Can the fashion industry calculate its way to sustainability? - The potential of LCA

By Renske Koster

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Apparel has a long and complicated life cycle consisting of many phases such as fiber and yarn production, assembly, and transportation. All these stages can have an adverse impact on the planet and lead to complex environmental issues such as water degradation, climate change, and the depletion of resources. The fashion industry is in need of new insights that help solve such complex problems. Life Cycle Assessment (LCA) is a tool that can play a significant role in providing critical information on how to improve fashion’s current environmental sustainability challenges.

May 11, 2017, fashion industry leaders, policy makers, researchers, and NGO’s came together during the fifth edition of Copenhagen Fashion Summit the world’s largest sustainability conference. The groundbreaking report: Pulse of the Fashion Industry (2017), which includes an assessment of the current sustainability status of the fashion industry and an advanced perspective on the business case for sustainability was highlighted at the event. The evaluation concluded that the sustainability “Pulse” of the industry is weak, scoring only 32/100. But when the fashion industry addresses the current social and environmental challenges, it can generate up to an additional 160 billion euros in annual value.

One of the reasons why the “Pulse” remains weak is the lack of accessible, high-quality data on the environmental impact of fashion products. Natascha van der Velden, author of Making Fashion Sustainable, The Role of the Designer (2016), states that fashion professionals are not able to access the correct information to justify their decisions regarding production and material processes, even though empowering industry professionals with the right sources can result in the development of more sustainable products and processes.

One way of generating quality data on the environmental impact of the production of fashion items is by using the measurement tool, Life Cycle Assessment (LCA). This scientific approach assesses the environmental implications of a particular product, for example, a pair of jeans, or process (e.g. tumbling) throughout its lifespan and can be used to indicate the events in a garment’s lifespan which do the most harm to the environment. LCA can also be used to make comparisons between different products to measure which has the lowest environmental impact.

LCA Research aims for a high degree of accuracy. However, this means it is also very resource intensive. Collecting the required data and verifying the results costs time, expertise, and money and unfortunately, many fashion professionals are not adequately trained to perform or analyze scientific research. Therefore it can be said that this need for substantial investment and lack of scientific knowledge limits the uptake by the industry.

To reduce the required investments and to enable industry professionals to perform or access LCA research, commercial instruments that simplify LCA methodology or data have been created. For example, the Modint Ecotool simplifies the process of conducting an LCA assessment through an easy to use Excel tool that enables the user to perform quick environmental impact assessments on products. Then there is the MADE-BY Environmental
Benchmark for Fibers which uses existing LCA data and translates this data into an understandable guide of commonly used fibers for the fashion industry to understand and access.

Of course, each method comes with benefits and limitations, all of which should be considered when selecting the right method to analyze the environmental impact. Tools which are more complex generate more quality data, but at the same time require more investment, which limits uptake by small businesses. One way to encourage adoption may be through collaboration between industry partners and academia, as shared interested can lead to better research. Another option for smaller companies may be publicly accessible information sources, such as the Sustainable Material Guide by Modint, which gives them the opportunity to work with credible data and make justified decisions regarding their products.

In general, measuring the environmental impact of products using different resources benefits the fashion industry in many different ways. For example, quantitative data on the environmental impact of goods and processes can create awareness about current sustainability challenges. Intern at the Buying Department of the Dutch Defense Ministry Maaike van Middendorp, praises the Modint Ecotool, stating that it has created awareness on the most damaging stages, such as transportation. By teaching students and industry professionals about LCA, their capabilities to think with a life cycle approach will increase, and connections between sustainability issues will be recognized.

An additional asset of LCA is greater transparency of the supply chain, as LCA tools require the user to fill in personal data on their supply chain, such as fiber consumption. Collecting this information ensures interaction between partners, which can go on to strengthen industry relations and increase technical knowledge exchange. According to Begoña García, manager of the EIM (a tool for calculating the impact of the finish phase created by Jeanologia), fashion designers and buyers generally do not have technical expertise regarding the finishing process. The EIM enables these professionals to learn about their environmental impact, creating awareness about mechanical laundry processes and allowing them to discuss the results.

Another significant benefit of working with LCA is the fact that quantitative environmental impact data can also stimulate and support sustainable innovations. Firstly, LCA can indicate early in the development process if there is a real sustainable potential. Secondly, a company may communicate the results to the customer and the industry, which can strengthen the market position of a new product. Christian Schuster, the Senior Sustainability Expert at the Lenzing Group, states that the Higg Material Sustainability Index, a tool from the Sustainable Apparel Coalition which ranks the sustainability level of fibers, has helped the company to position its products and communicate its benefits, while LCA knowledge is supporting the research and development stage.

LCA results have also lead to stimulating sustainable consumption when used for marketing purposes, such as implementing ecolabelling or making environmental claims. For example, Kings of Indigo, a denim brand based in Amsterdam, indicates the percentage of sustainable materials used in a product on a garment label, conveying more transparency and therefore building trust with the consumer. By proving consumers with credible information, those buying the products are empowered to make more informed consumption decisions and hold brands accountable for their product development decisions.

The increase in the usage of environmental impact tools will eventually lead to more accessible, valuable data, benefitting not only the manufacturer but also the consumer. However, creating sustainable products and the challenges that come with them require not only a quantitative approach but also critical thinking, logic, and collaboration within the industry. In combination with other relevant initiatives such as sector collaboration platforms and organizations, the increase in measuring the environmental impact of fashion products and processes will be significant in increasing the “Pulse” of the industry and its value.
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The complex life cycle of a fashion product strongly associates with negative environmental impact. Measuring the impact of products is not yet standard practice while this can stimulate sustainability in many ways. For example, the quantitative impact data can create awareness, increase transparency, encourage innovation and support sustainable consumption.

So how do we measure the negative environmental impact of a product? The most commonly used method is LCA (life Cycle Assessment). This scientific method assesses the environmental impact of a particular product or process throughout its lifespan and can be used to indicate impact hotspots. LCA can also be used to make comparisons between goods and processes to measure which has the lowest environmental impact.

This scientific approach aims for a high level of accuracy, however, is therefore also very resource intensive. In addition to the required investments, the fact that fashion professionals are mostly not trained in performing or analyzing scientific research limits the uptake of LCA by the industry.

In order reduce the required investments and to enable industry professionals to perform or access LCA research commercial tools that simplify LCA methodology or data exists. Examples of commercial LCA tools are; the Higg Index (Sustainable Apparel Coalition), the Environmental Benchmarking Tools for Fibers and Wet Processing (MADE-BY), the EIM software (Jeanologia), and the Ecotool (Modint). Consultancies create these tools specifically for their customers and are to be used by for example designers, buyers, and manufacturers.

Each tool comes with its benefits and limitations which should be considered when selecting the right LCA method. The Benchmarking Tools by MADE-BY are publicly available for the other discussed tools the user needs to become a member of the organization and pay to use it. Working with the Higg Index or the Modint Ecotool gives a company more insight into their particular situation however also requires more resources. Sector specific tools like the EIM which analyzes only the finishing processes are very suitable for denim companies focusing on sustainable washes, nonetheless, also exclude the other stages of the life cycle.

For many small businesses, the required resources limit the integration of LCA. A solution is to collaborate with industry partners and researchers. Shared interested can lead to better research and shared investments. Publicly accessible information sources such as the Sustainable Material Guide by Modint also offer small companies the opportunity to work with credible data and make justified decisions regarding their products.

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