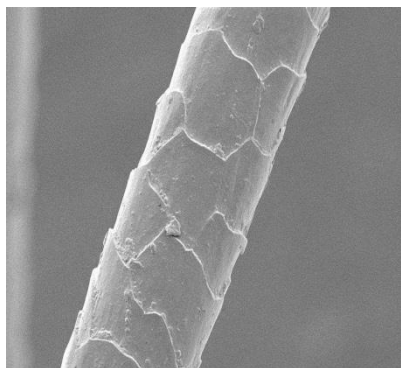
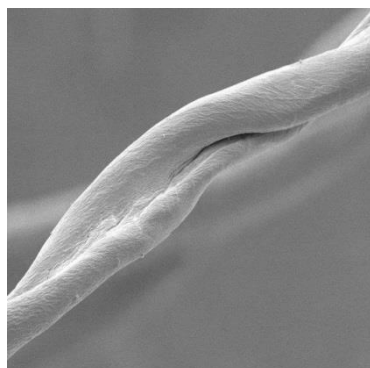


Photo : Lenzing.com

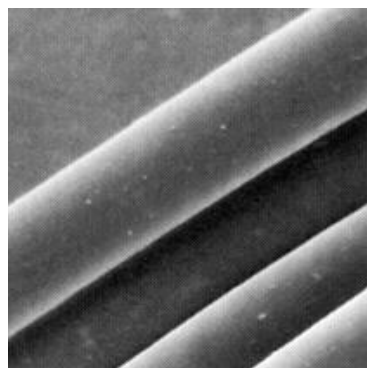
LENZING™ LYOCELL FIBER SURFACE



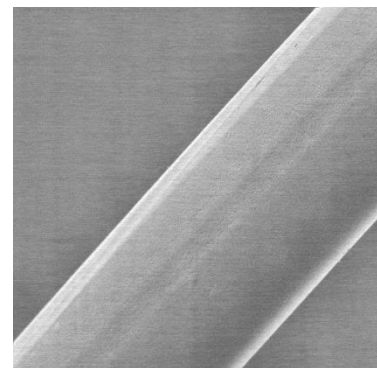
Wool



Cotton



Polyester



LENZING™
LYOCELL fiber

Smooth
surface

-

-

+

+

Water
absorption

++

+

-

++

INHERENT PROPERTIES OF LENZING™ Lyocell



→ Moisture management / thermal regulation



→ Smooth / gentle to the skin



→ Unfavorable for bacterial growth



→ Color retention

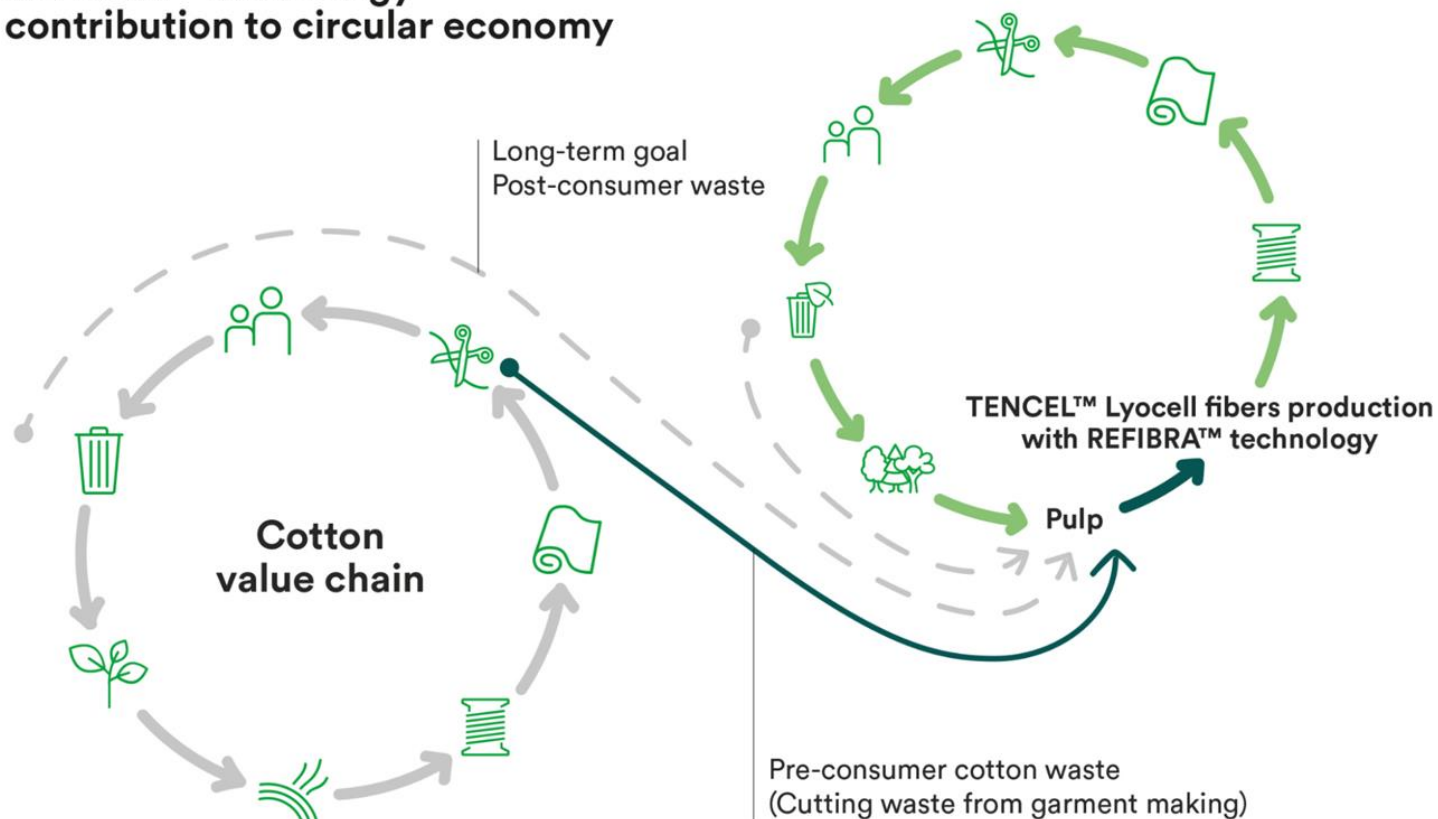
What to do with fashion waste?

- ~50 million tons of apparel and footwear are discarded globally per year



TENCEL™ x REFIBRA™ Lyocell Fibers

REFIBRA™ technology – contribution to circular economy

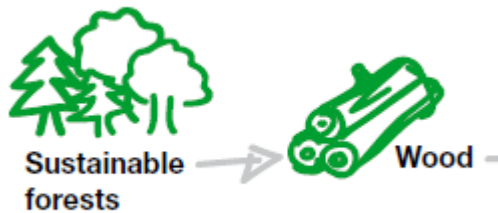


- Combination of lyocell technology with pioneering use of recycled cotton off-cuts
- Upcycling of cotton and significant reduction of cotton scraps in the garment production
- New system to identify the fiber in finished garment



Sustainable wood sources

- LENZING™ ECOVERO™ branded viscose fibers are made from natural and renewable raw material of wood
- Wood comes from natural forests or from sustainable forestry plantations
- Lenzing has a comprehensive wood sourcing policy
- Certified with FSC and PEFC



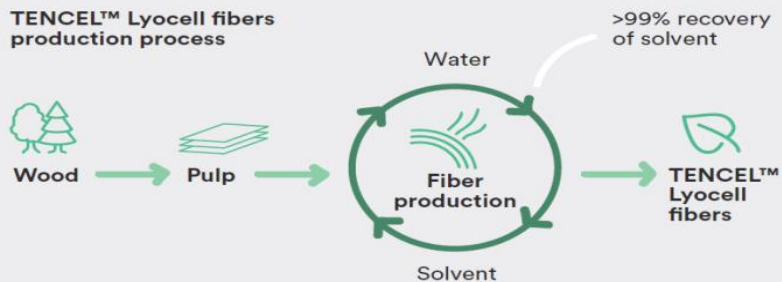
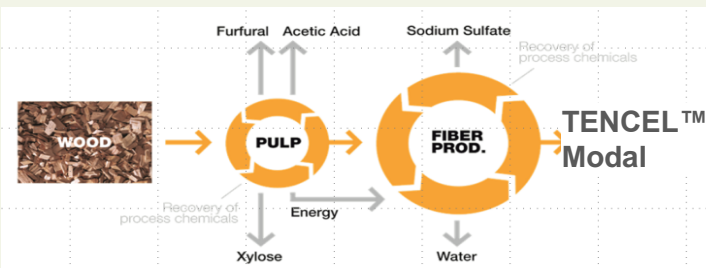
Highest environmental standards

- Lenzing enforces strict environmental standards in the viscose production
- LENZING™ ECOVERO™ fibers have been certified with the EU Ecolabel, a label of environmental excellence and is awarded to products and services meeting high environmental standards
- Lenzing is the one Viscose producer certified with the EU Ecolabel
- The manufacturing of LENZING™ ECOVERO™ fibers generates up to 50% lower emissions and water impact compared to generic Viscose
- According to Higg MSI™ tools, CO2 emissions and fossil resource use are approx. half of the industry average



¹ These results were calculated using the Higg Material Sustainability Index (Higg MSI) tools provided by the Sustainable Apparel Coalition. The Higg MSI tools assess impacts of materials from cradle-to-gate for a finished material (e.g. to the point at which the materials are ready to be assembled into a product).

Recap Fiber Properties

Processes	TENCEL™ Lyocell	TENCEL™ Modal
Raw Material Inputs	FSC & PEFC Wood sources	FSC & PEFC Primarily beech wood
Fiber Process	<p>Closed loop process</p>  <p>The diagram shows a closed-loop process starting with Wood, which is pulped into Pulp. The Pulp then enters a circular Fiber production stage. Water enters the top of the circle, and Solvent exits the bottom. An arrow from the circle points to TENCEL™ Lyocell fibers, with a note indicating >99% recovery of solvent.</p>	<p>Not closed loop Bi-products (see arrows)</p>  <p>The diagram shows a linear process starting with Wood, which is pulped into Pulp. From Pulp, the process moves to FIBER PROD. (Fiber Production). Various chemicals and energy are involved: Furfural and Acetic Acid enter the Pulp stage; Sodium Sulfate enters the FIBER PROD. stage. Arrows indicate the recovery of process chemicals from both stages. Xylose and Water are shown as by-products exiting the process.</p>
End of Life	Compostable Biodegradable Marine certification	Compostable Biodegradable Marine certification
Benefits	<p>Sustainability – closed loop process Long – lasting softness Smoothness Gentle on skin Enhanced breathability Thermal regulation Strength Drape – Sheen</p>	<p>Long – lasting Softness Gentle on skin Color vibrancy</p>

Brand Architecture TENCEL™



Denim



Intimate



Active



Home



LUXE

fiber type

technology

key benefit

TENCEL™ Lyocell



Eco Filament



Micro

TENCEL™ Modal



Micro



Eco Soft



Eco Color



biodegradable



unfavorable bacteria growth



thermal regulation



sustainable production



smoothness



strength



minimal static charge



botanic origin



sheen



long lasting softness



gentle on skin



feels cool and dry



enhanced breathability



drape



contribute to performance



color vibrancy

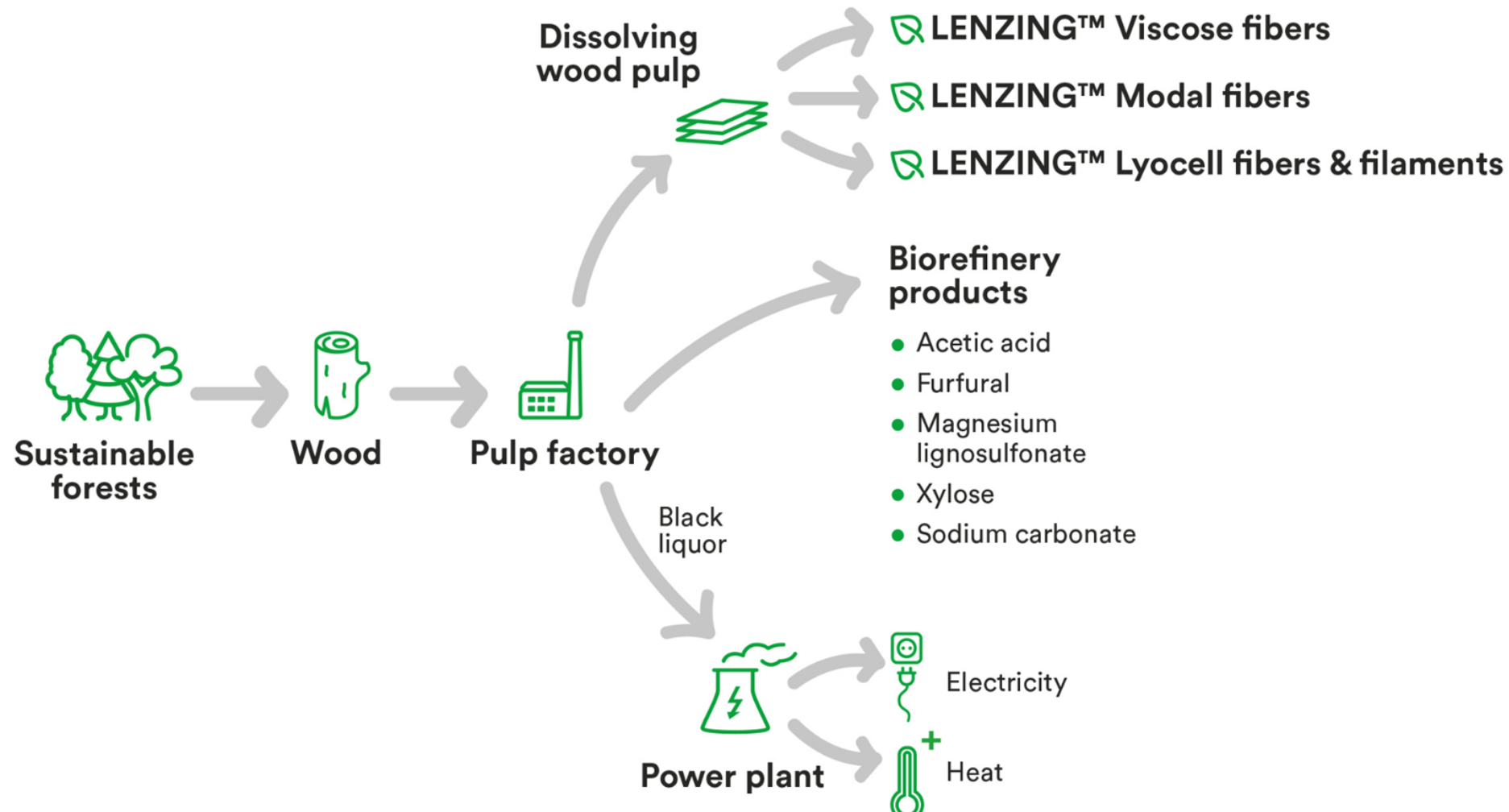


color retention



closed loop process

Lenzing's biorefinery concept



Lenzing's wood and pulp sourcing policy

- Lenzing has a strict wood and pulp sourcing policy in place
- Lenzing does not source any wood or dissolving wood pulp from ancient and endangered forests as well as high conservation value areas.
- Lenzing is committed to sourcing wood and dissolving wood pulp exclusively from non-controversial sources.
- All Lenzing production sites are FSC® (Chain of Custody) certified.
- The wood processed in Lenzing (Austria) and Paskov (Czech Republic) is procured by a team of experts who are educated and well-trained foresters and have reliable long-term relationships with their suppliers.



Wood and Pulp Policy

The supply of wood and pulp of a specified quality and quantity to all of the Group's pulp and fiber production sites is an important part of the Lenzing Group's core business.

The Lenzing Group is an environmentally responsible company operating as sustainably as possible.

We strive to source wood and pulp exclusively from non-controversial sources, preferring suppliers participating in credible forest certification programs, in particular the Forest Stewardship Council® (FSC®).

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 Core Conventions as defined in the ILO Declaration on Fundamental Principles and Rights at Work.

In order to protect the world's remaining ancient and endangered forests and the biodiversity and ecosystems integrity contained within these forests, Lenzing is committed to avoiding the use of wood and pulp containing wood sourced from regions such as the Canadian and Russian Boreal Forests, Coastal Temperate Rainforests, tropical forests and peatlands of Indonesia, the Amazon and West Africa.



Renewable Raw Material : WOOD

- The raw material for Lenzing fibers is dissolving wood pulp from beech, spruce, eucalyptus and several other types of wood
- 2–3 percent of industrial pulp produced worldwide is used by the fiber industry
- Dissolving wood pulp has specific requirements compared to paper pulp



Sustainability in the Lenzing Group

- Core value
- Balancing People – Planet – Profit
- Growth engine for business
- Guiding light for innovation
- Offering solutions to societal challenges
- Differentiating Lenzing's products

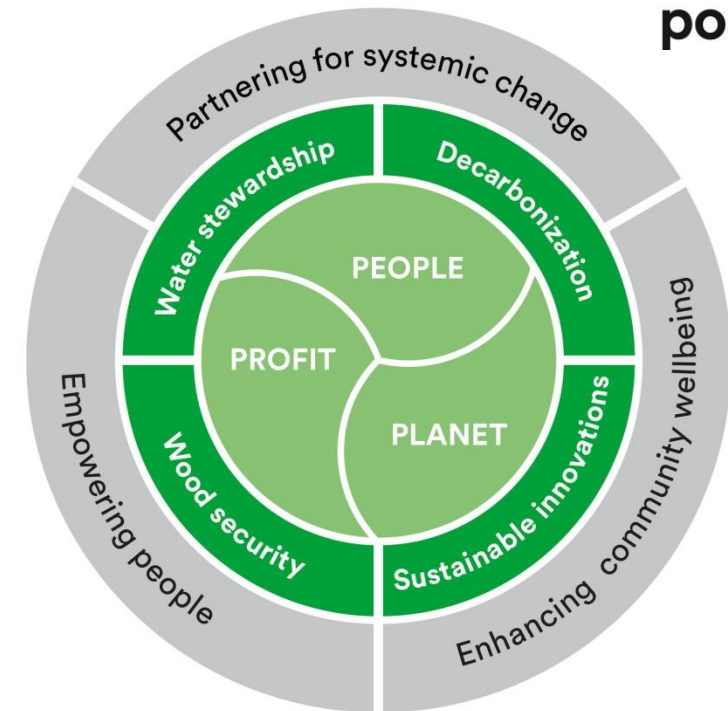


Sustainability strategy “Naturally positive”

The essence of “Naturally positive”

The strategy defines four main challenges where the Lenzing Group substantially contributes to creating more positive impacts and benefits.

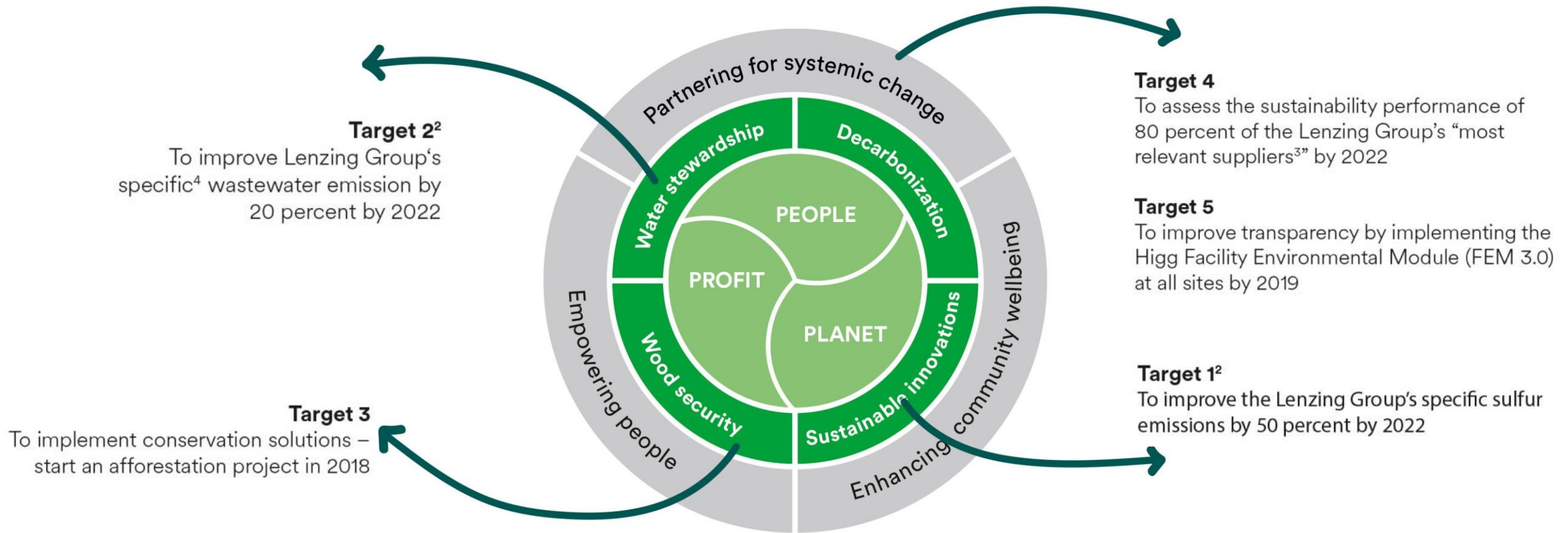
- Responsibility for forests
- Water stewardship
- Decarbonization
- Sustainable innovations



**Naturally
positive**

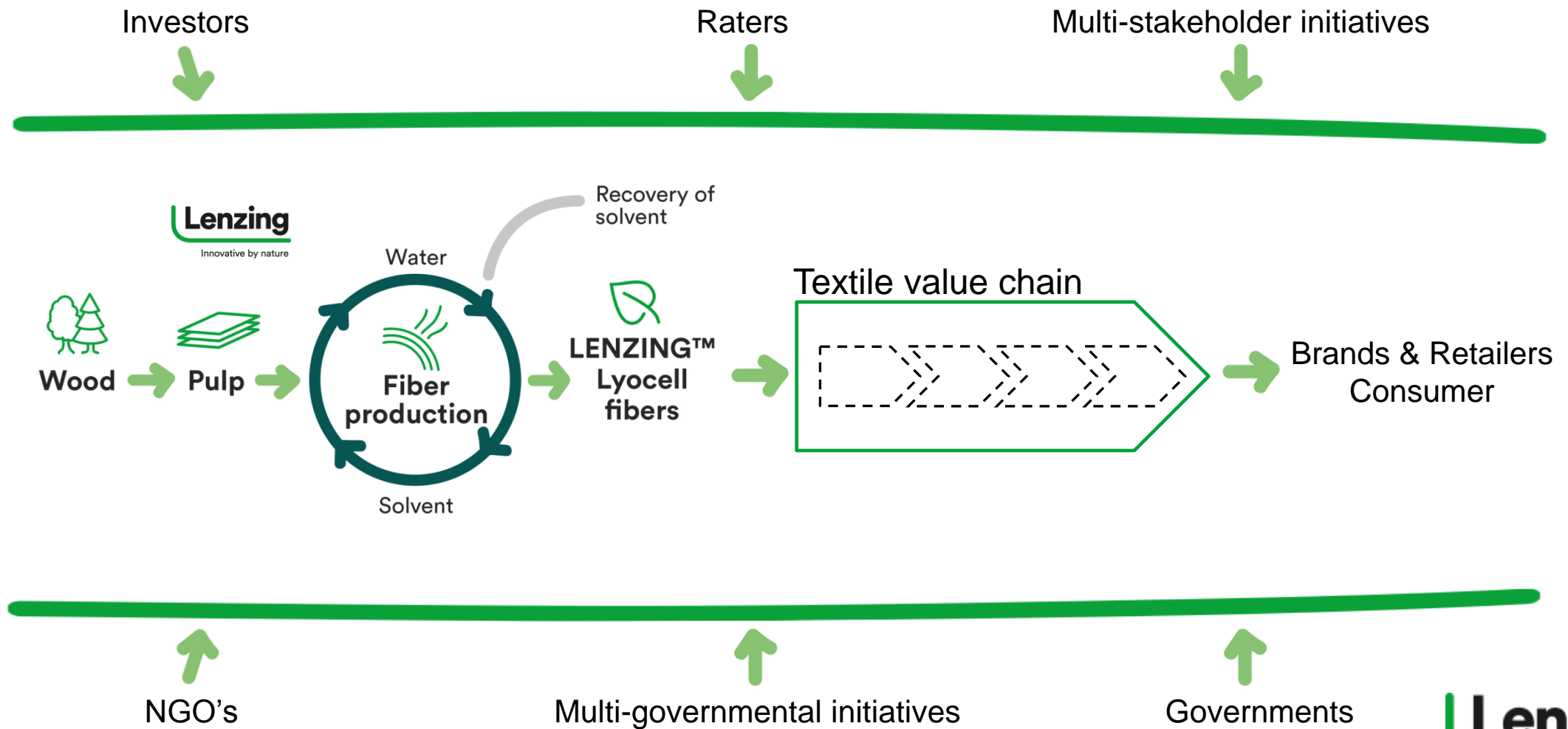
Lenzing commits to sustainable growth

Lenzing's phase-1 sustainability targets¹



1) These targets and commitments are applicable for the existing organizational structure and ownership of the Lenzing Group, i.e. current capacity and owned operations in 2014. If any structural changes in ownership, such as buying of a new plant, happen then these targets will be reviewed and reformulated considering the new context of the Lenzing Group.
2) These two targets will allow us to meet the EU Ecolabel criteria for all Lenzing production sites. Baseline for the targets is 2014.
3) Most relevant suppliers comprise 80% of the Lenzing Group's purchasing spend.
4) Specific emissions are defined as emission per unit of production by Lenzing Group (i.e. pulp and fiber production volumes).

Stakeholder expectations



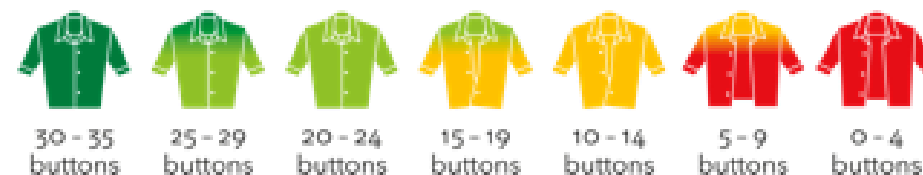
In dialog with Canopy

Full support of Canopy pathway

- Wood & Pulp Policy aligned with Canopy
- First to complete verification audit of CanopyStyle initiative
- Traceability: TENCEL™ Lyocell with REFIBRA™ technology and LENZING™ ECOVERO™ identifiable in fabrics
- Commitment to support conservation solution

*Nov. 2017 Hot Button Report

SHIRT RANKING



- High green shirt ranking (20.5 buttons)*

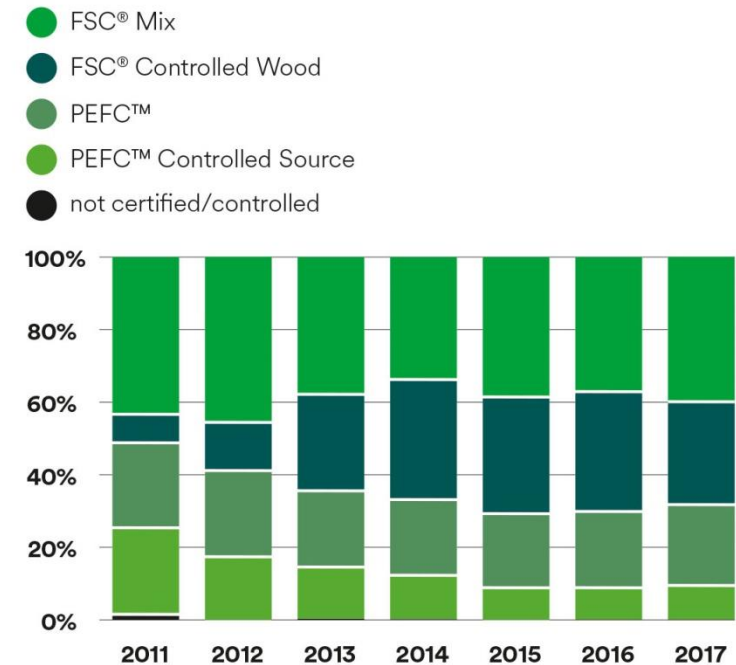
* Hot Button Report Nov. 2017

Wood and pulp certifications in the Lenzing Group

Certification status of total wood and pulp used by Lenzing production sites, own and purchased pulp 2017

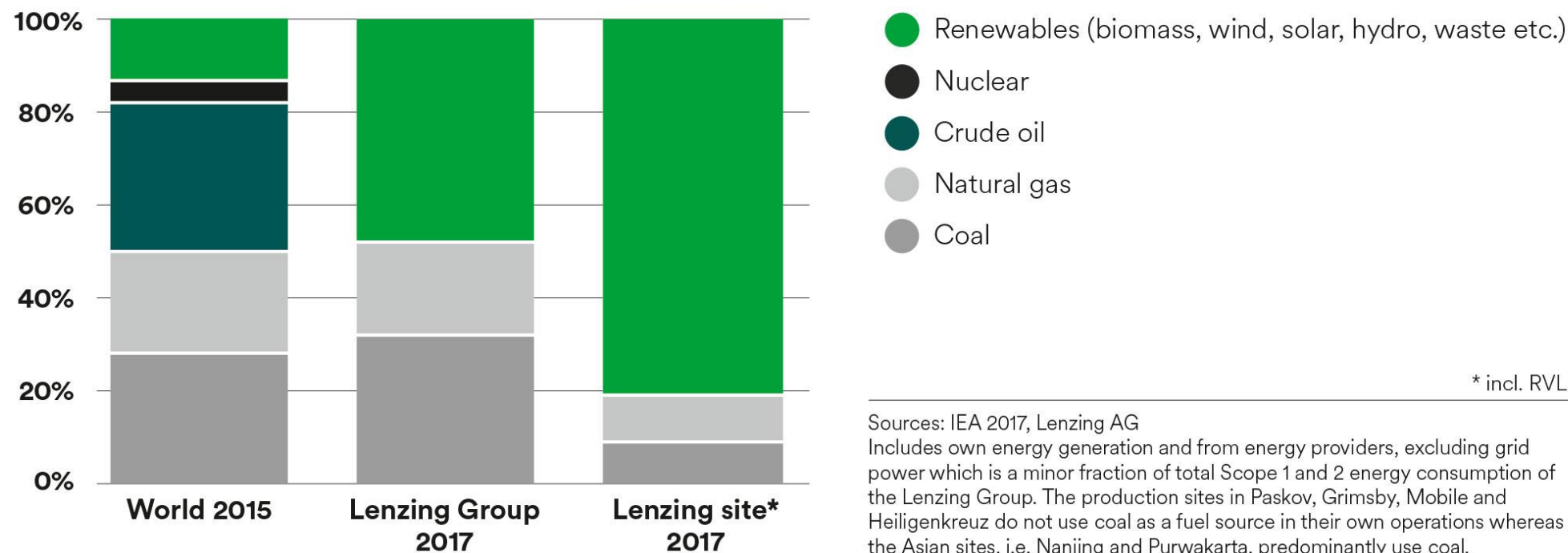
Basis: Pulp used by Lenzing for fiber production

Non-certified pulp was used for R&D purposes



Lenzing Group: 50 percent renewable energy

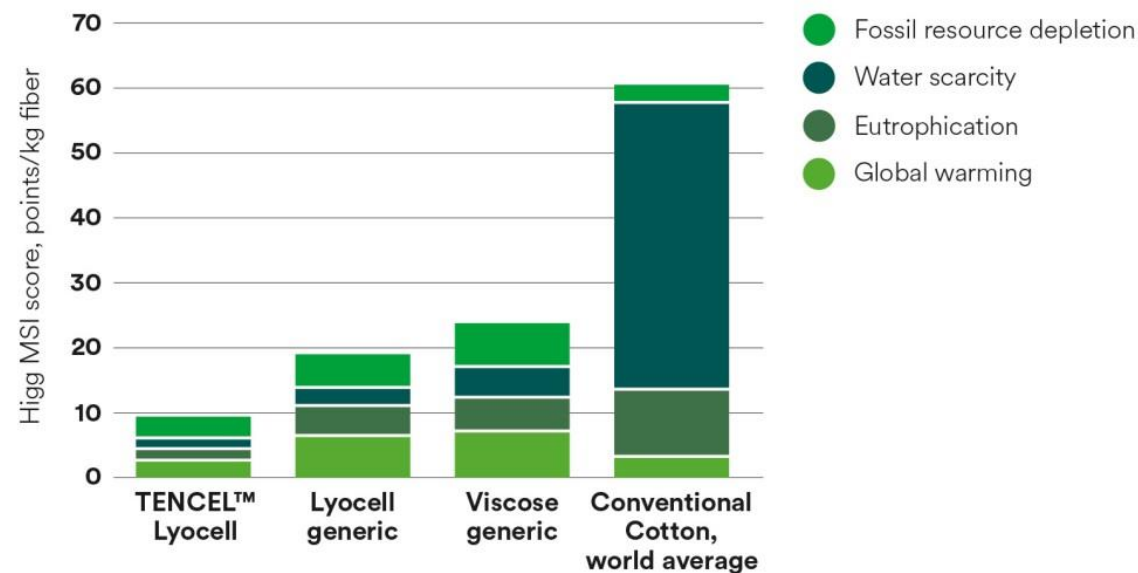
Energy sources of the world, Lenzing Group and Lenzing site*



TENCEL™ Lyocell fibers: lower environmental impact

- Higg MSI™¹: Score refers to environmental impacts
 - Low scores = better, high scores = worse
- MSI score¹ for TENCEL™ Lyocell fibers several times lower than for generic viscose and conventional cotton.
- Much lower impact on water scarcity of TENCEL™ Lyocell fibers compared to conventional cotton.

Comparison of environmental impacts of TENCEL™ Lyocell fibers vs. generic viscose and conventional cotton cultivation, world average



1) Results calculated based on Higg MSI™, assessing impacts of materials from cradle-to-gate for a finished material. Figure only shows impacts from cradle to fiber production gate. Provided by the Sustainable Apparel Coalition

The problem of microplastics in the ocean

- Truly a global problem – by 2050 there will be more plastic litter than fish in the oceans
- Particles less than 5 mm in size constitute a large part of the problem
- Fiber industry: during use phase and due to washing process fiber fragments are released and find their way to the ocean



Fiber certificates

- Oeko-Tex Standard 100
- Compostable Home, Soil, Marine (Vincotte)
- Biodegradable (Vincotte)
- ECOCERT ERTS (LENZING™ Lyocell Standard)
- Food contact compliance (for Lenzing nonwovens fibers)



TENCEL(TM) compostable after 8 weeks

QUESTIONS?



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Thank You

**for your
attention!**