

Annual Review 2022

courage
innovation
sustainability
trust
teamwork

ON A MISSION TO CREATE A MORE SUSTAINABLE TEXTILE INDUSTRY.

SPINNOVA[®]



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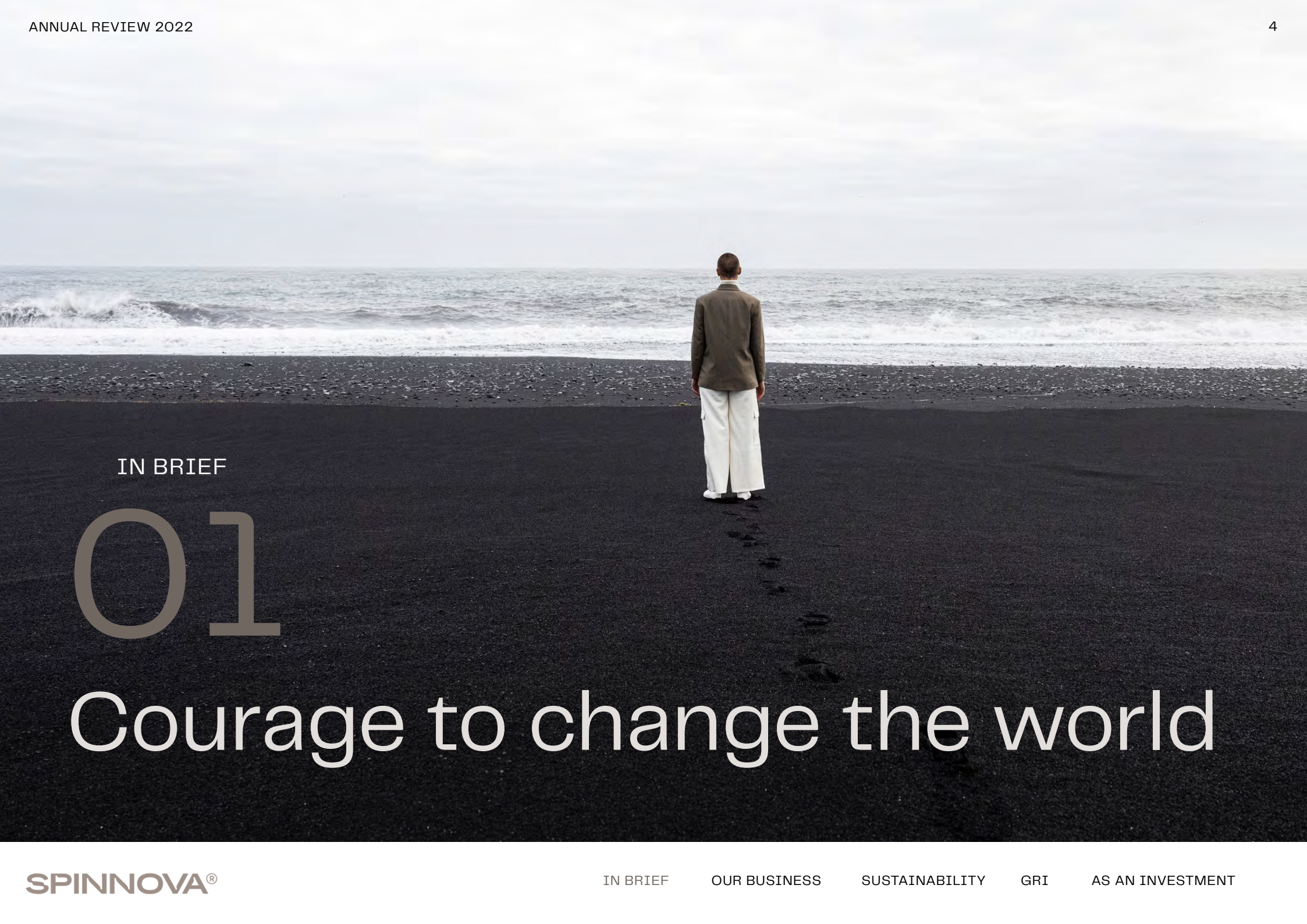
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IN BRIEF

01

Courage to change the world

IN BRIEF

Spinnova in brief

Spinnova's mission is to produce the most sustainable textile fibres and materials in the world for the benefit of the environment and humanity.

SPINNOVA® fibre is the breakthrough sustainable fibre, created with ground-breaking patented technology, that mimics how spiders weave their webs. SPINNOVA® can be produced from multiple raw materials from wood to leather, textile, agricultural, food industry and beverage waste. The look and feel of SPINNOVA® is similar to natural fibres such as cotton and linen.

The fashion industry is estimated to be responsible for four percent of global greenhouse gas emissions. In the textile value chain, material production and processing are the phases where the most emissions are created.¹

Spinnova's technology offers a solution for the textile industry to cut emissions by replacing conventional water and chemical intensive cotton and viscose and oil-based polyester with the sustainable SPINNOVA® fibre.

SPINNOVA® fibre is produced with a unique mechanical process, which uses minimal water and no harmful chemicals. For example, when produced from eucalyptus pulp, the CO₂ emissions from the production are estimated to be 74 percent lower compared to conventional cotton. Furthermore,

Woodspin's first commercial scale production plant in Jyväskylä, Finland, will help to reduce CO₂ emissions more than is generated during the entire fibre production chain, as surplus heat can be utilized in the local district heating network.²

Having completed the main phase of research and development, Spinnova is ramping up its global commercialisation phase.

In 2022, Spinnova announced product launches with adidas, the H&M Group's ARKET, Bestseller's JACK&JONES, Marimekko and Halti. In addition, we continued our cooperation with The North Face, Bergans and Icebreaker.

RECEIVED AWARDS

Spinnova received several awards in 2022. The company made the lists of TIME's Best Inventions of 2022 and Fast Company's Brands that matter. The company was among the finalists in the Financial Times Tech Champions and in Star of Innovations in European Small&Mid-Caps. In addition, Spinnova won the Sustainability Tech award by Capgemini, Technology Fast 50 Impact award by Deloitte and Engineering achievement of the year (Vuoden Insinööriteko). The company's Sustainability Report was recognised by Sustainability Reporting competition (Kestävyysraportointikilpailu) and was chosen to be the best in Finland among SME companies.



Spinnova's shares (SPINN) are listed on the Nasdaq First North Growth Market Finland.

¹ "Fashion on climate", Global Fashion Agenda and McKinsey, 2020 and Textile Exchange.

² Carbon footprint calculation by an independent third-party consultancy.

Significant events in 2022

PRODUCT LAUNCHES

11 FEBRUARY

Spinnova and adidas unveiled their first commercial product: the adidas TERREX hoodie

25 APRIL

H&M's ARKET's signature overshirt available in sustainable SPINNOVA® blend

29 AUGUST

Marimekko released capsule collection made with responsible SPINNOVA® fibre

26 OCTOBER

BESTSELLER brand Jack&Jones brought their first SPINNOVA® product to the stores

22 NOVEMBER

Spinnova partnered with Nordic outdoor brand Halti – urban parka jacket made with SPINNOVA® fibre and imogo's resource-efficient dyeing available in spring 2023

INNOVATIONS AND AWARDS

13 JANUARY

Spinnova joins the UN Global Compact

4 MARCH

ISPO award-winning premium PUSU x SPINNOVA® composite skis started to challenge glass fibre performance and user experience

26 JUNE

Spinnova partnered with imogo to apply resource-efficient dyeing to sustainable SPINNOVA® fabrics

4 OCTOBER

Spinnova received Business Finland NextGeneration EU grant for fibre development work

10 NOVEMBER

SPINNOVA® mentioned in TIME's Best Inventions of 2022

MANAGEMENT TEAM

2 MAY

Allan Andersen appointed Chief Sales Officer and member of the management team as of May

9 MAY

Teemu Lindberg appointed as Executive Vice President, Production Scaling and member of the management team as of August

3 JUNE

Chief Product Officer Lotta Kopra resigned from her operative role

14 JUNE

Kim Poulsen was appointed CEO of Spinnova as of 1 August

26 AUGUST

General Counsel and Board Secretary Lasse Holopainen was appointed member of the Spinnova management team



We would like to extend our thanks to everyone who believes in our mission and has joined our journey.

Chair's & CEO's greetings

CHAIR OF THE BOARD JANNE PORANEN:

After eight years, it was time to hand over operative responsibility and continue my work in a new role where I can better focus on the long-term strategy to take Spinnova to the next level. As Chair of the Spinnova Board of Directors, I will continue to drive the company to achieve global sustainability leadership.

Our new CEO, Kim has a crucial leadership role responsible for the company's strategy implementation and operational excellence.

Spinnova is executing a very demanding investment program over the next few years and strengthening our commercial and strategic partnerships around the globe. I have every confidence that Kim will lead these efforts with success, and his skills and experience will inspire us all when we take Spinnova to the next level.

Chair of the Board Janne Poranen and CEO Kim Poulsen.

JANNE PORANEN CONTINUES

Spinnova is revolutionizing the global textile industry and its raw material base for the better. We are now moving towards the commercial phase.

- The construction work for Woodspin's first factory is completed, and feasibility plans for the second plant have started.
- Respin is moving from the pilot to the industrial phase.
- Development of other raw material bases (for example from agricultural-, food and beverage industry- and textile waste) has progressed.
- We are working to convert brand partnerships into commercial customers

The operational implementation of these plans requires full focus and seamless cooperation between the operative management and the Board of Directors going forward. The Board of Directors is ultimately responsible for the company's strategy. As Chair of the Board, I focus on the company's longer-term strategic goals and actively evaluating our strategic needs.

The cooperation with Kim is very active. The management team is also highly professional and capable.

With this combination of a strong vision and a highly engaged management team and Board, we are well placed to execute Spinnova's strategy.

CEO KIM POULSEN, WHAT DO YOU SEE AS SPINNOVA'S BIGGEST ACCOMPLISHMENTS IN 2022?

I'd like to start by thanking our entire personnel, customers and partners. Spinnova's committed and talented team achieved many important milestones in 2022. We won several awards and gained significant recognitions, and even though they are not our principal goal, they're a sign that we're doing the right things.

Our most important strategic goal was to finish the construction work of Woodspin's first commercial-scale plant in Jyväskylä.

The company's record-high net sales in 2022 were also a positive thing.

In respect of our people, we strengthened our key resources, with the result that our team is now largely assembled. This will further our progress toward Spinnova's next growth phase.

The product launches with our brand partners also proceeded favourably.

WHAT DO YOU THINK IS THE BIGGEST OPPORTUNITY AND CORE STRENGTH OF THE COMPANY?

I'd like to summarise my answer into three different categories:

People – Our company possesses an incredible amount of intelligence, motivation and commitment. Spinnova has a unique DNA and people are at the core of what we do.

Technology – Spinnova's unique, patented technology makes the production of the SPINNOVA® fibre a great deal more environmentally friendly than the production of viscose or cotton, for example.

The textile industry is responsible for 4 percent of global emissions, which is a lot for an industry of this size. The production of the SPINNOVA® fibre consumes 99.5 percent less water than conventional cotton production, for one. The fibre's production does not rely on harmful chemicals, and the fibre's carbon dioxide emissions are 74 percent lower than those of traditional cotton. Furthermore, the fibre can be recycled, again and again. It can also be mixed with other fibres, separated and reused. This is huge from the perspective of recyclability!

And the third category is brand – We have an extremely strong brand, relative to our size. We are known in the textile industry in general, but we are especially well-known among fashion brands. All three categories – people, technology and brand – complement each other and will be our strength as we help various brands to make good on their promise to cut their own emissions by 30 percent by 2030.

They are the foundation upon which we are building the growth of our business and of which I can be proud.

WHAT WILL YOU, AS CEO, FOCUS ON TO MAKE SPINNOVA SUCCEED IN 2023?

The first six months at the helm of Spinnova have been eventful, and I'm looking forward to taking the next step toward the industrial scale, both in our operations and in the production of the SPINNOVA® fibre. We will do so together with our international team, partners, customers and investors.

The operating environment in 2022 was challenging in terms of energy prices, logistics, interest-rate levels and many other factors. We successfully finished the construction of the Woodspin plant (a joint ven-

ture with Suzano) in October, and the plant is now producing fibre. The next step is to commercialise the production and to get the quality and volumes in shape. The plant's ramp-up is important, and it's one of the things we'll be focusing on in 2023.

Woodspin's other plant and the feasibility study and preliminary design concerning Respin (a joint venture with ECCO), as well as the locations of these plants, are some of the important decisions to be taken in 2023. We will analyse the data related to the aforementioned diligently, to make the right decisions at the right time.

Clothes are the primary application of the SPINNOVA® fibre, and cooperation with our brand partners will become increasingly important during this year. Our goal is to launch new products on the market in cooperation with our partners.

We will continue our research and development work and will invest in the raw materials currently in the development pipe. But we'll also be investigating other options and materials, such as straw and recycled textiles. We will also study the use of the fibre in applications other than clothes.

In addition, we will continue to focus on safety. I consider investments in occupational safety and well-being to be extremely important.

OUR BUSINESS

02

Passion for innovation

OUR BUSINESS

Megatrends

Consumer eco-awareness

One of the most important consumer trends is the significant increase in environmental awareness: sustainability is becoming a key factor in consumption decisions. Consumers demand more transparency and sustainability from the products and brands they choose. They are after more sustainable alternatives to water and chemical intensive cotton, polyester, and viscose, and are increasingly willing to pay for them.

Climate change

Mitigating climate change means that human-kind needs to find new ways to produce and consume. The textile industry has an important role in driving the shift to a carbon-neutral world. This goal is also prioritised by numerous legislative initiatives, such as the EU Green Deal, as the political pressure to respond to climate-related challenges increases.

Following the Paris climate conference and the Paris Agreement in 2015, the UN network “Fashion for Global Climate Action” was started. The purpose of the network is to align the apparel industry with the goals and objectives of the Paris Agreement and drive it towards net zero emissions by 2050.

With significantly lower greenhouse gas emissions compared to, for example, cotton, Spinnova’s technology is part of the solution to climate-related concerns in the apparel industry. For more information, see pages [27-29](#).

Circular economy

Climate change also puts new pressure on textile recycling. For example, the European Commission introduced a circular economy action plan in 2020, which promotes textile repair, reuse, and recycling. This has been followed by the EU’s strategy for sustainable and circular textiles.

SPINNOVA® fibre is fully recyclable and its quality is improved in recycling. In addition, our fibre can be made of cellulosic textile waste in the future, as the infrastructure for collecting and sorting this waste develops. With these attributes, SPINNOVA® fibre can significantly contribute to the circular economy goals.

OUR BUSINESS

Spinnova's market

Spinnova provides sustainable materials for the global textile fibre market, the value of which was about EUR 200 billion in 2021 and is expected to grow to approximately EUR 245 billion by 2030.

Global fibre consumption is expected to grow to 150–155 million tonnes by 2030. Spinnova's initial target market, the fashion and apparel sector, represents 75–85 percent of the global fibre market.³

The increase in apparel consumption is driven by several factors, most importantly the growing middle class contributing to higher consumption, shorter fashion trends and fewer usage times of apparels before disposal.

A large share of major fashion and apparel brands have made commitments to significantly improve their environmental footprint by for example introducing sustainable materials in their collections. To achieve this goal, brands need to work with new material innovators like Spinnova. The EU is calling for a change in the textile industry demonstrated by its new strategy for sustainable and circular textiles that aims by 2030 for textile products on the EU

market to be long-lived and recyclable, to a great extent made of recycled fibres, free of hazardous substances and produced respecting social rights and the environment⁴.

Spinnova's unique value proposition including its environmentally friendly mechanical production process is well recognized in the industry. According to the Textile Exchange, the global non-profit organization in the textile fibre and material space, Spinnova is classified in the "Other plant-based fibres" category in the global classification of textile fibres⁵. This sets SPINNOVA® apart from man-made cellulosic fibres that are produced in a regenerative chemical process.

Various other industries are also on the lookout to replace their existing textile materials with sustainable, renewable alternatives, to minimize CO₂ emissions as well as chemical and water use. Spinnova is engaged in testing and entering select partnerships in interior textiles, transportation textiles and selected non-woven and composite areas. An example of this is the ISPO award-winning alpine skis from PUSU and Spinnova, which is our first commercial application in the field of composites.

Critical climate action called for by, amongst others, the IPCC (Intergovernmental Panel on Climate Change), also supports Spinnova's innovation.

The demand for sustainable fibre and materials is likely to continue to grow.

Limiting human-induced global warming requires limiting cumulative CO₂ emissions, reaching at least net zero CO₂ emissions, along with strong reductions in other greenhouse gas emissions. Spinnova's sustainable textile fibre can have a significant contribution in mitigating the textile industry's emissions.

The demand for sustainable fibre and materials is likely to continue to grow, which in turn would drive the demand for Spinnova's technology, fibres and materials.

³ Company management and third-party sources mentioned in Spinnova IPO Offering Circular 10 June 2021.

⁴ EU Strategy for Sustainable and Circular Textiles, 30 March 2022.

⁵ Textile Exchange's Preferred textile fibres and materials report 2020, 17 August 2021.

STRATEGY AND OPERATIONS

Strategy and Business Targets

Spinnova aims to be a global leader in the sustainable textile materials market.

Spinnova intends to continue expanding its production capacity and establish partnerships with apparel brands and textile manufacturers. To achieve its goals, Spinnova has divided its strategy into three areas: 1) technology strategy, 2) go-to-market strategy, and 3) product and brand strategy.

TECHNOLOGY STRATEGY

Spinnova's pilot production plant for wood-based SPINNOVA® fibre has been operating for over three years. Production at Spinnova's and Suzano's 50/50 joint venture Woodspin's first commercial one-thousand-tonne plant, will be ramped up during 2023. This factory is expected to serve as a demonstration of industrial-scale production capacity. The planning for the next industrial-scale production plant is ongoing. Spinnova has also been piloting leather waste-based fibre production on an exclusive basis with ECCO since 2021.

Spinnova's technology can produce SPINNOVA® fibre also from material other than wood and leather waste-based raw material sources, such as agricultural and textile waste. Spinnova is currently studying options to scale fibre production with these other raw material sources.

GO-TO MARKET STRATEGY

Spinnova's go-to-market strategy focuses on three elements:

1. TECHNOLOGY SALES

This encompasses selling Spinnova's technology platform exclusively to the joint venture companies in which it holds a 50 per cent ownership stake, and in the future potentially selling or licensing its technology platform to other parties. In 2022, the majority of Spinnova's sales came from technology sales to joint ventures.

2. FIBRE PRODUCTION AND SALES

The joint venture companies produce SPINNOVA® fibre using the technology platform acquired from Spinnova and sell the SPINNOVA® fibre to textile brands. SPINNOVA® fibre sales are currently in the pre-commercial phase where products are developed jointly with brand partners.

3. FABRIC SALES

Spinnova also aims to establish its own commercial scale fabric production supply chain selling SPINNOVA® fabrics. The fibre used in the yarn and fabrics production would be purchased from the joint ventures producing SPINNOVA® fibre. Spinnova is currently investigating business model options regarding fabric sales.

PRODUCT AND BRAND STRATEGY

Spinnova's brand vision is to become the top-of-mind sustainable textile material globally. The value proposition centres around sustainability, high performance benefits and natural feel. Spinnova's objective is to build partnerships with selected leading apparel brands and to anchor the SPINNOVA® brand to high volume product segments. Spinnova targets both premium and luxury brands as well as mass-market brands. Spinnova has launched products with several leading brands such as adidas, Bergans of Norway, Bestseller, H&M Group, Marimekko, and Halti. Spinnova aims to position itself as an appealing ingredient brand, which is visible to the consumer in the brand partners' final products.

PROGRESS AGAINST BUSINESS TARGETS

In 2021, Spinnova Group set the following medium and long-term business targets. The progress at the end of 2022 is described below.

| | COMMERCIAL | PRODUCTION | BUSINESS |
|---------------------------------|---|--|---|
| PROGRESS AGAINST TARGETS | <p>Spinnova announced brand collaborations that have released commercial products.</p> <ul style="list-style-type: none"> • adidas • H&M's ARKET • Bestseller's brand JACK&JONES • Marimekko • Bergans • PUSU | <p>The construction work for the first Woodspin factory was completed at the end of October – Fibre produced in February 2023.</p> <p>Second Woodspin factory feasibility planning progressed.</p> <p>The Respin pilot line produced fibre from leather waste in 2022.</p> <p>Tests with recycled textile fibre and agricultural waste showed promising results.</p> | <p>In 2022, revenue grew to EUR 24 million.</p> <p>EBIT was EUR -12 million.</p> |
| MEDIUM TERM TARGETS (2025–2027) | Up to 20 commercial textile brand partnerships, which have SPINNOVA® materials in their product lines. | 150 thousand tonnes of SPINNOVA® fibre production capacity. | EBIT positive. |
| LONG TERM TARGETS (2031–2033) | Up to 80 commercial textile brand partnerships, which have SPINNOVA® materials in their product lines. | One million tonnes of SPINNOVA® fibre production capacity. | <p>More than EUR 200 million EBIT p.a. from share of profits from JV's, recurring technology fees, and service maintenance fees.</p> <p>Cumulative more than EUR one billion cash margin from technology sales.</p> |
| DIVIDEND POLICY | In short- and medium term: no dividend | | |

STRATEGY AND OPERATIONS

Woodspin

Woodspin, the 50/50 joint venture between Spinnova and its strategic partner, pulp company Suzano.

The construction work for Woodspin's first factory was completed at the end of October 2022, after which work to finalize the technology installations has continued. The factory started up and has been producing fibre since February 2023. The ramp-up will continue throughout the year 2023, gradually increasing production capacity. Spinnova's textile development work continues, and we are planning to launch our first products using Suzano micro-fibrillated cellulose (MFC) as raw material.

The 1 000-tonne facility is the first commercial factory of Woodspin and a start to what will be around a million tonnes of annual global volume of SPINNOVA® fibre capacity by 2031–2033.

The market opportunity and ambition level to scale to one million tonnes with Suzano remains unchanged. Feasibility planning for the next plant progressed well during 2022. Both optimal size and comparison of brownfield and greenfield sites are under evaluation. Spinnova is actively working with Suzano to improve the efficiency of the raw material process. At the same time, Spinnova continues

to further develop the technology concept of the spinning process. The business case for the next Woodspin factory investment is being finalized and will use the learnings from the first factory as it ramps up production. It is therefore expected that the next Woodspin plant will be completed after 2024.

Spinnova has designed the factory's energy solutions to ensure a low emission facility that runs on 100% renewable energy and recovered heat energy. In addition, the factory is planned to transfer excess energy back into the district heating network. The only side stream of the process is evaporated water that is mostly fed back into the process. It is a very clean production method.

The factory complex is located on the south side of Jyväskylä in Central Finland and the factory complex includes Spinnova's and Suzano's joint venture Woodspin's fibre production, Suzano Finland's micro-fibrillated cellulose (MFC) refining, as well as Spinnova's headquarters and some of its product development functions.

For Suzano, the MFC refining investment is the company's first-ever investment outside of Brazil.



STRATEGY AND OPERATIONS

Product launches

In 2022, Spinnova announced product launches with adidas, the H&M Group's ARKET, Bestseller's JACK&JONES, Marimekko and Halti. In addition, we continued our cooperation with The North Face, Bergans and Icebreaker.

Commercial product launches are a sign of our successful research and development and demonstrate the suitability of the SPINNOVA® fibre for a wide range of applications.



The first commercial product with adidas, the adidas TERREX HS1 mid-layer hoodie, was released in February and available for consumers online and in select retail outlets from July.



Read more: spinnova.com →

In April, ARKET became the first H&M Group brand to release a SPINNOVA® product commercially.

H&M Group

Read more: spinnova.com →





In August, Marimekko released capsule collection containing the first ever commercially available printed products made using SPINNOVA® fibre. The capsule includes a denim-inspired smart utility overshirt, a pair of trousers and a tote bag, all with the iconic Unikko (poppy) print.

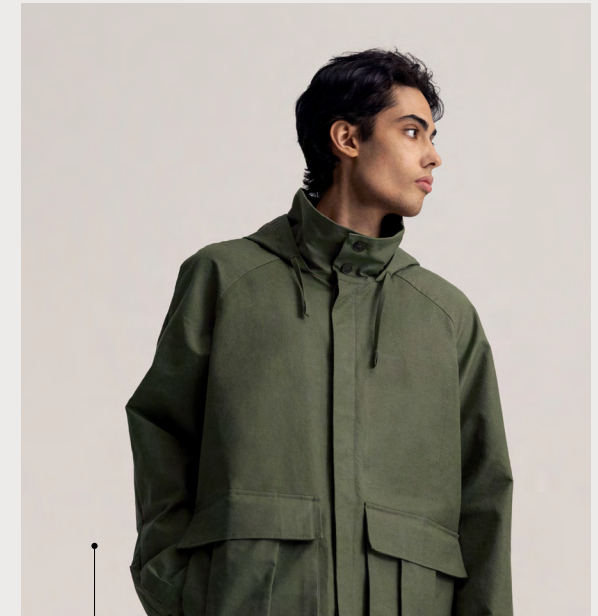
marimekko

Read more: spinnova.com →

BESTSELLER's largest brand JACK & JONES introduced a pair of men's trousers for consumer sales in October.

BESTSELLER

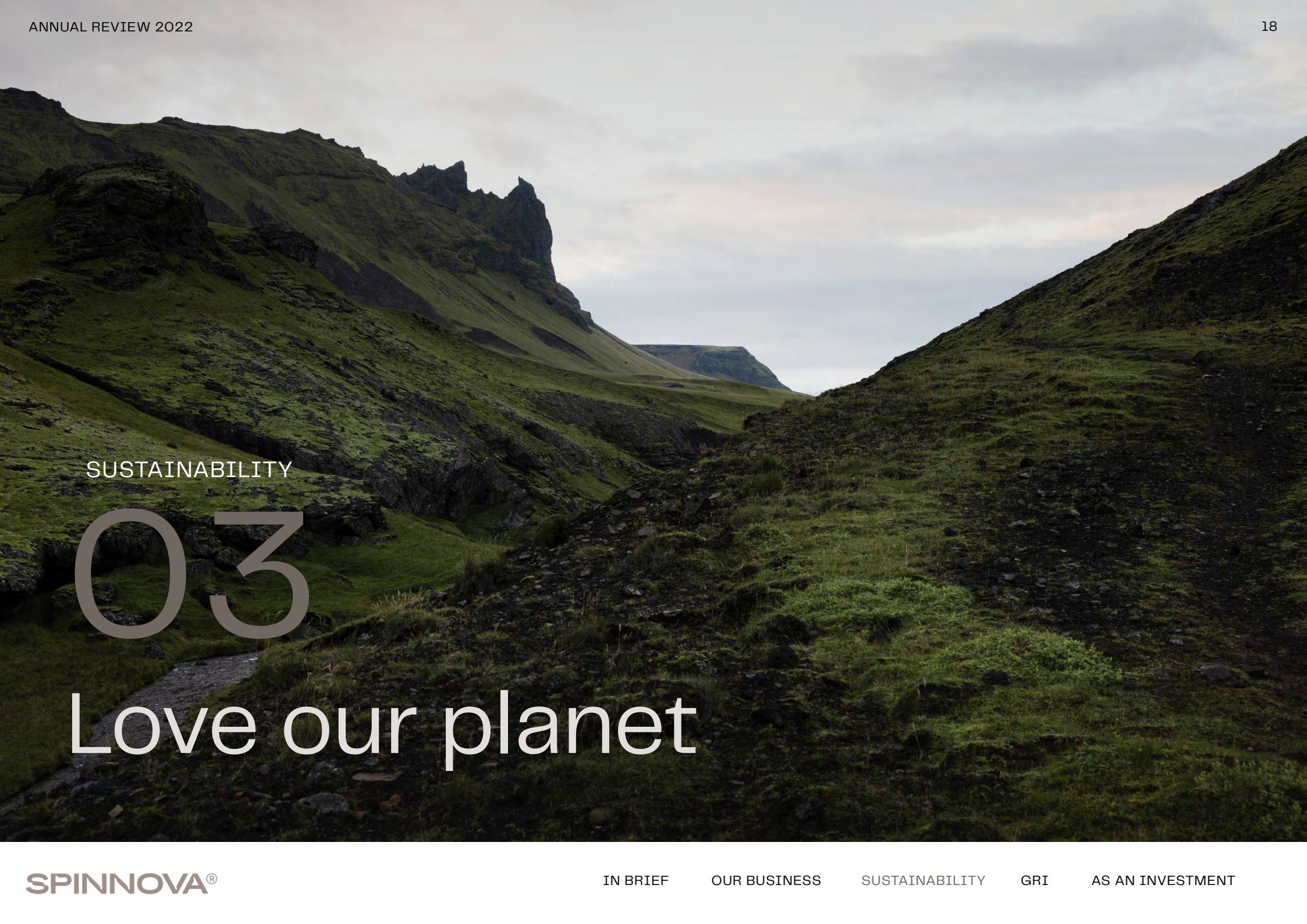
Read more: spinnova.com →



In November, we announced the launch of Halti's water-resistant and windproof parka, which is expected to hit the stores in spring 2023. The parka is dyed with imogo's sustainable hi-precision dyeing technology and is the first product to make use of both Spinnova's and imogo's technologies.



Read more: spinnova.com →



SUSTAINABILITY

03


Love our planet

SUSTAINABILITY

Sustainability at Spinnova

Sustainability is the very foundation of Spinnova's business. Our technology was created to solve major sustainability challenges in the global textile industry. By replacing materials that are water, CO₂, and chemical intensive, such as cotton, Spinnova also contributes to the UN Sustainable Development Goals.

At the same time, we are determined to ensure that our own operations are as sustainable as possible. We are committed to protecting the environment and respecting human rights in everything we do. We are also committed to the constant development of our sustainability processes, such as due diligence and responsible sourcing, to ensure that we understand and are able to address our impacts on people and the planet.

A woman with dark hair, wearing a white, textured, knee-length coat and dark shoes, stands on a dirt path in a rugged, mountainous landscape. The mountains are covered in green grass and some rocky outcrops. The sky is overcast with soft, diffused light. The overall mood is serene and natural.

Our technology was created to solve major sustainability challenges in the global textile industry.

SUSTAINABILITY

Governance and risk management

Sustainability is a key focus area of the Board of Directors (BoD) of Spinnova, which is the highest governance body of the company, and sustainability information, concerns, and trends are regularly shared with Board members. The CEO holds the ultimate responsibility for the implementation of Spinnova's sustainability strategy.

Strategic decisions regarding Spinnova's sustainability work are guided by the Sustainability Steering Team, which meets quarterly or, when needed to address critical topics, more frequently. The team consists of the entire management team, as well as invited representatives from other functions, such as HR and Communications. The work and decision making of the Sustainability Steering Team is facilitated by the Chief Sustainability Officer (CSO) who is a member of the management team and reports directly to the CEO. The CSO is responsible for defining and managing Spinnova's

sustainability approach, building a responsible value chain, and overseeing the development of sustainable products from SPINNOVA® fibre. Everyday sustainability topics are coordinated by line management in production, supported by functional experts.

Spinnova's risk management process is guided by our risk management policy. For more information on this topic, see page 19 in our 2022 Corporate Governance Statement and on our website www.spinnovagroup.com. We are in the process of integrating sustainability topics further into our risk management processes.

In 2022, we defined our strategic sustainability approach and strengthened the governance of operational sustainability topics. We accomplished health and safety management certification (ISO 45001) and Forest Stewardship Council (FSC)⁶ Chain of Custody certification for Spinnova's operations.

⁶ Spinnova's FSC® trademark license number is FSC-C179138.

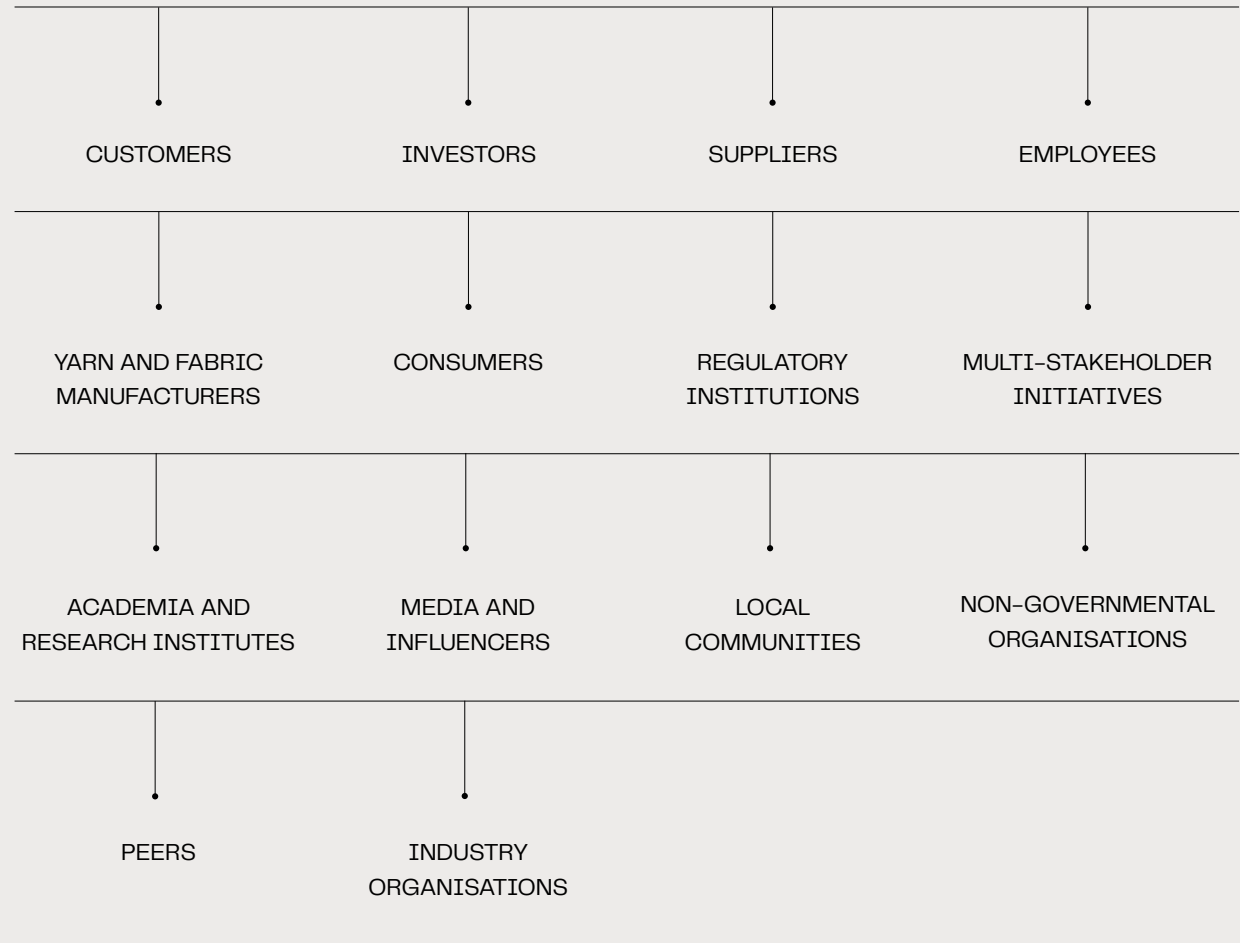
In 2022, we defined our strategic sustainability approach and strengthened the governance of operational sustainability topics.

Stakeholder engagement

Engaging with our stakeholders and understanding their viewpoints is highly important to us. We have identified Spinnova's most significant stakeholders and will update the analysis if necessary. In the analysis, we have evaluated the level of interest stakeholders have in Spinnova and the type of impact they have on our business. —————>

We frequently engage with our stakeholders to identify new trends within sustainability and to understand the specific expectations they have for Spinnova's sustainability work and reporting. This includes, for example, close cooperation with our brand partners to continuously develop our business, regular discussions with our investors, and employee consultations. In addition, we interact with our stakeholders at various events and respond to inquiries in various channels, such as on social media.

STAKEHOLDER GROUPS FOR SPINNOVA INCLUDE:



Collaboration with international platforms

We are members of various industry and cross-industry collaborations that drive sustainability in global supply chains and in the textile industry. In 2022, Spinnova continued to contribute to the following international platforms:

UN GLOBAL COMPACT →

is a voluntary initiative based on CEO commitments to implement its ten universally accepted sustainability principles. Spinnova became a Signatory of the UN Global Compact in 2021, which includes a commitment to report annually on progress towards the principles, in line with the compact's Communication on Progress policy.

THE CLIMATE LEADERSHIP COALITION (CLC) →

is a non-profit climate business network that drives positive climate impact through business solutions. CLC shares best practices, policy approaches, and strategies among its members, who strive to be leaders in climate change mitigation. Spinnova became a member of CLC in 2021.

CANOPY →

is a global network of companies that aims to protect and conserve the world's ancient and endangered forests. The platform seeks to introduce innovative and disruptive solutions that help eliminate the use of wood from vulnerable forests in companies' supply chains.

ELLEN MACARTHUR FOUNDATION →

is a charity committed to advancing the transition to a circular economy by creating evidence-based research on its benefits to society and by connecting companies whose aim is to accelerate the transition. Spinnova joined the Ellen MacArthur Foundation community in 2021.

FASHION FOR GOOD →

brings together the fashion ecosystem to promote technologies and business models that have the greatest potential to transform the industry. Spinnova has been a member of Fashion for Good since 2019.

TEXTILE EXCHANGE →

is a global non-profit that aims to positively impact the climate through accelerating the use of preferred fibres across the textile industry. Spinnova became a member of Textile Exchange in 2021.

ZDCH ROADMAP TO ZERO →

aims at reducing the use of harmful chemicals in manufacturing. The initiative brings together the entire value chain to decrease the industry's chemical footprint. Spinnova joined ZDHC as a contributor in 2021.

FINNISH TEXTILE AND FASHION →

is an employers' association for textile, clothing, and fashion companies in Finland that aims at strengthening the innovativeness and creativity of its member companies. Spinnova has been a member in the Finnish Textile and Fashion association, including their Responsibility and Circular Economy influencer group, since 2021.

Spinnova supports collaborations that drive sustainability globally.

SUSTAINABILITY

Spinnova's strategic sustainability approach

Our mission is to change the raw material base of the entire global textile industry for the better. At the same time, we must lead the change by example and ensure that our own actions are as sustainable as possible.

Sustainability is one of our company values, alongside trust, courage, innovation, and teamwork. The development and design of our values, to reflect Spinnova's operating culture and our personnel, was finalized in 2022 involving representatives from teams across the company. For more information, see page [35](#).

In 2022, we also prepared Spinnova's strategic programme to guide our company's sustainability work. The programme is built on the basis of materiality assessment and is in constant interaction with Spinnova's business strategy. The strategic sustainability programme was built together with the Management Team, supported by an external consultant. It enables Spinnova to achieve its mission and other strategic goals.

The three main themes of our sustainability programme are **passionately innovative, climate champion** and **naturally circular**. We can only succeed in these main themes by building them on responsible business practices, which form the fundamentals of the program. The sustainability programme also forms the structure of our sustainability reporting for 2022.

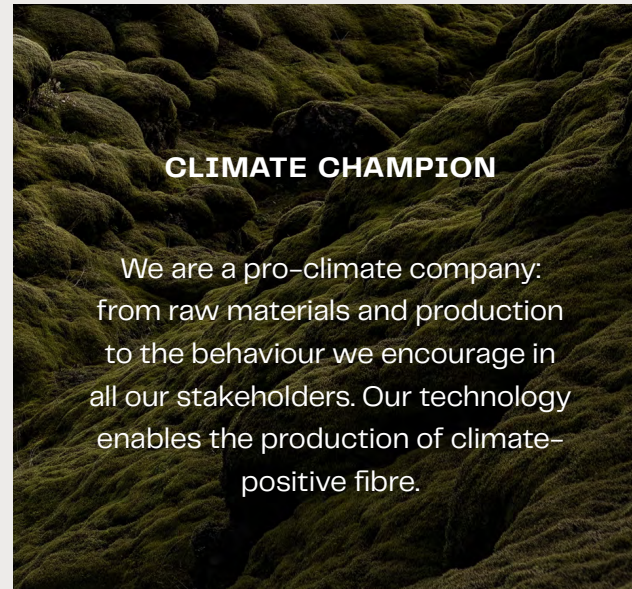
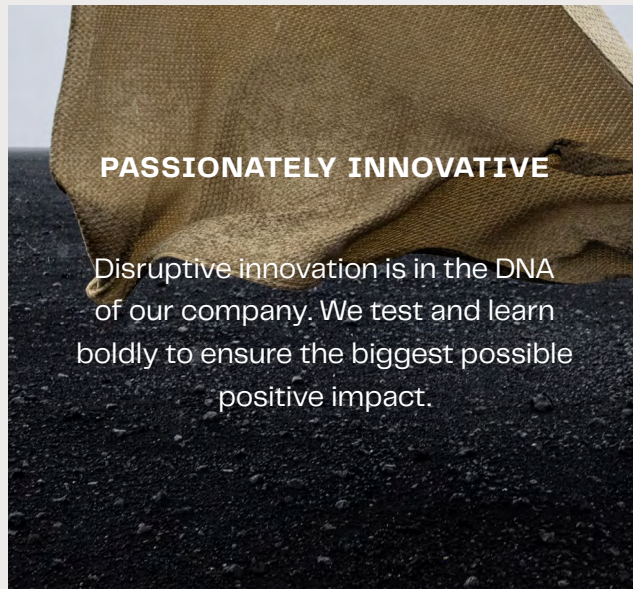
MATERIALITY

As part of the work for the strategic sustainability programme we continued to prioritise sustainability topics for Spinnova in 2022. The prioritisation built on the earlier materiality assessment in 2021, which included the mapping of sustainability trends and frameworks, and the interviews of customers, investors, employees and suppliers about their views and expectations on Spinnova's sustainability work.

We have collected detailed data on our operations from early on. In 2023, we will continue to develop targets and indicators for our material sustainability themes.

Our sustainability approach

Key themes



Fundamentals

ETHICS & INTEGRITY

- Business ethics and compliance

PEOPLE

- Occupational health and safety
- Employee wellbeing and development
- Local communities

VALUE CHAIN

- Responsible value chain
- Biodiversity and land use
- Product safety and quality

Spinnova and the UN Sustainable Development Goals

Spinnova recognises that the UN Sustainable Development Goals (SDGs) are a key initiative in building a safe and fair future for people and ensuring the health of the planet. While we acknowledge the importance and interconnectivity of all the SDGs, we have identified SDGs 12, 13 and 14 as the goals, where we can currently have the biggest impact.

SDG 12 – RESPONSIBLE CONSUMPTION AND PRODUCTION

Spinnova's technology enables a production process in which pollutants and waste are almost completely eliminated. No harmful chemicals are used. We partner with leading global brands to design and create sustainable textiles.

SDG 13 – CLIMATE ACTION

Spinnova is committed to contributing to climate change mitigation through its innovations, while also ensuring that its own operations are as low carbon and energy efficient as possible.

SDG 14 – LIFE BELOW WATER


Our biodegradable fibre product does not contain microplastics, which is a major concern for marine life and, eventually, us humans. Spinnova's technology helps to eliminate pollution and nutrient load to water courses by challenging existing fibre technologies, which are typically water and chemical intensive.

KEY THEME

Passionately innovative

Sustainable innovation is in the DNA of our company. We test and learn passionately to ensure that our operations and products create the biggest possible positive impact.

Our unique fibre and technology have the potential to significantly drive sustainability in the textile-apparel industry. Spinnova's technology platform allows the production of recyclable fibre from multiple raw materials, such as wood or leather processing waste, and other waste streams, such as agricultural and textile waste as well as waste from the food and beverage industry. Our innovations – and future ones – are where our positive impact on people and the environment is the biggest. Read more about our fibre and technology on pages [51-52](#).



Spinnova's technology platform allows the production of recyclable fibre from multiple raw materials.



KEY THEME

Climate champion

Climate action cannot wait. Spinnova is committed to contributing to climate change mitigation through its innovations, while also ensuring that its own operations are as low carbon and energy efficient as possible.

CLIMATE CHANGE MITIGATION

Spinnova works for the climate throughout the value chain: from raw materials to production and climate actions that we encourage among our stakeholders. We understand the urgency of climate action and therefore do everything we can to ensure that our business supports society's transition to a future that is sustainable for people and the environment.

The fashion and apparel industry is estimated to account for 4% of global greenhouse gas emissions, and the production of textile fibres is estimated to be the largest single source of greenhouse gas emissions in the fashion industry⁷. Spinnova's solution can drive significant change in reducing these emissions.

⁷ Source: McKinsey & Global Fashion Agenda, Fashion on Climate, August 2020.

For example, when produced from eucalyptus pulp, the greenhouse gas emissions of Spinnova fibre, 1.2 kg CO₂-e per kilogram of fibre produced, are 3.5 kg or 74% lower than the global average emissions of conventional cotton (4.7 kg CO₂-e/ kg of fibre).

The calculation of our product's carbon footprint follows ISO 14067:2018 standard and includes CO₂-e emissions associated with raw material supply, transportation of raw materials, and manufacturing of the product (cradle-to-gate). In 2022, we updated our product's carbon footprint with the support of a third-party expert. Furthermore, we have used Ecoinvent database as the source for global average emissions of conventional cotton.

In addition to the low carbon footprint, the surplus heat of our joint venture Woodspin in Jyväskylä enables further emission reduction in the local district heating. The factory complex of Woodspin will boost a highly advanced energy system. The factory runs fully on renewable electricity and uses recovered heat from the processes with the help of heat pumps. Alongside internal use, Woodspin provides recovered heat to the local district heating network, which reduces the emissions of the local energy producer Alva by replacing the use of fossil fuels. At the latest values, this emission reduction is 2.4 kg CO₂-e/kg of fibre.

We want to encourage and enable our employees to use electric or hybrid cars that run on renewable energy. To achieve this goal, we have installed electric charging stations at our premises in Jyväskylä. We also financially support our employees to purchase commuter bicycles.

CARBON HANDPRINT OF SPINNOVA® FIBRE

At the beginning of 2022, we tested the carbon handprint methodology for SPINNOVA® fibre for the first time with the help of an external climate expert. The carbon handprint methodology has been developed by VTT Technical Research Centre of Finland and LUT University in Finland. It compares the life cycle climate impacts of two products used for the same purpose.

SPINNOVA® fibre enables emission reduction for brand partners as a positive handprint. This positive climate impact is the result of the low carbon footprint of SPINNOVA® fibre compared to conventional cotton and the utilisation of surplus heat from Woodspin in the local district heating, replacing fossil-based energy.

PROJECTED EMISSION AVOIDANCE BY SPINNOVA'S FIBRE⁸

-3.5 KG CO₂-E

PRODUCTION OF SPINNOVA® FIBRE FROM EUCALYPTUS PULP EMITS 3.5 KG LESS CO₂-E PER ONE KG OF FIBRE PRODUCED, COMPARED TO CONVENTIONAL COTTON.

-2.4 KG CO₂-E

EXCESS HEAT FROM SPINNOVA'S PRODUCTION WILL REPLACE FOSSIL-BASED ENERGY IN THE LOCAL DISTRICT HEATING IN JYVÄSKYLÄ. PRODUCTION OF ONE KG OF FIBRE HELPS TO REDUCE 2.4 KG OF CO₂-E EMISSIONS.

⁸ Figures are based on projected, third-party emission calculations for our joint venture Woodspin's first commercial factory in Jyväskylä, Finland.

GREENHOUSE GAS EMISSIONS OF SPINNOVA'S OPERATIONS

No fuels or other materials are combusted in our process. The only greenhouse gas emitted is evaporated water which only stays in the atmosphere for approximately one week before returning to earth as rainfall.

| GREENHOUSE GAS EMISSIONS FROM SPINNOVA'S OPERATIONS | 2022 | 2021 |
|---|------------|------------|
| Scope 1: Direct emissions from our operations, tonnes of CO ₂ -e | 12 | 6 |
| Scope 2: Emissions from purchased energy, tonnes of CO ₂ -e | 173 | 143 |
| Total | 185 | 149 |

In 2022, we evaporated approximately 113,000 cubic meters of water in our pilot production line. In our joint venture, Woodspin, we capture and reuse the evaporated water in a closed loop. Read more about our water use on page [31](#).

In 2022, the only direct carbon dioxide (CO₂) emissions from our operations (Scope 1) consisted of the fuel consumption of two leased company cars.

| ENERGY USE IN SPINNOVA'S OPERATIONS, MWh | 2022 | 2021 |
|--|--------------|------------|
| Electricity | 654 | 512 |
| District heating for premises | 407 | 393 |
| Total | 1 061 | 905 |

While we strive to only buy renewable energy, our pilot production line in Jyväskylä and office premises also purchased energy which was partly generated by using fossil fuels. The emissions associated with our purchased energy form our indirect Scope 2 emissions.

The calculation of our greenhouse gas emissions is based on the GHG Protocol Corporate Accounting and Reporting Standard. In addition to our direct emissions (Scope 1) and emissions from purchased energy, we have also started to estimate our other indirect emissions along the value chain (Scope 3) at a company level. During 2023, we will continue to prepare for the calculation of our value chain emissions. Our product-level carbon footprint calculation already includes emissions from supply chain.

OTHER EMISSIONS TO AIR

In 2022, our production processes generated zero emissions to air of ozone-depleting substances (ODS), nitrogen oxides (NO_x), and sulphur oxides (SO_x).

The emissions of Spinnova's wood-based fibre are 74% lower than the emissions of conventional cotton.

Spinnova's technology enables a production process in which pollutants are almost completely eliminated. Renewable energy, efficient utilisation of energy and utilisation of waste heat are examples of measures by which Spinnova minimises its environmental footprint. In addition, no harmful chemicals are used in the production of SPINNOVA® fibre. More information about the use of chemicals on page [32](#).

KEY THEME

Naturally circular

Spinnova advances the circular economy by eliminating waste and pollution, and by promoting the circulation of products and materials. We develop circular products and solutions in collaboration with our partners.

ELIMINATING WASTE AND POLLUTION

Spinnova's technology creates no process waste or side streams. We are able to reuse all cuttings, lower grade fibre, and other SPINNOVA® fibre residues in production. In addition, any raw material surplus generated when, for example, pulp becomes contaminated during transport, is turned into biogas by our local partner, Metener. The only potential waste created using our technology comes from the washing of containers and piping.

CIRCULATING PRODUCTS AND MATERIALS

Spinnova's technology can be used to work with a wide range of raw materials. For our joint venture company Woodspin, the main raw material is wood-based pulp. We actively investigate opportunities to use other materials as well. In 2022, our joint venture company, Respin, has been piloting production of SPINNOVA® fibre using leather processing waste from ECCO's leather tanneries.



The quality of SPINNOVA® fibre remains or even improves when recycled.

When garments made with SPINNOVA® fibre can no longer be repaired, the fibre can be fully recycled using our technology. In addition, when the fibre is recycled in this way, it does not lose quality – in some cases, the quality of the fibre improves.

We want to ensure that our fibre stays in circulation and does not end up in nature. We promote the recycling of SPINNOVA® and all other fibres and strongly encourage our suppliers to integrate circularity – for example, repair, reuse, and recycling – into their business models. However, if Spinnova fibre does end up in natural environments, it biodegrades into safe components in 2–3 months.

RESPONSIBLE WASTE MANAGEMENT

In addition to our zero-waste production technology, we promote responsible waste management in all our operations. We strive to generate as little waste as possible. However, when waste is generated, we aim to ensure it is utilized in the best possible way. The recycling rate for the waste generated in our operations was 58% in 2022 (40% in 2021). When considering all beneficial use of waste, such as incineration for energy or land improvement, the overall utilization rate for our waste was 98% in 2022 (96% in 2021).

| OUR WASTE BY CATEGORY, TONNES | 2022 | 2021 |
|----------------------------------|-------------|-------------|
| Energy waste | 1.39 | 1.51 |
| Mixed waste | 1.29 | 1.29 |
| Organic waste | 1.40 | 0.70 |
| Cardboard | 1.28 | 0.54 |
| Paper | 0.67 | 0.58 |
| Recyclable plastic | 0.15 | 0.09 |
| Hazardous waste | 0.67 | 0.25 |
| Other | 1.05 | 0.04 |
| Total | 7.90 | 5.00 |

WATER USE

From farming to processing, SPINNOVA® fibre produced by our joint venture Woodspin requires as much as 99.5% less water compared to the average water need in conventional cotton production⁹. This is due to the heavy watering required by cotton plants, while eucalyptus trees rely on rainfall for irrigation. Water is used for irrigation in the nursery, where eucalyptus tree seedlings are grown to an appropriate stage, and when the seedlings are planted. In addition, cooling and process water is used when eucalyptus trees are processed to pulp. Water is also needed when pulp is processed

| WATER USE IN SPINNOVA'S OPERATIONS | 2022 | 2021 |
|---------------------------------------|-------|-------|
| Municipal water, m ₃ | 1 524 | 1 285 |

further to more granular micro-fibrillated cellulose (MFC), which is the raw material for Spinnova's process.

In Spinnova's process, we use water for the cleaning of tanks and equipment, if needed. At our pilot lines, we test different raw materials, and the equipment is cleaned between the tests. Wastewater that is created at our facilities due to cleaning is treated appropriately in the municipal wastewater system.

The condensed water in our new joint venture, Woodspin, will be continuously reused in a closed loop. We will be able to capture and reuse the majority of evaporated water, which most other plants release into the atmosphere. Minimal amounts of evaporated water may be released into the air during production line ramp-ups.

⁹ Source: Life-cycle impact comparisons, conducted for Spinnova by third-party expert.

CHEMICAL USE

As the pulp for our fibre is refined mechanically, it does not need to be dissolved using harmful chemicals. The refined cellulose is then transformed into spinning-ready fibre suspension, again without harmful chemistry.

The main additives that go into SPINNOVA® fibre are wood-based polymers, such as carboxymethyl cellulose (CMC), also known as cellulose gum, which is widely used in papermaking and food processing and is safe for people to use and digest.

We comply with the EU's REACH regulation for chemical use and follow Finnish Textile & Fashion's Restricted Substances List, which is regularly updated based on national and EU-level regulation. We also work closely with our suppliers to find the most sustainable and safe additives to be used in our fibre.

Our joint venture, Respin, is piloting leather-waste fibre. When processing the material, we ensure that the material that is used to make SPINNOVA® fibre is not harmful and complies with the REACH regulation.

As we develop our fabric production, we work with various partners in certain parts of the process, such as dyeing. All these processes are aligned with or go beyond the requirements of the EU's REACH regulation for chemical use. For example, we have chosen not to use any carbon fluorides in the finishing of our fabrics even though their use is allowed, although restricted, by REACH. This is because carbon fluorides accumulate in nature and do not biodegrade quickly.

Some chemicals are also present in the cleaning products and other such items that we use at our units. All chemicals that are used by Spinnova employees or contractor employees come with appropriate instructions for safe use.

As the pulp for our fibre is refined mechanically, it does not need to be dissolved using harmful chemicals.

ETHICS AND INTEGRITY

Business ethics and compliance

Spinnova does not tolerate any unethical and illegal behaviour, and we always seek to go beyond compliance.

We comply with all relevant legislation and regulation set by authorities, such as those related to anti-corruption, competition law, employee health, and labour rights. But we always seek to go beyond compliance and build an ethical company culture. While misconduct may weaken stakeholder trust in our brand and result in personal and business risks, we also believe that ethical business conduct is simply the right thing to do.

Spinnova's [Code of Conduct](#) describes our generally approved practices and commitments regarding business ethics. The Code of Conduct applies to all our employees and management, also in any duties or tasks they may hold in any joint venture or subsidiary of Spinnova. We require absolute compliance with the Code of Conduct. All our employees have the obligation to ask for help when necessary and to report suspected non-compliance to the relevant line manager, a member of Spinnova's management team, or our Whistleblowing Channel.

Our Whistleblowing Channel is a tool provided by an external service provider. The channel makes it possible to report suspected violations anonymously and thus protects the person making the report. At the moment, the Whistleblowing Channel can be used by Spinnova's employees. There were no reports filed through this channel during the year.

Reports filed through our Whistleblowing Channel are received by our General Counsel and Chief Financial Officer (CFO), who will decide on the need for further investigation and actions. The Board of Directors is also informed, as needed. All reports are processed confidentially. We do not tolerate any retaliation against people who report suspected misconduct in good faith.

If misconduct is found during the investigation, we take appropriate action to resolve the case and prevent similar situations from taking place in the future. This action can range from improving our processes to disciplinary or even legal action.

Ethical business conduct is simply the right thing to do.

PEOPLE

Occupational Health and Safety

Ensuring the health and safety of our employees is a common cause for the entire company at Spinnova. We also require our suppliers to provide a healthy and safe workplace for their employees.

The aim of our occupational safety and health is to promote workplace safety as well as physical and mental well-being of employees. Our occupational safety and health action plan defines the objectives for activities at the workplace and for activities that maintain the work ability of personnel. By identifying the processes, operating methods and conditions of Spinnova's working environment, as well as the associated risk and hazard factors, we make a safe and functional working environment possible for all personnel.

In 2022, we prepared our [health and safety policy](#) covering our entire company, which was reviewed together with our personnel. At the same time, we collected feedback and suggestions for improvements, from our employees, to develop occupational safety and health at Spinnova.

Creating a healthy and safe operating culture also means actively communicating about occupational health and safety. During the year, we increased the visibility of occupational health and safety in management team and general employee meetings.

In 2022, we successfully received the ISO 45001 certificate for occupational health and safety management in our pilot line in our Jyväskylä and Helsinki offices. ISO 45001 aims to improve the health and safety of workers, reduce risks in the workplace and create healthier and safer working conditions. The standard further enhances the coverage and reliability of our systems. In addition to certification, we focused especially on developing our emergency preparedness, which included, for example, updating emergency plans and first aid and first-aid extinguishing training for personnel.

We did not record any lost-time incident at Spinnova's sites or at the sites of our joint venture companies. This was a great achievement, also including the construction works at our joint venture Woodspin.

The development of the reporting system for occupational accidents, near misses and other observations is an ongoing process for us.

We received the ISO 45001 certificate for occupational health and safety management in 2022.

In 2023, our aim is to further monitor and focus on proactive measures to prevent accidents and near misses. We believe that a predictive measurement system will best serve the implementation of occupational health and safety.

PEOPLE

Employee wellbeing and development

At Spinnova, we take great pride in our company culture, where we care for and listen to each other. As our business continues to grow, this culture of caring, collaboration, and inclusion is something we aim to maintain.

At the end of 2022, we employed 81 people (64 at the end of 2021), including fixed term employees. Almost all our employees are located in Finland.

Our company values are trust, courage, sustainability, innovation, and teamwork. The development and design of our values, to reflect Spinnova's operating culture and our personnel, was finalized in 2022, involving representatives from all teams in the company. During 2022, we also created easy-to-adopt value statements that complement the values and increased the visibility of the values in our premises. By implementing our values, we have wanted to ensure that the values become a natural part of our daily work. In addition to this, we make sure that all our current and future operating models are in line with our values.

We conduct well-being surveys to learn more about the well-being of our employees and to find ways to improve it. In the surveys our employees assess, for example, work-related stressors, resources, motivation and work ability.

During the year, our personnel in Helsinki moved to new premises. During 2023, several of our teams in Jyväskylä will move to new premises. Employees have been encouraged to participate in the design of the premises at different stages of the planning process. Based on the well-being surveys, we have also intensified cooperation with occupational health care. In 2023, we aim to make more tools and services available to support the mental well-being of the staff.

With the help of surveys, we can not only plan measures to improve our employee well-being and engagement, but also monitor the effectiveness of the measures taken.

DRIVING DIVERSITY, INCLUSION, AND WELL-BEING

We aim to provide an inclusive environment where people feel safe to share their feedback and ideas. This is vital for any business but especially crucial for a growing company like Spinnova. We want to

We conduct well-being surveys to learn more about the well-being of our employees.

hear from everyone so that we can continuously develop and improve our ways of working.

We cherish diversity and promote the equal and respectful treatment of all employees in all areas of work regardless of the employee's ethnic background, gender, religious beliefs, sexual orientation, marital status or other similar characteristic. We do not tolerate any forms of harassment or discrimination, including sexual harassment, bullying, or any other unacceptable behaviour towards anyone.

In 2022, we prepared the company's internal labour policy, which aims to create a clear framework for our labour practices. The policy has been created on the basis of the International Labour Organisation's fundamental labour rights and complements

We want to enable a well-balanced work and private life.

Spinnova's ethical operating principles. Every Spinnova employee is obliged to act in accordance with the principles listed in the labour market policy. For more information on Spinnova's approach to ethics and integrity, see page [33](#).

In addition to extensive occupational health care services and medical insurance, we provide several wellbeing-related benefits to our employees in Finland, such as the ePassi app. The app can be used to pay for employee benefits, such as dental care, massage, exercise, and culture.

We also want to enable a well-balanced work and private life. Remote and hybrid work is one example of ensuring this. While Spinnova enabled remote working prior to Covid-19, the pandemic has made hybrid work a permanent option in those roles where it's possible.

TRAINING AND CAREER DEVELOPMENT

As a fast-growing company, we are continuously developing our processes, systems, and tools to meet the needs of our growing personnel.

In 2022, we introduced a new Human Resources (HR) information system and a work time management system. We also launched Spinnova's career page and implemented an internal recruitment system. During the year, we also introduced an online training environment for our employees. With new systems and tools, we aim not only to make our processes more efficient, but also to increase their transparency.

We cherish the sharing of ideas and honest feedback in daily discussions and meetings. In addition, all our personnel attend a formal development discussion twice a year. The discussions allow the employees and their managers to review their performance and discuss development opportunities and target setting in a structured way.

In 2022, a co-operation representative was selected from among our personnel to intensify the dialogue between personnel and management. We want to ensure that lines of communication are short and discussion between employees and management remains active as our company keeps growing.

Our employees in 2022

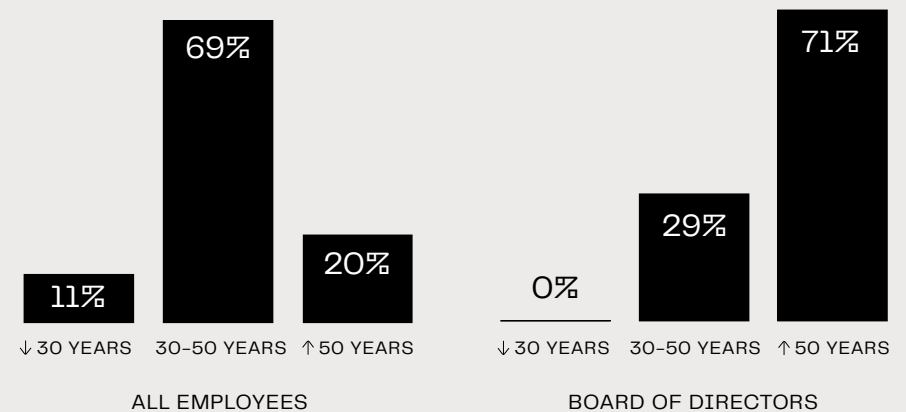
At the end of 2022, we employed 27% more people year-on-year. Otherwise employee figures remained largely stable.



EMPLOYEE BREAKDOWN BY GENDER AS OF 31 DECEMBER 2022



EMPLOYEE BREAKDOWN BY AGE AS OF 31 DECEMBER 2022



PEOPLE

Local communities

Spinnova contributes to a unique industrial ecosystem in the town of Jyväskylä, Finland.

Jyväskylä hosts a strong concentration of paper and pulp technology expertise, including companies, research institutes, and academia and education. This provides a one-of-a-kind network for developing Spinnova's innovation in the form of expertise partners and also hiring new employees with skill sets that support our growth.

Through local sourcing, we strive to have a meaningful indirect employment impact in and around Jyväskylä. Whenever feasible, we source all our materials and services from the local region. This provides us with a wide local network, which enables us to have a good understanding of who we work with and how they operate.

The local community around our operations in Jyväskylä is an important stakeholder group for us. We engage with local residents through, for example, guest lectures at schools, providing seasonal job opportunities for students and responding to all inquiries. We also take great pride in not having a negative impact on the local environment.



The local community around our operations in Jyväskylä is an important stakeholder group for us.

VALUE CHAIN

Responsible value chain

One of the main building blocks of our business model is building solid and inspiring partnerships throughout our value chain.

We seek to collaborate and co-create with organisations that are relevant to Spinnova's business and future growth, share our values, and strive to have a positive impact on people and the environment. This includes suppliers, customers, and research and development partners, such as academia. When choosing like-minded partners, we pay attention to the impact their business has as well as their level of commitment in sustainability.

RESPONSIBLE RAW MATERIAL SOURCING

Our joint venture Woodspin sources eucalyptus-based pulp from FSC-certified tree plantations in Brazil. The certification provides third-party assurance of professional, sustainable plantation management. The eucalyptus used to make SPINNOVA® fibre is grown on plantations that were established on degraded land, not replacing natural ecosystems.

Spinnova and Canopy, the global network for responsible wood sourcing, co-created a Fibre Procurement Policy for Protecting Forests for Spinnova in 2021. Through this commitment, we acknowledge that Ancient and Endangered Forests must be protected and conserved, and ensure that, to the best of our knowledge, we are not sourcing wood from controversial sources. Read our commitment in detail on spinnova.com.

We also source leather processing waste, or side streams from leather production, for our joint venture, Respin. Respin has been piloting the manufacturing of SPINNOVA® fibre from this material. The leather waste is sourced from our joint venture partner ECCO's leather tanneries in the Netherlands.

For information on the potential impacts these raw materials may have on biodiversity, see page [41](#).

FSC CHAIN OF CUSTODY CERTIFICATION

In 2022, Spinnova successfully completed Forest Stewardship Council (FSC) chain of custody certification for our pilot line in Jyväskylä. In practice, this means that Spinnova has been able to reliably demonstrate the functionality of its management

With the FSC Chain of Custody Certification we have wanted to demonstrate our commitment to the use of sustainable wood-based raw materials.

system required to monitor and document the chain of custody of its wood-based raw materials. Even before the certification, we were committed to the procurement of certified raw material, but the FSC chain of custody certification granted to Spinnova will also allow us to sell SPINNOVA® fibre to our customers with the FSC label.

With the certification, we have wanted to demonstrate our commitment to the use of sustainable wood-based raw materials. The FSC certificate guarantees that products sold with an FSC claim originate from well-managed forests, controlled sources, reclaimed materials, or a mixture of these. The FSC label on a finished product requires that each of the wood-based materials used during production meet the chain of custody requirements at every step in the supply chain, from sourcing to distribution. Certification also requires a commitment to FSC's minimum requirements for the rights of workers and indigenous people.

ESTABLISHING SUSTAINABILITY CRITERIA FOR SUPPLIERS

During 2022, we purchased goods and services from over 500 companies. The vast majority of our supplier spend occurred in Finland, both in terms of number of suppliers and supplier spend.

As we build our supply chain, we focus on establishing sustainability criteria for suppliers and monitoring their performance. In 2022, we established our [Code of Conduct for Suppliers](#), including requirements related to human rights, the environment, and ethical business practices. The Code for suppliers is aligned with the principles of the UN Global Compact and the labour standards set out by the International Labour Organisation (ILO).

We are also strengthening our risk management process related to responsible sourcing. This will enable us to identify and address potential adverse impacts in our supply chains.

COLLABORATING WITH PARTNERS AND CUSTOMERS

We aim to significantly scale up our technology on an industrial level to ensure that consumers increasingly have access to sustainable products made with SPINNOVA® fibre. We collaborate with some of the world's biggest brands to do this.

Our mission to transform the textile industry is the main principle guiding us when choosing brand and other partners. We prioritise organisations that are committed to working with new innovations and Spinnova as a company, and who ambitiously and proactively drive sustainability in their value chain and the entire industry. We realise that our success would not be possible without our partners, and that the change in the industry must be made together.

We seek to collaborate with organisations that share our values.

VALUE CHAIN

Biodiversity and land use

We make every effort to ensure that biodiversity is safeguarded in our value chain.

Spinnova's operations have no direct impacts on biodiversity, and our joint venture Woodspin's raw material, eucalyptus-based wood pulp, originates from sustainably managed tree plantations, currently from the state of Espírito Santo in Southeastern Brazil. The plantations are located on land that was previously damaged due to other uses, such as cattle grazing, which means that no natural landscapes were destroyed to establish the plantations. The plantations co-exist with areas designated for conservation. This mosaic system supports the reduced use of natural resources, such as water and nutrients, and enhances soil productivity, stability, and resilience against erosion.

In Brazil, forest-based companies are required by law to set aside a part of their land for conservation. Our raw material supplier, the Brazilian company Suzano, has set aside approximately 1 million hectares of vegetation, which corresponds to 40% of its total area. Suzano has also conducted active

habitat restoration in areas totalling over 30,000 hectares, and the company adheres to the biodiversity requirements of the FSC and CERFLOR/PEFC certification systems. Read more about Suzano's sustainability work on [suzano.com](https://www.suzano.com).

Our joint venture company, Respin, has been piloting production of leather-waste fibre in Jyväskylä, Finland, during 2022. While the facility's operations have no direct impact on biodiversity, and the fibre originates from the side streams of leather production, the leather industry would not exist without cattle. The potential biodiversity impacts of the industry are typically linked to the risk of deforestation due to land use changes that turn natural landscapes into agricultural land and areas for cattle grazing. It is therefore crucial that any leather that is produced stays in use and circulation for as long as possible, and Respin provides a solution to this through upcycling waste into new textile fibres. The leather waste comes to Respin from the side streams of our partner ECCO's leather tanneries in the Netherlands.

Read more about how we work with our suppliers on page [39](#).

Our wood pulp comes from sustainably managed tree plantations where biodiversity is safeguarded.

VALUE CHAIN

Product safety and quality

Product safety is an essential part of Spinnova's innovation and product development.

For us, as a fibre producer, product safety is mainly linked to chemical safety. Harmful chemicals can cause environmental damage but handling them also presents health and safety risks for employees. Similarly, harmful chemicals in end-products, such as clothing, can cause skin irritation or pose other health issues for consumers.

Spinnova does not use harmful chemicals in production, and none exist in our fibre. We provide comprehensive instructions for the safe handling of the very few chemicals we do use. For more information on chemical use at Spinnova, see page [32](#).

We take great pride in our precise data collection and quality control systems. Information on every tangle of fibre is archived with detailed data on its origin and properties. As a part of the process, we conduct quality control tests to make sure that the fibre complies with our requirements.



Spinnova does not use harmful chemicals in production, and none exist in our fibre.

SUSTAINABILITY

Preparation of sustainability reporting

We regularly review our sustainability programme priorities and ensure that our reporting duly covers them. For more information on our materiality assessment, see page [23](#).

ACCOUNTING PRINCIPLES FOR SUSTAINABILITY REPORTING

Unless otherwise stated, the scope of reported figures includes operations of which Spinnova owns over 50%, excluding the 50%-owned joint ventures Woodspin and Respin.

However, information about the sustainability impacts of the joint ventures is described across the report as deemed material. The reporting on occupational safety accidents also includes the joint venture companies, as well as onsite contractors, due to Spinnova's respective oversight responsibility. Incidents resulting in sick leave of more than one workday are accounted as lost-time incidents, following the respective definition in Finnish legislation.

Personnel figures are reported as headcount. Personnel turnover is calculated by dividing the leavings of permanent employees with the average personnel during the year.

Accounting of Greenhouse gas emissions follows the GHG Protocol Corporate Accounting and Reporting Standard. When specific standards and methodologies are additionally used, they are mentioned in connection to the respective reporting.

WITH REFERENCE TO THE GRI STANDARDS

Our sustainability reporting is also prepared with reference to the GRI Sustainability Reporting Standards. Selected GRI standards have been utilized in reporting, guided by our materiality assessment. In our GRI Content Index we refer to the locations where the standard topics are addressed in our reporting.

EXTERNAL ASSURANCE

Our sustainability reporting is not yet verified by a third-party assurance provider. We will consider the assignment of external assurance in our upcoming annual reports.

Our sustainability reporting is prepared with reference to the GRI Sustainability Reporting Standards.

GRI

04

Trust to be trusted

GRI Content Index

Spinnova's sustainability reporting for the financial year 2022 has been prepared with reference to the GRI Standards.

AR2022: Spinnova's Annual Report 2022
CG2022: Spinnova's Corporate Governance Report 2022
RR2022: Spinnova's Remuneration Report 2022
FS2022: Spinnova's Financial Statement 2022

| GRI STANDARD | CONTENT INDICATOR | LOCATION AND NOTES |
|---------------------------|---|---|
| GRI 2 General Disclosures | | |
| 2-1 | Organizational details | Legal name: Spinnova Plc (public limited company) Location of headquarters: Palokärjentie 2-4, Jyväskylä, Finland. Countries of operation: Finland, Neatherlands. |
| 2-2 | Entities included in the organization's sustainability reporting | AR2022: Preparation of sustainability reporting. |
| 2-3 | Reporting period, frequency and contact point | Reporting period for both financial and sustainability information: Jan 1, 2022 - Dec 31, 2022. Publication date: April/2023. Frequency: annual. Contact information on the back cover of the report. |
| 2-4 | Restatements of information | No restatements. |
| 2-6 | Activities, value chain and other business relationships | AR2022: Strategy and operations |
| 2-7 | Employees | AR2022: Sustainability (Employee wellbeing and development) |
| 2-9 | Governance structure and composition | CG2022: Spinnova's governing bodies |
| 2-10 | Nomination and selection of the highest governance body | CG2022: Board of Directors, Board Committees |
| 2-11 | Chair of the highest governance body | CG2022: Board Committees |
| 2-12 | Role of the highest governance body in overseeing the management of impacts | AR2022: Sustainability (Governance and risk management) |
| 2-13 | Delegation of responsibility for managing impacts | AR2022: Sustainability (Governance and risk management) |
| 2-14 | Role of the highest governance body in sustainability reporting | The Board of Directors reviews Spinnova's annual sustainability report. |
| 2-16 | Communication of critical concerns | AR2022: Sustainability (Governance and risk management) |

| GRI STANDARD | CONTENT INDICATOR | LOCATION AND NOTES |
|------------------------------|---|---|
| 2-17 | Collective knowledge of highest governance body | AR2022: Sustainability (Governance and risk management) |
| 2-19 | Remuneration policies | CG2022: Board Committees |
| 2-20 | Process to determine remuneration | RR2022 |
| 2-21 | Annual total compensation ratio | RR2022: Business development of the Company and remuneration |
| 2-22 | Statement on sustainable development strategy | AR2022: Chair's and CEO's greetings |
| 2-26 | Mechanisms for seeking advice and raising concerns | AR2022: Sustainability (Ethics and compliance) |
| 2-27 | Compliance with laws and regulations | AR2022: Sustainability (Ethics and compliance) |
| 2-28 | Membership associations | AR2022: Sustainability (Stakeholder engagement) |
| 2-29 | Approach to stakeholder engagement | AR2022: Sustainability (Stakeholder engagement) |
| 2-30 | Collective bargaining agreements | 93% of Spinnova's employees were covered by collective bargaining agreements at the end of 2022 (92% at the end of 2021). |
| GRI 3 Material Topics | | |
| 3-1 | Process to determine material topics | AR2022: Sustainability (Spinnova's strategic sustainability approach) |
| 3-2 | List of material topics | AR2022: Sustainability (Our sustainability approach) |
| GRI 201 Economic Performance | | |
| 201-1 | Direct economic value generated and distributed | FS2022: Income statement |
| 201-3 | Defined benefit plan obligations and other retirement plans | Salary contributions to retirement funds follow Finnish national legislation. |
| 201-4 | Financial assistance received from government | FS2022: Grants received |

| GRI STANDARD | CONTENT INDICATOR | LOCATION AND NOTES |
|---|---|--|
| GRI 205 Anti-corruption | | |
| 205-2 | Communication and training about anti-corruption policies and procedures | AR2022: Sustainability (Ethics and compliance) |
| 205-3 | Confirmed incidents of corruption and actions taken | No incidents in 2022. |
| GRI 206 Anti-competitive behaviour | | |
| 206-1 | Legal actions for anti-competitive behavior, anti-trust, and monopoly practices | No such legal actions in 2022. |
| GRI 303 Water and effluents | | |
| 303-1 | Interactions with water as a shared resource | AR2022: Sustainability (Water use) |
| 303-4 | Water discharge | AR2022: Sustainability (Water use) |
| 303-5 | Water consumption | AR2022: Sustainability (Climate champion, Water use) |
| GRI 304 Biodiversity | | |
| 304-2 | Significant impacts of activities, products and services on biodiversity | AR2022: Sustainability (Biodiversity and land use) |
| 304-3 | Habitats protected or restored | AR2022: Sustainability (Biodiversity and land use) |
| GRI 305 Emissions | | |
| 305-1 | Direct (Scope 1) GHG emissions | AR2022: Sustainability (Climate champion) |
| 305-2 | Energy Indirect (Scope 2) GHG emissions | AR2022: Sustainability (Climate champion) |
| 305-6 | Emissions of ozone-depleting substances (ODS) | AR2022: Sustainability (Climate champion) |
| 305-7 | Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions | AR2022: Sustainability (Climate champion) |

| GRI STANDARD | CONTENT INDICATOR | LOCATION AND NOTES |
|--|---|--|
| GRI 306 Waste | | |
| 306-1 | Waste generation and significant waste-related impacts | AR2022: Sustainability (Naturally circular) |
| 306-2 | Management of significant waste-related impacts | AR2022: Sustainability (Naturally circular) |
| 306-3 | Waste generated | AR2022: Sustainability (Naturally circular; Responsible waste management) |
| 306-4 | Waste diverted from disposal | AR2022: Sustainability (Naturally circular; Responsible waste management) |
| 306-5 | Waste directed to disposal | AR2022: Sustainability (Naturally circular; Responsible waste management) |
| GRI 401 Employment | | |
| 401-1 | New employee hires and employee turnover | AR2022: Sustainability (Our employees in 2022) |
| 401-3 | Parental leave | Spinnova pays full salary for a period of three months of maternity leave and six weekdays of paternity leave, following the collective agreement for senior salaried employees in technology industries in Finland. |
| GRI 403 Occupational Health and Safety | | |
| 403-1 | Occupational health and safety management system | AR2022: Sustainability (Occupational health and safety) |
| 403-2 | Hazard identification, risk assessment, and incident investigation | AR2022: Sustainability (Occupational health and safety) |
| 403-3 | Occupational health services | AR2022: Sustainability (Occupational health and safety) |
| 403-4 | Worker participation, consultation, and communication on occupational health and safety | AR2022: Sustainability (Occupational health and safety) |
| 403-5 | Worker training on occupational health and safety | AR2022: Sustainability (Occupational health and safety) |
| 403-6 | Promotion of worker health | AR2022: Sustainability (Occupational health and safety) |

| GRI STANDARD | CONTENT INDICATOR | LOCATION AND NOTES |
|---|---|--|
| 403-7 | Prevention and mitigation of occupational health and safety impacts directly linked by business relationships | AR2022: Sustainability (Occupational health and safety) |
| 403-8 | Workers covered by an occupational health and safety management system | In 2022, all persons working at Spinnova's fully owned premises were covered by the company's occupational health and safety system. |
| 403-9 | Work-related injuries | AR2022: Sustainability (Occupational health and safety) |
| GRI 404 Training and Education | | |
| 404-3 | Percentage of employees receiving regular performance and career development reviews | AR2022: Sustainability (Employees and wellbeing) |
| GRI 405 Diversity and Equal Opportunity | | |
| 405-1 | Diversity of governance bodies and employees | AR2022: Sustainability (Employees and wellbeing); GC2022: Board of Directors (Diversity) |
| GRI 406 Non-discrimination | | |
| 406-1 | Incidents of discrimination and corrective actions taken | No incidents in 2022. |
| GRI 415 Public Policy | | |
| 415-1 | Political contributions | No political contributions made in 2022. |
| GRI 417 Marketing and Labeling | | |
| 417-3 | Incidents of non-compliance concerning marketing communications | No significant incidents in 2022. |
| GRI 418 Customer Privacy | | |
| 418-1 | Substantiated complaints concerning breaches of customer privacy and losses of customer data | No complaints in 2022. |

AS AN INVESTMENT

05

Succeed as a team

AS AN INVESTMENT

Spinnova as an investment

SPINNOVA'S SHARES

Spinnova's shares are listed on the Nasdaq First North Growth Market Finland. The share capital is EUR 80 000 and the company had 51 538 235 shares at the end of 2022.

The ISIN code of the share is FI4000507595, and the trading code is SPINN.

The company has one series of shares. Each share entitles the holder to one vote at the company's general meeting of shareholders, and all shares have equal rights to dividends. The shares have no nominal value.

At the end of December 2022, Spinnova had 35 900 shareholders, of which 27 percent were held by nominee registered shareholders. Spinnova's largest shareholder is Suzano S.A, with a shareholding of 19.10 percent. The company did not hold any of its own shares.

SPINNOVA'S MARKET

Spinnova provides sustainable materials in the global textile fibre market, the value of which was about EUR 200 billion in 2021 and expected to grow to approximately EUR 245 billion by 2030. Global fibre consumption is expected to grow to 150-155 million tonnes by 2030. Spinnova's initial target market, the fashion and apparel sector, represents 75-85 percent of the global fibre market.

The increase in apparel consumption is driven by several factors, most importantly the growing middle class contributing to higher consumption, shorter fashion trends and fewer usage times of items of apparel before disposal.

SUSTAINABLE GROUND-BREAKING TECHNOLOGY

SPINNOVA® is the breakthrough sustainable fibre, created with ground-breaking patented technology, that mimics how spiders weave their webs. SPINNOVA® can be produced from multiple raw materials from wood to leather, textile, agricultural, food industry and beverage waste. The look and feel of SPINNOVA® is similar to natural fibres such as cotton and linen.

The fashion industry is estimated to be responsible for 4 percent of global greenhouse gas emissions. In the textile value chain, material production and processing are the phases where the most emissions are created.

The target is a scalable technology. Together with our strategic partner Suzano, the world's largest pulp company, we aim to reach an annual capacity of more than one million tonnes of fibre production per annum by 2031-2033.

SPINNOVA SHARES ON NASDAQ FIRST NORTH GROWTH MARKET

| JANUARY-DECEMBER 2022 | No. of shares traded | Average daily turnover EUR | High EUR | Low EUR | Average* EUR | Last EUR |
|-----------------------|----------------------|----------------------------|----------|---------|--------------|----------|
| SPINN | 13 637 742 | 361 975 | 13.99 | 3.84 | 7.47 | 5.44 |

* Volume weighted average

Spinnova's technology has been created to solve major sustainability challenges in the global textile industry. By replacing materials that are water, CO₂, and chemical-intensive, such as cotton, Spinnova contributes to the global sustainability goals.

At the same time, we are determined to ensure that our own operations are as sustainable as possible. We are committed to protecting the environment and respecting human rights in everything we do.

BUSINESS PROGRESS IN 2022 AND OUTLOOK

THE ONE THOUSAND TONNE WOODSPIN FACTORY (WOODSPIN IS A 50/50 JOINT VENTURE WITH SUZANO)

The construction work for Woodspin's first factory in central Finland was completed at the end of October, after which work to finalize the technology installations has continued. The factory has started up and has been producing fibre in February 2023. The ramp-up will continue through the year 2023, gradually increasing production capacity. Spinnova's textile development work continues, and we are planning to launch our first products using Suzano micro-fibrillated cellulose (MFC) as raw material.

WOODSPIN SECOND FACTORY

The market opportunity and ambition level to scale to one million tonnes with Suzano remains unchanged. Feasibility planning for the next plant progressed well during 2022. Both optimal size and comparison of brownfield and greenfield sites are under evaluation. Spinnova is actively working with Suzano to improve the efficiency of the raw material process. At the same time Spinnova continues to further develop the technology concept of the spinning process. The business case for the next Woodspin factory investment is being finalized and will use the learnings from the first factory as it ramps up production. It is therefore expected that the next Woodspin plant will be completed after 2024.

RESPIN (50/50 JOINT VENTURE WITH ECCO)

At the end of 2022 the Respin pilot line built by Spinnova produced fibre from leather waste raw material. Following the success of the pilot trials, Spinnova and ECCO have agreed to proceed towards commercializing the product and to go ahead with a feasibility study and pre-engineering of the first commercial factory, which is planned to be located in the Netherlands.

OTHER RAW MATERIALS AND END USES

Spinnova continued to develop other raw material sources and to evaluate applications beyond apparel. Recent tests with recycled textile fibre showed promising results. The company will continue to invest into research and development during 2023.



BUSINESS TARGETS AND DIVIDEND POLICY

In 2021, Spinnova Group set the following medium and long-term business targets:

| | COMMERCIAL | PRODUCTION | BUSINESS |
|------------------------------------|--|---|--|
| MEDIUM-TERM TARGETS (2025-2027) | Up to 20 commercial textile brand partnerships, which have SPINNOVA® materials in their product lines. | 150 thousand tonnes of SPINNOVA® fibre production capacity. | EBIT positive. |
| LONG-TERM TARGETS (2031-2033) | Up to 80 commercial textile brand partnerships, which have SPINNOVA® materials in their product lines. | One million tonnes of SPINNOVA® fibre production capacity. | More than EUR 200 million EBIT p.a. from share of profits from JV's, recurring technology fees, and service maintenance fees. Cumulative more than EUR one billion cash margin from technology sales. |
| DIVIDEND POLICY | In short- and medium term: no dividend | | |

COMMERCIAL OUTLOOK

The long-term demand for sustainable textile fibres and materials remains strong and Spinnova expects to see increased interest as more fibre volumes become available as Woodspin ramps up.

FINANCIAL GUIDANCE FOR 2023

Spinnova will continue to work towards its long- and medium-term business targets and execute its strategy accordingly in 2023.

The timing of the final investment decisions of the next Woodspin and Respin plants will be key factors in the timing of Spinnova's technology revenues.

In 2023, revenues are estimated to be lower than in 2022, impacted by expected phasing of technology sales fees. The loss will increase during 2023 as the company is ramping up operations.

Please read more about Spinnova as an investment at spinnovagroup.com or contact ir@spinnova.com.

Spinnova's strengths

SPINNOVA® FIBRE

SPINNOVA® fibre is 100% recyclable, quickly biodegradable, contains no microplastics, and can be produced without dissolving or using harmful chemicals.

SPINNOVA® is the most natural man-made fibre, and its properties and comfort of use are comparable with natural textile fibres.

MARKET

Spinnova is addressing the very large and growing, nearly EUR 200 billion textile fibre market.

TECHNOLOGY

We have a unique and disruptive technology platform for producing sustainable textile fibres and materials from multiple feedstocks.

STRONG PARTNERS

We have strong partners for ramping up the SPINNOVA® fibre production. Our scaling ambition together with Suzano is to reach more than 1 million tonnes p/a by 2031-2033.

BUSINESS MODEL

Spinnova is the sole provider of its patented and scalable technology.

We engage in joint ventures with leading raw material providers to produce and sell SPINNOVA® fibre to apparel brands and other buyers.

We also work directly with apparel brands and develop fabrics together with such apparel brands to suit their needs.

PROFESSIONAL TEAM OF EXPERTS

Spinnova has experienced management, personnel and Board of Directors with extensive technical, textile industry and commercial know-how.

Furthermore, we have an experienced R&D team with strong capabilities for scaling technology.

BRAND AND IPRS

The well-known SPINNOVA® brand is strongly associated with sustainability. Our brand vision is to be a leading ingredient brand in sustainable textiles and other applicable materials.

Spinnova's technology platform, intellectual property rights, and the SPINNOVA® brand are protected by strong international patents and trademark.

Please read more about Spinnova as an investment at spinnovagroup.com. →

SPINNOVA®

SPINNOVAGROUP.COM

+358 20 703 2430

PALOKÄRJENTIE 2-4

FIN-40320 JYVÄSKYLÄ

BULEVARDI 7 C

FIN-00120 HELSINKI

