Nordic perspectives on used textiles and circular economy

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Used textiles: Waste or Value Seminar
Tallinn 12th December
Nordic Council of Ministers and textiles

Who?
• Nordic Council of Ministers established 1971 to ensure regional cooperation
• No policy making power. Acts as channel/platform for moving towards common goals
• Environment is one area of cooperation

Why?
• Textile, plastic and food waste came under scrutiny as avoidable waste streams with high environmental (and economic) benefits
• Nordic region has potential for leading the world in sustainable textiles and fashion

What?
• 15 projects commissioned between 2012 and 2017
• 6 of these initiated under Nordic Action Plan for Sustainable Fashion and Textiles
• Studies, reports, guides, tools, platforms
Themes

- Increasing use of Ecolabels in textiles
- Green textile procurement in healthcare
- Chemical labelling/declarations

- Environmental management in Tirupur
- Chemical control in supply chains

- Sustainable design education platform
- Ecodesign criteria

• Nordic Action Plan

- Greener distribution, Access/retail
- Extending active lifetime
- Capturing materials for new products
- More sustainable manufacture

- Waste prevention indicators
- Mapping of used textiles
- LCA of different management routes
- Impacts of exports
- Nordic commitment
- New business models and EPR systems

- Textile to textile recycling – 10 nordic brands
Exports of Nordic Used Textiles: Fate, benefits and impacts

Of interest to all stakeholders wondering whether the exports of used textiles to the African continent and other regions is good or bad for the environment and economy in the receiving countries.

Maps and tracks exports of 75 000 tonnes of used textiles from the Nordic region for processing and resale in other parts of the world. Assesses the environmental, social and economic benefits and risks and makes recommendations for mitigating negative consequences.

Led by: Nordic Council of Ministers
Implemented in: Africa, Asia / Pacific, Europe and Central Asia
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• Sustainable design education platform
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• More sustainable manufacture

Greener distribution, Access/retail

More sustainable fibres

Sustainable Design

Capturing materials for new products

Extending active lifetime

Feedstocks

Non-textile products

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• Waste prevention indicators
• Mapping of used textiles
• LCA of different management routes
• Impacts of exports
• Nordic commitment
• New business models and EPR systems

• Textile to textile recycling – 10 nordic brands
Post-consumer textiles - key questions

• What is total consumption of new clothing and home textiles?
• What happens to post-consumer textiles? How much is collected for reuse and recycling? How much ends in mixed waste?
• Exports of used textiles – what happens to those and is this good or bad?
• What should we prioritise: reuse or recycling and what type of recycling?
• How can we increase collection, reuse and recycling?
• How can we close the material loop?
Mapping of textile flows

Denmark

Finland

Norway

Sweden
Consumption levels

Denmark
- Supply of new textiles: 89,000
- Separately collected used textiles: 41,000
- Not separately collected: 48,000
- Incinerated: 6,000
- Reuse and rags: 12,000
- Accumulation and material loss: 3,000

Finland
- Supply of new textiles: 89,000
- Separately collected used textiles: 41,000
- Not separately collected: 48,000
- Unknown: 18,000
- Industry: 3,000
- Reuse and rags: 12,000
- Accumulation and material loss: 3,000

Norway
- Supply of new clothing: 72,000
- Separately collected used textiles: 23,000
- Not separately collected: 31,000
- Reuse in Norway: 1,000
- Exported: 21,000
- Mixed municipal waste: 27,000
- Accumulation and material loss: 7
- Incineration in Norway: 1,000

Sweden
- Supply of new textiles: 152,000
- Separately collected used textiles: 29,000
- Not separately collected: 103,000
- Stolen from containers (rate unknown): 500 - 1,000
- Mixed municipal waste for incineration (majority of 103,000)
- Accumulated in households: ?

360,000 tonnes a year of new textiles

14.5 kg/capita
**Consumption levels**

**Denmark**
- **Households**: 88%
- **Government & business**: 12%

**Norway**
- **Households (clothing)**: 72%
- **Government (linen)**: 2%
- **Government (workwear)**: 4%
- **Business (linen)**: 3%
- **Business (workwear)**: 3%
- **Households (home textiles)**: 16%

*Pie chart showing the distribution of consumption levels.*
What happens to post-consumer textiles?

Denmark:
- Separately collected used textiles: 41,000
  - Incinerated: 6,000
  - Expports: 23,000
  - Reuse and rags: 12,000
  - Industry: 3,000
- Accumulation and material loss: 3,000
- Unknown: 18,000

Norway:
- Separately collected used textiles: 23,000
  - Incinerated in Norway: 1,000
  - Incineration: 22,000
  - Landfill and other: 5,000
- Import: 72,000
- Export: 21,000
- Reuse in Norway: 1,000

Finland:
- Separately collected used textiles: 41,000
  - Incinerated: 6,000
  - Exported: 23,000
  - Incineration: 24,000
  - Industry: 3,000
- Accumulation and material loss: 3,000
- Unknown: 18,000

Sweden:
- Separately collected used textiles: 29,000
  - Incinerated in Sweden: 2,000
  - Exported: 19,000
  - Stolen from lots: 500
- Infrared waste for incineration (major of 103,000)
- Accumulated in households?
What happens to post-consumer textiles?

Denmark: 54%?

Finland: 65%?

Norway: 76%?

Sweden: 88%?

Incineration/landfill?
Lost value?

Recent Danish study (2017 data)

- Separately collected (36,000 tonnes) Value €65 mio.
- Disposed in mixed waste (40,000 tonnes) Lost value €12-15 mio.
Importance of exports

Denmark

Exports as % of separately collected textiles

56%

Finland

25%

Norway

91%

Sweden

65%
Trends in volume of exports

Tonnes

Denmark  Finland  Norway  Sweden  4 countries

2011  2012  2013  2014

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First destinations for Nordic exports

2014

Imports of used textiles from 4 Nordics (Tonnes)

- Europe
- Africa
- West and central Asia
- Eastern Asia

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Survey data - Final destinations

- Unspecified (South America) 900 tonnes
- Unspecified (Africa) 5,556 tonnes
- Unspecified (Middle East) 187 tonnes
- Unspecified (World) 3,991 tonnes
Global markets allow optimisation

Cascade of quality
- Cream (and much of Grade A) stays in Europe
- Grades A, B and tropical >> Middle East, Africa
- lower grades for reuse >> Asia
- Industry wipes >> global use

Optimisation of activities
- Only pre-sorting in Nordic countries (expensive labour/limited demand)
- Detailed sorting in Baltics/Eastern Europe (less expensive labour/higher demand)
- Production of wipes in Eastern Europe (cheaper labour/more demand)
- Mechanical unravelling in Asia (cheap labour/demand from textile industry)
Global markets allow optimisation

Maximises reuse and environmental benefits

- **Annual net savings** 193 000 tonnes CO$_2$ and 72 million m$^3$ of water use (LCA modelling)
- **Benefits arise from offset production** of textile products/materials
- **Impacts from transportation are insignificant** compared to benefits
- **Benefits higher** than would be achieved if the textiles remained in Nordics – reuse is maximised
Cotton EOL treatment Nordic average
Selected impact categories

<table>
<thead>
<tr>
<th>Acidification midpoint</th>
<th>Climate change midpoint, excl biogenic carbon</th>
<th>Eutrophication marine midpoint</th>
<th>Photochemical ozone formation midpoint, human health</th>
<th>Total energy consumption (net cal. Value)</th>
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<td>Person equivalents/ton</td>
<td></td>
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<tr>
<td></td>
<td>0,500</td>
<td>0,000</td>
<td>0,000</td>
<td>Total energy consumption (net cal. Value)</td>
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- 2A Cotton incineration
- 2B Cotton reuse NORDIC
- 2C Cotton reuse ROW
- 2D Cotton chemical recycling
- 2E Cotton-cotton yarn
- 2F Cotton-flax insulation
Polyester EOL treatment Nordic average

Selected impact categories

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Global markets allow optimisation

Provides economic/social benefits

### Regulated sector

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<tr>
<th>Service</th>
<th>Estimated FTEs per 100 tonnes of mixed imports</th>
<th>Estimated FTEs from annual Nordic exports (75 000 tonnes)</th>
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<tbody>
<tr>
<td>Sorting</td>
<td>2.1</td>
<td>1 500</td>
</tr>
<tr>
<td>Wholesale</td>
<td>4.0</td>
<td>2 900</td>
</tr>
<tr>
<td>Retail (regulated trade)</td>
<td>7.6</td>
<td>5 500</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2.1</strong></td>
<td><strong>9 900</strong></td>
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**Informal sector:** one market trader per ton sold in street stalls

*Nordic textiles support 10 000 street sellers in Africa alone*

But are they ‘good’ jobs? Need Codes of Conduct

And are exports of Nordic used textiles inhibiting circularity in receiving countries
Nordic Commitment

- 3rd party certification process for collectors
- Environmental and social criteria for own and downstream activities
- Piloted in 3 municipalities with 3 collection organisations

Benefits

- Increased transparency in fate of textiles
- Regulates market - excludes grey actors
- Assurance of good working conditions
- Assurance that waste hierarchy upheld
But what to do with the non-reusable textiles?

28% of weight

But only 4% of value

And we need to collect more!
Stimulating textile to textile recycling

Greater **demand** for Recycled materials

Greater **supply** of recyclable textiles

Design for ease of recycling

Collection, sorting and processing systems
Use of recycled materials in new products

Design of products for recyclability

Closed-loop systems

Dressmann
Touchpoint
H&M
Lindex
Filippa K
Pure Waste
Elsk
Nortex
Peak Performance
Egetæpper
Houdini

H&M
Lindex
Filippa K

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Use of readily available recycled material (e.g. polyester from PET bottles, pre-consumer textile waste) in single new product

Trials using more difficult waste products (e.g. fishing nets, post-consumer textile waste)

Design for ease of disassembly and recycling

Establish take-back systems

Full closed loop

Application to more products in the brand’s collections

Typical development pathway

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TEXTILE-TO-TEXTILE RECYCLING

Ten Nordic brands that are leading the way
Thanks for listening!

Find all Nordic projects at:
www.norden.org.publications
Or
http://www.oneplanetnetwork.org/initiatives

Or ask me!
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