





SPINNOVA'S YEAR 2023



OUR BUSINESS



SUSTAINABILITY



AS AN INVESTMENT

CONTENTS 2023

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AS AN INVESTMENT

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Spinnova's year 2023

Spinnova in brief

Spinnova is a technology company, which has created a unique production process for a sustainable textile fibre. Spinnova offers the textile industry a solution for reducing emissions and other environmental impacts by providing an alternative to conventional water and chemical-intensive cotton and viscose and oil-based polyester with the sustainable SPINNOVA® fibre.

With Spinnova's patented technology, the textile fibre is produced with a mechanical process that mimics how spiders weave their webs. The same technology and process can be used to produce SPINNOVA® fibre from multiple raw materials from wood to leather processing, textile, agricultural, food industry and beverage waste. The unique mechanical production process results in SPINNOVA® fibre having a look and feel similar to natural fibres such as cotton and linen.

The fibre production with Spinnova's technology uses minimal water and no harmful dissolving

chemicals. The greenhouse gas emissions from the production of wood-based SPINNOVA® fibre are estimated to be 74% lower and the water consumption 98% less compared to conventional cotton.¹

Having completed the main phase of research and development, Spinnova is ramping up its global commercialisation phase. Spinnova's technology has been proven effective at the Company's pilot production facility, in Spinnova's joint venture Woodspin's industrial demonstration factory and in joint venture Respin's pilot factory. Spinnova has collaborated with several global apparel brands, such as adidas, Bestseller, Marimekko and the H&M Group, which have launched commercial products containing SPINNOVA® fibre.

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

¹ CO₂e emission comparison is based on a projected product carbon footprint conducted by a third-party expert following the ISO 14067:2018 standard. Ecoinvent database has been used as the source for global average CO₂e emissions of conventional cotton. Water consumption comparison is based on a projected, screening Life Cycle Assessment (LCA) conducted by a third-party expert. Both comparisons include raw material supply, transportation of raw materials, and manufacturing of the product (cradle-to-gate).



SPINNOVA. FOR ALL THAT MATTERS.

We are on a mission to transform the raw material base of the global textile ecosystem with our technology.

We innovate and engineer the most sustainable textile fibre in the world.

We do this for the benefit of the planet, because that is what matters most.

2023 was the year of finalizing the successful technology delivery to Woodspin

BUSINESS

4 APRIL

Halti's urban windproof parka made from SPINNOVA® fibre and cotton entered stores

→ [Read more on page 23](#)

25 MAY

Spinnova's joint venture Woodspin's zero-emission factory producing wood-based SPINNOVA® fibre opened in Finland. Spinnova successfully delivered the technology for the factory

→ [Read more on page 21](#)

29 MAY

Hyères-awarded Finnish designer Sofia Ilmonen presented a collection made with wood-based SPINNOVA® fibre

→ [Read more on page 24](#)

14 JUNE

Spinnova and Portuguese Tearfil entered into a yarn development cooperation agreement

14 AUGUST

Spinnova received a grant of maximum EUR 1.9 million, for its research and development (R&D) work for textile and agricultural waste streams, from Business Finland

31 AUGUST

Spinnova started a review of its strategy and medium- and long-term business targets

13 SEPTEMBER

Spinnova and Swedish textile recycling innovator Renewcell announced a cooperation to develop textile waste-based fibre.

19 SEPTEMBER

Spinnova technology was featured in a BBC-produced film series presented by the Global Fashion Agenda

18 OCTOBER

Spinnova unveiled sustainable denim at Kingpins trade show

→ [Read more on page 25](#)

13 DECEMBER

Spinnova participated in COP28 climate conference and called for incentives and investments into circular fashion

MANAGEMENT TEAM

1 MARCH

Santeri Heinonen was appointed Chief Human Resources Officer and management team member

21 APRIL

CEO Kim Poulsen stepped down as CEO, and CFO Ben Selby was appointed as interim CEO.

31 AUGUST

Tuomas Oijala was appointed CEO and Ben Selby Deputy CEO, effective 1 January 2024 at the latest

11 DECEMBER

Tuomas Oijala started as CEO

→ [Read more on page 10](#)

Greetings from the Chair of the Board of Directors

Last year's biggest event was the completion of the joint venture Woodspin's plant.

The year 2023 was challenging for Spinnova due to the global macroeconomic situation, changes in the Company's management and R&D and ramp-up work at Woodspin's factory. As the previous CEO stepped down in April 2023, we appointed CFO Ben Selby as interim CEO. Ben did a very good job in the interim CEO position until we found a new CEO for the Company. I am very happy that Tuomas Oijala accepted this challenging task and we were able to start cooperation and strategy renewal already last year. Now the situation looks promising, and Tuomas has already shown in a short time that he is the right person to take the Company forward.

Last year's biggest event was the completion of the joint venture Woodspin's plant and the start-up phase of the plant. In retrospect, we were initially too optimistic about the time required to start up the factory and, consequently, about the timetable for the next investment decision. Although we encountered delays in ramping up the plant, we are now at a good



stage. Woodspin's factory fulfils its mission by optimizing and demonstrating the concept of the next industrial plant. At Woodspin's factory, we are not aiming for fibre production at full capacity, but instead focus on finding a scalable concept.

As the world has changed since the IPO in 2021, we decided to update the Company's strategy to adapt to the new situation. In the updated strategy, we focus on our strengths: selling and developing the technology as well as developing the market for Spinnova's fibre. We see technology sales as the most valuable driver for rapid cash generation. Therefore, in the short or medium term we don't plan to invest in fibre production ourselves. Investments in production would require raising substantial capital, which is challenging to achieve with favourable financing terms in the current market situation.

Spinnova's goal is to deliver the technology together with global partners to customers who manufacture Spinnova fibre. With technology sales, we can achieve positive cash flow faster, which creates value for stakeholders, including shareholders. This strategic choice is in line with Spinnova's joint venture agreements, and the company maintains the option to invest

in production at a later stage if the situation changes. The company's strategy is now clearer: We focus on what we do best.

Adopting fibre innovations in the textile sector at scale is yet to come. Adversity is difficult to avoid when trying to change an established industry. Last year, we also successfully tested the functionality of non-wood-based raw materials in Spinnova's technology process. For example, leather processing waste, which Spinnova's joint venture Respin focuses on, and textile waste-based pulp are suitable raw materials. However, at the moment Spinnova has chosen to focus primarily on wood-based raw material, as there are no bottlenecks in the availability and quality of wood, and therefore the implementation of scaling is largely in our own hands.

I would like to thank Spinnova's employees, partners and every shareholder who has been onboard on our challenging path. I look forward to implementing the new strategy and I am confident that we will be able to move forward in scaling under the renewed management.

JANNE PORANEN,
CHAIR OF THE BOARD AND CO-FOUNDER
OF THE COMPANY

AS THE WORLD HAS
CHANGED SINCE
THE IPO IN 2021, WE
DECIDED TO UPDATE
THE COMPANY'S
STRATEGY TO
ADAPT TO THE NEW
SITUATION.

Introducing Spinnova's CEO Tuomas Oijala

WHAT MADE YOU INTERESTED IN SPINNOVA AND TO JOIN THE COMPANY?

Joining Spinnova was a combination of three important things. First, I have a personal interest in science and technology that stems from my youth when I worked in a life sciences lab at NASA. Throughout my career, I have been close to product development and technology and have a deep respect for the people and work required to make great technologies come to life and create value. Second, it is important to ensure sustainability and prosperity on our planet. New technologies and innovations are needed to change the way we produce and consume. Spinnova's technology can drive a fundamental shift in the fibre and textile value chains that are both needed from the environment's point of view but can also drive tremendous value for the industry. Finally, the people at Spinnova



have made a lasting impression on me both in their commitment to the cause, their strategic thinking and understanding of the industry, and their sharp expertise in the technological fields required to master the delivery of our technology to our customers. There is a need for new fibres in the market and Spinnova's innovation is able to offer a real solution for the demand. I believe that with our committed people, we can reach the challenging ambition of scaling our technology around the world.

TELL US ABOUT YOUR FIRST THREE MONTHS WITH THE COMPANY?

During the first months at Spinnova, I started by reviewing our situation at the end of 2023 with our management team and our board. We had deep discussions about our technology, what it takes to scale, and how we ensure that we have a clear business model that drives value for our customers and shareholders. I then spent time meeting all our employees and visiting brand and industrial partners, as well as the strong network of technology companies that will help us provide production technology to our future customers. Finally, we worked closely with our partners Suzano and Ecco to ensure we are aligned on the ambitions and direction for our business opportunities going forward.

It was very clear to us all along that we want to be able to take all the learnings from Spinnova's past few years as well as from our stakeholders to sharpen our strategy and ambition – ultimately

leading to our Capital Markets Day (CMD) and strategy announcements in March 2024. During the first quarter of 2024, we worked to finalize our strategy, update our targets, agree with Suzano on the next steps in our scaling of wood-based Spinnova fibre, and set the foundation for aligning our organization to ensure the successful execution of our strategy. I am honoured to have been part of a professional team and proud of the work done so that we were able to announce our new strategy, strategy targets, management team, and cost control programs at our CMD. Spinnova has now made the shift from a strategy involving production, fabric sales, and technology sales to a pure technology sales company with a strong network of partners to make this possible and scalable. We have a clear business model, real customer projects in the pipeline, and a set of financial targets that we believe we can reach that would drive significant shareholder value.

We can now say mission accomplished for the first 100 days with the foundation laid for our next year – we are already on the way to making this happen and are looking forward to keeping our shareholders posted on the good progress during the rest of 2024.

WHAT IS YOUR VIEW ON THE TEXTILE MARKET AND ITS READINESS TO ADOPT SUSTAINABLE FIBRE INNOVATIONS?

The textile market has been around for a long time and innovation has spurred many important leaps in productivity and industrialization in the

past. Today, the industry is in a position where productivity developments seem to be stagnating while demand continues to grow due to a rising middle class. The industry is also attributed with a large responsibility for emissions, pollution, and waste accumulation around the world. Discussions with brand companies, supply chain players, and technology providers all point to a number of important megatrends that will drive changing demand: (1) the environmental crisis requires real solutions for emissions and pollution, with all companies having made commitments without fully having technologies ready to fulfil them, (2) there is a real demand for natural fibres like cotton, but challenges on the horizon for supply and limited alternatives, and (3) lack of proper waste management systems. All of these have convinced me that there will be investments in new fibre-making technologies and supply.

The next question is how the industry goes from a need for innovations to actually implementing innovations. It is important for innovators like Spinnova to understand all the players in the value chain and how they create value and drive their business forward. Innovation must provide customer value – as we do with our significant benefits in carbon footprint, clean processes, and natural feel – with a technology that is scalable and competitive, which the supply chain can easily adopt and make a standard part of the supply chain. Our ambition is to have Spinnova fibre a commonly known alternative material that is readily available and easy to use. We believe that this, coupled with clear values and balanced production cost, is what it takes to reach our ambitions.

WHAT WILL YOU, AS CEO, FOCUS ON TO MAKE SPINNOVA SUCCEED IN 2024?

Three things will be in focus in 2024.

Customer focus: in order for Spinnova or any innovator to succeed, we must position our development and priorities so that they reflect what drives value for our customers' business. After our strategy update, our customers are now the companies that invest in our production technology. The success of our work with them involves having a great fibre product that is easy for the industry to scale, an investment with a strong financial profile, and the ability to deliver this. Our management team will, at every turn, make sure we are thinking about how to serve our customers.

Strategy execution: after updating our strategy, we must ensure we execute on this. In practice, it means that we are getting our fibre and technology ready for scaling and working with brands and industrial players to ensure there is demand for Spinnova fibre. Our must-win battles are used to guide our organization and measure our progress, and they are fully aligned with this strategy. We will ensure strong follow-up of our key programs and a high clock speed of implementation. Our strategy execution also means building a strong network of technology providers, so we will continue actively working with our partners to prepare for the next big deliveries.

Strengthening our organization: we have announced a program to align our organization to support strategy execution. We have to ensure

we have people in the right places to make our strategy happen. The new organization will be leaner to allow us to reach our financial targets without the need for additional funding, and will have clear roles, accountability, and structures to get things done fast. We will refresh our ways of working to reflect our strategy and ensure that non-value-adding activities are stopped. Ensuring great leadership and taking good care of our people will also be an important focus. In a company like ours, our people are a core asset and a competitive advantage.

WHAT MATTERS MOST TO YOU?

What matters most to me is how we will measure our success. Here I believe we have three key metrics. First, is how our customers see us and are willing to invest in our technology. When we succeed here, it means we have succeeded in making a great product and with scale, we can have a real impact on our planet –without scale, our impact and contribution to making the planet a better place to live is limited. Then comes our people: we need a strong team of professionals to succeed. To build this, we need to always hold ourselves responsible for making Spinnova a great place to work where individuals can thrive, develop, and contribute to our mission. Last but not least is creating value for our shareholders. Our shareholders have enabled the journey we are on, and we want to deliver on our promises to them.



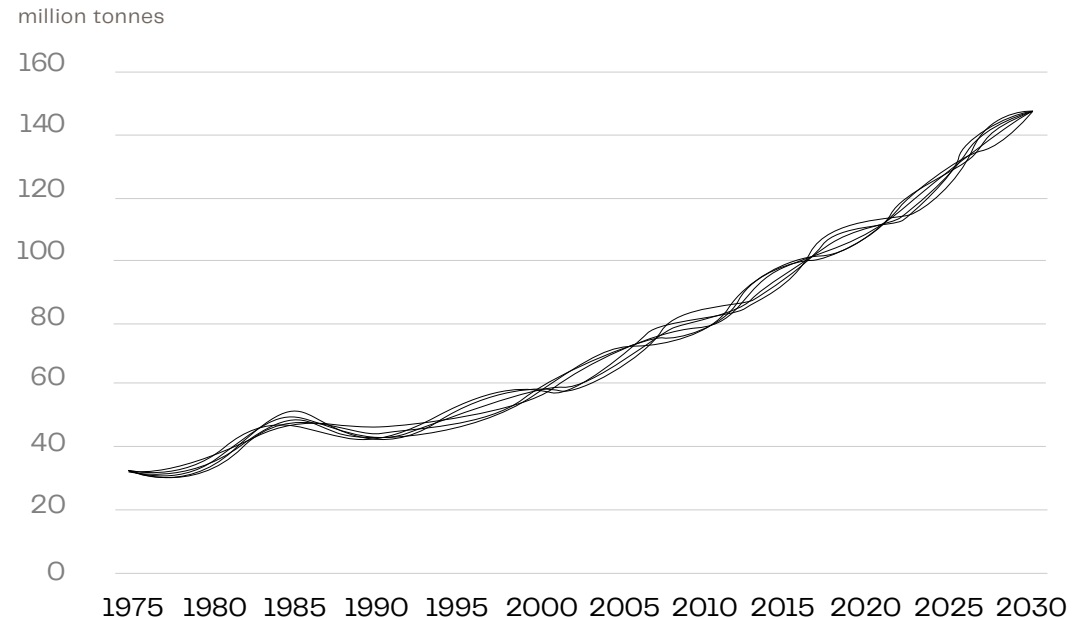


Our business

OUR BUSINESS

The textile fibre market needs natural fibre alternatives

Spinnova's technology addresses the global textile fibre market, which size was approximately 116 million tonnes in 2022, up from 112 million tonnes in 2021. Over the last two decades, global fibre production has almost doubled from 58 million tonnes in 2000 and is expected to grow to 147 million tonnes in 2030 if business as usual continues.¹



¹ Textile Exchange: Materials Market Report, December 2023

KEY TRENDS IN THE MARKET

- Natural fibre demand represents ~1/3 of the overall fibre market. Cotton production growth is stagnating, and its production is struggling to keep up with the demand.
- Multiple brands have made commitments for sustainable alternatives such as using more sustainable raw materials to reduce emissions. The textile industry must cut greenhouse gas emissions by 45% by 2030 to be in line with the Paris Agreement and keeping global warming to a 1.5°C pathway³.
- Regulatory developments and outlook regarding sustainable textiles in the EU are favorable for innovators like Spinnova. In the EU as many as 16 pieces of legislation are currently under discussion, with the first coming to force in 2024⁴. Some EU countries have also recently implemented special duties on goods produced in fast-fashion supply chains.
- There is a lack of sustainable fibre alternatives that are available at scale. Majority of sustainable fibre innovations are still in pilot phase and are for example dependent on textile recycling in large scale to mature. Spinnova's technology is ready to scale with wood-based raw material.

- Significant investment is needed for the natural fibre gap, which Spinnova addresses. Polyester cannot fulfill the fibre market growth on its own due to it lacking desired properties that only natural fibres have.
- Potential disruptions on supply chains caused by climate change forces brands to find alternative fibre supply. Extreme weather events such as heat waves and floods cause an immediate risk for cotton production globally.

ATTRACTIVE GROWTH MARKET FOR TECHNOLOGY SALES

- Significant production investments are needed on global basis to satisfy the demand growth of millions of tonnes of textile fibres.
- Supply constraints in natural fibres and environmental targets are expected to drive demand for alternative fibres with a natural feel, also opening opportunities for new sustainable fibres, such as Spinnova.
- Spinnova customers are the companies making investments into fibre production technology and capacity to produce new sustainable fibres

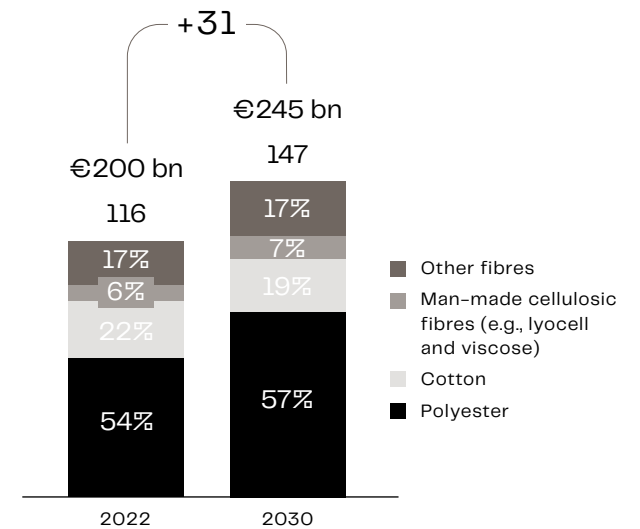
³ Textile Exchange, Boston Consulting Group and Quantis: Sustainable Raw Materials Will Drive Profitability for Fashion and Apparel Brands, October 2023 and Textile Exchange at: <https://textileexchange.org/climate-vision/>

⁴ McKinsey & Company, Business of Fashion: The State of Fashion 2024.

3+
MILLION TONNES OF NEW CAPACITY

In man-made cellulosic fibres in 2022-2030

GLOBAL TEXTILE FIBRE PRODUCTION IS ESTIMATED TO GROW BY >30 MT BY 2030



STRATEGY

Spinnova's updated strategy focuses on technology sales

Spinnova published its updated strategy and strategy targets on 14 March 2024. Spinnova's business is driven by the megatrends: **Natural fibre gap, climate crisis and waste problem and lack of recycling**. Spinnova focuses on selling its unique SPINNOVA® fibre production technology. **Technology sales and delivery are supported by technology development and fibre market development**. In the short- and medium-term Spinnova is not planning to invest in fibre production by itself and hence does not need external additional funding.

The updated strategy was presented in the Capital Markets Day on 14 March 2024. To learn more about Spinnova's strategy and targets please visit: <https://spinnovagroup.com/cmd2024/>.



Spinnova's business

Value chain operators

Spinnova strategy

MEGATRENDS



THE NATURAL FIBRE GAP



CLIMATE CRISIS



WASTE PROBLEM AND LACK OF RECYCLING

SPINNOVA'S MISSION

We are on a mission to transform the raw material base of the global textile ecosystem with our technology. We innovate and engineer the most sustainable textile fibre in the world. We do this for the benefit of the planet, because that is what matters most.

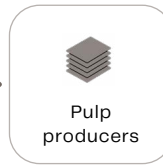
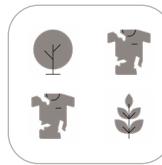
SPINNOVA ASPIRATIONS LEADING TO 1 MILLION TONNES OF FIBRE PRODUCTION CAPACITY

Spinnova technology is the preferred option for new fibre production investments

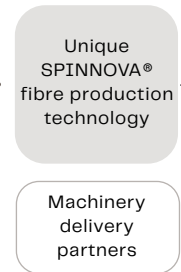
Highly profitable and cash generative, with a significant proportion of recurring revenues

Lean organisation with world-class experts

RENEWABLE RAW MATERIAL STREAMS



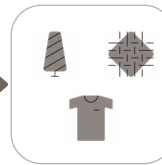
SPINNOVA'S CORE BUSINESS



JV



DOWNSTREAM INDUSTRY



SPINNOVA® brand

TEXTILE RECYCLING

SPINNOVA'S CORE COMPETENCES

Research & Development

Technology sales & delivery

Fibre market development

SPINNOVA'S VALUES

Trust

Courage

Sustainability

Innovation

Teamwork

SPINNOVA SOLUTION



FIBRE PRODUCT WITH NATURAL LOOK AND FEEL



LESS CO₂ EMISSIONS



LESS WATER CONSUMPTION



NO HARMFUL CHEMICALS



RENEWABLE AND CIRCULAR PROCESS AND PRODUCT

TECHNOLOGY SALES

Spinnova focuses on technology sales and delivering the technology together with its partners, which is expected to be the fastest way to ramp up the production capacity of SPINNOVA® fibre. Technology sales will be targeted at where it creates the most value, with upstream raw material partners or downstream textile manufacturers. The value of the Spinnova technology to technology sales customers will be magnified by a strong focus on technology development and adoption of the fibre in the textile industry.

TECHNOLOGY DEVELOPMENT

Spinnova continues its development efforts on advancing the use of various raw materials while reducing production cost (OPEX) and capital expenditure (CAPEX) per tonne.

FIBRE MARKET DEVELOPMENT

Spinnova continues to see a clear market need for new natural feeling and sustainable fibres and is confident its technology can offer a solution. SPINNOVA® fibre is a novel fibre which we are developing into a mass-market product. Spinnova will participate in market development to promote fibre adoption in the value chain together with

retail brands and their supply chain partners. Spinnova has an ingredient brand strategy whereby Spinnova manages the visibility of the SPINNOVA® logo in the end products using SPINNOVA® fibre, creating value for Spinnova's technology customers.

FOCUS ON CASH GENERATION

Spinnova's updated strategy aims to lead to positive cash flows and EBIT without the need for additional funding. The cash runway is expected to be lengthened through a cost-savings program, including aligning the organization to ensure effective strategy execution.

Spinnova's strategy is designed to position Spinnova as the preferred option for anyone making new fibre production investments. The updated strategy is already being implemented through the Letter of Intent (LOI) signed in March 2024 together with Suzano, regarding the plans of the next wood-based production factory. According to the LOI, Suzano plans on owning and operating the next wood-based fibre production factory on its own site. Spinnova will provide the technology together with its partners to Suzano.

AS A RESULT OF OUR STRATEGY REVIEW, WE ARE FOCUSING OUR EFFORTS ON TECHNOLOGY SALES.

TUOMAS OIJALA, SPINNOVA'S CEO

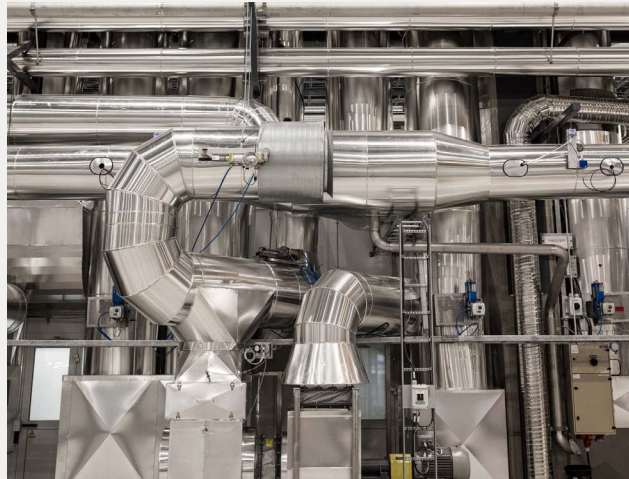
SPINNOVA'S VALUE PROPOSITION

Spinnova offers a scalable solution for the natural fibre gap



THE FIBRE PRODUCT

- Natural look and feel that meets the needs of designers in the industry and consumers
- Significantly reducing the impacts on climate and nature



THE TECHNOLOGY

- Patent-protected innovation
- Easily scalable concept
- World-class partner network for technology delivery
- The same technology for multiple raw material sources



THE INGREDIENT BRAND

- Premium ingredient brand recognised for sustainability
- Adds value for technology customers, textile industry partners and fashion brands

Updated strategy targets

	Short term (2025-2026)	Medium term (2028-2030)	Long term (2034-2036)
Cumulative technology sales*	30k tonnes	130k tonnes	450k tonnes
Financial	No additional external financing required	EBIT positive	More than EUR 100 million EBIT per year More than 30% of revenues recurring**

*Total cumulative annual fibre production capacity committed to be built by Spinnova technology customers or by Spinnova through own investments

** Royalty and service fees

As Spinnova is implementing its technology sales strategy and does not plan to make its own investment into fibre production in the short to medium term, Spinnova does not expect to need additional external financing in order to reach its strategy targets.

Upside potential to Spinnova's strategy targets is expected to be driven by acceleration of the timing of investment decisions for new plants by our technology customers, increased adoption of sustainable materials by consumers and brands, further regulation of raw materials in the textile industry and faster than anticipated ramp up of alternative raw material pulp suppliers.

Downside potential to Spinnova's strategy targets may include potential delays to investment decisions by our technology customers, potential delays to delivery of our technology projects to customers, slower than anticipated development of reductions in CAPEX or OPEX per tonne of Spinnova's technology, and slower than expected development of SPINNOVA® fibre properties which would reduce the size of the addressable fibre market for our technology customers.



CASE: WOODSPIN

Delivering technology to the first factory producing wood-based Spinnova fibre

The highlight of Spinnova's year 2023 was successfully delivering technology to Woodspin's first factory. Woodspin is Spinnova's and the world's largest pulp producer Suzano's joint venture. In May 2023, Woodspin's factory in Jyväskylä, Finland celebrated its official opening. The factory is the first factory producing wood-based SPINNOVA® fibre with an annual capacity of 1 000 tonnes of sustainable, recyclable and fully biodegradable textile fibre from responsibly-grown wood. Woodspin's factory is an industrial-scale demonstration of both Spinnova's technology and Suzano's wood-based microfibrillated cellulose refining process. The Woodspin facility also marks the first industrial operation, which Suzano has outside of Brazil.

Christian Orglmeister, Executive Director New Business at Suzano:

"The global fashion and textile industry needs high quality sustainable and recyclable materials. At Woodspin we are bringing to the market Spinnova's innovative biodegradable textile fibre, made using Suzano's abundant supply of responsibly-sourced eucalyptus pulp. This has



a radically lower environmental impact than alternative fibres such as cotton, offering one of the few genuinely scalable solutions to support sustainable production. We're excited to ramp up production and create positive change."

Capable of producing textile fibre with zero emissions, the modern facility also has a comprehensive approach to circularity and sustainability. As the only by-product of SPINNOVA® fibre production is heat, the facility does not require an environmental permit to operate. Using an advanced energy recovery system, excess heat is recycled into the local district heating system, estimated to save 2.4kg CO2e per kg of fibre produced, which would otherwise be required to generate district heat. Coupled with an environmentally friendly production process, Woodspin's pioneering facility saves more emissions than it creates.

Juha Salmela, Chief Technology Officer and Co-Founder at Spinnova:

"Spinnova's patented fibre production process doesn't require harmful chemicals or dissolving, nor does it generate waste. It has a 74% smaller life cycle carbon footprint and uses 98% less water compared to conventional cotton production. The result is a natural, cotton-like textile fibre that meets the rigorous environmental and performance demands of brands and consumers alike – and, through facilities such as this one, can now be produced at scale."

SPINNOVA® fibre spun at Woodspin's facility is produced from wood pulp made from certified, sustainably grown eucalyptus trees. All pulp is sourced from Suzano, which has a strict zero deforestation policy and only plants on land that was previously degraded.

Woodspin's factory focuses on optimizing the production process and maximum capacity is not targeted. The learnings from the factory will be used when designing future factories using Spinnova's technology.

CASE: HALTI

Spinnova partnered with Nordic outdoor brand Halti

Spinnova partnered with Finnish outdoor brand Halti to create a parka jacket made from SPINNOVA® fibre and cotton. The Cyclus unisex parka jacket is the first product from Spinnova and Halti's partnership, and the newest addition to Halti's urban Kallio® collection. The water-repellent and windproof parka entered the stores in spring 2023.

"We have extremely high criteria for all the materials we use at Halti: not only do we look for recyclability and sustainability, but the materials we use must withstand wear and tear, protecting their users from wind and horizontal rain. It is fascinating to use new materials and learn how they work in practice. Our long-term aim is to make products such as the Cyclus unisex parka widely available to consumers, becoming wardrobe staples for everyday wear. Knowing that SPINNOVA® doesn't compromise on performance or sustainability makes them a natural partner for us to work with," says Halti's CEO **Aki Kuusilehto**.

The Cyclus unisex parka combines two next-generation technologies in its production: made from SPINNOVA® fibre, the parka has also been dyed with Swedish textile technology company imogo's hi-precision dyeing technology. imogo's patented technology is highly resource efficient, decreasing energy, chemical and water use by over 90% compared to conventional jet dyeing. The production process of wood-based SPINNOVA® fibre uses minimal water and zero harmful dissolving chemicals and the fibre is fully biodegradable and circular.



CASE: SOFIA ILMONEN

Spinnova collaborated with Hyères-awarded Finnish designer Sofia Ilmonen

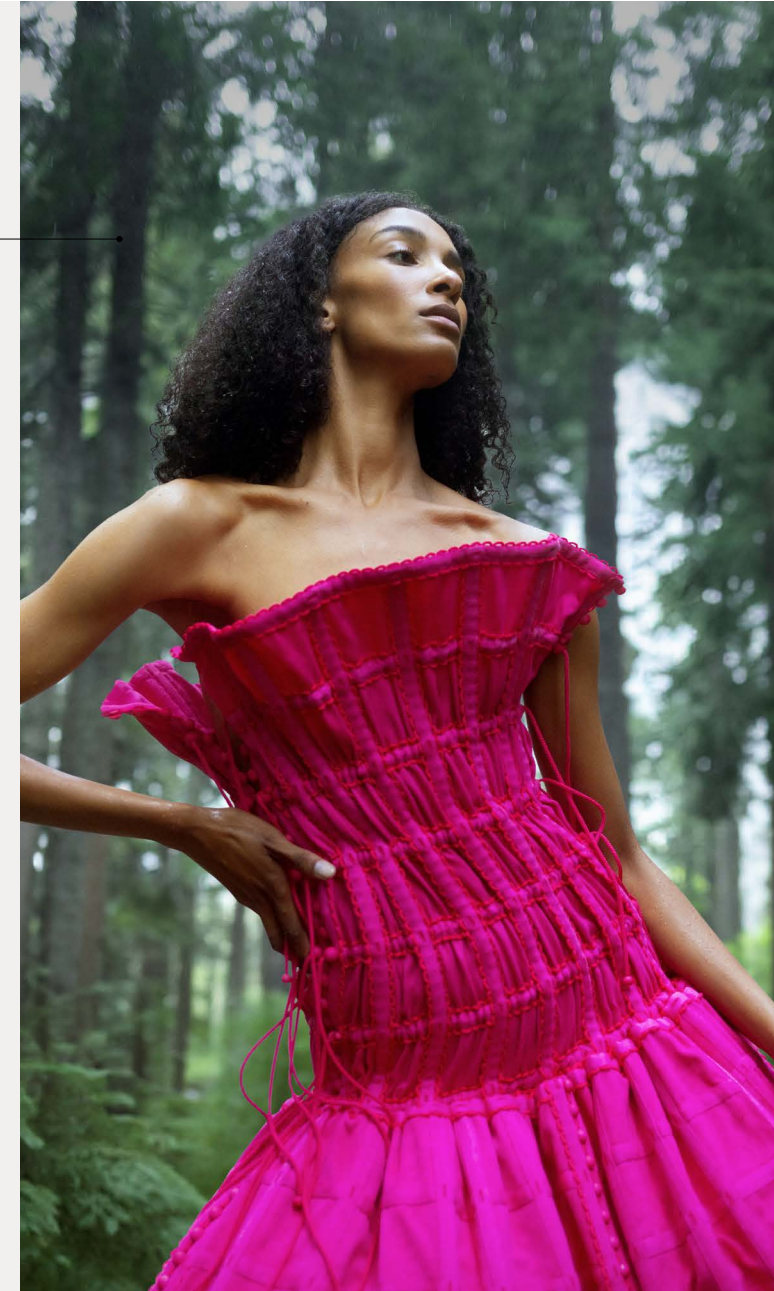
Spinnova and Sofia Ilmonen presented a collaborative collection made with wood-based SPINNOVA® fibre. The first capsule collection was presented at Woodspin's factory opening in May 2023. Woodspin's factory in Jyväskylä, Finland, is the first commercial-scale facility producing wood-based SPINNOVA® fibre. The fabric in all garments is 20% SPINNOVA® and 80% cotton. The navy-colored fabric has been woven in Finland and dyed with reactive dyeing and treated with enzyme treatment.

The second capsule collection consists of two pink outfits which can be mixed and matched, including shoes made from SPINNOVA® fabrics. The pink collection is featured in "Fashion Redressed," a series presented by the Global Fashion Agenda and produced by BBC StoryWorks.

Sofia Ilmonen, designer: "This collection demonstrates how a circular, wood-based fibre can be woven into something delicate and elegant. Working with Spinnova's sustainable fibre is a dream collaboration for me."

The garments are designed using 6–16 modules to create a total of five different silhouettes. The outfits are transformable, meaning that multiple garments can be created from the same modules. The collections were inspired by the material itself enhanced with Sofia's feminine aesthetics. The modular structure enables the clothes to be sizeless and the concept also follows a zero-waste pattern cutting method. Sofia's sustainable approach to fashion design has been recognized internationally and she has won the Mercedes-Benz Sustainability Award at the 36th edition of the prestigious Festival de Mode de Hyères in 2021.

Diana Balanescu, global brand director at Spinnova: "The design enables longevity for garments, which is a shared value between the designer Sofia Ilmonen and Spinnova. To change the fashion industry for the better, I believe we need both sustainable alternatives to the materials being used, as well as a shift towards simpler more regenerative designs that can be easily recycled in the future. I am confident that innovative, value-driven partnerships such as Spinnova with Sofia Ilmonen can bring us one step closer to that goal."



CASE: DENIM

Spinnova unveiled sustainable denim at Kingpins trade show

Spinnova presented the first blended denim fabrics made with SPINNOVA® fibre and cotton at the Kingpins denim trade show in Amsterdam in October 2023. The SPINNOVA® fibre for denim presents a less resource-intensive way of making jeans without compromising the sturdy feel and aesthetics of denim.

Denim is a demanding application with specific aesthetics required. The denim industry doesn't compromise on quality, which has been a challenge for denim manufacturers exploring new materials in the past. While most man-made fibres lack the quintessential, sturdy feel of cotton-based denim, early tests have shown that denim produced with a blend of SPINNOVA® and cotton maintains those qualities and meets the aesthetic requirements of denim.

"We see a huge opportunity in changing the way that raw materials are sourced and treated for a product as iconic and timeless as denim. It's exciting to see that we can already address many of the existing sustainability challenges with Spinnova's technology, while upholding the quality

associated with a good pair of jeans. Spinnova works together with partners in the denim segment to optimize the share of SPINNOVA® in the fabric for the best use of the qualities of the fibre," says Spinnova's Chief Product and Sustainability Officer **Shahriare Mahmood**.

David Tring Globally leading denim consultant with 30+ years of experience at Lee, Wrangler, Kontoor, VF and H&M:

"In denim, a robust cotton hand feel is a factor that cannot be understated. Denim must feel like denim. The Spinnova / cotton blended product samples have achieved just that. With the emerging demand for sustainable denim, I see Spinnova as a great alternative to cotton in denim."



Sustainability

SUSTAINABILITY

Sustainability at Spinnova

Sustainability is the very foundation of Spinnova's business. The company's technology was created to solve major sustainability challenges in the global textile industry.

While bringing a sustainable solution to the market, Spinnova is determined to ensure that the company's own operations are also as sustainable as possible. Spinnova is committed to protecting the environment and respecting human rights in everything the company does. Spinnova constantly develops its sustainability processes, such as due diligence and responsible sourcing, to understand and address the impacts from its operations on people and the planet.



SUSTAINABILITY

Governance and risk management

Spinnova's work on sustainability is overseen by the Board of Directors. The CEO holds the ultimate responsibility for the implementation of Spinnova's sustainability strategy.

Spinnova's Chief Product and Sustainability Officer (CPSO) is a member of the management team and reports directly to the CEO. The CPSO is responsible for Spinnova's sustainability approach, building a responsible value chain, and overseeing the development of sustainable products from SPINNOVA® fibre. The sustainability work is coordinated by a sustainability director role reporting to the CPSO. Everyday sustainability topics are managed by team leads, supported by the sustainability director and other functional experts.

Spinnova's full management team convenes quarterly, or more frequently when needed, as a Sustainability Steering Group focusing on sustainability matters and advising strategic sustainability work.

The sustainability work at 50%-owned joint venture companies Woodspin and Respin is overseen and supported by Spinnova, in close

co-operation with the joint venture partners Suzano and Ecco. Woodspin's factory in Jyväskylä, Finland, which was inaugurated in May 2023, is operated by the joint venture company's own employees and procedures, without Spinnova's daily operational control. Respin's pilot factory in Jyväskylä is operated by Spinnova employees with Spinnova's daily operational control. The consolidation of joint venture companies in Spinnova's sustainability reporting follows the operational control principle. For more information, see Preparation of sustainability reporting on page 53.

Spinnova's financial risk management process is guided by the company's risk management policy. For more information, see page 31 in the Corporate Governance Statement and on [the company's website](#). Sustainability topics are considered as part of the risk management processes.

During 2023, Spinnova maintained its health and safety management certification (ISO 45001) and Forest Stewardship Council (FSC)¹ Chain of Custody certification. The joint venture company Woodspin also achieved FSC Chain of Custody certification during the year for its operations.

¹ Spinnova's FSC® trademark license number is FSC-C179138.

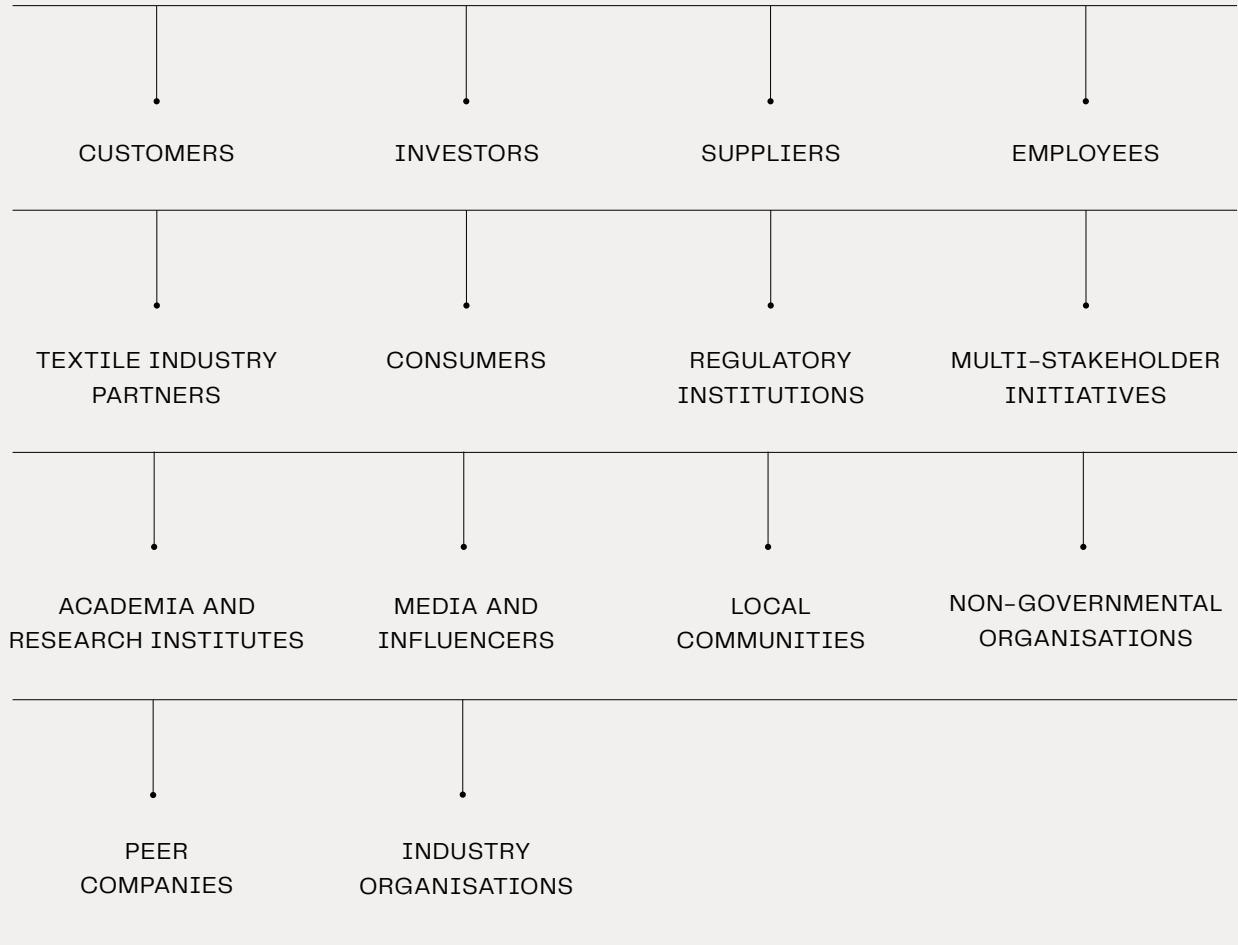
SUSTAINABILITY

Stakeholder engagement

Spinnova frequently engages with stakeholders to understand their needs, viewpoints, and expectations on the company, including the company's sustainability work and reporting.

Spinnova's stakeholder engagements include, for example, close cooperation with the brand partners and industry partners to continuously develop the business, employee consultations, and discussions with investors. Interaction with stakeholders also takes place in various events and by responding to inquiries in different communication channels.

STAKEHOLDER GROUPS FOR SPINNOVA INCLUDE:



SUSTAINABILITY

Collaboration with international platforms

Spinnova is a member in various industry and cross-industry collaborations that drive sustainability in global supply chains and in the textile industry. In 2023, Spinnova continued to contribute to the following international platforms:

Forest Stewardship Council (FSC) →

is a forest certification system and the pioneer of a multi-stakeholder governance model that gives equal weight to economic, environmental, and social chambers. The FSC Chain of Custody certification was achieved for Spinnova in 2022, followed by the joint venture company Woodspin in 2023.

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. Spinnova became a partner with Canopy 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.

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.

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.

The 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.

SUSTAINABILITY

Spinnova's sustainability approach

Spinnova is on a mission to transform the raw material base of the global textile ecosystem with the company's technology. At the same time, the company must lead the change by example and ensure that its own actions are as sustainable as possible.

Sustainability is one of Spinnova's highlighted values, alongside trust, courage, innovation, and teamwork.

The three main themes of Spinnova's sustainability approach are

- passionately innovative
- climate champion
- naturally circular

The company will only succeed in these main themes by building them on responsible business practices, which form the fundamentals of the approach.

The strategic approach was prepared in 2022 to guide the company's sustainability work. The approach has been built on the basis of materiality assessment and is in constant interaction with Spinnova's business strategy.

Materiality

During the year the Management Team reviewed Spinnova's sustainability approach, also forming the structure of this sustainability reporting. In the review it was concluded that the approach continues to structure material sustainability priorities for Spinnova.

In 2023, Spinnova started to utilize planetary boundaries concept as a guiding framework for the sustainability work, and the concept also supported the materiality review. The concept presents a set of nine planetary boundaries within which humanity can continue to develop and thrive for generations to come. According to the Stockholm Resilience Center the boundaries are interrelated processes, and a focus on climate change alone is not sufficient. Instead, understanding the interplay of boundaries, especially climate, and loss of biodiversity, is key in science and practice.

Spinnova's internal assessments during the year welcomed the growing global focus on biodiversity. At the same time, 2023 was the world's

hottest year on record, and the Greenhouse Gas emissions in the global textile industry continued to increase².

Based on screening third-party life-cycle assessments (LCAs) and related internal analyses, textile fibre manufacturing with Spinnova's technology brings holistic sustainability benefits such as lower emissions, lower water and land use, and lower chemical impacts compared to conventional textile fibres – helping with the necessary change of direction as highlighted by the Planetary Boundaries concept.

In addition to the company's own operations and products Spinnova aims to contribute to more sustainable development through value chain partnerships. Examples include the partnership with eucalyptus pulp producer Suzano whose mosaic landscape model for plantations in Brazil gives back to the biodiversity rich native flora and fauna. Another example is the excess heat deliveries from the joint venture factory Woodspin to the local district heating producer Alva in Finland. Read more on pages 37 and 51.

² Material Markets Report by the Textile Exchange (December 2023)

SPINNOVA FULLY SUPPORTS THE OBJECTIVES OF TIGHTER REGULATION, ALSO PRESENTING BUSINESS OPPORTUNITIES FOR THE COMPANY.

While Spinnova's operations and value chain enable positive impacts, they also have negative impacts on the environment and people. Both aspects have been considered when defining material sustainability topics. In its sourcing and other business decisions the company aims to always value sustainability performance as part of the decision criteria.

Sustainability performance is a core element of Spinnova's commercial value creation to its customers, alongside SPINNOVA® fibre performance features. The main sustainability topics are also financially material for the company.

Sustainability-related regulation

Spinnova monitors closely market trends, legislation and environmental initiatives related to the textile industry. The environmental challenges in the industry are urgent and they are putting pressure on new legislation. In the European Union (EU) as many as 16 pieces of legislation were under discussion during the year aiming

to improve the sustainability performance in the textile industry, with the first coming to force in 2024³.

Spinnova fully supports the objectives of tighter regulation, also presenting business opportunities for the company. In Spinnova's view, textile production should increasingly build on:

- manufacturing technologies that are significantly less polluting and harmful on the climate and nature, and that aim to create positive, regenerative impacts on the climate and nature.
- virgin raw materials of which production enforces carbon sinks and promotes nature and biodiversity.
- recycled or residual raw materials, processed with low-impact manufacturing technologies.

Spinnova is a member in the Finnish Textile and Fashion association, and the company contributed to the association's feedback to the EU's consultations on legislation during the year.

In December 2023 Spinnova participated in the United Nations Climate Change Conference (COP28) in Dubai to urge incentives and investments into circular fashion.

During the year Spinnova also monitored the progress in the EU's Corporate Sustainability Reporting Directive. The implementation of the legislation starts with large companies, and the following market practice will support smaller listed companies like Spinnova in later implementation. Equally on a voluntary basis Spinnova has initially assessed the company's operations in relation to the EU Taxonomy legislation. External verification should be consulted prior to formal Taxonomy reporting, subject to Spinnova's future finance strategies and regulatory reporting requirements.

³ McKinsey & Company, Business of Fashion: The State of Fashion 2024

SUSTAINABILITY

Spinnova's sustainability approach

Key themes

PASSIONATELY INNOVATIVE

Groundbreaking innovation is in the DNA of the company. We test and learn to ensure the biggest possible impact.

CLIMATE CHAMPION

Spinnova is a pro-climate company: from raw materials and production to the behaviour we encourage in all our stakeholders. Our technology enables textile fibre production with low carbon emissions and climate benefits.

NATURALLY CIRCULAR

Spinnova applies circular principles that go way beyond recycling – both in own operations and value chain. We encourage our partners to join us in the transition to a circular economy.

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

SUSTAINABILITY

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 the importance and interconnectivity of all the SDGs is acknowledged, SDGs 12, 13 and 14 have been identified as the goals, where Spinnova currently has the biggest impact.

SDG 12 – RESPONSIBLE CONSUMPTION AND PRODUCTION

Spinnova's technology enables textile fibre spinning in which pollutants and waste are largely eliminated. No harmful chemicals are used. The company partners with leading global brands to support the design of 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

Spinnova's technology helps to eliminate pollution and nutrient load to water courses by challenging existing fibre technologies, which are often water and chemical intensive. In Spinnova's upstream supply chain, water impacts related to eucalyptus plantations and pulp manufacturing are managed by the company's partner Suzano following, for example, ISO 14001 environmental management system standard.



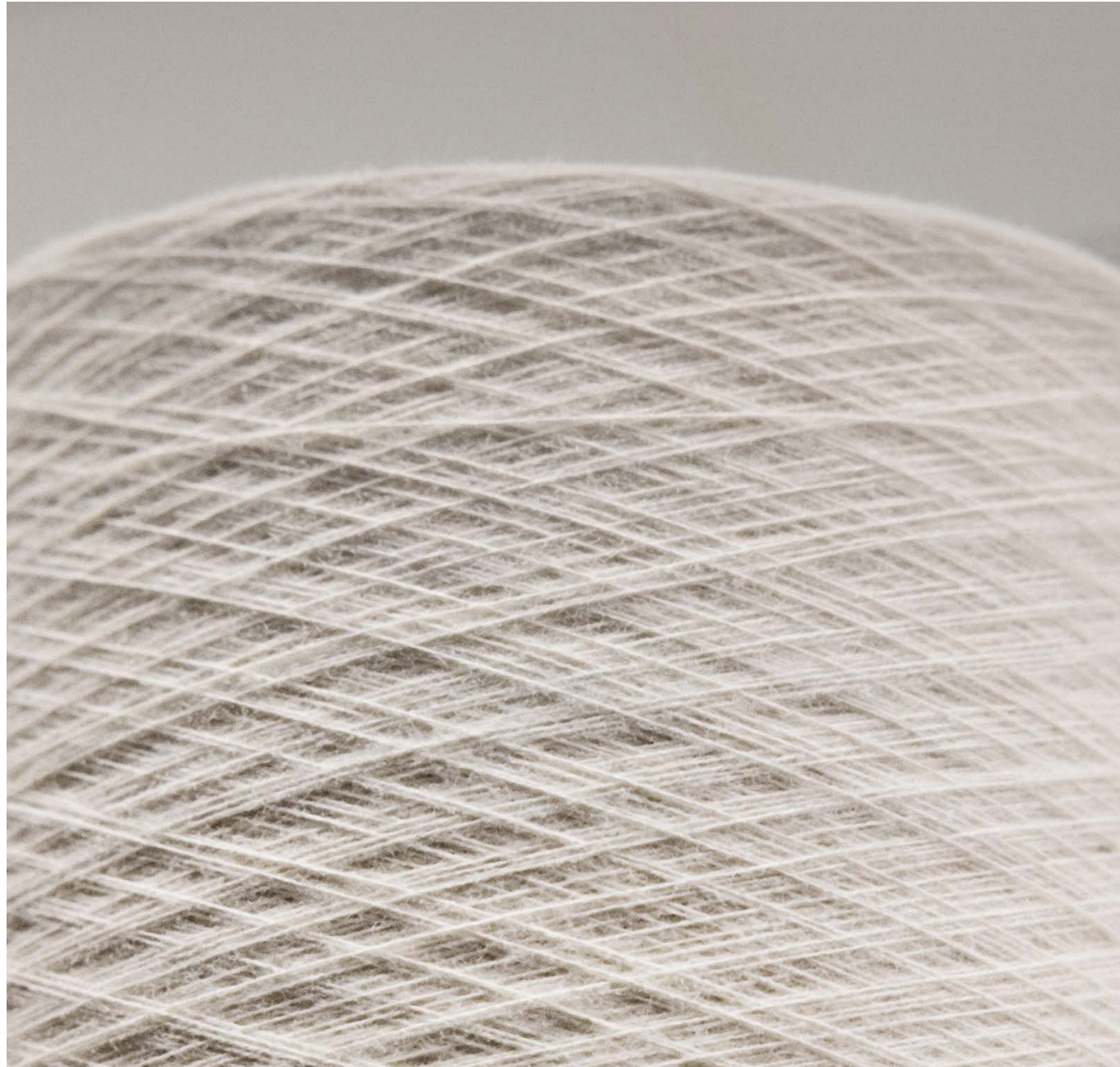
KEY THEME

Passionately innovative

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

Spinnova's unique fibre and technology have the potential to significantly drive sustainability in the textile and apparel industry. Spinnova's technology platform allows the production of recyclable fibre from multiple raw materials: eucalyptus pulp or leather processing waste, and pulps based on textile waste or cropping waste from agriculture. Spinnova's innovations – and future ones – are where the impact on people and the environment is the biggest.

At the end of 2023, Spinnova owned a total of 66 granted patents worldwide. In addition, 39 patent applications were filed and pending. The figures exclude patents and applications owned jointly with a third party. Read more about Spinnova's fibre and technology on pages 16–19.



KEY THEME

Climate champion

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

Spinnova works for the climate throughout the value chain: from raw materials to production and climate actions that it encourages among the company's stakeholders. 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 industry³. Spinnova's solution can drive significant change in reducing these emissions.

When produced from eucalyptus pulp, the projected 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 fibre⁴). These emissions include raw material supply, transportation of raw materials, and

³ McKinsey & Global Fashion Agenda, Fashion on Climate, August 2020.



manufacturing of the product (cradle-to-gate). The data for textile fibre manufacturing of eucalyptus-based SPINNOVA® has been projected based on the technical design for the joint venture company Woodspin's factory in Jyväskylä, Finland. Other data has been mainly collected from the suppliers based on their historical emissions. Emissions associated with transportation have been calculated by utilizing emission factors for the used transportation modes from recognized databases. The calculation was conducted by a third-party expert in 2022 following the ISO 14067:2018 standard.

In addition to the low carbon footprint, Woodspin's factory in Jyväskylä helps to reduce emissions in the local district heating. The factory runs fully on renewable electricity and recovers heat resulting from the process by using heat pumps. The recovered heat is partly looped back to the process. The surplus is delivered to the local district heating network, which reduces the emissions of the local energy company Alva by replacing partly fossil-based energy generation. These excess heat deliveries started as part of Woodspin's factory ramp-up in 2023. At its full operational capacity, Woodspin's factory complex is estimated to enable an emission avoidance of 2.4 kg CO₂-e/kg of fibre produced, based on the current fossil carbon emission levels in the local district heating.

⁴ The ecoinvent dataset 3.9.1, global average emissions of conventional cotton.

Spinnova encourages employees to use cars that run on renewable energy and has installed electric charging stations at its premises in Jyväskylä. Employees are also financially supported to purchase commuter bicycles.

Carbon handprint of Spinnova® fibre

During earlier years Spinnova has tested the carbon handprint methodology by VTT Technical Research Centre of Finland and LUT University in Finland. It compares the life cycle climate impacts of two solutions used for the same purpose. Similar comparison is also addressed by the concept of avoided emissions, for which the World Business Council for Sustainability Development (WBCSD) has developed a reporting guidance together with partner organizations. According to the WBCSD guidance, the avoided emissions quantify the benefits that a company provides through its products and services compared to a reference scenario.

The avoided emission calculations for SPINNOVA® fibre illustrate an emission reduction opportunity 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's factory in the local district heating, replacing partly fossil-based energy generation.

PROJECTED EMISSION AVOIDANCE BY SPINNOVA'S FIBRE⁵

-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 WILL REPLACE FOSSIL-BASED ENERGY IN THE LOCAL DISTRICT HEATING IN JYVÄSKYLÄ. PRODUCTION OF ONE KG OF FIBRE IS ESTIMATED TO REDUCE 2.4 KG OF CO₂-E EMISSIONS.

⁵ Figures are based on projected, third-party emission calculation (2022) for the joint venture Woodspin's factory in Jyväskylä, Finland. No additional external verification. The ecoinvent dataset 3.9.1 has been used for the global average emissions of conventional cotton. The actual emission reduction depends on the fibre replaced. The emission reduction with excess heat is specific for Woodspin's factory.

Greenhouse gas emissions of Spinnova's operations

No fuels or other materials are combusted in Spinnova's processes. The only greenhouse gas emitted is evaporated water which only stays in the atmosphere for approximately one week before returning to earth as rainfall. In the joint venture Woodspin's factory, the evaporated water is largely captured and reused in a closed loop. Read more about the water use on page 40.

In 2023 one of the company's leased cars was a hybrid car of which fuel consumption accounted for the only direct carbon dioxide (CO₂) emissions from Spinnova's operations (Scope 1). While Spinnova strives to only buy renewable energy, the company's own operations still relied on energy which was partly generated by using fossil fuels. These emissions associated with the purchased energy form the company's indirect Scope 2 emissions. The company's Scope 2 emissions were at a higher level year-on-year partly due to the increased use of fossil fuels by the electricity supplier. In addition, Spinnova's office spaces and operations at the new Woodspin factory were included in the reporting as of 2023, which increased Spinnova's district heat consumption, partly based on fossil fuels. At the end of 2023 Spinnova was in the process to switch its electricity contract to include only renewable electricity, which will reduce the Scope 2 emissions as of 2024. The joint venture Woodspin's factory uses fully renewable electricity.

The calculation of Spinnova's greenhouse gas emissions is based on the GHG Protocol Corporate Accounting and Reporting Standard. The accounting of Spinnova's direct emissions (Scope 1) and emissions from purchased energy (Scope 2) for 2023 have been verified by OpenCO2net, a third-party consultancy specialized in GHG accounting.

During 2023 Spinnova additionally estimated the company's indirect emissions along the value chain (Scope 3), based on activities in 2022. The work was supported by a third-party consultancy, and it was built on previous product-level carbon footprint calculations. The Scope 3 calculation includes all material supply chain emissions.

The estimated Scope 3 emissions in 2022 amounted to 11 410 tonnes or 98% of the total Scope 1, 2 and 3 emissions. The Scope 3 emissions consisted mainly of Spinnova's technology suppliers' emissions during machinery and equipment manufacturing. While the business grows, Spinnova is planning to start to manage and report its Scope 3 emissions periodically.

Other emissions to air

Spinnova's production processes generated zero direct emissions to air of ozone-depleting substances (ODS), nitrogen oxides (NOx), and sulphur oxides (SOx).

Spinnova's technology enables a textile fibre spinning process in which pollutants are almost completely eliminated. In addition, only safe, widely used additives are utilized. More information about the use of chemicals on page 41.

Greenhouse gas emissions from Spinnova's operations	2023	2022 ¹	2021 ¹
Scope 1: Direct emissions from operations, tonnes of CO ₂ -e	2	12	6
Scope 2: Emissions from purchased energy, tonnes of CO ₂ -e	340	192	150
Total	342	204	156

¹Historical figures recalculated to include Respin pilot factory.

Energy use in Spinnova's operations, MWh	2023	2022 ¹	2021 ¹
Electricity	1 890	722	551
District heat	948	467	453
Total	2 838	1 189	1 004

¹Historical figures recalculated to include Respin pilot factory.

KEY THEME

Naturally circular

Spinnova advances the circulation of products and materials in collaboration with its partners. The company's technology utilizes renewable feedstocks, while helping to eliminate waste and pollution and recycle water and energy during the textile fibre manufacturing.

Spinnova's technology can be used to work with a wide range of raw materials. For the joint venture company Woodspin, the main raw material is eucalyptus-based pulp from Suzano's Aracruz pulp mill in Brazil. The joint venture company Respin develops the production of SPINNOVA® fibre using processing residuals from ECCO's leather tannery in the Netherlands. In addition, Spinnova has successfully tested textile fibre spinning from pulps made of textile waste and crop residues from agriculture.

When textile products made with SPINNOVA® fibre can no longer be repaired, the fibre can be recycled. Spinnova has also tested recycling with its own technology, and the tests show that when the fibre is recycled in this way, it does not lose quality – in some cases, the quality of the fibre improves.



Spinnova encourages its suppliers and partners to integrate circularity – for example, repair, reuse, and recycling – into their business models. Ideally, garments made of SPINNOVA® are loved and worn by their owners for as long as possible – and eventually recycled when repairing is not feasible anymore. However, if Spinnova fibre does end up in natural environments, it biodegrades in 2–3 months⁶.

Material efficiency

Spinnova's technology is designed to create zero process waste or side streams, and to give close to 100% yield from the raw material.

If production wastage occurs, it can be re-utilized as raw material within the process or by partner companies. Some production wastage is typical to industrial processes, especially in pilot tests and ramp-ups. In 2023, the production wastage from Spinnova's pilot factory was utilized by a local partner to produce biogas.

Responsible waste management

In its daily operations Spinnova strives to generate as little waste as possible. However, when waste is generated, the aim is to ensure the best possible utilization. In 2023 the company generated more waste year-on-year due to the inclusion of new operations in Jyväskylä in the reporting. All the waste was collected by an accredited waste management company for further processing.

⁶ Screening biodegradability tests (2019) conducted by a third-party test provider in different end-of-life scenarios, following applicable standards.

⁷ Screening third-party life-cycle impact comparison based on actual supply chain water consumption and projected consumption for the joint venture Woodspin's factory in Jyväskylä, Finland. Conservative approach excluding the factory's surplus heat sales which brings further water saving at the system level.

WASTE GENERATED IN OPERATIONS IN 2023

	Tonnes	% of total waste
Total amount of waste	37.1	
Hazardous waste	18.8	51%
Non-hazardous waste	18.3	49%
Recovery and disposal		
Recycled waste	11.9	32%
Non-recycled waste (other recovery and disposal)	25.2	68%
Hazardous waste, recovery and disposal	18.8	51%
Incineration with energy recovery	13.2	36%
Other disposal operation	5.6	15%
Non-hazardous waste, recovery and disposal	18.3	49%
Recycling	11.9	32%
Incineration with energy recovery	6.4	17%

Water

From farming to processing, eucalyptus-based SPINNOVA® fibre consumes as much as 98% less water compared to the average water consumption in conventional cotton production⁷. This is mainly due to the heavy watering required by cotton plants, while eucalyptus trees rely on rainfall for irrigation.

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

In Spinnova's process, water is used for the fibre suspension as well as the cleaning of tanks and equipment, if needed. The only wastewater created comes from this washing of tanks and equipment, if necessary.

Water use in Spinnova's operations	2023	2022 ¹	2021 ¹
Municipal water, m ³	3 422	1 726	1 519

¹ Historical figures recalculated to include Respin pilot factory.

The condensed and evaporated water in our joint venture Woodspin's factory is largely reused in a closed loop, further reducing water consumption.

Spinnova's own operations at Woodspin's factory were included in the reporting as of 2023, which increased Spinnova's consolidated water consumption year-on-year.

The pilot factory of joint venture Respin uses leather processing residuals as raw material, and due to heavy metal content in this material the wastewater from the washing of containers and equipment requires collection by an accredited waste management company.

Chemical use

As the pulp for SPINNOVA® 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. Only safe, widely used additives are used for quality or processability reasons.

The main additive that goes into SPINNOVA® fibre is a wood-based polymer, 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.

Spinnova complies with the EU's REACH regulation for chemical use and follows the Restricted Substances Lists by the Finnish Textile & Fashion and the company's brand partners. Spinnova also is a contributor to [the Roadmap to Zero Programme by ZDHC](#), a multi-stakeholder organization aiming at eliminating the use of harmful chemicals in the fashion industry.

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

AS THE PULP
FOR SPINNOVA
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 the company always seeks to go beyond compliance.

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

Spinnova's [Code of Conduct](#) describes the company's generally approved practices and commitments regarding business ethics. The Code of Conduct applies to all Spinnova's employees and management, also in any duties or tasks they may hold in any joint venture or subsidiary. The company requires absolute compliance with the Code of Conduct. All the 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 the company's Whistleblowing Channel.

Spinnova's Whistleblowing Channel is a tool provided by an external service provider. During 2023 the channel was also opened to external stakeholders. The channel, accessible on Spinnova's website, makes it possible to report suspected violations anonymously and thus protects the person making the report.

Reports filed through our Whistleblowing Channel are received by 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. Spinnova does not tolerate any retaliation against people who report suspected misconduct in good faith.

During 2023, one report was received through the whistleblowing channel. The report was reviewed in accordance with Spinnova's policies and responded to. The report did not warrant subsequent action.

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

**SPINNOVA ALWAYS
SEEKS TO GO BEYOND
COMPLIANCE AND
BUILD AN ETHICAL
CULTURE.**

PEOPLE

Occupational Health and Safety

Ensuring health and safety is a common cause for every employee at Spinnova. The suppliers are also required to provide a healthy and safe workplace for their employees.

The aim of Spinnova's occupational health and safety (OHS) is to promote workplace safety as well as physical and mental wellbeing of employees. The 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, a safe and functional working environment is made possible for all personnel.

Since 2022, Spinnova's premises in Jyväskylä and Helsinki office have had the externally certified ISO 45001 management system for occupational health and safety. The standard further enhances the coverage and reliability of the company's systems.

The safety work follows Spinnova's health and safety policy, created together with the personnel in 2022.

Safety performance in 2023

In 2023, no lost-time incidents were recorded at Spinnova's sites or at the joint venture companies' sites. While we celebrate this achievement, we also recognize that maintaining the company's safety performance requires constant attention and work.

In 2023, a company-wide safety performance was additionally measured with a new Key Performance Indicator (KPI) consisting of preventive, leading actions (60% weight) and potential lost-time incidents (40% weight). The preventive measures require actions such as safety training and observations, and management safety tours. The safety KPI was part of the bonus incentive scheme for the management and all employees, alongside other business KPIs. In addition to zero lost-time incidents, all targeted preventive actions were completed by the end of the year.

During 2023 a new reporting system was also implemented for employees to report occupational accidents, near misses and other observations. The tool is also used for safety risk assessments and chemical safety management.

Occupational safety at Spinnova's units	2023	2022	2021
Number of lost-time incidents	0	0	0

IN 2023 NO LOST-TIME INCIDENTS WERE RECORDED AT SPINNOVA'S SITES OR AT THE JOINT VENTURE COMPANIES' SITES.

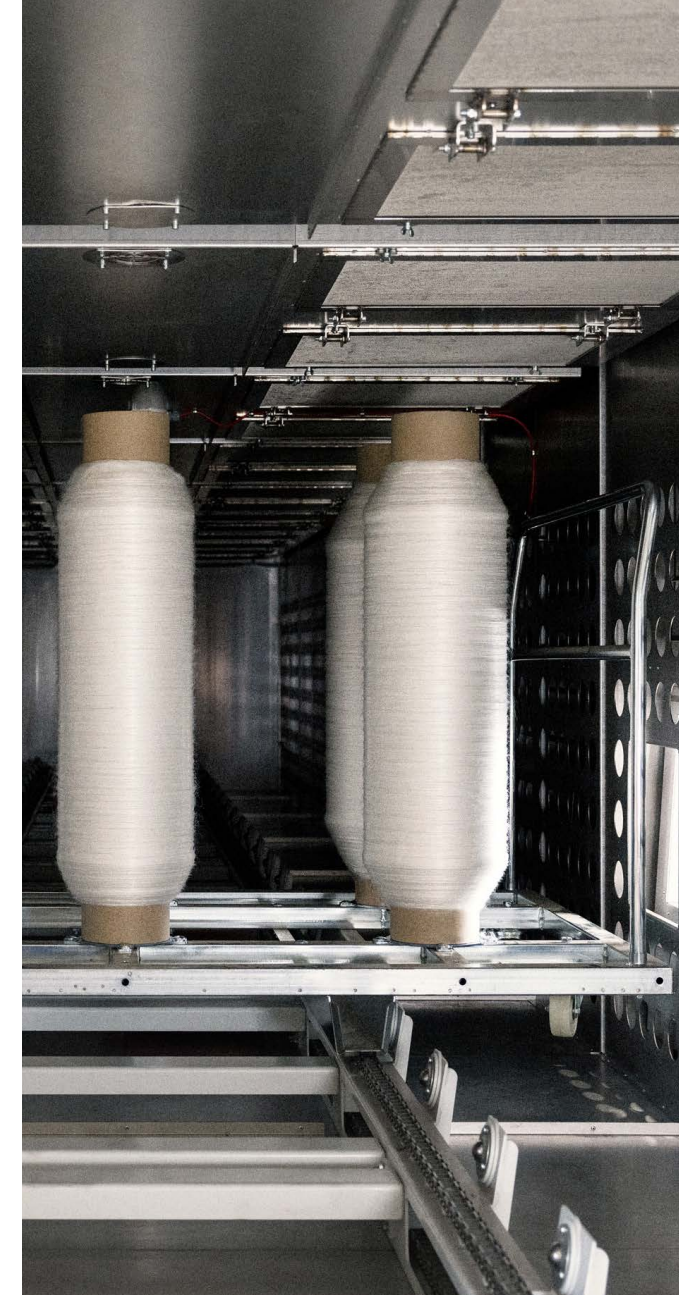
OHS at joint ventures

In addition to its own sites, Spinnova carries operational control and responsibility for OHS at the joint venture Respin's pilot factory in Jyväskylä. The leather processing residual, used by the site as main raw material, contains chromium, widely used in the leather industry to tan the leather. The heavy metal content of the raw material requires specific procedures to ensure occupational safety, such as improved ventilation and the measurement of employee exposure. As a precautionary measure in 2023, the company additionally collaborated with Finnish Institute of Occupational Health on occupational hygienic analyses to ensure and minimize any work-related exposures at Spinnova's pilot factories in Jyväskylä.

Spinnova has also supported the joint venture Woodspin in the building of safety management system and respective policies and procedures.

OHS as a company-wide effort

During 2023 the understanding on the wellbeing of employees was further improved with workplace surveys and employee interviews conducted by management. Creating a healthy and safe operating culture also means actively communicating about occupational health and safety. During the year, safety was a regularly discussed visible topic in management team and general employee meetings. At the same time, employees are encouraged to give feedback and suggestions to further improve occupational safety and health at Spinnova.



PEOPLE

Employee wellbeing and development

The company culture at Spinnova promotes caring for and listening to each other.

At the end of 2023, Spinnova employed 81 people (81 at the end of 2022), including fixed term employees. Almost all the employees locate in Finland.

The company's values are trust, courage, sustainability, innovation, and teamwork. During 2023 the work continued to enforce these values to become a part of daily operations.

In 2023, Woodspin's factory was inaugurated in Jyväskylä, Finland. In addition to the joint venture company employees, the site has modern working spaces for several of Spinnova's teams, as well as laboratory and testing facilities. Spinnova's employees participated in the design of the premises at different stages of the planning process.

Diversity, inclusion, and wellbeing

Spinnova aims to provide an inclusive environment where people feel safe to share their feedback and ideas. Everyone is encouraged to share their views so that the ways of working can be continuously developed and improved.

Spinnova requires equal and respectful treatment of employees in all areas of work regardless of the employee's ethnic background, gender, religious beliefs, sexual orientation, marital status or other similar characteristic. Any forms of harassment or discrimination, including sexual harassment, bullying, or any other unacceptable behaviour towards anyone, is not tolerated.

In 2023, new company-level policies and guidelines were created to further clarify expectations and ensure an equal and fair place to work. The new policies include anti-harassment and

inappropriate treatment policy and guidelines for disciplinary actions.

In 2023 a new employee suggestion system was also established. All Spinnova's employees are encouraged to suggest development ideas, which are reviewed by the committee that consists of a wide representation from Spinnova's teams.

Annual wellbeing surveys are utilized to learn about the work-related stressors, resources, motivation and work ability of Spinnova's employees. In addition to extensive occupational health care services and medical insurance for Spinnova's employees, several wellbeing-related benefits are provided to 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.

ALL SPINNOVA'S
EMPLOYEES ARE
ENCOURAGED
TO SUGGEST
DEVELOPMENT IDEAS.

The company wants to enable a well-balanced work and private life. Remote and hybrid work is one example of ensuring this. In 2023 remote work guidelines were created to support managers and employees with basic company-wide rules and practicalities on the remote work.

Career development and learning

During the year, the company introduced new roles and positions, to support the business and individual career development. Several opportunities for internal job rotation and promotions were offered to employees.

The aim is that Spinnova's employees attend a formal development discussion twice a year. This allows the employees and their managers to review their performance and discuss development opportunities and target setting in a structured way.

A major part of the learning of Spinnova's employees takes place at the job. During 2023 educational learning opportunities were also

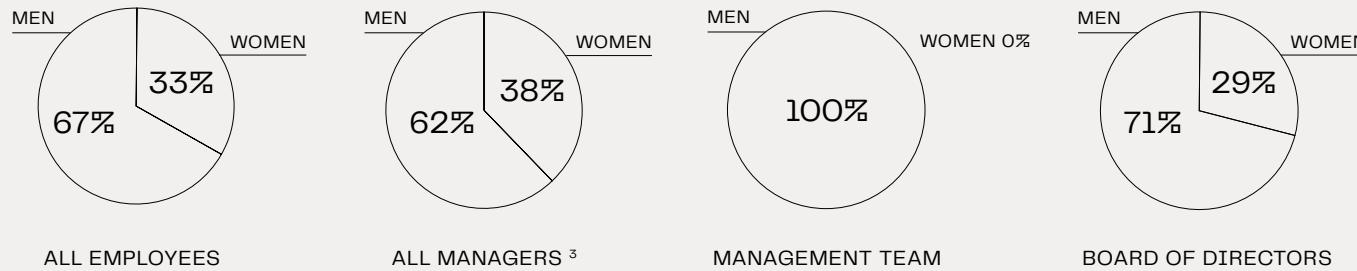
enhanced with a customized learning programme for project management competencies, Finnish language courses for non-Finnish employees, and a content extension in the online training environment for the employees.

SEVERAL OPPORTUNITIES FOR INTERNAL JOB ROTATION AND PROMOTIONS WERE OFFERED IN 2023.



Employees in 2023

EMPLOYEE BREAKDOWN BY GENDER AS OF 31 DECEMBER 2023



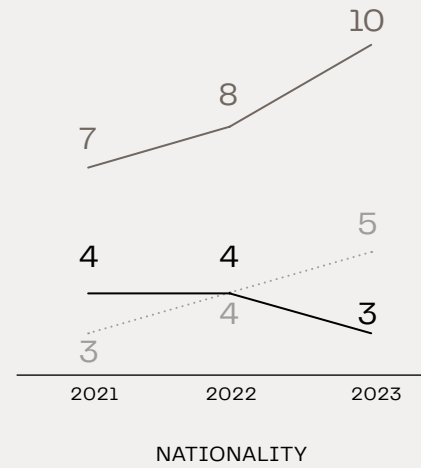
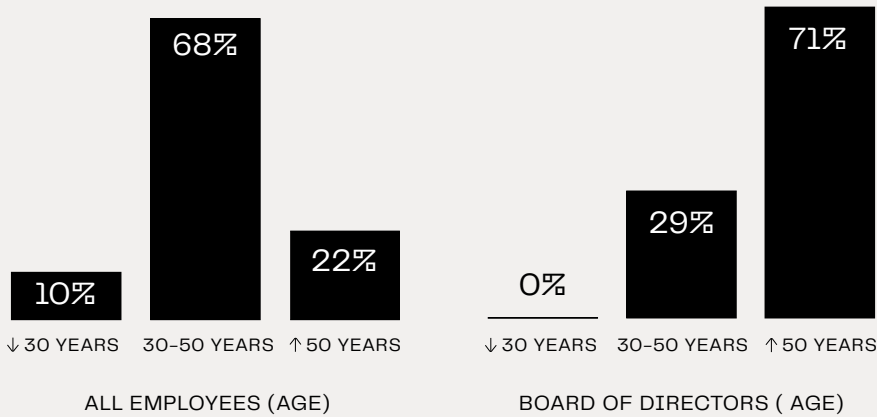
NUMBER OF EMPLOYEES
(2022: 81)

81

AVERAGE AGE, YEARS
(2022: 43)

43

EMPLOYEE BREAKDOWN BY AGE AND NATIONALITY AS OF 31 DECEMBER 2023



SHARE OF EMPLOYEES WORKING FULL-TIME
(2022: 94%)

96%

EMPLOYMENT TURNOVER
(2022: 7.5%)

7.8%

³ Managers are defined as employees with at least one direct report.

— ALL EMPLOYEES
— BOARD OF DIRECTORS
.... MANAGEMENT TEAM

PEOPLE

Local communities

Spinnova contributes to a unique industrial ecosystem in the town of Jyväskylä, Finland, where majority of the employees and operations locate.

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

The local community around the operations in Jyväskylä is an important stakeholder group for Spinnova. The company engages with the community through, for example, guest lectures at schools, providing seasonal job opportunities for students, hosting visitor groups, and responding to inquiries. The company also takes great pride in its technology that does not negatively impact the local environment.



VALUE CHAIN

Responsible value chain

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

Spinnova seeks to collaborate and co-create with organisations that are relevant to Spinnova's business and future growth, have shared 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, attention is paid to business impacts and the level of commitment in sustainability.

Responsible raw material sourcing

Eucalyptus pulp used by Spinnova's pilot factory and joint venture Woodspin originates to FSC certified and FSC controlled wood 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.

For piloting purposes Spinnova has also used wood pulp originating from certified forests in the Nordics.

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, Spinnova acknowledges that Ancient and Endangered Forests must be protected and conserved, and ensures that, to the best of the company's knowledge, no wood is sourced from controversial sources. Read the policy in detail on spinnova.com.

The leather processing waste for the joint venture Respin's pilot factory is sourced from the joint venture partner ECCO's leather tanneries in the Netherlands.

FSC chain of custody certification

In 2023, Spinnova successfully maintained the Forest Stewardship Council (FSC) chain of custody certification for the pilot factory in Jyväskylä. During the year, the joint venture Woodspin also achieved the FSC chain of custody certification. In practice, this means that the companies have been able to reliably demonstrate the functionality of their management systems required to monitor and document the chain of

custody of their wood-based raw materials. The FSC chain of custody certification allows to sell wood-based SPINNOVA® fibre to customers with the FSC label.

With the certification, Spinnova wants to demonstrate the commitment to the use of sustainable wood-based raw materials. The FSC certificate guarantees that products sold with a 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.

Sustainability criteria for suppliers

During 2023, Spinnova purchased goods and services from over 500 companies. Like previously, the vast majority of Spinnova's sourcing occurred in Finland, both in terms of number of suppliers and supplier spend.

In 2023, Spinnova established a second, slightly simplified version of the company's Code of Conduct for Suppliers. The updated version also informs about the company's whistleblowing channel, which was opened to external stakeholders during the year. Spinnova's Supplier Code of Conduct includes requirements related to human rights, the environment, and ethical business practices, and it is aligned with the labour standards set out by the International Labour Organisation (ILO).

Collaborating with partners and customers

Further down the value chain Spinnova collaborates within a network of textile industry partners, such as yarn and fabric manufacturers, who use SPINNOVA® fibre as raw material. In some cases, the industry partners are selected together with a brand customer, who has an existing prior partnership with the manufacturer. Spinnova considers the sustainability performance of its

industry partners through in-person visits, and by assessing, for example, the manufacturers' externally audited management systems and sustainability certifications.

Spinnova aims to significantly scale up the company's technology on an industrial level to ensure that consumers increasingly have access to sustainable products made with SPINNOVA® fibre. The company collaborates with some of the world's biggest brands to do this.

Spinnova's mission is to transform the textile industry, which is the main principle guiding the company when choosing brand and other partners. The company prioritises 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.

SPINNOVA
COLLABORATES
WITHIN A NETWORK
OF INDUSTRY
PARTNERS.

VALUE CHAIN

Biodiversity and land use

Spinnova aims to ensure that biodiversity is safeguarded and promoted in the company's value chain.

Climate change, land use and eutrophication of waters due to nitrogen and phosphorus pollution are major global challenges that weaken biodiversity and ecosystem resilience⁸. In Spinnova's view, global textile production should be increasingly based on virgin raw materials whose production enforces carbon sinks and promotes biodiversity. In parallel, the production of textile fibres based on residual and recycled raw materials will also need to advance to reduce pressure on nature.

From farming to processing, eucalyptus-based SPINNOVA[®] fibre needs significantly less land and causes significantly less eutrophication compared to conventional cotton production⁹.

The 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 degraded 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 local biodiversity and ecosystem, while enhancing 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. Spinnova's and the joint venture Woodspin's wood pulp supplier, the Brazilian company Suzano, has set aside approximately 1 million hectares of vegetation, which corresponds to 40% of its total area. Suzano also conducts active habitat restoration, and the company adheres to the biodiversity requirements of the FSC and CERFLOR/PEFC certification systems. Read more about Suzano's sustainability work on www.suzano.com.

The joint venture company, Respin, pilots the production of textile fibre from leather processing waste. The leather industry would not exist without cattle, and 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 the joint venture partner ECCO's leather tanneries in the Netherlands.

Read more about Spinnova's work with suppliers on page 49.

⁸ Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)

⁹ Screening third-party life-cycle impact comparison for the joint venture Woodspin's factory in Jyväskylä, Finland. Conservative approach excluding the factory's surplus heat sales which brings further environmental benefits at the system level.

VALUE CHAIN

Product safety and quality

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

For Spinnova 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's production process only utilizes safe, widely used additives. Spinnova provides comprehensive instructions for the safe handling of the very few chemicals used in the process. For more information on chemical use at Spinnova, see page 41.

Spinnova takes pride in the company's 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, quality control tests are conducted to make sure that the fibre complies with the requirements.



SUSTAINABILITY

Preparation of sustainability reporting

Spinnova regularly reviews its sustainability priorities and ensures that the company's reporting duly covers them. For more information on the materiality assessment, see page 31.

Accounting principles for sustainability reporting

Unless otherwise stated, the scope of reported figures includes units in which Spinnova has operational control. These units are Spinnova's pilot factories and other premises in Jyväskylä and Helsinki, Finland. As of reporting for 2023, new locations in Jyväskylä have been added to the reporting, including the 50%-owned joint venture Respin's pilot factory, where Spinnova has operational control.

The operations of the 50%-owned joint venture Woodspin are excluded from the consolidated sustainability figures as the joint venture has its own employees and procedures, without Spinnova's direct operational control. However, information about the sustainability impacts of Woodspin is described across the report as deemed material.

Similarly, the reporting of occupational safety covers the sites under Spinnova's operational control. The lost-time incidents (LTI) cover

incidents resulting in sick leave of more than one workday, following the respective definition in Finnish legislation.

The waste figures exclude Spinnova's office in Helsinki due to data availability and low materiality.

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

Accounting of Greenhouse gas emissions (GHG) 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.

The statements associated with Spinnova's textile fibre product and technology are based on documentation, such as life-cycle assessments, external or internal test reports, or externally

audited certification schemes, depending on the statement.

With reference to the GRI standards

Spinnova's sustainability reporting is also prepared with reference to the GRI Sustainability Reporting Standards. Selected GRI standards have been utilized in reporting, guided by the materiality assessment. In the GRI Content Index the reporting refers to the locations where the GRI topics are addressed in the report.

External assurance

The accounting of Spinnova's direct greenhouse gas emissions (Scope 1) and emissions from purchased energy (Scope 2) for 2023 has been verified by OpenCO2net, a third-party consultancy specialized in GHG accounting. Spinnova will consider assigning external assurance on all material sustainability statements in upcoming annual reports.

SUSTAINABILITY

Summary of sustainability figures

Greenhouse gas emissions from Spinnova's operations	2023	2022 ¹	2021 ¹
Scope 1: Direct emissions from operations, tonnes of CO ₂ -e	2	12	6
Scope 2: Emissions from purchased energy, market-based ² , tonnes of CO ₂ -e	340	192	150
Scope 2: Emissions from purchased energy, location-based ³ , tonnes of CO ₂ -e	259	137	n/a
Total Scope 1 and 2 emissions, market-based, tonnes of CO₂-e	342	204	156
Total Scope 1 and 2 emissions, location-based, tonnes of CO ₂ -e	261	149	n/a

¹ Historical figures recalculated to include Respin pilot factory.

² Based on emissions by Spinnova's energy suppliers.

³ Based on average emissions from electricity generation in Finland and average emissions from district heating in Jyväskylä region.

Energy use in Spinnova's operations, MWh	2023	2022 ¹	2021 ¹
Electricity	1 890	722	551
District heat	948	467	453
Total	2 838	1 189	1 004

¹ Historical figures recalculated to include Respin pilot factory.

Water use in Spinnova's operations	2023	2022 ¹	2021 ¹
Municipal water, m ³	3 422	1 726	1 519

¹ Historical figures recalculated to include Respin pilot factory.

Waste generated in operations in 2023	Tonnes	% of total waste
Total amount of waste	37.1	
Hazardous waste	18.8	51%
Non-hazardous waste	18.3	49%
Recovery and disposal		
Recycled waste	11.9	32%
Non-recycled waste (other recovery and disposal)	25.2	68%
Hazardous waste, recovery and disposal	18.8	51%
Incineration with energy recovery	13.2	36%
Other disposal operation	5.6	15%
Non-hazardous waste, recovery and disposal	18.3	49%
Recycling	11.9	32%
Incineration with energy recovery	6.4	17%

PERSONNEL

KEY PERSONNEL FIGURES	2023	2022	2021
Number of employees	81	81	64
Share of permanent employees, %	94%	93%	91%
Share of employees working full-time, %	96%	94%	97%
Average age, years	43	43	42
Employment turnover	7.8%	7.5%	6.1%

GENDER

EMPLOYEE BREAKDOWN BY GENDER, % ¹	2023	2022	2021
Female employees among Board of Directors	29%	29%	14%
Female employees among Management Team	0%	0%	17%
Female employees among all managers ³	38%	33%	42%
Female employees among all employees	33%	37%	39%
Female employees among new hires	9%	39%	41%

AGE

EMPLOYEE BREAKDOWN BY AGE, %	2023	2022	2021
Board Of Directors			
Up to 30	0%	0%	0%
31-50	29%	29%	14%
51 and over	71%	71%	86%
Management Team			
Up to 30	0%	0%	0%
31-50	100%	87%	100%
51 and over	0%	13%	0%
All managers³			
Up to 30	0%	0%	0%
31-50	81%	73%	83%
51 and over	19%	27%	17%
All employees			
Up to 30	10%	11%	11%
31-50	68%	69%	70%
51 and over	22%	20%	19%

NATIONALITY

EMPLOYEE BREAKDOWN BY NATIONALITY ²	2023	2022	2021
Number of nationalities among Board of Directors	3	4	4
Number of nationalities among Management Team	5	4	3
Number of nationalities among all managers ³	5	4	3
Number of nationalities among all employees	10	8	7
Number of nationalities among all new hires	4	2	3

OCCUPATIONAL SAFETY AT SPINNOVA'S UNITS

	2023	2022	2021
Number of lost-time incidents	0	0	0

¹ Our employees are also able to choose the option "Other / Prefer not disclose" in our human resources system.

² Including dual citizenships.

³ Managers are defined as employees with at least one direct report.

GRI Content Index

Spinnova's sustainability reporting for the year 2023 has been prepared with reference to the GRI Standards.

AR2023: Spinnova's Annual Report 2023
CG2023: Spinnova's Corporate Governance Report 2023
RR2023: Spinnova's Remuneration Report 2023
FS2023: Spinnova's Financial Statement 2023

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 and Neatherlands.
2-2	Entities included in the organization's sustainability reporting	AR2023: Preparation of sustainability reporting.
2-3	Reporting period, frequency and contact point	Reporting period for both financial and sustainability information: Jan 1, 2023 - Dec 31, 2023. Publication date of sustainability information: April/2024. Frequency: annual. Contact information on the back cover of the report.
2-4	Restatements of information	No significant restatements. Historical environmental figures recalculated to include the pilot factory of the joint venture company Respin, in which Spinnova has operational control.
2-5	External assurance	AR2023: Preparation of sustainability reporting
2-6	Activities, value chain and other business relationships	AR2023: Spinnova's strategy, Sustainability (Stakeholder engagement)
2-7	Employees	AR2023: Sustainability (Employee wellbeing and development)
2-9	Governance structure and composition	CG2023: Spinnova's governing bodies
2-10	Nomination and selection of the highest governance body	CG2023: Board of Directors, Board Committees
2-11	Chair of the highest governance body	CG2023: Board Committees
2-12	Role of the highest governance body in overseeing the management of impacts	AR2023: Sustainability (Governance and risk management)
2-13	Delegation of responsibility for managing impacts	AR2023: Sustainability (Governance and risk management)

GRI Standard	Content Indicator	Location and notes
2-16	Communication of critical concerns	AR2023: Sustainability (Governance and risk management)
2-17	Collective knowledge of highest governance body	AR2023: Sustainability (Governance and risk management)
2-19	Remuneration policies	CG2023: Board Committees
2-20	Process to determine remuneration	RR2023
2-21	Annual total compensation ratio	RR2023: Remuneration of the Board of Directors (Average remuneration)
2-22	Statement on sustainable development strategy	AR2023: Chair's and CEO's greetings
2-26	Mechanisms for seeking advice and raising concerns	AR2023: Sustainability (Business ethics and compliance)
2-27	Compliance with laws and regulations	AR2023: Sustainability (Business ethics and compliance)
2-28	Membership associations	AR2023: Sustainability (Collaboration with international platforms)
2-29	Approach to stakeholder engagement	AR2023: Sustainability (Stakeholder engagement)
2-30	Collective bargaining agreements	86% of Spinnova's employees were covered by collective bargaining agreements at the end of 2023. The members of the management team are not part of the agreement.
GRI 3 Material Topics		
3-1	Process to determine material topics	AR2023: Sustainability (Materiality)
3-2	List of material topics	AR2023: Sustainability (Spinnova's sustainability approach)
GRI 201 Economic Performance		
201-1	Direct economic value generated and distributed	FS2023: Group Consolidated Financial Statements (IFRS)
201-3	Defined benefit plan obligations and other retirement plans	Salary contributions to retirement funds follow Finnish national legislation.

GRI Standard	Content Indicator	Location and notes
201-4	Financial assistance received from government	FS2023 Notes to the consolidated IFRS financial statements (Government Grant details)
GRI 205 Anti-corruption		
205-2	Communication and training about anti-corruption policies and procedures	AR2023: Sustainability (Business ethics and compliance)
205-3	Confirmed incidents of corruption and actions taken	No incidents in 2023.
GRI 206 Anti-competitive behaviour		
206-1	Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	No such legal actions in 2023.
GRI 302 Energy		
302-1	Energy consumption within the organization	AR2023: Sustainability (Climate champion)
GRI 303 Water and effluents		
303-1	Interactions with water as a shared resource	AR2023: Sustainability (Naturally circular; Water)
303-4	Water discharge	AR2023: Sustainability (Naturally circular; Water)
303-5	Water consumption	AR2023: Sustainability (Naturally circular; Water)
GRI 304 Biodiversity		
304-2	Significant impacts of activities, products and services on biodiversity	AR2023: Sustainability (Biodiversity and land use)
304-3	Habitats protected or restored	AR2023: Sustainability (Biodiversity and land use)
GRI 305 Emissions		
305-1	Direct (Scope 1) GHG emissions	AR2023: Sustainability (Climate champion)

GRI Standard	Content Indicator	Location and notes
305-2	Energy indirect (Scope 2) GHG emissions	AR2023: Sustainability (Climate champion)
305-3	Other indirect (Scope 3) GHG emissions	AR2023: Sustainability (Climate champion)
305-6	Emissions of ozone-depleting substances (ODS)	AR2023: Sustainability (Climate champion)
305-7	Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions	AR2023: Sustainability (Climate champion)
GRI 306 Waste		
306-1	Waste generation and significant waste-related impacts	AR2023: Sustainability (Naturally circular)
306-2	Management of significant waste-related impacts	AR2023: Sustainability (Naturally circular)
306-3	Waste generated	AR2023: Sustainability (Naturally circular)
306-4	Waste diverted from disposal	AR2023: Sustainability (Naturally circular)
306-5	Waste directed to disposal	AR2023: Sustainability (Naturally circular)
GRI 401 Employment		
401-1	New employee hires and employee turnover	AR2023: Sustainability (Summary of sustainability figures)
GRI 403 Occupational Health and Safety		
403-1	Occupational health and safety management system	AR2023: Sustainability (Occupational health and safety)
403-2	Hazard identification, risk assessment, and incident investigation	AR2023: Sustainability (Occupational health and safety)
403-3	Occupational health services	AR2023: Sustainability (Occupational health and safety)
403-4	Worker participation, consultation, and communication on occupational health and safety	AR2023: Sustainability (Occupational health and safety)

GRI Standard	Content Indicator	Location and notes
403-5	Worker training on occupational health and safety	AR2023: Sustainability (Occupational health and safety)
403-6	Promotion of worker health	AR2023: Sustainability (Occupational health and safety)
403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	AR2023: Sustainability (Occupational health and safety; Responsible value chain; Product safety and quality)
403-8	Workers covered by an occupational health and safety management system	All employees working at Spinnova's premises are covered by the company's occupational health and safety system.
403-9	Work-related injuries	AR2023: Sustainability (Occupational health and safety)
GRI 404 Training and Education		
404-3	Percentage of employees receiving regular performance and career development reviews	AR2023: Sustainability (Employee wellbeing and development)
GRI 405 Diversity and Equal Opportunity		
405-1	Diversity of governance bodies and employees	AR2023: Sustainability (Employee wellbeing and development); GC2023: Board of Directors (Diversity)
GRI 406 Non-discrimination		
406-1	Incidents of discrimination and corrective actions taken	No incidents in 2023.
GRI 415 Public Policy		
415-1	Political contributions	No political contributions made in 2023.
GRI 417 Marketing and Labeling		
417-3	Incidents of non-compliance concerning marketing communications	No significant incidents in 2023.
GRI 418 Customer Privacy		
418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	No complaints in 2023.



As an investment

AS AN INVESTMENT

Spinnova as an investment

SPINNOVA'S SHARES

Spinnova's share is listed on the Nasdaq First North Growth Market Finland. Spinnova's share capital is EUR 80 thousand and in the end of 2023 the total number of shares was 52 228 685. Spinnova has one series of shares. All the shares have one vote in the general meeting of shareholders and have equal rights to dividends. The ISIN code of the shares is FI4000507595, and the trading code is SPINN.

As of 31 December 2023, Spinnova had 36 066 (35 900) shareholders. Of the shares, 25.18 (26.97) percent were held by nominee registered shareholders. The company does not currently hold any of its own shares.

SPINNOVA AS AN INVESTMENT

- Demand for new solutions in a large EUR 200 billion market drives value for Spinnova technology customers
- Capital-light technology sales model accelerates Spinnova cashflow generation
- Letter Of Intent signed with Suzano for next wood-based factory
- Scalable delivery together with partners
- Path to add-on sales and recurring revenues
- No additional external investment expected to be needed for Spinnova to achieve strategy goals

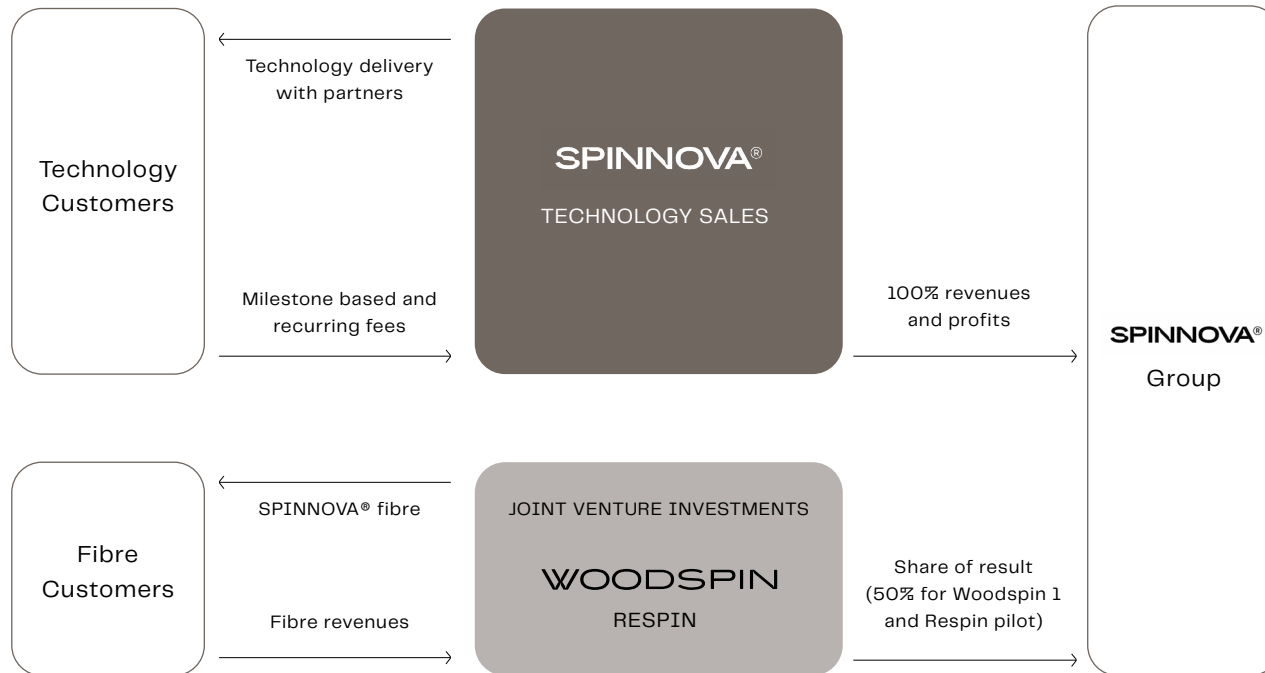
SPINNOVA SHARES ON NASDAQ FIRST NORTH GROWTH MARKET

January–December 2023	No. of shares traded	Average daily turnover EUR	High EUR	Low EUR	Average* EUR	Last EUR
SPINN	12 354 901	179 999	7.38	1.492	3.657	2.395

* Volume weighted average



THE BUSINESS MODEL



BUSINESS PROGRESS IN 2024

Revenues decreased from 24.3 MEUR in 2022 to 10.6 MEUR in 2023 due to phasing of technology and other service sales to Woodspin. The majority of the technology and related services were delivered to Woodspin in 2022. Operating loss increased from -13.1 MEUR in 2022 to -20.9 MEUR in 2023 driven by other operating expenses, personnel costs and the loss in our joint venture Woodspin.

The Company continued to invest capital, mainly into Woodspin. Total investments, however, decreased from 16.8 MEUR in 2022 to 9.0 MEUR in 2023. The net cash position remained strong, though decreasing from 74 MEUR at the end of 2022 to 54 MEUR at the end of 2023.

FINANCIAL GUIDANCE 2024

In 2024, revenues are estimated to be lower than in 2023. The timing of revenues is linked to the timing of technology sales and delivery of the next production facility.

The operating result is expected to improve from 2023 but to continue to be negative. The total of Spinnova's personnel expenses and other operating expenses is expected to be lower in 2024 than in 2023.

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

SPINNOVA®



SPINNOVAGROUP.COM

+358 20 703 2430

PALOKÄRJENTIE 2-4
FIN-40320 JYVÄSKYLÄ

ETELÄPORTINTIE 15
FIN-40530 JYVÄSKYLÄ

BULEVARDI 7 C
FIN-00120 HELSINKI