Creating Circularity

A Product Lifecycle Approach To Apparel Product Development
„Successful companies will take their design from nature, their values from their customers and their discipline from the market place”

Amory Lovins
Introduction

As the textile industry has flourished for years in a linear model of „take, make and dispose“, it now has to face a change from its traditional ways. Driven by a growing environmentally friendly consensus amongst consumers, their increasing demand on product transparency and a governmental push to strive towards a zero-waste future, it has become inevitable to ignore the progression of circular business and production model application towards large scale companies.

For the textile industry, the circular model provides a sustainable and environmentally friendly process that is designed to restore natural capital and optimize material flows in infinitely connected loops. The growth of the circular model is now being recognized more as the next evolvement towards design and development as it has proven to be resilient towards constant shifting of the economy and product value propositions, while also providing a solution to waste management.

Thus, a product lifecycle approach towards product development is what we should strive towards to in order to prosper in a circular economy. The three following approaches that are aligned towards Lidl’s scale and today’s global context are offered as long term beneficial solutions: design for longevity (DfL), design for recycling (DfR) and design for disassembly (DfD).

This guideline will act as an introductory guideline as well as a rationale towards recognizing the growing importance of applied circular models and outlining Lidl’s potential in the circular economy through implementing product lifecycle approaches to their apparel product development process. Considering that global trends are pointing towards a more consumer driven design development, Lidl finds itself in a favorable position to be the first leading retailer to successfully thrive in a fully sustainable supply chain.
The Circular Economy

The circular economy is a conceptual framework where the main idea revolves around an economy that is based upon restoration and regeneration of finite natural resources.

The idea within a circular model is as follows: products are designed to be restorative and regenerative to keep the components and materials valuable and optimizing at all times.

Circular models are argued to be a profitable opportunity towards material savings, increased productivity and job opportunities.

**THREE PRINCIPLES**

- **PRESERVING NATURAL CAPITAL**
  Managing finite resources and maintaining flow of materials

- **OPTIMIZING RESOURCE INPUTS**
  Circulating products and materials at the highest possible quality through recycling

- **SUPPORTING SYSTEM EFFECTIVENESS**
  Designing out negative qualities in the products through redesigning for regeneration

„THE GOAL MUST BE TO SHIFT TOWARDS A CIRCULAR ECONOMIC FRAMEWORK THAT IS BASED UPON IMITATING NATURE“

Figure 1 „The Circular Economy”
Illustration by CIWM-Journal.co.uk
The Textile Industry

“A circular textiles industry is based on a system where textiles products, fabrics and fibres are infinitely and effectively cycled through connected loops within and across industries in a transparent and economical way.

Producers should apply business practices that enable circular use of textile resources to promote social justice, while consumers have a healthy relationship with textiles, based on sustainable consumer practices.”

(Brett Matthews, 2015)

“IT WILL CHANGE THE WAY HOW MATERIALS ARE SOURCED, TREATED, PRODUCED AND PLACED”
Opportunities

Opting for circularity can open up opportunities towards growth, efficiency and innovation. The circular model is also argued to be a profitable opportunity for transitioning businesses, as is calculated by the Ellen MacArthur Foundation. These opportunities include material savings, increased productivity and job opportunities. The biggest savings in cost would be within material costs. The estimated cost savings would amount up to $1 trillion per year globally by 2025 and according to the EU, businesses that apply circular models can save up to €630 billion in the long run.

1 Reducing CO2 Emissions
Circular models can conclude in reducing carbon dioxide levels by 48% by 2030 and/or 83% by 2050. Of course, this is calculated from a global stand point and includes participation throughout various sectors. Though, it is important to be reminded that the given opportunities through circularity will always be a collective effort. But once the fire is ignited, the combustion is inevitable.

2 Material Consumption and Supply Management
Through circular models and material flows, virgin resources are less needed and therefore primary material consumption can be reduced significantly up to 32% by 2030. This is specifically the case for certain chemical uses, water and electricity. Through using recycling, restoring and re-using systems, Lidl can compromise its costs through being less dependent on the price of raw materials, causing a stronger flexibility towards external challenges.

3 Cross-Sector Collaboration
Collaboration is a huge part of the acceleration and success of a circular model. Through collaborating with various sectors, platforms and manufacturers/suppliers, opportunities within creativity and optimization can be found, while also maintaining great cross-sector relationships that were out of question before.

4 Receiving Governmental Support
Many governmental bodies such as the EU are supporting and pushing the circular economy as a positive strive towards the future. Many regulations and policies are being adapted towards enhancing circular models, while big financial investments and fundings are being given towards transitioning businesses and innovations that help accelerate this transition. The target of reducing waste has become a global goal towards sustainability.

5 New Business Opportunities
Circular models can open up new business opportunities as well as new job opportunities. Two important ones could include the following services:

- Material collection logistics
  Ensuring that material textile waste is getting collected and treated properly to enhance the end-of-life use as a whole requires a completely new system.

- Marketers and product placement
  Putting new sustainable markets on the shop floor means a completely new branding and placement of these products. Sustainable products should be highlighted, celebrated and distinguished from the other products. Customers, especially millennials, have shown their willingness to pay more for sustainable products and this behavior can enhance the drive for sales and higher productivity of these products.
Consumer Driven

Next to the moral and ethical justification of any sustainable driven systematic implementation, consumers and governmental influences are the biggest forces of drive towards making a change. According to future global trends, the shift towards a more sustainable and environmentally friendly consuming behavior is only getting stronger each day. Keeping up with the consumers desires is key towards growth and as more companies are currently offering more sustainable products to keep up with their consumer desires, there is no denying that this is what is laying ahead in the future.

1. Transparency and Shared Knowledge
   Continuous advancing technology will allow for more transparency between the customer and the company regarding product material, sourcing and ethical production issues. This can be a big influence in the way consumers shop. Next to this, consumers will also be able to communicate and share information on product conditions and components amongst each other. Companies can use this information again to perform better conforming to consumers desires.

2. Consumer Driven Design Development
   Now more than ever consumers will have access to product information like never before, meaning that the focus on ethically sourced products will be growing stronger. This will stem from the consumers personal motivation “to do good” that will be an important weighing factor in their shopping behavior and purchasing decisions. These changing consumer demands will result in a product design development that is strongly lead by consumer’s needs. Through the technology of today, they are able to get this information more easily. For the discounter market to weigh in on this trend is only natural as most of their competitors have already implemented sustainability programs.

3. Increasing Customer Loyalty
   One of the Lidl’s strength in brand awareness is the fact that consumers know exactly what they stand for. Great value for great prices will remain to be their product value proposition as customers keep coming back. Combined with various loyalty programs, the customer loyalty is incredibly high for any discounter. Circular models can increase these relationships between the retailer and customer as their contact and communication continues after the end-of-life use of a product. For example, returning unwanted textiles back to the store creates further interaction. This on-going relationship can conclude in gaining an incredibly insightful view on consumer usage pattern amongst other data.

4. Off-Price Consuming Behavior
   As the discounter are starting to expand and entering new markets, they have raised the bar for traditional retailers and drawing in more consumers. Competition is running high and the discounter can not depend on the low price/good quality approach anymore. They have to offer more. Together with the rising trend of sustaining products, Lidl can be the first discounter retailer to offer sustainability to its incredible and ever expanding consumer group.
Lidl

Opting for product lifecycle approaches can mean several things for Lidl. Next to product development, areas such as sourcing, production, merchandising and textiles will be affected greatly and it will be needed for these departments to work together more closely.

Ideally, a product development team that is implementing closed loop models should have an extensive knowledge on textile engineering and technology in order to stay atop and to push creativity and innovation. It is important that all teams have the same mindset and goal towards closing the loop.

„IT IS POSSIBLE TO RECONCILE SUSTAINABILITY AND PROFIT, BUT ONLY IF THE ENTIRE SYSTEM AND LIFESPAN OF THE PRODUCTS ARE CONSIDERED”
- ROHITH DESIKAN

„ADOPTING A CORPORATE MINDSET THAT FOCUSES ON LONG-TERM GOALS IS NEEDED TO ACTUALIZE SUSTAINABLE BENEFITS”

SETTING GOALS
In order to push any sort of innovation, there is nothing more important than setting goals to get the whole company positive, excited and thinking hard on creative solutions to reach these goals.

RESEARCH
To stay ahead of competition in the sustainability area, excelling in knowledge is a significant part in doing so. Acquiring a special research team within the sustainability department can help Lidl to fully explore possibilities and solutions towards closing the loop.

PLAN OF ACTION
For product development, thinking of ways on collecting textile waste should be the starting point on closing the loop. Collaborating with waste and recycling companies is a great solution to collect initial waste. To close the loop, Lidl should consider putting textile collection bins to pursue customers in bringing their worn out Lidl products back to the store. After this, designing possibilities and active collaboration with other internal departments is needed to start production.
Product Life Cycle Approach

A product life cycle approach is meant to focus on sustaining materials and will affect the company’s system towards the environment from manufacturing, production and distribution. The benefits that come with focusing on product lifecycles can mean adapting cleaner production processes, increase better quality in clothing and brand value for companies, manufacturers and suppliers. While it can also help consumers pointing towards a more sustainable consuming behavior through offering a more transparent background details on materials.

„NOT ONLY IS IT ABOUT THE IMPACT WE WILL LEAVE ON THE ENVIRONMENT TODAY, BUT MORE IMPORTANTLY IT IS ABOUT THE IMPACT WE WILL HAVE ON THE FUTURE“

WHY?
Lidl’s no-frills supply chain map and overall simplistic product development process has made its framework both accessible and easily adaptable. There is more room for innovation and implementation. Therefore, the new approach should be focussing more on offering overall quality and optimization of materials and design components in order to sustain those materials and eventually design for further end-of-life use.

Furthermore, focussing on an approach that involves low consumer participation and focusses more on internal systematic changes is key to make sure that consumers do not feel they have to change too. Next to that, it is also important to keep in mind that we are dealing with production on a large scale and have to deal with tremendous existing waste streams.

HOW?
This has resulted into presenting three main approaches towards circular product development processes that are highly focused on the product lifecycle as a whole.

This includes designing for longevity (DfL), designing for recyclability (DfR) and designing for disassembly (DfD). The product development process approaches are specifically those that, again, involve low consumer participation efforts and highly depend on internal systematic efforts. These approaches also conclude to be of high impact, but involve little change from the traditional product development model.
Design for Longevity (DfL)

AIM

Designing for product longevity means making sure that all components of the garment are designed in a way to ensure that the lifecycle of the garment can be eternalized. The average life span of a garment (from retail consumption to landfill) is 2.2 years. Extending this lifecycle by three months per item only can already reduce carbon, water and waste footprints up to 10% and cut resource costs overall.

OUTCOME

The biggest changes from the traditional model would be apparent through material and color usage driven by durability and endurance and a focus on basic style designing. Next to that, an increasing importance in quality assurance would be needed as well. The recommended product line for a DfL product development process approach would be basics. Everyday styles (Esmara, Livergy) are most suitable for product longevity due to simplicity of design and timeless consumer usage.

Supplier
- Headquarter/Buyer
- Manufacturers/Suppliers
- Merchandising Team
- Product Development Team (Trend Research)

Input
- Sales Report
- District Buyer Directions
- Trend Analysis
- Collection Planning
- Reports
- Reference Samples

Process
- Product Development

Output
- High Longevity Collection
- Average Extension of Product Longevity of At Least 3 Months Per Item
- Labels on Extending Garment Care and Recycling Opportunities

Customer
- Headquarter/District Buyer
- Retail Customer

2. Tech Pack and Sampling (Multifunctional Product Design, Focus on Stronger Seams, Focus on Care Repair Labels)
3. Price Quotations Per Selection
4. Bulk Confirmation Order From District Buyers
5. Ready For Production
Design for Recycling (DfR)

**AIM**

Design for recycling is specifically aimed at using proper recyclability components and materials for the end-of-life use of a product. Because of the incredible stream of current waste, DfR approaches are more directed towards finding a solution to clean up this waste, rather than focusing on designing products out of components specifically chosen for the goal to recycle it afterwards.

**OUTCOME**

The presence of a DfR approach will mostly show its significance through a list of requirements for materials, colours, chemicals etc. Holding on to this checklist of requirements will mean that the process of recycling will be more accessible for various product lines on a large scale, making the implementation of a DfR approach a more gradual course of development. Recommended product lines are ones that are based upon polyester (Crivit, Crivit Pro) to work with existing plastic waste and ensure high quality recycling on a large scale at the same time.

![Diagram showing the process of Design for Recycling (DfR)]
Design for Disassembly (DfD)

**AIM**

Designing for disassembly and designing for recycling are both aimed towards a product development process that optimizes sustainability of the materials through the recycling system. Though, different from a DfR approach, DfD is aimed towards the ease of disassembly of the garments through designing for restoration, re-use, repair and recovery of the materials.

**OUTCOME**

DfD offers a solution towards product development that seems more in line with today’s context of product lifecycle production abilities and opportunities. It could be compared to a puzzle-piece furniture from Ikea, where all components are designed in a way to ease the assembly of a product and disassembly towards the end-of-life stage. For Lidl, DfD can be applied to fashion items with trimmings and many or complicated patterns (lingerie, outerwear, fashion items, denim) to try and optimize these product lines to the fullest.

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<thead>
<tr>
<th>Supplier</th>
<th>Input</th>
<th>Process</th>
<th>Output</th>
<th>Customer</th>
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<tbody>
<tr>
<td>Headquarter/Buyer</td>
<td>Sales Report</td>
<td>Easily disassembled clothing collection</td>
<td>Headquarter/District Buyer</td>
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<tr>
<td>Manufacturers/Suppliers</td>
<td>District Buyer Directions</td>
<td>Disassembled components to be used for further recycling or re-use</td>
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<td>Internal Material Storage</td>
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<td>Merchandising Team</td>
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<tr>
<td>Product Development Team</td>
<td>Reference Samples</td>
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1. Classic Shapes and Trends Analysis and Material Selection
2. Tech Pack and Sampling (Easily Seperable Materials, No Blended Fibres, Minimal Number of Patterns)
3. Price Quotations Per Selection
4. Bulk Confirmation Order From District Buyers
5. Ready For Production
Conclusion

When looking at the three proposed approaches of which are able to be successfully applied to Lidl’s product development process, we should keep in mind that these are specifically chosen to deal with large scale volumes of bulk orders and that are conformant to the abilities of creativity within design development. Ultimately, these approaches should be combined to optimize efficiency. This is also depending on specific product lines and choice of end-of-life use in order to close the loop. Therefore, it is not meant to implement one approach to the product development department in its entirety as each product line has its own advantages and limitations. Rather, the approaches should be applied to specific product lines all at once to truly optimize a product lifecycle approach towards product development processes.

Going circular or implementing closed loop systems is not about just implementing the technology. This would mean we would have circular technology in a linear system. It is about changing mindsets towards sustainability and long-term benefits and changing strategic frameworks. Even though it is challenging, it is important to note that sitting still is not necessary. The circular model is highly dependent on collaborative efforts between all players within this process and this is what is ultimately going to accelerate and strengthen the circular model in the near future. It is important to act today to benefit from the opportunities that circular models can propose tomorrow.
„If not now

Then when?“