FINIX
sustainable textile systems

Interaction coordinator Sini Suomalainen

Sini.Suomalainen@aalto.fi

FINIX

ACADEMY OF FINLAND

strategic RESEARCH
research-based knowledge to support society

Aalto University

[i$wspzi$kpsfep$glepoirkiw$r$xi|xpi$fywmriww

- Xli${ svph$epowjsve$ywxemrefpx}$ vizspyxsr$r$1s{ iq eoi@ywierh$ hmtswi$j$xi|xpiw2
- [i$gsq fmri$xst$wmirxmg$viwievglsr wywxemrefpx}$ewtigxw$j$xi|xpi$w}wxiq w2
- [i$1ipc$gs1gviexmk$mgyevigsrsq }$ fewih$xi|xpi$fywmriwwr$Jmperh$r${ e}w$ xlex$tvsq sxi$kpsfep$wywxemrefpi$ hizipstq irx2

FINIX

Aalto University

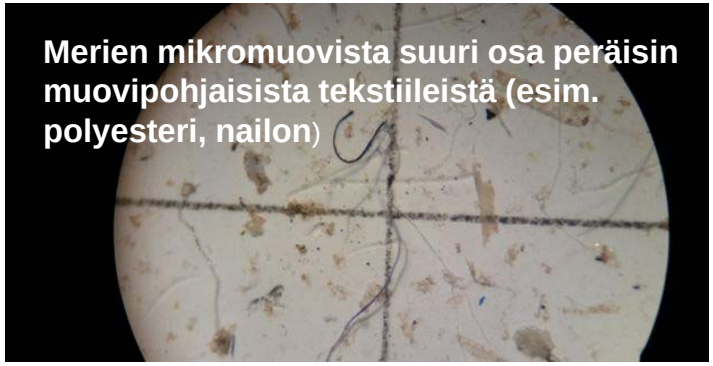
Finix consortium & partners

Partners

FINIX

Aalto University

Why?



CO2: United Nations Economic Commission for Europe. (2018) “UN Alliance aims to put fashion on path to sustainability”. https://www.unece.org/info/media/presscurrent-press-h/forestry-and-timber/2018/un-alliance-aims-to-put-fashion-on-path-to-sustainability/doc.html | Wastewater: Kant, R. (2012) Textile dyeing industry an environmental hazard. Natural Science, 4, 22-26. doi: 10.4236/ns.2012.41004. Cited in: Ellen MacArthur Foundation. (2017) A new textiles economy: Redesigning fashion’s future. http://www.ellenmacarthurfoundation.org/publications | Microplastics: International Union for Conservation of Nature. (2017) Primary microplastics in the oceans: A global evaluation of sources, p.21. Cited in: Ellen MacArthur Foundation. (2017) A new textiles economy: Redesigning fashion’s future. http://www.ellenmacarthurfoundation.org/publications | Freshwater: World Bank, AQUASTAT, and FAO. (2014) Dataset: Annual freshwater withdrawals, total. Cited in: Ellen MacArthur Foundation. (2017) A new textiles economy: Redesigning fashion’s future. http://www.ellenmacarthurfoundation.org/publications | Pesticides: Rodale Institute. (2014) Dig deeper: Chemical cotton. Cited in: Ellen MacArthur Foundation. (2017) A new textiles economy: Redesigning fashion’s future. http://www.ellenmacarthurfoundation.org/publications

FINIX

Aalto University

TEKSTIILITEOLLISUUDEN SYSTEEMISET HAASTEET

MAKRO

MUOTILIIKETOIMINTAA HALLITSEVAT SUURYRITYKSET

NYKYINEN KULUTUS-PARADIGMA

PIKAMUOTI LIIKETOIMINTA-MALLINA

ILMASTO-PÄÄSTÖT

MIKRO-MUOVIT

ULKOIS-VAIKUTUKSET HUOMIOITTA

LUONNON-VAROJEN KESTÄMÄTÖN KÄYTTÖ

VESI-NIUKKUUS

META

SEKOITE-KANKAAT

TUHOLAIS-MYRKKYJEN JA KEMIKAALIEN KÄYTTÖ

SYNTEETTISET KUIDUT

LOPPUKÄSITTELY POLTTO/ KATOPAIKKA/ DUMPPAUS KEHITYSMAIHIN

TUOTANTO HALVAN TYÖVOIMAN MAISSA

IHMISOIKEUS-RIKKOMUKSET

MIKRO

LYHYEN AIKAVÄLIN VOITON-MAKSIOINTI

KIERRÄTYS VÄHÄISTÄ

HEIKKO LAATU

ALHAISET HINNAT

MUOTI OSANA IDENTITEETTIÄ

VAATTEIDEN HUONO JÄLJITETTÄVYYS

LYHYT KÄYTTÖIKÄ

VAATEOSTOKSET HETKEN MIELIJOHTEESTA

Jmm| zmmsr

*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

Aalto University

Challenges, objectives and expected impacts

CHALLENGES TO BE ADDRESSED	SCIENTIFIC AND SOCIETAL OBJECTIVES	EXPECTED IMPACTS
Resource-intensive textile production for fast fashion, causing waste, emissions and land use impacts	1. Knowledge on the environmental impacts of the new textile materials and practices 2. Co-creating resource-wise technologies, materials and business models for circular economy of textiles	CIRCULAR AND DURABLE FIBRES AND RESOURCE-WISE TEXTILE SYSTEMS
Human rights violations and malpractices in textile production in developing countries	1. Knowledge on social sustainability impacts 2. Co-creating socially just business model innovations benefitting the poor in developing countries	MORE INCLUSIVE PRODUCTION MODELS IN DEVELOPING COUNTRIES
Major part of the textile value chain takes place abroad, creating little value and employment in Finland	1. Knowledge for co-creating new business models, design strategies and technologies for sustainable, globally-linked domestic production 2. Facilitate systemic sustainability transition and new ecosystems in the textiles sector	EMERGENCE OF NEW SUSTAINABLE TEXTILE BUSINESS MODELS IN FINLAND

[svo tegpeki 5=$Q exi vnepw

WP1 concentrates on the investigation, development and evaluation of sustainable textile materials.

The focus is on:

(1) novel cellulosic Ioncell textile fibres

(2) developing tools for future machine vision

(3) understanding the behavior of chemicals in textile recycling and their potential risks

(4) defining textile quality criteria leading to new knowledge of product lifetimes.

[svotegpeki6>$Hiwmkr$erh$fywmriww$q shipv

WP2 seeks to transform design strategies and business models based on cutting-edge technologies and innovative services, all powered by information about product lifetimes and transparency.

The goal is to foster design aiming for multiple lifetimes, life-cycle orientation, quality understanding and recyclability of products. This can catalyse the emergence of new business models enabling resource-wise textile systems.

(A) *Sharing:* the digital information from garments' "activities" will be available and enable easier garment fleet management for sharing models; (B) *Longevity*: the information of product longevity can inform consumers the higher quality and give reason for higher price. Consumers with ethical interest have a possibility to invest on longevity; (C) *Eco-efficiency:* the lifetime information workwear sector can be connected to model "product as a service"; (D) *Closing the loop:* recycling and textile waste form new business opportunities, (E) *Business model X:* new information and digitalization will provide an opportunity to construct a totally new kind of business model for resource wise system.

FINIX

Aalto University

[svo tegpeki 7>$Ewwiwwq irx

WP3 assesses the environmental and socio-economic impacts of the new textile materials and practices studied in WPs 1, 2 and 4.

The analyses will bring about the most critical sustainability aspects of the new materials and design and business strategies, will shed light over the areas where improvement is needed, and propose those improvements in iterative co-creation process with the stakeholders and WPs 1-2.

[svotegpeki 8>$Kszivrergi

WP4 focuses on polycentric governance, investigating how it enables and promotes systems change in the textiles sector towards more sustainable practices.

Identify how new governance innovations can facilitate the transformation to a sustainable textile systems.

1. Policy analysis and recommendations for policy makers stainable textile economy.
2. Focus on 3 ecosystem models: (1) closed-loop textile supply chains with digitally assisted material traceability, (2) social business ecosystems involving low-profit enterprises, non-profit organizations (e.g. recycling centres, NGOs) and consumers, and (3) industrial symbiosis systems, where textiles materials may be reused in completely new contexts or textiles materials may be manufactured from new raw materials.

Nsmryvwiq mrev%

- Mr$Jmrrmwl@$srpmri
- sr$2evgl$57vh 5715 9
- Vikmwxivlivi>$ https://link.webropolsurveys.com/EP/8EE1B199235440E1

FINIX

Aalto University

FINIX

MRXIVIWXIHMRNSMRMRK$ XLI$VIZSPYXMSRC

jmrm|2eeps2jm D jmrm|vizspyxmsr

Tpiewi gsrxegx

Wmm$Wysq eperrir
Mrxivegxmsr gssvhmrexsv$Vlie Wspyxmsrw$Px h
wmm2wysq eperrirD eeps2jm

Qmre$Leppi
Tvmrgmtep$Mrziwxkexsv$Eeps$FMˆ
qmre2leppiD eeps2jm

Xli JMRM$tvsnigxlewvigimzih jyrhmrk jvsq xli Wxvexikmg$Viwievgl$Gsyrgmpexxli Eqehiq}sjJmrperh$yrhivkverx$ryqfiv$76;6=:2