



## Notes from the Baltic Wool Conference Oct 8-9 2020

The first Baltic Wool Conference (BWC) was planned to be held on Gotland, the Swedish island in the middle of the Baltic Sea. Due to the covid situation the meeting was transformed into a digital conference. The conference was organized by The National Swedish Handicraft Council, The Rural Economy and Agricultural Society Gotland and Region Gotland. BWC gathered 80 participants from 8 countries. Innovation and research were the themes for the first day and the second day focused on Market and business opportunities.

### THURSDAY OCT 8<sup>th</sup>: Innovation and research

#### *Background and purpose*

Friedrike Roedenbeck and Annkristin Hult from The National Swedish Handicraft Council explained why their organization initiated the conference. The Handicraft Council is a government agency under the Ministry of Culture with the task of promoting handicraft and small-scaled industry. In recent years, the council has focused on wool issues from a sustainability perspective. When the Swedish media a few years ago drew attention to the fact that most of the wool produced in Sweden will not be used, many local initiatives started to change this. The council saw a need to offer a platform for national collaboration and therefore hired Annkristin Hult as a national developer. During her work, Annkristin also have seen both needs and possibilities for international cooperation in wool business. BWC is inspired by the North Atlantic Native Sheep and Wool Conference as since 2010 has brought together sheep and wool workers of the North Atlantic region.

#### *Gotland and Baltic Wool Cooperation*

Lotta Löwhagen Lundberg from The Rural Economy and Agricultural Society Gotland introduced us to Gotland and explained why a Baltic wool conference is important for the island. Gotland has a long tradition of sheep farming. The sheep provides for tasty meat, beautiful skins and versatile wool but also contributes to biodiversity when grazing old pastures with rare plants. An inventory made in 2018 showed that Gotland has good opportunities for wool industry, with quite many sheep close to a scouring mill, 3 spinning mills and other companies processing wool and many talented designers. For the last two years there has been a project with focus on developing grey wool from the local native Gotlandic breed. But there is a need for partners and cooperation, both national and international.

Riina Noodapera, also from The Rural Economy and Agricultural Society Gotland, presented Baltic Wool Cooperation. This is a parallel project to the Baltic Wool Conference, in cooperation with Poland and Estonia. The project involves networking and an inventory of processing sheep wool (spinning mills etc) in the Baltic Sea region. An inventory will be made outlining the mills capacity, machinery and quality/quantities produced. Networks and new co-operations will be built between businesses working with sheep wool during the 18 months of the project.



## Swedish wool on Mount Everest – opportunities and challenges for a traditional fiber in a new context

**Erik Blomberg, Product Developer & Designer, Tierra/Fjällräven**

*Erik Blomberg is product developer and designer for Fenix Outdoor, with brands such as Fjällräven and Tierra. When he read in the newspapers that a large amount of Swedish wool was wasted, he wanted to make a difference. As wool is a perfect material for sustainable outdoor products, Erik started a project for using Swedish wool in the company. It wasn't that easy at first, but with innovation and creative thinking most problems were solved.*



Fenix Outdoor produces clothing and equipment for all sorts of outdoor activities. Their mission is to inspire the world to walk with nature and their vision is to be the most premium and sustainable global outdoor brand. They aim for a sustainable production where non-renewable materials are replaced with renewable ones and to recycle, reuse and reduce materials.

The company has a long tradition of using wool, but in 2016 they didn't use any Swedish wool at all – though they wanted to. The problem was that everybody said it was impossible, as the wool was of too uneven quality, coarse, dirty, etc. Now they have worked with 40 tonnes of Swedish wool in three different products. The secret is to work with the material in the product development and to adapt the product – not the fibre!

One project was to use Swedish wool from the newly developed Jämtland sheep breed (with a wool type similar to merino) in knitwear. It was successful but didn't increase the use of renewable materials as merino wool was exchanged with local fibres. So they started to develop a new product where Swedish waste wool could replace plastic foam in backpacks. For this product they used needle punched and pressed wool in different colors from different breeds. (So uneven and coarse quality was not a big problem).

They also developed a wool padding for jackets. This was challenging at first but in the long run Swedish wool turned out to be very good for padding as it has some extra stiffness. And the users like wool padding because they don't need to change clothes as often as with polyester padding!

The next step will be to single out the wool with best qualities and add more value to it by making both knitted and woven fabrics. The lower quality wool can be used in backpacks and padding. Here a system for classification of Swedish wool would be needed. Fenix Outdoor also wants to continue to build and support a more local wool industry.

Right now the company has access to enough wool but they want to buy more in the future. There are good scouring facilities in Sweden, but we could need other companies processing after scouring and that could be done in the Baltic area!

## ***The story of the perfect wool fiber – or how a new local sheep breed was created to meet the demands from the market.***

### **Lena Persson, wool entrepreneur and part of the project that developed the “Jämtland sheep”**

*20 years ago some wool and sheep enthusiasts in Northern Sweden asked themselves the question: Do we really have to import the fine merino-wool – couldn't we keep the sheep here instead? Inspired by a wool industry in the area producing merino underwear they wanted to develop a local breed with wool fine enough to suite the industry.*

1999 the journey began to create a Swedish breed with soft wool without losing other benefits. As meat for long has been the main thing in Swedish sheep production it was important to maintain fertility and growth while developing the wool quality.

In the project Ull-rika (wool-rich) during 2002-2008 six farmers was involved in crossbreeding the Swedish Svea sheep with merino. The Svea ewes are of meat breed and good mothers with high fertility. Some individuals also have very fine wool. At first merino semen from Denmark was used but it didn't work out very well, so the next step was to import rams. The breeding work was facilitated by continuously using OFDA-100 optical fiber diameter analyzes of the wool.

In project ullFORuM (wool forum) 2008-2011 a mini mill with capacity of spinning 3-4 kg yarn per day was established for small-scale processing of the wool. There was also a felting machine. The project included courses for shearers and developing products together with the brand Design of Jämtland and local craftspeople.

So where are we today? There were 382 ewes and 753 lambs of Jämtland breed registred in the Swedish national breeding database (Elitlamm) in 2019. Not all sheep are registred here, so the numbers might be a bit higher. The wool is very good with 17-23 microns on the ewes. Breeding is carefully planned to avoid inbreeding, but there is a need for new rams.

2020 the mini mill still runs under the name Yarns & Barns. Wool from Jämtland sheep is used in Brattland sweater and hat made by Fjällräven, in a classic college sweater from A new Sweden, and of course it is popular among local crafters.

It takes time... but hopefully the breed will slowly grow and the wool increase in value! Most challenging was to get the rams into Sweden due to the bureaucracy, importing livestock includes a lot of paper work. The interest from farmers has been increasing as they see the value in the wool.



## ***Culture heritage meets modern spinning technology - some tools for stimulating innovation in the local wool sector in Estonia.***

**Ave Matsin, Head of Department, Viljandi Culture Academy at the University of Tartu**

*Viljandi Culture Academy offers professional higher education (240 ECTS, 4 years) in Estonian native crafts. The department aims to make craft more visible and stronger in society. Students work with local traditional techniques and materials, textile students work mostly with wool. Since 2016 there is a wool laboratory for innovation at the university.*

The current situation for wool in Estonia (2015) is about 85000 sheep, 1900 farmers with average herd size about 50 sheep, and the annual production of wool is estimated to 170 tons. 85-90% of the wool is discarded, only 13 ton per year comes out processed in Estonian industry.

There are several obstacles to using local wool in the industry: Wool is counted as agricultural waste, farmers focus on meat production, quality is uneven, there is a lack of shearers, no wool standard, no collecting or classification system, no scouring, less than 1% is washed by small companies in the country, farmers have problems getting rid of wool, wool has a low economical value, and there are outdated machines in the industry.

In 2017 one student made research of the wool mill situation in Estonia. There are six mills producing woolen yarn and three mills producing semi-worsted. The largest yarn producer is Raasiku wool factory (OÜ Aade Lõng), with a capacity of around 40 t per year. They prefer New Zealand and Australian wool that has been previously washed and dyed in Europe. The share of local wool in their production is 10-20%. The smaller mills mostly use home scoured local wool, or local wool scoured in Pāces Vilnas Fabrika in Latvia. The total annual production of wool factories participating in the study is about 60 t of wool products, of which the production of local raw materials is about 13.5 t.

There was a lack of specific yarns to practice old textile techniques which lead to the creation of an own wool laboratory at Viljandi Cultural Academy in 2016. The equipment was produced by Ramella company in Italy for specially meeting the demands of the university. The machines can handle all processes from scouring to yarn (semi-worsted) and also produce wool batt. The maximum capacity is 20 t per year. There are no measuring or testing machinery in the laboratory.

The work in the wool laboratory is based on innovation. Students make small amounts of yarn for producing knitted or woven fabrics and garment, so they better understand the textile processes. The students also learn more about the materials. They are mostly working with finer fibres suitable for yarn and textile production.

What they have learnt from working in the laboratory is that all wools are different! But there is suitable usage for every fibre and yarn. For local development it is important to have the whole collecting and production chain at the same place. Size also matters. The state must support classification and collecting of wool. All partners must be included, the university can't do this on their own!

## **Wool recycling research at Metropolia University of Applied Sciences. Usage of recycled wool and business potentials**

**Anneli Auranen, Master Student in Textile, Aalto University**

*This research project aimed to create connections with different wool actors and connect the supply chain for wool recycling in Finland, to research the suitability of recycled wool for a variety of products and see what kind of business potential there is in wool recycling. They also studied fiber properties and chemical residues in recycled wool.*

The project was coordinated by Metropolia University of Applied Sciences but several companies involved in the wool/textile industry participated.

The mechanical recycling process of wool includes collecting, sorting, shredding, carding, spinning, garment production, transporting, storage, sales and using – including repairing and reusing. Spinning into yarn can be done only once as the fibre length is shortened during shredding.

Collecting for the project was done by Reuse centre in Helsinki. Knitwear and old textiles with a minimum of 75% wool was collected. Sorting was made according to colour and fibre content. The materials is not always so easy to tell if labels are missing. Sorting was labour-intensive, as removing hard parts like zippers, buttons etc. was manually done. They also used waste from the wool industry which is easier to sort.

Shredding means to tears textiles apart into fibres that can be used again. The next step is opening and mixing with virgin fibres. Carding straightens the fibers and removes trash and tangles. During carding the fibres are turned into batts, thin sheets or a long strip. Spinning of recycled wool fibres is the same process as with new wool with the exception that you cannot spin worsted yarn due to the uneven quality of fibres. It is also difficult to produce thin yarn from recycled fibers but in Italy they can make thinner yarn than made in this project.

The fibre length of recycled fibers varied between 25-53 mm. This is good compared to the fibre length of virgin wool (25-75 mm). The fiber composition of 80 % recycled wool /20 % virgin wool had the average fiber length of 47mm, which performs well in all production stages.

It is important to analyse if there are chemical residues in recycled wool. When the material was tested for formaldehyde it contained 4-22 mg per kg which is under the limit allowed for textiles for children. Other tests were done and they didn't find anything alarming, but more tests are needed.

The results from the study shows that recycled wool performed well in all production stages! The current problem is that there is no organized collection and sorting of the material in Finland. There is however a project called Telaketju in Finland that organizes textile collecting and sorting by 2023.

All final products are grey, as there were not enough textiles for sorting in different colours. The amounts of wool waste in Finland are relatively small so cooperation with other countries could be beneficial for larger scale business.

## ***WOOLUME – a current wool research project in Poland***

**Monika Rom, Assistant Professor at the University of Bielsko-Biala, Faculty of Materials, Civil and Environmental Engineering**

*WOOLUME is a newly started research project initiated to find solutions enabling rational use of wool from Polish Mountain Sheep, and the aim is to support ways for using all wool.*

WOOLUME intends to show that wool is a valuable raw material which can be used for high-end interior products manufactured with traditional textile technologies, but also develop products which can be made from low-grade wool fibres. The name WOOLUME was chosen as they want to scale up production and use as much wool as possible!

The project is based on learning from the Norwegian experience to create local value chains for wool.

They have two norwegian partners in applied sciences and cooperates with companies. Cooperation is important for the project and they would like to connect with other countries and projects as well.

The Polish Mountain Sheep is adapted to harsh conditions and farmers want to keep them as they are doing well in the local environment. The wool varies in quality and colour – it is thick and hard with long flecks falling on both sides and mostly white, but sometimes also black and brown.

WOOLUME aims to build a value chain for the local wool with a zero waste philosophy. It is also very important to build a good atmosphere about wool in Poland.

# FRIDAY OCT 9th: Market and Business opportunities

## *Experiences from successful marketing of local wool in the UK*

### **Sue Blacker, The Natural Fibre Company/Blacker Yarns**

*Sue Blacker ran The Natural Fibre Company wool mill in 2005-2019. In this time, the business multiplied by 10 and set up an online sheep wool breeds and blends yarn store - Blacker Yarns. Now she has handed on to new owners to take the business forward, remaining on a part-time consultancy support basis. During this lecture Sue shared from her rich experience of processing local wool from both British and other European breeds and selling the products successfully.*



In the UK there are more wool infrastructure than in many other countries. You can choose to sell just the wool or invest in adding some more value. In the last 200 years wool prices have been up and down over and over again on the global market. Recent pandemics have had a significant effect, due to the influence of China. So: avoid the main wool market! Create another market for your wool and products. An own niche is essential, even for large-scale. Use the scale you need and can deliver, rather than the scale of the market. Wool is a sustainable winner! Make use of the attributes and the origins! Even an ordinary product is special if you can tell the story. And remember that this way is either cheap nor easy, so you must be realistic and patient! It takes at least a year from clip to finished product, and you must then market it as well! It will not sell itself.

For adding value (and some cost!) to make the most of your wool you need to develop products and tell their story. If you don't want to process the wool on your own you must sell it to the right person, where you can get better payed for rare or regional breeds. There will always be great and worse fleece in a flock, sorting out and selling the best fleece expensive could finance all shearing.

The origins of the wool – your farm, your farmer's co-op, your farmer's market or your region is important for both business and consumer. This extra difference is very saleable, whether through certification, blockchain or local provenance, if demonstrated!

You can add value beyond the farm by scouring, carding, spinning yarns, weaving, knitting, etc. The characteristics of your wool are crucial to what can be done and you must process and present it in the most appropriate way. The many main stages in the wool process makes the products expensive, so you have to sell them! With provenance, photos, stories, website, blog and other social media. If you get your wool designed into high quality products and then bring them back to the farm you get the best impact from your story. Marketing and selling online is no longer only for the few. Post pandemic world is more virtual than real and marketing local wool is an international activity.

## ***Together it is possible! The Swedish Wool Initiative – Fashion industry in cooperation with local wool producers***

**Claudia Dillmann (The Swedish Sheep Breeding Association), Jodi Everding (Filippa K) and Linda Nydén (Smart Textiles/University of Borås)**

*In November 2019 several Swedish outdoor and fashion companies gathered for a Swedish Wool Initiative (SWI). Together the companies wanted to buy Swedish wool to develop collections. Something that these Swedish companies really demand is traceability and ethically produced wool and this initiative would be a good way to get it.*

As introduction Claudia Dillmann presented the current wool situation in Sweden. 2019 there was a Vinnovaproject called Circular Woolclothes in cooperation with LRF (the Federation of Swedish Farmers), Smart Textiles/University of Borås and the Swedish brands Filippa K and Røjk Superwear. The goal was to produce sustainably wool garments from Swedish wool. The project made an inventory of the whole wool value chain from farmers, shearers, scouring and spinning mills, etc. to map out what types and amounts of wool that are available. The yearly Swedish wool production was estimated to 1200 t, where only 37% is used but nearly 75% could be used. The inventory focused on crossbreed wool, as it is the biggest amount in Sweden.



Jodi Everding continued and talked about the good relation to wool in the fashion company Filippa K. They love wool because it is a versatile, durable and circular material! Wool is the second most used fibre in their 2019 collection. The company is currently sourcing wool from Australia, South Africa and South America, but they would really like to use Swedish wool, for several reasons. Using Swedish wool gives benefits with good animal welfare, can reduce the carbon footprint of their products, and reinvigorates the textile industry in Sweden.



During 2018-19 Filippa K developed a sweater called Elin from Swedish wool. All wool was bought from one farm - Norrby farm in Kungsör. They have crossbreed sheep (finndorset) with fine wool (23-26 micron) in enough amounts. Scouring took place in Sweden at Ullkontoret, spinning in Italy and knitting in Romania. 140 sweaters were made and introduced to the market in fall 2019 for 1800 SEK each (retail price). All was sold out. Filippa K hopes that the cooperation in SWI will make it easier for them to use Swedish wool in the future. Using Swedish wool should not be a competitive advantage between companies. It is much better to buy together and have the same supply chains.

Linda Nydén then described the main purposes with the SWI: using more Swedish wool, enable Swedish brands to buy Swedish wool and enable farmers and shearers to get paid a fair price for their wool. The first step is to buy the Swedish wool together, send the batch for scouring in Europe and share the expenses and then use parts of the retailers own value chain. We also need to continue collaborating and increasing knowledge.



Next step will be to process as much wool as possible in Sweden. But first we must fill the gaps in the value chain. We need to find funding for investment, like machinery, to get a reliable infrastructure for wool processing in Sweden. Now we are bringing in new project leader (Axfoundation) to help us organize and scale up the project.



After the SWI presentation there was a short discussion about wool, trends and fashion. We are in a wool trend now, but how can we make it last? We need to market wool with long lasting timeless design and quality. A wool piece is an investment as wool will keep and look good for many years. No teen-age design or attitude. We will see a flashback from the global “cheap” fashion industry and we need to be prepared with arguments for wool! Luxury to buy better and less? We need to change the attitude towards clothes and fashion.

What will happen in the next years? Hopefully things will move forward, building infrastructure, collecting, classifying, more shearers (there are only 10 full-time shearers in Sweden today). More than fashion – all textile industry should work with wool.

## ***To do more with less for many – with many. Reflections on the Swedish Wool Initiative with support from the Sustainable Development Goals***

**Helena Hansson, Frugal innovator and Doctoral Student in Design, University of Gothenburg**

*With experience from her international research Helena Hansson discussed innovation for sustainable development in situations characterized by institutional voids and complexities, resource scarcity and lack of affordances.*



The 17 Sustainable Development Goals (SDGs) is a global agenda established by the United Nations. Sustainable development meets the needs of the present without compromising the ability of future generations to meet their own needs. Wool issues can be a part of several SDGs but in her reflections Helena focused on SDG 9: Industry, innovation and infrastructure and 17: Partnerships for the goals.

Helena has not worked in the wool business but will try to give another perspective. She thinks that the Swedish Wool Initiative is a good example of building resilient infrastructure, in a long-term way, both local, regional and global, where also welfare of both people and animals are considered. To achieve sustainable industrialization – SDG 9 – new infrastructure and platforms like the SWI are needed. Building infrastructure involves many different actors and cooperation between business, academy, civil organisations and society. It is important to discover the voids and try to fill them. It is also important to see that innovation is not just products and business, it is also knowledge and there must be platforms for this.

Wool is a global movement and gives the north connection to the south. We can learn from other parts of the world, as well as from the global industry. Therefore Helena wanted us to put the theme of the congress in a global perspective. The SDG 17 urges us to enhance the global partnership for sustainable development to support the achievement of the SDGs in all countries – in particular development countries. This can be done by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources.

Helena also encouraged us to scale up the wool issues socially. From earlier experiences she has learnt to work in small but scale up through cooperative work. She also pointed out the importance of bringing in a variety of voices and perspectives in complex issues. Working with local innovation in a global scale with long-term projects, trust-building systems, building relations, interconnecting elements like wool is good to start with for sustainable development. Also try to work with projects that continues after ending of the actual project. Perhaps the most interesting things happens after the project ends!



## APPENDIX: BREAK-OUT SESSIONS DAY 2

**1. GLOBAL POSSIBILITIES FOR SUSTAINABLE WOOL DEVELOPMENT** One of the UN:s sustainable development goals is "Global partnerships for sustainable development". How can we work both local and global in the wool sector? Is it possible to work small-scale and large-scale at the same time? Can we include more people with different experiences in a global community of practise? If you are interested in global perspectives on wool fibers, welcome to join this break-out session! Room host: Helena Hansson.

**2. SPINNING AND PRODUCT DEVELOPMENT WITH LOCAL FIBRES** The conventional wool industry and machines are rarely adapted to the fibres from local breeds. Still, there are many small-scale industries working with fibers from local breeds and making unique products with great stories and transparency. Are you one of them? Or do you want to become part in developing these products? Maybe you are in need of a special yarn for further product development? Welcome to share your ideas and experiences in our break-out session! Room hosts: Anso Norling, Annkristin Hult.

**3. SWEDISH WOOL INITIATIVE** How do we transform into a more sustainable fashion and interior design industry? Discussions about collaborating on challenges such as knowledge, machines and financing. And – how do we use all the wool? Room hosts: Linda Nydén, Claudia Dillmann, Jodi Everding.

**4. IDEAS FOR USE OF LOWER QUALITY WOOL** Do you have wool that is difficult to sell because of quality defects? Do you have ideas for low quality wool but no access to the raw material? Do you look for partners in a project where waste wool can be turned into a product with a quick and cost effective transformation to final product? Join us in the break-out session and see if we can find solutions! Room host: Jenny Andersson

**5. BALTIC WOOL COOPERATION** Riina Noodapera from The Rural Economy and Agricultural Society Gotland tells more about BWC 2.0 (Baltic Wool Cooperation), which is a parallel project to the Baltic Wool Conference. The project involves networking and an inventory of processing sheep wool (spinning mills etc) in the Baltic Sea region. An inventory will be made (map or booklet) outlining the mills capacity, machinery and quality/quantities produced. Networks and new cooperations will be built between businesses working with sheep wool during the 18 months of the project. Room host: Riina Noodapera

**6. WOOLUME** Monika Rom from University of Bielsko-Biela will give a further presentation of WOOLUME and the various research projects included. WOOLUME was initiated to find solutions enabling rational use of wool from Polish Mountain Sheep, and the aim is to support ways for using all wool. They would like to get in touch with other similar projects, so if you have any experience to share, please join this break-out session! Or if you have a common interest in academic wool research and how universities can develop and encourage local wool business. Room host: Monika Rom