EXPANDFIBRE

Accelerating the development of sustainable bioproducts

Virtual Launch Event, 29th of October 2020

Katariina Kemppainen, Metsä Group
Heli Virkki, Fortum

EXPANDFIBRE LAUNCH EVENT – AGENDA

Time	Topic
10:00 – 10:20	Welcome and introduction to ExpandFibre • **Katariina Kemppainen, Metsä Spring & Heli Virkki, Fortum**
10:20 – 10:40	Keynote speakers • **“Global Challenges and Opportunities in Textile Fashion” by Prof. Minna Halme, Aalto University** • **”Introduction to Pure Waste and 100% recycled textiles” by Jukka Pesola, Co-founder, Pure Waste Textiles Oy**

10:40 – 11:35	• Introduction to the ExpandFibre themes, chaired by Laura Koponen, Spinverse
	  • Textiles, **Niklas von Weymarn, Metsä Spring**
	  • Biocomposites, **Mikko Koivuniemi, Fortum Waste Solutions**
	  • Packaging, **Markku Leskelä, Metsä Board**
	  • Other fibre products, **Anna Suurnäkki, Metsä Fibre**
	  • Lignin, **Hanne Wikberg, Fortum**
	  • Hemicellulose, **Matti Sonck, Fortum**
	  • Fractionation technology, **Pasi Hagelberg, Fortum**
	• Q&A session

11:35 – 11:45	Wrap up: ExpandFibre Ecosystem & look to the future (**Katariina Kemppainen, Heli Virkki**)
11:45 – 12:00	Coffee break
12:00 – 13:00	4 parallel Ecosystem workshops for discussing R&D ideas and future Ecosystem project opportunities: 1) Textiles, 2) biocomposites, 3) Packaging & other fibre products, 4) Lignin, hemicellulose & fractionation technology • Pitches from participants & discussion: 5-6 ideas per session • Wrap up and discussion on the workshop’s results
13:00	End of event

Introduction into ExpandFibre

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What is ExpandFibre?

ExpandFibre (2020-2024) is a 50 M€ R&D collaboration and an Ecosystem launched by Fortum and Metsä Group and co-funded by Business Finland. It focuses on upgrading pulp fibre, hemicellulose and lignin from renewable and sustainable sources of straw and northern wood into new bioproducts. Its ambition is to meet the growing demands for sustainable textile fibres and other added value biomaterials.

The **research and development in ExpandFibre,** aiming at producing new ground-breaking technologies and smart business concepts, is divided into **seven research themes:**

- Textiles
- Biocomposites
- Packaging
- Lignin products
- Hemicellulose products
- Sourcing & fractionation of straw
- Other fibre products

ExpandFibre invites actors in these value chains to join in building a world-leading innovation ecosystem to eventually commercialize new bioproducts and green businesses

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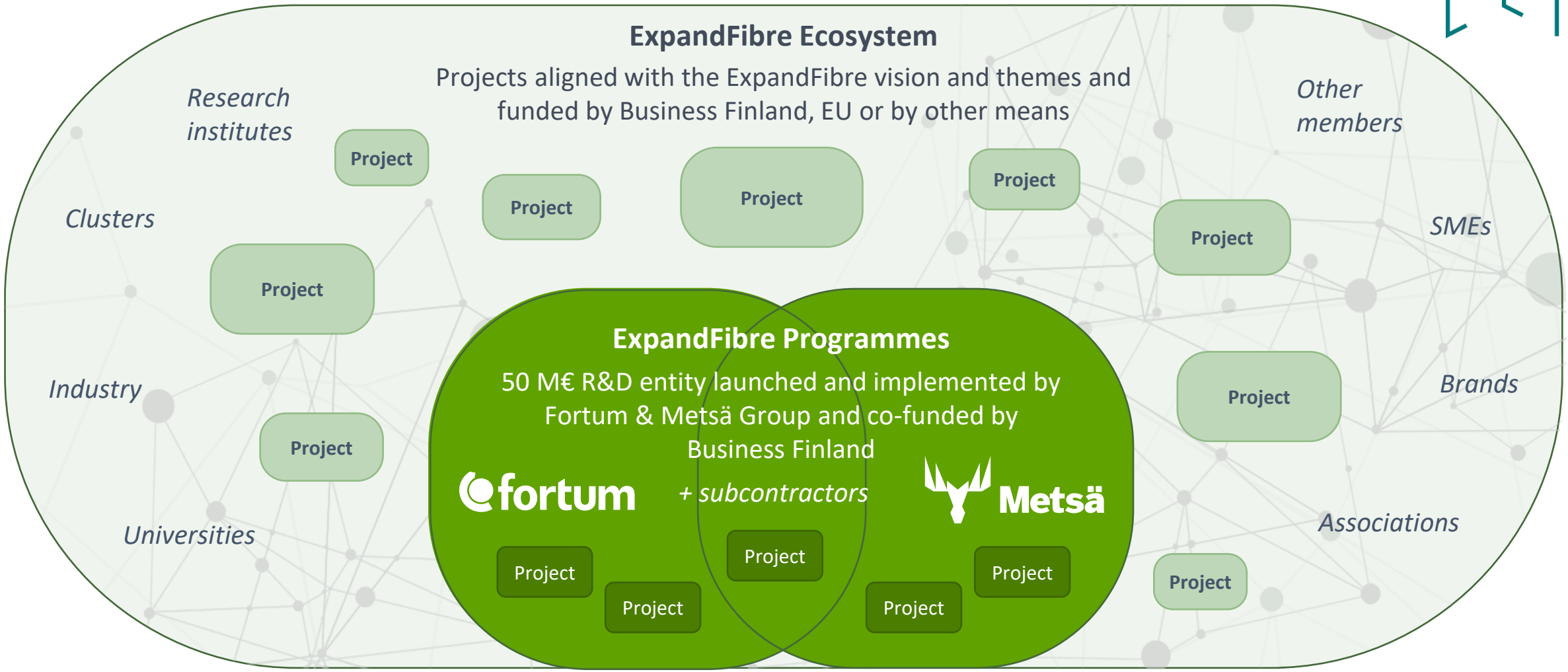
expandfibre.com

ExpandFibre Programmes & Ecosystem

Ecosystem Steering Group

VTT Aalto University



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ExpandFibre Ecosystem aims at developing novel bioproducts with a reduced environmental impact

Vision	**New bioproducts based on sustainable biomass contribute significantly to the reduction of the negative environmental impact of our everyday lives**
Mission	**ExpandFibre Ecosystem strives to meet the growing demand for sustainable bioproducts by developing ground-breaking materials and technologies and smart business concepts**

Short term objectives (2020-2024)

- Build knowledge-based **competitive advantage** among the ecosystem members
- Create/strengthen **test-beds for piloting** and proof-of-concept validations in the theme areas
- **Identify and fill in gaps** in the R&D landscape within ExpandFibre themes
- Create a thriving **business-driven innovation ecosystem for new biomass-based textile fibres**

Long-term objectives (2030 and beyond)

- Provide markets with new bioproducts that have **less than 20% of the carbon footprint** of the current products
- **Bring new revenue to ecosystem partners** through the increasing production and sale of new value-added bioproducts and technologies.
- Significantly **increase investments** into biomass-based value chains

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Metsä Group

Purpose

Advancing bio-economy and circular economy by efficiently processing northern wood into first-class products

Vision

The preferred partner in developing sustainable business

Key figures 2019

* Internal sales eliminated
**Listed on Nasdaq Helsinki

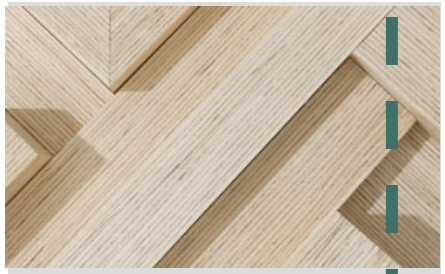
METSÄ GROUP | Sales* EUR 5.5 billion | Personnel 9,300 | Renewable energy 27,7 TWh

METSÄLIITTO COOPERATIVE | Group's parent company | Owned by 103,000 Finnish forest owners

METSÄ FOREST

Wood supply and forest services

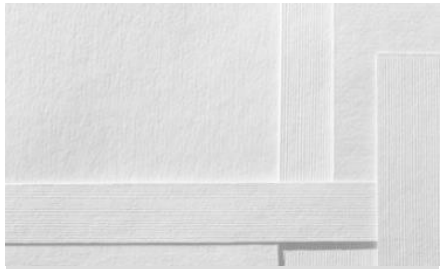
Sales:
EUR 2.0 billion
Personnel:
840



METSÄ WOOD

Wood products

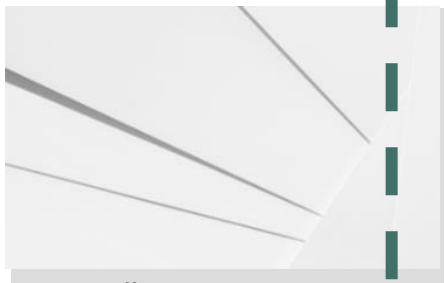
Sales:
EUR 0.4 billion
Personnel:
1,500



METSÄ FIBRE

Pulp and Sawn Timber

Sales:
EUR 2.2 billion
Personnel:
1,300



METSÄ BOARD**

Paperboard

Sales:
EUR 1.9 billion
Personnel:
2,400

METSÄ TISSUE

Tissue and Greaseproof Papers

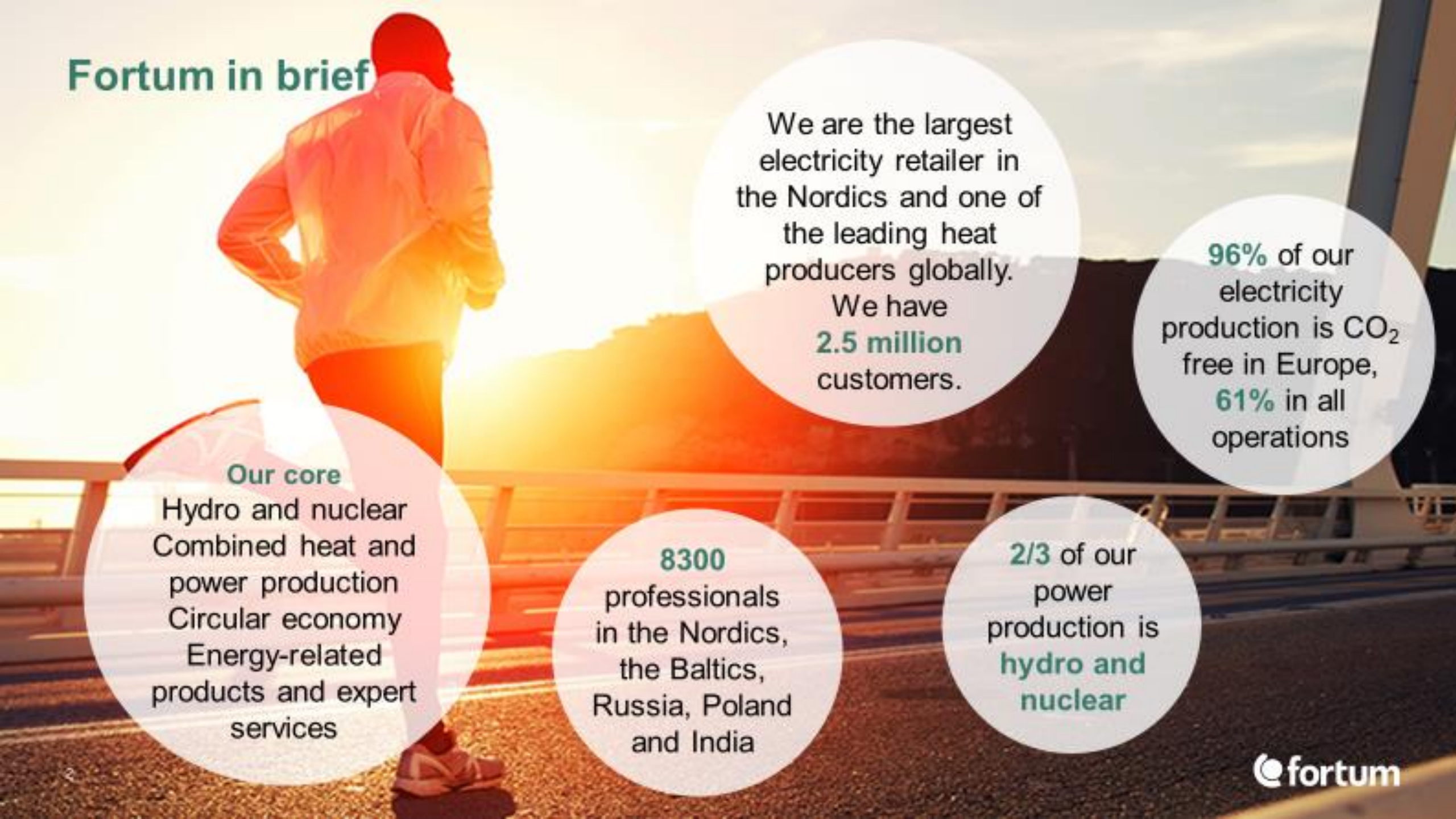
Sales:
EUR 1.0 billion
Personnel:
2,700

METSÄ SPRING | Innovation Company

Participating in ExpandFibre

Metsä

Fortum in brief



We are the largest electricity retailer in the Nordics and one of the leading heat producers globally. We have **2.5 million** customers.

96% of our electricity production is CO_2 free in Europe, **61%** in all operations

Our core
Hydro and nuclear
Combined heat and power production
Circular economy
Energy-related products and expert services

8300 professionals in the Nordics, the Baltics, Russia, Poland and India

2/3 of our power production is **hydro and nuclear**

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Fortum Bio2X: mitigating climate change

Phases to reduce CO_2 emissions

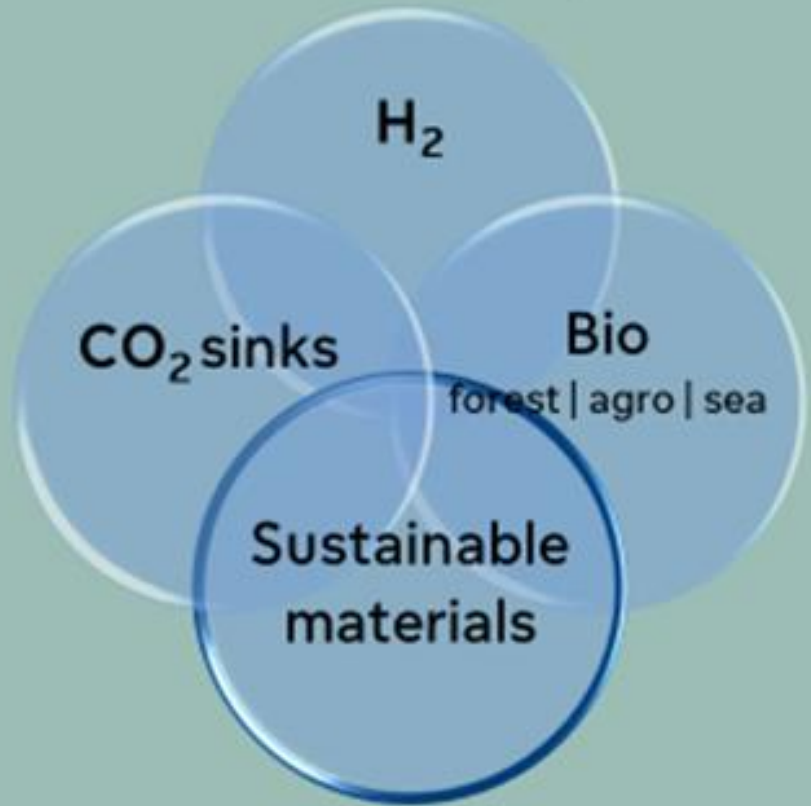
1.

Electricity from solar and wind
Hydro and nuclear power

- Power production moving towards renewables
- Electrification of traffic
- Electrification of households

2.

Focus on industry



fortum

Fortum and Metsä Group aim to inspire a larger ecosystem to join the mission

ExpandFibre is built upon a strong partnership

- Both Fortum and Metsä Group have strategic targets to build new and sustainable biobased businesses of considerable scale
- Focus is on different raw materials (straw for Fortum, wood pulp for Metsä Group) but both companies have multiple complementing capabilities and solutions.

ExpandFibre Ecosystem complements the partnership

- The ExpandFibre Ecosystem, consisting of a multitude of bioeconomy players, has a central role in co-creating new technologies and concepts that complement the R&D efforts of Fortum and Metsä Group
- All projects in the Ecosystem are on the same mission

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ExpandFibre connects to multiple R&D initiatives by Fortum and Metsä Group

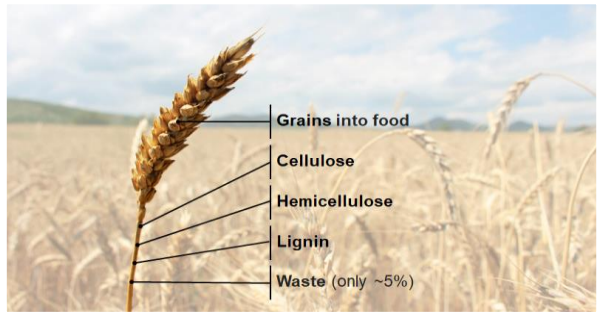
Collaboration with Chempolis and construction of the biorefinery in India (Fortum)

Demonstration of sustainable straw-based textiles (Fortum)

Development of novel materials utilising recycled plastics (Fortum)

Development of a new 3D wood-based packaging product to replace plastics (Metsä)

Sourcing & fractionation of straw	Lignin	Hemicellulose	Textiles	Biocomposites	Packaging	Other fibre products



High material efficiency through fractionation (Fortum)

Converting hemicellulose and lignin into value-added products (Fortum)

Development of sustainable textile fibre from paper-grade pulp (Metsä)

Establishment of Paperboard and Packaging Excellence Centre in Äänekoski (Metsä)

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R&D Themes and topics of the ExpandFibre Ecosystem

Straw and wood fibres as raw materials

Textiles	Biocomposites	Packaging	Lignin products*	Hemicellulose products*	Sourcing & fractionation of straw	Other fibre products
• New, sustainable textile fibres for wearable textiles and nonwovens • Staple fibre analytics and performance testing • New staple fibre applications and post-treatment technologies • Recycling and traceability	• Raw material processing and converting • Material properties • Recycling and end-of-life • Biocomposites containing fibres and lignin • All-cellulose composites & natural fibre polymer composites	• New pulp-based plastic-replacing packaging solutions • Tools and processes for designing sustainable packaging • Barriers and binders based on natural polymers	• Lignin fractionation for material applications • Lignin as functional ingredient for thermoplastics an d bio-composites • Lignin dispersants • Lignin containing bio-composites *) Especially for straw	• Hemicellulose purification to food, feed and cosmetics applications • Chemically modified hemicellulose and C5 & C6 sugars for consumer products *) Especially for straw	• Sustainable agro value chains and linkages to food production • New fractionation technologies for processing of agro-residual raw materials	• New materials based on pulp fibres for high-volume applications • Novel chemistry for pulp fibre modification • Functional structures from pulp fibres • Advanced 3D and 4D fibre processing methods • Hybrid materials containing pulp fibres

Cross-cutting topics

- Replacing plastics
- Digitalisation & measuring
- Emerging technologies
- Sustainability assessment
- Design for circularity
- Piloting and test-beds for new applications
- Following regulatory environment

Vision for 2030

- **Investments** in commercial production of new bioproducts (textile fibres, biocomposites, other bioproducts, etc.)
- New bioproducts available to the markets with significantly **lower carbon footprint**
- Sales and/or out-licensing of **new technologies** related to new bioproducts
- **Professionals** trained for new bioproduct businesses
- **Sustainability awareness** increased throughout the value chains

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Keynote speaker 1

Prof. Minna Halme
Aalto University

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GLOBAL CHALLENGES AND OPPORTUNITIES IN TEXTILE FASHION

Minna Halme, professor of Aalto University School Business &

Director of
Aalto Sustainability Hub

29.10.2020

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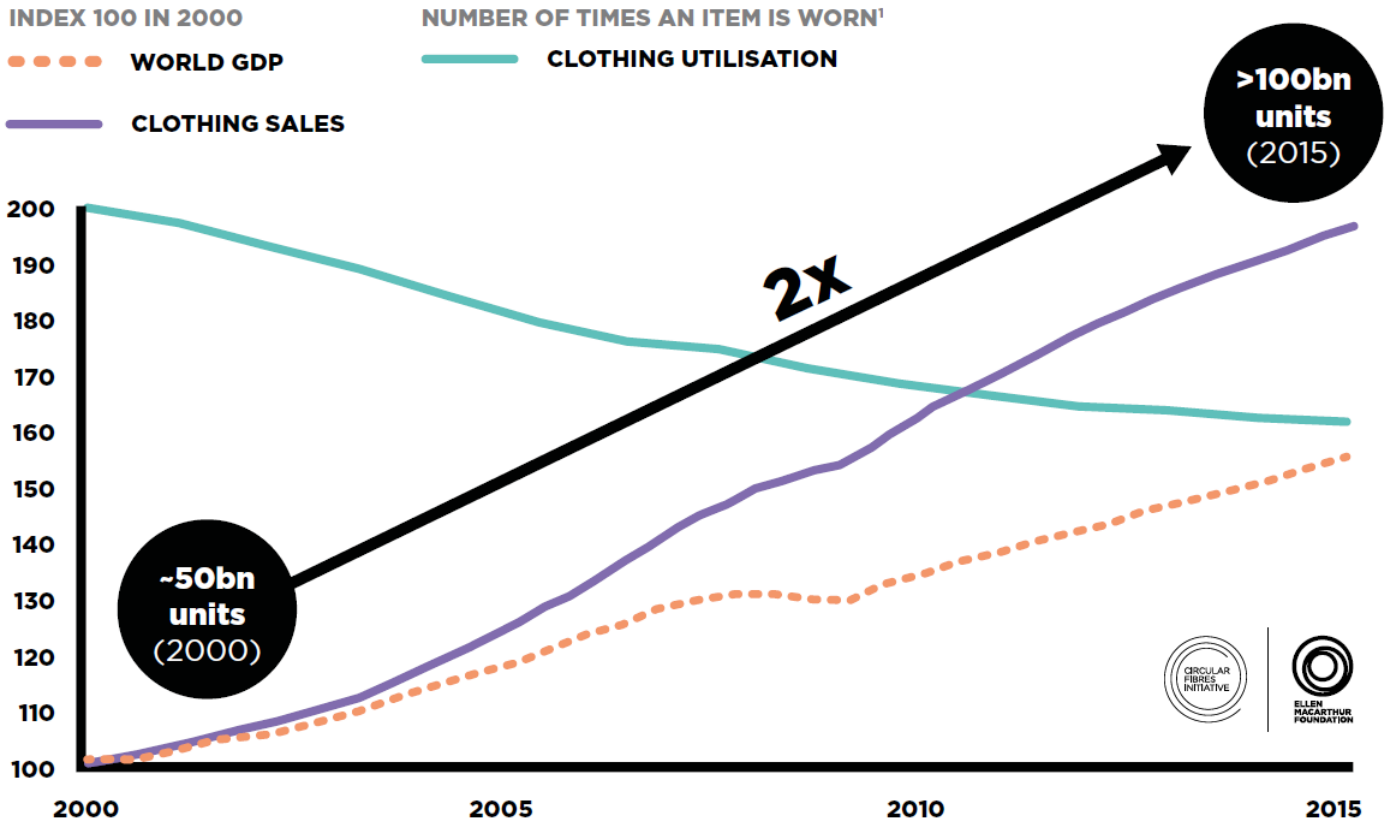
Sales increases & use reduces



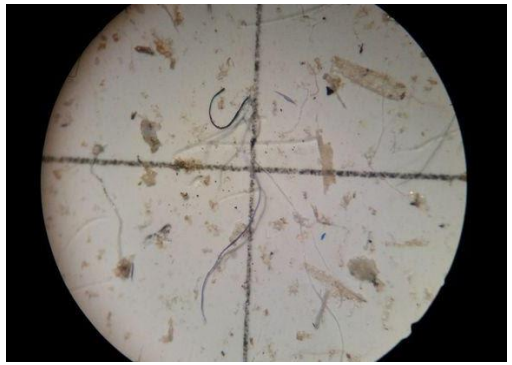
At what price?

At what price?

Textile production takes 4% of annual water use of the world.

10% of global CO2 emissions come from textile production

Most microplastics in oceans originate from oil based textiles fibres (polyester, nylon, etc.)



Cotton growing takes 16% of global pesticide use

Science Daily (2018) Presence of textile microfibers from washing machines in marine floors sciencedaily.com/releases/2018/11/181115115355.htm

www.metabolic.nl;
EMF Circular Fibres Initiative

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SYSTEMIC CHALLENGES OF THE TEXTILE INDUSTRY

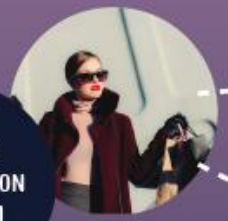
MACRO

MESO

MICRO

LARGE CORPORATIONS DOMINATE FASHION BUSINESS

CURRENT CONSUMPTION PARADIGM



FAST FASHION BUSINESS MODEL

CLIMATE EMISSIONS

DEPLETION OF NATURAL RESOURCES

WATER SCARCITY

EXTERNALITIES NOT TAKEN INTO ACCOUNT

MICRO PLASTICS

MIXED MATERIALS

USE OF PESTICIDES AND CHEMICALS

PRODUCTION IN LOW-COST LABOUR COUNTRIES

SYNTHETIC FIBRES

INCINERATION/ LANDFILLING/ DUMPING IN DEVELOPING COUNTRIES

VIOLATION OF HUMAN RIGHTS

MAXIMIZING SHORT-TERM PROFITS

FASHION IN IDENTITY-BUILDING

LOW RECYCLING RATE

LOW QUALITY

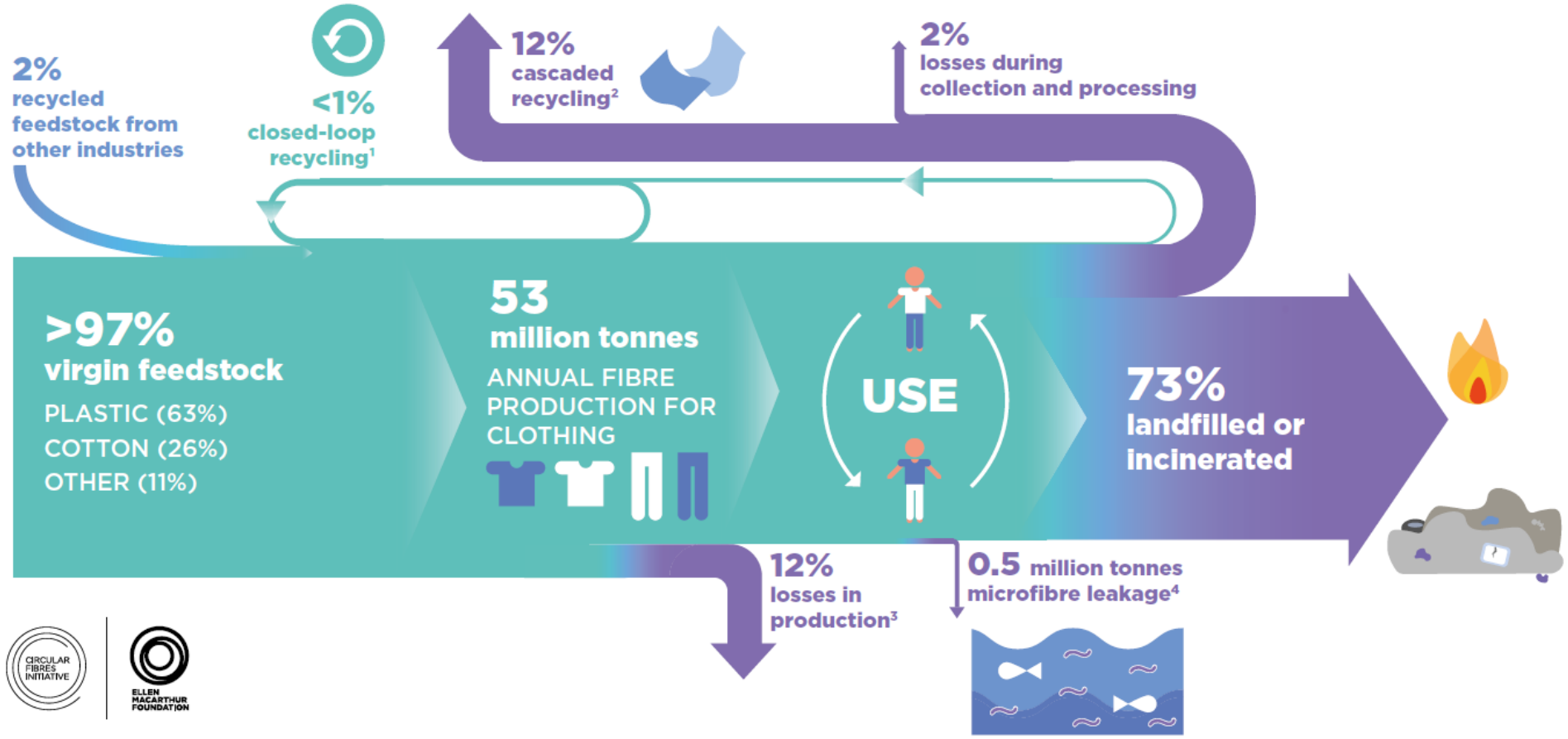
CHEAP PRICES

POOR TRACEABILITY OF CLOTHING

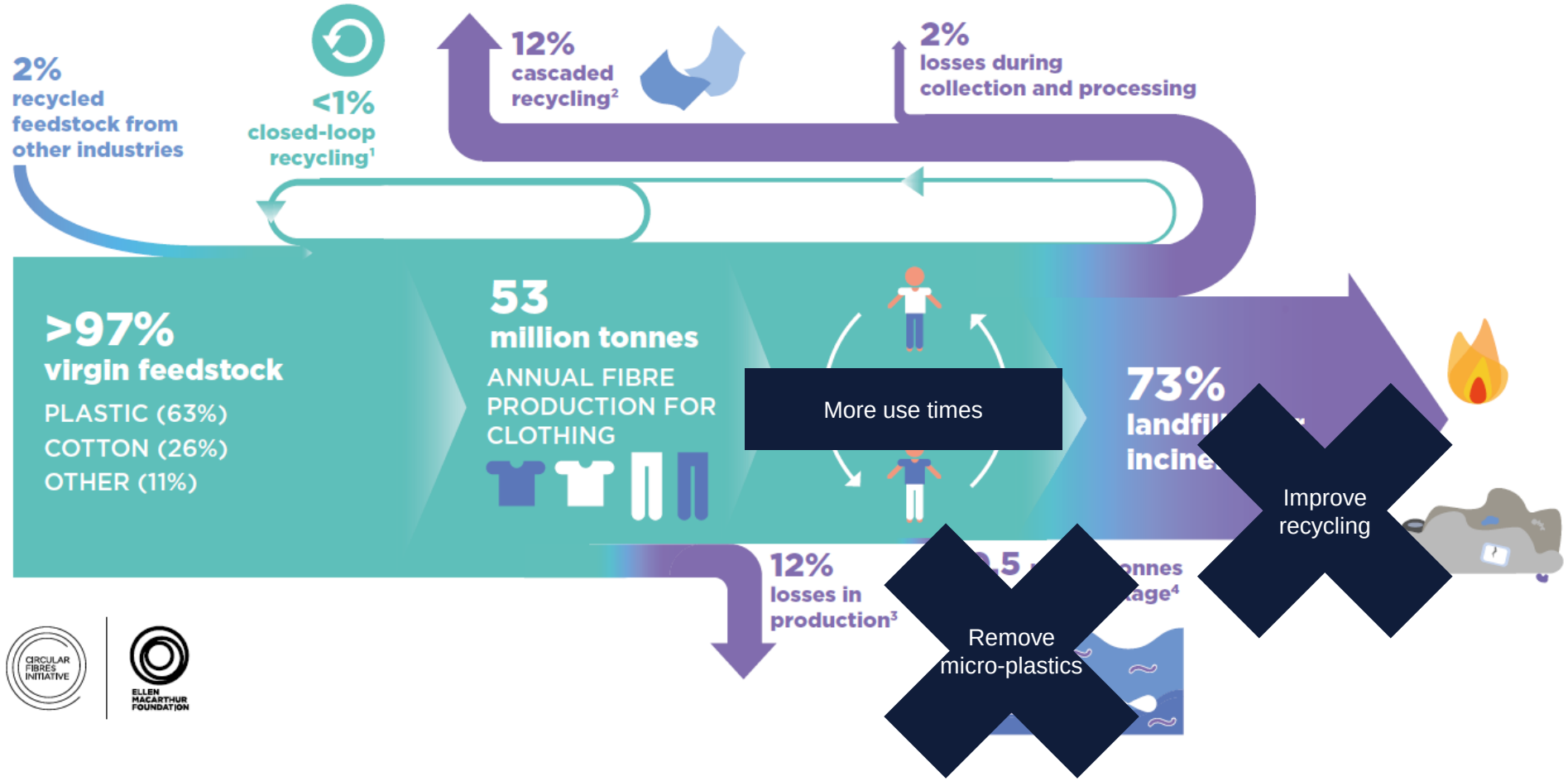
SHORT USAGE TIME

IMPULSE PURCHASES

What needs to be changed?



What needs to be changed?



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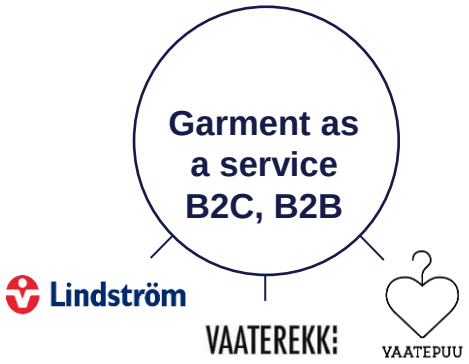
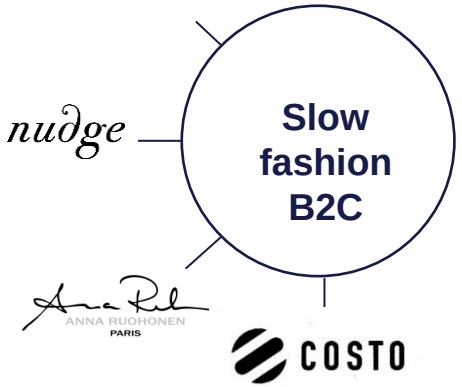
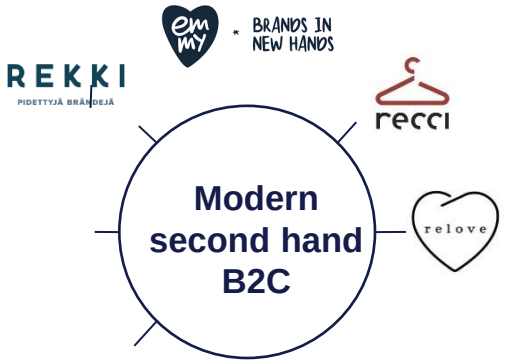
Nascent change







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Can Finland show example?

- Textiles form 0.6% of industrial production in Finland
- No big players in the global textile business ecosystem

- No textile fashion corporations with business models rely on unsustainable fast fashion business models
- Plenty of innovations in sustainable materials and business model
- Large companies as innovators of new fibres

Finix consortium & partners

Partners

FINIX

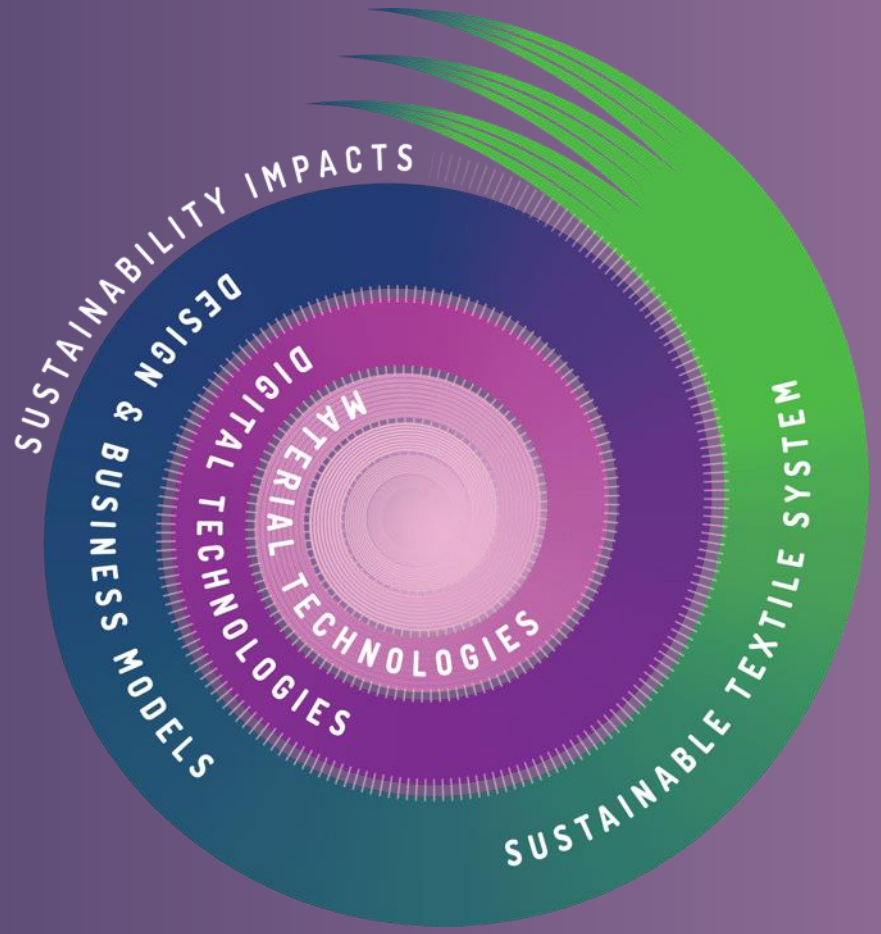
Aalto University

Finix vision

*Currently worthless **materials** become valuable through novel sorting, treatment and processing technologies that enable upcycling textile waste, using agricultural and other waste for fibre-making, and closing chemical loops.*

*Development of **digital technologies** for tracking and traceability make possible design for multiple lifetimes and new service-intensive **business models**.*

*With new forms of **ecosystem governance**, these make up a textile system, where fibres remain in circulation through long use lives.*



Interlinked breakthroughs across the consortium disciplines.

FINIX

SUOMEN AKATEMIA

strateginen TUTKIMUS

Aalto University

Join us

finix.aalto.fi @finixrevolution

Contact us

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The FINIX project has received funding from the Strategic Research Council at the Academy of Finland under grant agreement no. 327265.

Keynote speaker 2

Jukka Pesola
Co-founder, Pure Waste Textiles Oy

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ExpandFibre
Launch event
29.10.2020
PURE WASTE
100% RECYCLED TEXTILES

PURE WASTE

- Founded 2013
- HQ and logistics center in Helsinki
- Manufacturing in Tamil Nadu, India
- Team
  - Helsinki 16
  - India 81
- Turnover ~3M€ (2019)

Our mission is to develop 100% recycled yarns fabrics and products for a more sustainable industry.

PURE WASTE

PROCESS

Our products are made of textile waste, leftover from the clothing manufacturing process.

We first sort the waste by colour then we refiber and spin it into new yarn.

This allows us to produce fabrics **without dyeing and without use of fresh cotton.**

We turn the fabrics into products that save huge amounts of fresh water.

NEXT STEPS

- “Waste” streams must be treated where it is generated
  - Pre consumer waste - India
  - Post consumer - Finland / Europe
- Rester Oy
  - Founded 2019
  - Recycling facility in Paimio fully in operation 5/2021 (Rester & LSJH)
- Viability calculation and evaluation of the spinning mill
  - Not only for mechanically recycled fibers
  - Interesting development for new, more sustainable fibers in Finland (mechanically and chemically recycled fibers, cellulose based fibers)
- Mapping textile value chains in Finland, North Europe, Europe
  - Existing producers in different stages at the value chain
  - What is missing, would it come by it selfs if earlier steps would be in place, or can we help somehow

PURE WASTE

THANK YOU!

Jukka Pesola
Co-founder
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www.purewaste.com

Introduction to ExpandFibre themes

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ExpandFibre themes: 10:40 – 11:35

- Introduction to the themes of the ExpandFibre programme
- Session moderated by Laura Koponen, CEO at Spinverse Oy
- 5-minute introductions to the themes of ExpandFibre (35 min):
  - **Textiles**, Niklas von Weymarn, Metsä Spring
  - **Biocomposites**, Mikko Koivuniemi, Fortum Waste Solutions
  - **Packaging**, Markku Leskelä, Metsä Board
  - **Other fibre products**, Anna Suurnäkki, Metsä Fibre
  - **Lignin**, Hanne Wikberg, Fortum
  - **Hemicellulose**, Matti Sonck, Fortum
  - **Fractionation technology**, Pasi Hagelberg, Fortum
- Q&A session (20 min)
  - Share your questions or comments to Team's chat function

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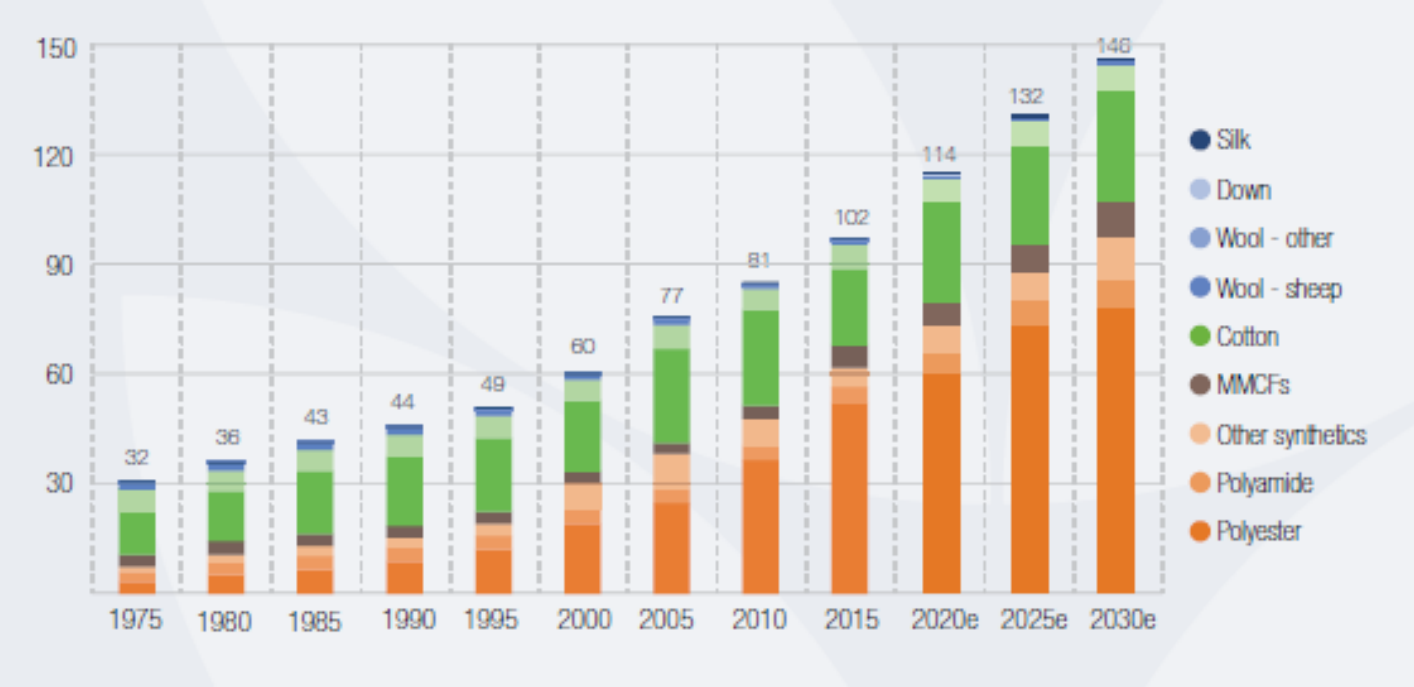
Textiles

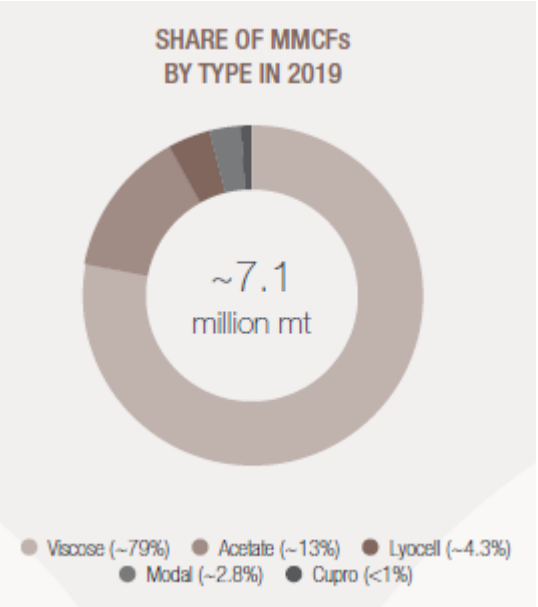
Niklas von Weymarn, Metsä Spring

fortum Metsä

Textile fibre market

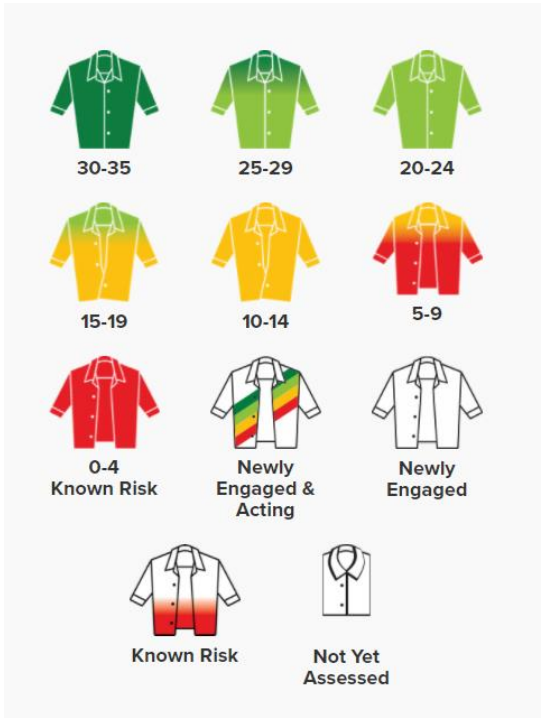
MMCF = Man-Made Cellulosic Fibre





Sources: ”Preferred Fiber & Materials Market Report 2020” by Textile Exchange and https://hotbutton.canopyplanet.org/

CanopyStyle Audit
Canopy’s Hot Button Ranking



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Trends with MMCF

1. Virgin MMCF: In 2019, only 40-50% of wood used in MMCF production came from PEFC/FSC certified forests
   - Paper-grade pulp instead of dissolving pulp?
2. ”Recycled” MMCF: In 2019, still less than 1% of all MMCF was based on recycled raw materials
   - Challenge: Typical textiles a blend of various fibres
3. Straw as a third feedstock platform
   - Agro residue to be used for fibre production, largely available globally (wheat, rice etc.)
   - Huge impact to CO_2 emissions, if collected and not burned in countries like India

- Production capacity expansion looking forward: Lyocell is right now growing faster than viscose

Fortum and Metsä Group endeavours

Fortum:

- Resource efficient fractionation technology development together with Chempolis
- Developing both paper-grade and dissolving pulp for textile fibres
- First fibre tests done using different fibre technologies and straw as raw material

Metsä Group:

- Today a major producer of softwood paper-grade pulp → Significant share sold to other companies for valorisation → Could a part of this be valorised to textile fibre by Metsä Group?
- MMCF technologies available today do not allow for production based on paper-grade pulp → need for new chemistry
- Ion liquid-based technology now at the beginning of demo phase (see pic). Demo plant owned 50/50 by Metsä Spring and ITOCHU
- The demo phase takes roughly 2 years

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Biocomposites

Mikko Koivuniemi, Fortum Waste Solutions

fortum Metsä

New Bio-composites

- In this project Metsä and Fortum carry out studies and choose the technology partner for providing the technology to compound the **cellulose fibres** and the **recycled plastic** together.
- The target is to produce a proof-of-concept, i.e. recipe/recipes and test batches of the future product and obtain feedback from potential customers.
- Strong focus will be on different additives, fiber treatment and processing technologies
- The technical and business potential of the concept is evaluated in a feasibility study and pre-engineering work is carried out, in order to prepare for commercial stages.
- New Bio-composite materials should provide significant CO_2 savings compared to conventional solutions like glass fiber reinforced materials.

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Bio-Composite Ecosystem

- We'd like to welcome interested parties to propose technologies and solutions as well as possible applications to collaborate our ecosystem
- Some examples
  - Fiber treatment technology
  - Sustainable plastic materials
  - Recycling concepts and closed circle programs
  - Engineering and machinery suppliers
  - New compatibilizers and chemicals
  - End users and pioneers to utilize new Bio-composites and lower carbon footprint

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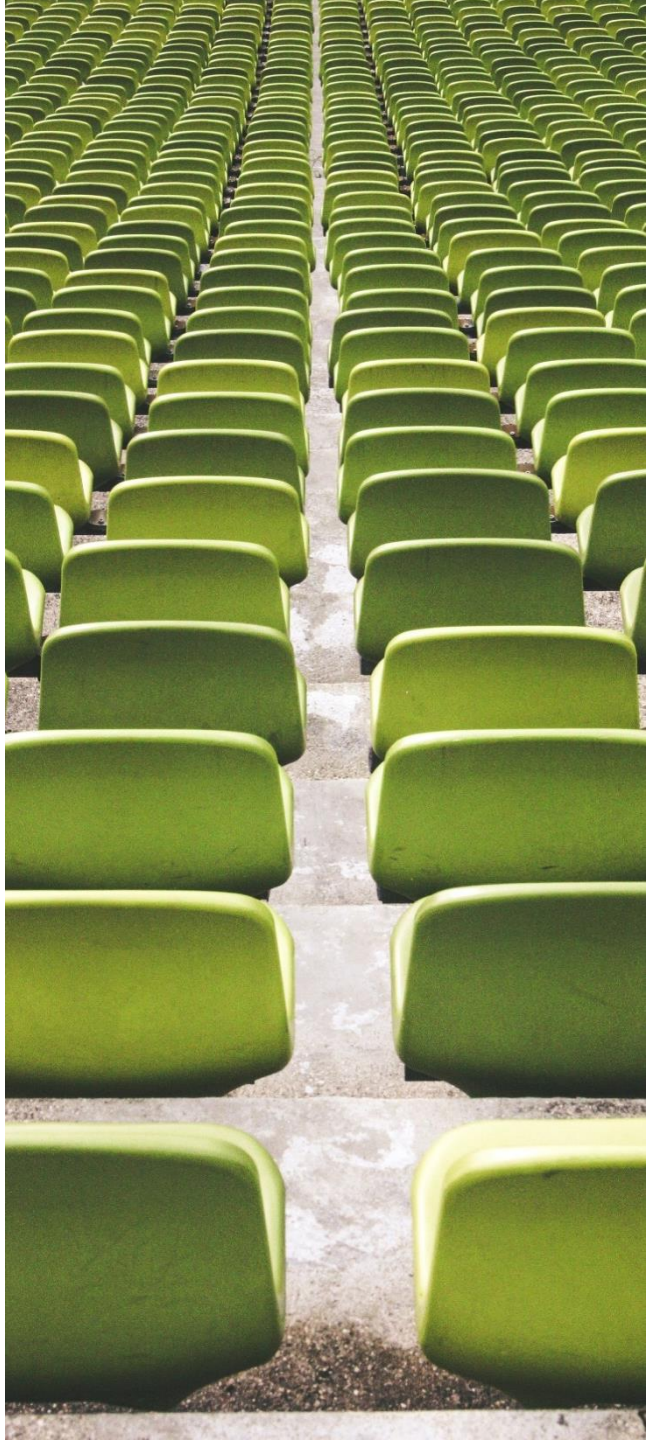

EXPANDFIBRE

Packaging

Markku Leskelä, Metsä Board

fortum Metsä

ExpandFibre Ecosystem R&D&I focus points on the road towards the 2030 vision

Vision for 2030

- **Investments** in commercial production of new bioproducts (textile fibres, biocomposites, other bioproducts, etc.)
- New bioproducts available to the markets with significantly **lower carbon footprint**
- Sales and/or out-licensing of **new technologies** related to new bioproducts
- **Professionals** trained for new bioproduct businesses
- **Sustainability awareness** increased throughout the value chains

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https://www.youtube.com/watch?v=xnzHSqKsuqo

“When we do things together, **it generates unforeseen ideas and solutions.**”

Ilkka Harju
Metsä Board’s Packaging Services Director, EMEA and APAC

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Research theme: Other fibre products

29.10.2020 Virtual launch event

Anna Suurnäkki

VP Research, Metsä Fibre

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Metsä Fibre focus

Development of future functional fibre-based bioproduct concepts based on sustainable Nordic wood.

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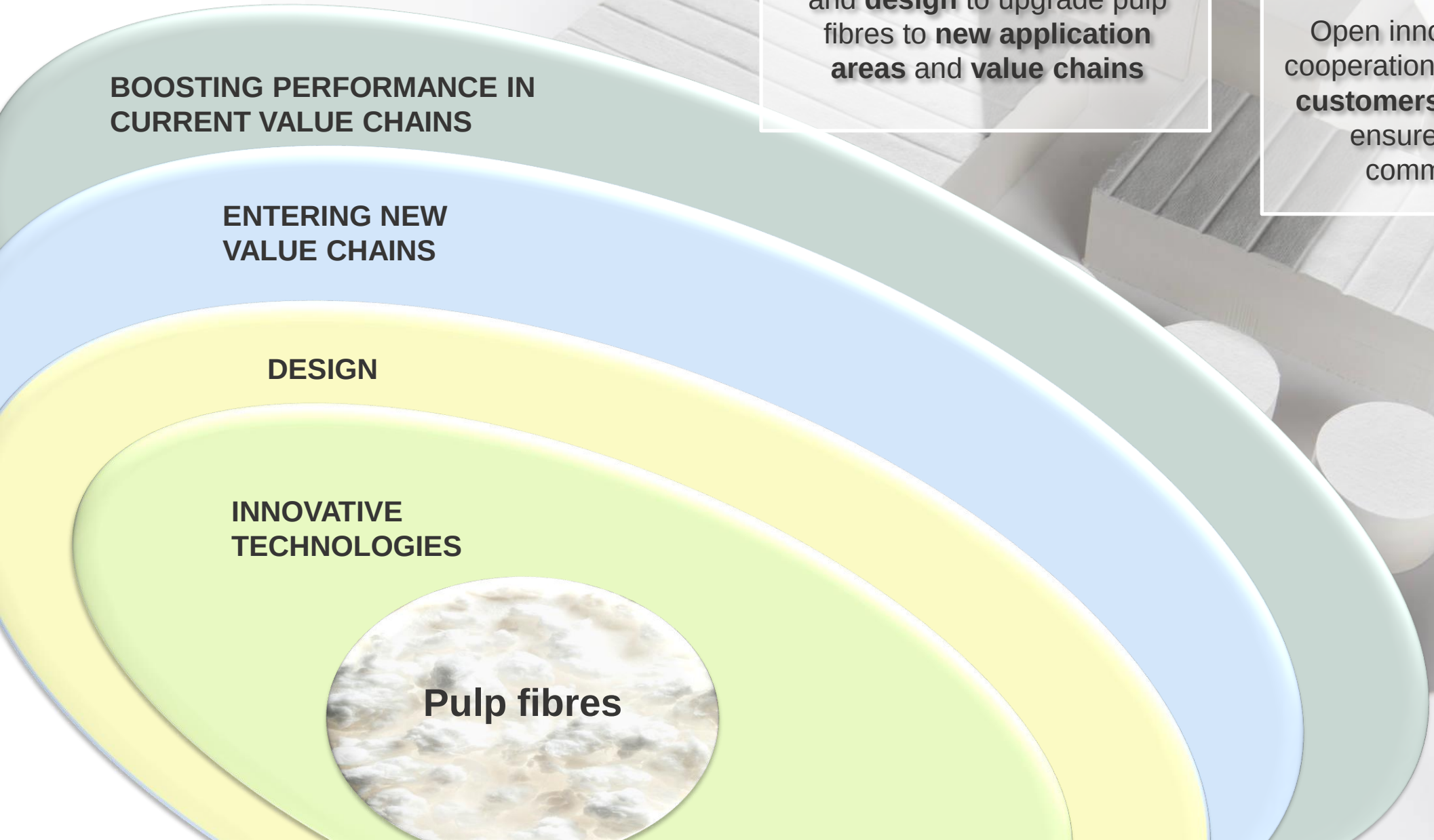
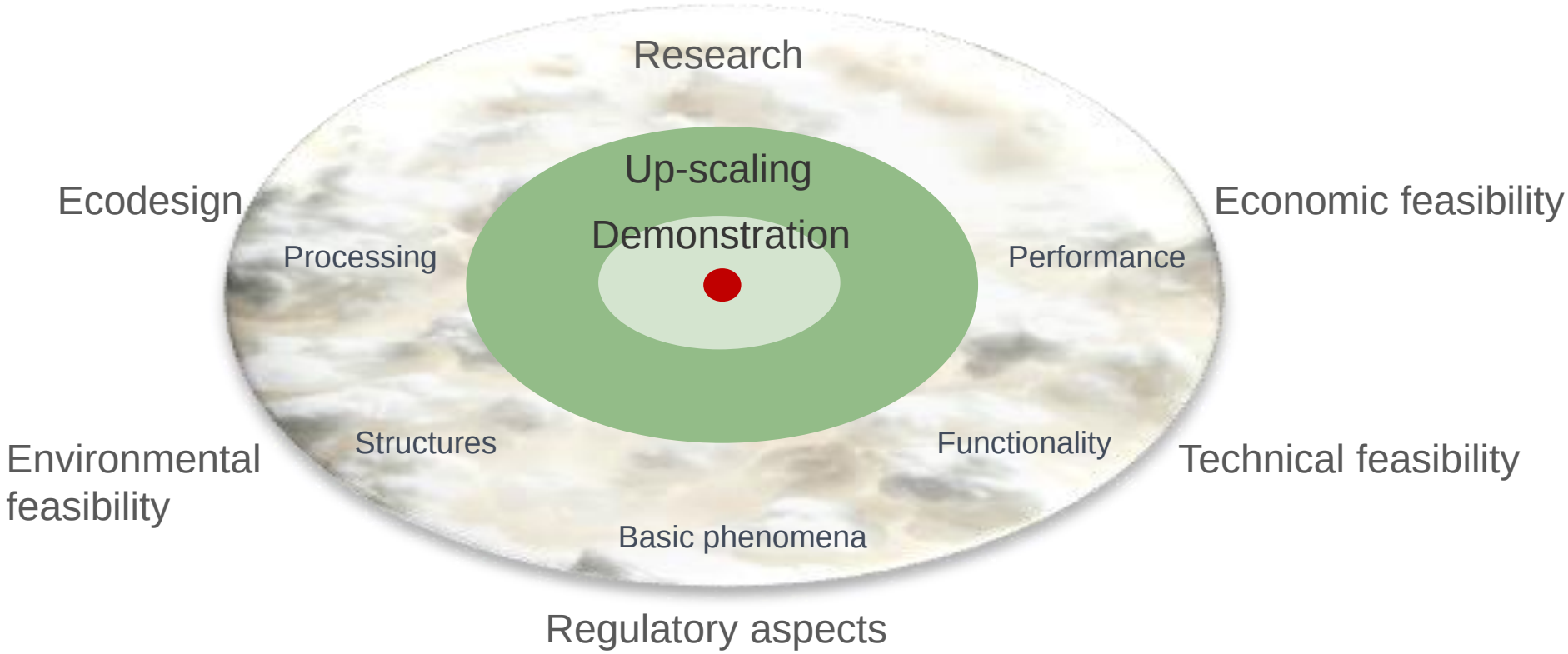
We apply **new technologies** and **design** to upgrade pulp fibres to **new application areas** and **value chains**

Open innovation and close cooperation with **partners and customers** in the ecosystem ensures fast-track to commercialization



Research supports novel fibre-based bioproduct innovations



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Lignin

Hanne Wikberg, Fortum

Lignin is a complex raw material – industry has only just begun to scratch the surface of lignin's potential

- Lignin structure still mostly unknown
  - Not a uniform polymer - structure depends on many factors: feedstock, cooking conditions, recovery process…
  - Heterogeneity slowing down the productization
  - Consistent analytical procedures missing
- Only few high-value lignin products commercialized
  - Quality requirements not understood
  - Low maturity of potential technologies and products
  - Long term R&D and commitment required to enter new markets
- Competitive value chains missing
  - Value proposition for end-users often unclear
  - Lack of knowledge on how to create win-win business models

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From complex raw material to marketable bioproduct – lignin quality needs to meet requirements of selected applications

- Securing steady lignin quantity and quality
- Close collaboration with industrial partners
  - Quality requirements for selected applications
  - Performance of lignin-based products
  - Lignin value proposition clarification
- Close collaboration with R&D partners
  - Opening new application areas
- Partnering with right actors - start building new value chains

- In-house activities in several areas - product-, technology- and business development – enable commercialization of 50 000 t of lignin to high-value products in the future

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Join the ecosystem - with joint effort we enable a shift towards material sustainability

- ExpandFibre invites actors to join in a world-leading innovation ecosystem to commercialize new bioproducts and green businesses
- Lignin ecosystem R&D&I focus points:
  - Lignin fractionation for material applications
  - Lignin as functional ingredient for thermoplastics and biocomposites
  - Lignin containing biocomposites
  - Lignin dispersants
  - Lignin based carbon materials for e.g. energy storage
  - Understanding of lignin chemical structure vs. material properties via analytical tools
  - Potential technologies to influence lignin color

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Hemicellulose

Matti Sonck, Fortum

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Hemicellulose is under-valorized material – only few existing applications

- Hemicellulose consist of sugars, composition is heterogenous
  - Sugar composition depends on species. In straw, 70% is xylose
  - Recovery and purification process greatly impacts the final form
  - No off-the-shelf purification process existing
  - Side products: challenge for purification, but also value potential
- A novel material for industries
  - Few existing applications for xylose
  - Little data about performance and quality requirements
  - Full valorization of **all** components needed: the whole sugar mixture, side products

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Building hemicellulose value chains – identify target applications and quality requirements

- Securing steady availability and quality of hemicellulose
  - Purification process according to quality requirements
- Active dialogue and testing with industrial partners
  - Identify target applications and quality requirements
- Scouting future market demand for hemicellulose sugars
  - Active business development for realizing these opportunities
- With R&D partners, increasing longer-term application options
- Addressing regulatory requirements of novel sugar components

EXPANDFIBRE fortum Metsä

Join the ecosystem - with joint effort we enable a shift towards material sustainability

- ExpandFibre invites actors to join in a world-leading innovation ecosystem to commercialize new bioproducts and green businesses
- **Hemicellulose ecosystem R&D&I focus points**:
  - Fractionation, purification for target applications
  - Identify applications and benefits of hemicellulose sugar mixture
    - Testing with industry collaborators (e.g. food, feed, cosmetics)
  - R&D of xylose platform – specialty sugar (bio)chemistry
    - Food, feed, pharma, biosurfactants, proteins, prebiotics, ..
  - Sustainable food production, end-of-life and recycling of nutrients, utilization for fertilizers
  - Market scouting, regulatory evaluations

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Fortum Bio2X Fractionation Technology

Pasi Hagelberg, Senior Technology Manager, Bio2X, Fortum

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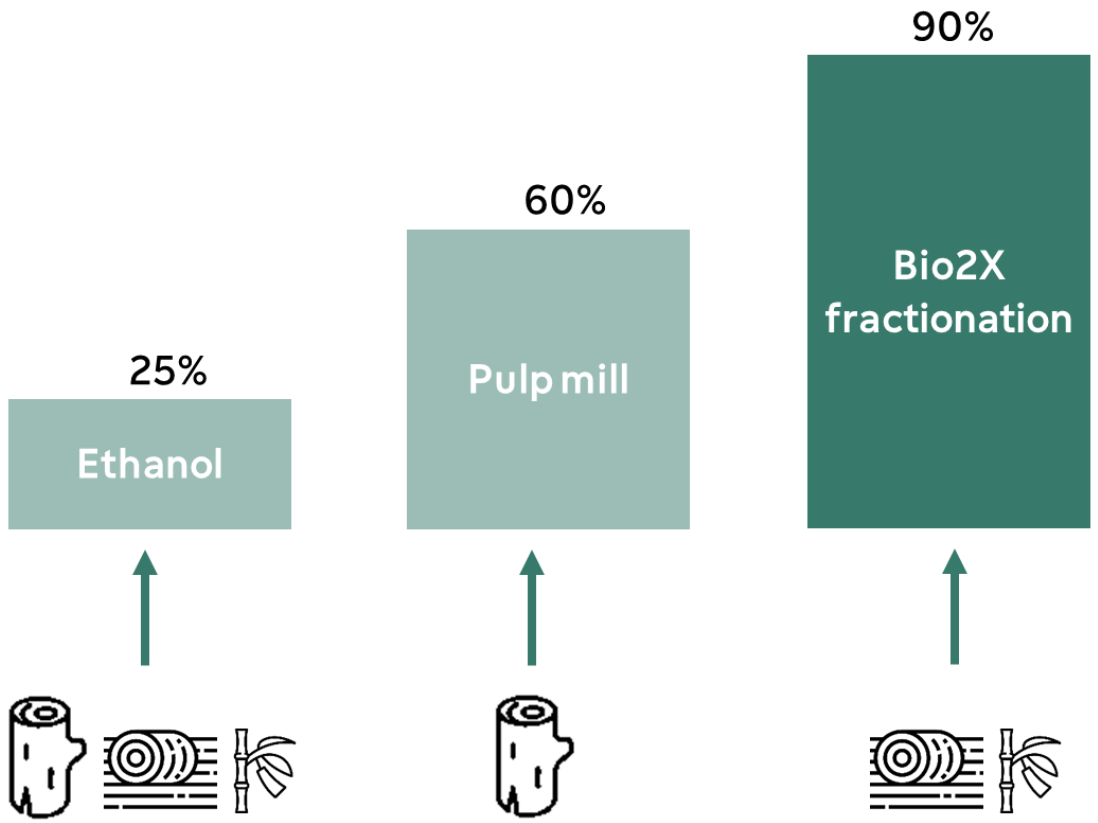
Key elements in Bio2X fractionation technology

Benefits

- Very high raw material efficiency – over 90% of the feedstock into sellable materials
- Energy will be generated from renewable sources – heat from biomasses and electricity from solar and wind
- Fractionation chemicals are recycled by conventional evaporations and distillations allowing also water reuse
- Scalability is good due to the commercially available technologies in chemical and pulp industry

Challenges

- Innovative fraction valorization technologies are needed for higher value creation
- Development speed of fraction valorization and applications is slow - industrialization takes time and money
- Improvement needed in energy use – utilization of waste heat, energy integrations, energy efficient technologies



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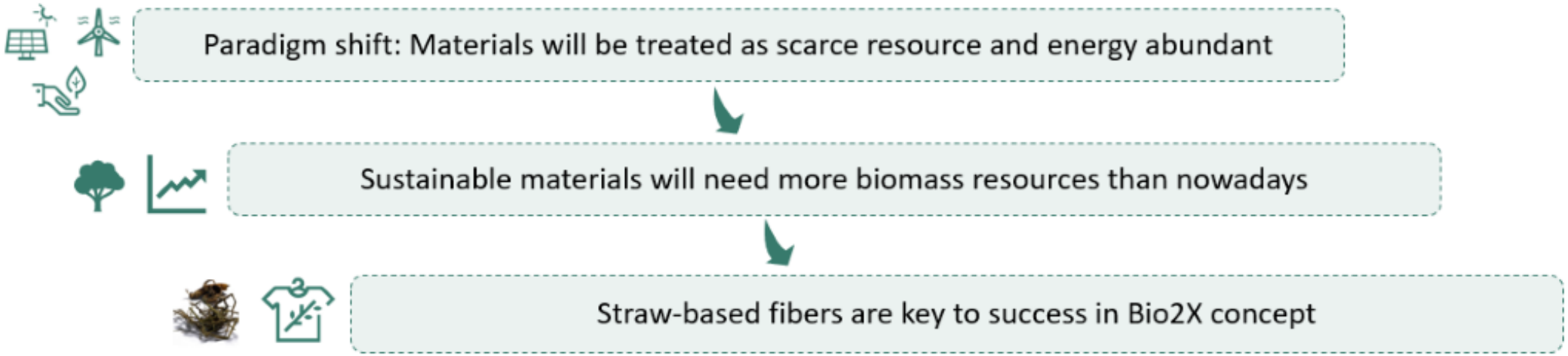
Straw as raw material

Underutilized raw material

- Currently underutilized raw material for materials – not much used for energy either
- Side stream revenue for farmers – now mostly left in the field for soil improvement
- Straw is burned on the fields in India causing severe air pollution in e.g. Delhi area

Under development

- Creation of supply chain logistics and storing
- Seasonality – back-up solutions needed e.g. pellets
- Soil fertility and humus balance – sustainability needs to be considered



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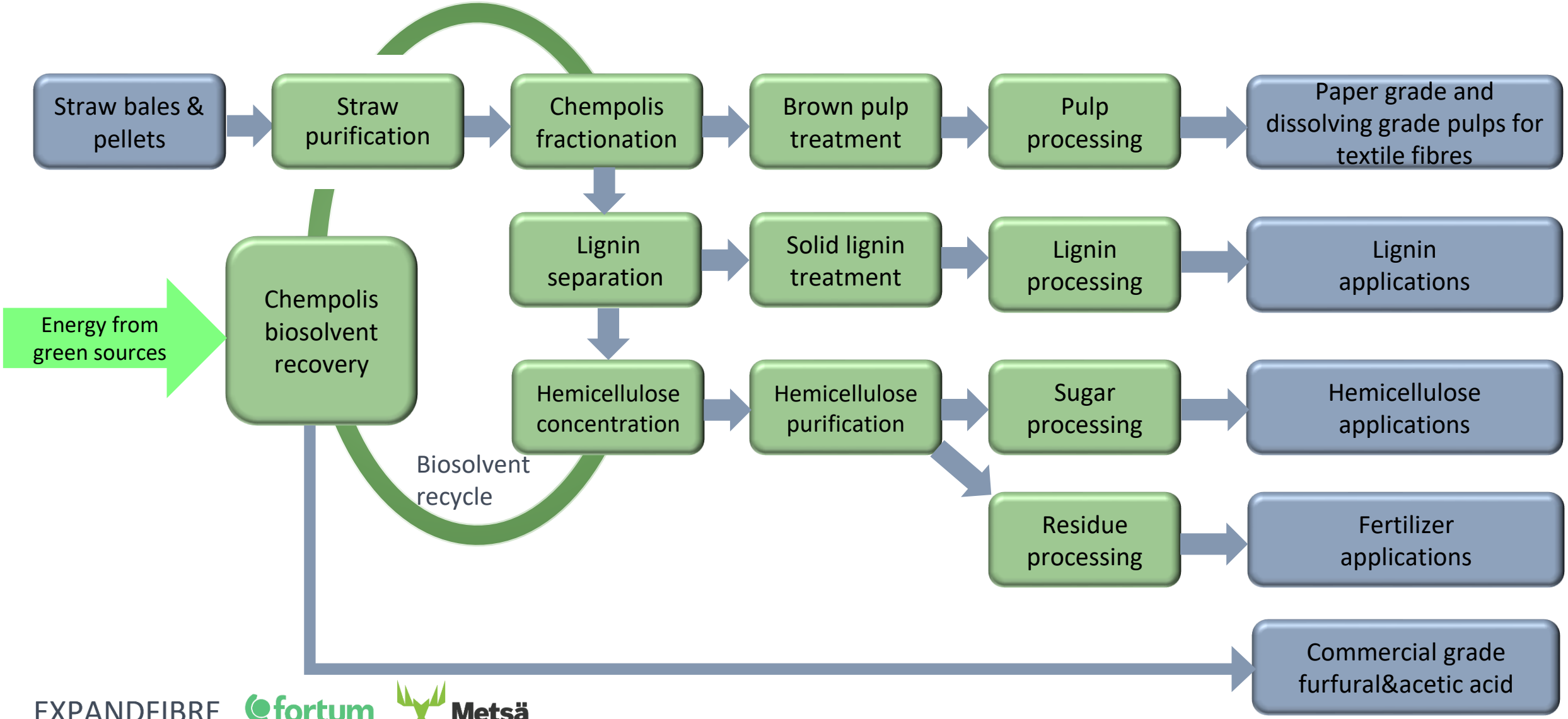
Bio2X technology enables high raw material efficiency



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Discussion

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Q&A

- Share your questions
  - Share your questions or comments related to the presented ExpandFibre themes to Team's chat function

  =>Presenters will be answering your questions there also during our wrap-up presentation

  - You can also express interest to collaborate in some area

  - And remember: Also challenge our Hemicellulose, Lignin and fractionation presenters!

ExpandFibre Ecosystem and Future Outlook

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Why should you join the ecosystem?

The ExpandFibre Ecosystem is an opportunity for:

- Finding innovation and collaboration partners
- Finding new business opportunities
- Cross-discipline and end-to-end value chain cooperation
- Sharing thoughts and ideas with those who share the same vision for a sustainable future
- Connection to the Business Finland Veturi ecosystem funding scheme
- Being a part of a large-scale go-to-market vehicle

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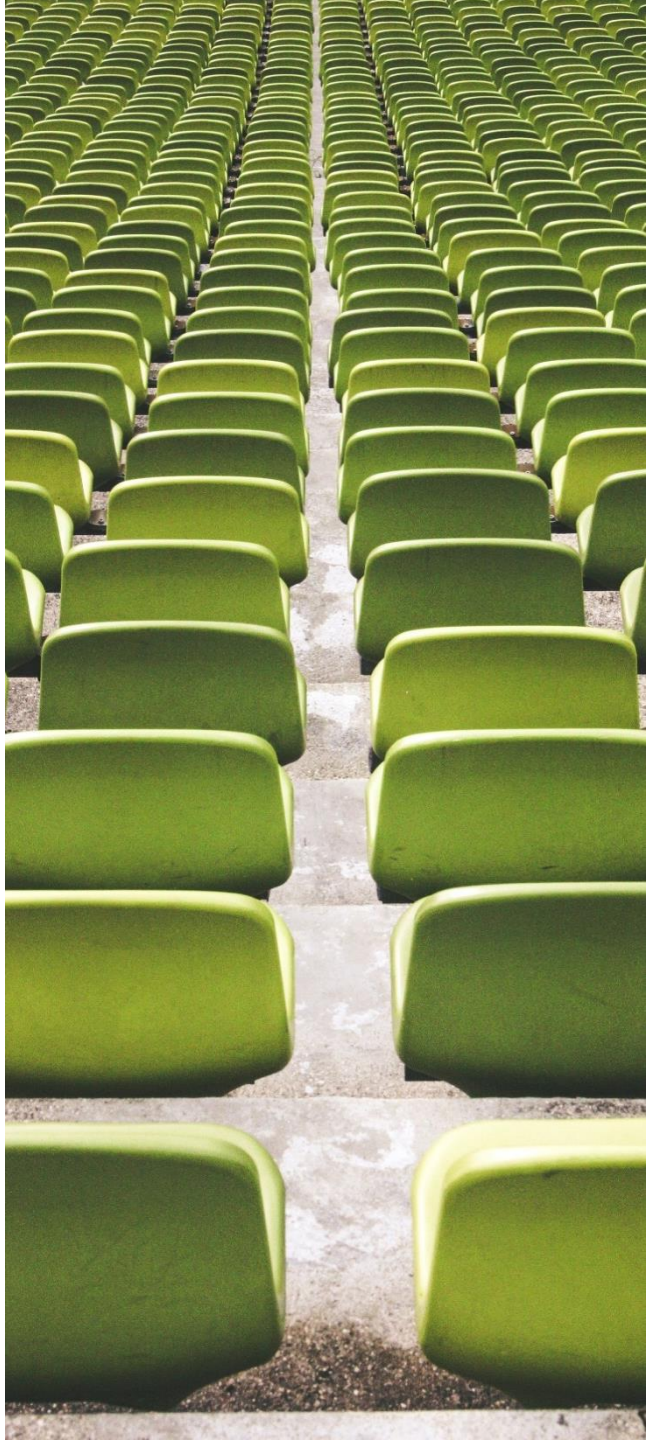

Membership of ExpandFibre Ecosystem

- As a principle, ExpandFibre Ecosystem welcomes organisations as well as existing projects and project applications as a part of the Ecosystem, if their **vision is in line with ExpandFibre vision** and if they work in the ExpandFibre Theme areas.
- By joining the Ecosystem you join a mailing list and give permission to use your organization's / project's name and logo on the ExpandFibre website and other similar communications materials.
- ExpandFibre will send a questionnaire to each member annually, asking for **certain public KPI's** to track the progress of the ecosystem.

ExpandFibre Programme Managers
(=ExpandFibre Management Group)
manage all membership issues:

- **Fortum**

  Heli Virkki

  Senior Manager, Bio2X

  heli.virkki@fortum.com

  +358505642426

- **Metsä Group**

  Katariina Kemppainen,

  Investment Manager, Metsä Spring

  katariina.kemppainen@metsagroup.com

  +358503752212

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Process to join the Ecosystem

1. **Contact ExpandFibre Programme Managers** (by email or through the website contact form) to discuss and align common interests.
   - If you already have, no need to do it again
2. If interests are aligned, you will receive a link to an **online form** to provide information about your organisation or project.
3. ExpandFibre management decides on the approval and informs the member / project of the decision, and upon a positive decision collects their logo and adds them to the Ecosystem mailing list

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Ecosystem events & communication

- ExpandFibre targets to create awareness, facilitate match-making, identify gaps and initiate the preparation of new R&D projects.
- This takes place through
  - Actively meeting with ecosystem partners
  - Arranging theme related workshops and an annual seminar
  - Co-operation and coordination with other Ecosystems
    - CLIC Innovation and its ecosystems (4Recycling), FinnCeres, Telaketju, SynBio Powerhouse, Nokia’s and Neste’s Veturi-ecosystems

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Join us to meet the growing demand for sustainable bioproducts – we need players from every part of the value-chain

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Coffee break

- 12:45 – 13:00
- ExpandFibre Launch Event continues with four thematic ExpandFibre workshop sessions all starting at 13:00
- Check your inbox for workshop invitation

Thematic workshops 12:00-13:00 (EET)

The event will continue at **12:00 (EET)** with four workshops each dedicated to a specific ExpandFibre theme. Each launch event participant has received an invitation to one workshop of their choosing.

Workshop session	Pitches by the following people & organizations	Workshop host & support
WS1: Textiles	Ali Tehrani (Aalto University), Tomasz Blasiak (Texon International), Kirsi Terho (Infinited Fiber Company), Pirjo Heikkilä (Telaketju/VTT) & Pradipta Halder (University of Eastern Finland)	• **Host & moderator: Päivi Lonka (Fortum)** • Support: Niklas von Weymarn (Metsä) & Laura Koponen (Spinverse)
WS2: Biocomposites	Teija Laitinen (CLIC Innovation), David Sandqvist (VTT), Mika Ijäs (Tampere University of Applied Sciences), Markus Silfverberg (Block Solutions) & Kari Soljamo (Isku)	• **Host & moderator: Kari Aaltonen (Fortum)** • Support: Reetta Anderson (Fortum), Katariina Kemppainen (Metsä) & Kaisu Leppänen (Spinverse)
WS3: Packaging & other fibre products	Harri Kiiskinen (VTT), Virpi Korhonen & Jani Mäkipää (FutuPack), Timo Härmä (Kemira), Niklas Björkman (Package Media), Johanna Lahti (Tampere University)	• **Host & moderator: Ilkka Harju (Metsä)** • Support: Raili Koponen (Metsä) & Niklas Weckström (Spinverse)
WS4: Lignins, hemicelluloses & fractionation	Matti Heikkilä (MetGen), Tiina Liitiä (VTT), Virpi Rämö (Neste), Tuula Palmén (Synbio Powerhouse -kasvumoottori / VTT), Juha Anttila (Chempolis) & Eric Enqvist (Sci-Tech Service)	• **Host & moderator: Matti Sonck (Fortum)** • Support: Heli Virkki (Fortum) & Andreas Lindberg (Spinverse)

In case **you have not** received an invitation to a workshop session, please send an e-mail to andreas.lindberg@spinverse.com, tell which workshop you want to attend. Please, remember to leave this session before joining a workshop session.

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