

SUSTAINABLE FASHION

RADICAL RETHINK
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CLOTHING TRADE

Spotlight
Series

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SUSTAINABLE FASHION

CLOTHING MANUFACTURE CAUSES ONE-TENTH OF WORLD'S CARBON EMISSIONS

Today's throwaway clothing or "fast fashion" has negative environmental impacts at every stage of its life cycle. Current systems are not sustainable. We need to change what our clothes are made from, where and how they are produced, and how we dispose of them.

THE ISSUE AT STAKE



MOST PEOPLE DO NOT REALIZE

the environmental damage that their clothes may be causing. But the facts are indisputable. The \$2.4 trillion global clothing industry, which employs some 300 million people, is a huge carbon emitter, wasteful of resources and grossly polluting.¹ China produces 65% of the world's clothes and is the world's largest exporter of textiles by value, followed by Germany.²

Globally, we are consuming more and more clothes each year and wearing them for less and less time (see ①). The clothing industry is responsible for 1.2 billion tonnes of greenhouse gas emissions annually. That's one-tenth of all emissions – more than all international flights and maritime shipping combined. Clothing manufacture is the world's second-largest consumer of water and causes one-fifth of all water pollution.³

Humans will always need and want clothes, and with 8 billion people on Earth, it will always require a substantial amount of energy, water, and raw materials to produce them. And as the textile industry is almost as omnipresent as agriculture, it will always play a major economic role, especially in low-income countries. This means that we should not try to make the textile industry disappear, but instead try to make it as sustainable as possible.

As we show (see ②), most of clothing's carbon impacts occur during production, followed by clothing in use, and far smaller proportions for retailing and end-of-life disposal. Synthetic fibers, used in around 60% of clothing, are made from carbon-intensive chemicals derived from oil. They also

release one-third of the microplastics found in the oceans. But natural fibers also have bad environmental impacts – growing cotton requires huge amounts of water.⁴

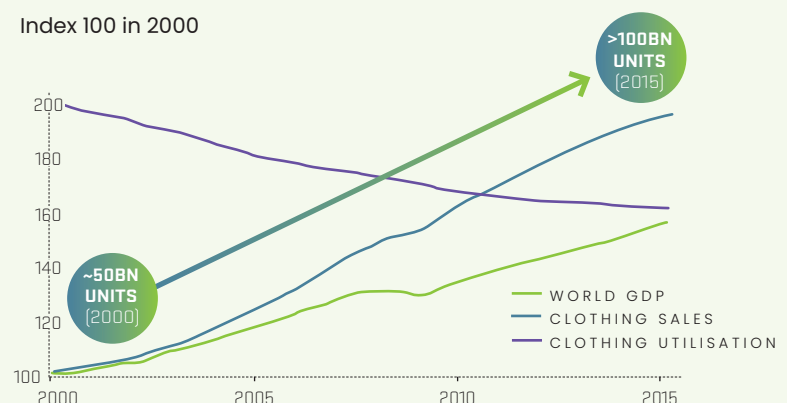
Despite these facts, it is estimated that just 12% of the material used for clothing is recycled.⁵ The world's two largest exporters of used clothing for reuse, recycling or disposal are the US and the UK, and the largest markets are in Africa, Eastern Europe, Asia, and the Middle East (see ③).⁶

LIMITATIONS OF SELF-REGULATION

A number of industry-backed NGOs and trade bodies are promoting sustainable fashion. The Circular Fashion Partnership 7 supports the textile recycling industry in Bangladesh by exporting fashion waste for new products. Dutch charity Fashion for Good⁸ →

① GROWTH OF CLOTHING SALES AND DECLINE IN CLOTHING UTILIZATION SINCE 2000

Index 100 in 2000



SOURCE: CIRCULAR FIBRES INITIATIVE/ELLEN MACARTHUR FOUNDATION

→ seeks to raise public awareness about the environmental impacts of clothing, and Danish Global Fashion Agenda organizes an annual sustainability-focused Global Fashion Summit.⁹ The Australian NGO Good on You ethically rates thousands of fashion brands.¹⁰

The US-based Sustainable Apparel Coalition (SAC) has produced the Higg Index. Launched with the Patagonia clothing brand and Walmart retail chain in 2012, this awards a numerical rating for the environmental and social impacts of materials, supply chains, and retailing models.¹¹

The index has been adopted by Swedish H&M which, with Spanish Zara, Japanese Uniqlo, and US Gap, is positioned in the top five of global fast fashion brands, selling more than 2 trillion items a year.¹²

All fashion brands must now claim sustainable credentials in order to gain market advantage. But how reliable are they? In June 2022, the SAC suspended the public-facing use of Higg ratings by fashion brands, after the Norwegian Consumer Authority (NCA) banned their use in Norway

under anti-greenwashing legislation.¹³ The embarrassed SCA has commissioned a third-party review of the reliability of the index.¹⁴

LEGISLATION WITH TEETH

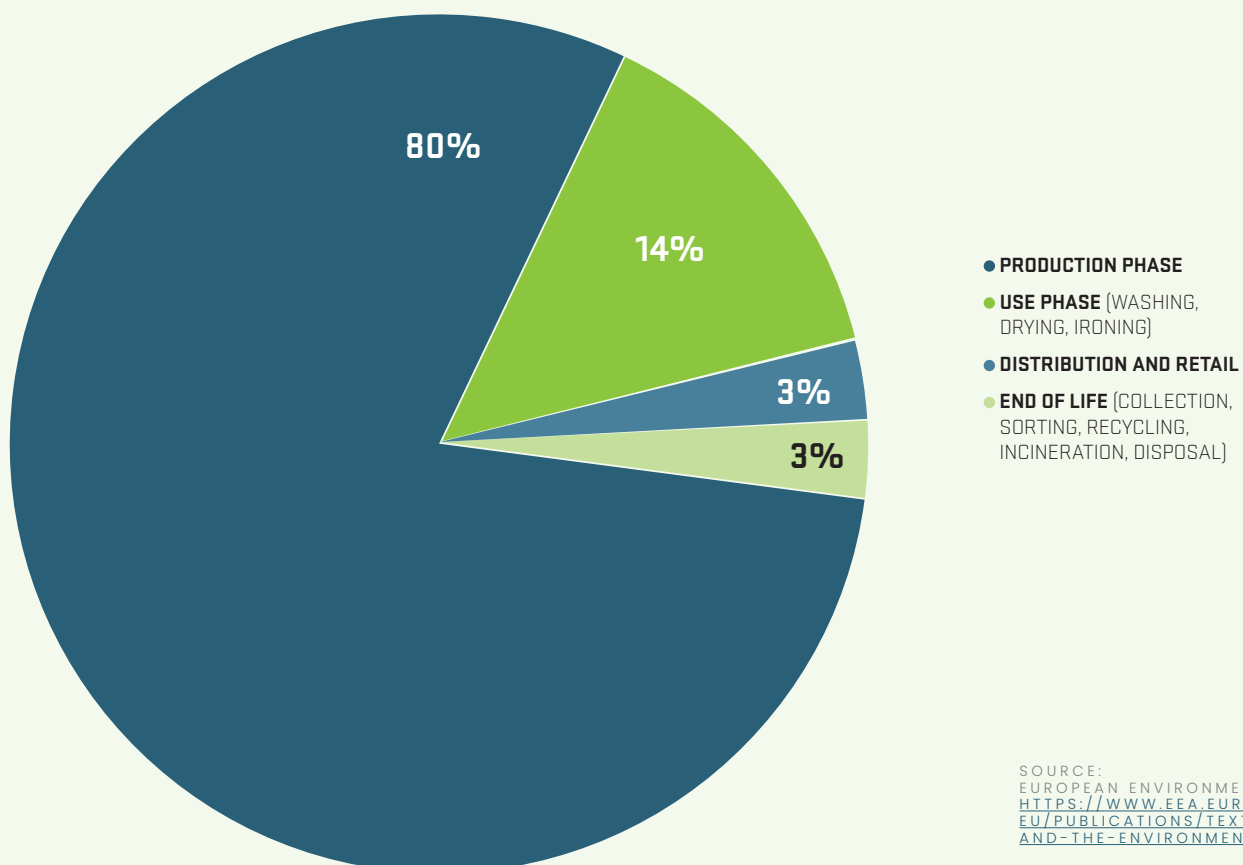
Since the world is flooded with cheap textiles, many people believe that only statutory →

Impacts of fast fashion

- Clothing manufacture is the world's second-largest water consumer, mainly through cotton-growing and dyeing
- Synthetic fibers, found in 60% of garments, produce **two to three times more carbon emissions** than natural ones
- It takes **8,000 liters of water** to produce **one pair of jeans**, and 3,000 liters to make a shirt
- Washing synthetic textiles releases **500,000 tonnes of microfibers** into the ocean each year, equal to 50 billion plastic bottles
- Dyeing textiles uses enough **water to fill 2 million Olympic-sized swimming pools** each year

SOURCE: WORLD ECONOMIC FORUM, CHEMICAL AND ENGINEERING NEWS

2 CARBON IMPACT OF TEXTILES





Cloth Rags in Shanghai, China

→ regulation will succeed in requiring fashion brands to adopt new materials, enforce standards in supply chains, and sell more responsibly. And this is beginning.

The EU is leading the world on legislation. The Waste Framework Directive of 2008 mandated that EU member states must set up separate collection for used textiles and garments by 1 January 2025. From that date, they can no longer be sent to landfill or for incineration.¹⁵

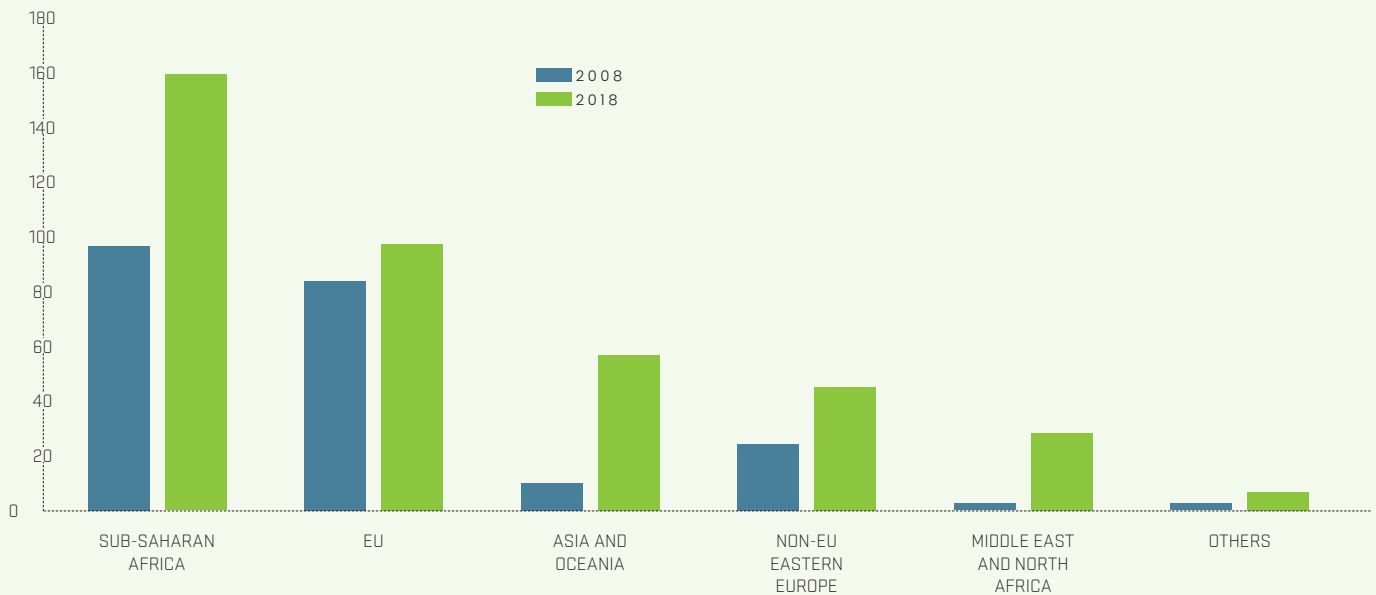
In 2008, France established the world's first extended producer responsibility (EPR) scheme for textiles and footwear.¹⁶ To avoid being taxed under EPR, companies must maximize their use of recycled fibers

and introduce in-store take-back schemes. Revenues raised pay for improved reuse and recycling facilities. It is likely that many EU countries will follow France's lead and set up their own textile EPR schemes.

Under the EU's sustainable textiles strategy, by 2030 all textile products put on the market must be "durable, repairable and recyclable."¹⁷ A carbon border adjustment mechanism, introduced under the EU's Green Deal, is set to apply to cement and iron and steel imports. How long before a carbon-based import tax is applied to textiles?¹⁸

In the US, the Fashion Sustainability and Social Accountability Act will apply to fashion companies with a revenue of more than →

3 UK EXPORTS OF USED TEXTILES BY DESTINATION, 2008 AND 2018



→ \$100 million selling in New York state. Enforced by the New York attorney general, it gives companies a year to map supply chains for environmental and social impacts, and 18 months to disclose the data on their websites.¹⁹

RECYCLING AND REUSE

The fashion industry is fast to pick up on social trends, and lockdown accelerated the use of online channels designed to facilitate take-back, reuse, and recycling. Fast-expanding e-commerce companies – like Rent the Runway in the US and Hurr in the UK – now include rent options for expensive brands, putting them within easy reach of consumers. Hurr allows users to rent or sell their own clothes online.²⁰

Mud Jeans offers “jeans for life” made from recycled and organic cotton, which can be bought or rented. Vigga in Denmark, a subscription-based service for babies and small children, offers unisex clothing made from organic fabrics for use and return.²¹

Yellow Octopus is a commercial “stock exit” company, partnered with multiple clothing brands. Unsold clothing is offered for recycling and reuse, and the company promises that none of it goes to landfill. Its reGAIN app connects UK consumers to more than 25,000 recycling drop-off points.²²

Such initiatives have also been described as “greenwashing.”²³ But e-commerce resale is the fastest-growing and most disruptive trend to hit clothes retailing in years, and the

SITA Clothing: made from sustainable fabric



practice of buying and selling “pre-loved” and “vintage” clothing has become fashionable. Boston Consulting Group estimates the global clothing resale market reached up to \$40 billion in 2020, and through 2025 will grow at an annual rate of up to 20%.²⁴

NEW TECHNOLOGIES AND FABRICS

It is estimated that over 8,000 chemicals are used by the textile industry, including →

→ fixing agents, bleaches, solvents and detergents. Outdoor clothing is often waterproofed with potentially toxic perfluorochemicals (PFCs). Textiles are colored with synthetic dyes using high pressures and temperatures.²⁵

New technologies are developing materials that require less energy and water to produce than conventional fabrics, and refining mechanical and chemical recycling. A team at Loughborough University in the UK is using enzymes so that textiles can be dyed and patterned at temperatures as low as 50°C, at atmospheric pressure.²⁶

Dutch company DyeCoo has developed a process using pressurized carbon dioxide that requires no water and no other chemicals to dye fabric. Because there is no need to dry the fabric afterwards, the process saves energy. The company has partnered with Nike and IKEA.²⁷

Chemical producers Archromar, DyStar, Huntsman Corp, and Protex are developing

PFC-free waterproofing agents. Meanwhile, in Sweden, OrganoClick has created a natural PFC replacement, OrganoTex, that is made with molecules found in fruit.²⁸

The Austrian company Lenzing offers a cellulose-based textile, Tencel, made from wood pulp.²⁹ This can be made into active clothing, nightwear, and denim for jeans. Start-ups VitroLabs, Bolt Threads, and Modern Meadow are using plant-based proteins to create cell-cultivated leathers with multiple clothing applications.³⁰

Aljohara Almodaimigh, founder of a women's gym chain in Saudi Arabia, and Gianfranco Zani, a textiles expert, have together devised SitaTech, a sustainable fabric for active lifestyles that controls body temperature and neutralizes odor.³¹ High-tech, long-lasting, and multi-functional textiles such as this could provide us with the clothing of the future. As Zani suggests, "Technology will be the new fashion avant-garde." ←

SITA founders Gianfranco Zani (left) and Aljoharah Almodaimigh





WHAT CAN WE DO?

- **Buy vintage and pre-loved clothing** and clothing made of recycled fibers.
- **Return clothing to take-back bins.** Use apps to rent clothes and to swap, sell, or donate unwanted items.
- **Support innovative, low-impact clothing** lines and ethical and transparent brands.
- **Press for legislation** so that clothing brands and retailers to pay for their environmental impact, with revenues paying for recycling and reuse facilities.

ABOUT FII INSTITUTE

→ **THE FUTURE INVESTMENT INITIATIVE (FII) INSTITUTE** is a new global nonprofit foundation with an investment arm and one agenda: Impact on Humanity.

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