Directors’ View

We are proud to introduce the first annual report of Mistra Future Fashion – a truly cross disciplinary research program that started in June 2011. In this program researchers within environmental science, business and CSR science, behavioral science, political science, sustainable design science, psychology and technical sciences are working together to initiate a systemic change of the fashion industry towards sustainability.

The program started in June 2011, which means that the first annual report only covers approximately half a calendar year. This first period of the program has mainly been devoted to establishing the program organization, including building up a managerial and administrative structure, and developing a communication & outreach strategy. Furthermore, a lot of effort was put into drafting and re-drafting a Consortium Agreement which is now finally approved by all parties. However, during this short period most PhD students have been recruited and have already started up their projects. Many collaboration tasks linking the different projects together have also been started or planned.

Partly due to the cross- and trans-disciplinary character of the program, we feel that there is a lot of positive energy being created through the interfaces between the different disciplines and that this energy will help us to achieve our objectives.

Mats Westin
Program Director

Åsa Östlund
Deputy Program Director
1. Program Funding

The over-all turnover for Mistra Future Fashion is expected to reach at least 110 million SEK for eight years (2011–2019). In this budget, the main funding organization is Mistra, the Foundation for Strategic Environmental Research, who supports the program with 40 million SEK over the first 4 years and after that another 40 million SEK if the Program is successful. Södra Skogsägarna’s Research Foundation is contributing with 1.2 million SEK over the first 4 years and the agreed counter-financing from the industrial and organisation Parties (at present a cluster of 10 parties) is at least ca 15 million SEK for the first 4-year period.

An evaluation of Phase 1 (2011–2015) will take place during spring 2015 which, combined with an approval from a cluster of continuing and new Program Parties, will form the basis for funding of Phase 2 (2015–2019).

Read more about the research program and financers at:

1) www.mistrafuturefashion.com
2) www.mistra.org
3) http://www.sodra.com/sv/Om-Sodra/Forskning/Forskningsstiftelsen/

The industrial and organization parties (contributing in-kind to the Program activities):

<table>
<thead>
<tr>
<th>Industry parties</th>
<th>Organisation and agency parties</th>
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<tr>
<td>- Fabric Retail Global AB</td>
<td>- Environmental Protection Agency</td>
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<td>- F.O.V. Fabrics AB</td>
<td>- Myrorna (Salvation Army 2\textsuperscript{nd} hand)</td>
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<td>- H&amp;M Hennes &amp; Mauritz AB</td>
<td>- Protekostiftelsen</td>
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<td>- I:Collect AG</td>
<td>- Swedish Chemicals Agency</td>
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<td>- Kiram AB</td>
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<td>- Södra Skogsägarna</td>
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2. CHAIRMAN OF THE BOARD, PERNILLA WALKENSTRÖM

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3. WHAT IS THE PURPOSE OF THE PROGRAM?

3.1 Vision, expected results and effects of the program

The ultimate objective is that the program research will initiate a systemic change of the Swedish Fashion industry that leads to sustainable development of the industry and wider society, while at the same time strengthening the competitiveness of this industry.

Specific expected outcomes of this trans-disciplinary research program include a) recommendations/strategies for different stakeholders how to bring about systemic changes in the fashion industry; b) educational and feedback material for designers regarding design tools; c) shortened time to market introduction of novel textile fibers that are more sustainable than current alternatives; d) some major environmental problems within textile processing industry and use phase of textiles will be solved; e) textile recycling leading to high-value products through dissolution and spinning of new fibers of virgin quality, f) toolbox of communication strategies according to identified target groups; g) suggested framework of policy instruments leading to more sustainable fashion.

Combined with each other, these outcomes have a capacity of making Swedish fashion industry more competitive by turning sustainability into a business advantage.

3.2 Overall Program Structure and Strategy

The board has the overall responsibility for the program and answers to Mistra.

The Management Team lead by the program director, reports to the Board and coordinates the research.

The research is organized in eight research projects:

- **P1.** Changing markets & business models: Towards sustainable innovation in the fashion industry
- **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

A communication committee lead by the Head of communication, is responsible for seeing to that both internal and external communication is functioning in an efficient way.
4. INTERVIEW WITH JOHAN WARD, H&M

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5. ESTABLISHMENT OF THE MISTRA FUTURE FASHION

During 2011, prior to the start of the program, the Board and the Program Management team were formed. At the kick-off meeting, the project leaders presented their project plans and opened up for comments and suggested changes for these from the audience. Half a month later the researchers met and discussed research integration between the projects. After these two meetings the project plans were slightly refined. During the first months of the program, routines for how the board and management team should function was set up and the communication & outreach strategy for 2012 and beyond was worked out.

5.1 Organization of the program

The basic organization of the programme is shown in the illustration below.
Board members from left: Johan Ward (H&M), Mona Blomdin Persson (Management of Swedish Chemicals Agency), Jonas Eder-Hansen (R&D Manager, Danish Fashion Institute), Karin Emilsson (CTO, Södra), Ulf Carlson (Head of Dept of Chemical and Biotechnical Engineering, Chalmers Univ. of Tech.), Nick Morley (Oakdene Hollins), Per-Erik Petersson, (CTO, SP), Pernilla Walkenström (Area Manager Swerea IVF/Assoc. Prof. Swedish School of Textiles).

Two Board meetings were held during 2011, one after the kick-off at SP in Borås and the second in September at Chalmers, Gothenburg. Rules of procedure for the Board has been prepared as defined in the Consortium Agreement.

Program Management Team

The Program Management consists of the Program Director, Dr. Mats Westin (SP), and the Deputy Program Director, Dr. Åsa Östlund (SP/Chalmers), Head of Communication, Mike Schragger (Sustainable Fashion Academy) and Coordinator of Social Science projects, Dr. Susanne Sweet (Stockholm School of Economics). Mats’ role is to handle the over-all guidance of the Program development, communication with the Board and to be updated on the general activities within the projects and communication committee. Åsa’s role is to coordinate meetings (of the management team, project leaders, researchers and of the whole program), and to address special attention to the technical and environmental science projects (P2, P4, P5 and P6), report on their progress and problems to the rest of the Management team and act as support for the researchers of these projects. Mike’s role is to plan and lead the communication & outreach activities and report on these to the Man. Team. Susanne’s role is to address special attention to the design and social science projects (P1, P3, P7 and P8), report on their progress and problems to the rest of the Management team, act as support for the researchers of these projects and facilitate cooperation between all projects.

Communication

Head of communication is Mike Schragger (see above)

The rest of the communication team are shown below:
Dr. Finn Englund, SP Trä, function as the program’s Newsletter Editor and Team-site administrator.

Karolina Wikander, SP Communication, constructed the web site and is helping out with updating it.

Cecilia Nielsen, Head of SP Communication, invited to the first press conference and has after that been a discussion partner for Mike concerning communication and outreach strategies.

Staffan Ljung, SP’s Media Relations Officer, has helped Mike with the formulation of media guidelines.

Persons involved in Mistra Future Fashion during 2011 (some statistics)

Approximately 50 persons with specific competences have been connected to the Program during 2011. Of these persons were

- 22 PhDs
- 13 Professors
- 1 Technology Licentiates. (from institute)
- 2 postdocs
- 6 PhD students (2 employed by institutes)
- 20 employed at institutes
- 25 employed at Universities
- 18 employed at the industry
- 4 researchers with split positions between universities and institutes
In total this corresponds to
- Xx.x person years that can be related to the program.
- x.x person years directly financed by the program
- x.x person years accounted at the industry
- x.x person years by PhD students
- x.x person years by PhD student directly financed by the program

Project Leaders
The following eight researchers were acting as project leaders during 2011:

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<tr>
<td>Esben RG Pedersen</td>
<td>Gregory Peters</td>
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<tr>
<td>Copenhagen Business School</td>
<td>Chemical Environmental Science, Chalmers</td>
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<tr>
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<tr>
<td>Rebecca Earley</td>
<td>Desiré Rex</td>
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<tr>
<td>University of the Arts London</td>
<td>Textiles and Plastics, Swerea IVF</td>
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<tr>
<td><img src="image" alt="Harald Brelid" /></td>
<td><img src="image" alt="Mikael Lindström" /></td>
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<tr>
<td>Harald Brelid</td>
<td>Mikael Lindström</td>
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<tr>
<td>Forest Products and Chemical Engineering, Chalmers</td>
<td>Innventia</td>
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<tr>
<td><img src="image" alt="Wencke Gwozdz" /></td>
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<tr>
<td>Wencke Gwozdz</td>
<td>Tom Nilsson</td>
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<tr>
<td>Copenhagen Business School</td>
<td>Political Science, Malmö University</td>
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6. SHORT OUTLINE OF THE PROGRAM RESEARCH PLAN
7. COMMUNICATION & OUTREACH

7.1 Development of the strategy

7.2 Activities and realization of the Communication Strategy

The following communication and dissemination activities related to Mistra Future Fashion and its Communication Strategy have been realized during the first year:

Seminars and workshops arranged by MiFuFa
[1]. XXXX
[2]. hkdldkds

Courses arranged in cooperation with MiFuFa
hkjlsdkl

MiFuFa Newsletters
No newsletters were published during 2011.

Oral conference contributions, seminar presentations and lectures related to the program (chronological order)
[1]. hsdjalkjd
An internal MiFuFa webpage, the “team site”, is available for the participants in the program through a “login” function at the external webpage. The main purpose of this site is to facilitate means for an efficient general communication within the program, communication and electronic document handling within the program’s projects, Program Management and Board. The security level of the team site is designed to be able to deal with confidential information and IPR within the program. The level of acceptance for this type of communication is growing among the program participants, but needs to be increased in the future.

Program Meetings and Seminars, 2011

The Mistra Future Fashion kick-off meeting attracted over 40 participants and 12 speakers (not including board members presenting themselves). The meeting was held in English and the program is shown below.

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>09:30-10:00</td>
<td>Registration, coffee and mingle</td>
</tr>
<tr>
<td>10:00-10:15</td>
<td>Opening of the meeting &amp; introduction by Mats Westin, Programme Director, and Åsa Östlund, Deputy Programme Director</td>
</tr>
<tr>
<td>10:15-10:30</td>
<td>Introduction by Britt-Inger Andersson, MISTRA</td>
</tr>
<tr>
<td>10:30-11:00</td>
<td>Presentation of the Program Board</td>
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<tr>
<td>11:00-11:30</td>
<td>Presentation of preliminary communication strategy</td>
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<tr>
<td>11:30-12:00</td>
<td>Presentation of Program projects and Project leaders</td>
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<tr>
<td>12:00-13:00</td>
<td>Lunch (in the room nextdoor)</td>
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<tr>
<td>13:00-15:00</td>
<td>Presentation of Program projects and Project leaders, continued</td>
</tr>
<tr>
<td>15:00-15:15</td>
<td>Coffee break</td>
</tr>
<tr>
<td>15:15-16:15</td>
<td>Presentation of Program projects and Project leaders, continued</td>
</tr>
<tr>
<td>16:15-16:40</td>
<td>General discussion of the research program</td>
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<tr>
<td>16:40-17:00</td>
<td>Planning of future meetings and closing of the meeting</td>
</tr>
</tbody>
</table>

The Mistra Future Fashion half-year meeting attracted over 40 participants, 15 from industry, 19 speakers. The meeting was held in English and the program is shown below.
Table Y. Program for the Half-year Meeting of Mistra Future Fashion, Nov 24, 2011.

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>09:30-10:00</td>
<td>Registration, coffee and mingle (outside Room 720)</td>
</tr>
<tr>
<td>10:00-10:45</td>
<td>Welcome &amp; updates about the program (Mats/Asa/Susanne/Mike)</td>
</tr>
<tr>
<td>10:45-11:50</td>
<td>Status report, research projects (Project leaders)</td>
</tr>
<tr>
<td>11:50-13:00</td>
<td>Lunch (in the Ohlin room)</td>
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Afternoon sessions: Some stakeholders’ view:
- Their current work within the program research area
- How they see possible interaction with the program research
- Their expectations on the outcome of the program research

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker and Affiliation</th>
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<tbody>
<tr>
<td>13:00-13:50</td>
<td>Mona Blomdin Persson, Swedish Chemicals Agency (KemI)</td>
</tr>
<tr>
<td>13:50-14:45</td>
<td>Christoph von Hahn, tCO and SOEX</td>
</tr>
<tr>
<td>14:45-15:15</td>
<td>Coffee break</td>
</tr>
<tr>
<td>15:15-16:00</td>
<td>Presentation of Program projects and Project leaders, continued</td>
</tr>
<tr>
<td>16:00-16:45</td>
<td>General discussion of the research program</td>
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<tr>
<td>16:45-17:00</td>
<td>Closing the seminar</td>
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<tr>
<td>17:15-19:00</td>
<td>Dinner in Terrassrummet, SSE, Holländargatan 32</td>
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</table>
As shown in the list below, xx research reports have been published, submitted or drafted during 2011. The reports can be divided into: x manuscripts submitted for publications in peer-reviewed journals, x manuscripts drafted for submission to peer-reviewed journals, xx oral presentations at international conferences published as papers in their conference proceedings, and x reports.


[3].


[8].


4.2 Popular science publications

[1]. ljlskj

Patent applications

[1]. lökfölksölk
8. ACTIVITIES AND RESULTS FROM THE RESEARCH PROJECTS

Project 1. Changing markets & business models: Towards sustainable innovation in the fashion industry

In 2011, interviews were made with a number of informants with knowledge of the Swedish fashion industry. The interviews were semi-structured and based on a number of predefined interview questions. The interviews are part of a fact finding exercise on sustainability/CSR in the fashion industry. Interviews will continue in 2012. The insights from the interviews will be integrated in a report on Sustainability/CSR in the fashion industry (see below).

In 2011, the work on a report on sustainability/CSR in the fashion industry was begun. The tentative title of the report is: Corporate Social Responsibility (CSR) and Sustainability in the Nordic Fashion Industry - A Cross-Country Comparison. The report is based on a review of the existing literature within the field of sustainable fashion, information on the fashion industry in the Nordic countries, and insights from the expert interviews (see above). The report will be completed in 2012.

In 2011, a review of relevant literature within the field of sustainable business models and innovation was conducted (to be continued in 2012). The results from the review will result in a working paper and serve as the basis for a survey to be launched in 2012. The tentative title of the working paper is “Innovative business models for the fashion industry”. At present, the paper is co-authored by Esben Rahbek Gjerdrum Pedersen and Heather Lynn Timmerman. In 2012, the paper will probably get input from more co-authors, not least the new PhD students (see below).

In 2011, a review of relevant literature within the field of stakeholder network analysis was conducted (to be continued in 2012). The results from the review will result in a working paper and serve as the basis for a survey to be launched in 2012. The tentative title of the working paper is “Mapping Sustainable Fashion: The Stakeholder Network surrounding the Fashion Industry’s Sustainability Activities”. The working paper will be authored by Esben Rahbek Gjerdrum Pedersen in collaboration with one or more co-authors from project 1.

In 2011, planned and implemented a survey among Nordic fashion companies. The survey included a number of questions relevant for the MISTRA Programme and project 1. The main objective of the survey was to explore how the market and nonmarket environments influence the variety and content of CSR activities in the Nordic fashion industry. Moreover, the paper developed and tested a new model of strategic responses to institutional pressures that encompass resistance, conformance, and opportunity-seeking behaviour. The survey resulted in valid responses from 400 fashion companies in Denmark, Norway, Sweden, Finland, and Iceland.

The main results from the survey has been used in a manuscript entitled “From Resistance to Opportunity-Seeking: Strategic Responses to Institutional Pressures for Corporate Social Responsibility in the Nordic Fashion Industry” (Completed in 2012). The paper is co-authored by Esben Rahbek Gjerdrum Pedersen and Wencke Gwozdz. In short, it is concluded that CSR in the fashion industry is very much about compliance rather than innovation. However, increasing CSR pressures tend to stimulate resistance as well as opportunity-seeking at the expense of compliance behaviour. In addition, the results indicate that inconsistent pressures within, stakeholder impact the responses of fashion companies to CSR pressures. Companies experiencing consistent pressures are more likely to conform with requirements and in general have higher social and environmental performance. In other words, internal stakeholder hypocrisy may drive down CSR performance. Last, companies with organic character-
istics are more likely to be active on the CSR agenda compared to more mechanistic organisations. However, organizational structure seems to be unrelated to CSR performance.

In 2011, a call for a PhD in sustainable fashion to join Project 1 was launched. The name of the successful candidate is Kirsti Andersen. Kirsti Andersen will begin her PhD in 2012 (Week 15). Kirsti holds a Master degree in European Cultural Studies from Aarhus University and have worked as a Project Manager and Researcher at the Copenhagen Institute of Interaction Design for the past 5 years. The proposed PhD Project investigates the relationship between organizational culture and a fashion company’s ability to develop new sustainable practices and business models. It does this through the application of the French sociologist and philosopher Pierre Bourdieu’s theoretical triad consisting of habitus, capital, and field, coupled with an ethnographic approach to data collection.

In 2011, a meeting was arranged with Meeting Stavanger University. Stavanger University has been involved in a large study of corporate social responsibility (CSR) in the fashion industry. The results from their work can be found here. Some of the insights from the study may also be of relevance for Project 1 (as well as other projects within the MISTRA Future Fashion Programme).

In 2011, a meeting was arranged with Peder Michal Pruzañ-Jørgensen from BSR (www.bsr.org) to discuss their involvement in the project. It is for instance expected that BSR may play a pivotal role in communicating the findings from the MISTRA Future Fashion Programme.

In 2011, work was done on detailed project plan, consortium agreement, research design etc. This work also included meetings in Stockholm, London, and Borås.

In 2011, project participants established initial contacts with potential case companies. First case studies will take place in 2012.

**Project 2. Clarifying sustainable fashion**

Future Fashion began operations in the second half of calendar 2011. Senior research time in Project 2 in this period was focused on building relationships within the consortium and hiring researchers.

As initially presented at the kickoff meeting on 25 May, Greg Peters began developing a flowchart identifying the potential informational exchanges between Project 2 and the other projects over the four year course of the overall project. Despite him going on paternity leave in mid September, initial meetings were held regarding technical exchanges with Project 1 (Esben Pedersen; 24 November), Project 3 (Rebecca Earley; 7 November), Project 4 (Anna-Karin Jönbrik, Sandra Roos; 1 June & 22 November), Project 5 (Harald Brelid; 8 November), Project 6 (Mikael Lindström, 24 November) and Project 7 (Wencze Gwozdz & Sarah Netter; 1 November). Relateledly, meetings between Sandra Roos, Anna-Karin Jönbrink and Mikael Lindström occurred on 2 November and Sandra and Anna-Karin talked with the consortium leaders on 9 December. All these meetings resulted in a better understanding of what
each project leader might want from Project 2, and have lead to the outcomes and plans mentioned in the rest of this document, among others. Additionally, with Mike Schragger materials and information were exchanged and a meeting was held (24 November) as part of Future Fashion’s internal communications.

Significant time and effort was expended in Project 2 in order to bring in the best possible postgraduate researchers for the work. Advertisements for the university position were made online and in the technical press, over two dozen applicants were evaluated and five were interviewed. This resulted in Bahareh Zamani joining the project in mid September. She has previous practical experience in the application of sustainability assessment to textile systems analysis through a masters thesis at IVL. The other key addition to the team was Sandra Roos, and industrial PhD candidate employed by Swerea. Applications for additional funding to support her candidacy (and based on their unsuccessful outcome) challenging negotiations between the parties, took until December to finalise. Sandra is a very experienced in matters of textile chemical management and her enrolment at Chalmers is a very practical way of increasing the cross-pollination of ideas between partners to the consortium agreement, particularly Chalmers and Swerea.

Gustav Sandin was already enrolled as an industrial research student but Future Fashion has extended his funding to cover a full PhD. Most of his work on the project will occur in 2013 and 2014, but with Greg Peters and Magdalena Svanström he worked in 2011 on drafting an article regarding sustainability metrics for forest resource extraction, which contributes to the aims of Project 2. The paper is undergoing further improvement prior to submission to a scientific journal.

Bahareh, Magdalena and Greg spent time drafting an article for publication in a scientific journal exploring the topic of technology preferences in textile recycling. It is intended that this should provide support for future collaborations between Project 2 and Project 5. Bahareh also completed two of the compulsory courses for new doctoral students: Information literacy and Challenges and opportunities of technology in sustainable development.

Additional dialogue with Project 7 staff regarding the addition of social sustainability questions to a survey to be subcontracted by CBS in early 2012 was directed towards finding an appropriate set of questions and type of language to engage with the interviewees. This work was informed by a literature review of social impact assessment literature in Project 2 in which Gustav and Bahareh were active.

Project 3. Interconnected design thinking and processes for sustainable textiles and fashion

A. PhD Project – Clara has rewritten some aspects of the RF3 – the formal project proposal – for the college research committee. She extended the discussion around auto ethnography and further bibliographic analysis of the ‘social’ aspect of her project, making more references to key case studies.

In the first three months of the project (October – December 2011) Clara:

1. Began research for a consultancy project (working with social branding and CSR experts) developing a model for how a garment factory could become a hub for social innovation, for a US apparel company.

3. Began to map case studies for new creative workshop methodologies.

**B. Development of TED’s TEN cards & workshop content and techniques:**

1. **Large Companies** – H&M Pilot continues to be discussed and is still at draft proposal stage. Work has been completed around the appropriate allocation of research hours and costing & timings for delivery. An agreement between UAL, Mike and H&M has been drafted by UAL, and needs discussion. (Becky and Mike scheduled to Skype Friday 16th March!)

2. **SME/Individual Entrepreneurs** – Pilot ‘Research Focus Group’ programme at Chelsea due to complete on April 18th with a one---day workshop. Outcomes to be presented on the website, and included in the year2 report.

3. **Workshop facilitation experts** – TED researchers continue to work with workshop content. *Fashion Services* with Snook’s [Lauren Currie](http://www.wearesnook.com/snook/) took place here in early March:

   http://blog.tedresearch.net/2012/03/07/service---design---workshop/

   http://www.wearesnook.com/snook/

   CCW is also supporting Becky to work on facilitation with [Rachel Gilmore](http://www.rachelgilmore.com/)

4. **TED’s TEN cards industry feedback** – the cards have been sent to a number of academics and industry professionals for review and feedback.

**C. Product development**

Kay, Becky and Clara have been completing a curation and production development commission for VF Corp in USA, and a number of new sustainable fashion prototypes have been developed in TED. VF have the option to buy these and obtain the IP from us, but if they do not take this option by mid April then we will have some new sustainable fashion ideas to bring into the MFF project. Watch this space…

**D. Website**

[www.textiletoolbox.com](http://www.textiletoolbox.com) – The site is being designed by [http://www.polimekanos.com/](http://www.polimekanos.com/) and will be fully functional by the beginning of April and will form the basis of P3’s presentation in Copenhagen in May. The site will be a useful tool at this stage to work towards the report/journal edition, planned for the end of MFF year 2, and has been designed to invite fashion user feedback and interaction.

**E. Management** – P3 will now report to Susanne Sweet, with the aim of encouraging and supporting a range of interactions with other projects, including potential co-authoring of academic papers.
Figure X Fashion Services workshop with Lauren Currie and TED team
Project 4. Moving towards eco-efficient textile materials and processes

Trials and results

Swerea IVF has ordered new yarn twisting equipment that arrived in the beginning of 2012. Yarns of different qualities has been ordered to start collect a library of yarns to work with, in the new machine.

In Mistra Future Fashion the goal is to find new bio-based material that have as less impact on the environmental as possible. CelluNova is a fiber that is in the developing phase in another project at Swerea IVF among others. This new fiber is made from dissolving pulp and with more environmentally solvent, comparing for example viscose. This fiber is still in the developing phase and therefore not ready to use yet. But some fibers are available and samples have been made as nonwoven material. To compare the CelluNova fibers with already existing fibers and to see how it reacts together with other materials further nonwoven samples were done. See table X below.

Table X. Nonwoven samples of CellNova blendings and Lyocell.

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (dtex)</th>
<th>Composition</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 % CelluNova</td>
<td>2.0 dtex</td>
<td>Carded and needled</td>
<td>Very soft and comfortable feeling.</td>
</tr>
<tr>
<td>50 % CelluNova, 50 % Modacrylic</td>
<td>2.0 dtex, 2.2 dtex</td>
<td>Carded and needled</td>
<td>Soft and comfortable, feels little more stable.</td>
</tr>
<tr>
<td>50 % CelluNova, 50 % Polyester</td>
<td>2.0 dtex, 7.0 dtex</td>
<td>Carded and needled</td>
<td>Little stiffer feeling, but still fluffy.</td>
</tr>
<tr>
<td>100 % Lyocell</td>
<td>6.7 dtex</td>
<td>Carded and needled</td>
<td>Stiff and rough, but probably because thick fibers (6.7 dtex).</td>
</tr>
</tbody>
</table>

Before carding the CelluNova fibers went through a mechanical texturing process. This leads to crimped fibers that behave better in the carding step. None crimped fibers sticking in each other and creates not wishful lumps.

CelluNova is working well in blending with other materials. The strength of the fiber are until now not as strong as viscose especially not in wet condition. Therefore it is suitable to blend up the material with some other stronger fibers for example cotton or polyester. This operation can be done in the yarn twisting step and will be performed in a small scale during 2012.

In the nonwoven sample with 100% Lyocell the fibers are really thick, high dtex. This leads to a stiff and rough feeling that not is comparable to the smooth CelluNova fibers. So the thickness of the fibers has really high impact on the feeling of the material. A good example on that is microfibers that feels really smooth because of its thin structure, usually less than 1.0 dtex.

Washing tests on the CelluNova sample above has been done, but not yet evaluated fully.

Meetings and collaborations
Swerea IVF’s team gathers every second week for a follow up meeting internally. And meetings have been held 1st of June together with Chalmers regarding P2 with Greg Peters and his team and together with Innventia 2nd of November regarding collaboration in P4 and P6.

**Further work, plans for 2012**

During 2012 the work will start with the new yarn twisting equipment. Trials will be done in twisting in different ways and blending different materials and evaluate the properties of it. Several different materials will be evaluated and some of them will be analyzed regarding sustainability and LCA issues. Focus will also be on washing and dyeing processes. Furthermore circular knitted samples can be produced with some chosen yarn qualities. The PhD work will continue with focus on developing tools for guidelines then choosing sustainable material.

Innventia will start work with tagging in clothes for following up the history of the garment and to be able to give the user information when it is time to recycle the garment.

**Staff**

Swerea IVF:
- Desiré Rex, Project leader and textile technology
- Sandra Roos, PhD student focusing on LCA with holistic view including chemicals.
- Anna-Karin Jönbrink, Eco Design, Supervisor to Sandra.
- Anne-Charlotte Hanning, Washability and textile testing.
- Erik Perzon, Project support and fiber expert.

Innventia:
- Hjalmar Granberg, Tags in clothing and user follow ups.

**Project 5. Reuse, recycling and End of life issues**

Project 5 aims to develop technologies for recycling of polymers from textile material for producing new textile fibres. Recycling strategies involving polymers both of petrochemical origin, such as polyester, and of cotton, with high cellulose content, are addressed. The different parts of the project, and the main partners involved are shown in Figure 1. The project started in June, and the initial activities have mainly involved planning and meetings in order to establish the network between the participants. Furthermore, efforts have been made to find a suitable PhD student to the project.

![Figure 1. A schematic illustration of the textile polymer recycling concept studied.](image)
This project has two main objectives; 1) to perform research in the area of recycling textile fibres from a chemical point of view; and 2) to develop efficient recycling routines in the field. Within the latter objective two pilot studies are to be performed to cover the sequence of shops/costumers/collection/sorting/processing. Åsa Östlund, SP, has been appointed responsible for coordination of these studies.

Within the research of recycling textile fibres a PhD student, Anna Palme, was hired at Chalmers in October. In order for her to get more familiar with the project and to investigate previous research in the area of textile recycling, literature was summarized and finalised to a report in the end of 2011. Contact has been established with the facility management company Textilia. Textilia, being a large supplier of textiles such as sheets and towels to hospitals and hotels in the southern part of Sweden, has provided cotton sheets to the project. The sheets have gone through defined number of washing cycles. A study regarding the effects of washing on the cellulose was started based on this material in late 2011. This work will be continued during 2012. The preliminary results indicate a large decrease of the degree of polymerization during washing, which is promising with aspect to the potential for dissolution of the cellulose.

During 2012, the possibilities to recycle the textile fibre polymers in different fractions from SOEX textile recycling plant in Wolfen will be evaluated. Fibre samples containing mainly polyester and polypropylene will be characterised at Swerea with regards to processability and behaviour during melt spinning. A cotton-rich fraction will be characterised at Chalmers. Initially, focus will be on cleanliness and cellulose quality. Research on dissolution of cellulose is important to the project as the aim is to produce regenerated cellulose fibres from cotton textiles. Therefore, a study regarding activation and dissolution of cellulose prior to fibre spinning will be carried out in collaboration with SP, Swerea and The Institute of Biopolymers and Chemical fibres in Lodz, Poland.

The second objective of Project 5, ‘To develop efficient recycling routines for textiles’ started off during November when project members from Chalmers, SP, Swerea, SOEX and I:collect had a start-up meeting at SOEX in Wolfen. The visit involved both brainstorming on textile recycling, planning of coming activities and a tour of the plant, Figure 2. After this visit fibre samples from SOEX was sent to Swerea and Chalmers to be investigated upon the dissolution of both polyester and cotton fractions. The first Pilot study will focus on the I:Co’s recycling bins for used clothes to distribute to Fabric Retail Global stores. The plan is to start-up collecting used clothes in stores in Sweden during 2012.

Figure 2. Sorting of used clothes in SOEX in Wolfen, Germany.
The second Pilot study, where Myrorna will evaluate a possible future cooperation with SO-EX regarding non-reusable clothes in Sweden, will most probably start-up Fall 2012.

People involved:
Dr. Harald Brelid, Chalmers (Project Leader)
M.Sc. Anna Palme, Chalmers (PhD student)
Prof. Bengt Hagström, Swerea IVF (Researcher)
Dr. Åsa Östlund, SP (Researcher)
Dr. Erik Perzon, Swerea IVF (Researcher)
Christoph von Hahn, I:Co/SOEX
Nina Gunnarsson, I:Co
Irene Häglund, Fabric Retail Global
Emma Enebog, Myrorna (Salvation Army Second Hand)

Project 6. Fashion for the public sector

Project 6 has had a late start due to key persons at SLL Innovation and SLL Environment resigning, however we are in a process of identifying new participants for this role.

Project 7. Sustainable consumption and consumer behavior

1. General activities:

Junior staff employed:
- Sarah Netter as a research assistant (100% from September 2011)
- Sarah Bly as a student assistant (on an hourly rate from August 2011)
- Sarah Netter applied for a PhD grant at CBS and got offered a position from June 2012
- Sarah Bly will be a research assistant from June 2012

Meetings:

Project 7 had meetings with several project partners in order to identify opportunities for collaboration, to be more specific:
- We meet regularly with Project 1 and coordinate CBS activities, e.g., the MISTRA Future Fashion Symposium on 2nd May 2012 in Copenhagen
- Regular meetings between Project 7 and Project 2 were arranged via Skype. A collaboration regarding the identification of social indicators of sustainability was established. Project 2 delivered a list of 30 social indicators which were integrated into the Project 7’s questionnaire on sustainable fashion consumption (Objective 1)
- Project 3 visited CBS for a meeting the 27th September 2011. Possible links were identified, e.g., a collaboration regarding the in-store experiments (objective 2) or the expert interview with Rebecca Early for background information regarding the fashion pioneer analysis
- Project 5 invited Project 7 for a start-up meeting in Stockholm, participants were Project 5, Project 7, H&M, Weekdays and I:CO. Several links between the MISTRA projects 5 and 7 as well as the industry partners were identified, e.g., Project 7’s questionnaire elements on recycling will provide insights into consumers’ discarding be-
haviour. Weekdays showed an interest in carrying out in-store experiments in connection with their possible collaboration with I:CO.

- **Project 8** visited CBS the 7th October 2011. The highest potential for collaboration was identified for the Project 7’s communication toolbox for policy-makers (Objective 3), where contacts and expertise will be shared.

- **H&M**: Anna Eriksson from the Communication and Press Department became the contact person for project 7. She connected Project 7 also to the Business Development Department. H&M took on a consultancy role for the development of the questionnaire on sustainable fashion consumption (Objective 1) and H&M introduced one of their questions in the questionnaire. Project 7 will further collaborate with H&M.

- **Weekdays & Fabric Retail**: Project 7 discussed the opportunity of carrying out in-store experiments (Objective 2) in some of the Weekdays and/or Monki stores. Weekdays and Fabric Retail are open for that. Project 7, in turn, offers expertise in measuring effects on consumer behaviour when changing the “setting”, i.e., product placement, labelling, prices. Further details as well as timelines have to be clarified.

- **Danish Fashion Institute and NICE**: The meeting took place at CBS on the 2nd December 2011 and was about knowledge and expertise exchange. Since then, a close relationship was established.

**Other:**

- Project 7 developed a work plan for the whole period of the project. The plan covers tasks, staff and timelines
- A literature database was developed comprising relevant literature for Project 7
- A literature review has been carried out. The literature review is split into so-called “knowledge units”, each covering a specific topic. 13 knowledge units will be developed by the end of May 2012, 11 have been finished by the end of 2011. Figure 1 presents the rationale of the knowledge units according to the employed main theory (MOAB).
1. Activities for Objective 1: Identify internal barriers and drivers – consumer competence

Lead users:

Identification and analysis of sustainable fashion pioneers (lead users) was successfully carried out. Applied methods included in-depth interviews and analyses of blogs. First results were presented at the MISTRA Future Fashion Program Meeting in Stockholm, 25th November 2011, a scientific conference article was submitted to the Nordic Conference on Consumer research 2012 in Gothenburg (29-30 May). The results fed into the development of the questionnaire on sustainable fashion consumption

Expert interviews:

Experts from the scientific, the industrial and the policy-maker area were interviewed. Results fed into the development of the questionnaire. As experts served, for example, as internal experts, we interviewed Rebecca Early (Project 3), Anna Eriksson and Marina Matteoni (H&M) and Jonas Eder-Hansen (DFI), as external experts e.g., Jacob Lagerstedt (GiK), John Thøgersen (Aarhus University), Jessica Aschemann-Witzel (Aarhus University) and Ines Weller (Research Center for Sustainability Studies, University of Bremen).

Questionnaire:

A draft version of the questionnaire on sustainable fashion consumption was developed in 2011. The target group are Swedes aged between 16 and 30 years – the sample will be representative with a size of about 1,000 respondents.

The questionnaire is based on the underpinning theory (MOAB), results from the sustainable fashion pioneer analyses, previous literature review as well as the expert interviews. The questionnaire contains topics such as socio-demographics, general personal information &
lifestyle, fashion purchase behaviour (motivational factors), buying behaviour, use and maintenance of clothing, discarding of clothing, environmental and social issues, stages of change (see objective 3)

The English questionnaire was pretested at CBS – 15 respondents participated. As a consequence, we decided to split the questionnaire into two parts: Part 1 on general fashion consumption and Part 2 on fashion consumption and environmental &social issues.

CBS obtained offers from several marketing research institutes (from Epinion, GFK Sweden and TNS Sifo) and decided to collaborate for the survey with GFK Sweden.

Stockholm School of Economics (SSE) translated the English questionnaire into Swedish, GFK Sweden checked the translation.

SSE runs pretests in February 2012, the actual field work will be carried out by GFK in April 2012 for about two weeks

2. Activities for Objective 2: Identify external barriers and drivers – choice setting factors

First negotiations with industry partners in order to identify possibilities to carry out in-store experiments were successful (e.g., Weekdays, Monki).

A literature review was carried out regarding field experiments and external factors (see list of reports and publications, knowledge units).

Concrete ideas for the experimental design alternatives were developed and presented (e.g., at the meeting with Project 5)

3. Activities for Objective 3: Induce change of behaviour – communication

To identify target groups for changing consumer behaviour towards more sustainability, we integrated a module on consumers’ stage of change into the questionnaire.

No other planned activities for Objective 3 in 2011.

Project 8. Policy instruments

The first half year of the project was primarily devoted to planning. A time line for the project has been drafted according to which the following studies are to be made:

- Construction of a typology of policy instruments for the EU, national, regional and local levels in Sweden. The feasibility of each policy instrument (such as hard and soft regulation, procurement, financial support, information etc.) is furthermore to be investigated through empirical studies (but also through stakeholder dialogues). Specific attention will be devoted to feasibility for implementation, an area where relations to the regulatory framework as well as the private sector are especially important.
- A comparative study of sustainability in other policy fields such as transportation and waste management. An important focus is what may be learnt from other sectors.
- Stakeholder dialogues with evaluative as well as scenario-building purposes, and including relevant representatives of the public and private sectors as well as NGO:s.

A pilot study was made of public procurements of textiles in five counties and two municipalities. The aim was to map problems as well as opportunities in the efforts of making more environmentally-friendly procurements. One additional aim was furthermore to use this case as a “test” for the degree of national government within the policy field at large. As expected,
the degree of national steering is strongly limited. The regulatory framework within this area mainly consists in the Public Procurement Act which does not stimulate environmentally-friendly behavior. In principle, the greening of public procurement is an issue for each individual municipality and county – national government is limited to information and recommendations.

During 2012 this study is developed, with the primary aim of identifying the key incentives for green public procurement of textiles in municipalities and counties. In the absence of governing from the center, how can it be explained that the local and regional actors within the Swedish system still have strong ambitions within the area? Do local and regional politicians play an important role, or are the ambitions dependent upon initiatives from civil servants? May variations be explained on the basis of how the procurement function is organized? Is the degree of coordination between legal and environmental expertise the crucial factor behind success in greening procurements, as is suggested by one of our cases (City of Malmö).

Contacts with key stakeholders were initiated in 2011, and are developed during 2012. A meeting with the Swedish Environmental Protection Agency and the Swedish Chemicals Agency was held in October, where substantial future collaboration was planned, for instance a policy instrument meeting in autumn 2012. For 2012, contacts with, among else, the following stakeholders are planned: the European Environment Agency (participation in workshop in Copenhagen 18 April); the working group for green public procurement at DG Environment, the European Commission; the Swedish Environmental Management Council; the Swedish Association for Local Authorities and Regions. Research interviews as well as contacts will be made at the Government Council (Ministry of Environment and Ministry of Enterprise, Energy and Communications), the large counties (Stockholm, Västra Götaland, Skåne) and a selection of municipalities.

Within the MISTRA future fashion-program, a strategy meeting was held with the project 1 and project 7-groups from Copenhagen Business School.

Apart from the project participants in project 8 (Patrik Hall, Scott McIver and Tom Nilsson), a research assistant (Rebecka Forssell) was employed to do the pilot study on procurements. She will also be involved in the procurement study during spring 2012.
9. FINANCIAL REPORT

9.1 Income

Income in form of cash funding according to the Consortium Agreement, Budget for the program’s Phase 1 (Financial Year 1-5; Jun 2011- May 2015) and outcome for 2011 (kSEK):

Total income and cash funding, Budget for the program’s Phase 1 (Financial Year 1-5; Jun 2011- May 2015) and outcome for 2011 (kSEK):

In-Kind contribution by the Parties, Budget for the program’s Phase 1 (Financial Year 1–5; Jun 2011- May 2015) and outcome for 2011 (kSEK):

See the specification of the industry Parties counter financing (Cash & In-Kind) on the next page.
9.2 Costs

Accounted program costs and use of the cash funding for Financial Year 1 (Jun-Dec 2011) (kSEK)

Accounted Program costs related to different program activities (kSEK)

9.3 Total turnover

9.4 Signature

The economy report is hereby certified by

Carina Lydén
Mistra Future Fashion Controller