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Disrupting the status quo: a sustainability transitions analysis of the fashion system

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ABSTRACT

The fashion industry has developed into a complex global system with persistent social and environmental sustainability challenges. Private, public, and civil society actors have condemned these persistent problems and called for system change toward sustainable fashion. While alternative practices and industry collaborations have emerged throughout the system, they have not added up to a sustainability transition. Instead, the system shows signs of being locked into unsustainability. The aim of this article is to examine the state of transition of the fashion industry through a multi-level perspective system analysis, based on a co-creative research project with the former C&A Foundation, which became the Laudes Foundation in 2020. This transition analysis shows that the fashion system is locked into a state of disconnection, uncontrollability, extraction, growth-focus, and disposability. We build from analysis and present a set of strategic transition pathways that can be pursued today throughout the fashion system to accelerate the transition to sustainable fashion.

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fashion; lock-in; pathways;
system change

Introduction

The fashion industry is a complex system that is made up of global networks of actors that contribute to the diverse activities that allow for the creation, production, distribution, and consumption of “fashion.”¹ We consider the “fashion system” to unite diverse activities, such as the producing of fibers; the designing of clothes and fabrics; the manufacturing and shipping of garments; the distributing, marketing, and retailing of apparel; the formulating of policies to govern the industry; the consuming of fashion; and so forth. Garment production is the third largest manufacturing industry in the world in terms of annual revenues (Karaosman et al. 2016) and continues to grow rapidly (EMF 2017). As one of the most globally significant industries, it generated \$2.5 trillion in annual revenues (Amed et al. 2020) and provided employment for over 300 million people before the onset of the COVID-19 pandemic (EMF 2017). But the fashion industry also faces persistent social and environmental sustainability problems. Research highlights how the industry’s value chains are characterized by an asymmetric distribution of power (Hileman et al. 2020), major social injustices

(Ozdamar Ertekin et al. 2020), and widespread environmental impacts (EMF 2017; Sandin and Peters 2018; Peters et al. 2021).

After abundant criticism over the limited consideration of social and environmental issues by the industry in recent years (Niinimäki et al. 2020), the need for change toward sustainability in fashion is increasingly acknowledged by researchers (Bick et al. 2018; Fletcher 2010; Peters et al. 2021), activists (Fashion Revolution 2020), industry (Amed et al. 2020; Drew and Yehounme 2017), and policy makers alike (European Commission 2021b). However, there is no one clear definition of sustainable fashion, meaning efforts to achieve sustainable fashion materialize in various shapes and forms (Islam, Perry, and Gill 2021). Many terms and concepts have emerged in the past few decades to describe a movement toward greener, more ethical, slower, circular, and more transparent fashion (i.e., Clark 2008; Fletcher 2010; Ozdamar Ertekin and Atik 2015; Henninger et al. 2016; Brydges et al. 2014). To date, the most substantive change has been in response to incidents such as the Rana Plaza factory collapse in 2013, which stirred up debate about unethical industry practices. Calls for more transparency and traceability in the fashion

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industry have led larger fashion brands to commit to doing better. However, fast fashion, overproduction, and overconsumption still dominate the landscape and the fashion system has not been able to phase out unsustainable practices (Fletcher 2010; Peters et al. 2021). While engaging in corporate social responsibility (CSR) and developing responsible collections, the sustainability efforts of many large brands are still marginal and not at the core of their business models. The textile and clothing industry is still among the largest polluters in the world and its social and environmental unsustainability is not diminishing (Bick et al. 2018; Ozdamar Ertekin et al. 2020; Peters et al. 2021).

Private, public, and civil society actors increasingly condemn the issues in the sector and urge change toward a sustainable fashion industry. In response, opportunities for more sustainable fashion are emerging across the system, which in turn could become entry points for transformative change. These efforts include increasing pre-competitive business collaboration and consumer interest for sustainable fashion, as well as the emergence of alternative practices, materials, and business models. Regardless of these promising emerging practices, sustainability efforts have not yet added up to a transformation of the fashion system, which instead shows only slow progress at best (Global Fashion Agenda 2019). Beard (2008) highlights that one of the reasons why change is not happening or is happening at a very slow pace is linked to the fragmentation and complexity of the supply chains of a truly global industry. The textile and clothing industry is made up of hundreds of thousands of brands, wholesalers, and retailers; millions of workers; and billions of consumers worldwide (Mihm 2010).

This article takes a sustainability transitions perspective of the fashion system and an action-oriented understanding of processes of change within the industry. We use system-analysis methods to study the patterns and mechanisms that create inertia and possibilities for transformative change in such a complex societal system. The sustainability transitions perspective offers a system-level helicopter view rather than a deep dive into any specific theme within the fashion space. This transition approach contributes to an improved ability to unravel the complexity and inertia in the system and helps to find the entry points for change that are already present. We build on these opportunities by proposing pathways to move toward a more sustainable fashion system.

This article builds on a research project with the former C&A Foundation (now Laudes Foundation) which included co-creative sessions to define transition pathways from a system perspective toward a

more sustainable fashion industry. The discussion is structured as follows. First, we introduce the concept of a sustainability transition, including the multi-level perspective (MLP) for transition analysis. Second, we describe our methods. Third, we highlight our results by presenting the current state of transition of the fashion system and several co-created transition pathways forward. Finally, we draw our conclusions and identify avenues for future research.

A sustainability transitions perspective

Sustainability transitions research emerged in an attempt to understand the workings of societal transitions and to unearth points to address sustainability (Loorbach, Frantzeskaki, and Avelino 2017; Grin, Rotmans, and Schot 2010). This perspective begins with the notion that grand societal challenges are the result of the ways in which systems are structured and that create and reproduce persistent problems (Schuitmaker 2012). To address these challenges, radical changes to restructure the system are required, which over the long-term might unfold into a transition toward a more sustainable system. Such sustainability transitions are found to have a number of key characteristics that make them difficult to predict. They are understood as multi-dimensional, long-term, uncertain processes that involve multiple and diverse actors and their divergent values and understandings (Köhler et al. 2019). Various frameworks and approaches have been developed in attempts to better understand and influence these complex processes of change. We turn to a number of key concepts from the sustainability transitions literature to better understand the dynamics of change and sustainability in the fashion system.

Earlier transitions research set out a framework that helps to analyze systems in transition based on three key elements that together make up the MLP as shown in Figure 1. Researchers have developed and applied the MLP in the context of historical transitions and this work has uncovered a typical pattern of non-linear change between these three elements. First, the *regime* describes the dominant way of thinking and the rules that govern the system, as well as the infrastructures and the institutions that give shape to the overall system. Practices and responses initiated from within the regime generally seek to further stabilize and optimize the regime which can ultimately lead to a “lock-in” of the system (Frantzeskaki and Loorbach 2010; Klitkou et al. 2015). When lock-in occurs, the structures of the system have developed in such a deeply entrenched way that few alternative options have

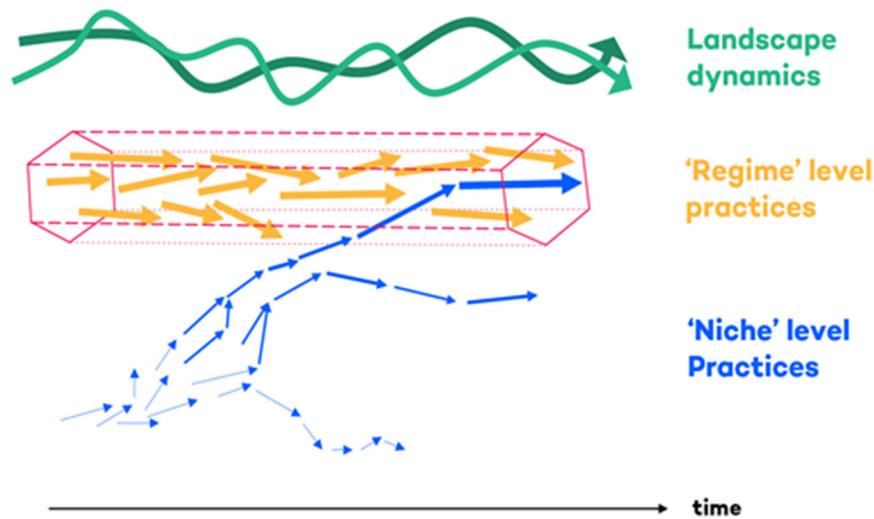


Figure 1. A multi-level perspective of how processes of change can lead to a transition in a societal system (adapted from Geels 2011).

room to grow. Sustainability transitions research aims to explore how a dominant and unsustainable regime that is locked-in can change into a sustainable one. For this we turn, second, to *niches*, which are understood as spaces outside of the regime that define alternative ways to think, govern, and shape the system. As their name already suggests, they aim to counter dominant modes, but are generally only considered viable in a specific, protected environment and under certain conditions (Smith, Fressoli, and Thomas 2014; Smith 2007; Sengers, Wieczorek, and Raven 2019; Raven, Van Den Bosch, and Weterings 2010). Nevertheless, some niches have the potential to grow in terms of relevance vis-à-vis the system and to survive outside of this protected environment. With that opportunity comes the possibility to challenge and overthrow the unsustainable regime in time or the “risk” of being co-opted by the regime. Finally, these processes do not take place in a vacuum but are subject to *landscape dynamics*. These are broad societal trends and processes that influence the entire system (and beyond), such as climate change or economic crises (Geels and Schot 2007; Loorbach and Lijnis Hufferreuter 2013). Landscape dynamics influence the stability of the structures that uphold both regime and niche practices, forcing processes of reconfiguration, transformation, substitution, or de-alignment (Geels 2011).

We understand societal transitions as non-linear patterns of change, which are the result of multi-actor, multi-level interactions: dynamics at the landscape level, disruptions of the path-dependency of the regime, and emerging niches that provide alternatives. These insights are the result of analyses of historical transitions, and these patterns allow us to better understand and support transitions-in-the-making. In fact, transition research has increasingly moved toward using and developing more action-

oriented approaches and methods (Köhler et al. 2019). Action research offers a way to acquire meaning and understanding through practice and interactions in a multi-actor context (Wittmayer et al. 2014). A key principle in action research is the understanding of knowledge as the product of interaction with societal actors, building on their understandings, experiences, and values. Such co-creative processes allow transition researchers to develop “action-oriented knowledge” that supports sustainability action (Clark et al. 2016; Caniglia et al. 2021). Multi-actor engagement enables participants to co-produce new knowledge with which to advance sustainability transitions, to make sense of transition dynamics, and to examine how innovative sustainability solutions operate and affect transitions (Frantzeskaki and Rok 2018).

Methods

This article contributes to the academic and industry debates on fashion and sustainability by presenting strategic pathways to sustainability reasoning from transition theory. It builds on insights from a transdisciplinary action-research project that set out to explore transitions to sustainable fashion through co-creation with diverse stakeholders from the fashion system. This project was concluded in 2018 and was commissioned by the former C&A Foundation and Fashion for Good. We published the results of this project in a report (Buchel et al. 2018) that the current article builds on and expands upon based on more recent literature and dynamics in the fashion industry.

We used various methods to get a better and more actionable understanding of the fashion system through a sustainability transition perspective. These can be divided into three subsequent parts:

(1) desk research and analysis, (2) stakeholder reflection and validation, mainly through interviews, and (3) a stakeholder co-creation process.

First, desk research was an essential part of the project and used analytical elements from the MLP to examine both academic and gray (industry) literature on the fashion system. The desk research was the responsibility of the researchers. It was intended to provide insights into current notions of sustainability in the industry and to outline the state of transition in the fashion system. Rather than conducting a retrospective analysis of a fulfilled transition, the research focused on finding signals for emerging pressures that have the potential to destabilize the existing fashion regime. In other words, the desk research applied a transition perspective to a “transition-in-the-making,” which meant that it set out to uncover *potential* current and future transition dynamics.

Second, stakeholder reflections were key for the validation of the desk research. Within the scope of the project this included informal talks with employees of the former C&A Foundation and Fashion for Good, as well as eight in-depth expert interviews. The experts came from knowledge institutes, industry sustainability initiatives, nongovernmental organizations (NGOs), brands, and retailers. The countries in which the experts operated were in North America, Europe, and Asia. The interviews allowed us to validate and reflect on transition insights and adapt where needed.

Finally, essential to the formulation of the transition pathways were the co-creation workshops with stakeholders from the fashion system. These workshops started from the transition analysis of the fashion system, asked the participants to critically assess and improve it, and further built from there. Two in-person co-creative workshops of approximately three hours were organized, with a total of 19 unique participants. Participants came from a broad range of organizations, including large brands and retailers, small innovative brands, NGOs, and knowledge institutes. Due to the in-person nature of the workshops that took place in Amsterdam, the geographical origin of the participants was limited to Europe. The first workshop featured a collective system analysis and visioning process to define the desired sustainable fashion system and to identify seeds for change among niches in the current system. The second workshop used backcasting and wildcards to strategically define steps from the desired system to the present, providing insights into multiple transition pathways. These were then further unpacked and summarized by the research team. A final, shorter, in-person session was organized in Copenhagen with 14 new participants from

industry sustainability initiatives, foundations, and NGOs (many of them with a global scope, but mostly with roots in Europe and North America) to validate the transition pathways. It must be noted that the results of each of these activities were outcomes of an iterative process. The MLP analysis of the fashion system was primarily made on the basis of the desk study and interviews and the transition pathways were co-created during the workshops. However, both outputs were further developed with the data gathered throughout the research process and have benefited from input by participants.

A multi-level transition analysis of the global fashion system

Based on the data generated in the research activities, we have conducted a transition analysis of the current global fashion system using the MLP. The results from this study are presented here, citing publications and references where applicable, but also including data from the expert interviews and workshops. We start by explaining in detail the structures, cultures, and practices that the regime encompasses. We continue with a categorization of emerging niches, and, finally, clarify the landscape dynamics that might influence and disrupt this broader system.

The dominant fashion regime

Dominant structure and practices

While fashion-supply chains are organized globally (Niinimäki et al. 2020), the system itself is very fragmented and includes many small and medium-sized enterprises (BCG 2016). The apparel-production chain is a classic, linear model that uses almost exclusively virgin materials from either organic or synthetic sources (Bick et al. 2018; Peters et al. 2021). It heavily depends on the use of nonrenewable resources (e.g., petrochemical products), intensive farming practices (e.g., using large volumes of fertilizers, pesticides, and water for cotton production), and chemical dyeing and is thereby responsible for considerable environmental impact (Bick et al. 2018; Niinimäki et al. 2020; Peters et al. 2021).

The fashion market is characterized by induced obsolescence (Christopher, Lowson, and Peck 2004; Raustiala and Sprigman 2006; Janssens and Lavanga 2020) and high demand uncertainty (Lavanga 2018; Pratt et al. 2012; Brydges 2018), not only in the case of fast fashion but in luxury fashion as well. Short lifecycles of garments, long lead time, and make-to-stock practices are at the core of the fashion system (Brun et al. 2008; Brandao, Godinho Filho, and Lago da Silva 2021). Production has shifted toward

locations where the labor costs are increasingly lower. Following cheap labor to enable the supply chain of fashion, materials, fibers, fabrics, and garments are shipped around the world (Fletcher 2007; Ozdamar Ertekin et al. 2020). Here the industry relies on people (mostly women) to work in sewing factories for the non-automated cut-make-trim step of the supply chain (Karaosman et al. 2016). Where traditional design-to-sales timelines need almost two years, the current dominant model demands only four months or less (Taplin 2014a). This leads to manufacturers subcontracting and relying on excessive overtime. This business model is prone to the exploitation of manufacturing workers resulting in issues like poverty-line wages, severe health and safety issues, and worker repression (Taplin 2014a).

The fashion market is highly competitive and luxury brands often outsource to low-cost countries, too. However, Brun et al. (2008, 562) highlight that while “the most critical production phases (e.g., the cutting phase) are to be kept in-house, the non-critical and most labor intensive phases (e.g., sewing) can be outsourced.” In particular, to ensure control and quality, “outsourcing strategies during the production phases in low-cost countries have been increasingly reviewed in this luxury segment, and this has led to a movement called reshoring emerging within this supply chain... However, a value-added strategy is to outsource a process to a highly specialized supplier that enhances quality attributes in the end” (Brandao et al. 2021, 866).

Fashion demand in emerging economies is soon projected to outgrow that of the most advanced countries (Amed et al. 2020). Overproduction and overconsumption are at the core of the fashion system, resulting in an increasing “clothing mountain” and waste (Maldini et al. 2019; Niinimäki et al. 2020). Though there is a small market for clothing resale either domestically or by shipping items abroad, 12% of worldwide textiles enter cascading recycling into lower-quality products like insulation materials, and less than 1% of textiles are recycled into new fibers or garments (EMF 2017). Moreover, retailers regularly dispose of unsold stock, contributing to high levels of waste generated by the industry. Repair, reuse, and resale are uncommon, meaning all other discarded apparel and textiles are landfilled or incinerated.

Dominant fashion culture

Fashion is a central part of consumer culture in higher income countries, and increasingly in emerging economies, allowing consumers to give shape to identity and culture (Niinimäki 2010; D’Souza 2015). The marketing by brands and retailers relies on this relationship to the consumer’s identity and

exposes consumers to advertisements across media and public space (Macchion et al. 2017; Langley and Rieple 2021). With the intertwining of fashion and identity, consumption has come to represent a bridge toward a desired lifestyle (Niinimäki 2010). However, the lifespan of garments has further decreased due to fast fashion, urging consumers to use it and dispose of it (Ozdamar Ertekin et al. 2020). In fact, producers and consumers increasingly treat garments as disposable products, demonstrated by the trend of declining clothing utilization (EMF 2017). Many brands and retailers argue that the inertia of the industry is due to the lack of consumer willingness to pay for sustainable products and the rising demand for affordable clothing supports this claim (Lehmann, Arici, and Martinez-Pardo 2019). However, the demand for guilt-free consumption is increasing, as 55% of people state they are willing to pay more for sustainable clothing (Gazzola et al. 2020). While consumer awareness is increasing, there is a considerable gap between sustainability intentions and behavior (McNeill and Moore 2015). When it comes to efforts to improve sustainability and ethics in the industry, brands and retailers are predominantly doing so in response to public attention by forming collaborative, industry-led sustainability platforms, and certification and benchmarking schemes, with many of these initiatives coming from sustainability intermediaries supported by the industry. Notable examples include the Sustainable Apparel Coalition, the Global Fashion Agenda, Fashion for Good, and the Organic Cotton Accelerator.

Emerging fashion niches

Throughout the system numerous niches have emerged as part of attempts to counter the dominant practices from the fashion regime and to address some of its sustainability challenges. Their innovations in terms of technologies and practices are aimed at making apparel production and consumption more sustainable and ethical, each innovation addressing separate sections of the fashion system (Gwilt and Anicet Ruthschilling 2019).² These initiatives have often been developed by independent fashion designers and small fashion brands who embrace a slow fashion movement (Leslie et al. 2014; Brydges et al. 2018). “Money doesn’t buy the lead. A lot of bottom-up, unexpected companies will make the change,” according to a workshop participant.

We have broadly characterized niches into four categories: (1) technology and fibers; (2) business models; (3) value-chain models and partnerships; and (4) consumer awareness. We categorize niches

as “alternative practices” compared to the “dominant practices.” Niches are not inherently sustainable per se, and research is needed to analyze these new practices. For example, while researchers have highlighted the emerging niche of fashion rental as a more sustainable practice than buying fashion (EMF 2017; Mukendi and Henninger 2020), a recent study suggests instead that out of five options, including discarding and recycling, renting clothes produced the most carbon emissions (Levänen et al. 2021).

Technology and fibers

A flurry of technological niches has emerged in apparel production in response to the fashion industry’s unsustainable use of resources and virgin materials for disposable fast fashion. Design for sustainability and circular design practices aim to reduce waste in design, sampling, and production processes (e.g., laser cutting, digital sampling, 3-D knitting, reuse of leftovers) as well as to extend the lifetime of garments through direct reuse, repair, and upcycling (Kant Hvass and Pedersen 2019; Earley and Goldsworthy 2015; Sandvik and Stubbs 2019). In particular, upcycling increases the value of a product by transforming it into a higher-quality product. “Upcycling is found to be the best alternative to close the loop, whereas direct reuse is considered to be the second most preferred alternative” (Paras et al. 2019, 406). Some interviewees saw a lot of potential in the circular economy, even beyond a materials perspective with one respondent observing that “in the circular economy you phase out anonymity in the supply chain. Everything needs to be traceable.”

In addition, there are niche practices that deal with innovations that reduce the environmental impact of the dyeing processes and water, energy, and chemical use (e.g., with bacteria, enzymes, and nanotechnology). At the same time, various innovations that enable the recycling of textiles have surfaced, such as automated sorting, chemical recycling, and the creation of new fibers from recycled plastic. There is also a growing number of niches of designers and startups that use or produce fibers from a variety of alternative materials (e.g., fruit leather, algae, or fungi).

Business models

“We built our business models based on infinite growth. There needs to be a new model that sells something different,” one interviewee said. To counter the dominant business model in which fashion is manufactured by anonymous producers and garments are disposable, novel business models have appeared throughout niches in the system. Here

fashion is considered a service, and longer-term relationships with customers are highly valued (Pedersen et al. 2018). Examples are companies that enable consumers to swap, lease, or rent clothing (e.g., VIGGA); produce garments on demand (e.g., Elsie Gringhuis); allow for personalization; and reuse, remake, repair, or recycle garments (e.g., Nudie Jeans). These innovative business models are predominantly offered online and frequently make use of social media and direct-to-consumer sales (e.g., Vestiaire Collective, Comn).

Value-chain models and partnerships

Another development in the fashion system has been the emergence of ethical brands that respond to the social injustice that is persistent throughout the industry. These (often small) ethical brands value working closely with manufacturers and have set up shorter supply chains than conventional fashion producers. This has enabled consumers to have a closer connection to the manufacturer, as brands are able to provide more transparency regarding their production process. In combination with new business models, value-chain models that are centered on local-for-local (circular) production and reshoring are also increasingly apparent (e.g., Mud Jeans). In addition, in pursuit of transparency, various initiatives have emerged that form partnerships with brands (Hileman et al. 2020): such as environmental profit and loss accounting (e.g., Kering), transparency initiatives disclosing in which factories individual garments were made (e.g., ARKET), or even IT-based traceability through the use of blockchain systems (e.g., Bext360).

Consumer awareness

Finally, a key-niche development has been a shift in consumer awareness of sustainability issues in the fashion industry. Global consumer campaigns like #WhoMadeMyClothes and #WhoMadeMyFabric (by Fashion Revolution), for example, urge consumers to reflect on the social impacts of the clothes they own, to take a role in urging fashion brands to assume responsibility, and to improve their transparency and social and environmental sustainability practices. Alongside producer-facing consumer activism, recent social media trends feature aspects of the previously discussed niches from a consumer perspective: as a focus on quality and long-lasting garments (e.g., minimalism and capsule wardrobes) or moving away from “disposable” fast-fashion garments (e.g., zero-waste movement; fast fashion-detox challenges; clothes-swap parties). These trends, and the pressure they have put on the fashion system, show that niches in sustainability transitions are not always technology-, innovation-, or

market-based. Some niches rather involve new ways of thinking and doing led by consumers and activists.

In conclusion, there is plenty of diversity among innovative practices in niches across the fashion system. While novelties that focus on improving the environmental performance of a product, company, or value chain have been most dominant, there is increasing attention for issues of social justice. In fact, there is a growing trend of companies focusing on ethical production and good labor conditions for garment workers. While we can identify many innovations and initiatives as niches in the fashion system, these have not yet resulted in a larger shift of mainstream practices and have not been able to challenge the dominant fashion regime sufficiently to enact any movement toward system transformation. Countertrends that further entrench the fast-fashion regime can also be distinguished (Table 1).

Landscape pressures influencing the fashion system

The practices of the fashion regime and the emerging fashion niches do not play out in a vacuum. Instead, they are subject to landscape pressures that can be both enabling or disabling, and thus possibly accelerating transitions or further reinforcing an unsustainability lock-in. These landscape pressures can develop *outside* of the fashion system and come to influence it, such as an economic crisis. However, they can also develop *within* the fashion system and eventually become a source of global pressure that influences the entire system, such as the Rana Plaza factory collapse that put working conditions front and center. In this section we discuss several currently relevant landscape pressures and briefly reflect on how they influence both regime and niches.

Growing middle class

Global growth in population and wealth have led to a continuously expanding demand for a range of luxury items such as high caloric foods, clothing, and various technologies. This trend has been especially prominent in emerging economies which have seen rapid increases in the consumption of goods in the past decade. Furthermore, we are seeing a shift in the power dynamics in the broader fashion system, a spread of consumerist culture globally, and a strain on resources (Wubs et al. 2020). First, within the fashion industry these trends have especially led to changing power relationships in the regime. The overall market shares of brands and retailers in the global North are declining in the face of rapid growth in other parts of the world (Küpper et al. 2016; Amed et al. 2020). These shifts in global market shares have contributed to the loss of a leadership role on the part of large fashion companies based in the global North. Furthermore, the regime trend of consolidation among Chinese suppliers has shifted power over the supply chain from brands and retailers in the global North toward the suppliers and producers in China. The rapid bounce-back of China during the pandemic in 2020 compared to the rest of the world further strengthened the position of Chinese companies in the industry (Amed et al. 2021). Second, with a growing affluent middle class, consumerist culture has also expanded around the globe (Dobbs et al. 2016). The values and behavior associated with consumerist culture specifically feed into the business model that is dominant to the regime (Niinimäki 2010): it raises the demand for large quantities of new products at highly affordable prices. Finally, expanding consumption trends have increased the pressure on resources needed for the production process. As emphasized above, the modes of production in the fashion industry are contributing to the depletion and pollution of

Table 1. Regime vs. niche interaction with the system.

	<i>Regime practices</i>	<i>Niche practices</i>
<i>Dominant structure</i>	Just-in-time supply chains that are globally organized; start to finish	Practices specialized within certain sections and segments of the fashion system
<i>Perception of sustainability</i>	Supply-chain regulation for social impact; efficiency for minimizing environmental impact; CSR; siloed approach to addressing challenges	Minimal (or positive) impact on planet and people; re-usability; decent compensation for work
<i>Market dynamics</i>	Classic retail; trend-led marketing	Independent boutiques; online retailing; producer-consumer relations; transparency; service-based
<i>Cultural trends</i>	Fast fashion; cheap garments, race to the bottom; highly disposable garments	Slow fashion; durable, sustainable materials; rental; repair
<i>Industry and technological trends</i>	Cheap labor for cut-make-trim step; non-organic cotton and synthetic virgin fibers	Old and traditional crafts with new technologies; alternative fibers and materials; automation developments
<i>Ecological trends</i>	Intense use of nonrenewable resources and intensive farming practice; considerable environmental impact	Use of discarded materials, natural dyeing; renewable energy use and sustainable distribution
<i>Regulation and policy trends</i>	Regulated mostly for environmental production standards; working conditions are often on voluntary basis	New business models that feature shorter value chains, which enable transparency and consumer-producer relations

natural resources, thereby also posing an increasing threat to the natural capital on which the industry depends (Drew and Yehounme 2017; Niinimäki et al. 2020).

Global climate action

The increasing global urgency to deal with environmental issues and climate change is pushing governments to take measures to minimize the emissions of greenhouse gasses and to implement stricter environmental regulations. Global arrangements such as the United Nations Paris Climate Agreement intensify pressure on the fashion industry to address its environmental footprint. Moreover, the implementation of policies that integrate measures related to circular economy, such as applied to waste management, are increasingly common: for example, in the European Union (European Commission 2018), China (De Freytas-Tamura 2018), and India (Government of India 2020). In particular, the European Green Deal aims at making Europe the first climate-neutral continent in the world, with a target of 55% reduction of emissions by 2030 (European Commission 2021a). The textile and clothing industry is recognized as one of the sectors which can pave the way toward a carbon neutral and circular economy. Indeed, the European Commission identified the textile and clothing industry as a priority sector in its Industrial Strategy and it will publish in 2022 an “EU Strategy for Textiles” with sustainable textile-transition pathways (European Commission 2021b).³ At the same time, there is an ongoing policy debate around the role of extended producer responsibility (EPR) in textile products. The concept of EPR aims to ensure that producers take responsibility for the end-of-life phase of their products, in particular contributing financially to the costs of waste management. This policy can be an influential factor in driving change in the fashion industry, especially if it is designed for circularity and harmonized across European Union countries, as suggested by EURATEX (2020), the European Apparel and Textile Confederation.

These measures have the capacity to affect regime practices most strongly, as they often span the globe and are built on more competitive and extractive business models. “Governments have the possibility to become powerful actors in the fashion industry; they can ask for a different future,” said one of our interviewees. In comparison, most of the niche practices that we have shown are not particularly challenged by new measures: for some, the core of their business is oriented at keeping their environmental footprint as low as possible. In addition, there is a growing trend whereby consumers are similarly in pursuit of climate action and they gravitate more

and more toward environmentally responsible fashion actors. Interesting also is the changing role of NGOs which have emerged as influential and independent watchdogs to protect the environment and vulnerable populations of people. These NGOs are increasingly institutionalized within (voluntary) governance arrangements that prioritize transparency about the practices of fashion industries and include, for example, the Garments and Textiles Covenant, the Denim Deal, and the Dutch Circular Valley, all in the Netherlands.⁴

Social justice disasters

Like the global move toward climate action, social justice has been elevated by activists (Fashion Revolution 2020) and governments (European Commission 2021a) as a key concern and drives change at both niche and regime levels. Although calls for social justice are a growing global political trend across societal systems, in fashion it is also the result of dynamics that are endogenous to the fashion system, as these pressures arose from tragedies such as the 2012 Tazreen factory fire and the 2013 Rana Plaza factory collapse in Bangladesh (Taplin 2014b). At the regime level, these disasters prompted leading brands and local trade unions to form the legally binding Accord of Fire and Safety in Bangladesh (Ahlquist and Mosley 2021; Anner 2020; Oka et al. 2020). While in other countries, notably the UK, Germany, and the Netherlands, actors such as the private sector, NGOs, and the government have been working together to create non-binding agreements to address issues like unsafe working conditions and worker exploitation in the supply chain (Wu and Li 2019). Such agreements are often initiated from within the fashion system, in collaboration with other NGOs. As mentioned before, NGOs are increasingly taking on a more official role in holding the fashion industry accountable for their actions. In addition, these social justice disasters have also put a public spotlight on social conditions in the fashion industry, creating additional pressure for change by fashion consumers. This activity is visible in the growing number of consumer and activist movements that demand change from brands and companies to address social justice issues.

Digitalization, e-commerce, and social media

Digitalization and e-commerce have been major influences on the fashion system, to both regime and niche (Macchion et al. 2017; Brydges et al. 2021). While digitalization has challenged regime actors to adapt their dominant mode of physical retail stores, the shift to online retail and marketing has acted as a niche space for a wide array of

alternative fashion practices and even enabled them to accelerate (Brydges et al. 2018; Langley and Rieple 2021; Crewe 2013). The Internet initially allowed the fashion industry to expand internationally through e-retailing (Guercini and Runfola 2015). In recent years, the rise in e-commerce in fashion is associated with a department-store crisis, as brick-and-mortar (department) stores are outcompeted by online retail (Guercini et al. 2018). In general, e-retailing has promoted and perpetuated practices of overconsumption. In contrast, in the niches digitalization is a disruptive force that has allowed social innovations to flourish and alternative practices to emerge and scale up, such as peer-to-peer sharing and rental and (re)sale platforms (Langley and Rieple 2021). It has also enabled smaller sized fashion designers and producers to showcase their creations via social media and to sell directly to consumers; this development has enabled a degree of enhanced autonomy (Guercini et al. 2018). Social media has also allowed new players like fashion bloggers to emerge within the fashion system (Rocamora 2017). Successful fashion bloggers blur the line between marketing and consuming fashion products, allowing such individuals to influence consumer behavior and become online opinion leaders (Crewe 2013; Guercini et al. 2018).

COVID-19 pandemic

Many of these landscape pressures and their effects on the fashion industry have been amplified by the ongoing COVID-19 crisis. At the start of the pandemic and subsequent lockdowns, supply chains were severely disrupted as production and shipping were affected and brick-and-mortar retail venues around the world closed. These developments variously affected niche and regime actors throughout the fashion system, as economies and consumer behaviors rapidly changed, for instance by an initial dip in consumer spending and a general shift toward online retail and consumption (Amed et al. 2021). Many brands saw it necessary to cancel large orders that were already in production, due to the decline in demand, pushing financial risk further down the supply chain toward manufacturers in producing countries (Fashion Revolution 2020). While many regime-level retailers had already been making a shift toward more e-commerce and a stronger online presence, the COVID-19 pandemic has accelerated this dynamic. As physical retail was limited throughout 2020 and 2021, online retail has been vital for the industry to cope with these sudden changes (Fashion Revolution 2021).

Co-creating a response toward sustainability

From the transition analysis above emerged the question of where actors in the fashion system can intervene to create transformative change toward sustainability. Our work shows that the fashion industry is locked into unsustainable trends and has so far been quite resistant to change. However, rapid niche developments in combination with the increasing landscape pressures highlight some potential starting points for change within the system. Transition pathways offer a shared narrative connecting the desired system state to those transition dynamics currently present in the system that offer seeds of change. To support a transition in fashion, it is necessary for actors to collaboratively take action to disrupt current structures and to stimulate and scale innovation.

In the co-creation workshops, researchers and participants developed six transition pathways. These pathways were designed to break away from the lock-in the fashion regime currently faces, leveraging existing niches and landscape pressures to transform the industry into a force of positive change that enhances customer well-being, provides safe and just working conditions, captures the full value of materials, regenerates ecosystems, and strengthens economies and communities. These pathways can provide narratives to be used by industry actors and change agents to connect around, as well as a research agenda for researchers interested in studying the industry from a more systemic and transition-oriented perspective.

The pathways serve as inspiration to move beyond optimization strategies, where currently significant effort is concentrated, and toward system transformation. The pathways can—and should—develop alongside each other, since they cover different aspects of the fashion system that need to be transformed. Indeed, many of these pathways are not exclusive to the fashion industry, but rather are part of other, larger transitions in various manufacturing industries, as well as sectors like energy, waste management, and agriculture. Many actors in these industries can be found innovating, investing, and experimenting in these spaces. These experiences can provide the fashion industry with valuable lessons and partnerships if actors (e.g., brands and retailers, innovators, suppliers, or manufacturers) are willing to look beyond the fashion industry for transformative power and to partner with others. Each pathway can make use of several change practices as transformative tools (see Figure 2). These are not new interventions per se. Since there are many actors and initiatives already working on mobilizing these practices, there is not always a need to duplicate efforts or reinvent the wheel.

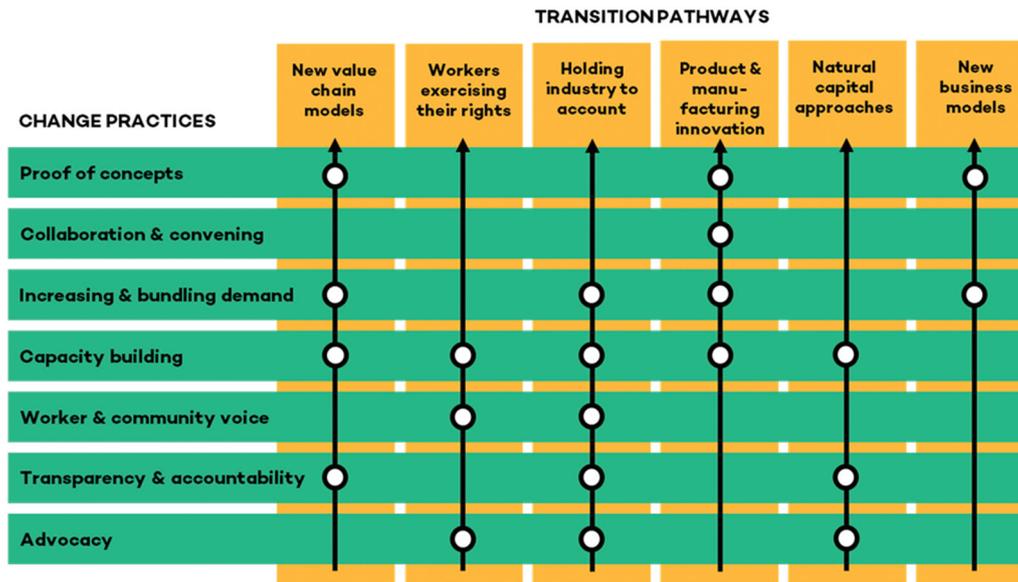


Figure 2. Transition pathways and levers for change.

However, fashion-industry actors (as well as governments, NGOs, and consumers) can connect and collaborate around suggested change practices and pathways and build on existing efforts to direct them toward shared narratives and to accelerate transformative change. As one of our interviewees stated, “The fashion system leaves capacities of people underutilized while exhausting natural resources. Humanity is smart enough to change this.”

Pathway 1: new value chain models

This pathway transforms business-to-business relationships in which supply-chain actors move beyond transactional relationships with strong power imbalances and toward partnerships based on connection, mutual understanding, and reciprocity. Supply-chain partners share risks and benefits, make joint investments in supply-chain innovation, and collaborate long-term to build capacities and to improve sustainability performance. Resources are allocated by supply-chain partners to enable all actors (including small- and medium-sized enterprises (SMEs) at a global scale) to change business-as-usual.

Indicators of progress for this pathway are the duration of supply-chain partnerships, the power balance in supply-chain partnerships (in terms of dependency or distributing the sales price throughout the chain, for example), the transparency of production chains, and the resultant changes in how materials are owned and managed throughout product lifecycles.

Pathway 2: workers exercising their rights

Workers (and community members) are empowered to exercise their rights to negotiate for the priorities they choose, including higher (living) wages, better

labor conditions, opportunities for growth, and healthier environments. The industry respects workers’ collective bargaining and advocacy to governments. Supply chains, working conditions, and purchasing practices are publicly disclosed, so employers and upstream buyers can be held accountable.

Indicators of progress for this pathway are the number of specialized jobs in the industry, the share of fashion-industry workers united in unions or other forms of worker collectivity, and the number of successful court cases with which communities prevent environmental degradation.

Pathway 3: holding the industry to account

The industry is no longer “footloose” due to increased oversight and regulation by governments that protect their environment as well individuals and organizations against pollution, health hazards, and exploitation. This situation means stricter environmental regulations for farming and manufacturing practices as well as facilitating good working conditions and wages. It includes implementing minimum social and environmental impact standards for garment import, use, and end-of-use. NGOs, investigative journalists, and individuals have a watchdog role, enabled by the movement toward industry-wide radical transparency that provides public access to the impact, origins, processes, costs, and value of products.

Indicators of progress for this pathway can be measured by looking at the presence of apparel-production measures in strong environmental policies, the decrease of the number of companies moving to other countries because of more limited regulations, the decrease of connectedness between industry stakeholders and policy makers, and the change in

consumers' attitude toward problematic practices in the fashion industry.

Pathway 4: product and manufacturing innovation

The industry moves away from the current linear take-make-waste model. This pathway leads to a circular system in which material loops are closed. Garments are made in clean-production processes and with regard for the materials and their full lifetime. They are viable assets in an economy that fosters reuse. Fibers and chemicals that cannot be part of a closed no-impact loop that upcycles materials are phased out. Production processes such as farming and manufacturing regenerate rather than pollute the environment. The industry is independent of fossil fuels and no longer contributes to micro-plastic pollution. Companies allocate resources to increase capacity for sustainable design, radical innovation, and knowledge about alternative practices.

Indicators of progress for this pathway are the pace of uptake of innovative and transformational technologies in the production chain; the amount and extent of collaboration between innovators and traditional regime actors; the accessibility of expertise, technologies, and finance for circular fashion innovation; the percentage of research and development budgets for radical innovation (as opposed to incremental innovation); and the cost of recycled versus virgin fibers.

Pathway 5: natural capital approaches

The sector moves toward natural capital assessment and radical transparency that provide details on the true cost of environmental impact, origins, and materials. Material and economic flows are combined in assessment and reporting tools. These data are captured by decentralized, open information technologies that financial actors can use for investment strategies and governments are able to access for crafting environmental policies, import limitations, and taxation.

Indicators of progress for this pathway are the market share of companies that report on natural capital impact throughout their supply chain, the extent to which data is shared transparently, the range of policies introduced that support natural capital accounting approaches, and the taxation of labor relative to the taxation of natural resources and capital.

Pathway 6: new business models

Consumers become "users" of fashion services rather than owners of garments. In the "next

circular economy" the use, adaptability, and convenience of products is valued. Local production enables brands and manufacturers to sell designs and (recycled, high-quality) raw materials directly to customers and SMEs. Tailoring, repairing, and customizing by retailers and local professionals make a return. Renting and reselling are common business models for brands. New service models turn supply-chain actors into asset managers rather than producers.

Indicators of progress for this pathway are the share of fashion-service revenues relative to total revenues, the accessibility of fashion services, the rate of clothing utilization and resale, and the extent of decline in new garment production and sales.

Discussion: a reflection on the state of transition

While the fashion industry proclaims to "do better" and some companies are making small steps toward more sustainable materials or products, not much has changed when it comes to the dominant fashion system (Global Fashion Agenda 2019). In fact, rather than transform the industry, efforts to push change have thus far led to optimization of the status quo. When we synthesize the dominant cultures, structures, and practices within fashion, we see a regime that is highly entrenched and resistant to transformative change. First, the fashion regime is *disconnected* because of its transactional relationships, fragmented supply chains, and unequal power structures which in combination allow for (financial) risk to be pushed further down the supply chain and encourage a collective sense of irresponsibility. Second, the fashion regime is *uncontrollable* as it operates within an unregulated global market that enables the industry to avoid accountability for social and environmental externalities. This situation enables the fashion industry to stay opaque and "footloose" by pursuing cheap and fast production around the world. Third, the regime is *extractive and growth-driven*, leading to high price competition. As such, sustainability is often considered a costly additional feature, meaning dominant fashion practices still heavily rely on nonrenewable fossil resources and virgin resource inputs. Finally, the dominant fashion regime is highly *disposable* in nature, enabling continuous and ever-changing consumer demand for quantity and novelty.

These four characteristics are highly interlinked and function as the design principles for how actors within the fashion regime think, work, and organize themselves. This regime has been developing path dependency in this direction for some decades, being clearly locked into this trajectory. Such a

“lock-in” is the result of positive feedbacks which reinforce existing and incumbent technologies and business models. These processes have become widely diffused and have made the regime stable and resistant to change (Klitkou et al. 2015). This state of lock-in leads to a “continuous empowerment of the existing infrasystem” (Frantzeskaki and Loorbach 2010) and helps explain the relatively marginal effect of attempts to move toward sustainability.⁵ Breaking out of lock-in then requires more radical approaches by system (governance) actors to rewire the structures and relations that govern the system. Furthermore, the changes introduced in the fashion system are often marginal and mostly improve and optimize the dominant structures, practices, and regime actors. This is visible in the sustainability efforts that are initiated within the fashion regime and that fail to address its complexity and incumbent nature (Taplin 2014a). For instance, the sustainability efforts of many brands only focus on using materials with a lower environmental impact, without addressing more systemic issues such as garment end-of-life or working conditions down the supply chain. However, commitments with a more systemic sustainability perspective are being made by leading brands, with the Fashion CEO Agenda prioritizing support between supply-chain partners for social justice, and a move toward circular production systems (Global Fashion Agenda 2018).

First, the persistent lock-in caused by these four reinforcing characteristics requires radical transformation of the fashion system and all its (governance) actors. However, to date the majority of sustainability efforts have only resulted in marginal innovations that have built on resources from within the regime. For instance, many companies are taking first steps into mapping their supply chains in an attempt to increase transparency (collaboratively developing standards and benchmarks), yet the practices that incentivize an opaque supply chain (short production times, low margins on products) have not changed. These changes have only further optimized the fashion regime’s dominant business model while presenting consumers with a veneer of ethics or sustainability through marketing. The true social and environmental costs of the fashion industry are still externalized, its supply chains and workers are exploited across the board, and a linear take-make-waste model with ever-faster turnover is still the norm.

Second, sustainability efforts tend to focus on technological innovation and present disjointed efforts that emphasize regulating single links within the supply chain. These interventions overlook the disconnected nature of the fashion system and

might even result in unintended consequences. For example, attempts to regulate manufacturing and use of chemicals or other illegal practices that are not yet regulated, have not resulted in the desired sustainability outcomes. In fact, the fashion system continuously adapts to increased regulation by moving production to countries that are cheaper and less regulated (like Cambodia or Ethiopia).

Third, persistent problems have often been uncovered by parties outside the industry such as NGOs or journalists. This has predominantly led to a reactionary response from both the fashion industry and governments. These defensive measures ultimately feed into optimization pathways and reinforce system lock-in. Despite improvement efforts to turn the fashion industry into a force for good, it seems that the mainstream industry’s development pathways remain along the lines of expansion, growth, low-cost production, and high consumption—while mitigating external pressures on the industry to become more sustainable with risk management, voluntary commitments, and marketing. This is largely due to the industry’s path-dependency: the established structures, networks, routines, technologies, and production processes that keep the fashion industry locked in. Rather than looking at the symptoms of unsustainability of these processes, we need to examine the underlying structural characteristics of the fashion industry that keep them locked in. Only when these fundamental persistent problems are structurally addressed by a significant number of actors in the system (e.g., in a transition) can the fashion industry secure a future where people can thrive.

We have explored the niche developments and landscape pressures that offer seeds for change and can create the momentum needed to disrupt the locked-in system. For the purposes of analysis, we used the MLP, a framework that makes a distinction between regime and niches. Such a heuristic is a useful tool for understanding system dynamics. However, it must be noted that the lines between regime practices and niche initiatives are not always clear-cut in reality. On top of this, even within a system as heavily laden with sustainability issues as the fashion system, not all regime dynamics are undesirable or harmful, and not all niche developments move toward a more sustainable system state. Building on the positive niches, niche-regime interactions, and change practices that can be seen within and outside the system, we offered six transition pathways that could provide guidance for systemic intervention by industry actors and innovators, as well as other governance actors (e.g., governments, NGOs, funders, activists, consumer groups) to accelerate transition. These pathways are

not silver bullets and need significant collaboration around them by many of these players around the world to destabilize the lock-in of the current system. Together the pathways could lead the way to an alternative regime state for the fashion system, in which the industry becomes a force of positive change that enhances customer well-being, provides safe and just working conditions, captures the full value of materials, regenerates ecosystems, and strengthens economies and communities.

Conclusion

We have described the fashion system and its persistent sustainability challenges through the lens of sustainability transitions. Using the MLP, we have shown the locked-in nature of the fashion regime, the opportunities for change that niches in the system provide, and the landscape pressures that challenge the current system and urge incumbent actors to change. Using this system perspective, we have co-created six transition pathways with industry experts that aim to transform elements of the regime and to build on niches and landscape pressures. The fashion system is disconnected, uncontrollable, extractive, growth-driven, and disposable; these elements make the regime resistant to change. Using the transitions perspective provides a new avenue for systemic, collaborative interventions to contribute to transformative change of the industry toward sustainability. This study used co-creative action research methods together with industry stakeholders.

The selection of participants for this study had limitations, and the results could benefit from validation and enrichment with a broader set of actors, especially from countries outside of Europe and North America, as well as involving governments, industry workers, consumers, and a broader range of companies. The pathways also suggest avenues for future research. The transitions perspective offers a birds-eye view and could be further developed by more in-depth interdisciplinary research that studies best practices from other sectors or industries that align with each pathway and focuses on niches that are experimenting with innovations suited to the pathways including, for example, innovative business models or government regulations. The transition pathways and analysis can be used as a foundation for system change.

Notes

1. Fashion is considered a “cross-sector concept” and refers to “several industries, such as apparel, footwear, leather, jewelry, perfumes, and cosmetics” (Brun et al. 2008; see also Macchion et al. 2015), although the main focus of this study was on the apparel industry.

2. Slow fashion has been described as “a philosophy of attentiveness” (Fletcher 2010) which is “mindful of its various stakeholders’ respective needs and of the impact producing fashion has on workers, consumers, and eco-systems” (Pookulangara and Shephard 2013). Slow fashion stands for high quality and long-lasting products, craftsmanship, and sense of care. During the past few decades, many independent fashion designers around the world have embraced slow fashion and carved out a niche in the global fashion market (Brydges et al. 2014; Leslie et al. 2014) in the global fashion market. Emphasis is put on local production, reshoring of manufacturing, ethical making and wearing, local heritage and fashion, and shorter supply chains and emerging new business models such as production-on-demand and rental. In this respect, the rise of slow fashion goes along with the growing popularity of the maker movement.
3. See https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12822-EU-strategy-for-sustainable-textiles_en
4. See Dutch Garments and Textiles Covenant (<https://www.imvoconvenanten.nl/en/garments-textile/agreement>), Dutch Denim Deal (<https://www.government.nl/documents/reports/2020/10/29/c-233-green-deal-on-circular-denim-denim-deal>), and Dutch Circular Textile Valley (<https://www.dutchcirculartextile.org>).
5. An infrasystem is defined by Frantzeskaki and Loorbach (2010) as “a special type of societal system that includes both the physical component that is the infrastructure, and the institutions regulating and managing it.”

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