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Sustainability Report

Group 3

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SUSTAINABILITY MANAGER

- What is sustainability for ARFAL?

  For us sustainability is a circular transparent textile industry with zero waste, clean environment and ensuring human rights, living wage, gender equality, safe working conditions and no child labor.

- Vision:

  Our vision is to make impact on lives of all the workers and communities in the supply chain through our business by creating a circular transparent textile industry with zero waste, clean environment and ensuring human rights, living wage, gender equality, safe working conditions and no child labor.

- As a brand what's our goal? (Mission)

  Our goal is to create stylish high quality timeless pieces that resonate with modern, unique, and encourage young men to embrace vibrant colors and not to fade into the crowd.

- Sustainable development goals

  - 1% of the profit will go to NGOs for poor people and child education.
  - Suppliers will be Fair wear Foundation monitored to ensure human rights, safe work environment, living wage and gender equality and no child labor.
  - Tex.tracer will ensure transparent supply chain.
  - Scraps from CMT factories and collected used products will go to Frankenhuis, the recycling factory in Almelo, Netherlands for recycling.
  - Recycled materials will be reused in the new collection.
  - 10% discount on returning garments.
  - Free shipping in the Netherlands, Belgium, Germany, metropolitan France, Austria, Denmark, Italy and Spain and payment for other countries.

- CSR Strategies

  - In 2-3 years, we want to make 50% of our collection sustainable
  - In 5 years, we want to make 90% of our collection sustainable
  - In 10 years, we want to develop our own R&D department.

- Materials

GOTs Cotton+30% recycled cotton

In organic cotton production, farmers reduce the use of pesticides and can only use natural fertilizers, no synthetic fertilizers are allowed *(Cotton, 2018).*
OEKO-TEX certified products can be made with chemicals, as long as they're of safe concentrations in the final product. GOTS, however, guarantees that a product is organic and has been made without the use of hazardous chemicals at any point in the supply chain. *(Home, 2023)*
Only textile products that contain a minimum of 70% organic fibers can become GOTS certified. All chemical inputs such as dyestuffs and auxiliaries used must meet certain environmental and toxicological criteria. The choice of accessories is limited in accordance with ecological aspects as well. A functional wastewater treatment plant is mandatory for any wet-processing unit involved and all processors must comply with minimum social criteria. (*Global Organic Textile Standard (GOTS) | OTA*, n.d.) Which makes GOTS certified cotton better than organic or OEKO-TEX certified cotton.

Production countries: China, India, Bangladesh, Turkey, and Africa. We will buy from Turkey. Because we want to source from EU to reduce risk and carbon emissions in supply chain.

Production process: ginning, carding, drawing, roving, ring spinning, winding

Yarn dye: Package dyeing (reactive or direct dye)

Lyocell with 30% recycled material

Lyocell is a semi-synthetic fabric we often use as a substitute for silk or cotton. Lyocell is a form of rayon, mainly composed of cellulose obtained from wood. Production of this fabric involves wood – mainly eucalyptus, though production sometimes also involve oak and birch. The wood is cut into small pieces and then ground into a pulp. It is then dissolved by a chemical or organic solution. This results in raw cellulose, which is a sticky and viscous liquid. This mixture is then pushed through spinnerets, through which white lyocell fibers emerge. After washing and drying, they are ready to spin into yarn and ultimately become fabric.

The main difference between lyocell and viscose is that their production method. Production of Lyocell involves modern methods, which require less energy than traditional viscose production. Besides, lyocell is more absorbent and has a better drape ability than viscose. *(Hasa, 2020)*

Lyocell fiber is eco-friendly since products made from it can be recycled and lyocell is biodegradable because it is a cellulosic fiber. Products made from lyocell can be recycled, incinerated, or digested in sewage. The fiber will usually degrade completely in just eight days in waste treatment plants. (*Michael, 2005*)

Lyocell is 100% cellulose and as such it is biodegradable. The fiber has also the potential for re-use and remanufacture. Where used as 100% lyocell there is the possibility of using the fabrics as a

raw material for regenerated cellulose fiber production. When present in blends, the end-of-life options are reduced. Considered to be an environmentally friendly fiber. It is produced from a solvent spinning process that recovers the majority (99.6%) of the solvent used and the process uses very little water, most being recycled within the process (*Environmental, Eco Impact, Dimensional Stability, Application, Reuse and Recycling Data for Lyocell*, n.d.)

Production countries: Austria, the United Kingdom, and the USA, Brazil, Pakistan, India, Indonesia, most of this fabric is now produced in China. We will buy from Austria. Because we want to source from EU to reduce risk and carbon emissions in supply chain.

Yarn dyed: Package dyeing (reactive or direct dye)

Fresco wool+30% Recycled wool

Fresco is a lightweight fabric made from tropical wool with a porous weave designed for maximum air circulation. It's an ideal choice for hot and humid climates or for those who generally have higher body temperatures. The word “fresco” is derived from the Italian word "affresco”, which means "fresh”. The breathability of this cloth is comparable to that of pure linen, but without the wrinkling. In fact, Frescos are known to be naturally wrinkle-resistant due to their crisp fibers and open weave. You will feel the breeze pass right through this refreshingly airy cloth. It also doesn't necessary "look" like a summer weight fabric – fresco can be worn year-round. (*1 Piece/10 Ways: The Fresco Suit*, n.d.)

Wool is readily recyclable, with pathways well established. One well-known hub for wool recycling is Prato, Italy. Textile manufacturers there perfected their trade and today, their expertise is highly sought after.
How existing wool items are recycled: The closed loop system- A mechanical process that returns garments to the raw fiber state and turns the fiber into yarn again, to produce new products (particularly suitable for wool knitwear).

Production country: We will buy from Italy. Because they have wool recycling factory. Also, we want to source from EU to reduce risk and carbon emissions in supply chain.

Production process: Scouring, carding, spinning, and twisting, fabric production.

Yarn dyed: Package dyeing (acid dye)

Bemberg (lining)

Bemberg is the proprietary name for a cupro fabric. Similar to rayon, lyocell, and Tencel, Cupro is a hybrid fabric. Cupro production begins with a basic material that is natural but requires chemical processing to become usable fibers. In this case, instead of bamboo, beech, or eucalyptus fibers, cupro uses cotton linter. Cotton linter, the fuzz around the cottonseed, is a by-product of the

production of cottonseed oil. The fuzz is removed, dissolved, then transformed into pure regenerated fiber — a very fine, smooth, and round, continuous cellulose filament. The linter is mixed with ammonium and copper before being dropped into caustic soda. Finally, it is extruded through a spinneret as a filament. Bemberg is washable and durable, it's also biodegradable and compostable. In fact, it can naturally break down in as little as 2-3 months. If it's burned rather than composted, it has a much lower environmental impact than nylon, silk, wool, and polyester. Few toxic substances such as NOx (oxides of nitrogen, an atmospheric pollutant), CO, and CO2 are released.

Asahi Kasei has a clear vision of its responsibilities to its employees, the community, and the environment. They use renewable energy including hydro and biomass power generation. 40% of the power that their factories use is generated on-site. They recycle their waste, including the chemical baths used in making cupro fiber. Their fiber scraps are burned as part of the power generation. They have almost zero waste emissions and have been certified by the Global Recycled Standard since 2017. Asahi Kasei has a few factories around the world. They are especially active in the Far East and India. They participate in the Business Call to Action led by the UN Development Programme. *(Rubin, 2022)*

Production country: Bemberg is produced in Japan, far east (mainly in India), and Italy (*Bemberg by Asahi Kasei Returns to Première Vision*, n.d.). We will buy from Italy. Because we want to source from EU to reduce risk and carbon emissions in supply chain.

Yarn dyed: Package dyeing (reactive or direct dye)

Linen with 30% recycled material

Production process:

1. CULTIVATION

Flax seeds need around 100 days to grow. The flax plant is a delicate and it cannot endure very hot weather. Therefore, it must be planted accordingly so that it is not exposed to very high temperatures. Flax can also be commercially produced as well. The soil must be tilled well, and frequent weeding is necessary for the growth of the plants.

2. HARVESTING

The plants give several indications for the right time for harvesting in around 90 days. When the leaves wither away, the stem becomes yellow and the seeds turn brown, the plant must be harvested immediately. This can be done manually or mechanically.

3. RETTING

After harvesting, the stalks are processed for the removal of leaves and seeds. Then the fiber is separated from the hard wooden interior part. This is the process of retting, which needs to be expertly handled.

4. BREAKING

After retting, the plants undergo a process called breaking. The stalks are moved through rollers to separate the bast from the exterior fibers. It is the bast from which linen is made.

5. COMBING

The process of combing or straightening of the fibers separates the short fibers from the long and fine linen fibers. The short fibers are used for making coarse and sturdy goods while the long fibers are used for spinning.

6. SPINNING

The long linen fibers, called Line fibers, go through the process of spinning, and a machine called spreaders is used. The fibers are laid parallelly, creating a sliver. These are again passed through rollers, after which the fibers are called roving. These roving are then ready to be spun on a spinning frame.

7. REELING

After spinning, the fibers are made into threads, which are then made into spools or bobbins. This process makes the fibers stronger and inelastic. Reeling needs to be carried out in wet and humid conditions and the linen fibers need to be run through hot water bath to bind is closer together.

8. DRYING

The yarn finally goes through the process of drying. The yarn is then used for textile manufacturing, like household items, clothes, etc. *(Tayal, 2020)*

Production country: China is currently the larger producer of linen. It is also produced in Ireland, Italy, and Belgium. Belgian Linen is widely regarded as the highest quality linen fabric globally. Linen fabrics carrying the Belgian linen quality label contain a minimum of 85% European flax fibre and are woven in Belgium. (House, 2022) We will buy from Belgium. Because we want to source from EU to reduce risk and carbon emissions in supply chain.

Fabric dyed: Jet dying machine (reactive or direct dye).

- Suppliers

  Cut-Make-Trim (tier 1) Factory: Italy

- Where to make the biggest impact? Focus points- Design/ Product/ Organization/ Use phase?

  Our focus is on product by using mono-material. We have 2 different kinds of fabrics in one item that needs to be dissembled before recycling which makes the recycling process little difficult. But we are trying to solve it and come up with innovative ideas. 30% recycled material will be used in each article. Unlike our competitors, we are not using any blend or synthetic material because synthetic material is extremely harmful to produce as well as for human body. We try to do sustainable production as much as possible. Less energy consumption, less CO2 emission and recycle waste. The industry is not developed for sustainable production yet entirely because in the industry the dyeing procedure of cellulosic fabrics is still the conventional procedure wasting huge amount of water and energy.

  The dyeing process of textiles varies depending on the type of fabric. Cotton dyeing is a longer and more water and heat-intensive process, due to the negative surface of cotton fibers. This means that usually cotton only takes up about 75% of the dye that is used. To make sure color holds, dyed fabric or yarn is washed and heated over and over again, producing huge amounts of wastewater. ColorZen uses a patented technology that pre-treats cotton before it is spun. This pretreatment makes the dyeing process faster, reduces 90% of water usage, 75% less energy and 90% less chemicals that would otherwise be needed for effective dyeing of cotton. *(How Sustainable Dyeing Is Changing the Textile Industry, n.d.)* Website is not available anymore. No information found after 2019. Not being used in the industry. But in future if this technology is developed, we can use it to dye our cellulose fibers.

Another sustainable coloring process is with bacteria. Living Colour is a biodesign project based in the Netherlands that is also exploring the possibilities of using pigment-producing bacteria to color our clothes. In 2020, Living Colour and PUMA teamed up to create the first-ever bacterial dyed sports collection. In the tub at first bacteria needs to be put in and let it grow then add solution in it. In that solution fabric needs to be socked for some time until the fabric gets desired color. Bacteria grows onto the fabric thus making it colored. *(Ilfa, 2020)*

- Sustainable Story:

Our outfit has great influence on our mood. We made collection for men who want to keep up the joy in boring professional life, who dare to step outside the circle, the social norms, men who believe in themselves and have playful attitude, men who are never afraid of showing their true self and want to be a part of the change. Our persona Jan-Hendrik is 31 years old Dutch man who works at the marketing department. He is an innovative and creative person. His physical health is as important for him as his mental health. Thus, he tries to live a sustainable life and appreciates sustainable clothing and sustainability in every aspect in human life. Because he thinks to save humans and our planet it is utmost necessity to make the world sustainable.

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