

 **forum for
the future**
action for a sustainable world

Fashion Futures 2025

global scenarios
for a sustainable
fashion industry

LEVI STRAUSS & CO.



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LEVI STRAUSS & CO.

Forum for the Future – the sustainable development charity – works in partnership with leading businesses and public service providers, helping them devise more sustainable strategies and deliver new products and services which enhance people's lives and are better for the environment.

We have been working with the fashion industry for several years. In 2007 we published *Fashioning Sustainability*: <http://www.forumforthefuture.org/projects/fashioning-sustainability>, which analyses the social and environmental impacts of the clothing industry. The report identifies the key issues that need to be tackled to make sustainable clothing mainstream and highlights what retailers, brands, designers, producers, governments and consumers each need to do to take action. Many of our retail partners have fashion ranges, and the sector has continued to be a high priority for us.

Levi Strauss & Co. is one of the world's largest branded apparel companies and the global leader in jeanswear, marketing its products in more than 110 countries worldwide. The company designs and markets jeans, casual wear and related accessories for men, women and children under the Levi's®, Dockers® and Signature by Levi Strauss & Co.™ brands.

Almost two decades ago, through the Terms of Engagement (TOE), Levi Strauss & Co. was the first company to state that it would only do business with suppliers who shared its commitment to environment, labour, health and safety standards. The company's vision is to build sustainability into everything we do so that our profitable growth helps restore the environment.

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www.forumforthefuture.org/projects/fashion-futures

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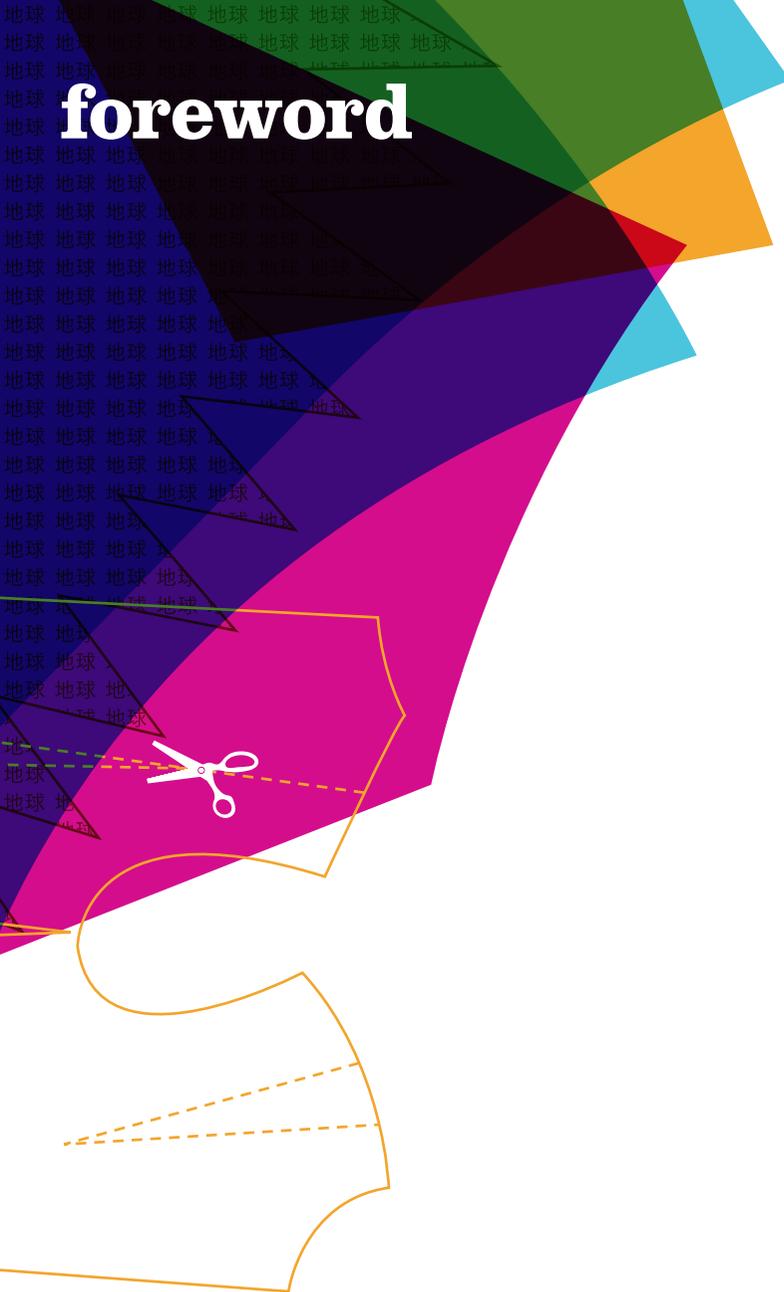
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foreword

The future holds many challenges for the global fashion industry. Resource shortages, climate change, demographic change, new technologies, and seismic shifts in the global economy will affect our businesses, our customers and our world in ways we find hard to anticipate, let alone prepare for.

All areas of this vibrant industry in every region will be affected, from suppliers of raw materials, designers and manufacturers, right through to big brands and niche retail outlets, and these profound changes will call into question the business models we're all familiar with.

But these changes hold exciting opportunities as well as risks. If we understand what the future may hold we can prepare for it, spot promising new ventures and even help shape the direction it takes. Visionary brands have a huge opportunity to lead the way with their values and position themselves for success in the marketplace.

That's why Fashion Futures is such an important and timely report for the global fashion industry. It explores how these major trends may play out over the next 15 years and allows us to try on some different 'worlds' for size. Its vivid scenarios help businesses think about how the needs of their customers may develop, the changing role of the fashion industry and what business strategies we should all be thinking about now and down the road.

We're very proud to have sponsored Fashion Futures, and we're proud that leaders at Levi Strauss & Co. have been involved in contributing to the report. The central message is that for the fashion industry to be sustainable economically, it needs to be sustainable socially and environmentally too.

At Levi Strauss & Co., our environmental vision is to build sustainability into everything we do so that our profitable growth helps restore the environment. It's a lofty goal but one that we strongly believe is achievable. Our goal is to reduce the long-term environmental impact of our products – and influence our partners and customers along the way to help us.

We are a company that prides itself on being a pioneering leader on issues of our time. We're not content just to look at what we're doing now in 2010. We want to continue to challenge ourselves and our thinking so we're demonstrating leadership as we think about the world – and our products and consumers – five, 10, 25 years ahead. We spend a lot of time thinking about how customers wear our clothes.

That's why we're focused on long-term change, beyond our products or our corporate footprint. One example is our work to support more sustainable cotton agriculture. Not just organic cotton but, through our partnership in the Better Cotton Initiative. Better Cotton is grown in a way that reduces stress on the local environment and improves the livelihoods and welfare of farming communities. Our goal is also to try to mobilise greater buying power in support of more sustainable cotton. We are still very early in this effort, but we think we have set a real agenda for change.

Reassuringly, Fashion Futures reveals that many of the opportunities for a sustainable future are already out there, they just aren't mainstream yet. The scenarios highlight many opportunities for the global industry to create thriving new business models that help lead consumers in the direction of a sustainable future.

But it also challenges businesses to look beyond immediate benefits and use their collective power to work to create the kind of positive world we'd all like to be living in 2025.

We hope you find Fashion Futures a provocative read, and will find many ways to apply its conclusions to your own businesses. At Levi Strauss & Co., we believe that a commitment to a sustainable future never goes out of style.



John Anderson
Chief Executive
Levi Strauss & Co.

executive summary

Fashion is a big deal. The global apparel, accessories and luxury goods market generated total revenues of \$1,334.1 billion in 2008.¹ And the opportunity for the industry to have a positive impact on global society and the environment is just as significant as its economic clout.

The fashion industry brings many benefits to everyday lives across the globe. Fashion goes beyond simple clothing to express identity, create wellbeing, embrace creativity and connect global communities. But like all industries there's a negative side, characterised at its worst by factories exploiting workers, generating throwaway fashion, wasting resources and encouraging unsustainable consumption.

Fashion Futures is a call for a sustainable fashion industry. We want companies in all sectors to wake up to the immense challenges that are already shaping our world, to address the serious risks and seize the rich opportunities they present. It's designed to help them take action which will safeguard their future, protect our environment and improve the lives of their customers, workers and suppliers around the world.

Climate change, population growth, and shortages of key resources are already affecting the industry and they will bring profound changes over the next 15 years. By 2025 there are expected to be another billion people living on this planet and twice as many elderly people. Climate change will have major impacts on agriculture and patterns of global land use. Many communities will change radically, affecting the needs of the industry's customers and the availability of labour. Demand for energy, water and food will grow, prices are likely to rise and control of resources will be a key political issue.

Other factors will shape our world in less predictable ways. China, India and other emerging economies will change global patterns of trade and power and exercise a growing cultural influence. Technology will continue to transform our lives and businesses and create new opportunities – think of the impact the internet has had in the last 15 years. People's attitudes to resource shortages, climate change and sustainability, and their levels of disposable income, will affect consumer demand. How governments act, or fail to act, on trade, economics, the environment and poverty, and how they coordinate action on these and other global issues will also have a huge impact.

The future is likely to be dramatically different from today. We have created four scenarios, exploring the challenges ahead for the fashion industry and its current business models.

They cover a wide range of issues and pose some searching questions:

- > How will the industry react to shortages of cotton and other raw materials?
- > How could the fashion workforce be affected by shifting supply chains and technological development?
- > How might technology influence fashion and change the way it is produced and sold?
- > How will people care for their clothes in a future of water shortages and high energy prices?
- > How could reuse and remanufacturing of clothing develop as a response to higher demand and prices?

The four scenarios explore worlds where globalisation has progressed or gone into reverse and where society and its fashions change more or less rapidly than today (see panel).

They are intended to be plausible, coherent, challenging descriptions of possible future worlds and the nature of the fashion industry within them. They are not predictions but a tool designed to challenge companies' ideas, inspire them with new opportunities and help them plan for the future.

scenarios for 2025

1. slow is beautiful

A world of political collaboration and global trade where slow and sustainable is fashionable.

2. community couture

Where high-tech systems deliver for the speed-obsessed global shopper.

3. techno-chic

Where resource crises constrain consumption in a world focused on local communities.

4. patchwork planet

A world of fast consumption in global cultural blocs.

The scenarios demonstrate the urgent commercial imperative for the industry, and the businesses within it, to rise to the challenge of the future and become sustainable. They also highlight the opportunity for pioneering companies to step up and lead the industry with business models, products and services that will thrive in a sustainable future.

¹ Consumer Goods: Global Industry Guide, Datamonitor, March 2009. The apparel, accessories and luxury goods market consists of mens, womens and infants clothing, jewelry, watches and leather goods.

five lessons for the fashion industry

Fashion Futures is a joint project between Forum for the Future and Levi Strauss & Co. It is aimed at all those within the global fashion industry, from suppliers of raw materials, designers and manufacturers right through to big brands and niche retail outlets. It should also be of use to others involved in the industry including government officials, academics and civil society.

It draws on the Forum's expertise in futures thinking and a series of in-depth interviews and peer reviews with fashion experts from around the world – in academia, trade unions, NGOs, manufacturing, design and retail.

We've drawn out five lessons for the industry:

1. Prepare now for a radically different and uncertain future

Companies should prepare now and put strategies in place for a variety of scenarios. They should carry out a risk assessment of their business models and supply chains; put together a sustainability roadmap covering the full product/service lifecycle; and ensure they understand the social and environmental context in which their products and services are used.

2. Seize the opportunity to be a trailblazer

Companies can gain first mover advantage by taking action on quick wins, such as energy efficiency. They can also benefit from taking the lead in talking to consumers and investors about the importance of sustainable production and consumption, lobbying government and driving collective industry action.

3. Put change into practice

In a world which is changing rapidly and unpredictably success will depend more than ever on being flexible and innovative. Companies should invest in design and innovation; explore new business models and ownership structures; and trial new ideas to see what works.

4. Look out for unexpected competition

Many different industries now play a part in the fashion industry, from information and communications technology (ICT) and sport to supermarkets and pharmaceuticals, and new competition can emerge from unexpected areas. Companies should embrace alliances with new partners where this can enable sustainable growth. They should also consider how to apply their core competencies to new markets.

5. Develop skills for a new world

Companies should start developing the skills they will need to be successful in the future. The industry will need climate change experts, water policy specialists, innovators with skills in design for disassembly and closed-loop manufacturing and many more. Businesses should also explore trends where the customer becomes a supplier, designer and seller as well as a buyer of fashion.

“ Companies need to be seeding innovation and new ideas now in order to thrive in a resource-constrained world. We need thought-provoking research like Fashion Futures to help us collaborate and advocate for the right future solutions around the most important issues on sustainability.”

Hannah Jones

Vice President Sustainable Business and Innovation
Nike Inc.

“ Fashion Futures makes an important contribution to the longer-term sustainability of clothing production. By providing four provocative scenarios of future worlds in 2025, Fashion Futures can help companies develop responses to key social and environmental challenges.”

Mike Barry

Head of Sustainable Business
Marks and Spencer

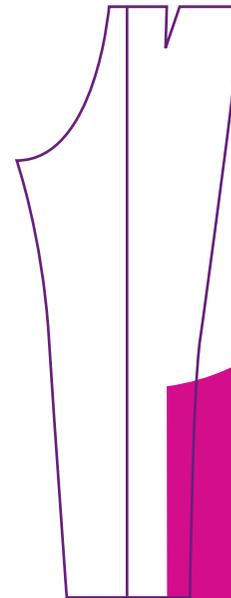
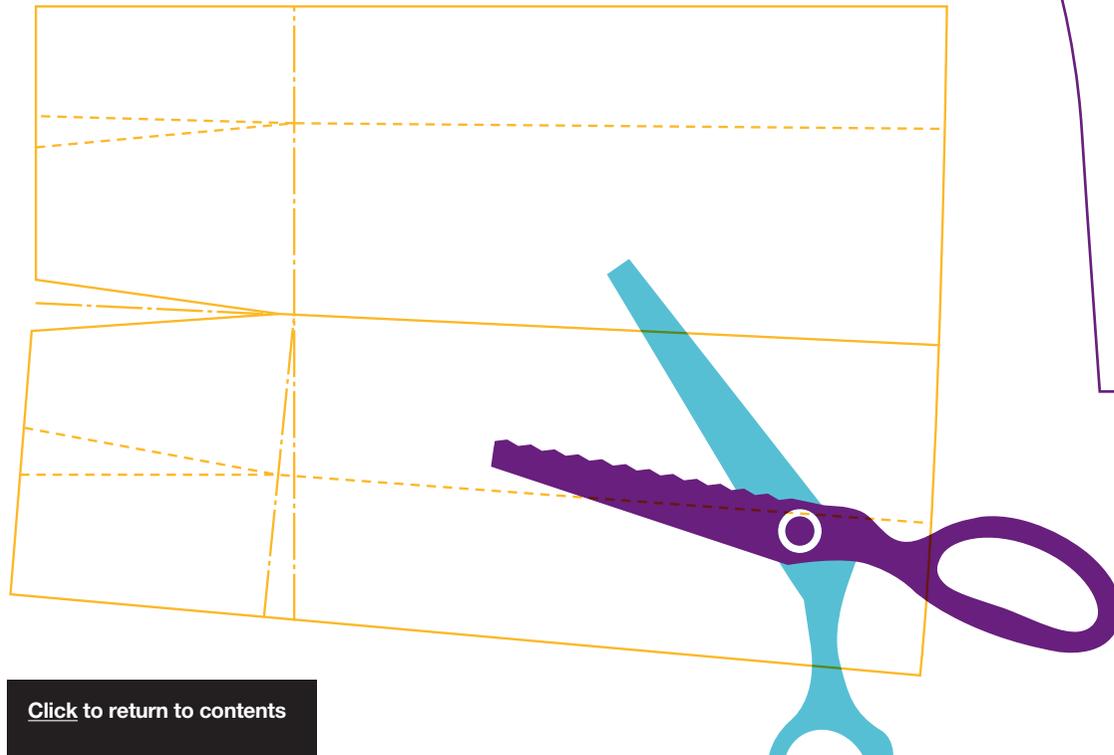
how to use fashion futures

It takes innovative thinking and an open mind to think ahead and explore the routes which will lead your business to a successful future. The Fashion Futures scenarios are designed as a tool to help you chart the course which is right for you: to avoid the risks, seize new opportunities and play your part in creating a future which is good for your business and your society.

Businesses can use the scenarios to future-proof current business models and processes, to develop a vision of where they want to go and a strategy to get there, to inspire innovation and to guide organisational development. We highlight these approaches with useful tips in the section 'How to use the Fashion Futures scenarios'. Further materials are available for download from: <http://www.forumforthefuture.org/projects/fashion-futures>

Forum for the Future also designed and led a university module, based on the scenarios, with students from the London College of Fashion's MA Fashion and the Environment in 2009. Inspired by the scenarios, students proposed and visualised fashion product and service solutions that would flourish in 2025.

Universities and colleges can use Fashion Futures in a similar way. Our pilot with the London College of Fashion has been successful in challenging and inspiring the students to deliver innovative fashion solutions for a changing world. Tips, workshop materials and module outlines are available to download from: <http://www.forumforthefuture.org/projects/fashion-futures>



“ Designers need to design for the future, not just for now, and Fashion Futures will challenge and inspire their thinking.”

Dilys Williams,
Director of Sustainable Fashion
London College of Fashion

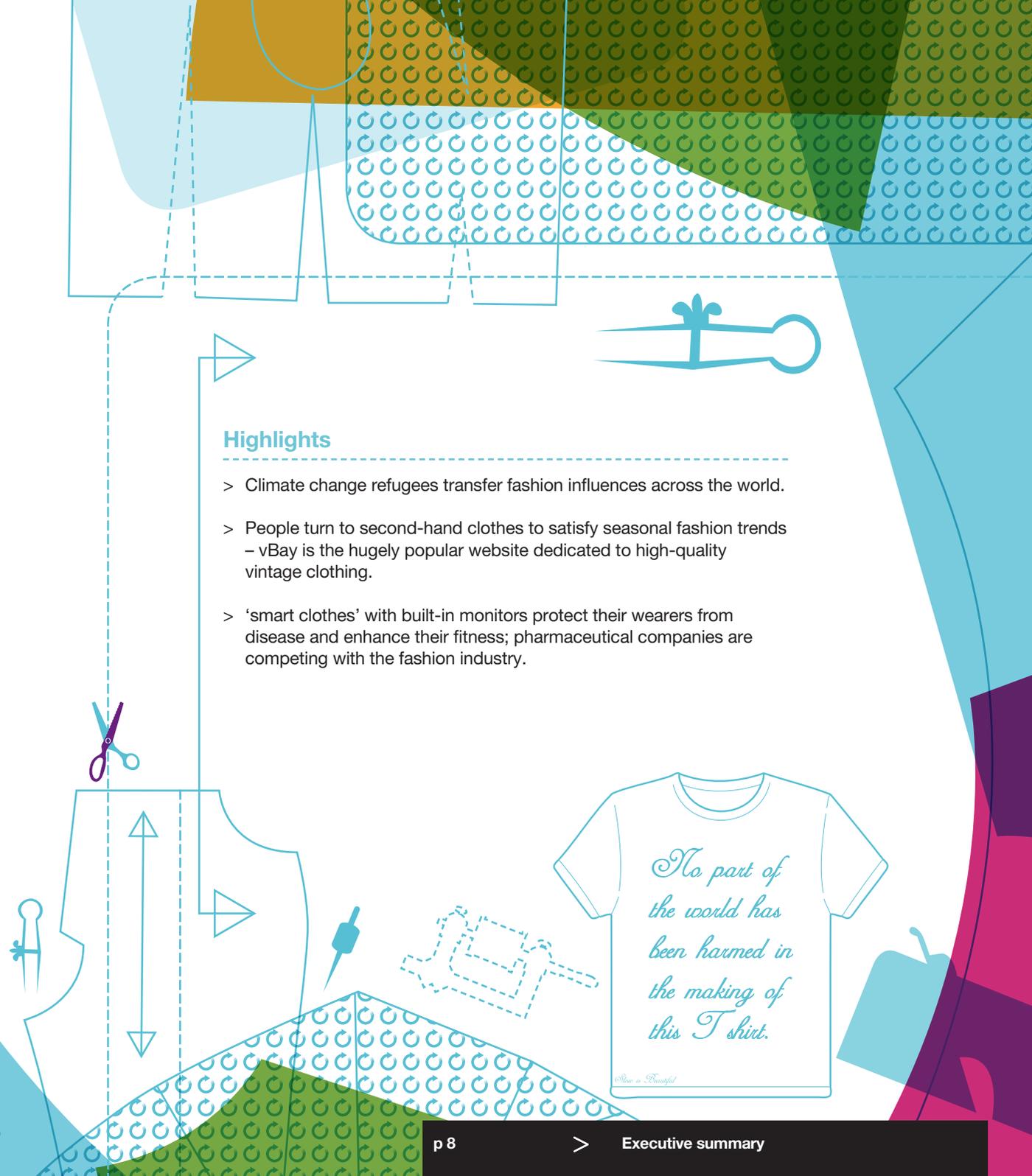


scenario 1: slow is beautiful

1. **The world is...** moralistic, risk-averse, low-carbon, tightly regulated with sustainable lifestyles and mindsets.
2. **Fashion is...** über sustainable and über cool... most consumers are prepared to pay more for a smaller number of high-quality sustainable clothing items.
3. **The fabrics we wear are...** durable... organic natural fibres... man-made materials from renewable resources... handcrafted, vintage, second-hand... 'smart clothes' monitoring health.
4. **We get our clothes...** from small or virtual stores with hyper-efficient logistics or we swap with friends.
5. **Clothes are made...** in different regions of the world according to the manufacturing processes they require... India and Nigeria have big 'refurbished clothing' industries... most workers are paid a 'living wage'.
6. **We care for clothes...** without harmful chemicals... clothes last longer and are washed less at low temperatures.
7. **When we have finished with clothes...** we take them back to where we bought them to be shipped and remanufactured in Japan.
8. **The industry is sustainable through...** SustainGrade labelling and digital tagging, ensuring consumers know exactly where their clothes have come from and what impact they've had... but a 'grey economy' with poor labour standards still exists to satisfy those who refuse to conform to the new, slower world order.
9. **Successful fashion businesses are...** radically transparent: the most sustainable *and* best value.

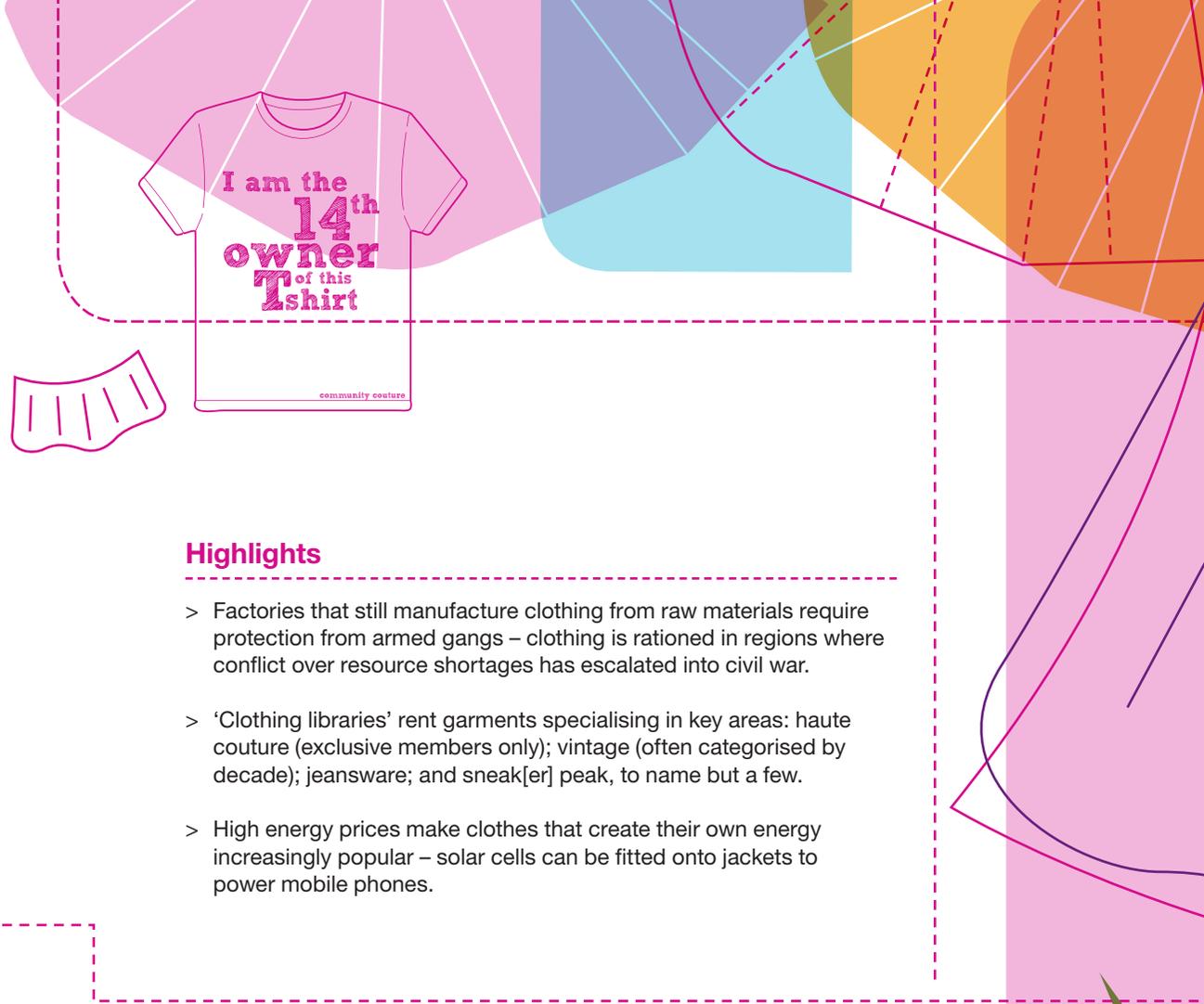
Highlights

- > Climate change refugees transfer fashion influences across the world.
- > People turn to second-hand clothes to satisfy seasonal fashion trends – vBay is the hugely popular website dedicated to high-quality vintage clothing.
- > 'smart clothes' with built-in monitors protect their wearers from disease and enhance their fitness; pharmaceutical companies are competing with the fashion industry.



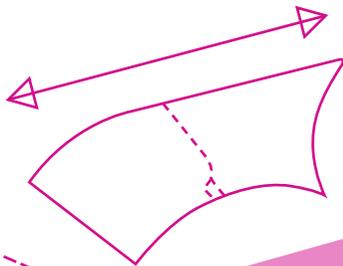
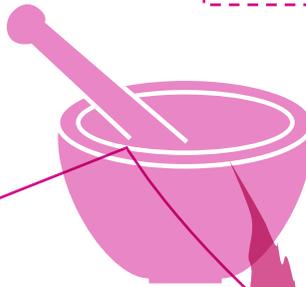
scenario 2: community couture

1. **The world is...** struggling to cope with the impacts of climate change and resource shortages but community bonds are strong – many strive for self-sufficiency.
2. **Fashion is...** expensive new or cheap and second-hand... very high costs of raw materials and disrupted supply chains have resulted in a dramatic fall in the production and sale of new clothing.
3. **The fabrics we wear are...** second-hand, 'pre-loved' clothing... community-grown hemp... only the rich can afford 'certified new' clothes made from expensive synthetics or virgin raw materials.
4. **We get our clothes...** at vibrant second-hand markets with tailors and stylists on hand, in retail stores with extra security, on the black market or from clothing libraries.
5. **Clothes are made...** at home or in community-run recycling centres linked to local, hyper-efficient factories.
6. **We care for clothes...** using community laundries... one cup of water washing machines... 'make do and mend' is taught in schools.
7. **When we have finished with clothes...** we sell them back for reuse to boost our incomes.
8. **The industry is sustainable through...** second-hand clothing becoming a valuable resource... nothing is disposed of.
9. **Successful fashion businesses are...** part of the local community: providing energy supply, education and even food to employees.



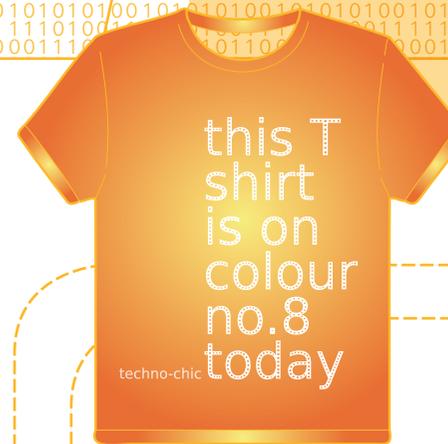
Highlights

- > Factories that still manufacture clothing from raw materials require protection from armed gangs – clothing is rationed in regions where conflict over resource shortages has escalated into civil war.
- > 'Clothing libraries' rent garments specialising in key areas: haute couture (exclusive members only); vintage (often categorised by decade); jeansware; and sneak[er] peak, to name but a few.
- > High energy prices make clothes that create their own energy increasingly popular – solar cells can be fitted onto jackets to power mobile phones.



scenario 3: techno-chic

- 1. The world is...** healthy, wealthy and ultra high-tech – materialism is out of favour and the aim is ‘lightweight living’.
- 2. Fashion is...** fast-paced, low-carbon and cheap.
- 3. The fabrics we wear are...** made from new high-tech, low-impact fibres... biodegradable, non-toxic spray-on clothing... nano-tech fabrics... programmable clothing.
- 4. We get our clothes...** using 3D body scanners that allow people to ‘try on’ clothes in virtual mirrors and on interactive screens.
- 5. Clothes are made...** by machines not people... sharp declines in the use of labour create pockets of crippling unemployment... modular clothing is manufactured in China and delivered to stores to be customised to consumer demand.
- 6. We care for clothes...** using high-tech, personalised clothing valet services... nanotech coatings that reduce the need for washing (now recyclable)... ‘smart’ solutions for low-impact clothing care and advanced recycling networks.
- 7. When we have finished with clothes...** they are composted, disassembled, remanufactured or reused according to design.
- 8. The industry is sustainable through...** financially viable low-carbon, low-impact production... technology delivers sustainable solutions but some can’t keep up with the fast pace.
- 9. Successful fashion businesses are...** consumer-obsessed: finding creative ways to keep their customers loyal and anticipating demand to avoid waste.



Highlights

- > Tour operators provide ‘holiday wardrobe’ packages that include a selection of local fashion items on your arrival – you can try on items virtually in advance and pre-select colour and styles.
- > ‘Crowd-sourcing’ fashion prevents overproduction and wastage – customers vote online to choose which clothes should be made in which colours.
- > ‘Chameleon’ clothing, a spin-off from military camouflage, is a global craze – it offers a ‘blank canvas’ which can change colour and style, programmed to mimic the most popular celeb of the moment.

scenario 4: patchwork planet

- 1. The world is...** broken into cultural 'blocs' with unequal economic performance – Asia is the economic and cultural powerhouse... there is conflict over scarce resources.
- 2. Fashion is...** strongly influenced by regional trends and celebs and highly personalised.
- 3. The fabrics we wear are...** made locally for local manufacture – bamboo in Asia, wool in Australia, flax in India... smart nano-tech materials... choice of colours is limited to save water and energy in dyeing.
- 4. We get our clothes...** online via mobile devices... consumers can personalise their clothes virtually.
- 5. Clothes are made...** in regional factories – short supply chains mean clothes reach consumers quickly.
- 6. We care for clothes...** according to wide regional differences... some have developed waterless washing machines, others use coatings to limit need for washing.
- 7. When we have finished with clothes...** they are (often illegally) dumped... edible clothing is a popular trend in Europe.
- 8. The industry is sustainable through...** a variety of locally appropriate strategies... sustainability know-how is guarded jealously so progress is slow and the world is struggling to cope with mounting social tensions and environmental constraints.
- 9. Successful fashion businesses are...** national heroes: companies with strong local heritage do best.

1
piece of
food only



Highlights

- > Nationalism encourages local fashion trends inspired by religious and cultural ideals. Across most of the Middle East, Western clothes are forbidden by law.
- > Clothing is designed so that it can be zipped, tucked and strapped on in order to create different looks in one. Brands provide post-purchase services, allowing owners to customise their clothing to follow local trends.
- > Resource shortages have driven innovation – clothes can be 'grown' from bacterial cellulose and self-cleaning coatings do away with the need to wash clothes.



introduction

the fashion industry and sustainability

The fashion industry can play a vital role in delivering sustainable development. Not only does it create jobs and contribute to the economy, it also has a huge influence over society and the economy through its marketing, regular customer transactions and complex, globalised supply chains. The global apparel, accessories and luxury goods market generated total revenues of \$1,334.1 billion in 2008.² In 2005, the industry employed approximately 26 million people and contributed to 7% of world exports.³

But back in 2007, Forum for the Future's report *Fashioning Sustainability*⁴ highlighted the fact that the fashion industry is locked into a cycle of unsustainability – using more and more of the earth's resources and in some cases exploiting cheap labour supplies in return for ever-decreasing profit margins. Fierce competition and lack of supply chain transparency have both contributed to driving down both costs and social and environmental standards.

On the plus side, the industry has already demonstrated an impressive capacity to adapt and create space for change. Following the first wave of 'ethical consumerism' in the late 1980s, for instance, retailers adopted codes of conduct to end relationships with suppliers who exploit workers, and set out to improve labour standards.

And the good news is that the industry is not inherently unsustainable. People will always need clothes and want to express themselves through what they wear. If we can harness the industry's collective energy, adaptability and capacity for innovation, it can play an important role in creating a sustainable, fair and low-carbon world. Indeed, through its powerful marketing and trend setting, it could play a wider role in making sustainability desirable. This is a huge opportunity.

There are lessons to be learned from the way the sustainability debate has developed in the food industry. As consumers have become increasingly aware of how their food is produced, demand has grown for healthy food, Fairtrade and organic products. Higher standards are driving up performance and supermarkets have begun to compete to be the most sustainable. We're beginning to see similar trends in the fashion world, where consumer opinion is arguably more important. For example, demand for organic and Fairtrade cotton already outstrips supply.

² Consumer Goods: Global Industry Guide, Datamonitor, March 2009. The apparel, accessories and luxury goods market consists of mens, womens and infants clothing, jewelry, watches and leather goods.

³ HM Customs & Excise, Provided by the British Apparel & Textile Confederation (2005) provided to Defra: <http://www.defra.gov.uk/environment/business/pdf/clothing-briefing-Dec07.pdf>

⁴ <http://www.forumforthefuture.org/projects/fashioning-sustainability>

In *Fashioning Sustainability* we mapped the social, environmental and economic impacts at every stage in the life of any common item of clothing, and the various ways these impacts can be reduced – many offering cost savings and reputational benefits along the way (see box). It focused on how the industry can benefit by tackling its current impacts.

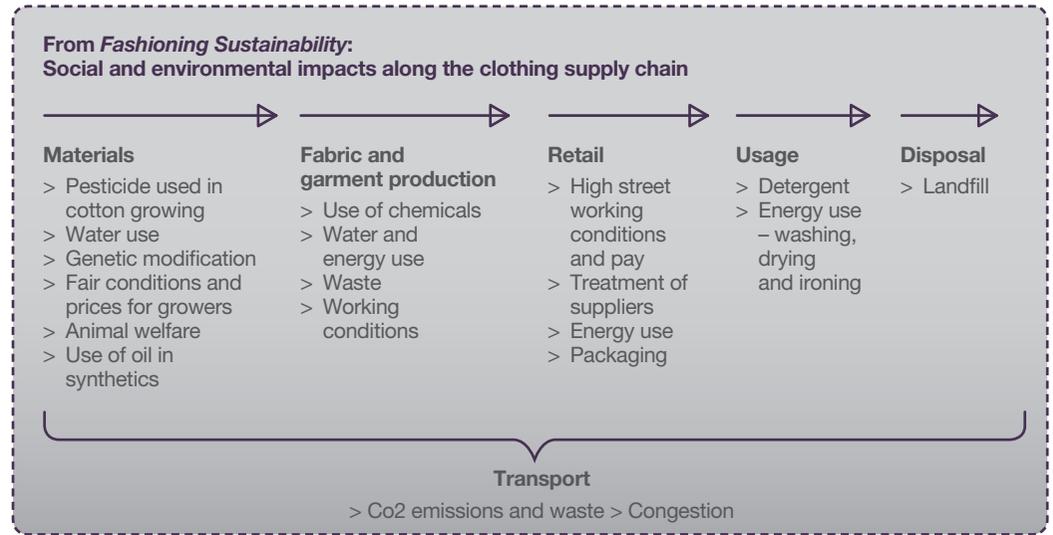
When you look forward 15 years, as we do for this report, it becomes even clearer that just ‘doing what we do now but slightly better’ won’t work. It’s time for a rethink. As the next section ‘Factors shaping the future’ shows us, there are major global challenges ahead which mean it will be very difficult for the industry to continue to be profitable in future if it remains on its current path. ‘The scenarios’ bring these challenges to life; ‘Implications’ highlights the key findings derived from the scenarios and what they mean for the fashion industry; and ‘How to use the Fashion Futures scenarios’ suggests six different ways that businesses can practically apply the scenarios to drive sustainable business practice.

The ‘fashion industry’ is a huge industry whose many components include agribusiness, design, manufacture, retail, promotion, laundry and recycling and waste services. In this report we take a broad definition of the ‘fashion industry’.

Our analysis includes:

- > where the materials come from that make our clothes
- > how our clothes are made
- > how they reach us as consumers
- > how we care for our clothes
- > and what happens to them at the end of their ‘life’

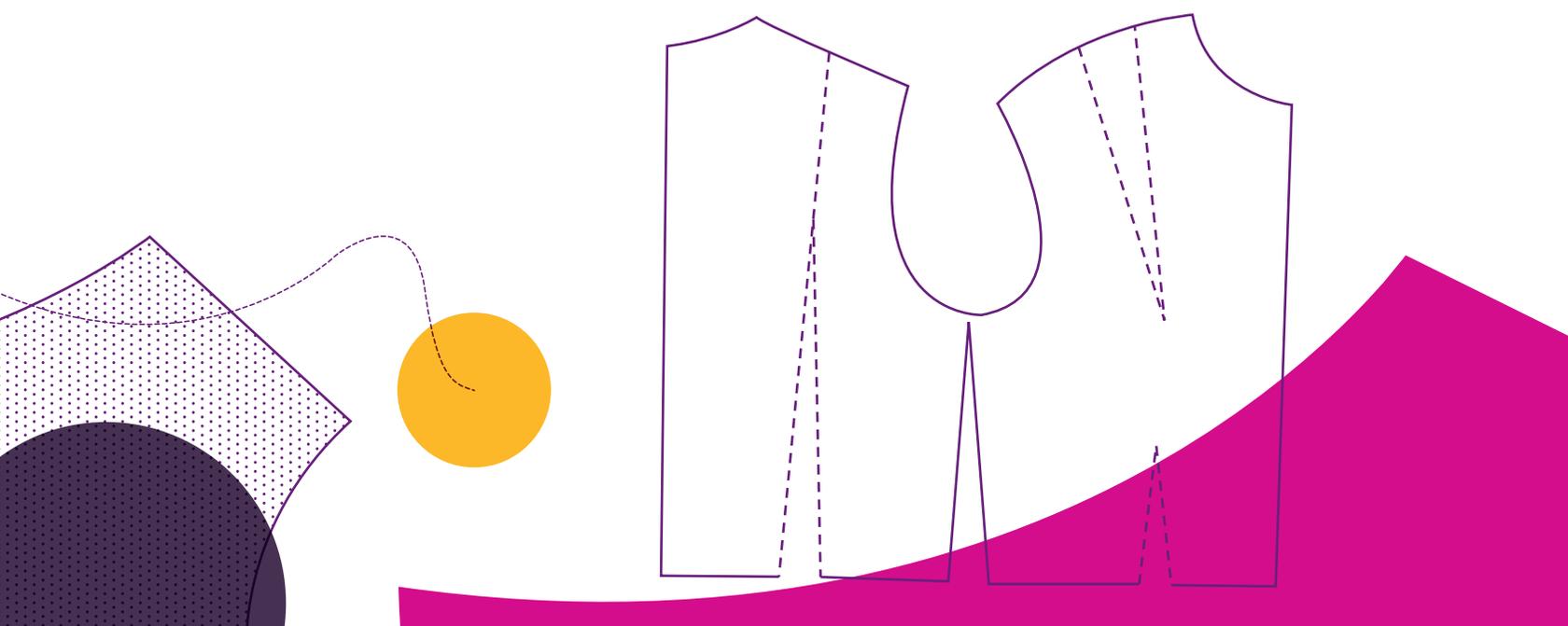
This report seeks to inspire the fashion industry to address a fundamental question: given the challenges ahead, what might a new, more sustainable path look like?



**From Fashioning Sustainability:
Key issues that need addressing in the clothing supply chain**

1. Fashion consumption – the increasing number of fashion items that we buy and then dispose of.
2. The intensity of cotton production requiring lots of energy, water and pesticides.
3. Working conditions across the supply chain from cotton production to sweatshops.
4. Energy consumed when we are washing our clothes contributes to climate change.
5. Chemicals in the working environment can be toxic and damage workers’ health and the local environment.
6. Unsustainable man-made fibres can take longer to degrade in landfill sites.
7. Fashion miles that burn carbon as fabric and clothing are transported around the world.
8. Animal welfare – ensuring that good standards are upheld during leather and wool production, and avoiding fur.

<http://www.forumforthefuture.org/projects/fashioning-sustainability>



factors shaping the future

We cannot predict how global clothing production and use will change over the next 15 years, but it's unlikely to look how it does today.

If we think back over the last 20 years, we've seen huge global changes: the 9/11 attacks and new terrorism threats; falling barriers to trade worldwide and new emerging economies; the oil price rising from \$15 to \$150 a barrel; a huge growth in awareness of pay and conditions in the labour supply chain; and rapid uptake of the internet and mobile telephony.

Even though some of these changes are not directly related to fashion, the industry will have felt all of them in one way or another. Impacts range from increased manufacturing costs to responding to changes in consumer buying patterns and how we care for our clothes. The fashion industry itself has become faster and more globalised.

How business and society respond to the many challenges facing us between now and 2025 depends on a bewildering array of factors and the interactions between them.

In order to pull out the key factors shaping the future, we completed extensive desk research and interviewed over 40 fashion industry experts including academics, business leaders, campaigners, legislators and commentators to help answer two key questions: what is likely to be important in shaping the future of global fashion? And how certain are those key trends? From an initial list of 170 future factors, our interviews and analysis have drawn out the key trends below.

what can we be more certain about?

Our interviews and research suggested that some factors will be important but more certain for the future – meaning we can be relatively sure that these will be important in any future. For this reason, some features are common to all of the scenarios although the emphasis may differ between them. They highlight the scale of the challenges ahead and we believe the industry should prepare for these three changes in any scenario.

Demographic change

Over the next 15 years it is likely that there will be more than a billion extra people living on our planet, with global population growing from 6.9 billion to reach 8.1 billion by 2025.⁵

According to the United Nations, this increase will occur mainly in less developed countries, whose population is projected to rise from 5.4 billion in 2007 to 6.7 billion in 2025. In contrast, the population of the developed world is expected to remain largely unchanged at 1.2 billion, and would have declined were it not for the projected net migration from developing to developed countries, which is expected to average 2.3 million persons a year after 2010.⁶

Not only will there be more of us, but on average we'll be older. The proportion of older people is projected to more than double worldwide over the next half century. By 2025 over 20% of the populations of the EU, USA, Russia and China will be over 60 years of age.

This will have implications for both the clothing industry's global workforce, and its global consumer base. For example, currently 11% of China's population is elderly and relies on the working population for support. This will increase to 19% by 2025.⁷ What will a shrinking labour force with more responsibilities mean for Chinese manufacture, for example? We explore these and other implications in more detail below.

⁵ Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, *World Population Prospects: The 2008 Revision*, <http://esa.un.org/unpp>

⁶ Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, *World Population Prospects: The 2008 Revision*, <http://esa.un.org/unpp>

⁷ United Nations, Department of Economic and Social Affairs, Population Division, *World Population Prospects: The 2008 Revision*, New York, 2009.

Growing impacts of climate change

The way the climate changes in coming years will be critical in shaping our future. But because of the time lag in impacts of present and past emissions on the climate, most of the climate change that we will experience in 2025 is the result of past pollution. Action between now and 2025 will do little to alter the way the climate changes over the next 15 years, though it may make society more or less resilient to those changes.

The planet will experience real disruption as a result of climate change in the next 15 years. Individuals and communities, especially in low-income countries, are already experiencing elevated levels of environmental stress as a result of climate change.

For that reason there is little difference in the amount of climate change that the world has experienced in each of our scenarios. We have used the upper end of the 2007 IPCC⁸ estimates for the climate in 2025, as the latest science suggests that the lower end of these estimates is looking increasingly unlikely.⁹

The changes to the climate that the world experiences after 2025 will depend on how we respond to climate change over the next 15 years. This is different in each of our scenarios and they would present radically different climate impacts later in the century. How our global community will respond to climate change is far from certain, as we explore in more detail below.

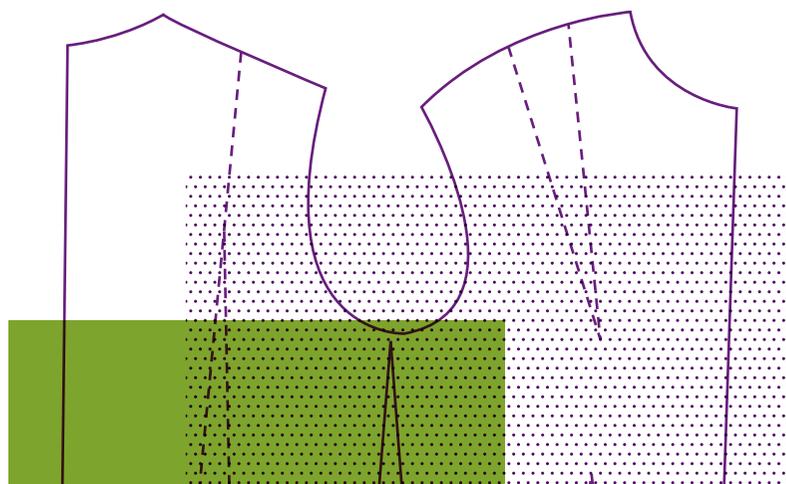
Rising costs of key resources

Against this backdrop of a changing climate and increasing pressures from growing populations, we can expect the cost of key resources such as food, building materials and energy to rise in many places as demand grows and supplies fail to keep pace.

Across all industry and society, the availability of resources such as energy, water and food will be crucial in the years to come. For example, by 2025, 1.8 billion people are expected to be living in countries or regions with absolute water scarcity.¹⁰ For the world of fashion, in particular, the supply of raw materials such as cotton is likely to become increasingly constrained as water gradually becomes scarcer and pesticides more expensive and regulated. As the world struggles to feed a growing population, land and resource use will need to become much more efficient. We can also expect stricter legislation on water use and waste treatment in manufacturing, as access to clean drinking water becomes an even more pressing global issue. Whatever the distribution and availability of resources, control of supplies will continue to be a crucial political issue.

Foremost in the minds of many for the next two decades will be energy, specifically the availability of supply and its links to security. Forecasts suggest that global demands for energy, particularly from India and China, will grow rapidly. The International Energy Agency estimates that based on current trends, energy needs might be over 40% higher in 2030 than today.¹¹ It's not clear what the energy mix across the world will be in 2025, but we do know the path to a viable, sustainable mix will not be easy. Our scenarios reflect a range of possibilities from global technological solutions like Carbon Capture and Storage in Techno-Chic to more localised energy provision in Slow is Beautiful.

High oil prices will have a dramatic impact across the clothing supply chain and will have a knock-on effect on the cost of polyester (a by-product of the oil industry), pesticides and transport. Similarly the availability and cost of water will impact cotton production,¹² manufacturing (particularly dyeing, printing and finishing garments), and how we clean our clothes. And in some parts of the world, using land for growing food – and perhaps energy crops – might take precedence over producing textile fibres.



⁸ IPCC Fourth Assessment Report, 2007.

⁹ The Copenhagen Diagnosis, 2009: Updating the World on the Latest Climate Science. I. Allison, N.L. Bindoff, R.A. Bindshadler, P.M. Cox, N. de Noblet, M.H. England, J.E. Francis, N. Gruber, A.M. Haywood, D.J. Karoly, G. Kaser, C. Le Quéré, T.M. Lenton, M.E. Mann, B.I. McNeil, A.J. Pitman, S. Rahmstorf, E. Rignot, H.J. Schellnhuber, S.H. Schneider, S.C. Sherwood, R.C.J. Somerville, K. Steffen, E.J. Steig, M. Visbeck, A.J. Weaver. The University of New South Wales Climate Change Research Centre (CCRC), Sydney, Australia, 60pp.

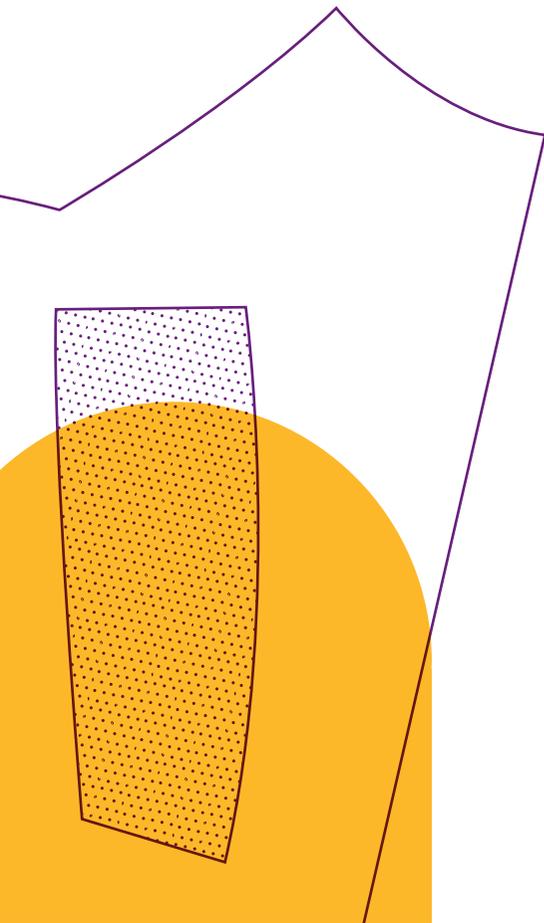
¹⁰ Food and Agricultural Organization, United Nations, 14 February 2007.

¹¹ World Energy Outlook 2009, International Energy Agency.

¹² Where, in some cases, over 10 tonnes of water are used to grow enough cotton to make one pair of jeans – or six pints per cotton bud (Pick your cotton carefully, Environmental Justice Foundation, 2007).

what are we less certain about?

Other factors are more uncertain – people could imagine things going a number of ways. Six key uncertainties arose from the research, and have been influential in shaping our four scenarios. In each scenario we vary the different possible directions that the uncertain factor could take to create a series of alternative futures.



How will society respond to resource scarcity and climate change?

How our societies respond to resource shortages and climate change will depend on a complex set of factors including the willingness of people and business to change their behaviour and the ability of politicians to reach global collective agreements.

Public attitudes will play a key role. How much will people be willing to make lifestyle choices that reduce consumption to reduce pressure on the environment? Will radical behaviour change occur in pursuit of low-carbon/impact living? Could we see a shift in values, with people concerned less with consumption and more with wellbeing and quality of life? Slow is Beautiful presents a world in which there has been such a shift in values. In Techno-Chic a technological response to resource shortages and climate change allows consumption to continue to drive the economy.

The public perception of resource scarcity and climate change will play an important role in influencing the critical political responses to these problems. Whether states go for market-led responses or regulatory incentives will have a big impact on businesses and they role they play. Working with the markets could lead to businesses harnessing innovation to deliver transformation, such as those seen in Techno-Chic.

We've seen governments respond in different ways to resource crises in the past. Some look to be more self-reliant. For example, food shortages in Europe during the Second World War led governments to try to be much more self-sufficient in production through the Common Agricultural Policy. Japan responded to the 1970s oil shocks by radically improving its domestic energy efficiency. And self-reliance is playing a key part in current US decisions on energy policy.

We've also seen countries take steps to ensure exclusivity of supply. For example, China has recently responded to potential resource shortages by entering into bilateral deals with developing countries, such as the \$6 billion investment in infrastructure in the Democratic Republic of Congo in return for natural resources.¹³ In extreme cases, countries have restricted exports for political bargaining (as with Russian exports of gas)¹⁴ or to ensure domestic markets are supplied first (as with rice exports in Indonesia).¹⁵ We see more of this sort of tit-for-tat protectionism and explore how it might affect the clothing supply chain in our Patchwork Planet scenario.

Recently, we have also seen the beginning of global cooperation to protect key resources such as fisheries and forests. Some of this is government-driven, such as the EU Common Fisheries Policy, but many of the cutting-edge initiatives – such as the Marine Stewardship Council – have emerged from voluntary collaborations. We see this trend spreading to the protection of other resources in our Slow is Beautiful scenario.

A lack of global collective action could lead to more drastic approaches to resource protection, carbon reduction and climate adaptation: the community-led, ad-hoc approach as seen in Community Couture or even the uneven, isolated response in Patchwork Planet.

We also explore the potential impacts of more extreme forms of government legislation to combat climate change, such as carbon rationing, in our scenario Slow is Beautiful.

Whether businesses see climate change as a risk or an opportunity will also be critical. A huge investment in technology would push us in the direction of the world shown in Techno-Chic. A world in which companies reconsider the fundamentals of their business model and shift from high-consumption products to low-consumption product and service systems could lead to the type of society we see in Slow is Beautiful.

The extent to which countries and businesses are willing to share Intellectual Property (IP) for climate change technologies is also something we explore in our scenarios Techno-Chic and Patchwork Planet.

¹³ <http://www.bloomberg.com/apps/news?pid=20601116&sid=aCadFrBou8RU>, <http://af.reuters.com/article/investingNews/idAFJ0E5BB01I20091212>

¹⁴ <http://news.bbc.co.uk/2/hi/europe/7825476.stm>

¹⁵ <http://www.reuters.com/article/idUSMAN2436020080415>

How might legislation shape the fashion industry?

The future of the clothing industry will be shaped by a myriad of global, regional and national legislation above and beyond the legislation around climate change and resource shortages outlined above.

The future of global trade agreements will be critical. The current recession has seen demand for clothing exports from China slump and there has been little opposition to the 2009 liberalisation of the sector, when EU and US international quotas were dropped, freeing up trade. But would this continue if an economic recovery saw exports from China boom once again? Or, as we explore in Patchwork Planet, would regions revert to protectionist measures – quotas and licences to curb cheaper imports from overseas?

Another key question is how far governments coordinate legislation on trade, economics, environment, poverty and other global issues. Many of the experts we interviewed saw a future with increased standardisation around clothing labelling and environmental and social regulation. In Slow is Beautiful we consider what a coordinated global response might look like. In the shorter term, this type of requirement might be seen as a 'new' type of trade barrier, raising not only social and environmental performance, but also costs of compliance. Our scenarios explore who the winners and losers might be.

Another potential policy implication experts consistently highlighted during our interviews was around land use and associated subsidies. In 2003, US farmers were exporting cotton at 57 percent below the cost of production.¹⁶ In several of our scenarios, cotton farmers are subsidised to grow crops that will meet more urgent energy or food requirements. If the availability of cotton were drastically reduced this would have far-reaching consequences for the fashion industry.

How much disposable income will we have, and what will we spend it on?

For many consumers the world over, the motivation to buy fashion items is primarily desire rather than actual need. This requires a certain level of disposable income. The uncertainty here is not just around the availability of spending money, but whether fashion will be a high priority on consumers' shopping lists.

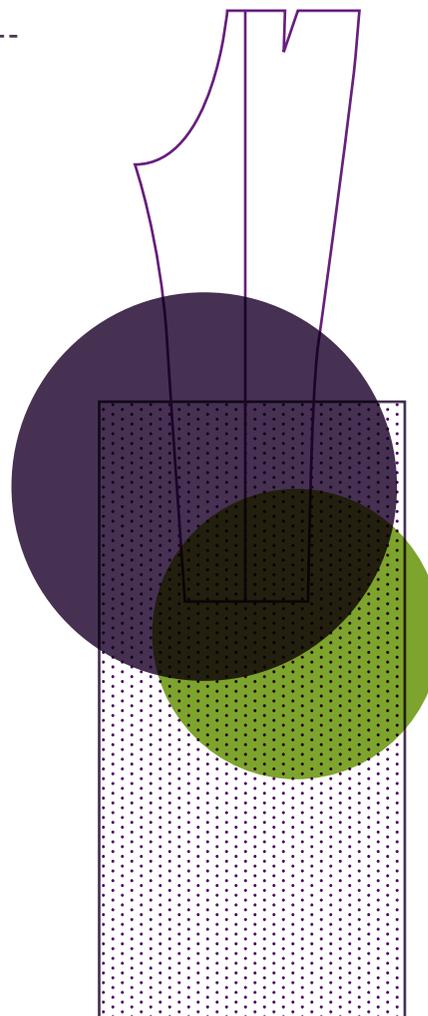
If consumer demand grows for fairly-traded raw materials, fair labour rights, lower-carbon and higher quality products, as seen in Slow is Beautiful, what would that mean for the low-cost brands of today? Alternatively, if clothing becomes very expensive and consumer priorities shift towards utilitarian needs as seen in Community Couture, how will the fashion world need to adapt?

We don't know for sure that the pattern of increased consumption will continue to grow. There are already signs that people are saving more and some niche consumer segments (dubbed 'conscientious consumers') even deem ostentatious money spending to be vulgar. As imitation designer goods have become affordable to everyone, for some, owning the biggest closet is what it is all about. Conversely, clothes swapping parties are all the rage¹⁷ and hip new second-hand clothing stores are springing up across the world¹⁸ as people are beginning to rediscover the joy of pre-loved clothing. We cannot know if either of these patterns will continue to grow or start to decline.

¹⁶ Shaeffer, Curtice. (2004) 'Levelling the agricultural playingfield', Global Envision.

¹⁷ See <http://www.swishing.com/>

¹⁸ See Supercool Market in Brasil <http://www.supercoolmarket.com.br/>



How will the so-called 'emerging economies' develop?

Estimates suggest that by the mid-2020s, China's economy could be the largest in the world.¹⁹ They also indicate that by 2050 the Russian, Mexican and Indonesian economies could each be larger than the German economy, that Brazil will have overtaken Japan, and that India may have almost caught up with the United States.²⁰ The development of a new middle class in countries we today call the 'emerging economies' will be a key force shaping the world over the coming decade.

As the centre of economic and socio-cultural power shifts, we can expect to see vast numbers of new middle-class consumers keen to indulge in and influence the world of fashion like never before. The middle class in India, for example, will grow from its 2007 size of 50 million to 583 million people by 2025.²¹ What kind of fashion will they desire? How will their growth affect current world-leading brands?

Some experts we spoke to foresee an increase in demand for Western-style clothing in Asia, resulting from an increase in disposable income – a demand that could easily be met by those Asian manufacturers currently supplying the West. We explore this in Techno-Chic where we see an increasingly globalised world with homogenised fashion.

Others questioned whether it might actually be China or India, not the West, that delivers the new global cultural trend people will follow. If so where would that leave European and American brands? We explore this in Patchwork Planet.

¹⁹ PwC, The World in 2050: Beyond the Brics, March 2008.

²⁰ PwC, The World in 2050: Beyond the Brics, March 2008.

²¹ Mc Kinsey, The 'Bird of Gold': The Rise of India's Consumer Market, May 2007.

Technological advancement

We've seen technologies advance rapidly over the past century and we use them in every part of our daily lives.

We've already seen techno-shifts in streamlining the fashion supply chain – from labour to automation, for example – but the degree to which this can continue in a carbon-constrained world is not certain. In Techno-Chic, society's preference for techno-fixes means that there has been a lot of progress in retail technology and closed-looped fashion systems, whereas in Community Couture fast manufacturing has almost ground to a halt.

We can't predict which technologies will be important in 2025, though the probability is that they will be ones already in existence, perhaps not yet mainstreamed, or just used in a different way. We've seen in the last 20 years, for example, how the internet has gone from being a military application to a fundamental part of the way that we keep in touch, make purchases and do business. In fashion, online tracking systems are increasingly used to promote transparency in supply chains.²² 'Build your own outfit' applications help retailers to understand changing trends,²³ and the ability to create clothing that can generate its own energy is apparently not far off.²⁴

Many of the experts we consulted expect that we will see huge improvements in energy efficiency within the fashion supply chain, for example, in how garments are dyed and finished. In fact, some commented that a lot of the technology is already out there.

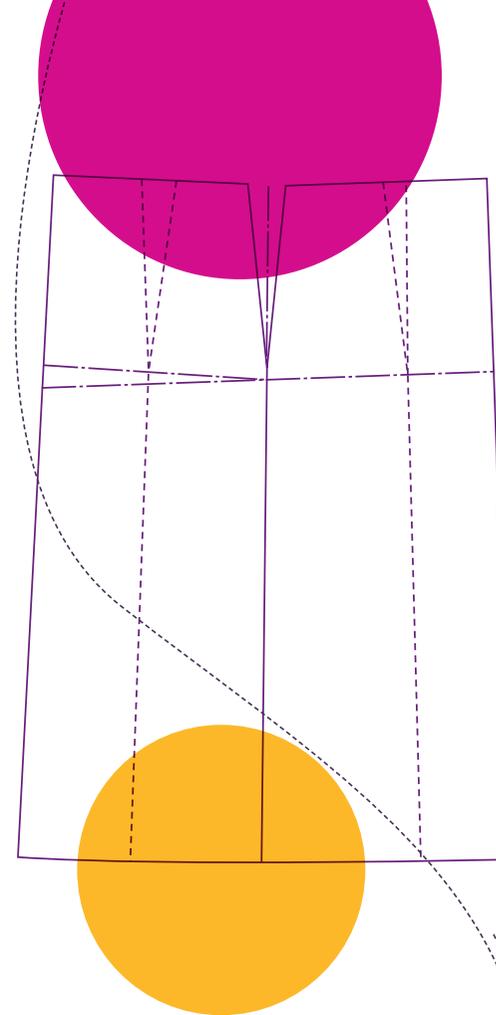
Whatever other technologies are deployed it is clear that ICT will continue to play a vital role in our economy and the way the fashion industry operates. For example, in the US alone, internet transactions are expected to reach \$334 billion by 2012, up from \$204 billion in 2008.²⁵

Consumer acceptance of sustainable consumption

In developed countries, consumer awareness of organic and Fairtrade food, ethical clothing, eco-detergents, car-sharing and so on is higher now than it ever has been. And yet it is not, by any means, mainstream. Neither is it becoming more desirable than the 'American Dream' for those who aspire to a better standard of living.

We now know that consumer behaviour plays a major part in the sustainability of fashion, for example in the amount of energy used in clothing care.²⁶ A key question for 2025 is whether global consumers will care about social and environmental factors when they buy their clothes, or just cost? People might say they are aware of an issue and intend to act accordingly, but in everyday life still make unsustainable choices. Will this 'knowledge-action gap' be just as large in 15 years? And will businesses take the opportunity to make these choices easy for consumers to make?

Some of those we interviewed have little faith in consumers making the 'right' choices, and feel it's up to businesses to take those decisions for them. We explore this in Patchwork Planet, where the world is still struggling with a fashion disposal problem. Others see a change in approach that we explore in Slow is Beautiful where the public no longer defines success by how much revenue a person or a company makes, but instead by what they are doing to change the world.



How might demographic changes affect the clothing industry?

Although demographic changes are certain, how well society copes with increasing numbers of (generally older) people is less so. This has a wide variety of implications for the clothing industry, for example: competition for diminishing resources in a crowded world (see the section on resources above); workforce diversity; and catering for and marketing to different types of global consumer.

In recent years there have been significant reductions in the differences between the clothes worn by people in different age groups in some societies. Jeans, for example, are worn by all ages. Concern about 'ageing' and improving health standards may result in older people adopting the style of a younger generation. At the other age extreme, small children are now dressing much like adults.²⁷ How this continues into the future will depend heavily on the health and wealth of older people. With pensions crises looming in many developed countries, this is a major area of uncertainty. In Techno-Chic a healthy, wealthy older population can continue consuming fashion at a fast pace. Not so in Community Couture, where our older population is less wealthy than today and prioritises spending on essentials.

In addition, each new wave of immigration has brought fresh variations in lifestyles in the West. How might increasing global flows of Asian, Middle Eastern or Latin American migrants, or climate change refugees, shape styles, culture and even body language and so clothing?

²² See for example:

<http://www.historicfutures.com/>

²³ <http://www.psfk.com/2010/01/retailers-spot-trends-through-virtual-mannequins.html>

²⁴ <http://sciencesowhat.direct.gov.uk/energy-scavenging-fashion>

²⁵ http://www.mastbusiness.com/shop_info/rs.php

²⁶ Depending on which materials clothes are made from, as much as 80 percent of the carbon footprint of clothing can be caused by its washing and care, contributing to climate change according to The streamlined life cycle assessment of textile recycling, Salvation Army and ERM, 2002.

²⁷ <http://www.fibre2fashion.com/industry-article/13/1207/the-future-of-clothing6.asp>

how we constructed the scenarios

Our research and interviews identified two headline issues shaping the future of the fashion industry which we used to frame the differences between the 2025 scenarios:

1. How connected is the world?

Connected:

Where economic globalisation has expanded further, trade barriers have been lowered, communications are more united and global cultures are more similar.

Fragmented:

Where globalisation has gone into reverse, there is more protectionism, long-distance trade is declining and regional identities are stronger.

2. How fast do society and its fashions change?

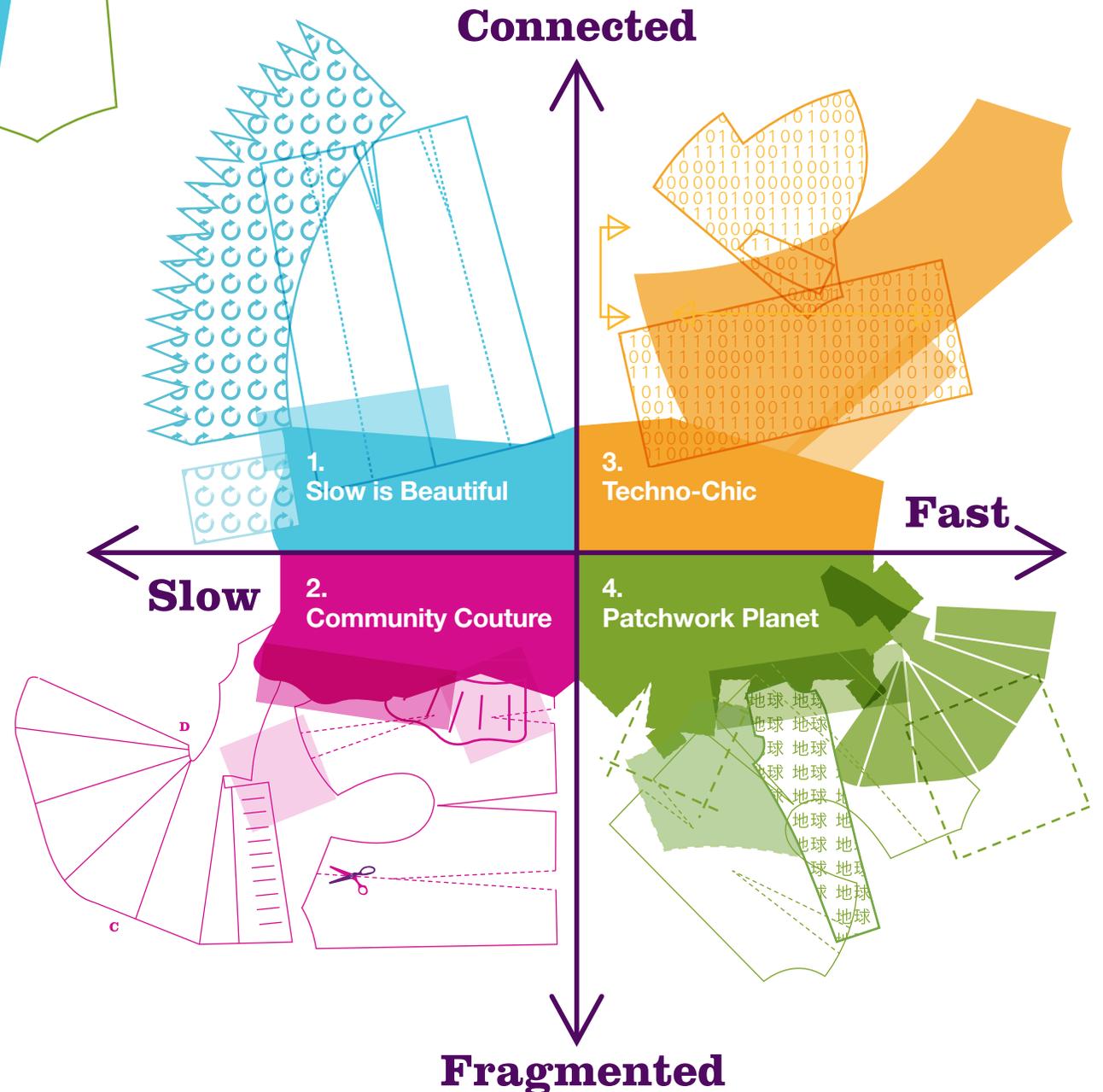
Fast:

Where the speed of change has accelerated: in media and communications; in flows of financial capital; and in the pace at which people live their lives.

Slow:

Where the rate of consumption has reversed; flows of financial capital are slower and lower; and cultures change more gradually.

The following pages describe the scenarios in detail (illustrated right).



global scenarios for 2025 scenario 1

slow is beautiful

political collaboration
and global trade in a
world where slow and
sustainable is fashionable

Timeline:

2012: Poland is put on probation by the EU after it breaks rules on building new coal-fired power plants.

2015: Bangladesh is flooded, with half the country under water; 20 million climate refugees spill over the borders into India, and population overload causes conflict. Venice is also flooded for much of 2015, large parts of the city centre are submerged; art and architectural treasures are lost and tourism grinds to a halt, costing the city millions.

2016: Under renewed leadership from the outgoing Obama administration, a global climate change agreement is signed.

2017: On the tail of that triumph, an optimistic global community revives the Doha Development Round negotiations to promote global trade. Key players agree on a trade regime that prioritises sustainable global production and sourcing.

2019: The internal conflict in India is finally brought to an end with a deal to settle a large number of Bangladeshi refugees in Canada.

2020: Uzbekistan goes bankrupt after its export cotton crop consistently fails to meet sustainability standards on the world market.

2022: H&M's "RBD" (recycled black dress) is the biggest selling fashion item of all time.

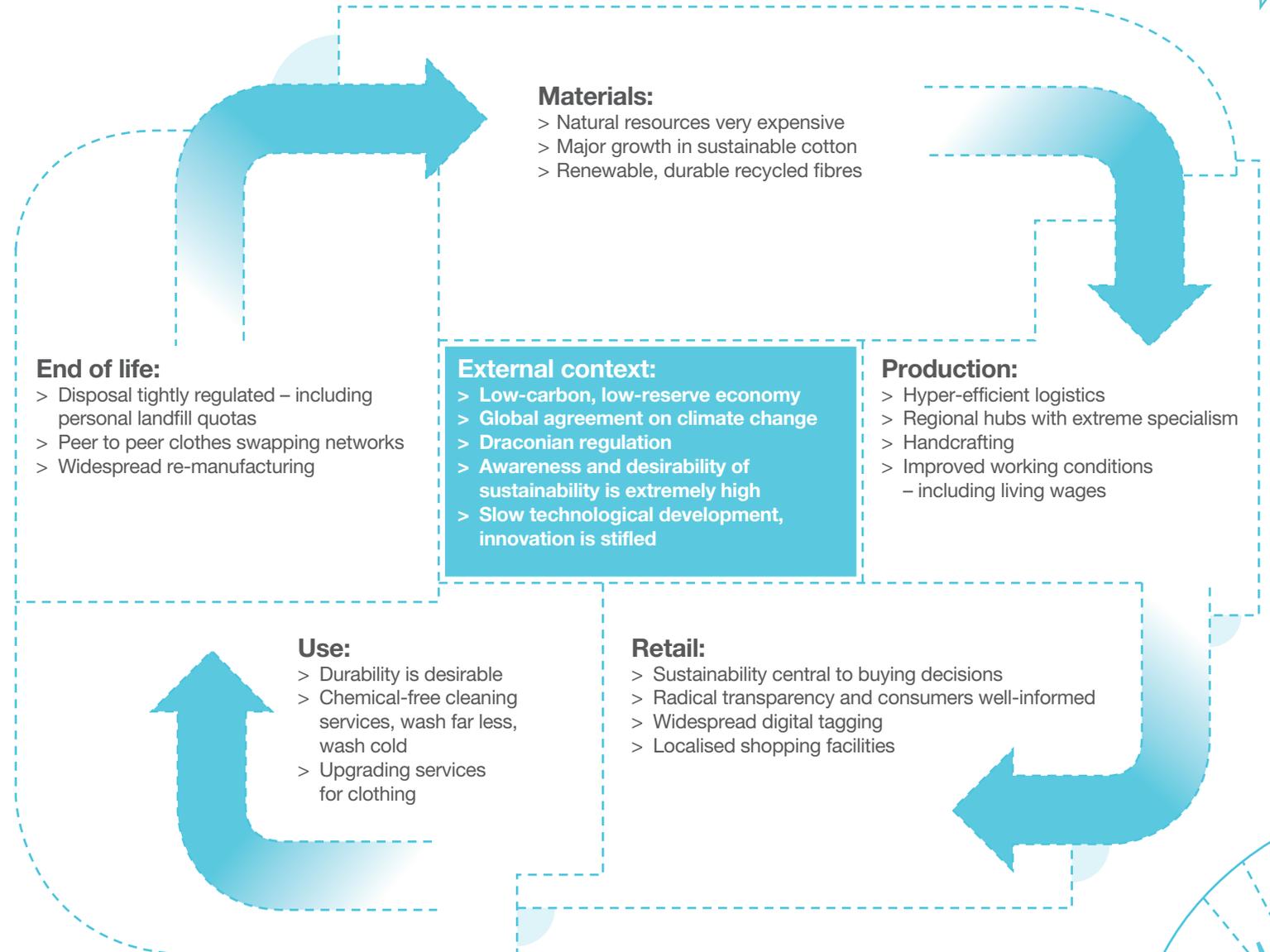
2023: Global sustainability standard SustainGrade is launched.

2024: Fairtrade label goes out of business, as does a proliferation of other sourcing and production standards.

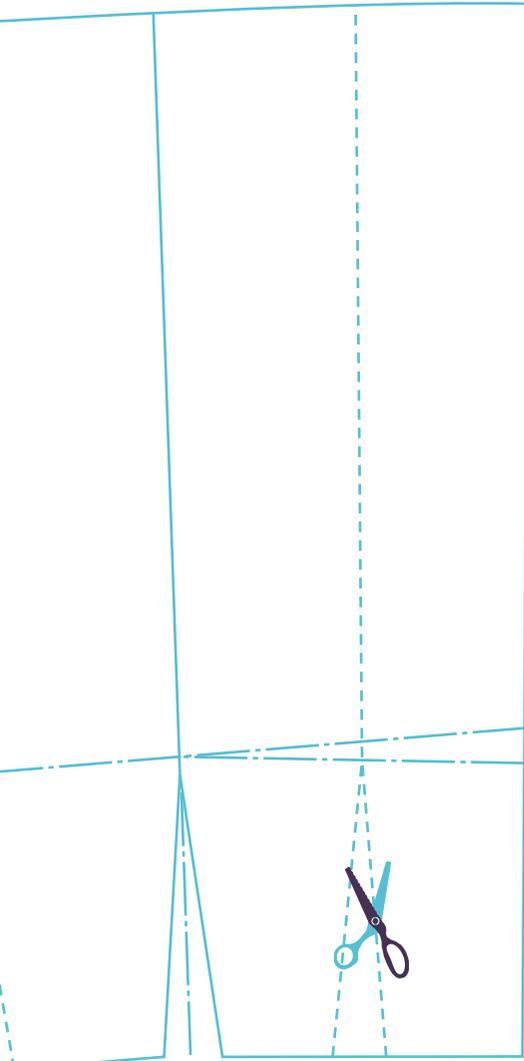
summary

This is a moralistic world of low-carbon, sustainable lifestyles and mindsets. Strict carbon regulation and sophisticated tracking and labelling mean that consumers across the world are more aware and concerned with the impacts of the clothing supply chain.

The majority of consumers are willing to pay more for a smaller number of high-quality, sustainable clothing items. The fashion industry has had to work hard, both to decarbonise, but also to shift people's perceptions of the industry, seen as inextricably linked with the rampant, frivolous consumption of the late 20th century. Although 'living wages' are now the norm for factory workers, a 'grey economy' of cheaper fashion with poor working conditions still exists.



the world in 2025 – external context



Global balance of wealth and power

The world stage is a much more equal place in 2025. Western governments continue to show leadership on many fronts, including the sustainability agenda. However, the **emerging economies of the early 21st century (China, Brazil, etc.) have now matured** and compete with each other in terms of growth and global leadership. The rivalry between China and the US is stronger than ever, but framed in different terms: the two countries are head-to-head in the new race to pioneer sustainable technology, with China leading in certain areas, such as wind power and electric vehicles.

By 2025, the world's economy is firmly on its way to a **low-carbon, low-resource economic path** as a result of new sustainability rules brought in by the 2016 global climate change agreement. New rules affect the fashion industry in a number of ways, for example, via a levy charged on the intensive production of clothing considered too harmful to the environment. The many countries which prepared early, profit from these measures; Sri Lanka, for example, resolved to compete on the basis that its production was ethical and sustainable, not just cheap,²⁸ and has seen its investment in 'eco factories' pay dividends. Other, less prepared, emerging economies have been hit hard causing rises in unemployment. These nations come to view the sustainability rules as just another trade barrier set in the way of their economic development. However, many low-income countries actually benefit, because their environmental footprints are so small that it is easy to adapt.

Policy direction

The delay in reaching a global climate change agreement has forced national governments to raise their game on carbon targets rapidly, resulting in draconian regulation. Consumers in many countries now have tight **personal carbon allowances**, and consume significantly less as a result. Education on sustainability has become a mandatory and extensive part of the school curriculum in many countries.

National policy priorities for science and technology research are geared at improving environmental footprints: all new technology has to pass the 'Carbon, Energy and Resources test'. However, technology is not seen as a panacea because of a number of high-profile failures. A widely publicised case of nanotech poisoning in a Chinese garment factory has led to **tight regulation of nanotechnology**, which is no longer common in clothing manufacturing processes.

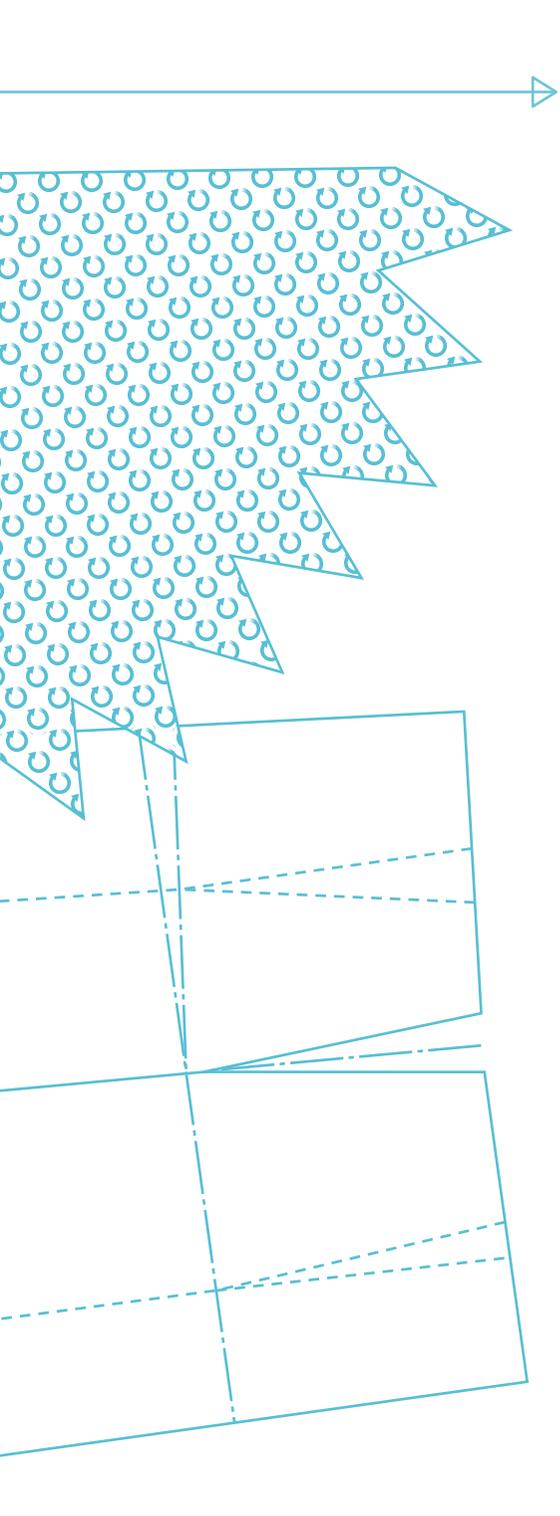
Products deemed to be too unsustainable, such as gas-guzzling light trucks and SUVs, have been banned in most countries around the world.

Response to climate change

Countries have had to take **stringent measures** in order to cut carbon and to adapt to a world increasingly stressed by the impacts of climate change. Societies the world over have to adjust to new rules rapidly and painfully. There are some 'rogue' states which did not sign up to the global climate change agreement, but the reshaping of world markets and trade rules has forced them to comply eventually in order to remain competitive.

By 2025, billions of people have transitioned to low-carbon, sustainable lifestyles and mindsets. The world is still struggling with climate change impacts, but the global climate change agreement has created a much stronger framework for development. All countries set aside a percentage of annual budgets for adaptation to climate change and significant funding is provided to help low-income countries. **Climate change refugees** transfer fashion influences across the world. Climate insurance is a mainstream product, and agrochemical companies focus almost exclusively on climate resistant crop development.

²⁸ <http://www.jaafsl.com/>



Consumer behaviour

The consumers of 2025 have had to make lifestyle sacrifices which, after some initial backlash, have resulted in significant behavioural shifts. For example, consumers have switched on to **slow fashion** the way that they once did with slow food – it is increasingly popular to choose ‘organic and local’ – and there is a trend towards lower overall levels of consumption. Unsustainable behaviour is now viewed in much the same way as smoking and alcohol abuse was in the early years of the 21st century.

Sustainable consumption has unique flavours in different countries around the world, but is building momentum as a trend across all key global economies. In Europe, Russia and the US consumers are using clothing as another manifestation of the search for health and wellbeing (see clothing use below). In Japan, restored **‘heirloom clothes’ from parents and grandparents** are a big hit, as people try to live more sustainably while still maintaining the distinctive, high-fashion look the country is known for. In Brazil ostentatious clothing reuse is all the rage.

Technological development for the sake of it (gaming, etc) is viewed as perverse and contrary to slower, more spiritual lifestyles. Technology is desirable if it is channelled towards more sustainable, healthy lifestyles.

Consumers are also extremely savvy about potential ‘greenwash’, and although trust in business is on the whole high, companies work hard to earn it. Retailers are expected to support sustainable lifestyles by offering customers minimally packaged products and waste management services.

Business landscape

Governments have created the regulatory framework that provides incentives for companies to make the shift to low-carbon, low-resource use business models. This drove a **new direction for innovation in industry**, albeit at a slower pace, and the cost of carbon and natural resources has been internalised into all business activities. Sustainable goods and services are now the expected standard.

Companies quickest to adapt have been the most successful, while those which assumed endless supplies of cheap inputs have suffered. There have been a number of high-profile buyouts as the global winners snap up the assets of the losers.

The fashion industry has had to work particularly hard, both to decarbonise, but also shift people’s perceptions that it is inextricably linked with the rampant, frivolous consumption of the late 20th century. Today, the fashion industry is credited with making sustainability fashionable.

the clothing supply chain in 2025

Materials

Raw materials are expensive, as a result of shortages and regulatory constraints. Cotton is a premium commodity and there has been a huge growth in **SustainGrade cotton**, because high fuel costs have made agrichemicals expensive.

Africa has become the go-to source of sustainable raw materials for the clothing industry thanks to its low-impact (and so low-cost) methods for growing and cultivating crops. African cotton-producing countries develop highly lucrative production hubs, lifting many out of poverty. Mali, for example, has switched entirely to producing sustainable cotton because this has become more profitable. An industry focus on water efficiency and innovative water management has also paid dividends.

Nonetheless, the supply of organic cotton is not big enough to satisfy the needs of the whole industry. Wool is marketed as a more hygienic,²⁹ natural, renewable, recyclable and durable fabric than synthetic alternatives like polyester. The innovation and use of **renewable, durable and recycled fibres** is a priority for the industry: sustainable man-made materials such as Tencel³⁰ and Ingeo³¹ are widely used. However, genetic modification is illegal, except when it is used for life-saving climate adaptation, such as growing heat resistant crops in Africa.

A switch by many to a lower-carbon, vegetarian diet, combined with strict animal welfare standards and a ban on leather that is not a by-product of the meat industry, mean a hike in price for leather clothing and accessories.

Design and production

Old ways of design and production have been re-evaluated. This is a world of 'appropriate technology' and **hyper-efficient logistics** with high-tech systems – like Web 3.0 RFID – allowing real-time tracking of products: for example, logistics companies sell off spare space on long-haul shipping through auctions.

Supply chains remain long but have slowed down in line with lower levels of consumption. This slow-down is partly offset by more **efficient regional hubs** for different stages of production (weaving is done in India, sewing in China, and so on). There has been a resurgence of handcrafting because consumers value energy-efficient, small-scale production. Local is popular, but SustainGrade labelling reveals that it is not always the best choice in terms of sustainability impacts.

Working conditions have improved in key markets because consumers have come to expect a baseline of fair labour standards. All of Asia's governments, for example, have adopted **'living wage' policies**. However, there are still areas of 'grey economy' low-cost production that pay less attention to labour standards, driven by continued demand from some parts of the developing world for low-cost garments, and from certain consumer segments in the developed world which refuse to conform to the new, green world order.

Retail

Sustainability is central to the buying decisions of consumers. It has **redefined the concept of luxury**, and consumers vie to have the most sustainable wardrobe, rather than high quantities of clothing or big brand names.

Haute couture houses lead the pack in promoting sustainable consumption. Iconic fashion labels provide seminars on responsible purchasing, care and redesign at fashion week events. **High street brands now compete on sustainability credentials**, not just price. They view this as an opportunity both to show leadership and to capitalise on sustainable consumption trends, which have led consumers to veer away from cheap, disposable mass production.

Controversially, some brands have started charging more for large sizes because of the high cost of materials. This sparked a heated ethical debate but was eventually approved in most markets, because this **moralising society** chooses to reward healthier, more sustainable lifestyles.

To satisfy the desire for seasonal fashion trends, which are harder to indulge in a world of slower consumption, people turn to **high-quality vintage clothing**: vBay is the new, hugely popular vintage-dedicated eBay spin-off. Accessories are also extremely popular, and used to dress up the long-lasting classics on which most consumers base their wardrobe. Jeans have continued to be a staple clothing item, although material scarcity has made them more expensive. Garments are no longer 'distressed' and varied colours are now provided by naturally coloured cotton.

²⁹ Wool contains Amino Acids which actually break down bacteria.

³⁰ Tencel is biodegradable.

³¹ Ingeo is made of renewable resources.



Radical transparency is expected from big brands because of the premium placed on eco-production. Retailers are using tools such as **digital tagging** – which allows for complete traceability – and are connecting consumers directly with producers. When purchasing an item of clothing you can see who has made it simply by scanning the tag with your mobile, and get in touch with the producer directly via webcam to find out more about production methods, get advice on care, and so on.

Because of restricted personal mobility, urban planning and retail formats have changed: consumers' carbon budgets no longer allow for long commutes to suburban malls so **shops have gradually relocated back to the city centre**, and are typically composed of smaller retail spaces in prime locations with separate stock rooms, which transport goods only when they are needed. There are more niche, 'straight from producer' stores on the high street as well.



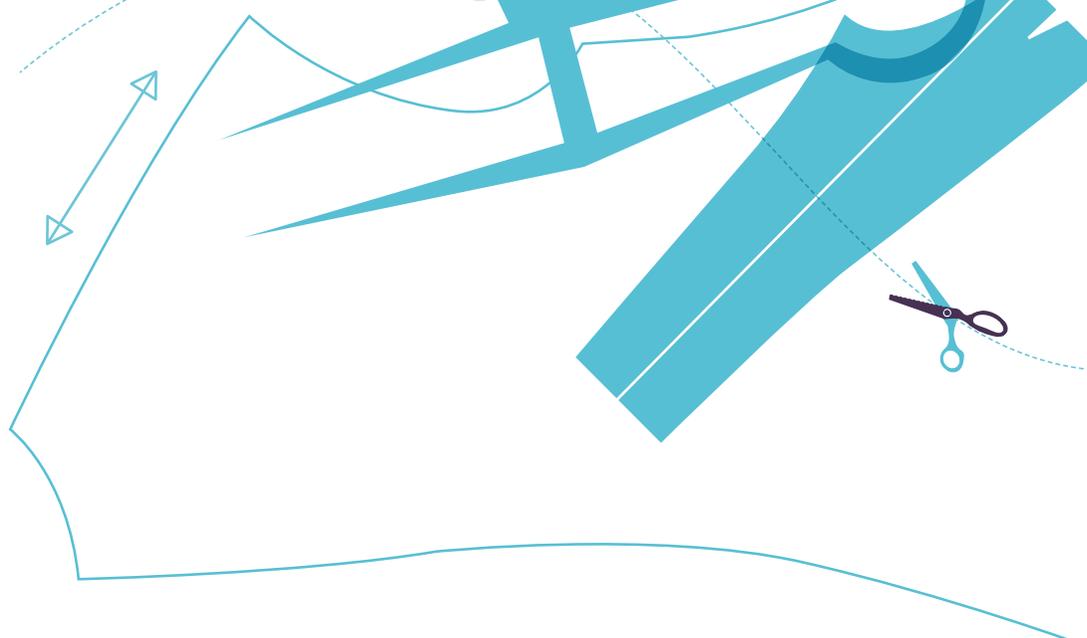
Use and clothing care

Consumers are no longer willing or able to spend their carbon budgets on washing and drying clothes. **Durability has become desirable**. Consumers seek high-quality, longer-lasting fashion and wash clothes less frequently. High-profile government supported campaigns to 'wash less, wash cold' have been very successful. Campaigns showed consumers what they could spend their carbon savings on instead.

Many chemicals deemed too damaging to the environment have been phased out from detergents. **Sustainable cleaning products are mainstream**, including chemical-free fabric fresheners and 'spot' cleaning kits to limit the need for washing.

Brands go to great lengths to build and maintain two-way relationships with their customers, aiming to find out how long clothes last, how often they need to be washed, and to advise when they should be returned into the cycle of re-use and re-manufacture. There has also been an upsurge in **entrepreneurial activities around reuse and durability**, including companies pioneering more durable synthetic materials, and a rise in mending and upgrading services for clothing. Some retailers have even begun offering their own 'chemical-free' cleaning services for clothes bought from their stores.

Another key trend is the changing functionality of clothing: consumers wear **'smart' clothes** with built-in heart rate and body temperature monitors to protect them from disease and enhance their fitness. This trend has seen the clothing industry face competition from new quarters such as pharmaceutical companies, as well as a series of interesting mergers.



End of life

Simply throwing clothes away is frowned upon. There is a lot more user responsibility legislation around disposal: in many countries, **exceeding landfill quotas is a punishable offence**. Blends of fabric have been strictly limited to aid recycling.

Charity shops and clothes-swapping have become trends in lower-income markets which find it harder to afford new, high-end durables. Big brands have also lost some market share in these places to **online peer-to-peer swapping networks**, for example, as well as to new competitors from the cleaning and care space, which use their knowledge to reclaim, refurbish and re-brand second-hand clothes. One of the exceptions to this is China, where the belief that wearing used clothing could bring bad luck persists, and the newly affluent Chinese are ready to spend a little extra for brand new, long-lasting clothing staples.

Regions have evolved their own **extreme specialisms** that add value to a particular part in the supply chain. For example, hyper-efficient take-back systems have gone from being a niche industry in Japan to a huge industry that has revitalised the country's economy and created a new source of competitive advantage. Used clothing is shipped in from all corners of the globe, collected by retailers directly from their customers so it can be made back into new clothes.

Many countries which used to protect their industries by restricting imports of recycled garments have now lifted that ban and are making a killing on **'refurbished' clothing**. India and Nigeria have both managed to maintain a large proportion of small businesses in their economies in this way: micro-entrepreneurs such as scrap collectors have adapted and diversified their services to focus on upgrading for resale and recycling in the global marketplace. Trade rules have adapted dramatically to make the sale of recycled clothing much easier.

Scenario 1: Slow is Beautiful

reducing and regulating carbon

Kathryn Wakeling with Beth Evans

The scenarios are designed as a tool to help organisations road-test their existing ideas, identify new opportunities and plan for the future. By picturing how their organisation would respond to the world of each scenario, they can develop resilient strategies, products and services which can adapt to whatever the future may bring.

We challenged students from the London College of Fashion to come up with ideas for products and services that would succeed in each scenario. This page features illustrations and descriptions of one of these concepts by students from the 2009 MA Fashion and the Environment course.



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In the scenario Slow is Beautiful there are strict climate change agreements which impact heavily on the lives of people in many countries through enforced carbon restrictions. Our team decided to explore how such regulation might be organised and how it would relate to the fashion industry and its consumers.

We came up with the idea of a carbon allowance system run by an 'International Bureau of Carbon Dioxide Reduction' (IBCDR) that enforces carbon restrictions on both countries and individuals, but which also allows states and people to trade their allocations.

Consumers purchase clothes and other goods using an IBCDR ID card or account that carries personal information, including bank and carbon allowance account details, as well as scanned-in body measurements for use by clothing suppliers.

Left
The global database search function connects people directly with a range of different service providers who offer mending, enhancing and restyling services to consumers worldwide.



As well as controlling the flow of 'carbon points', the IBCDR's website helps people to reuse and modify their valuable disused clothes, connecting consumers to a wide-ranging network of resources which includes tailors, bloggers and clothing exchanges.

Slow is Beautiful also mentions eco-labelling and the idea of transparent supply chains. We looked at labelling that is currently in the market place such as the 'squiggly square' and the use of radio frequency transmitters. By 2025 we anticipate this technology will have evolved and labels could be used to track the life of every garment.



Above
An interactive 'Archive' contains photographs of all of your clothing along with the history of each piece.

Below
This database allows people to monitor their carbon expenditure.



global scenarios for 2025 scenario 2

community couture

resource crises constrain
consumption in a local
community-focused world



Timeline:

2012: Following years of negotiations, world leaders announce that they have failed to reach a legally-binding climate deal.

2014: Oil reaches \$300 a barrel for the first (but not last) time in history.

2016: China's 'South-to-North Water Transfer Project' diverting water from the Yangtze to the Yellow River is abandoned; \$33 billion has already been spent on the project and 100,000 people displaced. Lack of water disrupts production in factories across China.

2017: High oil, energy and labour costs push the price of the average cotton T-shirt to \$100.

2018: A year of unprecedented climate change devastation: millions die in heat waves across Europe; prolonged drought in Africa leads to widespread crop failure and overwhelms the international aid community; the most ferocious bush fires ever seen in Australia prompt a national state of emergency; and flooding disrupts the Football World Cup. Many shipping routes are disrupted by unprecedented storms.

2019: India develops the 'LowFlow' community model for self-sufficiency, which is quickly replicated in communities across the globe.

2020: A major clothing discount hypermarket stops selling new clothing and launches 'LikeNu' clothing ranges instead made from restyled, upgraded second-hand goods and limited ranges of remanufactured pieces.

2021: There is national soul-searching in Brazil after the stabbing of a pensioner with a stiletto at a Swishing event during a fight over a never-been-worn-before cardigan. In the same year crime statistics reveal that street crime for clothing is increasing in nine out of 10 of the world's biggest cities.

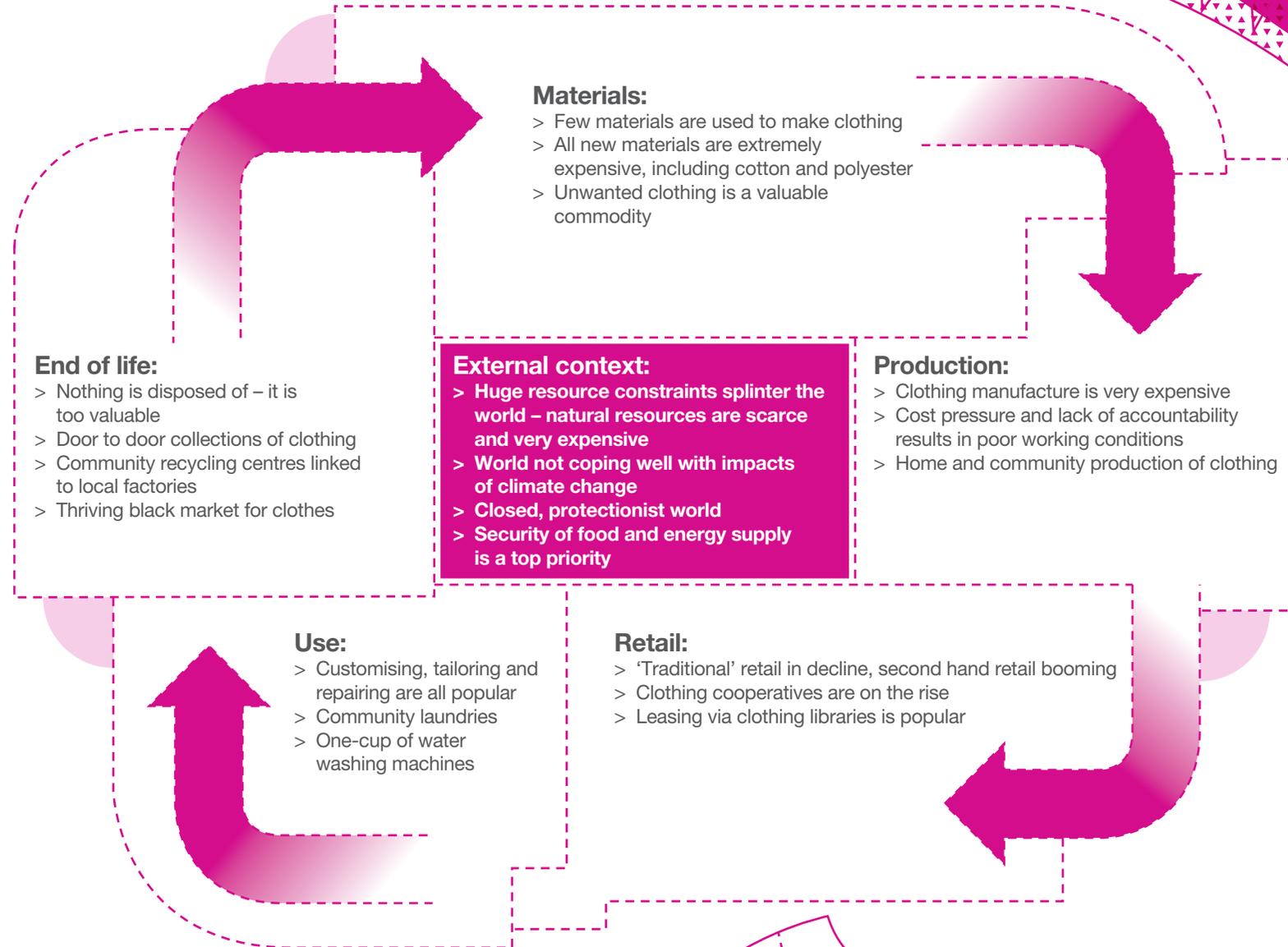
2022: A major scandal breaks out in India when clothes made from locally recycled silk are mislabelled as 'genuinely new'. Tighter certification emerges.

2023: The first community-owned clothing 'remanu-factory' opens in Ho Chi Minh City. In the same year San Francisco opens the world's largest clothing library.

2024: The Amazon rainforest has all but disappeared in the panic land grab for food and fuel. A study reveals it has reduced to 7% of its size in 2010.

summary

Self-sufficient communities thrive in a world struggling to cope with the strain of growing populations and resource shortages. Very high costs of raw materials and disrupted supply chains have resulted in a dramatic fall in the production and sale of new clothing. In its place vibrant local networks of second-hand clothing have evolved: community bonds are strong and creative fashion solutions abound. That said many consumers still strongly desire 'new' clothes – now affordable only to the rich or on the black market. Clothing care is low-tech but efficient.



the world in 2025 – external context



Global balance of wealth and power

The world economy has been rocked by **astronomically high resource prices**. Over the years, a failure to coordinate protection of fresh water and agricultural land, coupled with the lack of protection against the impacts of climate change, has seen their availability dwindle and prices skyrocket. Oil has also seen a series of sharp, unpredictable spikes and investment in renewable energy has been patchy. These problems have been compounded by runaway consumption and growing populations: after the 2009–2012 global recession, people around the world resumed their old habits and the following decade saw a rollercoaster ride of high consumption followed by recessionary slumps. Triggers included crop failures in Africa and energy blackouts across Europe.

These problems have devastated economies across the globe. For example, China's growth has been severely hampered by a **crippling water crisis**. Severe drought, along with other policy failures, has led to increasing civil unrest across large parts of the country.

By 2025, **China can no longer be relied upon to be the 'world's clothing factory'** – and with resource shortages across Asia, Africa and Central America, no other economy has been able to produce enough to take its place or to secure reliable supply routes across increasingly stormy seas.

The 'middle classes' worldwide have less disposable income than in 2010. They are likely to prioritise spending on feeding their families, heating their homes and transport, **leaving less money available to spend on fashion**. Growing numbers of pensioners are facing poverty due to unresolved pension crises, particularly in Japan and Europe where populations are ageing and shrinking rapidly. There is also a growing divide between the rich, who can still afford to buy new clothes, and the poor who cannot.

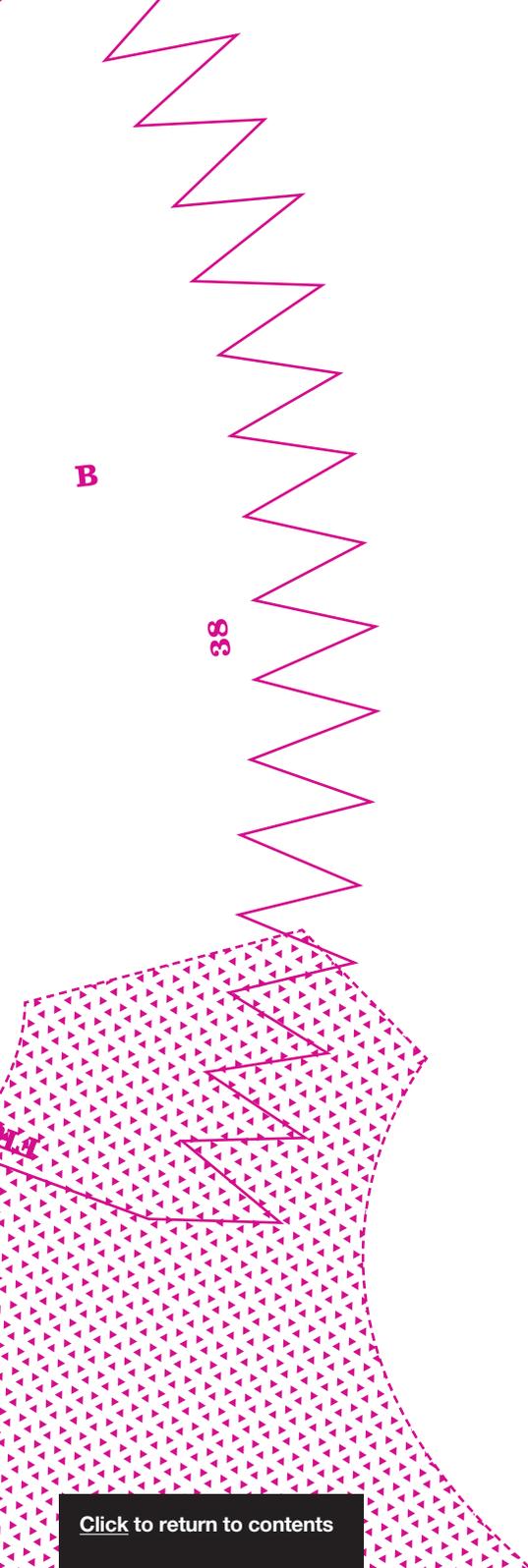
Policy direction

In 2025 **security of food and energy supply is a top priority** for countries – not international trade. As a result regional alliances have formed or strengthened in protectionist blocks. The world has become more closed, with tit-for-tat protectionism and high trade barriers. Clothing companies face unprecedented levels of bureaucracy, quotas and trade laws that are increasingly difficult to keep on top of.

In an uncertain, fearful world people are increasingly finding security and solace in their local community, often encouraged by government-led programmes. Many **communities strive for self-sufficiency** to take care of their own. Energy, food and waste needs are solved through communal investment and solutions. For example, community-based renewable energy production has been rolled out across most nations as a matter of national security. Out of necessity new forms of community living have evolved in the West: co-housing projects and government-subsidised community cooking clubs foster sharing and wellbeing, as well as saving time, money and energy.

In some regions conflict over resource shortages has escalated into civil war, and **clothing is rationed** along with essential food supplies. Other communities have seen a revival of uniforms, not only in workplaces, but worn daily to reinforce bonds with the local community.





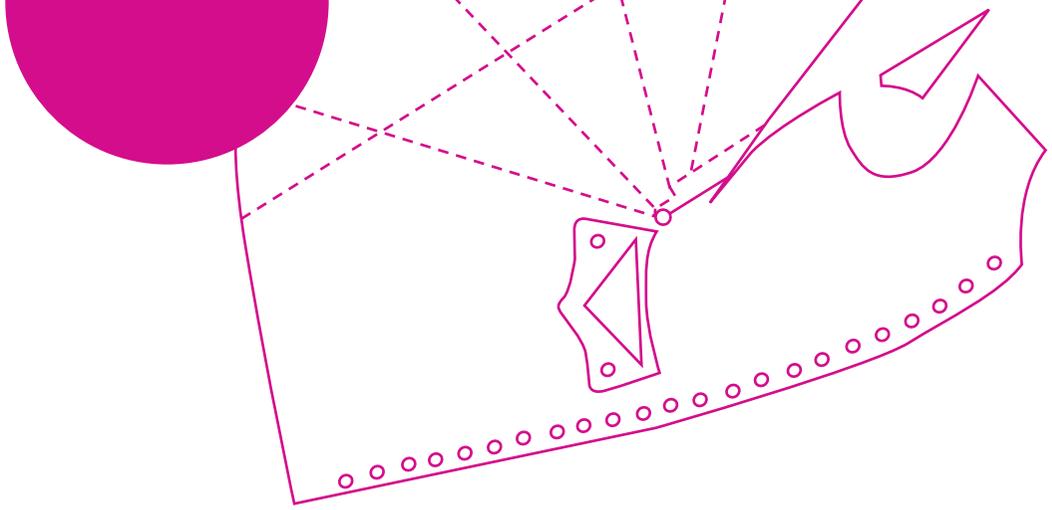
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Response to climate change

All attempts at creating **global agreements on climate change have failed** – scuppered over the years by short-sighted business lobbying coupled with a failure of political leadership. There has been a sustained lack of investment into research and development into climate change adaptation and emissions reductions. Where national or regional targets were agreed, they were invariably missed. The EU has tried many times to issue sanctions against the ‘rogue climate states’ that make no attempt to curb emissions – to little effect. This has led to further defiance, suspicion and protectionism.

As a result an **unprepared world** is struggling to cope with the impacts of climate change, and drought, desertification, extreme weather events and flooding are devastating farmland. These impacts, and the associated conflict over resources, severely limit the availability of raw materials for clothing and disrupt distribution across supply chains, which have shrunk in response.



Consumer behaviour

The very high price of essential resources plus the costs associated with high trade barriers and erratic supply chains, mean new clothes are much more expensive than in 2010 and the fashion industry has been forced to accept a slower pace. Consumers in many regions have found it hard to accept that they do not have a ‘right’ to cheap new clothing. Despite the availability of second-hand clothing, people still strongly desire ‘new’ clothes, which are now only affordable for most people on the black market. **Only the rich can afford anything made from certified ‘new’ materials**, which attract a price premium. There is little regard or concern for the sustainability of clothing.

Business landscape

The fashion industry is highly entrepreneurial and focused around keeping costs down and **reusing clothing** rather than creating new pieces. A small number of businesses compete fiercely for the luxury high-end market.

Many blame business and governments for the state of the planet, and a general lack of trust has been building over the years. However, some companies have been able to turn around their image by offering services governments are no longer able to provide due to the focus on the urgent issue of food and energy security. **Successful businesses form strong bonds with local communities.** ‘Job security’ takes on a whole new meaning – with business supplying employees from the local community with extra food, the best education for their children and a reliable energy supply.

the clothing supply chain in 2025

Materials

In 2025, **few raw materials are used** to make new clothing apart from luxury items, due to their high cost. Very few virgin synthetics are used either: lack of oil availability and very high energy prices have pushed up the price of virgin polyester. The cost of energy and water-intensive dyeing processes means the choice of colours for new clothes is also limited. Certifying materials as new is costly and onerous.

Cotton prices are also high, as many farmers have taken advantage of subsidies to switch to growing essential food, particularly in the US. **Genetic Modification (GM) has become widely accepted** as a route to food security. The guidelines for 'organic' cotton were recently changed to include GM cotton that is grown pesticide-free.

Hemp is grown everywhere, also supported by government subsidies because of its multiple uses: communities grow it in their gardens, across common park land and in 'urban farms', pooling supplies to use for clothing, fuel, food and in building materials. Nothing is wasted from animals: breeds that produce quality meat as well as leather, wool or fur are also prized community assets.

As clothing becomes more expensive to make from scratch, the vast amount of what was once **'unwanted' clothing has quickly become a valuable commodity**. Thrift stores and charity shops have made a windfall. That said, clothing waste from the early 2000s is less valuable due to its poor quality – most of it simply hasn't lasted.

Design and production

High production costs and resource shortages mean the **fashion industry has shrunk dramatically** and economies which once relied on it have been badly hit. For example, China's water crisis had a huge impact on both clothing manufacture and clothes dyeing, still heavily reliant on water availability. There is a huge, somewhat belated, effort underway to reduce resource use along the whole clothing supply chain. Costs are now so high it makes good business sense to use less.

Second-hand clothing is now big business.

Some factories have managed to survive by focusing on remanufacture, rather than creating new raw materials from scratch. That said, the global clothing remanufacture industry has also been hit by disruption to supply chains. Where possible these industries have localised and some are now community-owned and run. Regional recycling centres link to nearby factories that make new clothes out of recycled fabric. There has also been a revival in home and community production of clothing (see Use and clothing care).

Factories that do still manufacture clothing from raw materials require extra security. This year armed criminal gangs raided factories in Egypt and sold their supplies of organic cotton on the black market to the highest bidder.

Power shortages constantly disrupt production. Manufacturers which have invested in renewables to secure their energy supply are the preferred suppliers of those retailers that remain in business. In Sri Lanka, industry has invested vast amounts of money in developing **closed-loop water manufacturing** which uses a fraction of the water of traditional processes. With new materials so costly there has also been heavy investment in 'no-waste' pattern-cutting technology and design. There are glimmers of hope that, regionally at least, the manufacturing industry can begin to grow again.

Delivering affordable clothing is a top priority. Clothing manufacturers that remain in business focus on cost-effective efficiency and security in their shorter supply chains. This cost pressure, along with a lack of accountability and information (a particular issue for black market-run factories for 'new' clothing) means that **working conditions are worsening** in many factories.

Retail

Mainstream retail models have evolved dramatically and **focus on providing a clothing service**. For example, a variety of 'clothing libraries' and clothes swapping services have opened up with garments available to rent, use and return. Similar to retail shopping there are various 'hierarchies' of libraries and services available: haute couture (exclusive members only); vintage (often categorised by decade); jeansware; and sneak[er] peak, to name but a few. All libraries are attached to or contracted with a 'better-than-new' clothing renewal service. Several retailers have joined forces to develop a 'pre-loved' label. It's a mark that aims to give consumers confidence that they are purchasing premium second hand (or refurbished) clothing.

Enormous second-hand clothing markets have sprung up where traditional clothing malls of the 2010s have closed down. Vibrant networks of mini-enterprises have formed around them; there's always someone immediately available to mend, customise or repair the items that catch people's eye but don't quite fit, or stylists on hand to update a look. When the weather changes rapidly entrepreneurial street vendors are on hand to sell you what you need, be it an umbrella or a sun hat.

Clothing cooperatives are on the rise, as people club together and buy collectively to save costs. Retailers find it harder to talk to the consumer through traditional means. Companies work to promote **word-of-mouth recommendations** through social and community networks; 'traditional' advertising is considered a less effective method of communication.

Any retail outlets that stock 'new' clothing (clothing made from new, not remanufactured materials) need **maximum security** and have armed security guards as standard.

Use and clothing care

It is once again less expensive to make clothing at home than it is to buy ready-made clothing. **Mending and making clothes has seen a huge revival**. All children leave formal education able to do their own basic mending and most households own a sewing machine. Those without the time take clothing to mending workshops in community centres. Student subculture revolve around how kids choose to customise their uniforms. The most fashionable, well-dressed consumers are found in the developing countries which were once centres of clothing production, where former sewing machine operators are putting their skills to use.

Only the relatively wealthy can afford a washing machine because of the high energy and water costs. 'One cup' (of water) washing machines, which use recycled nylon 'super-pellets' in place of detergents, have been developed, but they are expensive and considered a luxury item. Most take their clothes to **community laundries** and catch up with friends or take evening classes while they wait.

Because of high energy prices, clothes that create their own energy are increasingly popular. Solar cells can be fitted onto jackets to power mobile phones and a popular sporting range of clothing includes a gadget that can be sewn into jogging bottoms to convert and store kinetic energy from running into electricity.

End of life

Nothing is disposed of – second-hand clothing is far too valuable. Some people sell their second-hand clothing to boost their income when times are tough. A black market in clothing is rife in many parts of the world. In many regions of the US, for example, organised criminal gangs coordinate bogus door-to-door collectors who trick people out of their used clothing, some using force. Throughout the world communities are finding innovative new ways to customise their clothing, extend its life and remain fashionable, despite the challenges. In the face of adversity the creativity of the human spirit is being unleashed.

Scenario 2: Community Couture

swap shop

Zoe Fletcher, Saida Bruce,
Ivan Dauriz, Katie Ledger,
Xiaogeng Sun and Aiman Sabri

The scenarios are designed as a tool to help organisations road-test their existing ideas, identify new opportunities and plan for the future. By picturing how their organisation would respond to the world of each scenario, they can develop resilient strategies, products and services which can adapt to whatever the future may bring.

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In the fragmented world of Community Couture large cities develop small sub-communities that focus on livelihood and direct needs. The older generation – having lived in the fast-paced world of ‘now’, with its lack of regard for resources – will still retain a strong desire for new products, or at least the feeling of new products.

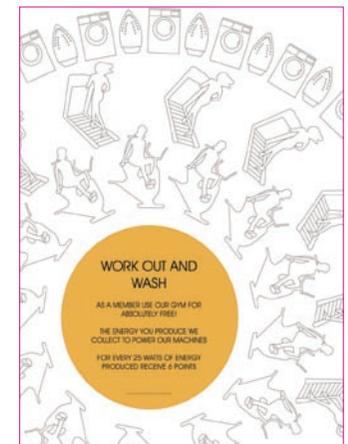
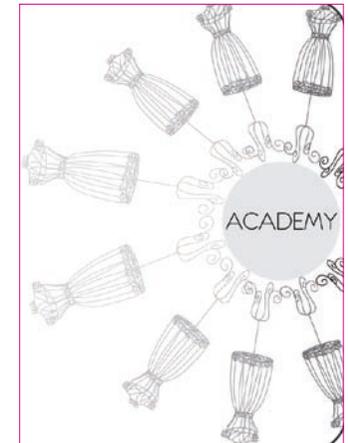
Our idea – SwapShop – serves this market for a retail experience but evolves the current high-street store model to meet the needs of the 2025 consumer where second-hand clothes are a precious resource.

SwapShop is a retail clothing library with an onsite laundry and alterations service that encourages customers to ‘Re-style’, ‘Re-make’ and ‘Re-care’ their own clothes, earning points they can spend in-store. Like a book-lending library, customers join SwapShop but can also participate in and learn about all activities of the business. The membership system, the shared activities and the educational opportunities create a strong, environmentally-aware community.

SwapShop also produces its own resources and energy, making use of every available space in the building. The shop harvests energy from the onsite gym, members grow their own ‘soap’ in an orchard and also use the building’s roof to dry clothes for the onsite laundry, earning more SwapShop points.

The SwapShop Academy is designed to teach students about every area of its operation, from repairs through to design, and awarding skills and qualifications. Students can learn and preserve traditional crafts, taught in workshops by the many climate refugees that have settled in the UK. Students ‘pay’ for their lessons through points that they earn generating energy for the operation in the gym and helping out with laundry tasks.

Right
SwapShop
members can
participate in
and learn about
all activities of
the business,
earning points
they can spend
in-store.



global scenarios for 2025 scenario 3

techno-chic

high-tech systems deliver for
a speed-obsessed global shopper



Timeline:

2012: Global leaders unite to announce firm and binding regional and global legislation on climate change.

2014: Australian libertarian Bruce Tucker flies around the world in a personal jet in a highly-publicised 'Cut the Crap' campaign to end the carbon clampdown. News channels report Bruce has given a voice to 'millions' who feel their lives have been restricted by carbon-related rules and regulations. The 'Cut the Crap' campaign's 'I wear what I want' t-shirt becomes a global bestseller.

2016: Three consecutive climate change disasters in low-income countries kill over a million people; independent studies conclude that each one could have been avoided if the appropriate technology had been in place. The global humanitarian shock this induces leads to the creation of the world's largest online social network, Climate Peace, which creates a sense of global solidarity around climate change. An emergency convention in Moscow, known as 'Penitence Day', achieves a global agreement to share life-saving carbon reduction and climate change adaptation technologies. The Climate Peace campaign's 'I wear low-carbon' t-shirt become a global bestseller.

2017: China, US and India join forces and announce the investment of \$1.3 trillion in sustainable technology development.

2018: The Israeli engineer, Amira Katz, wins the Nobel Peace prize as the pioneer of large-scale, highly efficient carbon capture and storage (CCS) technology that can be retrofitted to existing carbon-intensive power stations.

2019: The first global 'virtual' fashion week is a huge success, streamed live online and in every major licensed retail outlet.

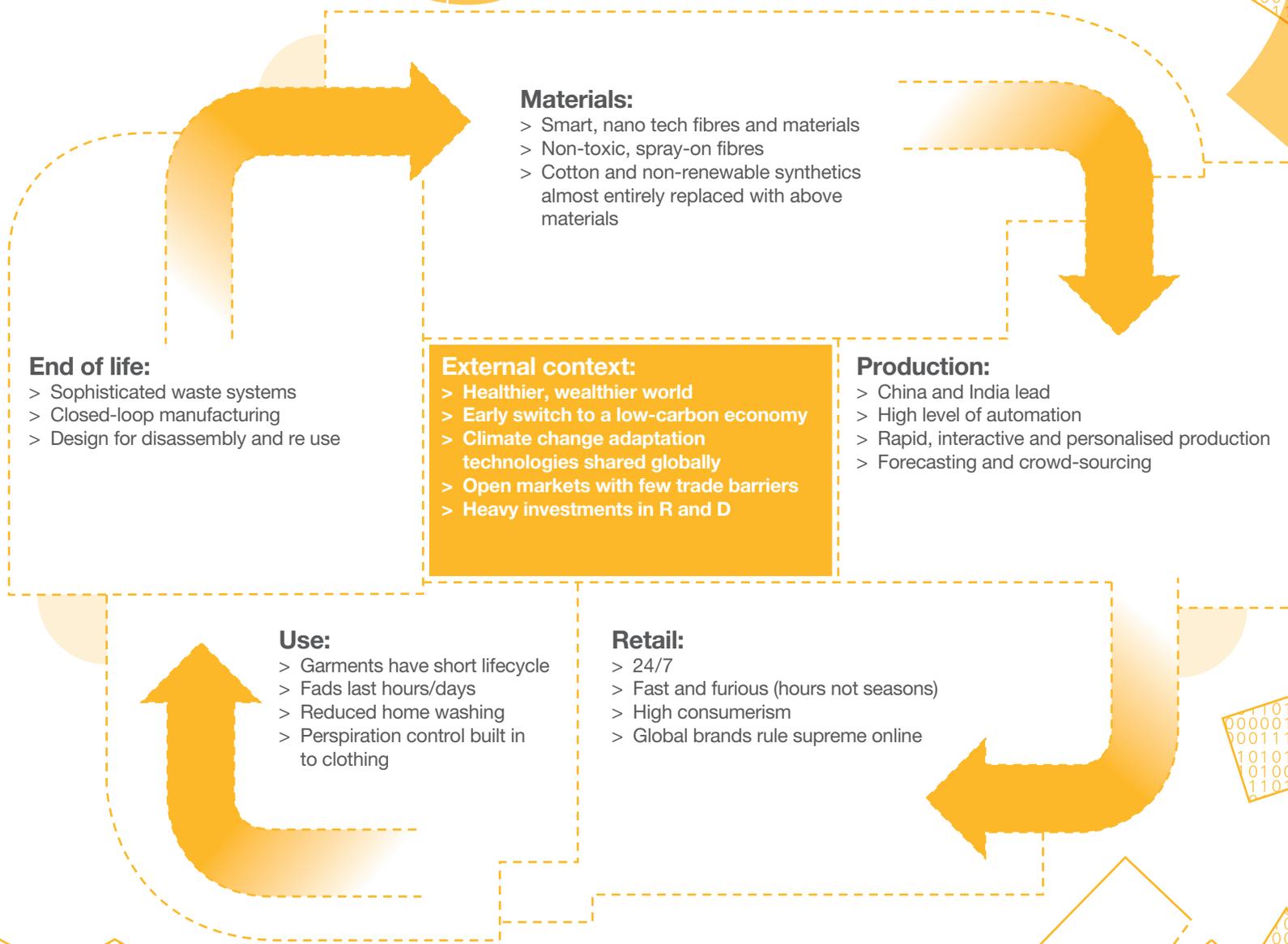
2021: MIT opens a new retail technology centre and pioneers the development of low-energy 3D scanners.

2022: Widespread introduction of robotic 'nimble fingers' technology puts countless garment workers in developing countries out of a job; hungerstrike by Indian factory workers attracts global media coverage.

2024: Fashion designer Chen Qing Yuan unveils 'mood-mimicking' clothes which change colour to reflect the wearer's mood; they become a global obsession and are replicated on the high street within days.

summary

This is a prosperous world which has benefitted from an early switch to a low-carbon economy and huge technological investment. Smart consumers are flourishing in this high-tech, open world of few trade barriers and fast-paced fashion fads. All clothing is designed for degrading, disassembly, re-manufacturing and/or reuse, supported by 'smart' solutions for low-impact clothing care and advanced recycling networks. Man-made fabrics rule the fashion markets, providing personalised, high-tech, affordable options across the globe. Massive levels of automation and sharp declines in the use of labour create pockets of crippling unemployment across economies previously reliant on clothing manufacture and production.



the world in 2025 – external context



Global balance of wealth and power

The global economy is more interconnected than ever. Growth is sustained by fast cycles of innovation which provide products and services to new markets across the world. An **early switch to a 'low-carbon economy'** based on renewable energy and a focus on 'cradle-to-cradle' models of production have enabled the economy to carry on on a fairly even keel.

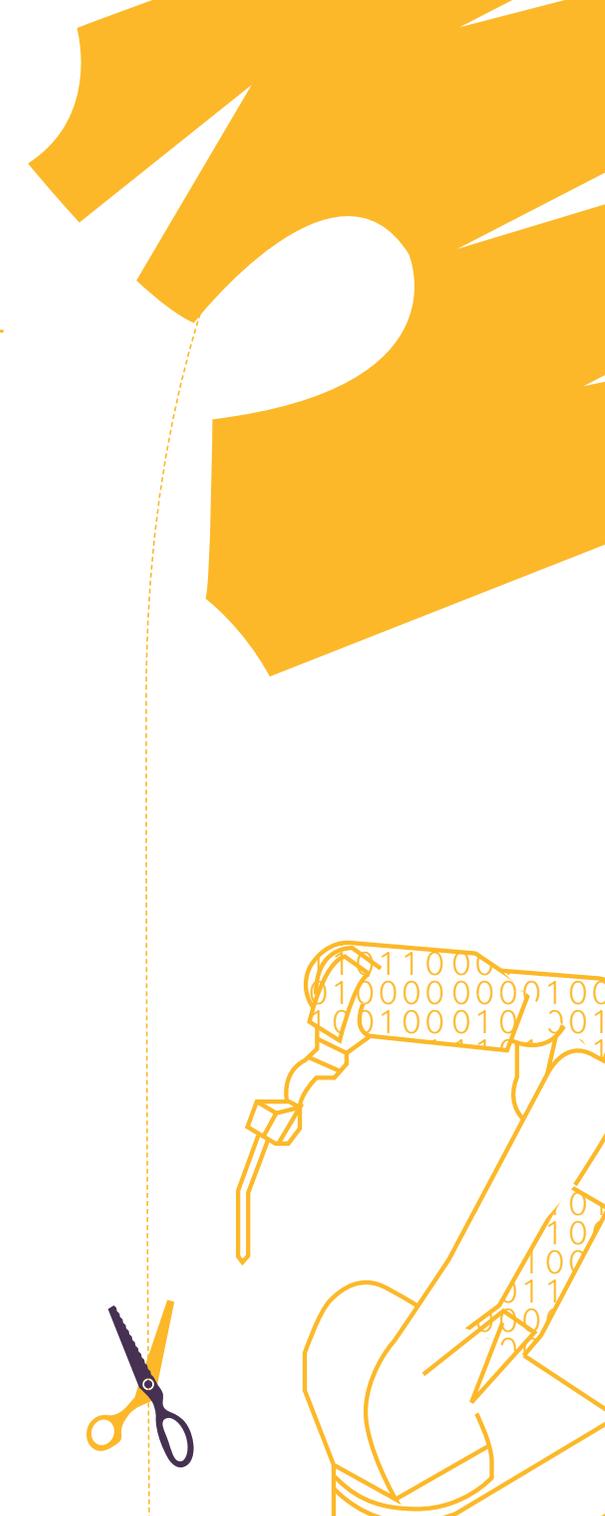
This is a healthier, better-off world compared with the turn of the century. Inequality has not been eradicated but the gap is gradually closing as middle-income economies capitalise on **'smart-tech' opportunities** and low-income countries benefit from trade mechanisms which encourage and enhance local industries and their national economies. The rise of equality between countries across the globe has led to a more even spread of disposable incomes, and a growing consumer base for fashion.

Countries unable to keep up with the tide of technology are left behind with **pockets of extreme poverty**. As urbanisation and immigration increase, populations in global megacities are growing rapidly and, despite technological advances, the cities' ability to provide good services to all is seriously limited. Blackouts and water shortages are common in hastily constructed secondary suburbs.

Policy direction

Climate change has been top of the global political agenda for almost 20 years. Technology is the driver of transformation, supported by government incentives including feed-in tariffs incentivising renewable energy and **tax breaks for low-carbon innovation**. Global agreements channel funding and resources to low-income countries for technological climate change adaptation schemes.

China and India have invested heavily in R and D and education for the creative industries as well as for smart technology and lead on many areas of innovation and manufacturing. This is a **new age of belief in technology**, where innovation appears constrained only by the imagination. It seems that wherever the challenge is greatest, the innovation is most creative.



Response to climate change

Encouraged by government incentives, there is a rich and varied energy mix across the world, with big investments in new types of energy generation and a high proportion of renewables. For example, **concentrated solar power** (CSP) generated in Northern Africa provides 6% of Europe's electricity. CSP also has a large presence in the energy mix for the Middle East and the US.

The Middle East and North Africa (MENA) region's **seawater desalination plants** run on renewable energy have expanded rapidly to meet soaring water demands and supply much of southern Europe as well. Global agreements to share life-saving technology for climate change adaptation (see timeline) have been effective and most people feel protected from the impacts of climate change, at least for the time being, in a comforting technological bubble.

Consumer behaviour

By 2025 the swirling mass of international media flows and global social networks has created a fast-paced and highly changeable world. **The growing new middle classes display a ferocious appetite for fashion consumption.**

'Green consumerism' is redundant. Low-carbon living and consuming is such a 'no-brainer' it has become the norm.

Buying and consuming experiences is increasingly popular – it is easy for people to get what they need without 'owning' it all. Ownership and materialism have gone out of fashion as new generations embrace **smart 'lightweight living'** that enables them to travel freely, switch lifestyles effortlessly and not feel tied down by belongings.

With the rapid decarbonisation of many sectors, **personal mobility is less constrained.** Pensioners enjoy travelling more than ever before and relish the opportunity to 'hot-home'³² across the globe and live for a month or two in a particular city or region. Travelling with very little is common practice, as is adopting and adapting to local fashion trends once you've arrived. Tour operators provide 'holiday wardrobe' packages that include a selection of local fashion items on your arrival – you can try on items virtually in advance and pre-select colour and styles.

This is a techno-savvy world: always on, always connected. There is, however, a small but growing backlash against the pervasiveness of technology. Many brands have a **'tech-free' label** to tap into this market. In extreme cases people reject fast-paced consumerism completely; isolated, off-network communities in Siberia have become a mecca for burnt-out individuals struggling with the constant onslaught of information.

Business landscape

This fast-paced world has presented a number of challenges for business. Protecting trademarks is tricky in the world's open-source and high-speed markets. **Many well-known brands have disappeared**, unable to adapt fast enough. Others invested heavily in technology that quickly became obsolete, and got left behind.

Brands need to use creative ways to keep an increasingly fickle consumer base loyal. In the fashion industry some use traditional financial incentives, offering discounts via networks and membership schemes. Others use style incentives with services such as **'style calendars'** (day-by-day suggestions linked to a person's activities, and coordinated with their social networks so they avoid wearing the same outfit as a friend) and 'style futures' (showing how a person's image might evolve, once they've lost weight, for example).

³² Like 'hot-desking' this describes the practice of people not owning a space, but using a network of homes to live in in different locations.

Scenario 3: Techno-Chic

the clothing supply chain in 2025

24

Materials

The search for new sources of raw materials is relentless and takes prospectors into every corner of every continent and the deepest oceans. At the same time, the world is racing to develop new processes and technologies that eliminate the need for so many raw materials. Easy availability of capital for industry investment has fostered the development of high-tech, smart materials. Many new materials are based on nano-scale engineering: nano tech fabrics have created a steadily growing niche market; new **smart fibres made from renewable sources** replace scarce natural resources to ensure that fast product turn over can keep pace with people's demands.

When textile R and D began to create man-made fibres that used less carbon and water, lasted longer and were more stain-resistant than natural fibres like cotton, it opened up a whole new area of opportunity for the fashion and clothing world. Fibres that can be used over and over again without losing quality are particularly valuable. **Biomimicry** has inspired the development of textiles that expand to trap heat when the weather is cold – and help people to adapt to a changing climate.

Distribution networks span the globe, and using 'reverse logistics' to recycle resources is standard. Valuable used material is shipped back to production locations for re-use and re-manufacture. The remanufacturing of standard clothing, such as work and school uniforms, is growing within the fashion sector, supported by **'better-than-new' clothing renewal technologies**.

Design and production

China and India control the short supply chain of fabric and clothing manufacturing: between them they have the (cheap) skills and technology to meet the clothing needs of most of the world and the fashion industry. The EU, however, still produces premium lines for high-end market buyers, many from Asia, who still look for **original heritage brands and exclusive labels**, such as 'Made in Italy'.

There is an intense focus on resource productivity in materials, manufacturing and distribution: **massive levels of automation have seen sharp declines in the use of labour** since the early 2000s factory boom. This transition has led to pockets of mass unemployment across traditional garment producing countries. UN Technology Displacement Assistance Funds have helped ease the pain for some nations, but supporting economies left behind in the technology boom remains one of society's toughest challenges.

Highly accurate means of **forecasting and 'crowd-sourcing'** demand for products helps to prevent overproduction and wastage. Customers vote online to choose which clothes should be made in which colours and pledge to buy should their choice be made. Small production teams can be mobilised locally, in cities all over the world, helping to respond to trends that create pockets of high demand in specific locations.

Retail

The importance people place on being 'in fashion' has continued to grow and styles are becoming increasingly similar and connected worldwide, thanks to web-centralised patterns, ideas, social networking and a love of global brands. In contrast to the previous era of 'guilty carbon shopping', thanks to technological innovations throughout the supply chain, garments are flying off the shelves and out of automated machines in a **'guilt-free' practically zero-impact shopping experience**.

In 2025, **fads and fashions can last hours not seasons**, as global networks swarm to imitate their favourite celebrities or micro-trend to live the moment or occasion. This year, a craze for programmable, 'chameleon' clothing has swept across the world. Originally developed for use in warfare camouflage where clothing could change shade to mimic surroundings, today a 'blank canvas' wardrobe can change colour and, in some cases, style – programmed to mimic the most popular celeb of the moment.

The urban teen megastore, Frock-Shop, is thriving thanks to a series of interactive screens linked to full-body 3D scanners. **3D scanners in store windows** give 'screen shoppers' immediate visualisations of themselves in the latest fashions. Clothing booths enable groups of friends to 'try on' clothes in virtual mirrors, using various style inputs and suggestions on screen. Most of this can also be done online, but many people still enjoy the fun of shopping with friends.

Modular clothing is manufactured in China and delivered to stores, where it can be finished and customised to consumer demand. People choose a style, precise size, colour and motif/pattern, and in 10–15 minutes the garment is ready to take home.

Use and clothing care

Clothes are designed and made to require less cleaning. For example clothing that helps to control perspiration is also a strong niche market. The shirts and t-shirts include hormone-controlling devices and **coatings which reduce sweat by 80%**, control odours and reduce the need for washing. Self-cleaning clothes have been launched and re-launched many times, but have never become mainstream: consumers simply cannot stop the embedded habit of washing and changing their clothing.

Caring for clothing has become a low-carbon part of daily life supported by numerous services and high-tech goods. **Personal clothing valets offer a door-to-door service** widely used by rural communities and urban households. Radio Frequency Identification (RFID)-tagged clothes are collected from customers, automatically separated to be cleaned with similar clothes and then returned to their owners according to their preferences (folded, on hangers, back in wardrobe etc). 'Smart clothes' talk to smart cleaning processes, telling them what they need to improve efficiency. Labels change colour when clothes need to be washed. Indulgence scents are included in the wash to provide clothing with a fresh, unique smell – which has drastically reduced perfume consumption.

That said, 30 per cent of homes in high-income countries still choose to have in-house washing machines despite the high cost.

Non-toxic, 'spray-n-go' clothing is the latest craze across the globe, especially for partygoers. The sprays distribute thousands of non-woven fibres across the skin enabling them to bind together to form disposable, biodegradable garments. Marketed as a 'sexy, slinky alternative to daywear' it has become a must for the fashion-conscious and has a rapidly expanding range of complementary accessories, or 'Accs', designed through open-source mechanisms and often printed using 3D printers at home.

End of life

Clothing waste to landfill is a minor concern as it is rare. There has been major investment and innovation in this area, including breakthroughs in the ability to recycle fibres with coatings. **All clothing is designed for degrading, disassembly, re manufacturing and/or reuse.** Sophisticated networks of 'smart' recycling services collect clothes from doorsteps and sort according to fibres. Blends of fibres that are harder to recycle are naturally phased out of the system. There is a way for almost everything to be remanufactured and put back into the system.

hologem

Saadia Niazi & Ruby Hoette

The scenarios are designed as a tool to help organisations road-test their existing ideas, identify new opportunities and plan for the future. By picturing how their organisation would respond to the world of each scenario, they can develop resilient strategies, products and services which can adapt to whatever the future may bring.

We challenged students from the London College of Fashion to come up with ideas for products and services that would succeed in each scenario. This page features illustrations and descriptions of one of these concepts by students from the 2009 MA Fashion and the Environment course.



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In this scenario, with its low-carbon consumption and smart technologies, we anticipate that some of the clothing we wear will be a tool to facilitate interaction and communication. Clothing and accessories will fulfil their potential as highly personalised mobile platforms to connect individuals to the world around them.

Hologem is an integrated product-service system based on the technology of 3D holographic projections. The consumer purchases a Hologem accessory and subscribes for a monthly fee to receive holographic designs sent as often to their Hologem as they choose. By completing a detailed user profile including size, colour and style preferences the consumer is assured of personalised designs that fit their mood and specific occasion. Well-known, talented designers create new holographic trends daily.

Right
Hologem accessories project designs onto the wearer to create an outfit.



global scenarios for 2025 scenario 4

patchwork planet

fast consumption in
global cultural blocs



1
piece of
food only

Timeline:

2012: Despite the efforts of the Obama administration, the world fails to reach a binding agreement on nuclear disarmament, and Iran continues to build its nuclear arsenal with implicit approval from several powerful states. Obama gives back his Nobel Peace prize.

2012: The biggest worldwide virtual campaign takes place, protesting against groundwater depletion and pollution by dye houses in India. It is organised on the internet using mobile phones.

2015: Eight coordinated major terror attacks in cities across North America, Europe and Asia kill thousands and prompt vicious counter-attacks and unprecedented levels of security and suspicion.

2017: There are violent uprisings against 'outsider communities' in a number of places; targets include Chinese factory owners in South East Asia and Indian labourers in the Middle East. Thousands die in Chinatown riots across North America. Muslims living in Western countries live in constant fear of attack.

2018: India and China sign an agreement to buy up all of Bolivia's lithium reserves in order to supply the domestic production of electric cars.

2019: The world's biggest fashion week takes place in Shanghai, with more visitors than New York, London, Paris and Milan combined; all major designers create special China-flavoured collections.

2020: Scandal in Russia as the number one brand of clothing is exposed as US-owned.

2022: The UN is finally disbanded after years of deadlock and lack of achievement, and regional multilateral organisations begin to emerge in its place.

2023: An anti-Western uprising leads to 'Western-style' clothes being banned across the majority of countries in the Middle East.

2024: China's GDP equals that of the United States.

Scenario 4: Patchwork Planet

summary

Years of conflict, exacerbated by uneven economic recovery from recession and a shortage of strategic resources, have caused the global community to fragment, and there is deep suspicion between cultural blocs. This is a world of rapidly changing fashions – where styles are led by an economically and culturally powerful Asia. Supply chains regionalise to meet consumer demand for fast-changing, regional, patriotic fashion. The world is struggling to cope with mounting social tensions and environmental constraints. Many wonder how long this pace can last.

End of life:

- > Waste is still a global issue, with no responsible system in place
- > Illegal dumping of industry waste continues to exist

Materials:

- > Resource hoarding and regional variations in materials
- > Dramatically decreased cotton production
- > Grow-your-own clothing popular

External context:

- > Fast-paced but fragmented world
- > High growth and consumption in Asia
- > Slow growth and consumption in the West
- > High barriers to trade (tariffs and quotas)
- > Countries and companies go to extremes to guard IP

Production:

- > Regionalised production lines
- > Rapid time to market
- > Transportation is expensive
- > Waterless textile dyeing

Use:

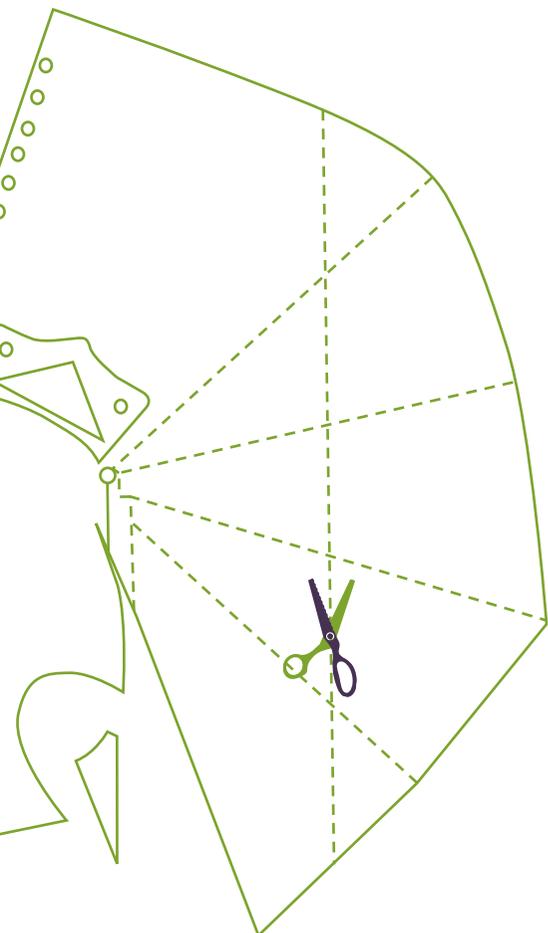
- > Personalised clothing is desirable
- > Clothing with reduced need for washing and ironing is popular
- > Updating and renewing clothing is a major trend

Retail:

- > Brands tailor to culture-specific trends
- > Have strong local presence and identity
- > Geared towards 'fashion services'
- > Backlash against 'American' fashion



the world in 2025 – external context



Global balance of wealth and power

The recession that began in 2008 resulted in uneven patterns of recovery in late 2010, leading to high levels of inequality between nations. The global balance of power has shifted dramatically. Spearheaded by China, **Asia has experienced a rise in power** and prominence. Westernisation as a trend has weakened and the US, though still prominent, is waning in cultural and political importance. Nation states have experienced a resurgence of power, while multilateral institutions have fallen further behind.

The West is plagued by slower rates of growth and consumption, as ageing populations begin to cost more to support and are no longer replenished by waves of immigrants, who tend to seek opportunities in the new, more dynamic economies. For example, Mexican migrant workers have returned home en masse in the face of joblessness in the US.

In facing the challenge of resource shortages, countries and regions guard their technologies and capabilities jealously, refusing to share sustainability know-how with other countries.

Similarly, despite the steady advance of ICT, which allows people to exchange ideas and opinions very quickly through many channels, increasing distrust between nations means that more and more governments have **blocked access to online global forums**.

The rise in disposable income has slowed since the recession of the early 21st century, and what dynamic growth there is occurs largely in Asia, where there is a large and enthusiastic fashion consumer base. In the West levels of disposable income are rising very slowly, and those in developing countries (particularly those not trading with China) are either flat or declining.

Policy direction

Exacerbated by geopolitical tensions, high resource prices and disruptive climate events, overall levels of imports and exports fall. **Countries strive to be more self-sufficient** when it comes to food and energy, and even clothing.

The EU leads the way on decarbonisation, with a strict carbon tax and pricing regime, including **carbon tariffs on imports**. But when it suggested a binding global commitment to restrict and regulate natural resource use, governments in the global South rejected the idea as patronising and hypocritical. China and other 'nouveau riche' economies – from Colombia to Brazil to Vietnam – have established more direct links with each other and no longer need the US and EU as intermediaries. Technological innovation is a funding priority for most of them, as they seek to maintain their dynamism and competitiveness in the face of growing resource shortages.

All over the world **governments protect their 'national champions'** and are strict in the way they deal with foreign Multi-National Corporations (MNCs), as well as in the way that they ration resources.

Responses to climate change

Nations are feeling the impacts of climate change, but adapt to these in isolation.

Floating farms and flood-resistant construction are now routine tools for resisting climate shocks. The rich world is generally better off than low-income countries when it comes to low-carbon adaptation, because it is able to afford the necessary technologies. Scandinavian countries have become experts in sustainable technology innovations that allow rich world lifestyles to continue, and they export this know-how to those able to pay.

When low-income countries such as Bangladesh or Somalia experience natural disasters, aid agencies continue to be called in, but there is **no global framework for climate action and relief**. This has led to an increase in violent outbursts against what is perceived to be the rich world's monopoly on life-saving technology. Clothing trade routes are increasingly disrupted by piracy originating in the poorest countries.

Consumer behaviour

Because there has been no global action to mitigate the impacts of high-consumption lifestyles, consumers in most countries continue to aspire to own more goods. High turnover, **rapidly changing trends** and extreme (national) celebrity culture are hallmarks of this world. Technological innovation has been able to satisfy these aspirations in the rich world in many areas, but there is widespread resentment among the global have-nots where there is continuing resource-intensive consumption.

Consumers are aware of their sustainability impacts, but this is mainly due to strict regulations – such as **energy and water rationing** – imposed by governments in countries like India. Special interest groups do emerge across cyberspace, including those that lobby for socioeconomic and environmental justice. These cross national and regional boundaries, but remain united only by the internet within relatively closed societies.

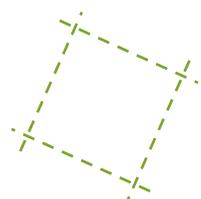
With Islam on the rise in Africa and Asia, as well as vociferous nationalism in countries like China, many consumers turn to **local fashion trends inspired by religious and cultural ideals**, and reject 'Western' style. China and Brazil are the trendsetters in their respective regions, with fashion that draws on traditional cultural themes. Across most of the Middle East, Western clothes are forbidden by law. Patriotism is fiercely high in many places, as people bond – or are forced to bond – over a common national identity.

Business landscape

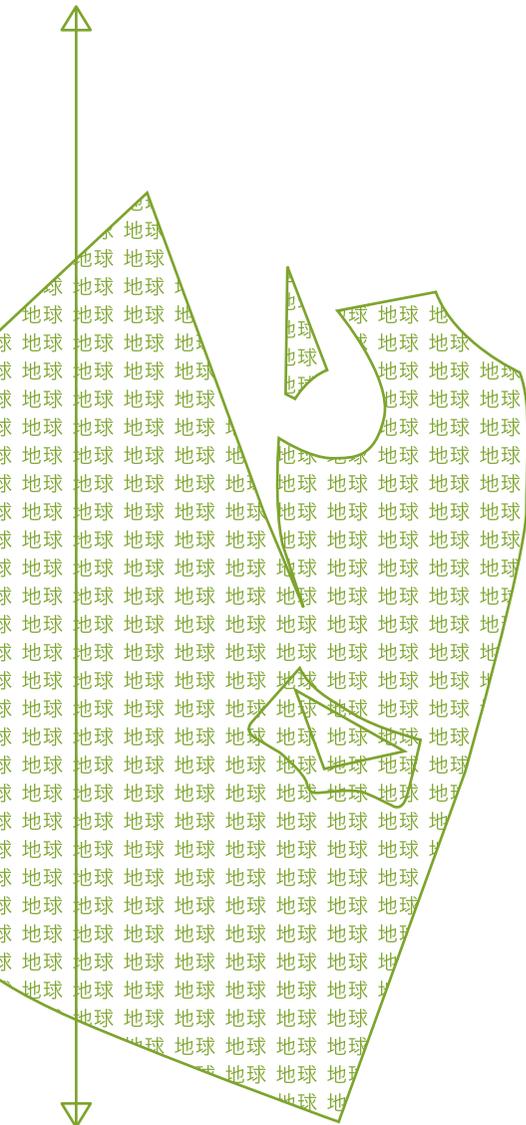
Many global businesses are struggling to cope with strict carbon regulation in the EU, and are pushing the cost of carbon down through to suppliers and customer. This leads to high resource prices and **greater regionalisation and vertical integration** as business seeks to find and secure low-carbon, local sources of materials as an alternative to vast global supply chains. Despite this, high consumer demand and a fragmented global marketplace mean that many players serve consumer needs.

There are still a number of large global businesses, but the competition from emerging local companies is much higher than before. The most successful companies devolve their identity into a number of smaller, localised brands in order to prosper, with small or even virtual head offices. Consumers are often extremely patriotic, so **companies with a long local heritage are strongest**.

Companies are also very **secretive about IP and strategy**, and the late 20th century trend towards transparency has been reversed. But because there are fewer and fewer global mechanisms and voluntary directives around, there is no longer so much attention on this issue.



the clothing supply chain in 2025



Material

With high resource costs and limited access to global markets, the materials the industry uses to deliver fast fashion vary greatly from region to region. Companies scramble to access ‘appropriate crops’ and come up with **new spins on old materials**. Asia has innovated new uses for bamboo in clothing production and low energy techniques for its manufacture, and Australia has done the same for wool, which is marketed not just as an input into fashion garments, but also a good way of helping reduce energy bills. In some regions zips are becoming hard source.

Agricultural yield rates are generally lower and the industry struggles, particularly in places like the American Southwest, Southern Europe and Australia where acute food and energy security issues lead to the prioritisation of land use for food and energy crops. This, along with water scarcity, puts pressure on cotton production, which dramatically decreases as an input for the clothing industry. Now seen as a luxurious fabric, all that is left of the **global cotton industry is Asian-owned** and controlled. Tanzania’s cotton industry was offered a lifeline when the Tanzania Cotton Board signed an agreement to send its best supplies to China to be processed and then sent on to regional manufacturing plants.

Flax products are big in markets where the raw material is plentiful, including China, Chile, Argentina and India. This is marketed to consumers who are keen to embrace **local sourcing and production** of fashion garments as a badge of patriotism.

The use of **smart man-made materials and nanotech** is also common, particularly in places where extreme resource shortages have forced industry and government to innovate rapidly. Some examples include garments with self-cleaning coatings that eliminate the need for water-intensive washing, as well as clothes that can be ‘grown’ from bacterial cellulose.

Design and production

Products arrive on the market swiftly due to **localised supply chains and improved shipping technology**. This feeds the cycle of conspicuous consumption – consumers in high- and middle-income countries continue to expect rapid product turnover and highly seasonal fashion. Within cultural blocs, online communication – on fashion and otherwise – continues to flourish, allowing people to maintain a strong regional identity in fashion, culture, and trends.

Regional differences in labour costs have narrowed leading to more local production and consumption, although Asian emerging economies have managed to retain a supply of relatively cheap labour compared with other countries. Labour rights take a back seat as localised production tries to keep pace with high levels of consumer demand.

In India and China, where water stress is acute, **waterless textile dyeing** has become an industry standard, and water recycling during clothing production is tightly regulated. There is strictly enforced regulation on wastewater treatment from factories, with regular spot checks by governments desperate to conserve drinking water.

Clothing is designed so that it can be zipped, tucked and strapped on in order to create different looks in one. Brands tailor design to culture-specific trends. Western trends, previously seen as ‘global,’ now compete with Asia’s dominant position in fashion and culture. There is a **backlash against ‘American’ fashion**, for example, which has come to be seen as cheap and too sexualised in many countries with more conservative cultures.

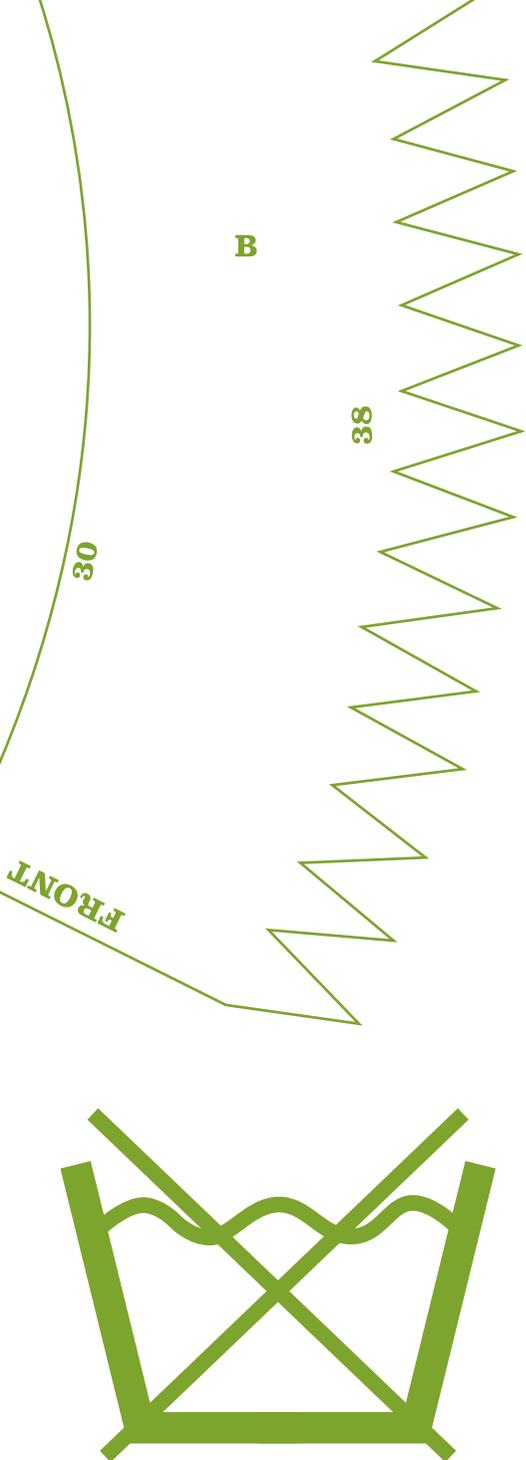
Retail

Local designer brands displace some of the prominence of high fashion houses, and often buy out global company outlets. Global businesses are very secretive about how they ‘localise’, developing different names and identities for each market.

Fashion has become so personalised that creating a unique look is a value-added service savvy brands provide for consumers who can afford it. **Celebrity endorsements** from national ‘heroes’ are also essential to consumer uptake.

Online shopping has taken off in a big way in order to feed consumer hunger for fast fashion. In the developing world, in particular, mobile telecoms has bypassed the desktop-based internet and consumers are used to accessing the web on their devices. The biggest brand outlets have online assembly-line ‘service stations’ where consumers can **personalise clothing items and accessories virtually**, and have them delivered quickly. In order to meet demand, with more regionalised supply chains and scarce resources, companies have become very good at flexible demand management: consumers choose their favourite pieces from the new collection, and the company responds by producing appropriate volumes on demand.





Use and clothing care

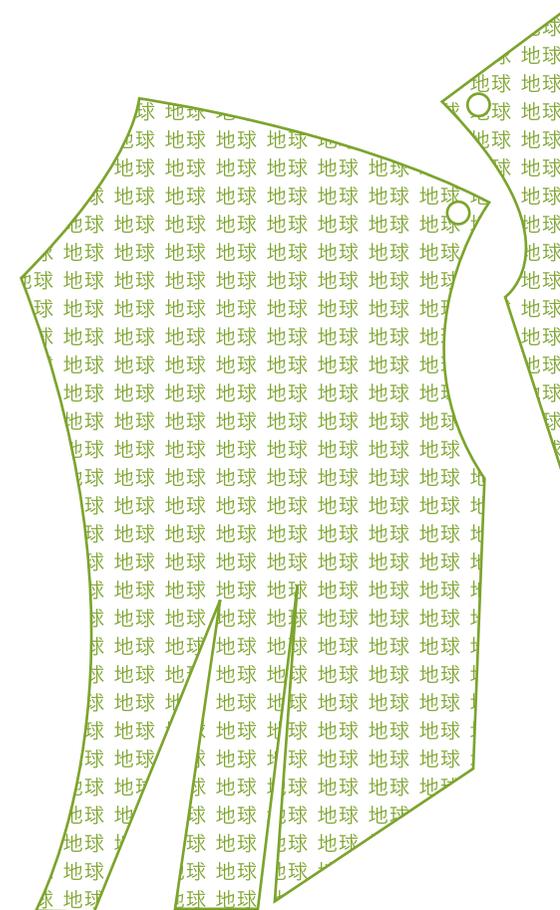
Personalisation is highly coveted in this world, as **citizens become 'fashion engineers'** enabled by the web and open source platforms. Many brands sell **easy-to-adapt fashion** items with attached personalisation kits, as well as post-purchase services, for example providing regular 'fashion upgrades' to follow local trends. Consumers can also purchase cheap DIY sets online and use them to make outfits and accessories out of locally available materials.

Clothing care is relatively easy in nations or regions with renewable energy and secure water supplies. New solutions are emerging in other places, for example clothes cleaning services provided by retailers, which achieve cost-savings through scale, or coatings that reduce the need for washing and ironing – although no way of recycling clothing with such coatings has been identified. **Waterless washing machines** are a staple of every household in areas experiencing water shortages; cheap versions have been manufactured and popularised by local brands in India and China.

End of life

No global, responsible system of disposal is possible in this fragmented world. Where it is easy to do so, resources are incorporated back into the supply chain, but waste is still an issue globally. **Illegal dumping of industry waste** continues to exist, just on a more regionalised scale than before. China is no longer the dumping ground of the West, for example, but itself illegally disposes of clothing industry waste in Mongolia.

Europe is one of the exceptions, where industry has been pushed by strict government regulation to innovate **sophisticated bio-synthetics** and disposal processes that reduce the burden on the local environment. In some European countries, **edible clothing** becomes a popular trend for a while, allowing people to consume their daily wear in order to close the loop.



Scenario 4: Patchwork Planet

my_i-d

Una Hussey, Julia Roebuck,
Yinyin Lu, Harmony Yu

The scenarios are designed as a tool to help organisations road-test their existing ideas, identify new opportunities and plan for the future. By picturing how their organisation would respond to the world of each scenario, they can develop resilient strategies, products and services which can adapt to whatever the future may bring.

We challenged students from the London College of Fashion to come up with ideas for products and services that would succeed in each scenario. This page features illustrations and descriptions of one of these concepts by students from the 2009 MA Fashion and the Environment course.

Below
my_i-d consumers order garments online before they are made, and select from a range of fabrics, colours and embellishments available at their local factory.



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This scenario features a fragmented global community with fashions that respond to localised cultural trends evolving quickly. In that context we present my_i-d: a virtual headquarters that connects brands to the consumer, and consumers with each other – an advanced web community. Brands pay my_i-d to show their monthly clothing samples on the site, where the consumer can then choose what they would like to buy. The consumer chooses from the range of fabrics, colours and embellishments available at their local factory and then order and pay. After payment the consumer collects the garment at the local factory or arranges a delivery.

Also with this service, my_i-d customers can choose a garment style from a designer or brand based in any region (or block of countries) around the world and download the pattern. The consumer is able to print the pattern, but many customers choose to send the pattern to their nearest factory to be produced with the resources available to their specific region.

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Above
Local factories are a hub of creativity and employment for the local community.

Local factories receive orders for garments via my_i-d. The garments provided by the brands are only available during a two-week limited edition period, providing the consumer with more choice within a fast fashion setting. The local factories are a hub of creativity and employment for the local community.

As well as the main focus on manufacture, the local factories encourage innovation and collaboration within the specific region. They collaborate with students and industry within the science laboratory to develop new twists on old materials, and work with synthetic fibres to improve their sustainable qualities. They also host workshops for the local community to reinvent their clothing and run sessions on fast customisation.



implications for the fashion industry



As we outline in 'Factors shaping the future', climate change, population growth, and shortages of key resources are already affecting the industry and they will bring profound changes over the next 15 years. By 2025 there are expected to be another billion people living on this planet and twice as many elderly people. Climate change will have major impacts on agriculture and patterns of global land use. Many communities will change radically, affecting the needs of the industry's customers and the availability of labour. Demand for energy, water and food will grow, prices are likely to rise and control of resources will be a key political issue.

Other factors will shape our world in less predictable ways. China, India and other emerging economies will change global patterns of trade and power and exercise a growing cultural influence. Technology will continue to transform our lives and businesses and create new opportunities – think of the impact the internet has had in the last 15 years. People's attitudes to resource shortages, climate change and sustainability, and their levels of disposable income, will affect consumer demand. How governments act, or fail to act, on trade, economics, the environment and poverty, and how they coordinate action on these and other global issues will also have a huge impact.

The four scenarios developed by the Fashion Futures project outline different ways in which the fashion industry and the behaviour of its consumers could be shaped by these factors. They are intended to be plausible, coherent and challenging descriptions of possible future worlds and the nature of the fashion industry within them. The 'real' future is likely to be different from all of these scenarios, but it could well incorporate aspects from each scenario, at different times and in different places.

The scenarios are designed to communicate the impacts of global trends, stimulate ideas and challenge how the fashion industry thinks about the future. They can be used to develop more resilient business strategies and as design tools to innovate sustainable products, services and processes.

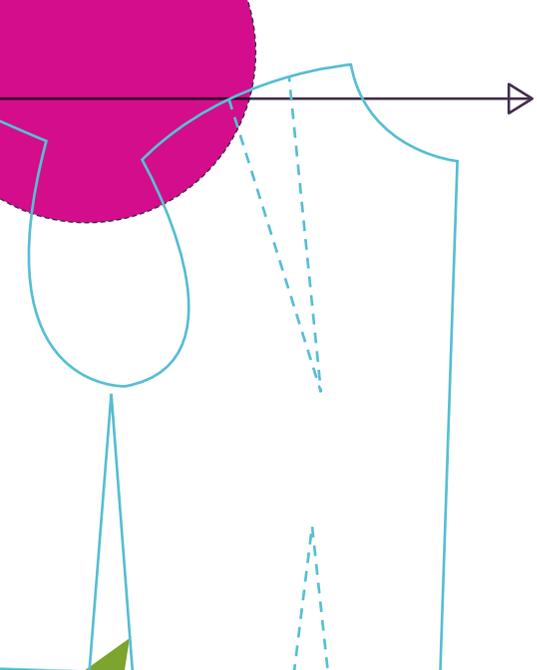
We hope they will help the industry understand the sustainability challenges ahead, prepare for the future, and play its part in steering the world in a positive direction. We explain how organisations can use the scenarios in the 'How to use Fashion Futures' section.

We have already used the scenarios with The London College of Fashion as a design tool for sustainable product and service systems of 2025.

We have drawn out five broad implications for the fashion industry. They are derived from what some or all of the scenarios have in common, or based on insights throughout the process of building the scenarios. In each case we have set out what it means for the fashion industry and what it should be doing about it now.

We also highlight some issue 'hotspots' that the fashion industry needs to start preparing for now, and some examples of the type of reflective questions to start considering. For further exploration of 'hotspot' issues such as chemical use in the fashion industry and animal welfare, take a look at our online report *Fashioning Sustainability*.³³

³³ <http://www.forumforthefuture.org/projects/fashioning-sustainability>.



1. prepare now for a radically different and uncertain future

We know that major changes will happen. The world may move quickly and take concerted action to tackle resource shortages and climate change, for example, in which case market frameworks, businesses and policy will adapt accordingly. For example, in the Techno-Chic scenario, government incentives drive forward rapid technological solutions. However, global action on these problems may come later or not at all, in which case we may soon be staring into the sort of 'resource void' that we see in Community Couture – a world forced into more reactive responses.

As we highlighted in the section 'Factors shaping the Future', there are some areas of change we can be certain about regarding the future. Demographic change, the growing impacts of climate change and rising costs of resources are all issues that are already beginning to impinge on global businesses and we can be certain that they will continue to create global shifts and impacts over the next 15 years. These future impacts require thinking and action now. These are 'no-regrets' actions, as no matter what path society and business take in the future, preparing for these three impacts will very likely be beneficial.

So, whatever happens, business as usual is not an option. As well as the above impacts, customer expectations, state intervention and geopolitical shifts all feature in our scenarios as potential disruptors of existing fashion business models. Every aspect of the industry will be affected one way or another: the demand from customers and consumers; the way fashion products and services are designed, produced and sold; the way customers use and care for their clothes; the nature of competitive advantage; the way staff live their lives; the regulatory context for the fashion industry. No business within the industry is immune from these challenges.

Fashion supply chains are complex, global systems and therefore especially vulnerable to disruption. In order to maintain a secure and sustainable supply chain it is imperative to explore these future possibilities, however daunting. And supporting the 'right kind' of globalisation is part of sustainable business too: cutting out risky sections of the supply chain is not necessarily the best option; working collaboratively with suppliers to create a robust system means everyone wins.

Hotspot: Clothing care

Washing, drying and ironing often accounts for the most significant use of energy in the clothing lifecycle. Detergents also have some damaging impacts. Our scenarios demonstrate that in future, water availability and energy prices will further impact on how consumers care for their clothes. Companies that pre-empt these challenges and make low-carbon, low-impact clothing care easy will benefit.

Questions for businesses:

- > Do you know how your consumers care for the clothes you make/sell?
- > How can you help consumers use less energy, water and fewer chemicals as they care for their clothes?
 - In the way they're designed?
 - In what they're made from?
 - In the information you give?
 - In the services you provide?

Further information:

- > Reducing the environmental impact of clothes cleaning, BIO Intelligence Service in collaboration with Giraffe and Intertek, a research report completed for the Department for Environment, Food and Rural Affairs, December 2009: <http://www.defra.gov.uk/environment/business/products/roadmaps/clothing/evidence.htm>

What this means for the fashion industry

Embrace the future

Thinking through the Fashion Futures scenarios will help businesses within the industry to explore different strategies. Conversations about future strategies will open minds to the possibility of rapid change and may even lead to immediate action.

Don't bet on one version of the future

There are four different scenarios in Fashion Futures, and although some might seem more likely – or indeed desirable – than others, none is impossible. We know that the response to resource shortages, demographic change and climate change will require a combination of social and economic restructuring, behaviour change and technological innovation, but we don't yet know the mix. Approaches are also likely to differ across the world. Long-term strategies must acknowledge uncertainty and build in adaptability, or they risk failure.

Industry collaboration in action: The UK's Sustainable Clothing Roadmap

Coordinated by the UK's Department for Environment, Food and Rural Affairs (Defra), the Sustainable Clothing Roadmap is a voluntary initiative involving over 300 companies along the clothing supply chain. The roadmap provides a platform for an integrated approach to sustainable clothing throughout the sector. Its aim is to drive sustainability from retailers down through the clothing supply chain and fast track best practice. A major focus is on 'getting the evidence right' – with several Defra-funded studies completed or in progress on key topics including 'Reducing the environmental impacts of clothes cleaning' and 'Sustainable

Prepare now

In many of our scenarios, change comes quickly and unexpectedly. Tipping points in the social, environmental and economic context could catch businesses off guard unless they are prepared. If organisations wait for crises to intensify, and change happens very quickly, then the sustainability of the business will be under threat.

- > Assess your existing business models and supply chains for their vulnerability to the disruptions ahead, and take steps to minimise these. Put in place early warning systems and enable local contingency planning. Take input costs, for example. How will these change if the price of oil triples without much warning as it does in Community Couture? Accepting that an 'easy' energy solution is unlikely, you can reduce risk by minimising input costs as well as decarbonising before regulations make this mandatory.

Fibres and Fabrics'. In addition to evidence, a Sustainable Clothing Action Plan sets out individual and collaborative industry actions agreed across five key priority areas that are the current focus of the Roadmap:

1. Improving environmental performance across the supply chain.
 - > Sustainable design
 - > Fibres and fabrics
 - > Maximising reuse, recycling and end-of-life management
 - > Clothes cleaning
2. Consumption trends and behaviour.
3. Awareness, media, education and networks.

- > Put together a sustainability roadmap (see boxed example from the UK's Defra Sustainable Clothing Roadmap). If you understand the impact of the whole product/service lifecycle, even parts that fall outside your immediate sphere of influence, you will be able to take 'no regrets' actions now. The cost of late measures in reaction to external demand is likely to be much greater than proactive step-by-step actions.
- > Develop a greater understanding of the social and environmental context in which your products and services are used. In the Slow is Beautiful scenario, businesses are required to take responsibility for the wider impacts of their products and services.

4. Creating market drivers for sustainable clothing.
5. Instruments for improving traceability along the supply chain (ethics, trade and environment).

While it originates in the UK, the Sustainable Clothing Roadmap has links with Asia (especially China and India), the EU and the US, reflecting the global nature of the UK clothing supply chain.

Further information:

<http://www.defra.gov.uk/environment/business/products/roadmaps/clothing/index.htm>

Hotspot: Fashion workforce

As well as a continuing spotlight on labour conditions, the scenarios highlight the new challenges that lie ahead for the fashion workforce. In many scenarios supply chains shift for various reasons (cost pressure, climate change impacts, regionalisation) or automate – these transitions will need to be carefully managed. In future, the workforce will need different skills, plus demographic shifts mean the future workforce will have different needs.

Questions for businesses:

- > How would you support suppliers to improve working conditions if cost pressures continue to increase?
- > How can shifts in the location and nature of supply be managed smoothly to minimise human impacts?
- > Are you ready to accommodate the needs of an older workforce throughout the supply chain?
- > Does your workforce have the right skills for a changing world?

Further information:

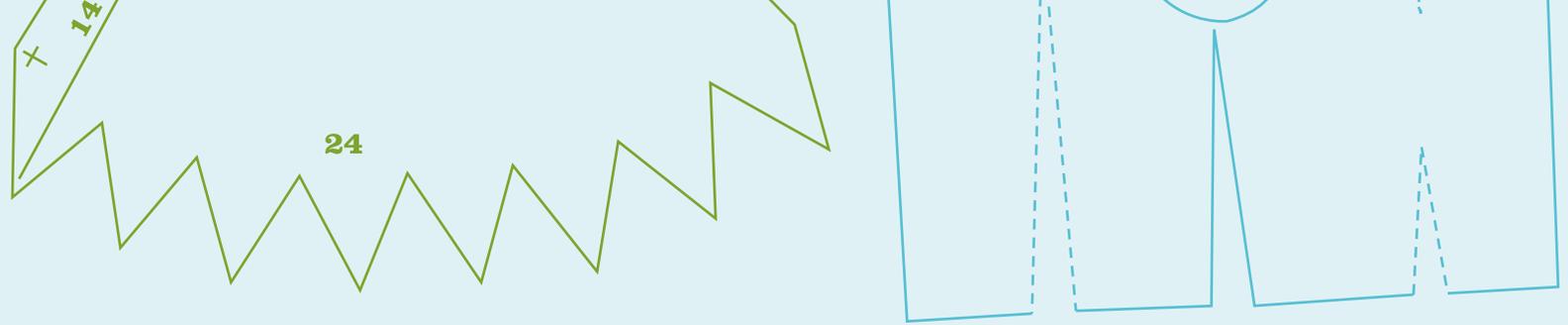
- > Clean Clothes Campaign – Advocating better working conditions www.cleanclothes.org
- > Fair Labor Association – protecting workers' rights and improving working conditions
- > No Sweat – Campaigning for a living wage, safe working conditions, and independent trade unions www.nosweat.org.uk

2. seize the opportunity to be a trailblazer

The issues raised in the scenarios prompt discussions on the dependencies between different areas of the fashion industry. Many challenges need collective action to be overcome and it is difficult for one part of the industry to address them alone. For instance, suppliers may feel unable to act on labour standards, given the constraints that buyers impose; buyers may be unwilling to act without some form of global regulation or shift in consumer demand.

But if we wait for everyone else to act then we will never get started. There is the opportunity for companies, countries and consumers to lead. First movers are likely to gain advantage from quick-win actions, and at the same time create the space for others to act.

Countries and regions can benefit from trailblazing. California has combined environmental standards with high growth. These environmental standards have promoted innovation and put Californian businesses in a prime position to export technologies and techniques around the world. The opportunity for countries, companies and citizens is to lead in a way that makes it easier for others to follow, and for themselves to benefit from others following, creating a virtuous circle.



What this means for the fashion industry

Look for quick-win trailblazing opportunities

There are immediate cost-savings to be made from energy efficiency measures, for example, and low-energy companies are less exposed to price hikes or energy legislation in the future. Taking the lead and driving energy efficiency through your supply chain as well, will spread the efficiency benefits globally and will likely change distant economies quicker than international negotiations.

Recognise the long-term benefits

Society needs businesses that are meeting social needs and generating wealth. Businesses need a society that is stable and prosperous. The long-term interests of business and society align with creating a strong, resilient, low-carbon economy. The expectation that businesses will take a leading role will grow and businesses can gain many long-term benefits by adopting that position now. For example, lobbying governments on global water policy may lead to regulation that is more business-friendly. Being perceived as a leader in global water policy could lead to greater influence and better access to governments, as well as a better brand image.

Talk to investors about the challenges ahead

Shareholders hold substantial power in the business world, and have a vested interest in an economy which is stable and prosperous in the long term. Two of our scenarios, Community Couture and Patchwork Planet, are clearly not in investors' interests. For this reason, it is likely that shareholders will place increasing emphasis on corporate policy that encourages long-term prosperity: keeping the pie large, rather than fighting for larger shares of a shrinking pie. Businesses that engage with this conversation and play a proactive leadership role could gain a strong advantage.

Talk to your consumers about sustainable consumption

Talk publicly about the importance of sustainable production, fair labour rights, resource shortages and climate change. Businesses can do themselves, and society, a service by using their marketing insights and expertise to galvanise action and make sustainable fashion desirable. These issues are increasingly important to consumers so this can be a valuable communication platform, which can help build consumer trust and reinforce brand value. Educating consumers on these issues empowers them to make the right consumption choice.

Identify and drive forward collective action for the industry

Understand how the fashion industry can work collectively to transform its businesses. Some issues can be tackled organisation by organisation, but many sustainability challenges are best tackled collectively. This can be achieved in collaboration with those in the supply chain, as well as peers. Organisations that instigate collective action will put themselves in a clear leadership position.

3. put change into practice

The fashion industry, like many others, is heavily reliant on a thriving economy and consumers with healthy disposable incomes. The emotional connection consumers have with fashion is deep-rooted, but how would it be affected by the pressures of a more utilitarian world? Can we expect governments and consumers to choose the latest clothing range over food, water and education? The resource squeeze, as seen in all the scenarios, begs these sorts of societal questions and soon enough the fashion industry will need to respond.

Fashion businesses have the opportunity to forge new relationships and interactions with customers and consumers in order to adapt to a society with radically different priorities. Consumer-led initiatives and social networks and enterprises that focus on re-manufacturing, reusing and recycling fashion items are already abundant across the world and how this activity will evolve is yet to be seen. We can be relatively sure that ICT will not be diminishing anytime soon and the fashion industry should ask how it can make the most of the opportunities these developments present.

What this means for the fashion industry

Open up to new business models and different ownership models

While creating the scenarios we couldn't help but come up with ideas for radically different business and ownership models. Some ideas are extensions of niche initiatives already up and running, that move into the mainstream, like the vibrant second-hand markets in Community Couture. Others are exciting new service collaborations like the Holiday Wardrobe in Techno-Chic. Patchwork Planet has businesses restructuring to adapt to the regionalised world and the need for local presence. All the different business models mentioned are responses to the many challenges the scenarios highlight, and in one world or another, all are feasible within the right context. This opportunity for change is both exciting and daunting but the good news is there is plenty of room for innovation: there is no one correct or ideal answer.

Invest in design and innovation³⁴

> *Disruptive innovation*: Exciting, market-changing innovations that enhance business productivity are usually disruptive. Looking at how the music market has evolved since MP3 is a good example of disruption where new market players have created a better, more efficient system for music purchasing. New, radical collaborations and partnerships can enable disruptive innovation; so can applying business competencies to new market areas. In the scenarios, new materials as well as the 'rediscovery' of old ones, change the fashion landscape. For example, in Techno-Chic, new materials replace the need for carbon-intensive

ones. If a viable alternative to cotton, requiring less water and pesticide, were to appear, it would radically change the fashion world.

> *Sustainable product and service innovation*: Using the Fashion Futures scenarios as a tool for product and service innovation will highlight exciting future opportunities, new ways of engaging the market and enable you to create products and services that will thrive within a low-consumption world.

> *Open innovation*: Businesses can gain clear insights into consumers' needs and desires by allowing them to play a bigger part in innovation processes. With ICT enabling these sorts of platforms, such as online competitions and open source idea banks, this is a low-cost and productive way of engaging with consumers and enhancing innovation. It doesn't work in all the scenarios, as it requires the right system to be in place that enables IP sharing for the wider social benefit, as seen in Slow is Beautiful and Techno-Chic.

> *People-centred innovation*: Using a human-centred, rather than a market or technology driven approach to research, puts society's needs and aspirations right at the heart of innovation. This design-led innovation process unearths latent needs as well as emotional desires that can help to overcome behaviour change barriers that often inhibit the take-up of sustainable products and services.

> *Closed-loop design*: Businesses can create sustainable product-service systems by planning in key principles such as disassembly, durability, ability for re-manufacture and take-back services, right from the very start of the innovation process.

Don't be paralysed by the prospect of change

Major change is necessary, but small steps can also open up entirely new paths down which radical action is more likely. Take a step back now to rethink the assumptions underlying your current business models: it could be the most valuable boardroom time you've ever spent, ensuring your long-term business success – and making a vital contribution to a sustainable future.

Experiment: fail early to succeed sooner

Trialling new ideas and business models enables organisations to understand quickly what has future potential, and what change is needed now to enable the right environment for future products and services. Acknowledging that what doesn't work now may well work in the future, is an important step in the right direction.

³⁴ See also 'How to use Fashion Futures', point 5, Use the scenarios to innovate.

4. look out for unexpected competition

Over the last few decades the fashion industry has evolved on many levels. What struck us the most, during our research, was the many different industries involved in creating, experimenting with and enabling fashion: ICT, electronics, pharmaceuticals, supermarkets, health, sport, and the chemicals industry, to name a few. As a well-established consumer-facing industry, fashion is a sector that many would like to gatecrash – and the disruptive years ahead may well see more and more examples of this kind of activity. Slow is Beautiful, for example, sees the clothing industry face competition from pharmaceutical companies.

What this means for the fashion industry

Embrace new alliances

The opportunity for the industry, as it stands currently, is to embrace collaboration and explore what kind of competencies and partnerships could enable sustainable growth. This is possible within the multiple stages of the supply chain: on renewable resources, sustainable cotton growth, low-impact production and distribution models, sustainable routes to market, and so on. Alliances with NGOs, peers, government initiatives and universities can strengthen organisations' sustainability knowledge and innovation capacity.

Look for new areas of business opportunity

Transferring your technologies, core competencies and sustainability expertise into new market areas is an exciting route for businesses to go down. A sustainable future has businesses interacting in very different ways compared to now; being a part of new systems and opportunities may well require businesses to take bold action in currently unknown areas.

Hotspot: Cotton

There are a myriad of sustainability challenges in the cotton industry, our largest single fibre in production, from excessive water use to reports of serious human rights abuses in production. We highlight the full list in our *Fashioning Sustainability* report.³⁵ Our scenarios demonstrate further challenges for the industry – climate change making the water use an even greater problem, changes in land use, and a likelihood that prices will rise.

Questions for businesses:

- > Do you know where your cotton comes from?
- > How secure is that supply? Is it at risk from climate change, water availability, changes in land use etc?
- > Are your suppliers aware of and planning for climate change impacts?
- > Can you support them to do this?
- > What would you do if cotton prices were to rise? Swallow costs, pass them on to consumers and/or investigate alternative, sustainable fabrics?
- > Given that demand already outstrips supply, are you ready for an increased demand for sustainable cotton if it happens? Can you help promote it?

Further information:

- > Environmental Justice Foundation – Pick your cotton carefully campaign: www.ejfoundation.org
- > The Better Cotton Initiative: www.bettercotton.org
- > Organic Exchange – Growing the global organic cotton market: www.organicexchange.org
- > Fairtrade Labelling Organisation International (FLO) cotton: www.fairtrade.net/cotton

³⁵ <http://www.forumforthefuture.org/projects/fashioning-sustainability>.

5. develop skills for a new world

The Fashion Futures scenarios describe new areas of opportunity, areas of risk and different ways of going about our daily lives. Planning for this and delivering the scale of change necessary will require both old and new business skills. Those that understand where new expertise will be needed will be several steps ahead of others. For example, designers and retailers are likely to need climate change expertise to understand the future environment in which their products will be sold and used. Global manufacturers will need local water policy knowledge to understand how production processes will be affected.

What this means for the fashion industry

Develop sustainable design and innovation skills

You will need to train or recruit people with skills to push forward new design areas such as design for disassembly and closed-loop manufacturing. You will need creative thinkers and doers to facilitate and take part in the innovative processes needed to challenge the status quo, by creating exciting new products and services for a sustainable world.

Be open to skilling-up the consumer

Some of the scenarios explore a mainstreamed version of personalised fashion, where the consumer has a much more pro-active role as supplier, designer and seller as well as buyer of fashion. Be open to exploring how these interactions could enhance the sustainability of your business.

Prepare the next generation of industry leaders

Does current college and university education inspire students to strive for and deliver a sustainable fashion industry? Getting the challenges and opportunities the scenarios cover into mainstream education is an important step to changing the industry for the better.

Hotspot: End of life

Reusing and remanufacturing clothing was a major element in many scenarios as a way of responding to higher clothing prices and shortages of raw materials, at the same time as diverting the vast amounts of clothing waste that currently end up in landfill.

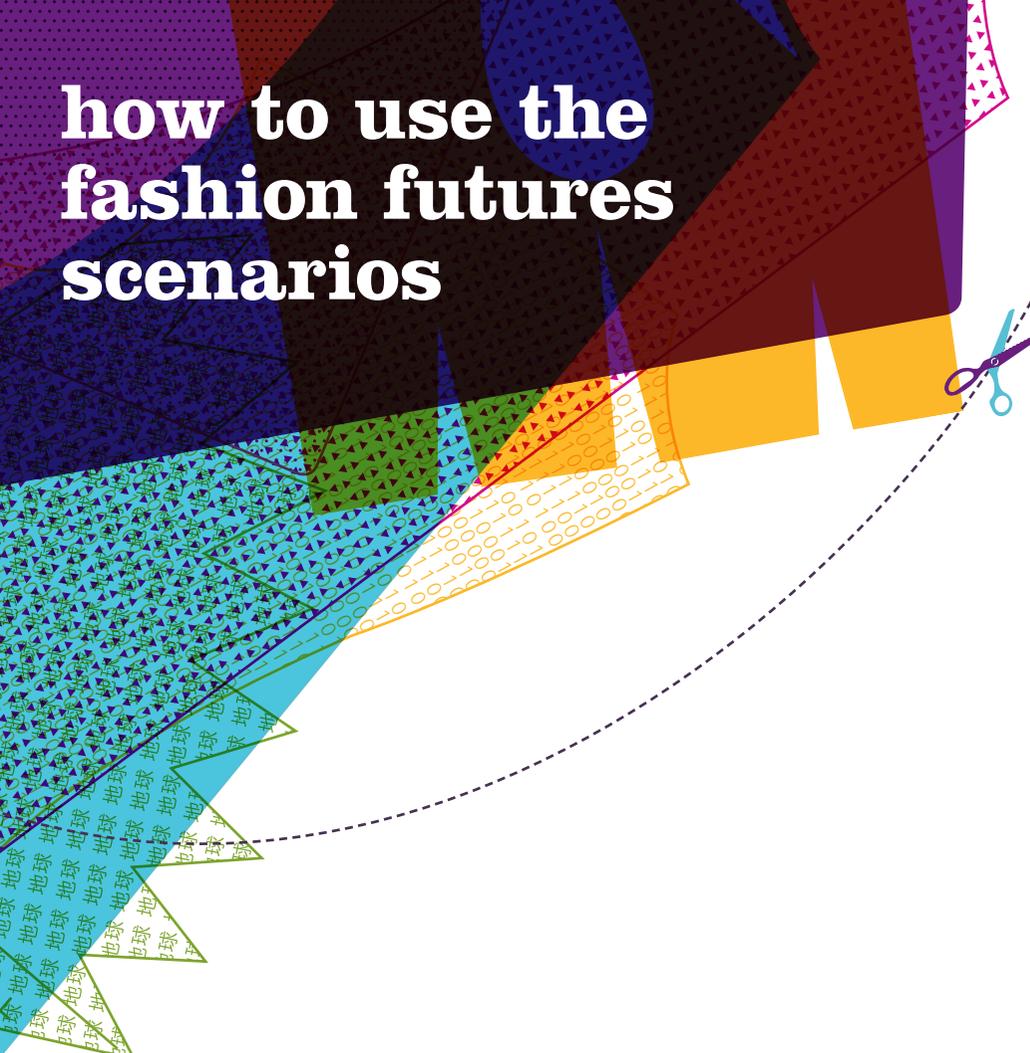
Questions for businesses:

- > Do you know what happens to the clothes you make/sell at the end of their life?
- > How can you design for durability, reuse and/or recycling?
- > If you had to take responsibility for clothing disposal what would you do?
- > How can you help consumers recycle their clothes? Or love them for longer?

Further information:

- > *Fashioning Sustainability*; A review of the sustainability impacts of the clothing industry, Forum for the Future for Marks & Spencer, 2007:
<http://www.forumforthefuture.org/projects/fashioning-sustainability>

how to use the fashion futures scenarios



It can be interesting to read scenarios and to imagine what the future may hold. But their real value lies in their practical application. Forecasting and long-term thinking are essential parts of any organisation's strategic planning. We've outlined six suggestions below for how the scenarios could be used. Using scenarios effectively takes time, but it's time well spent.

The ideal way to apply each suggestion is in a workshop, and you should set aside at least a half-day and ideally a full day. Workshops will work for both small and large organisations and it's useful to invite a wide range of representatives from different internal divisions as well as external stakeholders such as suppliers, designers and retailers, to run through the process. Multi-disciplinary workshops are very effective at tackling sustainability challenges as the broad range of perspectives and expertise help to shape more innovative and holistic outputs.

For the scenarios to serve their purpose as starting points for discussions about future plans, you will need to suspend any disbelief you may have. Treat them as exercises in asking 'What if?' Set aside scepticism for a period of time and use them to prepare for the future which – whatever it holds – will certainly be different from today, in unexpected ways.

Get to know the scenarios:

Before using the scenarios as outlined below, you and your colleagues should get to know them better.

There are a few ways you can prepare:

- > Read through them individually
- > Use the downloadable Fashion Futures presentation
- > Ask individuals or groups to create a 'Day in the Life' within the scenarios
- > Prepare for radical change using the downloadable 'Fifteen-year Brainstorm'

These resources and others you may find useful can be downloaded from: <http://www.forumforthefuture.org/projects/fashion-futures>



1

future-proof your business

Use the scenarios to future-proof your current business models and processes

Challenge

- > Are your business models and processes future-proofed?

How to use the scenarios

- > Go through the scenarios and explore how your current business models, unchanged, would perform in all scenarios. Which scenarios would they succeed in, and why?
- > What are the strengths, weaknesses, opportunities and threats for your plans in each scenario?
- > How could your plans be changed to be successful in a range of possible futures?

2

develop new strategies

Use the scenarios to develop new strategies

Challenge

- > What are the risks and opportunities presented by each scenario?
- > How can the risks be managed and the opportunities seized?

How to use the scenarios

- > Take each scenario in turn³⁶ and explore: what might be the
 - a) opportunities and;
 - b) risks to my organisation if this world were to come about by 2025?
- > Collect and compare ideas from the four different scenarios. Are there opportunities that are common to all?
- > Are their big risks that the strategy may not have considered?
- > What changes can be made that work in all scenarios? Develop a new strategy in the light of these findings, then 'test' it in each scenario.

3

establish a vision

Use the scenarios to help form your own vision of the future

Challenge

- > What kind of future would we like to live in/do business in?

How to use the scenarios

- > Discuss what changes you would like to see in the fashion industry. Set objectives and an action plan to achieve them, and then test the objectives and action plan against the four scenarios.
- > Or take the elements of each scenario that you like best, and use them to form a new, preferred scenario. Then ask what would need to happen for that scenario to come true.
- > Who would need to do what, and when?
- > How can you intervene to help?
- > Use the lifecycle maps in the scenarios to create a structure for your vision.

³⁶ Scenario exploration – this can be done in two ways: one scenario at a time in one group; or smaller groups can take one scenario each and then reconvene to share findings.



4

build partnerships

Use the scenarios to stimulate partnership working

Challenge

- > Who could you collaborate with to enable sustainable business models?
- > What partnerships could be mutually beneficial?

How to use the scenarios

- > The scenarios can be used as a way to frame discussions with other organisations within and beyond the sector to debate future collaboration. They can help explore common aims and identify differences in approach, and for long-term planning.
- > Pick out from the scenarios a number of key challenges facing the fashion industry³⁷ and ask what collaboration between partners could achieve in addressing them? Identify which actions are common in the different worlds as a way of prioritising and planning next steps.

5

innovate

Use the scenarios to innovate

Challenge

- > How can we be innovative and stay ahead of the competition?
- > How can we come up with new ideas that will thrive in a sustainable future?

How to use the scenarios

- > Take each scenario in turn and use it as a basis for brainstorming. Consider the following:
 - What current products, services no longer work in the different worlds?
 - What new products, service offerings or business models might evolve from and be successful in each one?
- > Use the scenario components as a basis for imagining further ideas. Ask yourself: if I lived in this world, how might my needs be different from today? How could an organisation help me meet those needs?
- > Look for overlaps between the scenarios. Are there innovations that could thrive in all of the scenarios?

6

develop your team

Use the scenarios for team/personal development

Challenge

- > How well-equipped are you and your team to respond to these futures?

How to use the scenarios

- > Explore each scenario in turn.³⁸ What new skills and knowledge would you need for your organisation to thrive in this world?
- > Collect and compare ideas from the four different scenarios. Which of these new areas of competence is common across the different futures?
- > Action plan how you might incorporate new skills into your organisation.

³⁷ Section 4, 'Factors shaping the future', can be a good basis for this exercise.

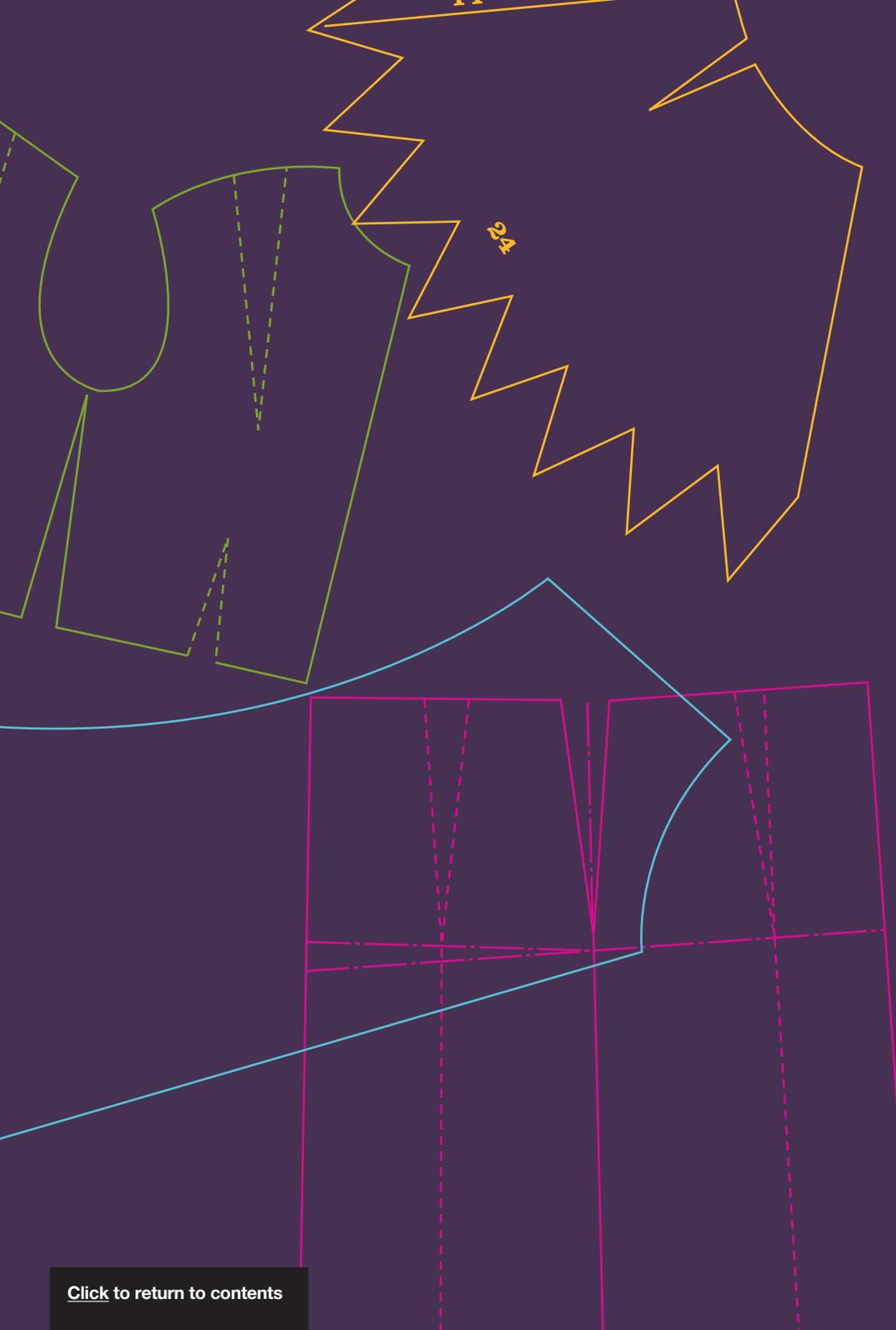
³⁸ Scenario exploration – this can be done in two ways: one scenario at a time in one group; or smaller groups can take one scenario each and then reconvene to share findings.

appendix 1: acknowledgements

we are very grateful for the contributions made to this project by the following people, either through being interviewed or through consultation.

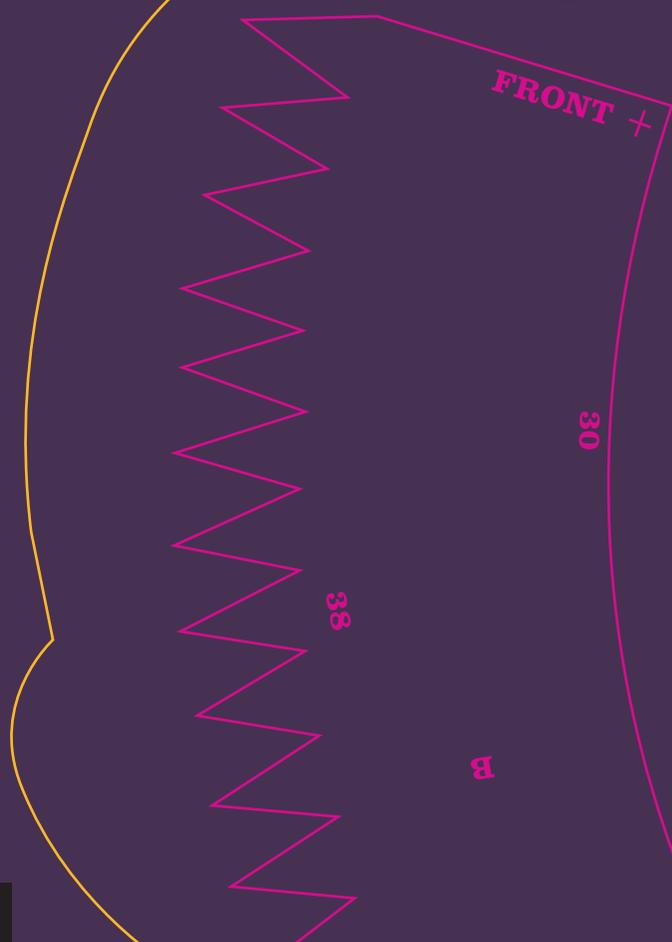
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appendix 2: glossary



Appropriate technology

Local or locally appropriate industries as an alternative to expensive and inappropriate imported technologies.

Biomimicry

The copying or imitation of a natural phenomenon's or environment's efficiency and survival mechanisms in manufacturing processes or in applied case-based reasoning.

Carbon footprint

The total set of greenhouse gas (GHG) emissions caused by an organization, event or product.

Climate change

The changes in temperature, precipitation, wind, humidity, and frequency of extreme climatic events caused by the accumulation of greenhouse gases in the atmosphere due to human activities.

Closed-loop design

Also known as cradle to cradle, see below.

Concentrated solar power (CSP)

A solar energy conversion system characterized by the optical concentration of solar rays through an arrangement of mirrors to generate a high temperature working fluid.

Cradle to cradle

The creation of production techniques that are not just efficient but are essentially waste free. In cradle to cradle production all material inputs and outputs are seen either as technical or biological nutrients. Technical nutrients can be recycled or reused with no loss of quality and biological nutrients composted or consumed.

Crowd-sourcing

Taking tasks traditionally performed by an employee or contractor, and outsourcing them to a group of people or community, through an "open call" to a large group of people asking for contributions.

Disruptive innovation

Innovation which improves a product or service in ways that the market does not expect, usually by new entrants overtaking incumbents. Examples include compact fluorescents overtaking incandescent light bulbs, the PC replacing typewriters, and digital overtaking print photography. They can also be innovative new partnerships like food conglomerate Danone teaming up with Nobel Prize winner Muhammad Yunus to produce a low-cost, eco-dairy product, or companies gate-crashing another market, such as Google entering the energy sector.

Fairtrade/fair trade

Fairtrade is about better prices, decent working conditions, local sustainability, and fair terms of trade for farmers and workers in the developing world. By requiring companies to pay sustainable prices (which must never fall lower than the market price), Fairtrade addresses the injustices of conventional trade, which traditionally discriminates against the poorest, weakest producers. It enables them to improve their position and have more control over their lives.

Genetically Modified (GM)

A term used to describe crops whose genes have been changed to give them particular qualities.

Hot-home

A fictional term, as mentioned in the Techno-Chic scenario, which describes the practice of people not owning a space, but using a shared network of homes to live in different locations.

Information and Communications Technology (ICT)

Technology related to the gathering, recording and communicating of information, especially computerised or electronic.

Intellectual Property

Property such as copyright, trademarks and patents, having no tangible form but representing the product of creative work or invention.

Geo-engineering

Artificial modification of earth systems to counteract climate change effects, such as increasing carbon dioxide uptake by fertilizing ocean surface waters or screening out sunlight with orbiting mirrors.

Greenwash

Environmental claims which are unsubstantiated (a lie) or irrelevant (a distraction). Found in advertising, PR or on packaging, and made about people, organisations and products.

Human-centred

See People-centred design/innovation.

Least developed countries

Least developed country (LDC) is the name given to a country which according to the United Nations fits within the broader grouping of less developed countries (see below) and, as such, exhibits the lowest indicators of socioeconomic development. The UN classifies levels of development within countries according to the following criteria: income levels, human resource indicators, and levels of economic vulnerability. The current group of least developed countries which comprises 49 countries, of which 33 are in Africa, 10 in Asia, 1 in Latin America and the Caribbean, and 5 in Oceania.

Less developed countries

These comprise all regions of Africa, Asia (excluding Japan), Latin America and the Caribbean plus Melanesia, Micronesia and Polynesia.

Low-carbon economy

A concept that refers to an economy which has a minimal output of greenhouse gas (GHG) emissions into the biosphere. More developed regions comprise all regions of Europe plus North America, Australia/New Zealand and Japan.

Nutraceuticals

Nutraceutical, a term combining the words 'nutrition' and 'pharmaceutical,' describes a nutritional product that claims to provide medicinal benefits in addition to their regular nutritional value.

Open innovation

Opening up to external ideas to increase innovation capabilities and find routes to market. The central idea behind open innovation is that in a world of widely distributed knowledge, companies cannot afford to rely entirely on their own research, but should instead buy or license processes or inventions from other companies. In addition, it includes the idea that internal inventions not being used in a firm's business should be taken outside the company and made publicly available.

People-centred design/innovation

Also known as human centred design, user-centred design, and empathic design, this is a process in which the needs, wants, and limitations of end users of a product are given extensive attention at each stage of the design process. This approach uses empathic research techniques such as observing and interviewing a diverse range of people at home or work to identify what they actually do, as opposed to what they say they do.

Product-service-system

A shift from selling material products, to offering non-material services. This can reduce the overall footprint per unit of service or profit. Examples include a shift from ownership to usage of a product, such as Streetcar and Zipcar's self-service, pay-as-you-go, car-leasing service.

Reverse logistics

Flow of surplus or unwanted materials, goods or equipment back to the firm, through its logistics chain for reuse, recycling or disposal.

Radio Frequency Identification (RFID)

Automatic identification of packages, products, machinery etc, through attached transponders. RFID provides 'out of line of sight' identification and at distances much greater than can be scanned by barcode readers.

Sustainability

Meeting human needs without overwhelming nature or society.

Sustainable development

A dynamic process by which sustainability is achieved. Enabling all people to realise their potential and improve their quality of life in ways which simultaneously protect and enhance the Earth's life support systems.

SustainGrade

Fictional labelling standard as mentioned in the Slow is Beautiful scenario: '2019: Global sustainability standard SustainGrade is launched. Fairtrade label becomes obsolete, as well as 'organic' certification and a proliferation of other sourcing and production standards.'

Sport Utility Vehicle (SUV)

A sport utility vehicle is a generic marketing term for a vehicle similar to a station wagon, but built on a light truck framework. It is usually equipped with four-wheel drive for on- or off-road ability.

Swishing event

A clothes-swapping event.

Vertical integration

Merging of firms at different stages of production/distribution in the same industry. When a firm acquires its input supplier it is called backward integration, when it acquires firms in its output distribution chain, this is called forward integration.

Web 3.0

The term used to describe the evolution of the Internet, and includes a shift in the level of interactivity and connectivity on everything from data, concepts, applications and ultimately people.