Report by Research & Degrowth International & War on Want

Extraction Fashion: unequal exchange and degrowth explored

Author: Tansy E. Hoskins & Morena Hanbury Lemos

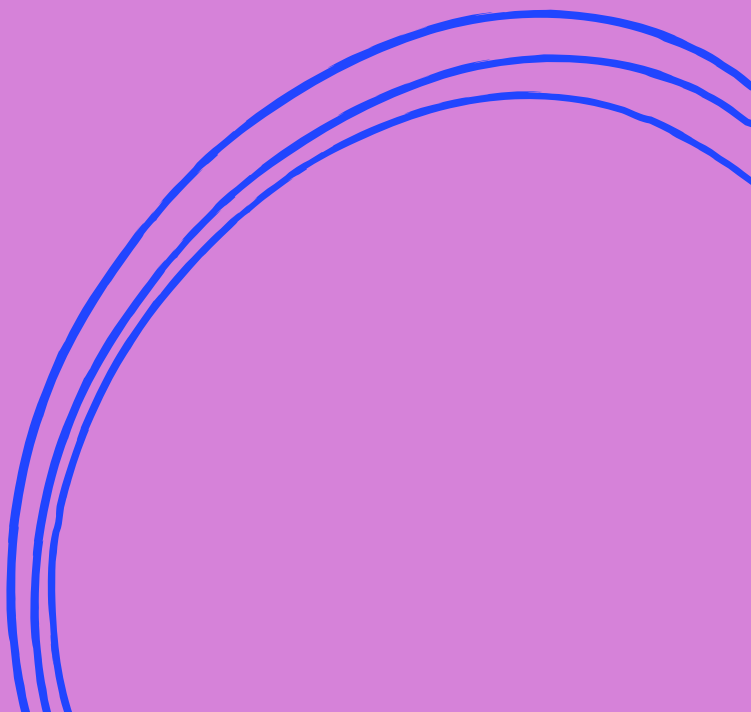
Research and Degrowth

About the authors

Tansy E. Hoskins: Tansy Hoskins is an award-winning journalist and author who investigates the global fashion industry. Her books include The Anti-Capitalist Book of Fashion and Foot Work – What Your Shoes Tell You About Globalisation. Tansy won the Fashion & Beauty Writer Award at the Freelance Writing Awards, and was nominated for a British Journalism Award.

Morena Hanbury Lemos: Morena Hanbury Lemos is a PhD candidate in Ecological Economics at the Institute of Environmental Science and Technology (ICTA-UAB), investigating the colonial legacies embedded in the global economy. Her work focuses on unequal exchange, economic sovereignty, and alternative pathways beyond growth. She holds master's degrees in Political Ecology and Decolonial Thought, and a bachelor's in Environmental Management from the University of São Paulo. She teaches and writes on post-growth, climate, and anti-imperialist political economy.

Contents



Executive summary

With less than a decade to avoid the catastrophic climate breakdown, which is already compounding global poverty and inequality, this report argues that the principles of de-growth economics offer a radical alternative to the dominant neo-liberal capitalist driven model that advocates for growth regardless of its devastating costs to people and the planet.

The report investigates the fashion industry using new data to uncover the scale and origins of natural resources and human labour embodied in the production of fashion consumed in the EU and UK in 2021. The findings reveal how fashion industry's extractive model contributes to pushing the planet beyond its limits while depriving poorer nations of the materials, land, energy, and labour essential for their own development.

The premise of this report is that the current economic model, which gave rise to the fashion industry as it exists today, is structurally incapable of providing anything other than extraction for profit. Given the sheer scale of fashion's extraction, it is misleading to suggest that transparency initiatives, sustainability indeces, swapping materials, or changes in consumer behaviour can, on their own, resolve the crisis. While progress on those areas is may offer gains, they fail to address the root cause of the problem: an industry designed for profit accumulation by big corporations in the Global North, divorced from what is sustainable for social and ecological life on our planet for all.

A fashion industry shaped by degrowth and justice principles and driven by the priorities of environmental and social well-being would be fundamentally different. Rather than based on mass production through global supply chains, planned obsolescence, waste, excessive resource extraction and labour exploitation, such an industry would be organised around producing less and taking less in the process. Longevity and reuse would be central to the production cycle. Producing fashion items would be more locally rooted and democratically controlled, no longer serving the interests of multinational profit-maximising corporations.

A just transition for the fashion industry along degrowth lines requires removing the barriers that lock countries into depending on low-value added fashion exports as an economic lifeline.

It means enabling such countries to make sovereign decisions about their own economic development strategies and priorities. This transition means centring the people whose livelihoods are dependent on fashion, ensuring they should be the ones the transition protects and provides alternatives for.

Methodology

This report analyses the scale and flows of embodied materials, land use and human labour throughout the global supply chain for fashion goods, using data from EXIOBASE version 3.9.6[1]. The EXIOBASE database was developed by a consortium of research institutes. Data curation and analysis for this report was done by Morena Hanbury Lemos, doctoral researcher at the Institute for Environmental Science and Technology (ICTA-UAB), Autonomous University of Barcelona.

For this report the EXIOBASE data was first analysed to identify all of the embodied[2] resources (raw materials, land, human labour) required for the production of fashion destined for consumption in EU countries and the UK in three years (2017, 2019 and 2021).

The next step extracted data to identify what specific countries and regions of the world the vast majority - being 90% - of those resources came from. The aim was to develop a geographic picture of what countries and regions contribute the most to fashion for the UK and EU. The report cites data for 2021 only as the overall geographic picture was not significantly different for the three years.

Introduction

Less than a decade for change

The scale and urgency of the multiple crises facing our world cannot be overstated. The Intergovernmental Panel on Climate Change (IPCC) is unequivocal: "There is a rapidly closing window of opportunity to secure a liveable and sustainable future for all."[3] With less than a decade remaining to avoid catastrophic climate breakdown by limiting global heating to a maximum of 1.5°C, scientists warn that current measures fall short of achieving this critical target.[4] At the same time, inequality has deepened. Centuries of colonial plunder and the dominance of a rigged economic system has seen the wealth of rich elites grow exponentially at the expense of the majority. The gap between the richest and the poorest is stark: half of the global population share just 2% of global wealth, while the richest 10% own 76%.[5] Increasingly frequent and intense climate disasters, amplify and deepen poverty and these inequalities.

The scale and urgency of these interconnected crises demand nothing less than the transformation of our economies and societies.

Unequal exchange and degrowth economics

Every year vast quantities of human labour, land and natural goods[6] are extracted from the Global South and used to create economic growth in the high-income Global North. Using data from 2015, economist Jason Hickel led a research team that calculated that the drain from the Global South to the Global North in a single year equates to $10.8 trillion – an amount of money that could end extreme poverty 70 times over.[7]

As Intan Suwandi, who co-authored the research states: *'This is how "drain" happens from the South to the North, where surplus of an economy is sucked out without an expected return of advantages…most people in the Global South population are not benefiting from the industrialisation that's born out of their countries' incorporation into the world economy. We are not seeing in them a sovereign industrialisation with the goal of fulfilling the needs of the people, but a form of dependent development designed to fulfil the need of capital to engage in endless accumulation for the prosperity of the few.'*[8]

Degrowth economics offers a radical alternative and critique of neo-liberal capitalist drive for growth no matter the devastating cost to people or planet.

The principles of degrowth economics call for societies, both local and global, to prioritise social and ecological well-being instead of corporate profit, overproduction, and excess consumption. Rather than aiming to reduce all forms of production everywhere, degrowth is specifically about reducing less-necessary forms of production and is targeted at rich Global North countries, as those most responsible for driving environmental damage and the climate crisis[9].

As economist Tonny Nowshin explains: *"Degrowth fundamentally embeds the discussion of giving back resources that are taken by extraction from the Global South to the Global North, including wages. Degrowth doesn't only focus on production but also redistribution of produce and resources. From a social justice perspective degrowth is one of the frameworks that needs to make sure we are decolonial and caring for everyone."*[10]

Extraction fashion

The global fashion industry produces a possible 100 billion pieces of clothing[11] and 24.4 billion pairs of shoes every year[12]. Shockingly, a possible 80% of end-of-life garments end up in landfills or incinerators[13] highlighting the industry's staggering wastefulness. Even using the loosest definitions of what constitutes human need, fashion is an extreme example of a sector organised around socially unnecessary production. This makes it a top candidate for an industry that must be degrown while still retaining the ability to meet the need for high quality clothing that is neither resource-intensive nor boring.

Accelerating processes of globalisation from the late 1970s into the 1990s profoundly changed the fashion industry. Companies shifted production across the globe in search of lower manufacturing costs and expanded their sales across continents, fuelling our present era of rapidly increasing consumption of fashion.[14] This rising consumption is predominantly seen in the wealthier countries of the Global North, as are the fashion corporations that profit from it.

In the EU, the amount of clothing bought per person increased by 40% between 1996 to 202115 making it the largest importer of clothing worldwide accounting for over a third of all textile clothing imports[16]. The UK buys more clothing per person than other countries in Europe[17]. Many of the world's leading and most profitable fashion brands are in the EU, such as H&M (£8.4 billion gross profit 2021)[18] and Inditex (€15.8 billion gross profit 2021)[19] and the UK, along with Europe, is one of the leading most lucrative markets for fashion.

In 2021 there was a 21% year-on-year increase in global fashion revenue, partly attributed to "pent up consumer demand after the Covid-19 pandemic"[20] Interestingly, revenue growth that is "stabilising in low single digits,"[21] **"highlighting that the fashion industry is not primarily about producing clothing or footwear, but about increasing profit growth—often divorced from what is socially necessary or ecologically sustainable within the limits of Earth's climate and ecosystems required for stable and resilient life**.

Reliable statistics about the fashion industry have been both scant and misquoted, often into meaninglessness.[22] Now, for the first time, new footprint data in this report reveals the extraction carried out specifically by the fashion industry: The origin and quantities of embodied land, biomass (animal and plant produce), metals, minerals, water and human labour extracted from the Global South to meet the demand for fashion in the 27 member countries of the European Union (EU) and the UK in 2021.[23]

This new data exposes the scale of fashion's extraction that is pushing the planet beyond its limits while depriving poorer nations of the materials, land, energy, and labour essential for their own development.

What this data makes clear is that colonial extraction is far from over. Fashion is not just a way for the rich to exploit the poor, but for Global North corporations and countries to extract a planet's worth of life from the Global South.

The mechanics of this extraction are found in the geopolitical and commercial power of high-income countries and corporations and their ability to cheapen the price of both natural goods and human labour in the Global South – they control both national economies and global commodity chains like garment production.

A just transition for the fashion industry along degrowth lines means removing the barriers for countries currently locked into fashion exports as their economic lifeline to make genuinely sovereign decisions about economic development and priorities. It means that the people who are dependent on fashion should be the ones the transition protects **and** provides alternatives for.

Part One: Stolen Land

"The contemporary fashion industry is part of a capitalist system that colonised in the name of labour and profit, that actively removed people from the land, severing their relationship with environments and reducing nature to an inanimate commodity that can be exploited. It is a system that attempted and attempts to destroy alternative ways of being while enforcing addictions to consumerism that ignores the true cost of ever-cheaper clothing. Shawkay Ottmann.[24]

Every single piece of clothing in existence is inseparable from the question of land.[25] Who owns land, who controls what land is used for and what gets grown on it, who reaps the benefits and profits, who decides whether forests are cut down or pipelines laid. Who gets to kick people off land and call it private.[26]

Today's global fashion industry is based upon land stolen and shaped by colonial conquests and land ravaged by the corporate thirst for physical earth sources. For the first time, we are able to see just how much land is being used to satisfy EU and the UK fashion consumption and, crucially, where this land is situated. Here, embodied land refers to the land, in km^2, used to produce the crops, animals, and forest products, cultivated or naturally growing, that go into the supply chain of the production of the fashion items consumed in the EU and the UK.

No Fashion Without Africa & Asia

In 2021, the land used to fulfil the desire for fashion in the EU amounted to 226,927.80 km^2 — as if every inch of the island of Great Britain were appropriated for EU fashion consumption. For the UK, fashion consumption required 30,257.96 km^2 of land, roughly equivalent to the entire territory of Belgium.

Reviewing the locations responsible for the majority (90%) of this land use reveals a stark geographical asymmetry: fashion for the EU is not being made using land within the EU, but rather through large-scale appropriation of land in Africa and Asia. Despite EU and UK companies profiting from fashion, the contribution of their domestic land use to its own fashion consumption remains minimal — accounting for just 16% of the land used for EU fashion, and less than 1% (0.82%) for the UK.

Location for majority (90%) of land use for fashion to the EU, 2021		Location for majority (90%) of land use for fashion to the UK, 2021	
Rest of Asia	36,209.22	Rest of Asia	6,040.14
Rest of Africa	28,512.74	Russia	3,719.94
Russia	26,793.97	China	2,873.87
Latin America	14,740.19	Rest of Africa	2,802.72
China	14,339.37	Latin America	2,282.85
Brazil	11,239.04	Brazil	1,772.63
Rest of Europe	10,950.33	Australia	1,646.77
South Africa	10,436.42	United States	1,463.72
Australia	8,237.29	Canada	1,275.77
United States	7,431.51	India	854.03
Italy	7,306.11	Indonesia	697.73
Canada	6,216.31	Rest of Europe	543.33
India	4,901.86	South Africa	507.63
Bulgaria	4,671.10	Middle East	403.38
France	4,105.91	Turkey	379.02
Indonesia	3,995.39		
Spain	3,112.93		
Sweden	2,591.16		

Land and Biomass

Start pulling on the thread of land and you will see the entire interconnected nature of exploitation in the global fashion industry reaching back centuries. Colonial powers like Britain changed economic systems from producing food to feed local populations, to producing cash crops for export.[27] This is still the case today. A combination of structural adjustment programmes, privatisation, austerity, and forced market liberalisation meant avenues to sovereign economic development were cut off to Global South nations from the 1980's. Rather than being able to mobilise production around socially useful work, Global South countries are stuck trying to earn foreign exchange to build infrastructure and import food and fuel. This sees countries opening themselves up to exploitation by high income nations and corporations – opening the door to poverty wages, unsafe factories and a cascade of waste and chemical effluent.[28]

This inequality has enveloped the food system with the current global system of food production prioritising corporate profit above the needs of the world's population and its biodiversity. As a result, large areas of land in the Global South, especially the most fertile swathes, continue to be devoted to producing cash crops, which often cannot be produced in the Global North, from cotton to biofuels and out-of-season fruit and vegetables.[29]

These dynamics mean that for example cotton and tea are shipped out from the Global South, while wheat and soy are mostly exported from the Global North. Agricultural production systems in most southern countries are weak and subject to vulnerability, leaving their people exposed to prices fluctuations and other markets volatilities while trying to earn foreign currency.[30] Land use for fashion in the EU and UK is land denied for other uses to meet the needs of people in those countries, including food production to replace costly food imports.

The emergency 'hunger hotspots' listed by the World Food Programme include Burkina Faso, Mali, Niger, the DRC, Ethiopia, North Eastern Nigeria, Somalia, Sudan and South Sudan.[31] All countries found on a continent which sits at the top of the Land Used For Fashion Production EU table for 2021. While brands grow rich on the sales of leggings, dresses and jeans, famine and malnutrition are casting a shadow over communities, countries and continents.

As well as decisions about how many square kilometres are appropriated or allocated for farming, there is also the question of what gets grown from that land. By examining biomass data we can also see how many tons of plant and animal based natural goods (for example, cotton or wool) is going into the fashion industry.

As with land, we can witness fashion's extractive geography by seeing where the biomass is coming from.

In 2021, **a total of 35,439 kilotons**, of embodied biomass was used to fulfil the desire for fashion in the EU, and **a total of 5,016 kilotons** for fashion in the UK. While there are some regional differences, but the overall picture is clear, with the categories of, rest of Asia, China, and Rest of Africa supplying the vast majority of this biomass.

Location for majority (90%) of biomass for fashion to the EU, 2021

From	kt
Rest Asia	7,852.43
China	5,281.25
Germany	2,751.37
Rest of Africa	2,748.87
Rest of Europe	1,889.7
Brazil	1,796.52
India	1,379.92
United States	1,349.11
Indonesia	1,249.76
Latin America	1,115.47
Russia	810.97
Poland	804.1
France	691.96
Turkey	504.75
Italy	475.67
Bulgaria	455.16
Spain	396.98
Middle East	393.02

Location for majority (90%) of biomass for fashion to the UK, 2021

From	kt
Rest of Asia	1,305.11
China	1,104.82
Brazil	303.43
Rest of Africa	282.21
India	278.10
United States	254.73
Indonesia	183.48
Germany	180.62
Latin America	166.03
Rest of Europe	104.53
Russia	102.09
Turkey	96.48
France	68.27
Middle East	65.22
Canada	52.53

Water and Land

The question of what is being grown is critical in a world where 2.2 billion people around the world do not have access to safe drinking water.[32] Water is the most critical resource of our time – its scarcity is a fact and an ever increasing crisis.[33]

Grown in over eighty countries, cotton is typically planted on about 34-35 million hectares of the world[34] and cotton production supports the livelihoods of around 350 million people,[35] though the price is driven down by US farmers receiving billions in subsidies.[36] These subsidies devalue land and biomass in other areas of the world – leaving farmers locked into cotton production but also unable to make their rightful share of its value.

Cotton is a water intensive crop. While the amount of water used to grow cotton varies from region to region, depending both upon rainfall and infrastructure for artificial irrigation, many regions, countries and states which intensively grow cotton also experience water scarcity – from India and Pakistan to Egypt and Australia.[37] As the climate crisis intensifies and water scarcity and water conflict increases we must question the validity of a system which forces farmers to grow a crop that can't be eaten and which deprive communities of water.

Cotton is also one of the most chemically intensive crops[38] – according to the International Cotton Advisory Committee, cotton accounted for 4.71% of all the pesticides sold globally in 2019 and 10.24% of all insecticides used in 2019.[39] India is the second highest cotton producing country after China,[40] all cotton is picked manually in India and[41] pesticides rank only next to road traffic accidents as the most common cause of death.[42] The chemical runoff from cotton fields contaminates rivers, lakes, wetlands, and underground aquifers, polluting water, harming biodiversity and human health.[43]

Fashion also contributes to deforestation with data from the NGO Canopy estimating that **300 million trees are cut down every year to produce human-made cellulosic fabrics like viscose and rayon, some of which come from ancient and endangered forests. If placed end-to-end 300 million trees would circle the Earth seven times.**[44] In addition, cattle farming for meat and leather is the number one cause of Amazonian deforestation.[45] This destruction means one million of the species of non-human animals we share this planet with face extinction.[46]

Rather than so much land and natural goods from that land being extracted for fashion consumption in the Global North, we must invest in biodiversity and climate resilience. Climate resilience requires the restoration and protection of forests, grasslands, wetlands, peatlands, oceans, coastlines and coral reefs. The climate emergency requires carbon emissions be slashed, but the good news is that conserving habitats and thus restoring nature's ability to absorb carbon emissions, would constitute about one third of the greenhouse gas emission reductions needed in the next decade.[47]

Inextricably linked to questions of land, food, water and reforestation is the question of housing. In 2021, 35,474 km^2 of land across all EU countries was used by the fashion industry to supply EU demand – this is around three times more than the 10,436 km^2

of land from South Africa by the fashion industry to supply European demand, yet the total land mass of the EU is approximately 4 million km^2 compared to South Africa's 1.2 million km^2 [48].

In South Africa, the Abahlali base Mjondolo (*people who stay in shacks*) social movement, fights for land, housing and dignity for shack dwellers.

"It is morally wrong and unjust for people to starve in the most productive economy in human history," S'bu Zikode of Abahlali base Mjondolo said in a speech in 2021. "In South Africa what shack dwellers continue to be told is that the hunger and the substandard living conditions in which we struggle to survive are a result of our own poor choices in life. In reality the problem is that there are no jobs for most of the poor and those few who are employed are exploited and under-paid."[49]

While land reclaimed from fashion extraction can provide autonomy and healthy, sustainable habitats for hundreds of millions of people, investing in nature is also highly cost effective. Investments of $350 billion a year in sustainable food and land use are estimated by the UN to create 'more than 120 million new jobs and $4.5 trillion in new business opportunities worldwide each year by 2030'.[50] There is a way forward which moves the focus away from corporate profit towards emissions reduction, carbon sequestration, flood defence and habitat restoration.[51]

The question of land shows how the overproduction of fashion for corporate interests has tilted the world away from freedom, food and asking "what do we need?" Instead, towards an extractive system that for the EU alone uses well over 200,000 km^2 of land to service the fashion industry. Because of this, a decolonisation of the planet that is expressly tied to the return and redistribution of stolen land[52] contains the start of a fair and just world.

Part Two: Fossil Fuel Fashion

'We must kick out the fossil fuel prop to achieve a sustainable industry.' - Safia Minney, Regenerative Fashion

Fossil fuels in fashion present us with a stark existential question: Should we allow the rich to destroy the planet with clothes and shoes as the payoff?

It is a fact that burning fossil fuels – oil, coal and gas – releases carbon dioxide into the air, causing the planet to heat up. This is the main cause of climate breakdown, responsible for over 75% of global greenhouse gas emissions and nearly 90% of global CO2 emissions.[53] Scientists warn that on current projections, global heating will exceed 1.5 in less than a decade.[54] The fossil fuel industry must be stopped.

Fossil fuels are central to fashion overproduction. They power factories and freight routes, producing and transporting the billions of pieces of clothing produced every year Fossil fuels are interlinked with land and biomass by the synthetic fertilisers and insecticides used on crops. Fossil fuels are also a central part of fashion's materials portfolio – currently two-thirds of all fabrics are derived from fossil fuels.[55] In all these ways the carbon emissions of fashion corporations in the Global North are 'outsourced' to their production countries in the Global South.

In 2021, a total of **40,976 kilotons of fossil fuels** went into fashion for EU consumption. The top producers even at first glance show the level of dependence of the fashion industry on China, Russia, and the rest of Asia. For the UK, **6,625 kilotons of fossil fuels** were used for fashion consumption in 2021. From this total, only 152 kilotons, or 2,3%, came from within the UK.

Location for majority (90%) of fossil fuels for fashion to the EU, 2021

From	kt
China	8,772.62
Russia	7,812.37
Middle East	3,734.12
Rest of Asia	3,558.72
United States	1,915.27
India	1,545.34
Germany	1,398.72
Turkey	1,383.20
Norway	1,315.79
Rest of Africa	1,241.62
Indonesia	1,164.29
Poland	1,123.96
Canada	868.10
Bulgaria	758.95
Czechia	606.40

Location for majority (90%) of fossil fuels for fashion to the UK, 2021

From	kt
China	1,726.93
Russia	824.30
Middle East	646.66
Rest of Asia	616.89
Norway	539.87
United States	385.54
India	307.40
Turkey	263.14
Indonesia	172.25
Canada	166.80
Rest of Africa	153.31
United Kingdom	151.52
Australia	114.44

Fossil fools

Polyester, nylon, acrylic and polyvinyl chloride (PVC) are all made from fossil fuels and it is estimated that by 2030, synthetic fibres will represent 73% of total fibre production, 85% of which will be polyester.[56] These fabrics shed microplastics – tiny fibres which have been found both in the organs of the human body[57] and in remote parts of the Atlantic Ocean – one study reported 73% of the microfibre pollution found in Arctic waters was polyester which could have come from textiles.[58]

Despite this dire situation, the fashion industry is showing no credible sign of doing barely anything to meet international climate goals. The UN predicts emissions from fashion will increase by nearly 50% by 2030.[59] Similarly an additional study from The Climate Board found no correlation between stated climate commitments from brands and actual carbon reductions.[60] And when it comes to synthetic fabrics - H&M's "Conscious Collection" actually contains a higher percentage of synthetics than its main collection 72% instead of 61%.[61]

Nor are industry claims of recycling credible. Changing Markets Foundation found that less than 1% of clothes are recycled to make new clothes and the share of recycled polyester is declining not rising.[62] Where recycled polyester is used it comes not from recycled garments, but from recycled plastic bottles – fundamentally undermining efforts to reduce the production and single use of billions of bottles.[63]

While fossil fuels make billions for fossil fuel companies, they are destroying the planet and are actually terrible providers of jobs – one study found that nature-based climate solution jobs can produce ten times the job creation rate of investments in fossil fuels.[64] The use of fossil fuels to make fashion is just not worth it. Unless we act to kick fossil fuels out of fashion, there are fears that as climate action hits oil industry profits in sectors like the automotive and airline industries, fashion will move to become an even greater source of fossil fuel extraction and pollution.[65]

Part Three: Metals & Minerals

'Fashion products have some of the most complicated and multilayered chemical profiles of any product you or I can buy. Multiple chemical substances are used to manufacture, process, weave, dye, finish, and assemble clothing and accessories. Each step in this daisy chain can leave a residue, either intentionally or unintentionally, on the item that you then sleep, sweat, and live in almost every hour of every day.' To Dye For, Alden Wicker

In 2021 a total of **45,889 kilotons of metals** and **189,261 kilotons of minerals** were used to satisfy the fashion consumption habits of the EU. Some EU countries contribute to this total, but the greater amount is from outside the EU. In the case of minerals, 32% of European demand of fashion was supplied by domestic sources, 26% from China, and another 25% from the Rest of Asia. For minerals, a mere 3% of the total was provided by domestic EU sources.

Location for majority (90%) of minerlas for fashion to the EU, 2021		Location for majority (90%) of minerals for fashion to the UK, 2021	
From	**kt**	**From**	**kt**
China	48,638.13	China	9,268.90
Rest of Asia	46,643.21	Rest of Asia	7,231.39
Romania	43,240.35	United Kingdom	1,294.61
Rest of Africa	6,732.16	India	1,162.06
Middle East	5,579.46	Middle East	1,038.78
India	5,149.57	United States	635.68
Czechia	4,927.06	Romania	537.73
Rest of Europe	3,702.16	Rest of Africa	341.26
United States	3,108.40	Turkey	273.93
Poland	2,758.65		

Location for majority (90%) of metals for fashion to the EU, 2021		Location for majority (90%) of metals for fashion to the UK, 2021	
From	**kt**	**From**	**kt**
Rest of Asia	21,236.89	Rest of Asia	3,231.58
Australia	5,825.26	Australia	949.93
China	4,235.69	China	718.08
United States	3,307.45	United States	530.97
Rest of Africa	3,010.00	Latin America	194.84
Rest of Europe	1,685.00	Rest of Europe	141.46
Latin America	1,367.53	Rest of Africa	140.23
Russia	900.87	Russia	108.81

Animal, vegetable or mineral?

Minerals are naturally occurring solid substances formed through geological processes within the Earth. In 2021, the minerals most intensively used in the production of fashion goods consumed in the EU were, in order of quantity: sand, gravel, and crushed rock for construction (141,752.5 kt), limestone (24,513.0 kt), clays (14,942.6 kt), stone (1,710.6 kt), gypsum (1,238.7 kt), salt (897.7 kt), industrial gravel and sand (893.3 kt), other non-metallic minerals (796.6 kt), industrial minerals (643.2 kt), fertilizer minerals (613.0 kt), chemical minerals (376.4 kt), dolomite (367.8 kt), and chalk (15.9 kt).These minerals were predominantly extracted in China, the Rest of Asia, Romania, the Rest of Africa, the Middle East, India and Czechia.

Similarly, embodied metals are used in the production of fashion items that are then consumed by the EU. In 2021, the metals most intensively used were copper (19,130.9 kt), iron (10,132.9 kt), gold (8,712.2 kt), other non-specified metals (1,930.9 kt), nickel (1,851.4 kt), bauxite and aluminium (1,498.2 kt), zinc (944.1 kt), silver (506.9 kt), and lead (286.1 kt), followed by manganese (277.9 kt), chromium (263.0 kt), tin (146.6 kt), platinum group metals (119.2 kt), titanium (67.2 kt), and uranium and thorium (21.7 kt). These metals were predominantly extracted in Rest of Asia, Australia, China, the United States, Rest of Africa, Rest of Europe, and Latin America.

What do Metals and Minerals have to do with fashion?

But what are metals and minerals doing in fashion? The data does not tell us how these metals and minerals are being used in the fashion industry – some will be used for garment construction, some in chemical manufacturing processes, and some in energy production.

An obvious place you find metals in clothes are zips on garments like dresses and trousers which are typically made from aluminum, stainless steel, zinc or brass, eyelets, hooks and steel plates for footwear, then chains and clasps on bags which are often made from brass – an alloy formed using copper and zinc. None of these uses is environmentally friendly. One brand that puts a lot of effort into documenting and publishing its environmental footprint is Stella McCartney. It reports a disturbing finding: While metals account for just 10-15% of the brand's materials use, this use accounts for 15% of its entire environmental impact. 97% of this impact is due to brass.[66]

The Trouble With Copper

The mining of copper and zinc to make brass is environmentally toxic. Mining copper creates deforestation, air pollution from dust emissions and devastating soil and water contamination from hazardous chemicals and heavy metals.[67]

Chile is the world's leading producer with 24% of the global copper market and the largest reserves in the world.[68] The Observatory for Environmental Conflicts in Latin America (OLCA) is an NGO based in Chile which supports and advises communities affected by extractivism. Here they explain what local communities lose when land is mined for copper:
'Communities lose sovereignty over their territories, their ways of life and their own economies. The loss of water sources and their pollution threatens people"s health and the environment, and their livelihoods are decimated. The material and biological conditions for the viability of life in its various forms are lost.' [69]

Copper is also heavily used in the production of renewable energy sources, highlighting the importance of rejecting claims that we can 'dig our way out of the climate crisis' by switching from fossil fuels to metal and mineral supported energy. The global mining industry is powerful and self-serving – it must be rejected. Instead, we need carefully planned, low carbon and non-resource-intensive solutions to protect people and planet.[70]

Hidden toxicity

There are also hidden uses for metals within the fashion industry – uses that have a huge impact upon land, ecosystems and human health.

Much of the use of metals in fashion relates to the dyeing process. Textile dyeing involves the use of multiple metals including copper, nickel, lead and chromium. Iron is also used to form dyes and is used in bleaching processes along with manganese.[71] Metals such as copper, cobalt and nickel are used as mordants – the chemical that fixes the dye to the fabric.[72]

Hazardous mines also produce silver,[73] which is used as a metallic nanoparticle for its antimicrobial possibilities. Additional metals are used to create flame-retardant fabrics,[74] while other metals are used in industrial processes – for example lithium grease, which is a commonly used industrial lubricant, and arsenic compounds which are used in the insecticides and herbicides that soak cotton fields.[75]

There is also the toxic horror show of industrial leather tanning using chromium. This process is so deadly that it led to the Buriganga River in Bangladesh being declared biologically dead due to tannery effluent.[76] One study found that working in these tanneries meant people had a 90% chance of being dead before the age of fifty.[77]

This toxicity does not stay in Bangladesh. While the mining of these metals poisons the earth, once they are being worn against people's skin, these metals can also be released from fabrics, leaching in through skin to reach the bloodstream and build up in organs or tissue.[78]

Part Four: Water

Water is the most vital resource on Earth, yet the fashion industry consumes it as if it were infinite. From growing cotton and dyeing fabrics to manufacturing and washing garments, water is extracted in vast amounts—often in regions already facing extreme water stress[79]. The fashion industry doesn't just use water; it pollutes it. Toxic chemicals from dyeing processes and untreated wastewater are regularly dumped into rivers and lakes, poisoning communities and ecosystems[80]

In 2021, the production of fashion goods consumed in the EU required approximately **5.45 billion cubic meters** of freshwater, while fashion for the UK used around **816.9 million cubic meters**.

This water use is highly concentrated in specific countries. For EU fashion consumption, the largest sources were **China (1.47 billion m³), Rest of Asia (1.19 billion m³), India (599 million m³), Rest of Africa (434 million m³), and Middle East (415 million m³)**. The UK's fashion water footprint followed a similar pattern, with top contributors being **China (309 million m³), Rest of Asia (200 million m³), India (94 million m³), Middle East (62.6 million m³), and the United States (26.3 million m³).**

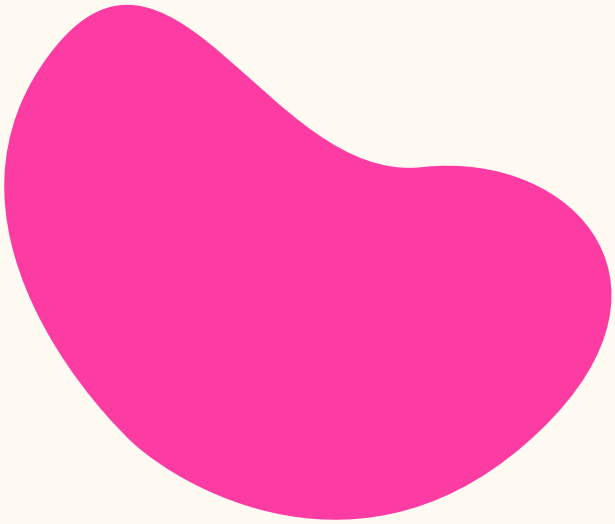
Location for majority (90%) of water for fashion to the EU, 2021

From	million m³
China	1,471.40
Rest of Asia	1,191.18
India	599.03
Rest of Africa	433.80
Middle East	415.33
Italy	197.67
United States	151.14
Spain	145.18
Rest of Europe	114.84
Belgium	99.89
Turkey	63.44
France	62.70

Location for majority (90%) of water for fashion to the UK, 2021

From	million m³
China	309.18
Rest of Asia	199.51
India	94.44
Middle East	62.58
United States	26.30
Rest of Africa	17.38
United Kingdom	12.61
Italy	10.84
Turkey	10.72

The concentration of water use in these countries—many of which are already facing serious water shortages—raises a critical question: Should the comfort and consumption of the Global North come at the cost of water insecurity in the Global South? As with fossil fuels, fashion outsources its ecological toll to the world's most vulnerable regions. Yet while fossil fuels are replaceable, there is no substitute for water.



Part Five: Labour

We come now to the most essential part of clothing production —the productive labour of people and the millions of lives spent working on fashion production.

In 2021, the human labour taken to create fashion imported into the EU amounted to over 4.5 million years of human time and existence being siphoned off in one year to produce fashion for the EU in return for poverty wages.

As well as using up so much time, these jobs are sustaining poverty over generations rather than reducing it. Not a single major fashion brand is paying living wages in their supply chains.[81]

It is important to add that the data for this report accounts for only formal employment because the informal labour data – that covering homeworkers and informal labourers especially in agriculture is still not good enough to use.

This extraction of the productive labour matches significant findings by a team led by Jason Hickel which, in July 2024, published findings on the flow of labour in the world economy between 1995–2021. This paper found that the labour of production in the world economy, across all skill levels and all sectors, is overwhelmingly performed in the Global South, while the yields are disproportionately captured in the Global North.[82]

The paper concluded that the Global North net-appropriated 826 billion hours of embodied labour from the Global South in 2021. This appropriation took place across all skill categories and sectors and had a wage value of €16.9 trillion in 2021.[83]

The new data for this report focused specifically on fashion for the EU and UK in 2021. The top three sources of human labour for producing fashion consumed in the EU and the UK were China, India, and the Rest of Asia. Workers in these three regions contributed approximately 56.9% of the total labour embedded in fashion for the EU and 70.5% for the UK. Within the EU, only 14.6% of the total labour came from the 27 member states, with Italy, Romania, Poland, Portugal, and Bulgaria being among the main contributors, and an additional 9.3% came from the Rest of Europe, including countries such as Serbia and Ukraine. These figures underscore that extractive dynamics — typically associated with the Global South supplying the Global North are also present within Europe, where lower-income countries in Eastern and Southeastern Europe supply labour for higher consumption in wealthier Western nations. As the Clean Clothes Campaign has argued, this has given rise to so-called "European Sweatshops," where proximity does not equate to decent working conditions. Shorter supply chains alone are not a model for regional fashion systems if they fail to ensure living wages and dignified work.

Labour used for fashion consumed in the UK in 2021 totalled approximately 711,644 years of human work. While the UK itself appears among the countries contributing to this labour, its share is relatively minor — accounting for just 5% of the total. These figures illustrate the limited role that the much-celebrated UK fashion industry plays in the actual labour behind the production of its fashion consumption.

Location for majority (90%) of labour for fashion to the EU, 2021		Location for majority (90%) of labour for fashion to the UK, 2021	
From	**Mhrs**	**From**	**Mhrs**
China	9,123.94	China	1,887.71
India	7,852.12	India	1,512.39
Rest of Asia	5,883.69	Rest of Asia	992.51
Rest of Europe	3,732.27	United Kingdom	315.62
Rest of Africa	3,062.25	Rest of Africa	236.42
Italy	1,198.38	Turkey	222.33
Latin America	1,190.74	Rest of Europe	212.76
Turkey	1,168.56	Latin America	187.7660997
Germany	771.1205184	Middle East	76.32724456
Poland	722.563857		
Indonesia	587.7067896		
Romania	574.8269831		
Spain	435.9245818		

Every one of these hours spent in a factory in China, India, Indonesia or Turkey is an hour not used for family and care work, practising agroecology (sustainable farming that works with nature) for domestic manufacturing for local fashion industries, for people's material needs of food and natural goods, building flood defences, protecting and restoring habitats, education, health, community building and political engagement as well as rest, leisure, music, literature and creativity.

Yet each of these hours is also a vital reminder that there are currently tens of millions of people whose livelihoods depend on the fashion industry. This is important because the worst environmental 'solutions' offered to radically reduce the fashion industry's carbon footprint, risk replicating the patterns of sacrifice zones whereby millions of people, spe-

cifically Black and Brown migrant women and their communities in the Global South, are consigned to permanent economic disinvestment and environmental disaster. As well as being ethically untenable, such approaches severely limit the social licence needed for energy transitions, while making useful material for populist politicians who seek to stoke up reactionary feeling to slow down or stop any kind of action to combat climate breakdown.

So if the industry shrinks as dramatically as it needs to, what could fashion look like? what will happen to the jobs of farmers growing cotton, factory workers, freight drivers, warehouse workers and shop staff?[84] How do we bridge environmental and economic justice to transform society?

To find the pathways for just, equitable and ecological change to the fashion industry a key question is what stops alternative choices being made by countries whose productive capacity has been capture for the overproduction of fashion?

Part Six: Just transitions

The new data in this report shows how the productive capacity of the Global South has been totally organised around the economic interests of corporations in the Global North. But who says Global South countries should be subordinate partners within global supply chains? Why shouldn't Global South countries pursue a more sovereign use of their productive capacity and be organised around domestic requirements and regional trade?

Fashion: economic miracle or trap?

The EU and UK fashion industry can produce and market mountains of cheap clothes because they are the high income countries that have virtually all the bargaining power in the world economy which they use to maintain the status quo. The US, Europe and the G8 nations determine the rules of the economy and compress the price of materials and of labour in garment producing countries.

This business model reflects a rigged economic system designed to maximise growth in richer Global North countries and amass wealth for the few, at the expense of the majority of people and of our natural world. Underpinning this rigged economic system are unfair and unequal trade and tax rules that leave Global South countries dependent on export-led trading models and international loans. Nations must then pay back unjust debts with crippling interest, as well as meeting the costs of ecological and climate breakdown that they did not cause.

There is absolutely nothing natural about "cheap labour" in the garment industry – it is the effect of an imperialist economy over the span of several hundred years, which has worked specifically and actively to cheapen the price of labour and resources – enabling increasing consumption and wasteful overproduction models.

Organising an economy around garment exports is offered as an economic miracle, but is a trap designed to maintain the flow of labour and raw materials from the South to the North. A combination of structural adjustment programmes, privatisation, austerity, and forced market liberalisation meant avenues to sovereign economic development were cut off to Global South nations from the 1980's onwards.

Earning foreign exchange to build infrastructure and import food and fuel therefore means countries have to open themselves up to exploitation by high income nations and corporations – opening the door to poverty wages, unsafe factories and a cascade of waste and chemical effluent.

These forces are the threads that hold big fashion together, and it is these that must also be unpicked for degrowth of the fashion industry in the Global North to lead – not to catastrophic job losses in the Global South – but to enable radically different futures with alternative livelihoods for millions of farmers, factory workers, homeworkers, drivers, distributors and retail workers.

What do we need?

Under capitalism, people work in order to pay for basic needs like shelter, food, healthcare, clothing, education and so on, with the lucky ones also working to pay for leisure activities or to create savings. This is an essential point for figuring out a transition along the principles of degrowth economics. Rather than having over four million years' worth of hours[85] each year spent producing endless garments to make profits for corporations, communities must ask:

What do we need?
What do we want to be producing?
What are we producing too much of?
What are we not producing enough of?

Once again, we return to the issue that there is nothing natural about poverty. Global South countries which are poor are not poor because of a deficit of labour or resources – in fact the new data in this report shows they are often very rich in these things.

The challenge is how labour and resources can be mobilised around necessary production to meet local needs. For every region, country and community there will be different answers to what would be a better use of people's time than stitching clothes for billionaires. Policies to tackle the financial infrastructure of debt, trade and tax that underpin extraction from Global South to serve Global North will create the possibilities for the use of land, people and natural goods for the common good rather than multinational profit generation and will end the artificial scarcity of jobs and income that keeps so many people poor and dispossessed.[86]

Principles of a just transition

A just, equitable and ecological transition along degrowth lines means removing the barriers for countries currently locked into fashion exports as their economic lifeline to make genuinely sovereign decisions about economic development and priorities. It means that the people who are dependent on fashion should be the ones the transition protects and provides alternatives for.

Fair shares

A 'fair shares' approach means all individuals have a fundamental right to an equitable share of the world's resources' including the carbon budget for 1.5ºC, access to food, safe water, healthcare, education, and other basic needs. It recognises historical and current patterns of exploitation and injustice, particularly by wealthy and powerful Global North countries, and seeks to address these imbalances. Countries of the Global North and their fashion companies have grown wealthy by accumulating profit 'at home' from the low-paid labour and overuse of natural resources of Global South countries. A fair shares approach would curtail corporate ability to extract wealth in this way, it would mean policies focused on ensuring those most responsible for climate breakdown pay the costs including through climate finance (not loans) reparations and loss and damage funds.

Worker-led

Those most impacted should be the ones central to developing the policies to redress historic wrongs and build new equitable and just futures. This means ensuring that workers, and worker rights advocates shape the discussions on how the fashion industry must change.

The right to join and to form trade unions is fundamental to worker-justice campaigns, whether as agricultural, land, factory, shop, distribution centre or home-based workers. A thriving trade union movement is the basis for workers in fashion to collectively have the power to negotiate for better wages and working conditions, and exercise their labour rights against corporate power.

Trade liberalisation has expanded corporate power and encouraged production and distribution through extensive and growing networks of global supply chains. To facilitate a just transition of the fashion industry, we must stop trade rules from facilitating wealth extraction from the Global South. This means abandoning or strictly circumscribing trade deals, and revising or abolishing treaties, investment agreements and institutions that entrench corporate power and the domination of the Global South by the Global North.

Tax is a crucial form of government revenue, providing funds to invest in public goods and services such as health, education, infrastructure, welfare provision and climate mitigation. Yet the world is losing over US$427 billion in tax each year to international tax abuse.[87]

As profits are manoeuvred further up through the supply chains into the coffers of big fashion shareholders, Global South countries manufacturing garments sold to Global North consumers are effectively robbed of seeing the tax revenue from these highly lucrative sales. The UN Tax Convention has the potential to tackle tax dodging worldwide and to rebalance power in the global economy. A necessary but first step is transparency to 'spot' tax dodging, but the UN Tax Convention has the potential to go further: wealth taxes on the super-rich, minimum tax rates for multinational companies, and carbon taxes to make big polluters (including fashion) pay for their climate-wrecking emissions. The Organisation for Economic Co-operation and Development (OECD), which has set international tax rules for decades, is dominated by rich Global North countries. By shifting governance back to the United Nations, a UN Tax Convention will make it possible for more countries to participate in global economic rule-setting. [88]

Debt plays a huge part in the economies of garment-producing countries such as Sri Lanka, Pakistan, Bangladesh, and Vietnam. In 2019, the total global debt owed was already as high as US$101 trillion, rising to US$226 trillion in pandemic hit 2021.[89] The cancellation of unsustainable debts for countries such as Pakistan and Sri Lanka is a prerequisite for a just transition. But cancelling debt without addressing the causes of debt risks debt accumulating again. Alongside a broader transformation of the global economy to prevent future debt, Debt Justice highlights the need for immediate policy changes to improve responses during a debt crisis. These include regulating lenders, introducing legal measures to make it easier for debtors to renegotiate debts, enforcing debt relief agreements, and establishing a global mechanism to support debt cancellation or default when repayments threaten a country's ability to meet the basic needs and human rights of its people.[90]

CONCLUSION

The premise of this report is the structural impossibility of the current economic model, which has created the fashion industry as we see it today, providing anything other than extraction for profit. Given the sheer scale of fashion's extraction it is misleading to suggest that transparency initiatives, sustainability indexes, swapping materials, or shopping differently or shopping less are enough alone to resolve the crisis. Whilst progress on those areas is certainly important - taken alone these approaches fail to address the root cause: an industry designed for profit accumulation by big corporations in the Global North divorced from what is sustainable for social and ecological life on our planet for all.

A fashion industry shaped by degrowth economic principles would be driven by the priorities of environmental and social well-being over profit-driven expansion. Instead of mass production through global supply chains, planned obsolescence, waste, excessive resource consumption and worker exploitation, the fashion industry would produce less and take less in the process, with longevity and reuse at the core of the production cycle. Producing fashion would be more locally organised and controlled, no longer in the hands of multinational profit-maximising corporations.

Fundamentally a just transition of fashion industry to look like this will require policies that rebalance global economic power - through a fair shares approach and reform of debt, trade, tax regimes. This shift would mean that, instead of being sites for extraction of land, natural good and cheapened human labour for profit hungry fashion corporations - countries of the Global South have viable economic alternatives to being at the bottom of the Global North's fashion supply chain. The fiscal freedom for countries in the Global South to enact their own alternative low-carbon and green industrial economic strategies would constrain the fashion industry's ability to extract so relentlessly for profit - as instead those natural goods and human labour would become organised to provide for the material needs of their people without perpetuating cycles of climate breakdown, environmental degradation, poverty and inequality.

Endnotes

1. Stadler, K., Wood, R., Bulavskaya, T., Södersten, C., Simas, M., Schmidt, S., Usubiaga, A., Acosta-Fernández, J., Kuenen, J., Bruckner, M., Giljum, S., Lutter, S., Merciai, S., Schmidt, J. H., Theurl, M. C., Plutzar, C., Kastner, T., Eisenmenger, N., Erb, K., . . . Tukker, A. (2018). EXIOBASE 3: Developing a time series of detailed environmentally extended Multi-Regional Input-Output tables. Journal of Industrial Ecology, 22(3), 502–515. https://doi.org/10.1111/jiec.12715

2. Embodied meaning what goes into (is present) in the different steps in the supply chain of the production of physical items/goods - in this case clothing, textiles and footwear) or services.

3. Calvin, K., Dasgupta, D., Krinner, G., Mukherji, A., Thorne, P. W., Trisos, C., Romero, J., Aldunce, P., Barret, K., Blanco, G., Cheung, W. W., Connors, S. L., Denton, F., Diongue-Niang, A., Dodman, D., Garschagen, M., Geden, O., Hayward, B., Jones, C., . . . Ha, M. (2023). IPCC, 2023: Climate Change 2023: Synthesis Report, Summary for Policymakers. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, H. Lee and J. Romero (eds.)]. IPCC, Geneva, Switzerland. In IPCC (pp. 1–34). https://doi.org/10.59327/ipcc/ar6-9789291691647.001

4. Ibid IPCC, 2023: Headline Statements Section C1.

5. Chancel, L., Piketty, T., Saez, E., & Zucman, G. (2023). World Inequality Report 2022: a treasure trove of trends and new data. In *World Inequality Lab*. https://wir2022.wid.world/

6. The term natural goods or physical earth sources are used to specifically replace the term 'natural resources' a term that points to the capitalist tendency to view Earth as a commodity. Natural goods or physical earth sources include the metals, minerals, the fossil fuels, land as well as plant and animal-based produce such as cotton or wool.

7. Hickel, J., Dorninger, C., Wieland, H., & Suwandi, I. (2022). Imperialist appropriation in the world economy: Drain from the global South through unequal exchange, 1990–2015. *Global Environmental Change*, 73, 102467.

8. Suwandi, C. a. T. (2021, May 23). *Neoliberalism and Imperialism: Interview with Intan Suwandi*. Textum Dergi. https://textumdergi.net/neoliberalism-and-imperialism-interview-with-intan-suwandi/

9. For more on degrowth see https://degrowth.info/en/degrowth and War on Want. (2023). Chapter 2 From Growthism to degrowth. In *Fashioning the Future: Fixing the fashion industry for workers and climate*. In War on Want. https://waronwant.org/fashioning-future/what-about-jobs

10. Tonny Nowshin. Personal communication. May 2023.

11. Clean Clothes Campaign (CCC). (2022). *The intersections of environmental and social impacts of the garment industry*. Pro Ethical Trade Finland. https://cleanclothes.org/file-repository/the-intersections-of-environmental-and-social-impacts-of-the-garment-industry_aug-2022.pdf

12. Hoskins, T. E. (2020). *Foot Work: What Your Shoes Tell You About Globalisation.* Weidenfeld & Nicolson.

13. Coscieme, L., Akenji, L., Latva-Hakuni, E., Vladimirova, K., Niinimäki, K., Henninger, C., Joyner-Martinez, C., Nielsen, K., Iran, S. and D´Itria, E. (2022). *Unfit, Unfair, Unfashionable: Resizing Fashion for a Fair Consumption Space*. Hot or Cool Institute. https://hotorcool.org/publications/unfit-unfair-unfashionable-resizing-fashion-for-a-fair-consumption-space-2/

14. Zekri, H. B. (2021). Globalization and the fast fashion phenomenon: the impact upon labors, environment and the consumer behavior. *MAS Journal of Applied Sciences*, 8(8). https://doi.org/10.52520/masjaps.102

15. European Environment Agency, Environmental indicator report 2014, p. 107 quoted in Šajn N. European Parliament Research Service. Members' Research Service. PE 729.405 – May 2022.

16. World Trade Statistical Review. (2023, September 25). *Share in world imports of the leading clothing importers* 2022, by region. Statista. https://www.statista.com/statistics/1207381/share-of-the-leading-global-apparel-importers/

17. European Clothing Action Plan, Used Textile Collection in European Cities (March 2018) quoted in Fixing Fashion: Clothing consumption and sustainability. Sixteenth Report of Session 2017–19 UK Parliament Environmental Audit Committee https://publications.parliament.uk/pa/cm201719/cmselect/cmenvaud/1952/full-report.html

18. Nazir, S. (2022, January 28). H&M profits jump sevenfold as it aims to double sales by 2030 - Retail Gazette. Retail Gazette. https://www.retailgazette.co.uk/blog/2022/01/hm-profits-in-strong-recovery-as-it-smashes-1bn/#:~:text=H&M%20has%20heralded%20a%20%E2%80%9Cstrong%20recovery%E2%80%9D%20as,the%20period%20while%20gross%20profit%20grew%2012.3%

19. Inditex. (n.d.). FY2021 RESULTS [Dataset]. In *1 February 2021 to 31 January 2022*. https://www.inditex.com/itxcomweb/api/media/93666757-f5a8-462f-b08b-984998091ff1/full_results_2021.pdf?t=1655306476151#:~:text=Page%201-,FY2021%20RESULTS,and%20a%20bonus%20dividend%20of

20. Amed, I., & Berg, A. (2022). The State of Fashion 2023: Resilience in the face of uncertainty. In *The Business of Fashion*. McKinsey & Company. https://www.businessoffashion.com/reports/news-analysis/the-state-of-fashion-2023-industry-report-bof-mckinsey/

21. Ibid.

22. Wicker, A. (2020, January 31). Fashion has a misinformation problem. That's bad for the environment. Vox. https://www.vox.com/the-goods/2020/1/27/21080107/fashion-environment-facts-statistics-impact

23. This report analyses data from EXIOBASE version 3.8.2 dataset for the scale and flow of embodied materials (meaning what goes into) the production of textiles, clothing and footwear. See methodology section for more detail on this data and the analysis process.

24. Ottmann, S. (2023). *Land as kin in Fashioning the Future: fixing the fashion industry for workers and climate*. War on Want. https://waronwant.org/fashioning-future/land-struggle-struggle/land-kin-shawkay-ottmann

25. Land has a capitalised L to represent not just physical space but the principles, philosophies and ontologies of Indigenous environments. See Nightingale, E., & Richmond, C. A. (2021). Building structures of environmental repossession to reclaim land, self-determination and Indigenous wellness. *Health & Place*, 73, 102725. https://doi.org/10.1016/j.healthplace.2021.102725

26. In the UK there is no public access to 92% of this Land. See Hayes, N. (2021). *The Book of Trespass: Crossing the Lines That Divide Us*. Bloomsbury Publishing.

27. War on Want. (2022). *Profiting from Hunger. Popular resistance to corporate food systems*. https://waronwant.org/profiting-hunger/part-1-state-global-food-system#coloniallegacy

28. War on Want. (2023). Fashioning the Future: Fixing the fashion industry for workers and climate. In War on Want. https://waronwant.org/fashioning-future/what-about-jobs

29. War on Want. (2022). *Profiting from Hunger. Popular resistance to corporate food systems*. https://waronwant.org/profiting-hunger/part-1-state-global-food-system#coloniallegacy

30. Ibid.

31. Ibid.

32. World Health Organization. (2019, June 18). *1 in 3 people globally do not have access to safe drinking water – UNICEF, WHO*. https://www.who.int/news/item/18-06-2019-1-in-3-people-globally-do-not-have-access-to-safe-drinking-water-unicef-who

33. For more information see the work of Dr Farhana Sultana https://www.farhanasultana.com/

34. International Cotton Advisory Committee. (2024). *Cotton: Review of the World Situation*. ICAC. https://icac.org/publications/review

35. The Council of Fashion Designers of America. (n.d.). *Cotton*. https://cfda.com/material-category/cotton/. https://cfda.com/material-category/cotton/

36. Congressional Budget Office. (2023). Baseline Budget Prediction. https://www.cbo.gov/data/budget-economic-data

37. Transformers Foundation. (2021). *Cotton: A case study in misinformation.* https://www.transformersfoundation.org/cotton-report-2021

38. Claydon, S. (2022a, June 20). *Cotton - Pesticide Action Network UK.* Pesticide Action Network UK. https://www.pan-uk.org/cotton/

39. 4.71% and 10.24% by value. International Cotton Advisory Committee website information accessed August 2024 at https://www.icac.org/LearningCorner/LearningCorner?CategoryId=1&MenuId=14

40. *Global cotton production 2024/2025, by country*. (2025). Statista. https://www.statista.com/statistics/263055/cotton-production-worldwide-by-top-countries/

41. Singh, A. (2018, March). Mechanical Picking of Cotton in India. *Cotton Statistics and News.* https://caionline.in/uploads/publications/doc/50_13-03-2018.pdf

42. Claydon, S. (2022b, June 20). *Tackling pesticide poisoning in cotton - Pesticide Action Network UK.* Pesticide Action Network UK. https://www.pan-uk.org/cotton-poisoning/

43. World Wildlife Fund. (n.d.). *Sustainable Cotton: Securing the future of the industry.* WWF. https://www.worldwildlife.org/our-work/food/sustainable-agriculture/cotton/

44. *Canopystyle: Leading Forest Conservation Efforts.* (n.d.). Canopy Planet. https://canopyplanet.org/change-together/canopystyle

45. Hoskins, T. E. (2020). *Foot Work: What Your Shoes Tell You About Globalisation*. Weidenfeld & Nicolson.

46. United Nations. (n.d.-a). *Biodiversity - our strongest natural defense against climate change | United Nations*. https://www.un.org/en/climatechange/science/climate-issues/biodiversity

47. United Nations Environment Programme. (2021, March 25). *Nature for Climate Action Factsheet*. https://www.unep.org/resources/factsheet/nature-climate-action

48. See https://european-union.europa.eu/principles-countries-history/key-facts-and-figures/life-eu_en and https://www.britannica.com/topic/list-of-the-total-areas-of-the-worlds-countries-dependencies-and-territories-2130540

49. Peoples Dispatch. (2021, October 21). *S'bu Zikode: Food sovereignty from the perspective of the urban poor.* https://peoplesdispatch.org/2021/10/16/sbu-zikode-food-sovereignty-from-the-perspective-of-the-urban-poor/

50. United Nations Environment Programme. (2021, March 25). *Nature for Climate Action Factsheet*. https://www.unep.org/resources/factsheet/nature-climate-action

51. Haines, I. (2023, December 8). *Restoration as a sustainable and cost-effective method of climate-change mitigation*. The Endangered Landscapes & Seascapes Programme. https://www.endangeredlandscapes.org/news/restoration-as-a-sustainable-and-cost-effective-method-of-climate-change-mitigation/; Soltis, J. (2024, December 13). *Strengthening the shoreline in the Rockaways*. Bluedot Living. https://bluedotliving.com/strengthening-the-shoreline-in-the-rockaways/

52. Hoskins, T. E. (2022). *The anti-capitalist book of fashion*. Pluto Press.

53. United Nations. (n.d.-b). *Causes and effects of climate change* | United Nations. https://www.un.org/en/climatechange/science/causes-effects-climate-change

54. Intergovernmental Panel on Climate Change. (2023). *Headline Statements Section C1: Climate Change 2023: Synthesis Report. Contribution of working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. https://www.ipcc.ch/report/ar6/syr/resources/spm-headline-statements/

55. Minney, S. (2022). Regenerative fashion. Laurence King Publishing.; Trunk, U., Harding-Rolls, G., Banegas, X., Urbancic, N., & Nguyen, A. (2022). *Synthetics Anonymous: Fashion's persistent plastic problem.* Changing Markets Foundation. https://changingmarkets.org/wp-content/uploads/2022/12/Synthetics-Anonymous-2-online-reports-layout.pdf

56. Nguyen, A. (2021, July 11). Time to go Cold Turkey – New report explores fashion's harmful addiction to Fossil-Fuel based fabrics and greenwashing. *Forbes*. https://www.forbes.com/sites/amynguyen/2021/07/11/time-to-go-cold-turkey--new-report-explores-fashions-harmful-addiction-to-fossil-fuel-based-fabrics-and-greenwashing/

57. Balch, B. (2024, October 2). Microplastics are inside us all. What does that mean for our health? AAMC. https://www.aamc.org/news/microplastics-are-inside-us-all-what-does-mean-our-health

58. Ross, P. S., Chastain, S., Vassilenko, E., Etemadifar, A., Zimmermann, S., Quesnel, S., Eert, J., Solomon, E., Patankar, S., Posacka, A. M., & Williams, B. (2021). Pervasive distribution of polyester fibres in the Arctic Ocean is driven by Atlantic inputs. *Nature Communications*, 12(1), 106. https://doi.org/10.1038/s41467-020-20347-1

59. Coscieme, L., Akenji, L., Latva-Hakuni, E., Vladimirova, K., Niinimäki, K., Henninger, C., Joyner-Martinez, C., Nielsen, K., Iran, S. and D´Itria, E. (2022). *Unfit, Unfair, Unfashionable: Resizing Fashion for a Fair Consumption Space*. Hot or Cool Institute. https://hotorcool.org/publications/unfit-unfair-unfashionable-resizing-fashion-for-a-fair-consumption-space-2/

60. Wicker, A. (2021, November 13). The fashion industry could reduce emissions—if it wanted to. *WIRED*. https://www.wired.com/story/fashion-industry-reduce-emissions/

61. Trunk, U., Harding-Rolls, G., Banegas, X., Urbancic, N., & Nguyen, A. (2021). *Synthetics Anonymous: fashion brands' addiction to fossil fuels*. Changing Markets. https://changingmarkets.org/report/synthetics-anonymous-fashion-brands-addiction-to-fossil-fuels/

62. Recycled polyester accounted for 14% in 2019, expected to decrease to 7.9% of overall polyester production by 2030. Trunk, U., Harding-Rolls, G., Banegas, X., Urbancic, N. (2021). *Fossil fashion: The hidden reliance of fast fashion on fossil fuels*. Changing Markets. https://changingmarkets.org/report/fossil-fashion-the-hidden-reliance-of-fast-fashion-on-fossil-fuels/

63. Ibid.

64. United Nations Environment Programme. (2021, March 25). *Nature for Climate Action Factsheet.* https://www.unep.org/resources/factsheet/nature-climate-action

65. Greenpeace International. (2023, September 22). *How fast fashion fuels climate change, plastic pollution, and violence - Greenpeace International*. https://www.greenpeace.org/international/story/62308/how-fast-fashion-fuels-climate-change-plastic-pollution-and-violence/

66. Metals. (n.d.). Stella McCartney. https://www.stellamccartney.com/us/en/sustainability/metals.html?srsltid=AfmBOooakINPxHKlIM1Bh5JfU61yhANd0AgSLaaIPI9Vx_cSvdVWqCtv

67. Uteuova, A. (2021, November). How the rise of copper reveals clean energy's dark side. *The Guardian.* https://www.theguardian.com/us-news/2021/nov/09/copper-mining-reveals-clean-energy-dark-side; Seidenfaden, J. (2016, January 22). *Impacts of copper mining on people and nature.* Danwatch. https://danwatch.dk/en/impacts-of-copper-mining-on-people-and-nature/

68. *Chile: copper mine production 2010-2024.* (2025). Statista. https://www.statista.com/statistics/254845/copper-production-of-chile/

69. Lucio Cuenca, OLCA. Personal communication. July 2024.

70. War on Want. (2021, March 25). *A Material Transition: Exploring supply and demand solutions for renewable energy minerals*. https://waronwant.org/resources/a-material-transition

71-75. Rujido-Santos, I., Herbello-Hermelo, P., Barciela-Alonso, M. C., Bermejo-Barrera, P., & Moreda-Piñeiro, A. (2022). Metal content in textile and (Nano)Textile products. *International Journal of Environmental Research and Public Health*, 19(2), 944. https://doi.org/10.3390/ijerph19020944

76. Photos: Life along a 'dead' river in Bangladesh. (2023, April 20). *Al Jazeera*. https://www.aljazeera.com/gallery/2023/4/20/photos-life-along-a-dead-river-in-bangladesh

77. Renton, A. (2012, December 13). Bangladesh's toxic tanneries turning a profit at an intolerable human price. *The Guardian*. https://www.theguardian.com/global-development/2012/dec/13/bangladesh-toxic-tanneries-intolerable-human-price; World Health Organization. (2001). *Tannery pollution threatens health of half-million Bangladesh residents.* https://www.scielosp.org/article/bwho/2001.v79n1/78-79/

78. Rujido-Santos, I., Herbello-Hermelo, P., Barciela-Alonso, M. C., Bermejo-Barrera, P., & Moreda-Piñeiro, A. (2022). Metal content in textile and (Nano)Textile products. *International Journal of Environmental Research and Public Health*, 19(2), 944. https://doi.org/10.3390/ijerph19020944

79. WRAP. (2017). Valuing our clothes: The cost of UK fashion. In *WRAP - the Waste and Resources Action Programme*. https://www.wrap.ngo/resources/report/valuing-our-clothes-cost-uk-fashion

80. Muthu, S.S. (2017). Water in textiles and fashion: Consumption, Footprint, and Life Cycle Assessment. In *Elsevier eBooks*. Woodhead Publishing. https://doi.org/10.1016/c2017-0-03774-6

81. *What are the issues plaguing fashion?* (n.d.). Clean Clothes Campaign. https://cleanclothes.org/faq/why

82. Hickel, J., Lemos, M. H., & Barbour, F. (2024). Unequal exchange of labour in the world economy. *Nature Communications*, 15(1), 6298. https://doi.org/10.1038/s41467-024-49687-y

83. Ibid.

84. Estimates on how many garment workers vary from 40-80 million people globally https://www.solidaritycenter.org/wp-content/uploads/2019/08/Garment-Textile-Industry-Fact-Sheet.8.2019.pdf but also significantly higher with Ellen Macarthur Foundation using 300 million https://ellenmacarthurfoundation.org/fashion-and-the-circular-economy-deep-dive. The estimates depend on what jobs (including informal sector) are counted. See *Faces and Figure: Who Makes Our Clothes.* Common Objective https://www.commonobjective.co/article/faces-and-figures-who-makes-our-clothes

85. Referring to the years of hours of human labour going into fashion consumed in the EU in 2021 as referenced at the start of Part Four of this report.

86. Hickel, J. (2020). *Less is More: How Degrowth Will Save the World*. Random House. *https://doi.org/10.1016/j.gloenvcha.2022.102467*

87 & 89. War on Want. (2023). Fashioning the Future: Fixing the fashion industry for workers and climate. In *War on Want*. https://waronwant.org/fashioning-future/what-about-jobs

88. Tackling tax dodging: the UN Tax Convention. (2024, August 14). *War on Want*. https://waronwant.org/news-analysis/tackling-tax-dodging-un-tax-convention

90. Debt Justice. (2022). *Cancel The Debt: Why lower income countries are demanding debt cancellation.* https://debtjustice.org.uk/wp-content/uploads/2023/04/Global-South-Briefing.pdf

Research and Degrowth