Activities within Mistra Future Fashion projects ongoing

How we contribute to Circular Economy

Symposium at Innventia, Stockholm
MISTRA Future Fashion
27\textsuperscript{th} of May 2014
Circular Economy according to Ellen MacArthur Foundation
Mistra Future Fashion
Towards Circular Economy within the Fashion and Textile Industry

1. Materials
   - Virgin fibers
   - Post user fibers

2. Processing (polymer to yarn/non-woven)
   - Sorting of used materials
   - Regenerating materials

3. Manufacturing (yarn to textiles)
   - Knitting
   - Weaving
   - Dying/printing

4. Design (textiles to apparel)
   - Design for cyclability
   - Use of waste streams

5. Retail/Wholesales

6. Use/reuse
   - Collaborative consumption
   - User behavior

7. End-of-use
   - Collection models
   - Material flow
   - Distribution channels for material flows

- Energy recovery
- Landfill

Leakage to minimize
**P1** changing markets and business models

**P2** clarifying sustainable fashion

**P3** interconnected design thinking and processes for sustainable textiles and fashion

**P4** moving towards eco-efficient textile materials and processes

**P5** reuse, recycling and end-of-life issues

**P6** fashion for the public sector

**P7** sustainable consumption and consumer behavior

**P8** policy instruments
reuse, recycling and end-of-life issues
How we contribute to Circular Economy:

Fiber – 2 – Fiber recycling

hanna.delamotte@chalmers.se
Project work

- Polyester research
  Swerea IVF

- Cotton research
  Chalmers

- Pilot studies

P5: Reuse, recycling, and end-of-life issues
P5 reuse, recycling and end-of-life issues

Project members

Polyester
Zongwei Guo
Erik Perzon
Bengt Hagström

Cotton
Anna Palme
Harald Brelid

Pilot Studies
Hanna de la Motte

SOEX group

Textilia

Weekday Myrorna I:Co

P1
P2
P7
Cotton reuse, recycling and end-of-life issues

Rayon/Viscose spinning dissolution pulping weaving

Rayon/Viscose

Textilia
PET reuse, recycling and end-of-life issues

1. Polymerization
2. Melt spinning
3. Weaving
4. Catalyst
5. Reaction
Pilot

**P5**

reuse, recycling and end-of-life issues

- **Collecting I:Co/Weekday**
- **1st Sorting Myrorna**
- **2nd Sorting SOEX**
- **Evaluate fractions**

**Business models**
- P1
- Compare new and old models → improvements?

**Consumer/Customer studies**
- P7

**Sustainability calculations**
- P2

**Possible to determine exclusive criteria**

**Technical evaluation**
- P5
Diploma work 15 hp
Solid-state analysis of textile fibers

Project description
Recent reports have emphasized the large volumes of textile waste produced in our society and the many environmental problems associated with textile consumption. Additionally, global population growth and an increased global gross domestic product (GDP) are expected to significantly increase the demand for newly produced textile materials and products.

Because of scarcity of natural resources and environmental impacts related to the production of virgin materials, it is of importance to carry out research on how to recycle waste materials. The focus of this project is to characterize and analyze textile fibers, and textile blends, to develop better sorting tools for textile recycling plants. The analysis will be performed using solid-state NMR, IR and Raman spectroscopy to create a library for textile polymers.

The project will be performed in connection to mistra future fashion, project 5. Reuse, recycling and end-of-life issues. The diploma project can be combined with the 15 hp-diploma work "Extraction of individual polymers from textile blends" – for a 30 hp Master thesis project.

About mistra future fashion
The purpose of the mistra future fashion program is to deliver insights and solutions that will be used by the Swedish Fashion Industry and other stakeholders to significantly improve the environmental performance and strengthen their global competitiveness.

The program consists of eight research projects, each aiming to generate new knowledge and recommendations that can be used by the Swedish fashion industry. For more information please visit the program webpage: www.mistrafuturefashion.com

Mistra future fashion is generously funded by MISTRA, The Foundation for Strategic Environmental Research. www.mistra.org

Applications
Please send a personal letter and CV to Alexander Idström.

Summary
Title: Solid-state analysis of textile fibers
Examiner: Lars Nordhåkema
Supervisors: Alexander Idström and Anna Martinelli
Starting date: Autumn 2014
15 hp, 15 weeks full time.
reuse, recycling and end-of-life issues
moving towards eco-efficient textile materials and processes
moving towards eco-efficient textile materials and processes

Stockholm
27 May 2014
Three pillars

- Textile development
- Sustainability support tools
- Consumer behavior in use phase
Members

Erik Perzon: Project leader. Fiber development. MiFuFa coordinator and administrator for Swerea IVF.

Desiré Rex: Deputy project leader. Yarn and textile development.

Anne-Charlotte Hanning: Washing and textile expert.


Anna-Karin Jönbrink: Consumer behavior in use phase. Ecodesign expert, supervisor to Sandra.

Stefan Posner: Textile chemicals expert, supervisor to Sandra.

Hjalmar Granberg and Therese Johansson: Feasibility study on identification tags in clothing for customer behavior study.
Benchmarking emerging biofibers vs. commodity fibers

Materials
✓ CelluNova
✓ Bamboo Viscose
✓ Lyocell
✓ Milk protein, casein
✓ Soybean
✓ Seaweed
✓ Cotton
✓ Conventional Viscose

Textile types
✓ Knitted
✓ Nonwoven
✓ Woven
✓ Blends
✓ Pure

Test parameters
✓ Pilling
✓ Abrasion
✓ Tensile testing
✓ Laundering
✓ Comfort
✓ Dyeing, staining, color fastness

erik.perzon@swerea.se
Sustainability toolbox to move towards sustainable fashion

Hundreds of sustainability tools already exist. Develop toolbox with users; fashion companies from The Swedish Chemicals Group at Swerea IVF, consumers from exhibition at Kulturen i Lund.

First version available online (Swedish): http://extra.ivf.se/mifufa/start.asp

Gap analysis

<table>
<thead>
<tr>
<th>Gap analysis of current sustainability tools for the textile industry</th>
<th>Management tools</th>
<th>Footprint tools</th>
<th>Websites</th>
<th>Networks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educate / Disseminate knowledge</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Measure sustainability</td>
<td>NO</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>Steer towards sustainability</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Tell success stories</td>
<td>NO</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Create motivation for change</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
</tbody>
</table>

erik.perzon@swerea.se
Use phase behavior

Washing behavior, wearing frequency, etc.
Input to MiFuFa sustainability work
Recommendations for improvement to industry/public

erik.perzon@swerea.se
All three pillars contribute to a circular economy

- Fibers from renewable sources
- Textile development
- Sustainability support tools
- Consumer behavior in use phase
- Help in making the most sustainable choice
- How to reduce impact
- How to prolong use
moving towards eco-efficient textile materials and processes
interconnected design thinking and processes for sustainable textiles and fashion
**Project Deliverables**

**D3.3 Workshops**
Becky Earley
Kate Goldsworthy
Kay Politowicz

- D3.3.1 Large Company H&M
- D3.3.2 SME’s SFA
- D3.3.3 Young Designers CCW, Konstfack

**D3.6 PhD Dissertation**
Clara Vuletich

**D3.4 Online Exhibition**
Becky Earley
Kate Goldsworthy
Miriam Ribul

**P3** interconnected design thinking and processes for sustainable textiles and fashion
D3.3.1. Training designers in large fashion corporations: H&M Pilot training programme & SFA

- 7 lectures, reaching over 350+ Buying Office staff, March - June 2013

- 1 training programme for Large Companies and Corporations: H&M, 30 participants in total from the new-development team

<table>
<thead>
<tr>
<th>Company</th>
<th>Typology</th>
<th>Pre Workshop Garment score</th>
<th>Post Workshop Garment score</th>
<th>% Improvement</th>
<th>Key area of Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company 1</td>
<td>T-shirt, cotton</td>
<td>55</td>
<td>61</td>
<td>6%</td>
<td>End-of-life options</td>
</tr>
<tr>
<td>Company 2</td>
<td>Sweater, cotton</td>
<td>52</td>
<td>53</td>
<td>1%</td>
<td>Manufacturing/finishes</td>
</tr>
<tr>
<td>Company 3</td>
<td>Top, polyester elastene</td>
<td>47</td>
<td>64</td>
<td>17%</td>
<td>Fiber &amp; End-of-life options</td>
</tr>
<tr>
<td>Company 4</td>
<td>Trousers, cotton/spandex</td>
<td>34</td>
<td>52</td>
<td>18%</td>
<td>Fiber &amp; Product Care</td>
</tr>
<tr>
<td>Company 5</td>
<td>Trousers, cotton/spandex</td>
<td>47</td>
<td>51</td>
<td>4%</td>
<td>Fiber &amp; Manufacturing/finishes</td>
</tr>
<tr>
<td>Company 6</td>
<td>Trousers, cotton/spandex</td>
<td>50</td>
<td>59</td>
<td>9%</td>
<td>Fiber &amp; End-of-life options</td>
</tr>
<tr>
<td>Company 7</td>
<td>Children dress, cotton spandex</td>
<td>45</td>
<td>57</td>
<td>12%</td>
<td>End-of-life options</td>
</tr>
<tr>
<td>Company 8</td>
<td>Jacket, polyester/nylon</td>
<td>55</td>
<td>65</td>
<td>10%</td>
<td>Product Care &amp; End-of-life options</td>
</tr>
<tr>
<td>Company 9</td>
<td>Jacket, polyester cotton</td>
<td>32</td>
<td>48</td>
<td>26%</td>
<td>End-of-life options</td>
</tr>
<tr>
<td>Company 10</td>
<td>Sleeping bag, polyamide down</td>
<td>37</td>
<td>51</td>
<td>14%</td>
<td>Fiber &amp; End-of-life options</td>
</tr>
</tbody>
</table>
D3.3.3 Training the next generation designers: Konstfack / work in education

3 elective modules designed and delivered:
• Pilot Study, CCW 2011/2012 ‘Interconnected Design Thinking’
• Konstfack Elective 2012/2013 9 ‘Manifesto for Creative Innovation’
• Konstfack Elective 2013/2014 ‘Material Journeys’

Insights:
• Interdisciplinary engagement enables transformation of individual practice
• Emerging design professionals articulate the case and proposals for action re: sustainability
• Applied design research involvement is effective in creating opportunities for creative solutions
More than 50 new garment concepts generated on paper through project workshop: Measuring and analysing changes in garments through design thinking.

- H&M, 16 concepts
- SFA, 24 concepts
- TED’s 24, 8 concepts
- Gothenburg MFF, 7 concepts
- Zero Waste Plus, 12 garments
- + Shirts workshop


- ‘The Black Hack Chat’, Earley & Ballie, in von Busch et al, the Design Journal

Evaluation to be peer reviewed and published in final report/papers
TED IN CHINA

Kirsti Reitan Andersen, engaged scholarship with TED
PhD Working title: A Qualitative Study: The Translation of Bespoke Design Strategies for Sustainability into Corporate Practices

MFF strategic fund: THE TEN in China
Aim: Understanding the cultural and industrial contexts of Chinese textile/fashion industry and the sustainability discourse.

1. Shanghai, October 2013
Fieldwork & Planet Textiles Conference.

2. Hong Kong, January 2014
TED’s TEN workshops in collaboration with the Ecochic Design Award, and panel hosted by Redress (January 2014).

3. Copenhagen, April 2014
Workshop in Copenhagen
Facilitation Tools

10 Workshop Tools Developed:

The TED RED BOX

Feedback Postcards

Now, Near and Far Stamps

Lifecycle Map

Case study cards (total 223)

Thinking Together Worksheet

Barriers and Opportunities Worksheet

Redesign Worksheet

Garment Checklist

THE TEN cards in Swedish and Chinese
D3.6 PhD Dissertation

Clara Vuletich:
‘Social Textiles: Understanding and Developing Attributes and Mindsets for Sustainability in Textile/Fashion Designers’

Analysis of auto-ethnographic review, combined with literature review, has resulted in development of teaching and communication tools to promote sustainability mindsets in designers.

**New Knowledge:**
1. Understanding of the epistemology and value of crafts-based textile design thinking and processes
2. Insight into the attributes and mindset of a sustainable design practice in fashion context
3. Development of transformational teaching tools to develop *sustainability mindsets and attributes* for design education

**Action research phase:**
A series of experimental workshops with fashion/textile design students (planned for Sept/Oct), that explore values and mindsets of a design practice that engages with sustainability.
D3.2 Textiletoolbox Website

Comment
Design to Minimise Waste
Design for Cyclability
Design to Reduce Chemical Impacts
Design to Reduce Energy & Water Use
Design that Explores Clean/Better Technologies
Design that Looks at Models from History & Nature
Design for Ethical Production
Design to Reduce the Need to Consume
Design to Dematerialise & Develop Systems & Services
Design Activism

External Writers
Internal Team
User Engagement

D3.2 Website

Dr. Timo Rissanen
Timo Rissanen is the Assistant Professor of Fashion Design and Sustainability at Parsons The New School for Design. He previously taught fashion design in Australia for seven years. Timo is creative ... read on ...

Clara Vuileotch
Clara Vuileotch is a printed textile designer and a researcher in sustainable textile design. Exploring ideas of material reuse, digital craft techniques and social design, and is currently the PhD ... read on ____

Suno - sourcing fabric and production in Kenya

Stitching an Alabama Chanin garment. Photographed by Mark Seliger.
1. Consumer engagement with new design practices in companies

Fast Refashion: A Consumer Service for Domestic Garment Makeovers

Designer: Professor Becky Earley

With CBS.

A key approach for transforming the industry is through designers thinking in terms of fashion systems and services, rather than solely the creation and sale of new products. One of the recent aims of TED researchers is to facilitate workshops that can inspire designers and consumers to engage with materials and products towards closed-loop thinking and action, and to share their ideas with fellow participants.

Through the MFF project Earley’s Top 100 work has recently begun to evolve into a practice that facilitates others to create a refashioned garment for themselves, using readily available tools and resources like irons, paper and dry foods. This approach Earley calls ‘Fast reFashion’ – referencing the speed of high street trends, but drawing people back to their wardrobes or a second hand shop for the garment that will begin the fashion process – the material and the personal transformation.

The approach was first tested at the Black Hack workshop (Chelsea, September 2012), where 10 TFRC researchers were invited to design and execute a heat photogram overprint for a polyester garment, using the heat press. In the next iteration – Black Hack Chat (EAD Gothenberg, April 2013) – domestic irons were used on table tops covered with bed sheets. Further workshops were conducted to develop the toolkit ideas: Shanghai Shirt (October 2013) and Symposium Shirt (CBS, Nov 2013). The service will offer consumers support through demo films and downloadable instruction kits.
2. Fast vs. Slow Cycles: Paper Cloth Project

P6 & P3
a.s.a.p. - FAST FORWARD FASHION

Professor Kay Politowicz
Dr. Kate Goldsworthy
Dr. Hjalmar Granberg,
2. Fast vs. Slow Cycles: Paper Cloth Project

How can we bring about more sustainable ‘fast fashion’ through materials development to provide both a sustainable substitute for traditional clothing materials and a radical new addition?

- development of ‘paper-fabric’ material and finishing for wearable non-wovens
- ‘fast fashion’ with intentionally short-life design for recyclable guilt-free fashion
- opportunity to avoid washing it altogether is designed into outcomes
- a complement to the resilient and durable qualities of more long-life and enduring designs
- alliances of existing forest industries with medical, clothing & waste sectors
- fibres which can be composted or recycled for closed loop material recovery

Atifa Rasooli S/S 13
Seamsdress

Designers: Dr Kate Goldsworthy

With David Telfer (COS)

Rethinking current manufacturing systems, this short experimental project explores a new way to design and construct clothes, or other 3D textile products, in a streamlined and digitally driven production line.

A recent collaboration between Goldsworthy and fashion designer, David Telfer (2013), resulted in a series of design experiments exploring the idea of production-ready garment designs in 2D. These concepts based around Telfer’s ‘Zero Waste’ and ‘Minimal Construction’ collections have been fused with Goldsworthy’s ‘Mono Finishing’ techniques to produce a blueprint for custom manufacture fashion products. These polyester garments are designed to be fully recyclable into virgin quality material through chemical repolymerisation due to their monomaterial construction.

One of the resulting concepts (‘Zero Waste Dress’) has been prototyped at half-scale, made possible through funding via the AHRC project Fire Up. With thanks to: TWI (The Welding Institute), Worn Again Ltd, AHRC and UAL

NB – I propose to make some garment ‘detail’ samples to demonstrate the creation of 3D construction from a 2D production technology.
4. Transparency of Material Flows in recycling systems

Transparent Value
Designer: Miriam Ribul

P5 & P3
Fibre DNA coding at the nano-scale
- transparency of provenance of fibres, aiding the recycling process of the material, by communicating essential information to the recyclers, consumers, designers and buyers

- The planned outcome is a garment where fibres are coded at the nanoscale through molecular modification with a visual code that can be read through the microscope and UV light.

- The coded pattern on fibre level will trace if the fibre is from Sweden, Austria or the UK; how this has been processed; how many recycling stages have taken place, and allows for further information to be added in the lifecycle.
interconnected design thinking and processes for sustainable textiles and fashion
fashion for the public sector
Fashion for the public sector

Annika Lindström

annika.lindstrom@innventia.com
Fashion for the public sector

Focus on the environmental and sustainability aspects

Focus on design, comfort and psychosocial effects

Closed loop process

Raw material → Fiber production → Material

Clothing production

Eco driving

Reduced emissions of fossil carbon dioxide

End of life

Wash

Use

Return

Distribution

Repair
Framework & Current Situation

Green Public Procurement:  
- Financial instrument  
- Becoming more regulated but voluntary  
- 'For a better environment'  
- Reduced environmental impact throughout life cycle  
- Holistic approach

annika.lindstrom@innventia.com
Introduction of new materials

Swedish case studies – stakeholders, needs and important aspects:

• Renewable
• Reusable (multiple use)
• Recyclable
Haptic studies of textiles with the purpose to test new sustainable materials.

- Textiles for industrial laundry (75 deg): Tencel/PES and cotton/PES gets softer and more comfortable with number of washings
- 50/50 Tencel/PES is a viable alternative to cotton/PES with respect to perceived comfort

annika.lindstrom@innventia.com
Fashion for the public sector  
- Value for the user

Assistance in the environmental procurement process for the public sector, providing recommendations for further improvement

More understanding of the sustainability needs

Knowledge about material performance and perceptual qualities in respect to repeated washing

Staff: Better functionality, Emotional value of knowing that the material is sustainable

Patient: Wellbeing, comfort, faster recovery, emotional value of knowing that the material is sustainable

Laundry Company: Better use of resources

annika.lindstrom@innventia.com
**Partners:** Innventia, Konstfack, Swerea, Textilia, 
**Network:** LiU, SLU, Capio St. Göran, SLL, Danderyd Innovation, Lenzing, Lauffenmühle

Textilia – has constantly been involved in the process

SLL/DI – With the help of SLL we have collected almost 700 questionnaires concerning patient clothes from a staff perspective. We are now collecting patient questionnaires

Lauffenmühle provided Tencel® samples for the haptic study
fashion for the public sector
sustainable consumption and consumer behavior
Implications for current research for creating a circular economy
P7 sustainable consumption and consumer behaviour

Internal Barriers & Drivers
- Consumer Competences & Resources

External Barriers & Drivers
- Choice Setting Factors
Sustainable consumption as systemic challenge

- Consumers
- Policy Makers
- Retailers
- Researchers
- Media
- Civil Society (NGOs)
- Manufacturers

Internal Barriers & Drivers
Consumer Competences & Resources

P7 sustainable consumption and consumer behaviour
Environmental Concern
- e.g. ‘I am concerned about the development of the global environment.’

Consumer Responsibility
- Who do you consider to be responsible for the non-sustainability of the fashion industry?

Responsibility Diffusion between different actors

Environmental Apparel Consumption
From Responsibility Attribution to Diffusion

Data source: Mistra Future Fashion Consumer Survey 2013
Model fit: $\chi^2 (176) = 658.82$, NFI = .912, CFI = .934, RMSEA = .052 (90% confidence interval = $[0.048, 0.056]$);
*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$
Sustainable consumption as systemic challenge

Researchers

Policy Makers

Consumers

Retailers

Civil Society (NGOs)

Media

Manufacturers

Internal Barriers & Drivers

Consumer Competences & Resources
Understanding consumer competences & resources as prerequisites for sharing

- Focus internal barriers & drivers
- First consumer survey
- Cross-cultural comparison between Sweden, UK, Germany, & US consumers
Value of activities

- First consumer survey
  → groundwork, point of comparison
- Cross-cultural comparison consumer survey
  → first insights attitudes & sharing behaviors
  → able to tailor activities MISTRA Phase 2
Changing behaviour through innovations

- Focus external barriers
- Moving from product- to service-focus
- ~23 cases of non-profit initiatives & new business models which enable circular fashion system
Changing behaviour through innovations

→ First insight into variety of initiatives
→ First insights founders motives & challenges
→ First insights consumer drivers & barriers
→ Establish knowledge base, tailor activities MISTRA Phase 2
→ close collaboration with some cases for MISTRA Phase 2 (partnerships initiated)
P7 sustainable consumption and consumer behaviour

Value for Users

Policy Makers

Initiatives

Industry

Society
P7 sustainable consumption and consumer behaviour
sustainable consumption and consumer behavior
changing markets and business models
changing markets and business models
Business Models and Business Model Models

• Architecture, rationale, logic or...?

• Value
• Customers
• Infrastructure
• Finance

• How about sustainability and the circular economy.
Example: Collaborative Consumption

- Collaboration with P7 (Consumers)
- Examination of Fashion Libraries (With S. Netter).
- Webinar on Collaborative consumption (With R. Zelwak).
- Grant proposals
- Forthcoming case studies.
Example: Public Sector and Textiles
Example: Public Sector and Textiles

Code of Conduct? Policies for CSR?

Collaboration with suppliers?

How are textiles used?

How are textiles handled?

How is value/non-value determined?

How did value/non-value determine?

Design for Reverse logistics?

How are textiles recycled?
changing markets and business models
## POLITICS AND POLICIES IN THE TEXTILE LIFECYCLE

As a way to: (1) couple LCA to policies and politics and present an overall frame (2) judge the environmental weight of different policy instruments (3) convincingly communicate policy suggestions.

<table>
<thead>
<tr>
<th>TEXTILE LIFECYCLE</th>
<th>Relevant Areas</th>
<th>What’s being done? (Political Actions)</th>
<th>Policy Instrument type?</th>
<th>Best Practice?</th>
<th>What could be happening? (Political strategies)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Consumption</td>
<td>Ch, Co2, H20, W, L</td>
<td>Very little; albeit ‘sustainable consumption’ a political buzzword</td>
<td>Potentially Command &amp; Control</td>
<td></td>
<td>Shift in tax emphasis onto consumption &amp; carbon taxes, Business opening hours</td>
</tr>
<tr>
<td>1. Production/Cultivation</td>
<td>Ch, Co2, H20, W, L</td>
<td>Sweden: Branschdialog EU: REACH expansion UN: Chemical working group</td>
<td>Co-regulation and capacity building</td>
<td>Positive list? (agenda in Branschdialog)</td>
<td>Stronger national pol pressure &amp; international support (other EU governments)</td>
</tr>
<tr>
<td>2. Transportation</td>
<td>Co2</td>
<td>Very little; although some political discourse supporting ‘local production’</td>
<td>Potentially Economic incentivisation</td>
<td></td>
<td>Incentivise local (national/European) production</td>
</tr>
<tr>
<td>3. Sale/Purchase</td>
<td>Ch, Co2, W</td>
<td>Labelling</td>
<td>Information. Voluntary agreements (Higgs?)</td>
<td>Svanen, EU-flower, GOTS (Nordic region and principally EU)</td>
<td>Standardisation of labelling. Governtmental push similar to Higg Index.</td>
</tr>
<tr>
<td>6. (Organizational use)</td>
<td>Co2, H20 (W in 7&amp;8)</td>
<td>(Similar to 5. Consumer use)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Prolonged Consumer Life</td>
<td>Co2, W</td>
<td>Information on use. Discussion of potential support for Repair, leasing, swop models</td>
<td>Govt. sponsored research, potentially econ. incentivisation</td>
<td></td>
<td>Strong economic incentives to support repair &amp; durability (link to EPR) or new business models</td>
</tr>
</tbody>
</table>
**Policies for a circular economy in fashion and textiles:**

A study of the ‘Industry dialogues to phase out hazardous chemicals’:

- **The question of representation** – limiting the participants to business which means a number of issues are not coming up, for labeling pushed off agenda.
- **Unclear goals and lack of clear governmental pressure** – “talks about talks”. Character of discussion forum and information exchange platform than a body for “policy suggestions”, especially how to talk about RSL or positive list.
- **Most rewarding for smaller businesses** – capacity building through experience of with the Agency and other key industry actors.
- **Competition stifling cooperation** - issues of information ownership and ‘brand protection’ lead to reluctance on RSL.
- **Possibility of certifications, rather than taxes** - with companies reporting their adherence to an common RSL (compare, Swedish Customs work with “efficient trade”)

A joint suggestion would be a step forward for reducing hazardous chemicals in clothes and would be a important example that governance arrangements is a adequate organizational form that can go further than information exchange.

Interest from and dialogue with Keml on how to develop and arrange the coming dialogue-meetings.
Policies for a circular economy in fashion and textiles:

A study of ‘Extended Producer Responsibility for textiles – Understanding why, how and for whom?’

As a way to: (1) understand how EPR is framed and map positions among stakeholders; (2) infuse knowledge from other EPR-systems (France and other fractions) and how this could be taken into account for an EPR-system for textiles; (3) present recommendations for a well suited EPR-system for textiles

- The issues of targets, responsibilities, regulatory measures and monitoring – in sum questions for how to coordinate, delineate and optimize
- The role of local government (a success factor?)
- The issue of reuse versus recycling (should EPR emphasise push for recycling?)
- The issue of upstream improvements (through tariffs and economic incentives), making it more than a take-back scheme (although dearth of good examples)

EPR rising on political agenda. SEPA’s ‘etappmål’ dialogues, Nordic Council of Ministers. Political support from Social Democrats, MP and now Center.
policy instruments
clarifying sustainable fashion
Aims:
• Move beyond myths and purely categorical thinking
• Contribute to a quantitative basis for more sustainable fashion
• Provide MiFuFa a life cycle perspective

petersg@chalmers.se
P2 main activities

- Improving water & biodiversity indicators
- Prioritising social LCA indicators
- Making ecolabels more effective
- Assessing chemicals in product life cycles
- Examining end-of-life clothing scenarios

Major report: LCA of 5 common garments in Sweden

petersg@chalmers.se
Water methods – important for product assessment

• Current methods
  • are confused about rain (eg: WFN vs WULCA)
  • fail to recognise system maintenance functions (eg: sheep/wool pasture) and other hydrological impacts

• We demonstrated a way to assess water use for forest cellulosics (scenarios A,B,E) versus cotton (F,G)

• Engaging with standardisation process (ISO14046; WULCA...) and publicising issues to practitioners
• Needed for ecolabel development etc
clarifying sustainable fashion