HOUDINI

Regenerative Lifestyles

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Exploring what a Half-Earth lifestyle could look like and how to enable it

Maximum experience and positive impact on the planet.

*Exploring what a Half-Earth lifestyle
could look like and how to enable it*

The aim of The Regenerative Lifestyle Initiative is to explore ways
for Houdini, in collaboration with Cybercom and different groups and
organisations, to explore how sustainable lifestyles can be supported
and the role of apparel/outdoor companies. The vision is a future where
humanity is connected to nature and everyone on the planet has a good
life while we depend on less than half of Earth's resources. The initiative is
also a contribution to the E. O. Wilson Biodiversity Foundation's project
"Companies for a Half-Earth Future".

This whitepaper is a first step in a process to understand the different
strategic options for a company like Houdini to contribute to a sustainable
future.

Instead of the traditional approach where the company's operations and individual products are the only focus, this paper expands the perspective. The result of this expanded perspective can be summarised in a simple formula: $P * V + L = I$. The first part is where most companies focus on, how the product is produced. The second part is the volume of the goods sold. The third is the lifestyle that a company enables and supports.

The formula makes it clear that sustainability cannot be confined to only make individual products less destructive, or even regenerative. The total amount of products a company encourages is also necessary to include. Perhaps the most ignored, but also important, aspects are the values and lifestyles that are enabled and promoted.

A company can for example enable and promote extreme lifestyles, including helicopter hunting of endangered animals on other continents. Less extreme, but still almost as unsustainable, are companies that reduce people to consumers and exploit our insecurities in order to get people to define themselves only through their consumption. On the other side you can have companies empowering citizens to live the lives they want, based on other values than consumption and enable sustainable lifestyle choices in support of a half-earth future where we reconnect with nature.

In a second step the framework will be discussed and data to assess impacts from different companies and initiatives will be explored. In a third step the project will explore how existing tools can be used to support a more comprehensive approach to sustainability and identify the existing as well as potential sustainability impacts Houdini and others can have.

So far very little attention has been spent on how the amount of goods, including apparel, companies want customers to buy and even less what lifestyles companies are supporting and enabling. To become a sustainable and regenerative company all three aspects must be addressed and activities in one area should never detract from the need to act in all three areas. We hope this whitepaper will contribute to a vivid and important conversation.

Eva Karlsson, CEO, Houdini
February 2020

Contents

The ideas and suggestions in this paper are meant to inspire a conversation about the role for (apparel) companies and other stakeholders in relation to global sustainability to move beyond a risk/problem approach with focus on incremental improvements

in the value chain towards an opportunity/innovation approach with a focus on transformative system change with the impacts in society in focus. A key part in this is to explore the potential for a Half-Earth vision as a driver for business innovation.

Photo: Nakshe Ghalat

Introduction

The aim of this paper is to explore different positive and negative environmental impacts of an apparel company from a global sustainability perspective, with a particular focus on how sustainable lifestyles can be promoted.

The paper explores different ways a company can support a sustainable future where transformative change is needed in society, not only reduce the direct negative impacts. The impacts explored include the volume of goods purchased by consumers and the lifestyles the company is encouraging/enabling. The direct impacts from the production of the goods that most companies focus on today and where significant data is available, are also included to provide context for the other areas where less work has been done so far.

The need to broaden the perspective becomes clear from a historical perspective. While many individual products have seen significantly improved resource efficiency, from car engines and cooling technologies to different types of apparel and electronics, the overall trend has been increased use of natural resources due to more people consuming both more of the same things and new things. When, e.g. car engines become more efficient, larger cars with more horsepower have been produced in combination with more sold cars, something that has resulted in demand for more roads and parking spots, etc. with an overall energy demand from the automotive industry rapidly growing.

One of the major challenges is that, on average, the more money people get, the less sustainable people become due to larger and more houses, more flying, more red meat, and overall more consumption. With the world currently on the path towards 9.7 billion by 2050, adding more than 25% to the current population, and almost 11 billion by 2100, the need to focus on sustainable lifestyles for an equitable society cannot be overemphasised. [1]

Often the total impact of humanity is described in formulas like the IPAT Equation where the impact (I) is equal to the Population (P) times Affluence (A) times Technology (T).[2] As both the affluence and the technology are average numbers it does not provide much guidance for a company, or a policymaker, when developing a long-term strategy for global sustainability.

In order to understand the global impact from the perspective of innovation, disruptive technologies, equity and lifestyles we need to zoom in and ask how we can provide a flourishing life for everyone on the planet and what solutions that can provide such lifestyles in a way that is compatible with a sustainable future. Such a formula would divide the population into different lifestyles and then focus on how these lifestyles can be sustainable.

For many on the planet the most important challenges are still to increase consumption, to ensure health, nutrition, education, etc, while for a growing group of people the main challenge is to provide a flourishing lifestyle with dramatically less use of natural resources in a situation when there is too much of many things, from car driving and flying to food and stressful situations with too much use of social media.

Reducing the environmental impact from individual products is important, but it is only one part of the equation. Without measures to curb the trend with overconsumption, i.e. more of both existing and new products, the overall ecological sustainability trend will continue and probably accelerate in a negative direction with catastrophic consequences such as ecosystem collapses and catastrophic climate change.

1. https://www.un.org/development/desa/en/news/population/world-population-prospects-2019.html

2. https://en.wikipedia.org/wiki/I_%3D_PAT

The vision is a Half-Earth future where half the land and sea are protected in order to manage sufficient habitat to reverse the species extinction crisis and ensure the long-term health of our planet. This is a unique science and ethics-based vision for the future. In order to ensure such a future, ways to provide high-quality flourishing lifestyles with a small ecological footprint are needed. Currently lifestyles in the rich part of the word tend to be 3-5 planets on average, so the challenge to find attractive lifestyles that allow for a Half-Earth future should not be underestimated.

Instead of only improving current ways of producing the goods, leading sustainability companies should explore ways that they can enable and support the kind of lifestyles that are compatible with a Half-Earth future.

In order to explore ways an apparel company drastically can help reduce the use of material resources and protect half of Earth for nature this paper presents a structure for categorising impact from an apparel company and presents an initial estimation of different order of magnitude levels of impacts depending on strategy. The impact categories included are:

1. *The product itself*
2. *The volume sold*
        2.1 How many of the products customers have (wardrobe size)
        2.2 Time the products are used
3. *The lifestyle the company is enabling and/or promoting*

In order to explore possible strategies, four lifestyle categories are used: Low, Medium, High and Obscene. The purpose of the impact and lifestyle categories is to show the order of magnitude difference between different strategic options and provide guidance for a science-based discussion about the role of companies in relation to global sustainability.

Examples of lifestyles choices that can be supported by an apparel company:

• Having a significantly smaller wardrobe that lasts longer and caters to a wider range of needs, including spending time in the outdoors.
• Accessing a shared wardrobe through product-as-a-service solutions, catering to an unlimited range of activities while being more resource efficient.
• Being part of a connected community for peer-to-peer sharing of gear and experiences, open source innovation and sharing of knowledge and insights.
• Multiplied outdoor experiences and encounters with nature with the well-being, and connection to nature these bring as well as the decrease in advertising exposure this results in.
• Values orientation shifting towards less material consumption, more time spent being active and in nature as well as making walking, bike commuting and ski touring the preferred alternative to motorised mobility and local adventures or sustainable travel destinations the preferred choice when vacationing.
• Increased awareness and behaviours shifting towards less impactful and regenerative lifestyles.

1.1 Three assumptions

The regenerative lifestyle initiative builds on three assumptions.
First, there is an urgent need to act to protect nature and ourselves from a full system collapse and a sixth extinction driven by us humans in order to ensure a society in harmony with nature. Climate change and biodiversity loss are also potentially irreversible existential threats.[3]

Second, an increasing number of companies, even conservative business groups[4], now accept that they have a role and responsibility beyond making profit.[5] While most companies still do not include care of the planet in their business strategy the surge in purpose-driven companies has opened a new conversation about the need to look beyond the legal responsibility of the company and explore ways that a company can support important goals in society and include visions that are beyond the profit of the company.[6]

Third, for many companies, especially purpose-driven companies with solutions society needs, the most important contribution is through providing solutions for society through their core business. Hence, for these companies the main focus cannot be to only reduce their own operational impact, as most companies and initiatives focus on today. Supply chain work and work related to the operation of the company are obviously also important, and a sustainable company needs to produce their goods in a sustainable way. To deliver global sustainability the world needs companies that develop and deploy new innovative solutions for society.

Moving forward, companies claiming to be leaders in the area of sustainability have an opportunity to clarify their contribution to society through their core business, i.e. "why" the company exists in the first place and "what" value a company provides to society through its goods and services. Once the company know that they provide something that society actually needs and is not part of the problem through its core business, it also needs to ensure that the manufacturing process is sustainable: the "how".

1.2 Structure of the paper

The paper is divided into two parts. The first part focuses on the situation today and includes discussions about the role of companies in relation to sustainability, the impact on society of apparel and outdoor companies and an overview of the current context for apparel/outdoor activities and ends with a discussion about possible ways forward with the help of a matrix that includes incremental, disruptive and transformative solutions.

The paper presents the initial exploration by Houdini, and Cybercom, a digital consultancy company with sustainability as the key focus, of how sustainable lifestyles can be identified, measured and delivered. The framework used is Cybercom's Digital Sustainability Framework[7] that in addition to the global sustainability goals also includes a Half-Earth vision as a science based and visionary framework for a future society in harmony with nature. [8]

Input and comments on this paper are most welcome. In particular feedback on the overall approach, the way to assess impact and what data that should be used. Other companies and groups who are interested in contributing to a Half-Earth future are most welcome to join the work.

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3. https://sustainabledevelopment.un.org/post2015/transforming-ourworld
https://www.nature.com/articles/d41586-019-01448-4
https://www.nature.com/articles/s41598-018-35068-1

4. https://www.businessroundtable.org/business-roundtable-redefines-the-purpose-of-a-corporation-to-promote-an-economy-that-serves-all-americans

5. https://www.forbes.com/sites/forbesinsights/2019/08/20/4-deeper-reasons-the-181-members-of-the-brt-realize-now-is-the-time-to-focus-on-value-not-just-profits-in-order-to-thrive/#45bfc7189060
https://www.ft.com/content/3732eb04-c28a-11e9-a8e9-296ca66511c9

6. https://www.wbcsd.org/Overview/About-us/Vision2050

7. https://www.cybercom.com/what-we-do/digitalisation/advisory/digital-sustainability/

8. https://www.half-earthproject.org/discover-half-earth/ Half-Earth is a call to protect half the land and sea in order to manage sufficient habitat to reverse the species extinction crisis and ensure the long-term health of our planet. The Half-Earth Project is bringing this goal to life.

Global sustainability and different value propositions

1

TODAY

Potential value proposition
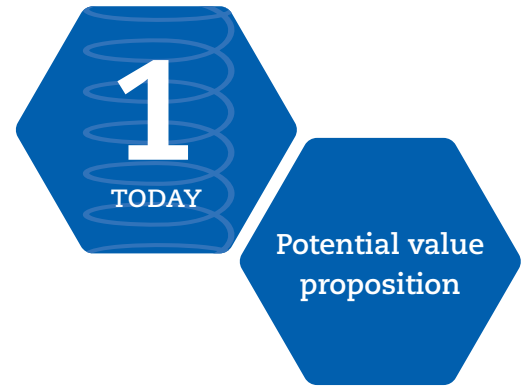
The World Business Council for Sustainable Development (WBCSD) explain how we can understand the impacts of lifestyles in the following way. [9]

> There are several ways of calculating lifestyle impacts or "footprints". We can convert all elements of a lifestyle (goods and services consumed, from housing to mobility, food, energy and leisure) into a material weight. This is called the lifestyle material footprint. A sustainable lifestyle footprint involves the use of about 8,000 kg of materials per year. The average European footprint is approximately 30,000 kg per year. Middle class footprints tend to involve the use of 40,000 to 60,000 kg per year.

> Another method is the Ecological Footprint, which converts lifestyles into demands on the environment, measured by how much land and ocean each of us requires for food, housing, roads and carbon capture. An ecological footprint is measured in hectares but is commonly referred to by the number of planets that would be needed if, for instance, everyone were to live a European lifestyle. The target is a one-planet lifestyle. The most well-known footprint is the carbon footprint, which converts all activities into emissions stemming from a product's full life cycle.

A strength with such an aggregated approach is that the order of magnitude for the change needed and where it is needed becomes clear. We need to reduce the material use to prove the services we need by close to 90% to not collapse the system. If we want to save parts of the world for other species, even more dramatic changes are needed. These are average numbers and this paper provides an overview of the impact of different lifestyles in relation to apparel and lifestyles affected directly and indirectly by apparel companies.

The weakness with an aggregated approach is that it does not identify specific areas where a specific company can play a strategic role. Such a granular assessment requires a different kind of assessment, such as with the SDG Compass[10], the Natural Step Four System Conditions,[11] a report that identifies a specific group of challenges that the company sees as important.[12] To know the planetary and social boundaries with the help of a "doughnut approach", such as the one proposed by Kate Raworth, can also help us understand what kind of society we do not want to have[13] All these have specific benefits and shortcoming in terms of what areas they cover and how they approach companies. Most of them tell us where we should not be and for some companies, that depends on extremely cheap labour and unsustainable use of natural recourses, but many are also not looking for a positive vision of such a fair and equitable Half-Earth future. Such a vision allows companies to ask fundamental questions about their business model, and not only whether they are improving relative to other unsustainable companies.

An initial assessment that identifies the company's major impacts, positive and negative, is therefore often a good first step. It is important to note that most frameworks approach companies as a risk where the best they can do is to reduce their impacts from operations to zero.

Different companies and different sectors have different kinds of impacts that are important to consider in the everyday work, but from a long-term sustainability perspective the way a

9. https://www.wbcsd.org/ Programs/People/Sustainable-Lifestyles/Measuring-Sustainable-Lifestyles/ How-can-we-understand-the-impacts-of-lifestyles

10. https://sdgcompass.org/

11. https://www.naturalstep.ca/ four-system-conditions

12. https://www.researchgate.net/ publication/291086909_12_ Risks_that_threaten_human_civilisation_The_case_for_a_ new_risk_category
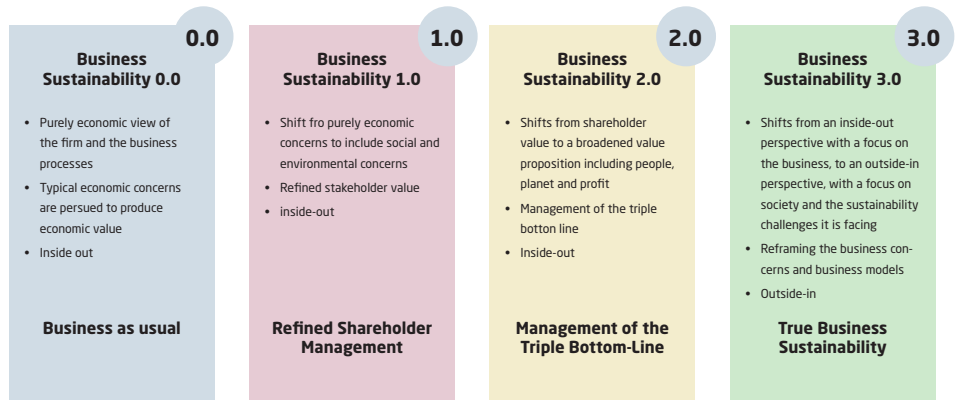
13. https://www.kateraworth.com/ blog/

company contributes, or undermines, to overall material resource consumption can be used as an indicator for overall sustainability and the direction a company must take in order to operate in a regenerative way and provide solutions in support of global sustainability.

In order to understand what sustainability contributions a company can provide it is important to first understand how they approach sustainability, their value proposition. Different sustainability rankings and frameworks use very different criteria to categorise companies. Often the focus is on companies that reduce their negative impacts in the short term and report progress when it comes to different aspects of their negative impacts. Often these companies launch a special product, or a category of products, that they claim are sustainable/green. This sustainability is usually defined as anything that is less bad than what is currently on the market.

With the growing understanding of the need for transformative solutions and that global sustainability will require more than improvements in existing systems, a new category of business sustainability has emerged. In this category the focus is on what is needed in society and how the company can provide the solutions needed.

The different approaches to sustainability can described in three steps. [14]

0.0	1.0	2.0	3.0
Business Sustainability 0.0	**Business Sustainability 1.0**	**Business Sustainability 2.0**	**Business Sustainability 3.0**
• Purely economic view of the firm and the business processes • Typical economic concerns are persued to produce economic value • Inside out	• Shift fro purely economic concerns to include social and environmental concerns • Refined stakeholder value • inside-out	• Shifts from shareholder value to a broadened value proposition including people, planet and profit • Management of the triple botton line • Inside-out	• Shifts from an inside-out perspective with a focus on the business, to an outside-in perspective, with a focus on society and the sustainability challenges it is facing • Reframing the business concerns and business models • Outside-in
Business as usual	**Refined Shareholder Management**	**Management of the Triple Bottom-Line**	**True Business Sustainability**

Credit: True Business Sustainability, Thomas Dyllick & Katrin Muff

Today, many of the rankings, reporting systems and tools still focus on business sustainability 1.0 and 2.0, while rankings, reporting systems and tools for business sustainability 3.0 are still in their infancy.

2.1 The impacts of an apparel company

In order to understand the sustainability impact of an apparel company the system boundaries (what we include as relevant) must first be established. From a global sustainability perspective an apparel company will affect four different areas, knowingly or unknowingly.

1. **P: Product (LCA)**
   This include the traditional cradle to grave that include fibre and fabric production, the making of the garment, the transport of the garment through the value chain, how the garment is washed and what happens at the end of life of the product. How apparel is produced and the impact over the lifecycle is what most companies and policymakers focus on using traditional LCAs and design models for "cradle to grave".

   To minimise the direct impact from the apparel a full lifecycle approach is needed that includes everything from what material is selected, via processes for manufacturing and transport of the garment to end-of-use systems. With a regenerative approach the company can also aim for a net-positive impact over the value chain by supporting protection of nature and reducing the use of natural resources to levels that are so low that a Half-Earth future is possible.

[14] The framework was developed by Thomas Dyllick & Katrin Muff and is described on their dedicated webpage: https://www.truebusinesssustainability.org/for-business-1

2. **V: Volume**

In order to assess the impact from apparel the impact of the individual garments must be multiplied by the volume, i.e. the total number of garments. This is true both for an individual company and the sector as a whole. This volume is particularly important to include in sustainability assessments as the volumes of apparel have dramatically increased.

The volume can be broken down into two parts, how much people own and how long they keep the garments. Both are affected by the strategies of apparel companies.

2.1 .W: Wardrobe size

The "wardrobe size" is not only the physical wardrobe in people's homes, but other storages and also includes the garments that are never sold.

The size of the wardrobe depends on what activities different apparel can be used for, how it can be combined, if the apparel is shared. The size also depends on the values of the customer in relation to fashion. Some companies encourage people frequently change their looks; leading influencers even promote the idea of only wearing a garment a single time. Some companies also encourage impulse purchasing when there is no actual need for the product.

To help optimise the wardrobe size both design and marketing are important. If the apparel is multifunctional and people feel that they can dress in the same apparel this can dramatically reduce the size of the wardrobe. A person that does not need a large wardrobe can often reduce the volume purchasing. An empowered person is also less likely to seek approval by buying new apparel, but rather through what they do. This makes marketing for empowerment, rather than communicating the following of fast fashion, important for sustainability.

2.1. T: Time used

The longer time a garment is used the less need exists to buy new apparel. How long a garment is used can be divided into two parts. First, quality, that is related to how long a garment can be used before it falls apart, lose the functionality, or lose the look the user wants. Second, fashion, that is related to how long the customer wants to use the garment. In order to have a long lifetime the apparel must both have good enough quality and the user must be willing to wear it. If the quality is not good enough it is discarded. The same goes for style, if the style is based on a short-lived trend and people think that is important, they will only wear it for a short time. The quality of the garment and the design will in combination affect how long the apparel is used.

To help optimise the time used, both the quality of the garment needs to be ensured as well as ways to extend its lifetime, but even more important is to find ways to make people feel proud when they wear a garment for its full lifetime, including when it show signs of use. To optimise the time a garment is used both the quality and the fashion aspect must be addressed.

3. **L: Lifestyle**

With the urgent need for sustainable lifestyles and the important role of fashion in establishing attractive lifestyles apparel companies have a very strategic role to play for global sustainability. Few sectors are so directly involved in establishing visions of what an attractive lifestyle looks like, and when a person lives a life full of compromises. What lifestyle and values the apparel sector as a whole promotes, as well as the contributions from individual companies, is therefore important to understand.

On a product level, different apparel can make it easier or more difficult to walk, bike, be out in the rain, and engage in different activities. Apparel can also be part of an image of a person who cares about experiences, self-actualisation and what they contribute to society, or be part of an image of a person who cares about fast fashion, constantly buys new things and seeks approval from others for how they look and what they buy.

On a company and sector level, different lifestyles and role models can be portrayed in advertising. These choices affect what kind of lifestyles that an apparel company encourages/enables.

To support sustainable lifestyles the design and quality can be optimised for low-impact activities that can be experienced without flying, like many outdoor activities that also can support a connection to nature that many studies indicate has many positive benefits.[15] The marketing and advocacy work can aim to empower citizens to engage and support sustainable development, instead of turning citizens into insecure consumers who define their value based on material consumption and how they look. Empowered role models who make a valuable contribution to society can be used rather than individuals with extremely unsustainable lifestyles who are only famous for being famous.

Based on the four areas above, the impact of an apparel company can be described with the following formula: $A * V + L = I$.[16] The total impact is influenced by the direct impact from the apparel multiplied by the volume. In addition to this direct impact, the impact from the lifestyle that the apparel and apparel company is encouraging/promoting should always be added if global sustainability is the focus.

For apparel companies and consultants with a sustainability 1.0 perspective the focus will be on the production of the garments. Initiatives tend to focus on better versions of existing materials and recycling. The main drivers are cost and branding. If companies in this group use recycling or subscription models the focus tends to be on staying ahead of regulation, increasing sales and/or improving people's perception of the company. The focus is to deliver fashion in the least destructive way. Many in this group are fast fashion companies that encourage high consumption volumes of low-quality apparel that is designed to last only during a short window when the apparel is seen as fashionable.

Examples of companies with activities in this category include H&M[17], Zara[18], and GAP[19].

A 1.0 company tends to have visions such as H&M's: "Our vision is to lead the change towards a circular and renewable fashion industry while being a fair and equal company."[20] The kind of activities that these companies engage in are described in reports that focus on how the production can be improved, such as "Fashion's new must have: sustainable sourcing at scale", by McKinsey's Apparel, Fashion & Luxury Group.[21]

Companies with a sustainability 2.0 perspective will focus on the production of garments, but also have a broader perspective including purchasing of better-quality apparel, renting and repairs. They care about the full lifecycle. If companies in this group use recycling or subscription models it tends to focus on how to reduce environmental impact. The focus is still on the apparel and fashion as an intrinsic value. Some include the size of the wardrobe and encourage purchasing of less apparel, but many are still highly consumption driven. The value proposition tends to focus on providing what they see as fashion, often fast fashion where customer focuses on their look, in the least destructive way.

Examples of companies with activities in this category include Stella McCartney[22], Fristad[23] and Nudie Jeans[24].

A 2.0 company tends to have visions such as Stella McCartney's "We are agents of change. We challenge and push boundaries to make luxurious products in a way that is fit for the world we live in today and the future: beautiful and sustainable. No compromises."[25] The kind of activities that these companies engage in are described in reports that focus on the full lifecycle of apparel, including lifetime of apparel such as "A New Textiles Economy: Redesigning Fashion's Future" by the Ellen MacArthur Foundation.[26] There are also guiding tools such as seven forms of sustainable fashion and the Higg Index.[27] The value proposition tends to focus on providing what they see as fashion, often more long-term fashion where customer are proud of how they look, and the goal is to have fair and sustainable apparel.

15. https://my.usgs.gov/hd/issues_and_topics/connections-between-nature-and-human-health

16. The formula is a simplification and each part of the equation is complex.

17. https://sustainability.hm.com/

18. https://www.zara.com/au/en/sustainability-l1449.html

19. https://www.gapincsustainability.com/

20. https://hmgroup.com/sustainability/vision-and-strategy/vision-and-strategy.html

21. https://www.mckinsey.com/~/media/McKinsey/Industries/Retail/Our%20Insights/Fashions%20new%20must%20have%20Sustainable%20sourcing%20at%20scale/Fashions-new-must-have-Sustainable-sourcing-at-scale.ashx

22. https://www.stellamccartney.com/

23. https://www.fristads.com/en-gb/about-us/fristads/sustainability

24. https://www.nudiejeans.com/page/this-is-nudie-jeans

25. https://www.stellamccartney.com/experience/en/sustainability/mission-statement/

26. https://www.ellenmacarthurfoundation.org/assets/downloads/publications/A-New-Textiles-Economy_Full-Report.pdf

27. http://www.greenstrategy.se/sustainable-fashion/seven-forms-of-sustainable-fashion/ https://apparelcoalition.org/the-higg-index/

Companies with a sustainability 3.0 perspective also focus on sustainable production of the goods they provide. However, the reason they were created is to empower people in different ways with the products and services they provide, from outdoor experiences, via mobility and nutrition to activism, meaning that their reason for existence is to help people live different kind of lives. Many of the companies were started by people who enjoyed something and wanted to help others to enjoy the same thing. It can be in certain areas such as outdoor experiences, or general empowerment. If companies in this group use recycling or subscription models, they tend to focus on support for certain lifestyles, making it easier to get access to the right equipment, as well as reduced environmental impact from the products through sharing.

Examples of companies with activities in this category include Houdini[28], Symbology[29], REI[30] and Patagonia.[31]

The main focus for a 3.0 company is to deliver sustainable solutions for society. For apparel companies in the 3.0 category, the contribution is often sustainable lifestyles and how to empower people. An important part is to have sustainable production of the apparel, but the apparel is a tool to help people live good lives. An example is what can be found in Houdini's manifesto: "We will fight overconsumption. We will contribute to the development and implementation of sustainable technology. We will collaborate with others and share our knowledge. We will speak for nature when no one else does." And ends with "When it snows, we will go skiing. When there's surf, we will go surfing. We will keep falling in love with nature, and we will bring our friends with us. We will never stop having fun. We will keep working to minimise our negative footprint, move beyond zero, and leave an entirely positive impact on the world." The value proposition tends to focus on empowering people to live sustainable lives and contribute to an overall positive impact on society. The apparel, which obviously should be sustainable, is a tool to live a good life.

The three categories can help us understand what different companies focus on and what contributions we can expect from them. Many companies are currently moving between categories, and sometime different parts of a company can belong in different categories. Patagonia for example could be described as a company that has moved from 2 to 3. Their mission statement used to be: "Build the best product, cause no unnecessary harm, use business to inspire and implement solutions to the environmental crisis." This changed recently, at the end of 2018, when Yvon Chouinard decided to change the mission to "Patagonia is in business to save our home planet", a 3.0 company.[32]

28. https://houdinisportswear.com/en-se/explore/houdini-manifesto

29. https://symbologyclothing.com/pages/about-symbology

30. https://www.rei.com/blog/stewardship/opt-outside-2019-eric-artz

31. https://www.patagonia.com/company-info.html

32. The new statement even hints of the possibility of a new generation of company, one with the primary focus on addressing existential threats facing our planet and humanity, a 4.0 company. https://www.fastcompany.com/90280950/exclusive-patagonia-is-in-business-to-save-our-home-planet

1

TODAY

Impact in society

Traditional Impact Assessment: Product Aspects related to Lifestyles

The impact from an apparel company perspective is a complex issue. The impact will depend on what is included in the assessment and the data used. For this overview the purpose is not to identify exact numbers, but rather to explore different ways to understand the impact from an apparel company in different areas and the order of magnitude of the impacts.

The impact assessment from an apparel company perspective is divided in three parts.
1. *Product (Apparel)*
2. *Volume*
     a. *Number of goods (Wardrobe size)*
     b. *Time used*

The impact assessment is based on a mixture of footprints and GHG/CO2e/energy as proxies for overall footprint impact. The main reasons for these proxies are:
A. GHG/energy/CO2e is a reasonable proxy for overall environmental impacts as it is related to overall material use in society and transport/mobility.
B. Data is readily available for these impacts.
C. The fact that for many companies and policymakers climate change and the need for reduced emissions is the key driving factor for transformative change. [33]
D. In relation to global biodiversity GHG/CO2e/energy provides important data.

Further work should look more in detail at the impacts in areas such as biodiversity, water and pollution as well as other global sustainability goals, including future areas such as right to data, nanotechnology, synthetic biology and AI.

For each part three categories of impacts are presented:
1. *Low impact*
2. *Reference impact*
3. *High impact*

The low impact is based on studies identifying best practice, more environmentally friendly solutions, as well as Houdini's own numbers.

The reference impact is based on studies that have calculated the average, or median, impact in different areas.[34] The high impact is based on less environmentally friendly lifestyle options.[35]

In addition to these three categories a fourth category of impact is also included, an "obscene impact" category.[36] This category is based on studies of how extremely affluent people live as well as examples from fashion magazines and blogs covering influencers and wealthy individuals with very high consumption lifestyles. It should be noted that all the data for this category is from articles that depict the extreme consumption in a positive or neutral way.

[33] https://pubs.acs.org/doi/full/10.1021/acs.est.6b05296

[34] The studies in appendix 1 were used to establish a reference impact by collecting all the data and then removing the two outliers on each side before calculating the average and median value.

[35] https://www.footprintnetwork.org/content/documents/WBCSD_SLWGUS15.pdf

[36] Obscene: 1590s, "offensive to the senses, or to taste and refinement".
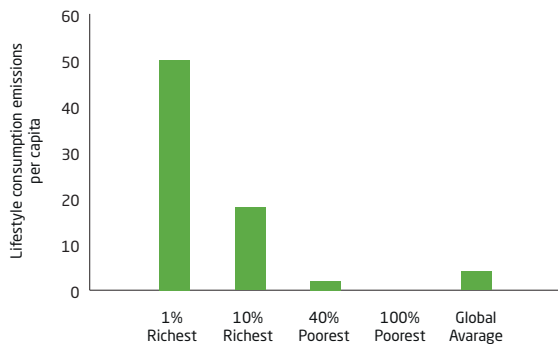
An Obscene category

With a small group in society growing their wealth rapidly, the 500 richest grew their wealth by 25% during 2019,[37] and social media highlighting those lifestyles and excessive consumption as something to admire is important to understand.

A significant part of the world of fashion is celebrating extreme levels of consumption and presenting it as something attractive. The term obscene was chosen as these lifestyles are counter to global sustainability goals and most ethical principles.

Another reason for including an obscene category is that numbers about impact are often presented as national averages, but the rich and the poor in counties often have very different environmental impacts. An MIT study from 2004 estimated that Bill Gates' climate impact is 10,000 times higher than the average American, while a CEO has a footprint between 100-1,000 times larger than the average citizen. [38]
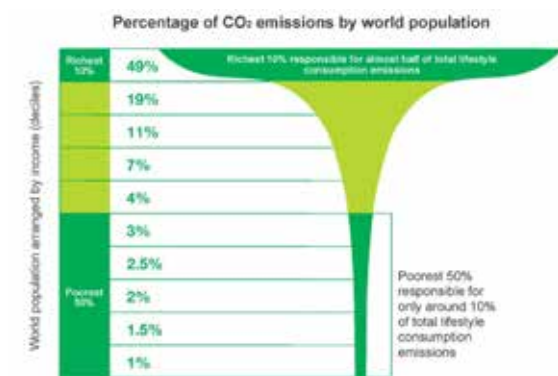
In a 2015 briefing paper, Extreme Carbon Inequality, Oxfam presented statistics for the richest people in the world.[39] They noted that the 10% richest people in the world contribute 49% of the global emissions. If we zoom in, we can see that these 10% contribute almost 20 tonnes per person. Zooming in even further we see that the richest 1% have lifestyle consumption emissions that are about 50 tonnes per person.[40]

Daniel Kurt wrote an article in Investopedia, Are You in the Top One Percent of the World? when he asked "Who exactly are the 1 percent worldwide? The surprising answer: If you're an American, you don't have to even be close to being uber-rich to make the list. According to the Global Rich List, a website that brings awareness to worldwide income disparities, an income of $32,400 a year will allow you to make the cut. $32,400 amounts to roughly 28,614 euros." [41]

Credit: Oxfam Media Briefing, 2 December 2025, Extreme Carbon Inequality

Many companies in the fashion industry, even the fast fashion companies that sell less expensive apparel, are using models in advertising that belong to, or are portrayed to live like those 1% with 50 tonnes per person biodiversity-destroying lifestyles with private jets, yachts, helicopter skiing, hunting safaris, and extreme amounts of jewellery and designer clothing. There are also countless examples of articles of how the extremely wealthy live and that are very often focused on what they wear, the wardrobes they have, the number of cars, where they fly, how many houses they have, etc. Very seldom are contributions to society included that contribute to global sustainability, unless it is in the shape of philanthropy in ways that are problematic.

In Architectural Digest Elizabeth Stamp invites readers to "Take a look inside the closets of some of the world's most famous actors, athletes, musicians, models, and designers to see how these high-profile figures keep their treasured pieces perfectly organized." [42] Cosmopolitan reporter Carrie Bradshaw provides an article about the largest closet in the world - and the attached house - on sale for $12.9 million.[43] The tabloid press also provide articles by journalists like Megan C.

37. https://www.bloomberg.com/news/articles/2019-12-27/world-s-richest-gain-1-2-trillion-as-kylie-baby-sharks-prosper

38. Environmental Life Style Analysis (ELSA), IEEE International Symposium on Electronics and the Environment May 19-20, 2008 (Thanks Timothy Gutowski at MIT for sending the PDF)

39. https://www-cdn.oxfam.org/s3fs-public/file_attachments/mb-extreme-carbon-inequality-021215-en.pdf

40. https://www-cdn.oxfam.org/s3fs-public/file_attachments/mb-extreme-carbon-inequality-021215-en.pdf

41. https://www.investopedia.com/articles/personal-finance/050615/are-you-top-one-percent-world.asp

42. https://www.architecturaldigest.com/gallery/celebrity-closets-mariah-carey-elton-john-slideshow

43. https://www.cosmopolitan.com/uk/fashion/style/news/a31951/largest-closet-in-the-world-on-sale-theresa-roemer/

Hills who tell us things like "Kim Kardashian's home features a walk-in closet just for shoes and handbags." [44]

Insider's reporter Brenna Opelka gives us an article about Jamie Chua, an Instagram-famous socialite and entrepreneur from Singapore.[45] Opelka tells us that "she [Chua] has glass panels installed in her closet to showcase her 200 plus Hermès handbags, her 300 (and counting) pairs of designer shoes, and rows upon rows of lavish clothing. Chua said her absolute favourite dress is Dolce & Gabbana's Rose Print Poplin Bustier Dress, which retailed for $2,995." Then Opelka quotes her as saying "I wore it three times within like three or four months, and I'm not ashamed of it." [46]

These magazines also provide insights into the emotions among these people. In a W magazine article Stephanie Eckardt provides her readers with information about Kim Kardashian, including a quote from her saying "I probably had 250 pairs of shoes and when we were done cleaning it out, I had two pairs left and I cried." [47]

These articles are just a few examples. The covers of many lifestyle magazines that can be seen in stores around the world provide ample insights into the kind of values and lifestyles that many mainstream fashions brands support and encourage.
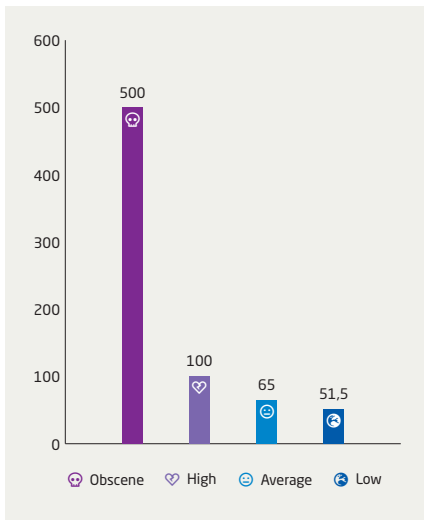
3.1 Apparel (LCA)

The first part of an environmental impact assessment from an apparel company is usually to understand the impact from individual garments. An example is the lifecycle assessment done by Mistra Future Fashion, see graph showing the different parts making up the direct carbon footprint of apparel. [48]
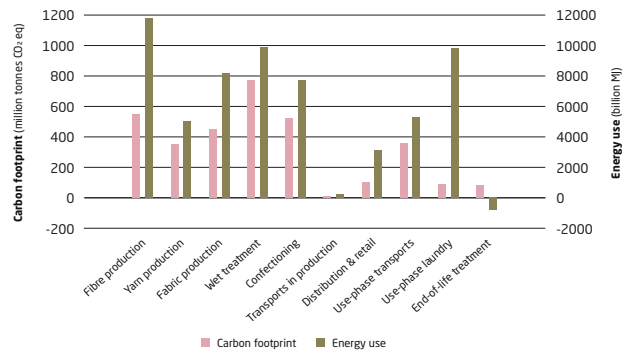
Credit: Environmental Assessment of Swedish Clothing Consumption, Mistra Future Fashion, Gustav Sandin, Sandra Roos et.al

The system boundaries are important and depending on how they are applied the result will differ. In the Mistra study the transport to and from the store was for example included, something the authors noted is often ignored in studies.

"One aspect of the result may come as a surprise: the significance of the transport of the user back and forth from the store, which has generally been ignored in previous studies. We found this to be 11% of the overall life-cycle impact." [49]

The different aspects of an LCA are important to separate in order to identify different measures and the potential they can have. New production methods can for example affect the fabric production, while a new material can affect the impact from fibre, yarn, fabric production and wet treatment. A renting/sharing model on the other hand can dramatically reduce all the parts related to production, but use-phase transportation might increase and use-phase laundry can stay the same.

While the focus of this report is climate and energy as a proxy for overall environmental impact, the fact that approximately half of all textiles are made of cotton makes the impact of cotton important to understand. The use of cotton is the most widespread profitable non-food crop in the world. Its production provides income for more than 250 million people worldwide. Cotton's most prominent environmental impacts result from the use of agrochemicals (especially pesticides), the consumption of water, and the conversion of habitat to agricultural use.[50] Reducing the impact from cotton will therefore have a significant positive impact on reduced pesticide use, water usage and land use.

[44] https://www.standard.co.uk/insider/alist/kim-kardashian-shoes-handbags-closet-a4092676.html

[45] https://www.instagram.com/ec-24m/?hl=en

[46] https://www.insider.com/video-bonkers-closet-singapore-socialite-2018-2

[47] https://www.wmagazine.com/story/kim-kardashian-kanye-west-fashion-closet-shoes

[48] http://mistrafuturefashion.com/wp-content/uploads/2019/08/G.Sandin-Environmental-assessment-of-Swedish-clothing-consumption.MistraFutureFashionReport-2019.05.pdf

[49] http://mistrafuturefashion.com/wp-content/uploads/2019/08/G.Sandin-Environmental-assessment-of-Swedish-clothing-consumption.MistraFutureFashionReport-2019.05.pdf

[50] https://www.worldwildlife.org/industries/cotton

Comparing different categories of impact also indicates how different parts can affect the overall impact. Where an individual garment with high impact often can have twice the impact of a low-impact version. Extremely unsustainable apparel also exists, but much of the impact is due to how it is purchased, not the material used and manufacturing process.

The data for the different impact levels of apparel is based on the 23 studies listed in appendix 1.

1. **Low impact**
   Smart materials, smart production, smart transport and smart washing and air drying.
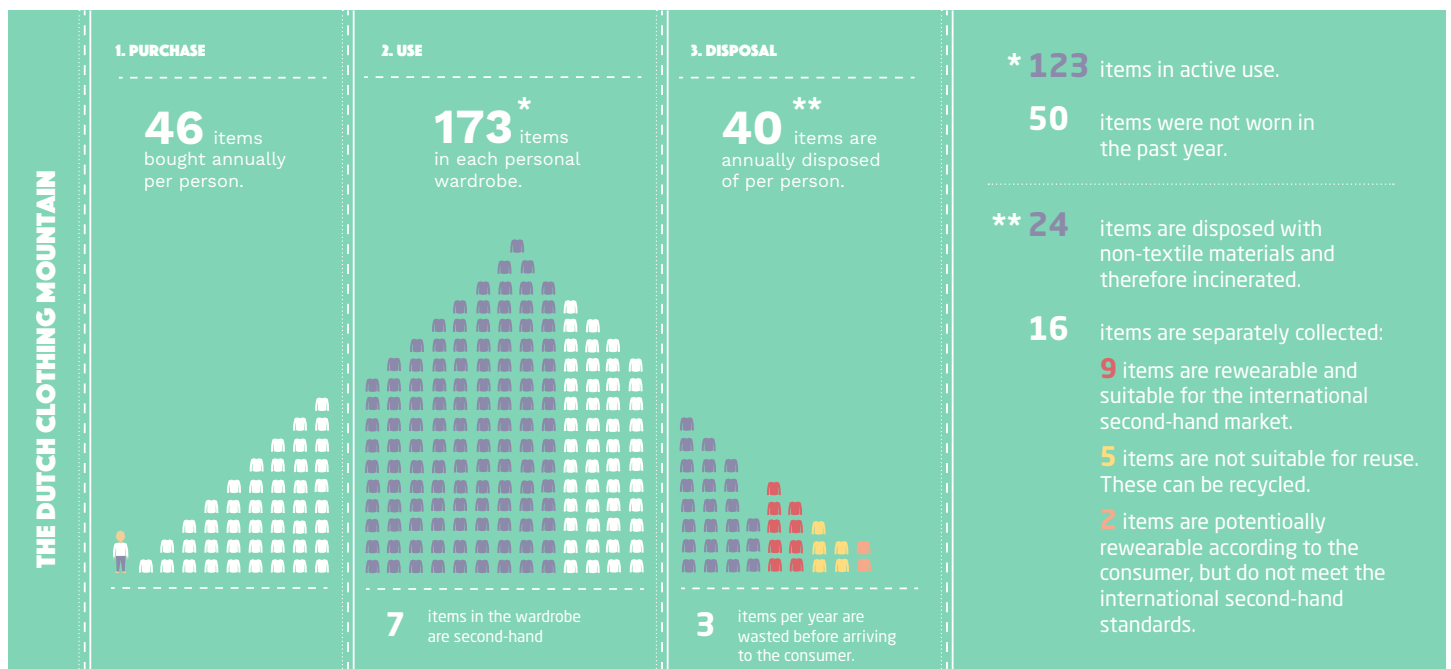2. **Reference impact**
   Swedish numbers
3. **High impact**
   Inefficient production and fast transport multiple times of the same garment, high temperature and frequent washing/drying.
4. **Obscene impact**
   Flying to shop in other cities, personal delivery of clothing, using fossil SUVs for shopping, specials order that use airplanes for delivery and jewellery included on apparel.

3.2 Volume

THE DUTCH CLOTHING MOUNTAIN

1. PURCHASE
46 items bought annually per person.

2. USE
173* items in each personal wardrobe.

7 items in the wardrobe are second-hand

3. DISPOSAL
40** items are annually disposed of per person.

3 items per year are wasted before arriving to the consumer.

* 123 items in active use.

50 items were not worn in the past year.

** 24 items are disposed with non-textile materials and therefore incinerated.

16 items are separately collected:
9 items are rewearable and suitable for the international second-hand market.
5 items are not suitable for reuse. These can be recycled.
2 items are potentionally rewearable according to the consumer, but do not meet the international second-hand standards.

While very many studies about the apparel sector cover different aspects of different apparel lifecycles, the direct impact of the apparel industry is a result of the impact of the individual garments times the volume. Two key drivers affect the volume:
1. The size of the wardrobe (how many garments a person owns)
2. The time a person owns the garments

The total volume we consume today is often forgotten, but there is a need to rethink the volumes we consume.[51] For fashion the volumes of consumption promoted have resulted in a situation where even average customers consume volumes on a scale that is capturing the attention of artists such as Von Wong. [52]

Von Wong recently created the world's tallest clothing closet. In collaboration with social-impact designer Laura François, Von Wong filled a giant steel wardrobe with the amount of clothing an average human in Western society owns, and discards, over the course of a lifetime. That adds up to roughly 3,000 items. [53]

Below the wardrobe size and the use time will be discussed.

[51] Radically reduced carbon emissions and the need for radically reduced use of natural resources to avoid the ongoing extinction of species and threat of an ecosystem collapse on a global scale both require rethinking of consumption volumes.

[52] https://www.forbes.com/sites/davidhochman/2018/12/21/worlds-tallest-clothing-closet-is-artful-commentary-on-retail-consumption/#5a2481046f7e

[53] https://www.forbes.com/sites/davidhochman/2018/12/21/worlds-tallest-clothing-closet-is-artful-commentary-on-retail-consumption/#5a2481046f7e

3.2.1 Wardrobe size

The wardrobe size can be divided into two parts, the part that is used and the part that is not used. A Dutch study indicated that an average wardrobe contains close to 200 items, but of those only a quarter (50) was used the last year.[54] The same study indicated that people bought close to 50 items every year and disposed of 40.[55] Perhaps people do regular large purges, or move old clothing to other form of storage, as an accumulation of ten items per year in the wardrobe soon would result in a very large wardrobe.

Under the heading "Wasteful world" Movinga conducted a study that asked "how much of our belongings are we really using?"[56] This study indicates that the numbers in the Dutch study might be underestimating the amount of items not used. When the researchers compared how people had answered the question "what percentage of your wardrobe hasn't been worn in the last 12 months?" with research in people's homes they saw a significant discrepancy.[57]

Rank	Country	Percentage Average Delusion	What percentage of your wardrobe hasn't been worn in the last 12 months?		
			Percieved value	Researched value	Delusion percentage
1	Russia	3,33%	47%	53%	6%
2	Sweden	9,33%	28%	58%	60%
3	France	11,40%	55%	68%	13%
4	Japan	12,33%	38%	72%	34%
5	Austria	13,33%	39%	65%	26%
6	Poland	13,33%	38%	67%	29%
7	Brazil	14,00%	43%	76%	33%
8	Mexico	14,33%	33%	64%	31%
9	Finland	14,67%	31%	62%	31%
10	Spain	15,33%	42%	76%	34%
11	Denmark	15,67%	29%	74%	45%
12	Netherlands	16,00%	38%	71%	33%
13	Norway	17,33%	36%	77%	41%
14	Germany	18,13%	32%	64%	32%
15	Italy	20,33%	28%	81%	53%
16	USA	22,67%	43%	82%	39%
17	UK	23,33%	34%	73%	39%
18	Belgium	23,67%	26%	88%	62%
19	Canada	24,00%	39%	79%	40%
20	Switzerland	26,33%	26%	79%	53%

Credit: Wasteful World, Movinga

In most countries people estimated the numbers of unused items at 30-40, but the actual number tended to be 70-80%. The result was what the authors called an "delusion percentage" between 30-60%.[58]

This overconsumption of apparel has led a growing number of experts and activists who call for a stop to buying new apparel due to the climate crisis and the fact that we have had excess production for decades.[59] Extinction Rebellion (XR) has for example launched a campaign called "Boycott Fashion" that they described the following way:

> We urge people to #BOYCOTTFASHION for a whole year, in order to disrupt business-as-usual and send a message to government, industry and public alike that enough is enough. We must collaboratively act now to mitigate fashion's impact on people, planet and the other animals with whom we share it. There is an abundance of clothing and textiles already in circulation which we can creatively repair, re-use, alter, upcycle, recycle and much more, minimising our use of new resources. We encourage rebels to share through swapping or renting, or buying and selling second-hand.[60]

Depending on lifestyle there are many different sizes of wardrobes that are possible. Some companies promoting fast fashion and high-consumption habits together with parts of fashion media that glorify high consumption have normalised a situation with very high consumption. Other companies promoting quality clothing with timeless design that promote sustainability are in parallel working to make smart consumption the norm. The difference between the different approaches results in very different wardrobes sizes.

Beside quality and design of individual garments, companies can also help support customers to establish what is sometime called a "capsule wardrobe" where it is possible to have a wardrobe with less than 50 items.[61] The term was coined by Susie Faux in the 1970s, as a response to people spending too much on too many fashion items that were poorly made, didn't fit, and wouldn't be on trend for long. The capsule wardrobe was designed to be made up of essential, timeless items that were high quality and fit well, therefore lasting for years, that could be paired with small seasonal accents such as accessories.[62]

The data for wardrobe size is based on the eight studies and articles in this chapter.

54. https://www.hva.nl/create-it/gedeelde-content/projecten/projecten-fashion/measuring-the-dutch-clothing-mountain.html

55. https://www.hva.nl/create-it/gedeelde-content/projecten/projecten-fashion/measuring-the-dutch-clothing-mountain.html

56. https://www.movinga.de/en/wasteful-world-delusion-reality

57. https://fashionunited.com/news/fashion/people-do-not-wear-at-least-50-percent-of-their-wardrobes-according-to-study/2018081622868

58. https://fashionunited.com/news/fashion/people-do-not-wear-at-least-50-percent-of-their-wardrobes-according-to-study/2018081622868

59. https://theconversation.com/why-you-should-stop-buying-new-clothes-123881 https://www.xrfashionboycott.com/

60. https://rebellion.earth/event/fashion-costs-the-earth-xr52-boycott-new-clothing/

61. https://www.whowhatwear.co.uk/how-to-capsule-wardrobe

62. https://en.wikipedia.org/wiki/Capsule_wardrobe

63. https://www.bloomberg.com/opinion/articles/2019-03-15/rental-clothing-is-the-future-of-fashion

1. **Low Impact**
   Need-driven consumption with multiuse garments and empowered person with high-self-esteem using a capsule approach.
2. **Reference impact**
   Average numbers in studies.
3. **High impact**
   Fast fashion with limited use and/or insecure person with high Instagram frequency.
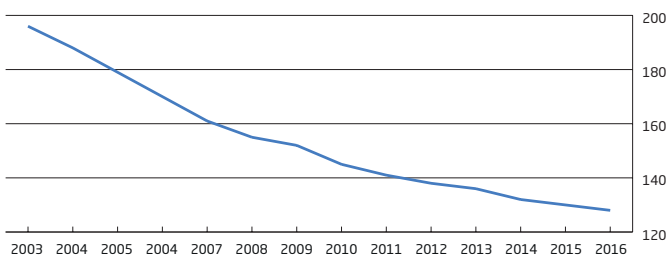4. **Obscene impact**
   Influencers and famous people being interviewed about their wardrobes.

3.2.2 Time used

On to the next one
Consumers worldwide are discarding their clothes after fewer uses

✎ Garment utilization, or avarage number of days a garment was worn before it was thrown away

Credit: Bloomberg, based on Euromonitor och Ellen Macarthur Foundation

Over the last ten years the international average number of days a garment is worn before it is thrown away has fallen from approximately 200 to close to 120. [63]

A main reason for the dramatic fall is the introduction of fast fashion in China as they are closing in on the short time of use in the EU and US. The average number of days a garment is worn before it is thrown away is also still falling in the US and EU. [64]

The time of use is an area where individual behaviour and companies seem to differ the most. Fast fashion promoted by many apparel companies has resulted in a dramatic decrease in the time apparel is used, and has also created a culture where quality and global sustainability are disregarded.

Fast fashion has resulted in a culture where some estimates suggest that consumers treat the lowest-priced garments as nearly disposable, discarding them after just seven or eight wears.[65]

A vocal group of influencers have also discussed how their use of social media results in a culture where they only want to wear certain outfits only one (1) time. [66] On the other end of the spectrum there are companies that view apparel as a service and who produce high quality apparel that is meant to be used thousands of times over decades. [67]

Difference business models and trends today make the scope of the lifetime of apparel very large.

The data for wardrobe size is based on the eight studies and articles referenced in this chapter.

Lifetime
1. **Low Impact**
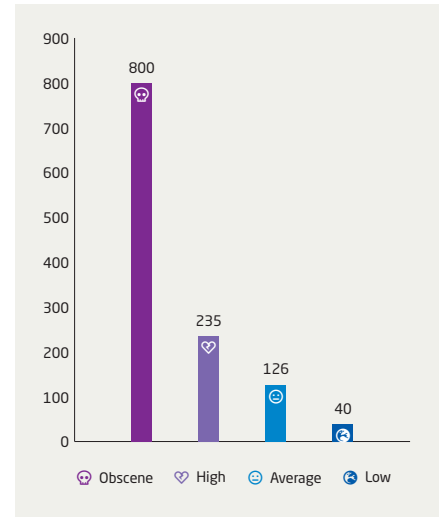   Timeless design and high quality
2. **Reference impact**
   Average lifetimes
3. **High impact**
   Fast fashion and/or low quality.
4. **Obscene impact**
   Only use one time and then throwing it away.

[64] http://www.wrap.org.uk/sites/files/wrap/valuing-our-clothes-the-cost-of-uk-fashion_WRAP.pdf#targetText=In%202012%2C%20WRAP%20released%20the,one%20year%20in%20the%20UK.

[65] https://www.mckinsey.com/business-functions/sustainability/our-insights/style-thats-sustainable-a-new-fast-fashion-formula

[66] https://www.treehugger.com/sustainable-fashion/people-are-buying-clothes-wear-single-instagram-pic.html there are interesting responses to this behaviour in terms of virtual fashion: https://www.elle.com/uk/fashion/a28166986/digital-fashion-dressing-virtually/ and if people want to focus on how they look, the idea of virtual fashion is probably the least destructive, but it still begs the question of whether this is a way of empowering or disempowering citizens.
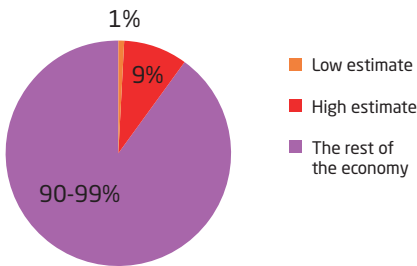
[67] https://houdinisportswear.com/en-se/sustainability/houdini-rental-and-subscription

1

TODAY
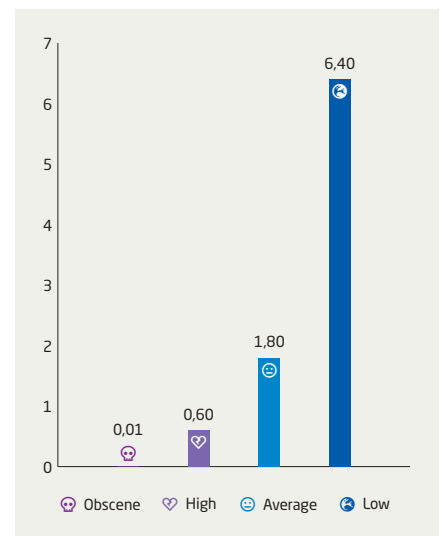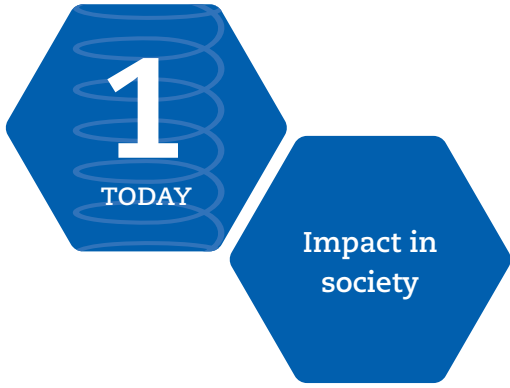
Impact in society

Purpose-driven impact assessment: Lifestyle impacts in society through core business

The apparel industry and the rest of the economy (climate impact)

1%

9%

90-99%

- Low estimate
- High estimate
- The rest of the economy

At the core of the apparel and fashion industry is the question of lifestyles, an attractive lifestyle. Today the consumption of apparel is seldom about purchasing protection from the elements in our everyday lives, but more a question about the kind of life we want to live, the person we want to be and the people we want to be around.

The role in affecting what is seen as an attractive lifestyle, through marketing, lobbying, PR, sponsoring, etc. make the apparel industry important beyond its own direct impact. Instead of only looking at the direct effects of the apparel industry, e.g. 1-10% of greenhouse gas emissions, the impact of the apparel industry on the rest of society must also be assessed, i.e. the 90-99% of the emissions due to how we live our lives and the underlying infrastructure to support that life.

The apparel industry is one of the largest advertisers and around the world we see the latest fashion with associated lifestyles and consumption behaviours on billboards, on TV, radio, and newspapers. But the offline media advertising is less than 20% of the total marketing budget for many brands.[68] More important, and growing, is the spending on online social media where apparel companies were among the first to sponsor influencers and use targeted ads to get people to buy their products.[69]

The business model of the fast fashion industry was captured by Mark Taylor in his book Speed Limits: Where Time Went and Why We Have So Little Left.[70]

> If mass production had to produce mass consumption, fast fashion has to produce hyper-fast, hyper-mass consumption. The marketing strategy of the fast-fashion industry is to encourage the shortest of short-term decision making by encouraging impulse buying in two ways.

> First, items are priced high enough to maximize profit margins but low enough so people do not hesitate to make purchases because of price.

> Second, merchants introduce and remove stuff so fast that customers worry that the item they are thinking of buying won't be available the next day. As fashion seasons give way to incessant "innovation," conspicuous consumption becomes constant consumption. The strategy of accelerating the change of styles to draw customers back to stores as often as possible has proved to be remarkably successful.

The effect on society due to advertisement and lobbying by companies has been discussed for decades [71], but with the Cambridge Analytica scandal the question of the role of the fashion industry for values in society became mainstream. [72] The way data was used by political groups to

68. https://zms.zalando.com/assets/docs/press/DressedForDigital.pdf

69. https://mediakix.com/blog/hm-marketing-case-study-celebrity-influencers-sponsored-videos/

70. https://www.amazon.com/dp/030020647X/?tag=salon-com08-20

target individuals highlighted how many companies today treat citizens and consumers in a way that can undermine democracy.

Instead of empowering citizens and strengthening the autonomy and self-determination of people – in order to enable them to represent their interests in a responsible and self-determined way, the opposite is done by large parts of the apparel industry. [73]

When Wylie, the whistle-blower from Cambridge Analytica, came out and criticised the fashion industry many were surprised. He conceded that while Cambridge Analytica "exploited the cultural narratives that the fashion and culture industry put out", the fashion industry was responsible for creating those cultural narratives in the first place." [74]

How much of the environmental impacts the apparel industries affect beyond their own direct impact is yet to be assessed. However, their central role in shaping what is seen as an attractive life as well as close collaboration with influencers that shape travel, commuting, food, and general consumption habits make the impacts important to assess.

In this chapter travel, commuting, food and overall consumption are discussed in relation to the apparel industry.
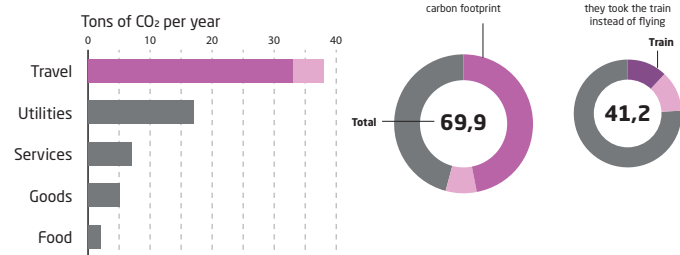
4.1 Travel/vacation

There are two major links between fashion/apparel and travel/vacations.

First, the lifestyle that apparel companies promote through marketing, from advertising to co-branding. The marketing and examples of how the clothing is used can highlight traveling to tropical countries for vacation, or encourage visits to different cities around the world for shopping. Travel agencies and fashion companies are also increasingly collaborating to link travel and shopping as presented in the "Global Report on Shopping Tourism" by UNWTO. [75]

In 2014 the World Tourism Organization (UNWTO) released the report "Global Report on Shopping Tourism" [76] one of the questions discussed was "Does shopping drive tourism or vice-versa?" and the answer was that much indicates that current trends indicate that they will accelerate each other. What is interesting is that the report does not even mention climate change and the need to reduce unnecessary flying, or the sustainability challenges with overconsumption. Sustainability is reduced to a local issue: "This report aims to investigate the current development of shopping tourism and discuss how it could make a sustainable contribution to destination development." [77]

Carbon footprints
The Holthaus household

Tons of CO₂ per year

In contrast, apparel companies can also promote experiences that do not require flying. Low-consumption lifestyles that are fulfilling through local experiences, or travel by train.

Credit: Why I'm never flying again, Quarts, Eric Holthaus

Second, many airlines and credit card companies promote links between shopping and traveling by providing credit cards that generate points for consumption that can be used for flying. For global sustainability feedback loops where overconsumption is encouraged by rewarding it with resource-intensive lifestyles such as increased flying are problematic.

[71.] https://www.theguardian.com/media/2017/feb/02/amusing-ourselves-to-death-neil-postman-trump-orwell-huxley

[72.] https://en.wikipedia.org/wiki/Cambridge_Analytica

[73.] https://en.wikipedia.org/wiki/Empowerment

[74.] https://www.theguardian.com/fashion/2018/nov/29/christopher-wylie-the-fashion-industry-was-crucial-to-the-election-of-donald-trump

[75.] http://cf.cdn.unwto.org/sites/all/files/pdf/am9-shopping-report_v2.pdf

[76.] http://cf.cdn.unwto.org/sites/all/files/pdf/am9-shopping-report_v2.pdf

[77.] Page 12 http://cf.cdn.unwto.org/sites/all/files/pdf/am9-shopping-report_v2.pdf

78. https://qz.com/129477/why-im-never-flying-again/

79. It is worth noting that a recent report commissioned by the UK government's climate change advisers recommended that air miles should be banned because they encourage excessive flying. https://www.theccc.org.uk/publication/behaviour-change-public-engagement-and-net-zero-imperial-college-london/

80. https://theconversation.com/these-celebrities-cause-10-000-times-more-carbon-emissions-from-flying-than-the-average-person-123886

81. https://sciencenorway.no/carbon-footprint-forskning-no-greenhouse-gas-emissions/the-well-heeled-leave-biggest-carbon-footprint/1389238 https://www.theguardian.com/environment/ng-interactive/2019/jul/19/carbon-calculator-how-taking-one-flight-emits-as-much-as-many-people-do-in-a-year

82. https://www.contagious.com/news-and-views/doppelganger-destinations-sell-staycations-to-germans

83. https://www.youtube.com/watch?v=_35uEjs2W7I

84. http://www.mynewsdesk.com/se/mtr-express/pressreleases/mtr-express-kompenserar-anstaellda-foer-klimatsmart-semester-resande-2752518

Vacation choices can also influence business travel. Many who travel for work get extra incentives for such travel as they can use bonus points for their personal vacations. If vacations by air are seen as attractive there is an incentive to fly instead of using virtual meetings or trains. The link between vacations and work trips was highlighted in an article by the meteorologist Eric Holthaus who wrote that "I have gold status on Delta, and my wife and I were planning trips to Hawaii and Europe, all for free with frequent flyer miles." When looking at his carbon footprint he took a decision to try to never fly again.[79]

How different lifestyles affect flying was also highlighted in a recent study by Stefan Gössling, Professor in Service Management and Service Studies, Lund University. In an article discussing the findings he wrote the following.

> The jet-setting habits of Bill Gates and Paris Hilton mean that they produce an astonishing 10,000 times more carbon emissions from flying than the average person. […] This highlights the insane disparity in carbon emissions between the rich and the poor. In 2018, an average human emitted less than five tonnes of CO_2 overall. But this hides vast differences in individual contributions. In the case of air travel – the most energy-intensive human activity, no other human activity consumes as much energy in such a short time – the global average is 115kg CO_2 per person per year. Yet the vast majority of humanity never fly. This average is created by the staggering emissions of the richest proportion of humanity. I calculated that Bill Gates, for example, causes at least 1,600 tonnes of CO_2 to be emitted into the atmosphere – and this is from flying alone.[80]

Similar numbers are also supported by other studies that have noted that the average citizen in many Western countries fly once or twice a year, while those in the upper echelon fly an average of 6.6 times a year. The wealthiest ten percent of the population is involved in 20 percent of the emissions linked to transport and travel, based on data from Germany. [81]

New innovative ways to encourage smart vacations that do not require flying have begun to emerge. One example is a German rail company that got a 24% revenue bump using lookalike destinations to encourage domestic holidays, so called "staycations" to German holidaymakers. [82] They used a lookalike algorithm to identify German locations that resembled iconic international landmarks and launched a campaign "No Need to Fly – Around the World in Germany." [83]

In Sweden MTR introduced a policy to help employees to use the train on vacations by allowing them to do paid work during the train trip to their holiday destination.[84]

The data for the travels is based on the seven studies and articles referenced in this chapter.
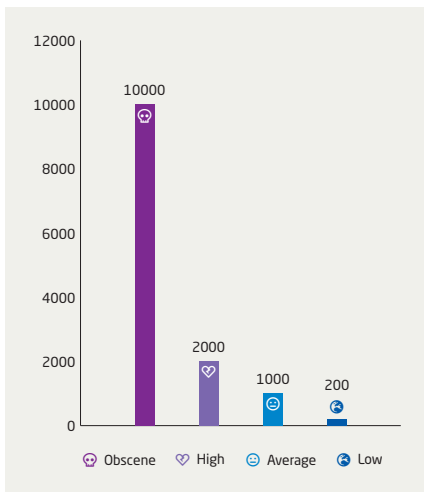
Travel/vacation

1. **Low impact**
   Local experiences by foot or bike and occasionally by train
2. **Reference impact**
   A biannual flying vacation
3. **High**
   Frequent flyer for vacations/shopping
4. **Obscene**
   Private jet and own yacht

4.2 Commuting/work

Apparel is related to commuting by communicating and providing clothing that is made for different kind of commuting and lifestyles. Through marketing they also communicate in what situations what they sell can be used.

According to IPCCs AR5 "the transport sector produced 7.0 GtCO2eq of direct GHG emissions (including non-CO2 gases) in 2010 and hence was responsible for approximately 23% of total energy-related CO2 emissions (6.7 GtCO2). Growth in GHG emissions has continued since the Fourth Assessment Report (AR4) in spite of more efficient vehicles (road, rail, watercraft, and aircraft) and policies being adopted." [85]
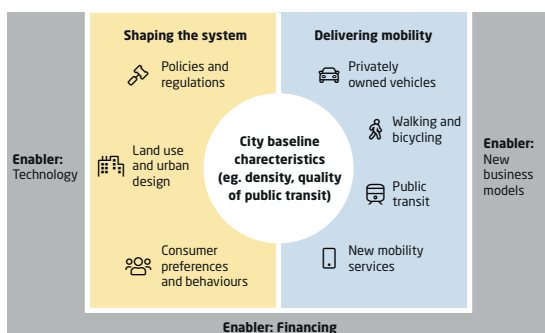
Commuting is a key driver for how the transport system evolve, both directly though the ways we choose that deliver mobility for us (from privately owned vehicles to walking and bicycling) and indirectly by shaping systems (influencing customer preferences as well as policies and regulations).

Online shopping has also increased the transport demand as many fast-fashion companies and online retailers are competing to deliver same day delivery and thereby create resource-intensive infrastructure.[86] With increased impulse purchasing there is also an increase in returns and in the US approximately 10% of the goods sold are returned. [87]

IPCC's 1.5C special report highlights the importance of rapid action and in a Forbes interview Professor Jim Skea, who co-chairs the IPCC, stressed that policymakers have to grasp, and quickly, the "unprecedented nature of the changes that are required if we are to limit warming to 1.5°C." [88]

The Professor of Sustainable Energy at London's Imperial College added that this means major "changes to energy systems, changes to the way we manage land, [and] changes to the way we move around with transportation." He continued: "Governments will have to change the way they manage energy, land use, and urbanisation, but individuals also have to change their lifestyles, eating less meat, drying clothing on washing lines rather than in tumble driers, and walking or cycling short distances rather than driving." [89]

A framework for understandning urban mobility.

Credit: Urban mobility at a tipping point, McKinsey, Shannon Bouton, Stefan Knupfer, et.al.

Dr Debra Roberts, the IPCC's other co-chair, added "This is not about remote science; it is about where we live and work," adding that "we can choose the way we move in cities." [90]

The way we dress and what is seen as appropriate/fashionable in the workplace affects what people see as possible ways to commute. Practical clothing designed to be used at work as well as comfortable and durable when moving in different weather conditions makes walking and biking a possible option. At the other end of the spectrum is clothing that people are afraid to use outdoors if the conditions are not perfect, clothing to show others instead of clothing that empowers. Even at sustainability conferences it is still common to see participants in clothing that is not meant to be used actively. To dress comfortably also has benefits related energy to control the indoor temperature. [91]

Both apparel and commuting are also moving from ownership to access. The high-impact scenario is when people buy fossil SUV and own them privately together with high consumption of apparel. The low impact scenario is when people use walking/biking and if that is not available

85. https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_chapter8.pdf

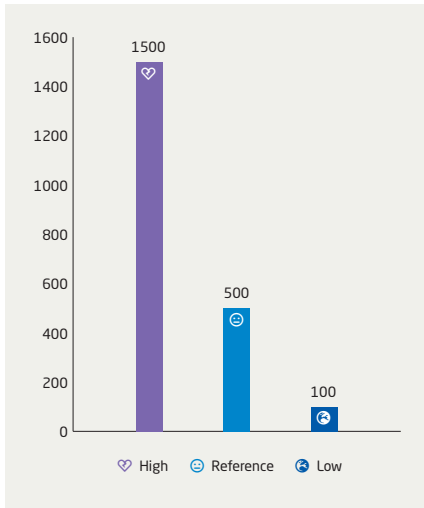86. https://www.scientificamerican.com/article/click-click-emit-the-carbon-cost-of-online-shopping/

87. https://appriss.com/retail/wp-content/uploads/sites/4/2018/12/AR3018_2018-Customer-Returns-in-the-Retail-Industry_Digital.pdf

88. https://www.forbes.com/sites/carltonreid/2018/10/08/bicycling-could-help-save-the-planet-says-ippc-climate-report/#2116bd6a2795

89. https://www.forbes.com/sites/carltonreid/2018/10/08/bicycling-could-help-save-the-planet-says-ippc-climate-report/#2116bd6a2795

90. https://www.forbes.com/sites/carltonreid/2018/10/08/bicycling-could-help-save-the-planet-says-ippc-climate-report/#2116bd6a2795

91. https://www.sciencedirect.com/science/article/pii/S0160412015300507

use access based mobility that can be public transport or some other form of shared access to a vehicle.

Apparel companies have the opportunity to design and promote apparel for multiple use scenarios, from warm boardrooms to rainy outdoor walks. Such multifunctionality could have both health benefits due to active living as well as environmental benefits due to low-impact commuting.

The data for commuting is based on the seven studies and articles referenced in this chapter.

1. **Low**
   Biking and walking and every now and again a shared vehicle
2. **Average**
   Public transport and shared cars
3. **High**
   Fossil SUV

4.3 Health/Nutrition

With health as an integrated part of an active lifestyle and outdoor activities and health closely linked to what and how people choose to eat there is a clear logical chain between apparel and nutrition. Currently few companies, except sport brands, are making the link between health/nutrition and apparel. With an increasing number of holistic studies exploring the total impact of different lifestyle choices, this is likely to change. [92]
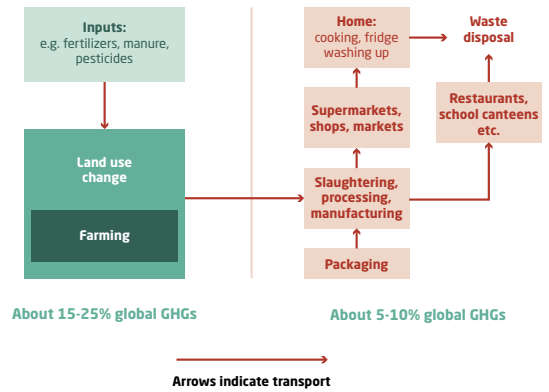
Credit: Foodsource, Food Climate Research Network, Based on Vermeulen S.J. et al.

The way we eat is closely linked to both climate change and biodiversity loss. Agricultural lands (lands used for agricultural production, consisting of cropland, managed grassland and permanent crops including agro-forestry and bio-energy crops) occupy about 40- 50% of the Earth's land surface. Agriculture accounted for estimated emissions of 5.1 to 6.1 GtCO2-eq/yr in 2005 (10-12% of total global anthropogenic emissions of greenhouse gases (GHGs)). [93]
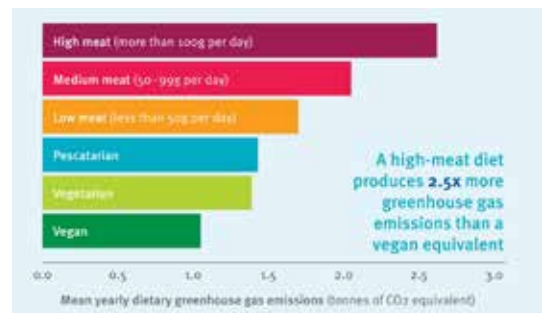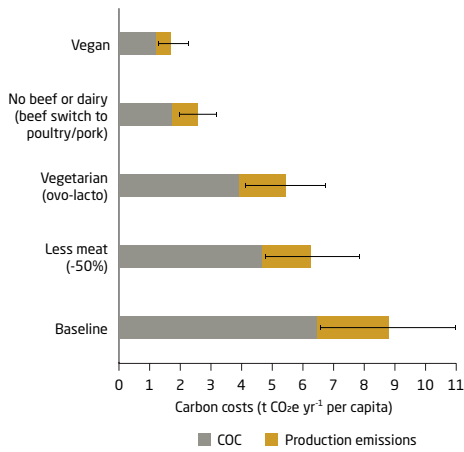

Credit: Saving the planet, one meal at a time, The Grantham Institute, Neil Jennings and Lily Peck

Agriculture is only one part of the food system and the total system contributes approximately 20-35% of global emissions. It is important to note that some of those emissions are related to buildings and transport. [94]

The differences between different diets are quite significant, and fortunately healthy and low planet-impact diets are very similar.[95] A plant-based diet (vegan) is usually assumed to result in about 1 tonne GHG emissions per year and a high-meat diet to result in about 3 tonnes. [96]

Recently the role of land use and potential to use land more optimally for carbon capture. A recent study in Nature with a focus on "Carbon Opportunity Cost" (COC) presented very

92. https://keith.seas.harvard. edu/blog/climate-impacts-biking-vs-driving

93. https://www.ipcc.ch/site/assets/ uploads/2018/02/ar4-wg3-chapter8-1.pdf

94. https://foodsource.org. uk/31-what-food-system%E2%80%99s-contribution-global-ghg-emissions-total

95. https://eatforum.org/eat-lancet-commission/

96. https://granthaminstitute. com/2019/06/25/saving-the-planet-one-meal-at-a-time/

Credit: Assessing the efficiency of changes in land use for mitigating climate change, Nature, Timothy Searchinger, Stefan Wirsenius, et.al

interesting numbers.[97] COC is the land cost of replacing each food and indicates that the difference between a plant-based and a meat (especially red meat) diet might be much higher than usually assumed.

A healthy active lifestyle where people reconnect with nature will encourage people to reflect about what they eat and the impacts, both on their and the planet's health.
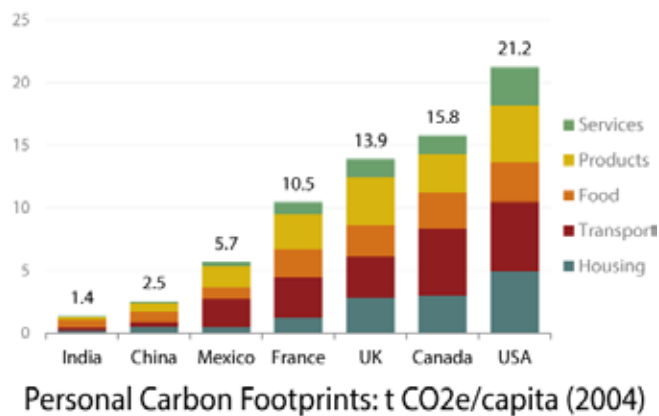
In the last decade, supply chain transparency and traceability have increased exponentially due to increased connectivity.[98] The food and apparel industry share an opportunity to move from unsustainable "fast" and unsustainable business models towards high-quality circular business models.[99] Both sectors currently require significant amounts of land, sometimes even competing for the same land and water, there are also opportunities to communicate the effects of food and apparel consumption on biodiversity together.[100]

The data for health/nutrition is based on the eleven studies and articles referenced in this chapter.

1. **Low**
   Plant-based
2. **Average**
   Omnivore
3. **High**
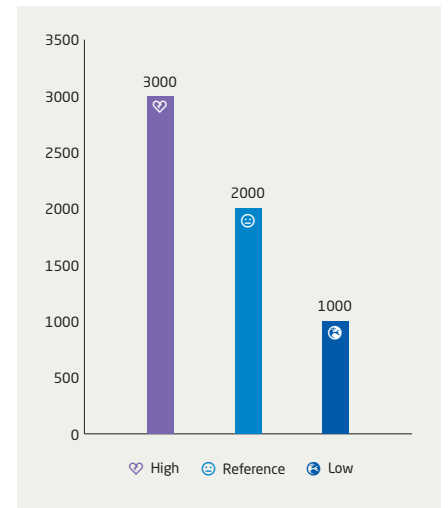   High red meat consumption

4.4 Lifestyles and values

Personal Carbon Footprints: t CO2e/capita (2004)

Credit: 13 Strategies for Reducing Your Carbon Footprint, Shrink That Footprint, from EUREAPA

While companies can influence specific lifestyle choices like vacation and commuting, the most important for many is the impact on overall lifestyles and values. This impact is more difficult to assess as it is a combination of marketing, lobbying and the kind of structures they support though the goods and services they provide.

With a short time perspective and narrow focus on the production of the products the impact on lifestyles and values is hard to see.

To understand the difference between incremental improvements in existing systems and transformative system change it is important to clarify the difference between "green consumption" and "sustainable regenerative lifestyles". Green consumption refers to the relative improvement when customers select a green version of a product, and/or buy carbon offsets. Sustainable regenerative lifestyles focus on our relation to the planet and the life on it, not just today but

[97] https://www.nature.com/articles/s41586-018-0757-z https://scholar.princeton.edu/sites/default/files/tsearchi/files/explanation_of_assessing_the_efficiency_of_land_use_change_for_mitigating_climate_change_nature_november_2018_in_press.pdf

[98] https://hbr.org/2019/08/what-supply-chain-transparency-really-means

[99] https://hbr.org/2019/08/what-supply-chain-transparency-really-means

[100] http://www.fao.org/3/a-i4170e.pdf

for generations to come. Instead of a focus on relative improvement the focus is on the absolute impact and how citizens together can create a society that is sustainable.

Successful green marketing and offsetting campaigns have led many people to think of themselves as sustainable when they as consumers buy green versions of what they always have done (cars, burgers, long-haul flights, etc.), or that offsetting is a step in the right direction. David Roberts wrote an article in Vox about this when he noted that "environmental self-identity did not predict overall energy use or carbon footprint. In fact, energy use and carbon footprints were slightly higher among self-identified greenies." [101]

The reason for this is what can be called "the incremental trap", or as David writes "It's not that the pro-environmental behaviors chosen by wealthy, eco-conscious people don't reduce energy use and carbon footprints. They do. Just ... not very much. And what effect they have is swamped by the much larger effects of wealth, age, and status." The major challenge today is that "wealthy people — even those who self-identify as green — consume more and do more of all those [unsustainable] things." [102]

There is also a tendency to focus on thing with relatively small effects, as Stephanie Moser and Silke Kleinhückelkotten noted in their paper "Good Intents, but Low Impacts":
"Our results show that individuals with high pro-environmental self-identity intend to behave in an ecologically responsible way, but they typically emphasize actions that have relatively small ecological benefits." [103]

In addition to not delivering significant environmental benefits the actions of green consumption do not seem to result in increased wellbeing either, compared to reduced material consumption, as in a recent study, Materialist Values, Financial and Pro-Environmental Behaviours, and Well-Being, by Sabrina Helm. [104]

On Phys.org, Helm concluded that "Green buying—which may have some positive environmental implications, although to a lesser degree than reduced consumption—was not found to improve consumer well-being." She continued: "We thought it might satisfy people that they participated in being more environmentally conscious through green buying patterns, but it doesn't seem to be that way." She ended by stating that: "Reduced consumption has effects on increased well-being and decreased psychological distress, but we don't see that with green consumption." [105]

The study found a positive effect of materialism on personal well-being and negative effects on financial satisfaction, proactive financial coping and reduced consumption, but no effect on green buying, a separate and distinct pro-environmental strategy. [106]

What values and lifestyles an apparel company communicates and supports though marketing, lobbying and the products they provide is therefore very important. Over time these impacts are much more important than the direct effect of the apparel.

At the heart of lifestyle and values are the relationships between companies and those using the products. Something the psychologist Mihaly Csikszentmihalyi discussed in his essay "The Future of Happiness".[107] For most companies the users are seen as consumers where the only relevant measure is how much money the company can get from the consumer.

> The prospect of a society of happy people should be enough to send shivers down the spine of our productive system, built on ever-escalating consumption, on never satisfied desire.
>
> Mihaly Csikszentmihalyi
> The Future of Happiness, 2002

How companies can help empower people as citizens with flourishing lives, not only approaching them as insecure consumers that can buy more sustainably, will be one of the most important future sustainability challenges.

101. https://www.vox.com/energy-and-environment/2017/12/1/16718844/green-consumers-climate-change

102. https://www.vox.com/energy-and-environment/2017/12/1/16718844/green-consumers-climate-change

103. https://journals.sagepub.com/doi/abs/10.1177/0013916517710685

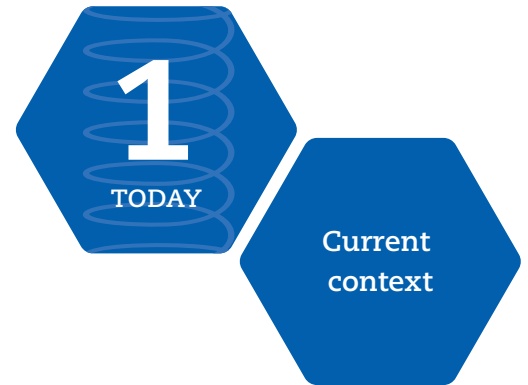104. https://www.researchgate.net/publication/334661406_Materialist_values_financial_and_pro-environmental_behaviors_and_well-being

105. https://phys.org/news/2019-10-greenfor-planet-happiness.html

106. https://www.emerald.com/insight/content/doi/10.1108/YC-10-2018-0867/full/html

107. https://en.wikipedia.org/wiki/Mihaly_Csikszentmihalyi

Trends related to apparel companies

1

TODAY

Current context

There are many similarities between companies in the apparel industry today and the finance or ICT sectors in the 90s. Focus on how things are made (supply chain) and very little focus on the impacts in society. Three converging trends make this "internal focus only" less likely to dominate much longer.

1. **Urgency to act (and role of fashion)**
   The climate crisis, accelerated collapse of ecosystems, water shortages and record extinction levels are converging to a situation when environmental challenges increasingly are acknowledged even by conservative mainstream organisations like the World Economic Forum as the greatest risks facing humanity.

   Government experts have "Given the stark scientific warnings we face on climate change and biodiversity loss, we must reinvent fashion." [108] Mainstream media have also begun to highlight the need for a new role for the fashion industry beyond the incremental focus that dominates today. Recently CNN published an article with the heading "The problem with 'sustainable fashion'". [109]

2. **Purpose-driven companies becoming mainstream**
   Even conservative business groups such as Business Roundtable (BRT) now call for companies to have a positive impact in society. [110] For many companies and business consultants the idea of being purpose-driven is however still not related to suitability and definitely not global sustainability. [111]

3. **Radical transparency**
   With data and connectivity increasing exponentially at the same time as it is getting easier to access, a new level of transparency is evolving. Many mainstream companies, including fast fashion companies, have business models that are not built for transparency. These companies do not disclose where they produce their products, even less so how the money is being spent and how they view income differences between CEOs and workers. [112] With income gaps growing, poor working conditions and environmental destruction, it will become increasingly difficult for companies with fundamentally unsustainable business models to continue defending their current mode of business. [113]

108. https://publications.parliament.uk/pa/cm201719/cmselect/cmenvaud/1952/report-files/195208.htm

109. https://edition.cnn.com/style/article/the-problem-with-sustainable-fashion/index.html

110. https://www.businessroundtable.org/business-roundtable-redefines-the-purpose-of-a-corporation-to-promote-an-economy-that-serves-all-americans

111. https://www.forbes.com/sites/caterinabulgarella/2018/09/21/purpose-driven-companies-evolve-faster-than-others/#1d4cf-63555bc

112. https://www.mckinsey.com/industries/retail/our-insights/what-radical-transparency-could-mean-for-the-fashion-industry

113. https://www.independent.co.uk/news/business/news/hm-fast-fashion-boss-karl-johan-persson-environmental-damage-a9174121.html?amp#referrer=https%3A%2F%2Fwww.google.com&amp_tf=From%20%251%24s&ampshare=https%3A%2F%2Fwww.independent.co.uk%2Fnews%2Fbusiness%2Fnews%2Fhm-fast-fashion-boss-karl-johan-persson-environmental-damage-a9174121.html

2

TOMORROW

Trend scanning

Half-Earth as a driver for business Innovation

Populations of mammals, birds, fish, reptiles and amphibians have, on average, declined by 60% between 1970 and 2014, the most recent year with available data. The Earth is estimated to have lost about half of its shallow water corals in the past 30 years and a fifth of the Amazon has disappeared in just 50 years. [114]

The crucial factor in the life and death of species is the amount of suitable habitat left to them. As defined by the theory of island biogeography, [115] a change in area of a habitat results in a change in the sustainable number of species by approximately the fourth root. As reserves grow in size, the diversity of life surviving within them also grows. As reserves are reduced in area, the diversity within them declines to a mathematically predictable degree swiftly – often immediately and, for a large fraction, forever. [116]

Edward O. Wilson established "HIPPO" as a way to understand the human impact on biodiversity:

> The human impact on biodiversity, to put the matter as briefly as possible, is an attack on ourselves. It is the action of a mindless juggernaut fuelled by the biomass of the very life it destroys. The agents of destruction are summarized by the acronym HIPPO, with the relative importance of the agents declining left to right, in this acronym, in most parts of the world:

> Habitat loss (H), by far the leading agent of destruction, is defined as the reduction of habitable area by deforestation, conversion of grassland, and that great golem arising from all our excesses, climate change.

> Invasive species (I), aliens that cause damage to humans or the environment or both, create global havoc. Their variety and number in every country for which counts have been made is increasing exponentially. Despite improving quarantines, the immigrants pour in faster and faster.

> Pollution (first P in the HIPPO series) has inflicted most of its damage to fish and other life in freshwater systems. But it is also the cause of the more than four hundred anoxic "dead zones" in marine waters that receive contaminated water from upstream agricultural land.

> Population growth (the second P) is actually a catalytic force of all the other factors. Damage will not be so much from the growth itself, which is expected to peak by the end of the century, but rather from the rapid and unstoppable ascent in per capita consumption worldwide as economies improve.

> Finally, the role of overharvesting (O) is best illustrated by the percentage of global decline in the catch of various species of marine pelagic fishes such as tuna and swordfish from the mid-1850s to the present: 96 to 99 percent. Not only are these species scarcer, but the individual fish caught are on average also smaller. [117]

Key strengths and weakness of using GHG as a proxy for long-term biodiversity protection can be understood through HIPPO.

114. https://www.worldwildlife.org/pages/living-planet-report-2018

115. https://en.wikipedia.org/wiki/The_Theory_of_Island_Biogeography

116. https://www.half-earthproject.org/discover-half-earth/#why-half

117. Edward O. Wilson. "The Meaning of Human Existence"

Habitat loss (H), the leading agent of destruction is well covered by GHG emissions. About 23% of global human-caused greenhouse gas emissions come from agriculture, forestry and other land uses. Land use change, such as clearing forest to make way for farms, drives these emissions. In addition climate change is a major threat, and this is obviously covered by tracking GHG. What is not covered is what areas that should be prioritised from a biodiversity perspective. It is important to note that energy efficiency and sustainable renewables, not excessive outtake of bioenergy, is needed to be included in sustainable Net-Zero Carbon strategies. IPCC has such a pathway, the P1 or Low-Energy Demand (LED) pathway.

Invasive species (I), is not directly linked to GHG other than though some transport-related emissions.

Pollution (P) is linked to dirty inefficient industries, and the fossil fuel industry is a major polluter directly and indirectly through the plastic and chemical industry. Again the LED pathway is a good proxy, but biofuel can often be problematic also due to pollution, directly and indirectly due to stubble burning. [118]

Population growth (the second P) is linked to GHG on the macro level, but for companies there is no direct relation between population growth and GHG.

Overharvesting (O) is not directly related to GHG, but rather to the overall consumption levels. Again, this is why the LED pathway should be a priority.

What Edward O. Wilson and other leading scientists have established is that when 90% of habitat is removed, the number of species that can persist sustainably will descend to about half. Such is the actual condition of many of the most species-rich localities around the world. In these places, if 10% of the remaining natural habitat were then also removed, most or all of the surviving resident species would disappear. If, on the other hand, we protect half the global surface, the fraction of species protected will be 85% or more. At one-half and above, life on Earth enters the safe zone, but 15% of species will still be lost. [119]

Human demands today add up to what 1.7 Earths can renew based on Global Footprint Network's ecological footprint calculations. [120] We need to be able to bring people out of poverty and out of excess consumption while providing everyone on the planet with a lifestyle that is fulfilling. Looking ahead, an equitable world with about 10 billion people will require us to have 0.65 global hectares per person. Rich countries today use between five to ten global hectares per person, so as a rule of thumb resource efficiency in OECD countries must improve by 90%. [121] This will require transformative system solutions and new business models that are within reach if we use Half-Earth as a driver for business innovation.

The Half-Earth Project is working to engage people to participate in reaching the goal of Half-Earth.[122] The project recently launched the Companies for a Half-Earth Future initiative to create a platform for companies to share best practices toward achieving this ambition. The Companies for a Half-Earth Future initiative has two goals:

1. To provide a science-based positive vision and focus for purpose-driven, long-term innovation and business development.
2. To explore how companies can use their value proposition and core business offering to deliver on sustainability; allowing companies to link increased value from sales to increased contributions to sustainability.

The six assumptions for the initiative are the following:
1. A new generation of companies have a purpose beyond profit
    Companies need profit, but for a purpose-driven company profit is like air for a human, it is necessary, but it is not the meaning of life. In the same way a successful Company for a Half-Earth Future will be successful economically, but the purpose is to provide what society needs to do in support of the Half-Earth goal. Many start-ups are responding to the needs in society

118. https://en.wikipedia.org/wiki/Stubble_burning

119. https://www.half-earthproject.org/discover-half-earth/#why-half

120. https://www.footprintnetwork.org/resources/data/

121. https://www.footprintnetwork.org/resources/data/

122. https://www.half-earthproject.org/discover-half-earth/

for smart sustainable solutions, but we also see a number of incumbents with sustainability-relevant purposes. Some of the incumbent companies are formulating new purposes, while others are revisiting their original purpose. [123] Half-Earth is about a future where humanity lives in harmony with the rest of the planet, supporting our inherent biophilia [124] and creating solutions that are compatible with a Half-Earth future.

2. **Science beyond incremental policy goals can provide guidance**
So far, most companies have been reactive in relation to sustainability. Regulations or goals formulated by policymakers have been adopted by companies, with the Sustainable Development Goals (SDGs) the most popular set of global sustainability goals today. [125] For most companies such a reactive approach is how they view their role in relation to sustainability, but for purpose-driven companies that want to be proactive the question emerges: What goals exist beyond current policy goals? Earlier attempts to formulate guidance have provided general principles, such as the four principles by the Natural Step, that can be used in conjunction with a Half-Earth future. [126] Most initiatives have, however, only focused on what we should avoid and approached companies as problems where the best they can do is to disappear, such as "Science based reduction targets" [127] or "Planetary boundaries." [128] Such frameworks can help major polluters identify their problems, but are of limited use for solution providers. The Half-Earth vision provides a science-based and positive goal for companies.

3. **Nature has value beyond money**
Most of the solutions to environmental challenges have so far assumed the necessity of putting a price on the nature we need to save/take care of. While this can help sometimes by making it less profitable to destroy nature, it can also undermine the values we have for the nature we want to save/take care of. A new generation of economists also realise, as social scientists have known since Auguste Comte, that incentives for deeper change can not only depend on price signals. [129]

4. **Rapid technology development is providing new opportunities**
The fourth industrial revolution has unleashed technologies and business models that provide society with totally new ways of providing what we need, from energy and food to mobility and experiences. [130] For companies this opens up opportunities to deliver new solutions and new business opportunities, but it is also a challenge for those that stick to their old business models and ways to deliver solutions.

5. **New clusters of solution providers are emerging**
New ways to provide sustainable solutions tend to require collaboration beyond existing sectors as different parts of transformative solutions often exist in companies in different sectors. Digital collaboration tools have enabled platforms that allow companies from different sectors to meet and explore ways to collaborate. [131]

6. **Resource constraints, climate change, unemployment and other trends are converging**
Policymakers and companies tend to approach the converging trends on a trend by trend basis. However, to capture the full opportunities, and mitigate the challenges, the effects of converging trends must be understood.[132] Rapid technological change, geopolitical changes, value shifts, and new ways to gather and process information are likely to magnify the impacts from the convergence of trends, making it increasingly important to understand and turn them into opportunities for a Half-Earth future.

123. https://sustainablebrands.com/read/walking-the-talk/why-most-companies-are-failing-at-purpose-and-how-you-can-succeed

124. https://en.wikipedia.org/wiki/Biophilia_hypothesis

125. https://sdgcompass.org/

126. https://thenaturalstep.org/approach/

127. https://sciencebasedtargets.org/

128. https://www.stockholmresilience.org/publications/artiklar/2018-06-25-the-challenges-of-applying-planetary-boundaries-as-a-basis-for-strategic-decision-making-in-companies-with-global-supply-chains.html

129. https://www.helsinki.fi/en/news/society-economy/nobel-laureates-common-good-requires-incentives-high-quality-education-a-freedom-of-choice https://www.nytimes.com/2019/10/26/opinion/sunday/duflo-banerjee-economic-incentives.html

130. https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/

131. https://home.kpmg/content/dam/kpmg/pdf/2016/01/unlocking-power-of-partnership.pdf https://blogs.worldbank.org/climatechange/climate-change-lessons-cross-sector-collaboration

132. https://sdg.trendscanner.online/

Possible ways forward

There are many possible ways forward for the apparel industry to deliver on global sustainability. Below are different initiatives, presented in an innovation matrix, that could be explored in support of a Half-Earth future [133]
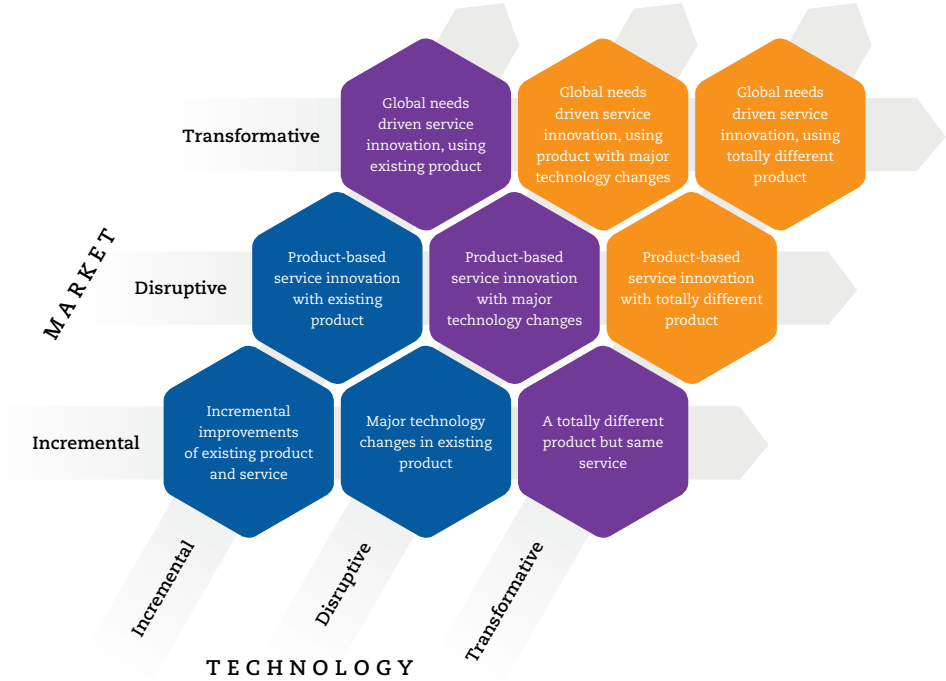
Credit: Digital Sustainability, Cybercom, Dennis Pamlin

The matrix has technology and market/values plotted on two axes and each axis is divided in three categories.

- The incremental is where fast fashion companies dominate with different takeback measures. The initiatives in this category are improvements in the dominating fast fashion business model where measures are taken only if they do not challenge the existing business model.
- The disruptive initiatives assume the need for global sustainability and embrace new business models based on quality and empowerment of citizens.
- The breakthrough (or transformative) initiatives look beyond current technologies, business models and/or values driven in order to deliver on a Half-Earth future.

The categories are based on the reports used for the impact assessments,[134] but different companies and organisations will have their own perspective on what categories that different initiatives belong to. In order to understand the differences between different companies' perspectives on innovation, the use of an Overton window can help (see illustration).[135] E.g. for a fast fashion apparel company without a sustainability purpose, many of the initiatives that could deliver global sustainability might be seen as radical, or even unthinkable.[136] Purpose-driven companies on the other hand might see the same initiative as sensible and might even have integrated some of them into their policy/strategy.

The possible ways forward listed below are only meant to inspire a discussion about possible ways forward for the apparel industry and how purpose-driven companies, and those that want to support them, can collaborate to deliver solutions that contribute to a Half-Earth future.

2 TOMORROW

Transition matrix

133. The innovation matrix is discussed here https://www.cybercom.com/what-we-do/digitalisation/advisory/digital-sustainability/

134. See the reference list

135. https://en.wikipedia.org/wiki/Overton_window

136. https://www.fastcompany.com/90423090/hms-ceo-is-worried-that-eco-conscious-consumers-could-be-bad-for-fast-fashion
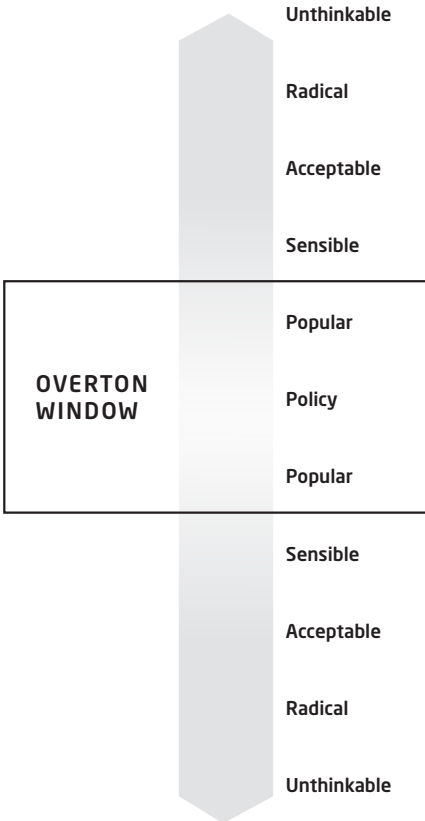
Credit: Joseph P. Overton

7.1 Technology/Product

7.1.1 Incremental

- Improved materials
  With cotton as one of the most water- and pesticide consuming products on the planet [137] and synthetic materials, such as nylon and polyester, primarily based on oil, more resource efficient and renewable solutions are needed. However, it is important to include the lifetime of the garment and the lifestyle it is meant to support, as these aspects often affect the overall sustainability impacts more than the material itself. [138]

- Apparel for a circular economy
  In order to support a circular economy all apparel should be designed for a robust and resource-efficient circular economy. [139] The important part is to reduce the overall footprint and in most cases the apparel should therefore be designed for smaller wardrobes and long lifetime. Takeback systems for fast fashion must always include a "unsustainability lock in-assessment", as there is a risk that such initiatives are the equivalent of energy efficiency measures in coal power plants. Coal power plants and fast fashion are similar in many ways. Incremental improvements in unsustainable systems tend to result in lock-ins when transformative system change is needed for global sustainability.

7.1.2 Disruptive

- **(Extended) capsule wardrobes**
  Designing garments for a capsule wardrobe can be explored to support both smaller wardrobes and more efficient use. With digitalisation and mobile devices, the possibility to create an optimal capsule wardrobe is better than ever. [140] Keeping track of the garment in the wardrobe as well as suggestions for smart combinations that reduce the need for additional purchases are features that can easily be provided. In addition, "extended wardrobes" could be created where people sign-up so they can use apparel in each other's wardrobes.

- **Badges of honour for wear and tear**
  Extending garment lifetime should be a priority and providing patches that are "badges of honours" for "patina" could be a step towards a culture where using apparel over years is seen as something positive. [141] These badges could also be part of initiatives that allow users to add stories to the badges digitally that can be shared among selected groups.

- **From customers to co-creators**
  Instead of viewing a sold/rented garment as "final", companies could encourage users of garments to continue to improve them. Tools and best practice could be shared to inspire ongoing improvements/changes of apparel in support of sustainable lifestyles. This would also fit the trend towards "make on demand" and decentralised production, including 3D-printing.

7.1.3 Breakthrough/Transformative

- **Sharing experiences**
  Designing apparel to encourage sharing of sustainable experiences by integrating sensors could encourage democratisation of environmental data and support increased engagement and participation in sustainable outdoor experiences. Smart sensors and access to data from the supply chain could also allow users to share other aspects that are relevant for a Half-Earth future, such as sustainable mobility and food habits, as these share many of the same supply chain and infrastructure challenges as the apparel industry.

- **Sharing material goods (broader sharing network)**
  Creating standards for tagging of goods together with companies from different sectors, especially those where use is intermittent, could encourage a culture of sharing. Sectors that

137. https://www.worldwildlife.org/industries/cotton

138. https://www.ellenmacarthurfoundation.org/assets/downloads/publications/A-New-Textiles-Economy_Full-Report.pdf

139. https://circular.fashion/

140. https://www.uselesswardrobe.dk/3-apps-to-help-you-organize-your-wardrobe-and-lower-your-consumption/

141. http://www.wrap.org.uk/sites/files/wrap/Design%20for%20Longevity%20Report_0.pdf

could be interesting include apparel, bikes, household equipment and specific equipment for hobbies that is only used occasionally.

- **Integrated connection to nature**
Sensors that keep track of the natural environment can track sustainability trends as well as make the wearer aware of changes in the environment that are beyond our natural senses from UV radiation and ultraviolet light to ultra-high sound frequencies allowing us to experience the world in ways that other animals do as a high-tech way to connect with nature. Another possible feature could be to have interactive material that allow the person, or group, wearing the apparel to feel things in nature such as the increased level of greenhouse gases and cutting down of forests.

7.2 Market/Business Model

7.2.1 Incremental

- **Improved takeback systems**
Introducing a system where users are given an opportunity to upgrade their wardrobe when they return apparel could help create a culture where people view apparel as part of a circular economy. It would also help counter the culture of getting paid to do things even though behavioural economics and social sciences have known for decades that such incentives often undermine the values they are meant to support. [142]

- **Receipts for investors/co-creators**
Shifting the perspective on the relationship between companies and users can help accelerate sustainable solutions. Instead of providing a receipt only with the cost and a label with information about how the garment was produced, information about the future could be included, including information of how users might use the garment more than 1,000 times. This "future information" would also include the impact of the planned investments by the company and could in addition include the possibility for investors/co-creators to provide suggestions for future apparel and offerings. Instead of viewing the user of apparel as a passive customer such an initiative could change the role to that of an investor/co-creator who is engaged and supports the development of the apparel company and a sustainable future.

7.2.2 Disruptive

- **Empowerment influencers/"role models"**
Many apparel companies are currently using conventional models and influencers, often with unsustainable lifestyles, that only represent a "look". A new generation of apparel companies, companies that want to support a sustainable future with empowered citizens, could use role models who support and represent empowerment. Instead of influencers and models who only "pose", the focus for these role models is what they "do" and make in life. Leading teachers, nurses, scientists, environmental activists, etc. are just a few examples of potential role models with knowledge and skills that can be shared to support a sustainable future.

- **Half-Earth vacation and commuting experiences**
When it comes to vacations, apparel companies could collaborate with providers of sustainable mobility, train travel and other public transport solutions, to provide offerings where people can spend time working during the journey to the vacation destination. Employers in all sectors could support paid train trips where staff work as a way to support employment engagement and increased innovation. Adding nature experiences together with NGOs and scientists could support a deep connection to nature and also encourage citizen science. [143]

For commuting, apparel companies could collaborate with bike providers, green space providers, and ecosystem experts that would allow commuting to be both sustainable and also a deeper experience where people could learn about nature and the built environment as part

142. https://www.nytimes.com/2019/10/26/opinion/sunday/duflo-banerjee-economic-incentives.html

143. https://en.wikipedia.org/wiki/Citizen_science

of the commuting. People who share similar interests could also be connected and guided by experts in different areas.

- **Virtual experiences for connection to nature**
  There are exciting opportunities for connecting to nature virtually. Instead of a person having to fly in order to dive and experience coral reefs underwater drones could be controlled and used in combination with real-time remote reality using VR-equipment. This could also be mixed with real experiences where opportunities are provided to return to the same place virtually and stay connected to them. An opportunity to stay connected virtually could also support deeper connection to places and friends rather than a hunt for new sensations and Instagram posts.

7.2.3 Transformative

- **Experiences beyond material consumption**
  With many people in OECD countries having ecological footprints that are 10-20 times larger than what is compatible with a Half-Earth future, and many problems related to overconsumption from obesity to stress, there is an urgent need to shift focus from material consumption to experiences. The rich countries carry a particular responsibility to find sustainable lifestyles and rich people in rich countries have the greatest responsibility of all. Our current economy is built around the assumption that "more" of everything is good, and it is time to shift focus from quantity to improved quality in society. Many companies struggle to find business models that are not built on increased sales of material goods. To help in this transition apparel companies could explore ways of providing experiences, in collaboration with role models, in support of a Half-Earth future.

- **Kintsugi**
  There is an opportunity to highlight philosophies and traditions that can provide inspiration for sustainable lifestyles and societies that support these. Kintsugi for example is a philosophy that views breakage and repair as part of the history of an object. [144] The idea of an object as more beautiful after long-term use could provide transformative inspiration for the apparel and fashion sector. As an object tends to break in unique ways there is also a way to avoid simple fashion trends that try to get everyone to look the same. Arranging for ways to know more about concepts like kintsugi and wabi-sabi, as well as more modern concepts such as ecosophy and biophilia. [145]

- **Obscenity index (Obscene investments and obscene promotion)**
  Today there is a tendency to focus on extreme consumption as something that is admirable, or at least interesting. In order to counter the idea that more is better, an obscenity index could be established to highlight people who brag in media about lives that are the furthest from sustainability. It could be done on an individual level or by profession. It would not have to be very controversial as it could bring data from people who post examples of their lifestyle on social media on a regular basis, together with scientific data on resource use for different lifestyle choices.

  As Stephanie Moser, of the University of Bern, who found that a person's carbon footprint is better indicated by their income than their environmental beliefs, said in a CNN interview, "We as a society have to search for new ways of leading 'rich' lives that are independent of material wealth. We have to redefine wealth in our societies such that living a 'good life' is possible without high greenhouse gas emissions." [146]

The above are only examples of initiatives that highlight different levels of innovation and the need to move beyond incremental innovation in order to deliver solutions for a Half-Earth future. These initiatives would also benefit from more in-depth studies based on frameworks covering multiple areas, such as a Half-Earth version of planetary boundaries that also include opportunities and establish positive goals.

[144] https://en.wikipedia.org/wiki/Kintsugi There is a video by Evan Puschak, aka Nerdwriter, on YouTube that is worth watching https://www.youtube.com/watch?v=IT55_u8URU0

[145] https://en.wikipedia.org/wiki/Wabi-sabi
https://en.wikipedia.org/wiki/Ecosophy
https://en.wikipedia.org/wiki/Biophilia_hypothesis

[146] https://edition.cnn.com/2019/07/12/health/rich-people-climate-change-intl/index.html

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Appendix 1: References for footpri

Source	Title	Year	Whole sector	Breakdown
McKinsey	Style that's sustainable: A new fast fashion formula	2016	Apparel industry	General/cotton
Quantis	MEASURING FASHION 2018 - Environmental Impact of the Global Apparel and Footwear Industries Study	2018	Apparel + Footwear industry	> Material apparel: synthetics, cotton, cellulosic fibres and other natural fibres such as linen. > Material footwear: synthetic, leather, textile, and other.
Mistra Future Fashion	Environmental assessment of Swedish fashion consumption	2015	No	T-shirts, jeans, dresses, jackets, hospital uniforms
Stockholm Environment Institute	Ecological footprint and water analysis of cotton, hemp and polyester	2005	No	Cotton, organic cotton, hemp, organic hemp, polyester
Science Based Targets	Launch of Apparel, Textiles, and Footwear Sector Guidance for Setting Science-based Targets	2017	No	No
European Parliament	Environmental impact of the textile and clothing industry	2019	Yes (in EU)	Material (but only amount)
European Commission, Joint Research Centre (JRC)	Environmental Improvement Potential of textiles (IMPRO Textiles)	2014	Clothing sector	Clothing (broad categories): Tops, Underwear, nightwear and hosiery, Bottoms, Jackets, Dresses, Suits and ensembles, Gloves, Sportswear, Swimwear, Scarves, shawls, ties, etc. Fibre types: cotton, wool, viscose, flax, silk, polyester, polyamide, acrylic, polypropylene, hemp and polycotton. Materials: polyurethane/polypropylene, feathers and polyvinyl chloride (PVC).
Global Fashion Agenda (GFA)	A Call to Action for a Circular Fashion System	2017	Fashion industry	No
Global Fashion Agenda (GFA) & Boston Consulting Group	Pulse of the Fashion Industry 2017	2017	Fashion industry	No
Chenxing Wang et.al	Carbon footprint of textile throughout its life cycle: a case study of Chinese cotton shirts	2015	No	Chinese cotton shirts
Carbon Trust	International Carbon Flows - Clothing	2011	Fashion industry	T-shirts
House of Commons Environmental Audit Committee	FIXING FASHION: clothing consumption and sustainability	2019		Natural fibres and synthetic fibres
WRAP	Valuing Our Clothes: the evidence base	2012		
WWF	Ecological Footprint HK	2019		
Ellen McArthur Foundation	A New Textiles Economy: Redesigning fashion's future	2017		
Ecotricity	The carbon footprint of getting dressed	2018		Yes
McKinsey	The State of Fashion 2018	2017		
Nature Climate Change	The price of fast fashion	2018		
UNFCCC	Fashion Industry, UN Pursue Climate Action for Sustainable Development	2018		
WRAP	Mapping Clothing Impacts in Europe: The Environmental Cost	2017		
Xin Li et.al	Allocation Methodology of Process-Level Carbon Footprint Calculation in Textile and Apparel Products	2019		T-shirts + Polo shirts
European Commission's Joint Research Centre (JRC)	Environmental Impact of Products (EIPRO)	2006		
WRAP	A Carbon Footprint for UK Clothing and Opportunities for Savings	2012		Tops, underwear/nightwear/hosiery, bottoms, jackets, dresses, suits and ensembles, gloves, sportswear, swimwear, scarves/shawls/ties

nt assessments

Footprint

Making 1 kilogram of [cotton] fabric generates an average of 23 kilograms of greenhouse gases. Washing and drying 1 kilogram of clothing over its entire life cycle, using typical methods, creates 11 kilograms of greenhouse gases.

Together the apparel and footwear industries generated between 5 and 10% of global pollution impacts in 2016. Footwear alone represents approximately one-fifth the impact of the apparel industry, about 1.4% of global climate impacts (700 million metric tons CO_2eq), while apparel represents 6.7% of global climate impacts (3,290 million metric tons CO_2eq). Combined, they account for an estimated 8.1% of global climate impacts (3,990 million metric tons CO_2eq).

The carbon footprint pf Swedish fashion consumption is approximately 0.25 tonnes CO_2-equivalents per capita and year. Environmental impact potential for yearly fashion consumption in Sweden, with the scale-up model is 2.45E+06. The fashion share of the total carbon footprint is 2.5%.

No

A 2006 Joint Research Centre (JRC) report estimated that the environmental impact of EU consumption of clothing amounts to 2 to 10% depending on the type of impact. A 2017 report by Global Fashion Agenda (GFA), estimated the EU's environmental footprint caused by the consumption of textiles at 4 to 6%. The 2017 Pulse of the Fashion Industry report estimated that in 2015, the global textiles and clothing industry was responsible for the consumption of 79 billion cubic metres of water, 1 715 million tons of CO_2 emissions and 92 million tons of waste.

The environmental impact of EU consumption of clothing amounts to 2 to 10% depending on the type of impact.

Figure 29 shows the impact on climate change due to the production of one kg of fabric from different fibre types. Impact on climate change ranges from 14.9 to 35.7 kg CO_2 eq/kgfabric (values corresponding to silk and acrylic, respectively).

The most substantial impact, 35.7 kg CO_2 eq/kg, is generated by acrylic. Acrylic is followed by PA6 (30.9 kg CO_2 eq/kg) and polyester (27.2 kg CO_2 eq/kg). In general, synthetic fibres show a higher impact on climate change than natural fibres.

4-6% of the EU's environmental footprint is caused by the consumption of textiles. (GFA & BCG)

1,715 (million tonnes) Emissions of CO_2

Estimated average carbon footprint for the life cycle of a pure cotton shirt was 8.771 kgCO_2e.

Global consumption of clothing results in around 330MtCO_2 of emissions, with emissions from the use of clothing resulting in an additional 530MtCO_2 per year.

A polyester shirt has more than double the carbon footprint of a cotton shirt (5.5 kg CO_2e vs. 2.1 kg CO_2e) (Kirchain, R., Olivetti, E., Reed Miller, T. & Greene, S. Sustainable Apparel Materials (Materials Systems

Global footprint of UK consumption of clothing: 38 million tonnes CO_2e

Percentage of UK comparator: The UK part of the carbon footprint of UK clothing is 2% of the UK's total direct carbon footprint

Footprint per household (per annum): 1.5 tonnes of CO_2e emissions

Household footprint equivalent (per annum): Driving an average modern car 6,000 miles

Clothing accounts for 15% (1.02 gha) of Hong Kong's total Ecological Footprint.

In 2015, greenhouse gas (GHG) emissions from textile production totalled 1.2 billion tonnes of CO_2 equivalent, 21 more than those of all international flights and maritime shipping combined. This is mainly due to the high amounts of throughput in the current linear system, but it is also exacerbated by the high GHG intensity of textiles, with the production of 1 tonne of textiles generating 17 tonnes of CO_2 equivalent (compared to 3.5 tonnes for plastic and less than 1 tonne for paper).

> Jeans - a pair of Levi 501 jeans will use 33.4kgCO_2 eq
> Pair of running trainers - it's estimated that the carbon footprint of a typical pair of running shoes made of synthetic materials is 14kgCO_2 eq
> Cotton t-shirt - according to the Carbon Trust, the estimated carbon footprint of a pure cotton shirt over its lifetime, is 15kgCO_2 eq
> Polyamide/Polyester jacket - from cradle to grave will use 18kgCO_2 eq
> Underwear – even the smallest item has an impact of 1.9kgCO_2 eq

Worldwide, clothing utilisation – the average number of times a garment is worn before it ceases to be used – has decreased by 36 percent compared to 15 years ago.

The carbon footprint of clothing consumed in one year, 2015, in the EU is 195 million tonnes CO_2e.

GHG emissions of the polo shirt in the sewing process are significantly higher than that of the T-shirt in the sewing stage (T-shirt, 0.167 kg CO_2 eq/piece, and polo shirt, 0.371 kg CO_2 eq/piece, respectively).

Tables below.

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Appendix 2: The Houdini Manifesto

Our manifesto is our promise for the future. It's a set of thoughts that guide us in our daily work and in every decision we make.

Stockholm, November 2017 [147]

We are driven by a deep love for nature and the experiences it gives us. We also believe that nature has an intrinsic value, regardless of human needs.

We acknowledge that human activities have created a dire situation for the planet we live on. Companies have a big part in this, and therefore a big responsibility.

The current system, where products are produced, used and discarded at an ever increasing pace, is not working. Our mission is to transform into a circular system in harmony with our world. Nature itself is the blueprint.

Every resource we use is borrowed from nature and we will therefore treat it carefully.

We will fight overconsumption.

We will contribute to the development and implementation of sustainable technology.

We will collaborate with others and share our knowledge.

We will speak for nature when no one else does.

We will question our own way of working and evolve to address the challenges we face.

We will encourage free thinking and individuality among ourselves.

Environmental, social and economic factors are interdependent and system change depends on all of them.

Our work is fuelled by passion and therefore we take our passions seriously.

We will keep exploring the world around us.

When it snows, we will go skiing.

When there's surf, we will go surfing.

We will keep falling in love with nature, and we will bring our friends with us.

We will never stop having fun.

We will keep working to minimise our negative footprint, move beyond zero, and leave an entirely positive impact on the world.

[147] https://houdinisportswear.com/en-se/explore/houdini-manifesto

Appendix 3: Aim and expected outcome of the "Regenerative life-style project"

Through support for sustainable maximum experience, demonstrate and contribute to sustainable and flourishing lifestyles that depend on significantly less than half of Earth's land resources.

By 2022

1. *Houdini will have 100,000 end-users, followers and fans turned activists.*
2. *Houdini will have enabled exponential growth in the number of experiences of nature with sustainable use of resources, using innovative approaches such as product-as-a-service solutions.*
3. *Houdini will have local hangouts to guide, educate and inspire to reconnect to nature worldwide.*
4. *Houdini will enable a 100% connected community for end-users to turn activists.*

The above will result in (where relevant specific numbers will be developed during the initiative)
1. *Significantly increased number and quality of experiences in nature.*
2. *Reduced GHG emissions in society due sustainable lifestyles supported by new initiatives related to experiences that are sustainable, especially with regards to mobility, nutrition, living and the infrastructure needed.*
3. *An initial group of people, cities and organisations have set targets in line with a "maximum experience and positive impact on the planet" approach.*
4. *Millions of physical and virtual activities in support of a "Maximum experience and positive impact on the planet".*

Deliverables 2019-2020

During 2019-20 the initiative will deliver the following:
1. *A Maximum Experience strategy in support of flourishing lifestyles and a Half-Earth future*
2. *A Report exploring what a Half-Earth lifestyle could look like and how to enable it*
3. *A first paper with initial estimations for Houdini's positive impacts and Half-Earth Project contribution in 2020*
4. *A full planet positive report based on a Half-Earth approach in 2020*
5. *A series of innovative initiatives for "maximum experience linked to Houdini's "Reconnect humanity to nature" goals.*

Photo: Erik Nylander

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